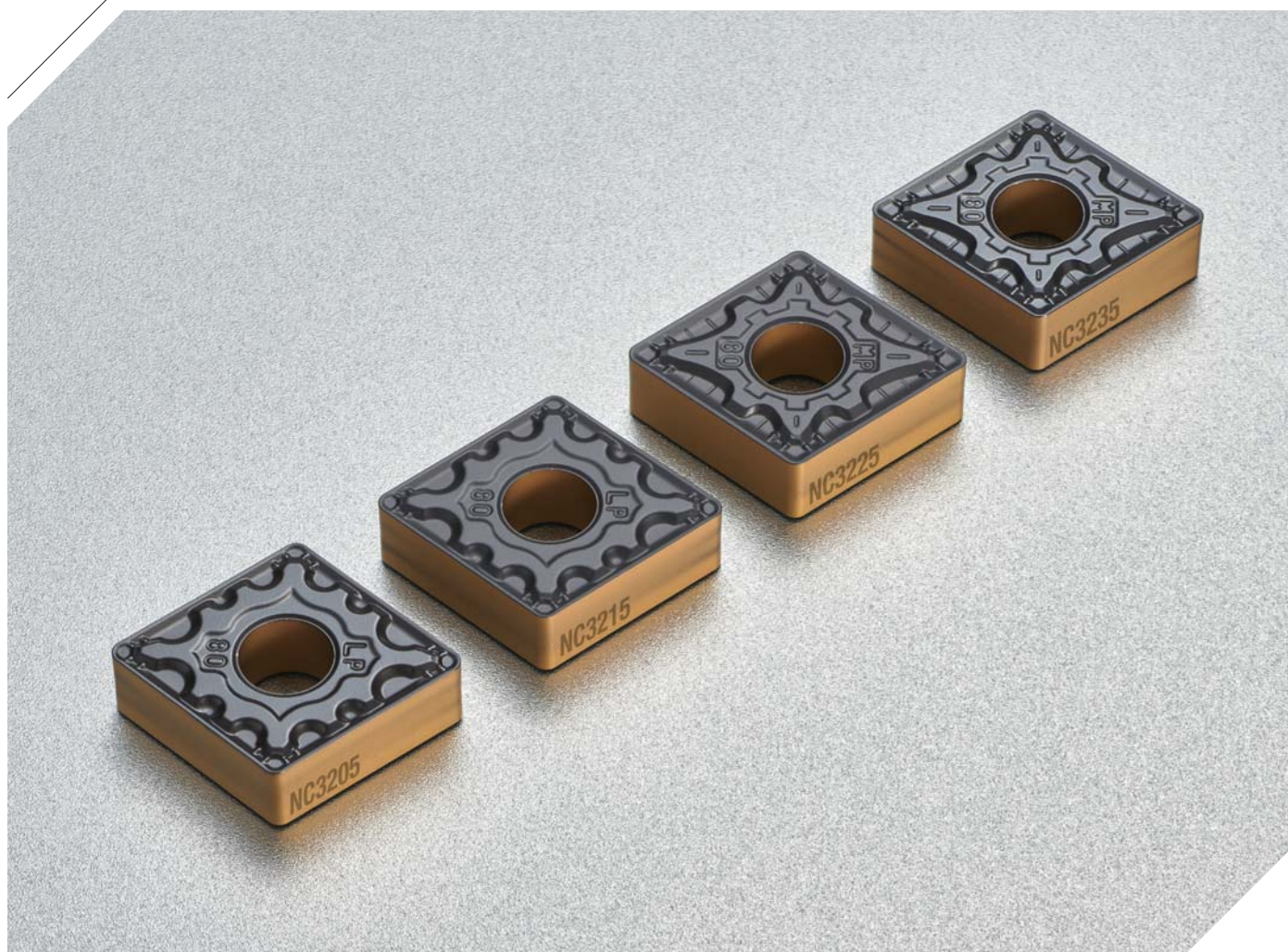


NC3200 *Turning Inserts*

Grades: ^{New} NC3205, ^{New} NC3215, NC3225, NC3235

- CVD insert series for Steel Turning
- New CVD coating increasing productivity and stable tool life



NC3200 Turning Inserts

In the recent days, grades ensuring high precision, high quality, high productivity and stable tool life are necessary for increasing cutting quality in automobile and parts industries.

KORLOY launched CVD grade insert for Steel Turning providing stable cutting quality and high productivity with less wear, chipping and fracture in Steel Turning.

NC3205 increased productivity due to New CVD coating technology for high speed Turning, saves changing tool time and minimizes tool life deviation.

NC3235 realized high productivity and stable tool life from New CVD coating technology with stability and high lubrication in heavy interrupted cutting and cutting with frequent tool fracture.

KORLOY's Steel Turning line-up is completed with a launch of NC3205 and NC3225 which are added to NC3215 and NC3225 for general Steel Turning. It provides perfect solutions to meet various demand from customers.

» **Optimal grade for high productivity on Steel cutting**

- New CVD coating with good heat resistance and wear resistance

» **Optimal for Steel continuous and interrupted cutting**

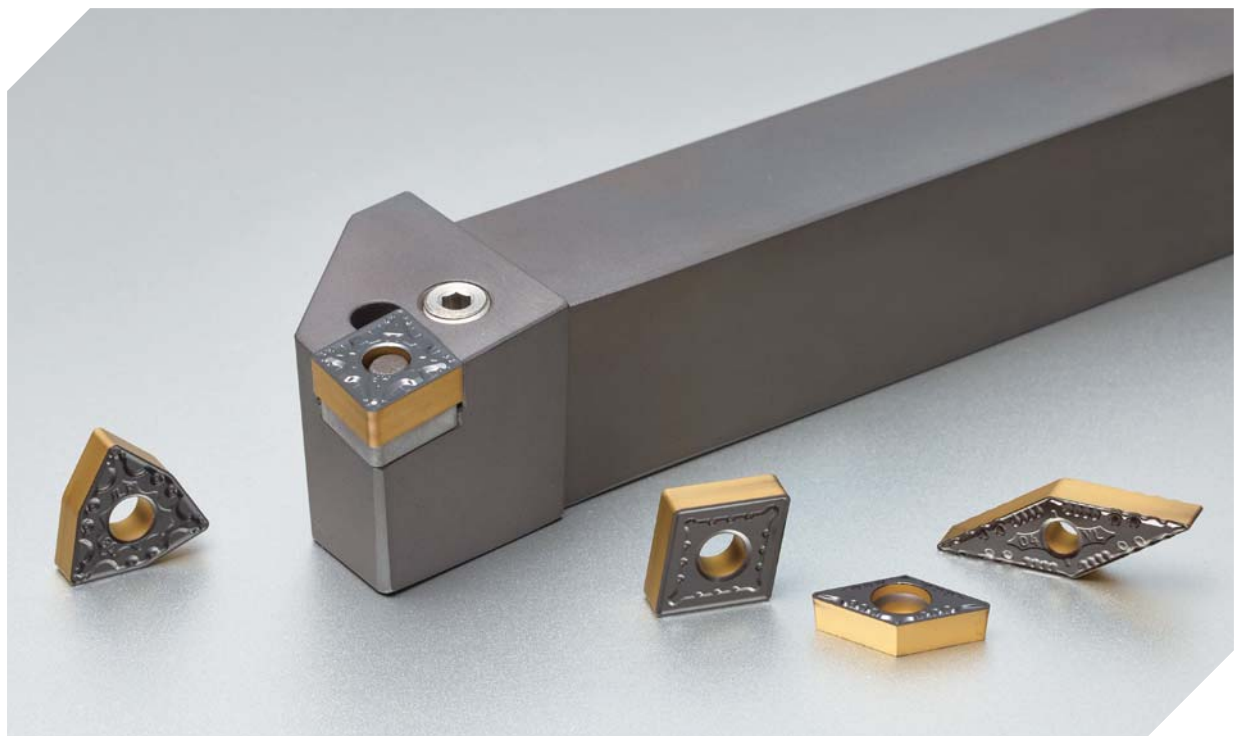
- Exclusive substrate application per each grade

» **Stable tool life due to increasing tool life**

- Enhanced lubrication and chipping resistance

» **Optimized line-up in high quality cutting condition**

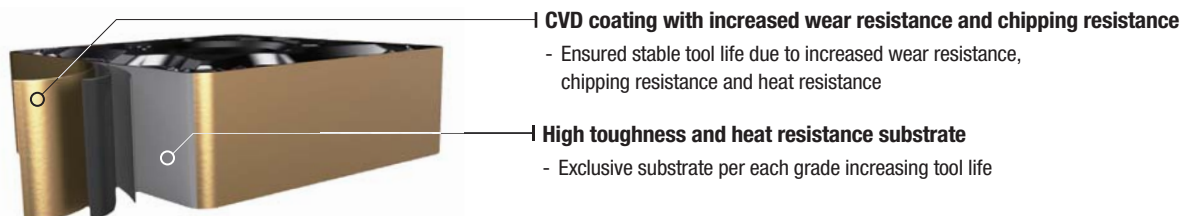
- NC3205, NC3215, NC3225, NC3235



Features

- Applied the New CVD coating increasing productivity and stable tool life
- Applied optimal substrate in cutting range (P05, P15, P25, P35)

New CVD coating and substrate increasing stability



Highly lubricative coating with fine surface finish application

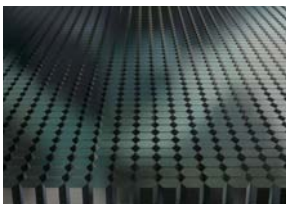
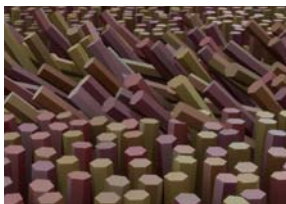
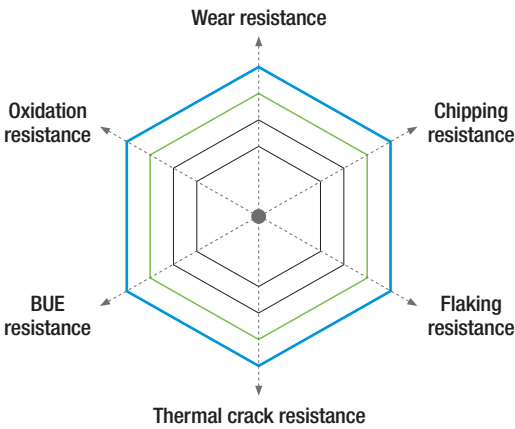


[NC3205, NC3235]

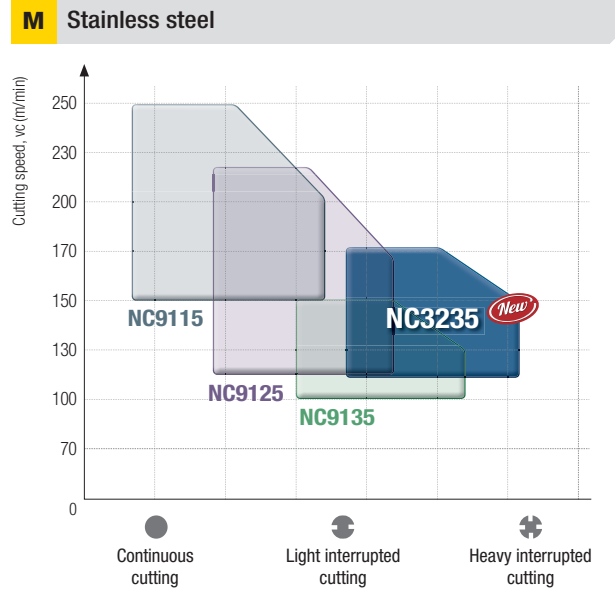
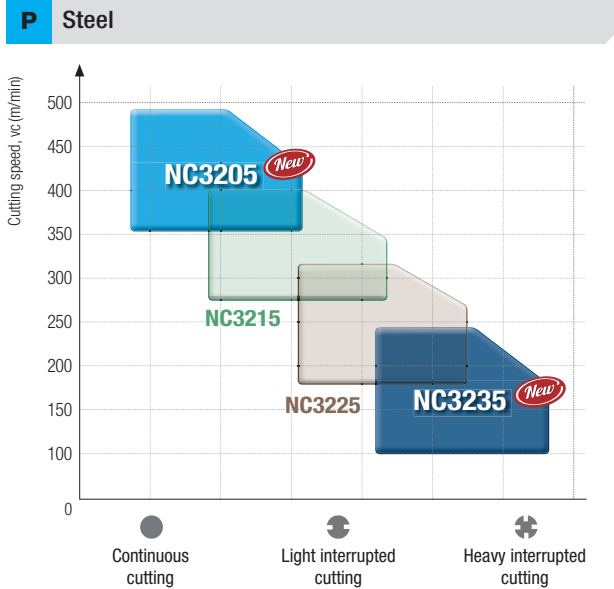
Increased
BUE resistance
and chipping
resistance



[Existing grade]

Orientation control technology	Existing and common use coating technology	Comparison of coating technology
		— Orientation control technology — Common use coating technology 
• Increased crystal orientation, tool life and stability of wear due to the New CVD coating technology	• Randomly generated crystal orientation • Limitation of wear resistance and cutting stability	

Application range

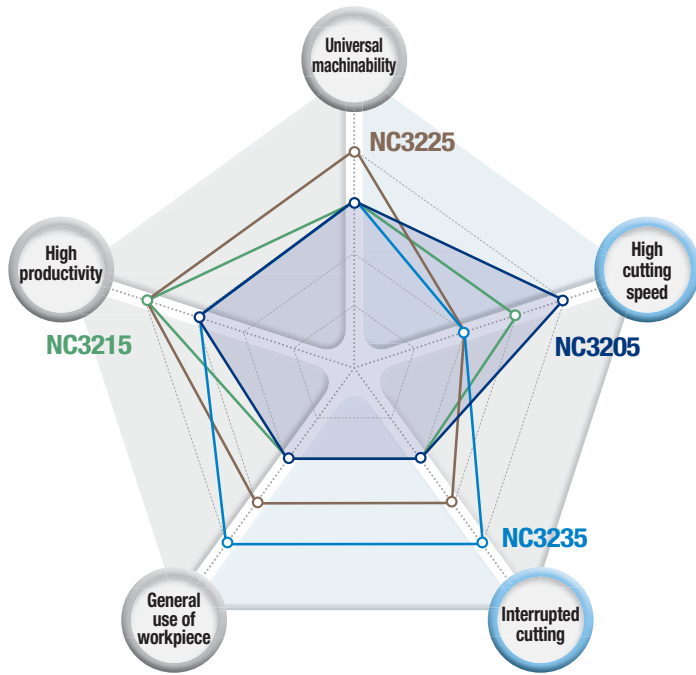


Recommended cutting conditions

※ Based on CNMG120408

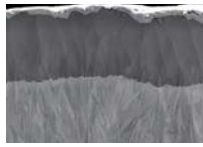
		Workpiece		Specific cutting force (N/mm²)	Brinell hardness (HB)	Recommended cutting condition			
ISO	Workpiece material	ISO (DIN)	AISI			NC3205	NC3215	NC3225	NC3235
						vc (m/min)			
P	Carbon steel	C25	1025	1500	125	330	300	270	210
						370	340	310	250
						410	380	350	290
		C35	1035	1600	150	310	280	250	190
						350	320	290	230
						390	360	330	270
		C55	1055	1700	229	290	260	230	170
						330	300	270	210
						370	340	310	250
	Low alloy steel	42CrMo4	4140 (H)	1700	180	260	240	200	140
						300	270	240	180
						340	310	280	220
		-	4145 (H)	2050	350	240	210	180	120
						280	250	220	160
						320	290	260	200
	High alloy steel (Alloy tool steel)	(X100CrMoV5 1)	D2	1950	200	220	190	160	100
						260	230	200	140
						300	270	240	180
X40CrMoV5-1		H13	3000	352	220	190	160	100	
					255	225	195	135	
					290	260	230	170	
High carbon chrome steel (Bearing steel)	B1	52100	1950	201	260	230	200	140	
					300	270	240	180	
					340	310	280	220	
M	Ferritic/ Martensitic series	X6Cr17 X12Cr13	430 410	1800	≤ 200	-	-	-	120
						-	-	-	145
						-	-	-	170
	Austenite series	X5CrNi18-9 X5CrNiMo17-12-2	304 316	2000	≤ 187	-	-	-	120
						-	-	-	145
						-	-	-	170
	Austenite-ferritic series (Duplex)	(X2CrNiMoN22-5-3) (X2CrNiMoCuN25-6-3) (X2CrNiMoN 25-7-4)	S31803 S32205 S32750	2200	≤ 310	-	-	-	70
						-	-	-	90
						-	-	-	90
	Precipitation hardening series	X5CrNiCuNb16-4	S17400	2800	≤ 350	-	-	-	50
						-	-	-	85
						-	-	-	120

Grade selection guide



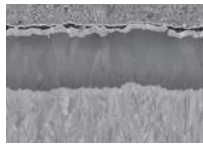
NC3205

- High cutting performance in high speed and continuous cutting
- Good wear resistance



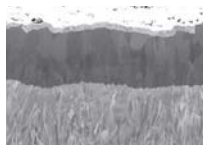
NC3215

- High cutting performance in medium to high speed and light interrupted cutting
- Good wear resistance and heat resistance



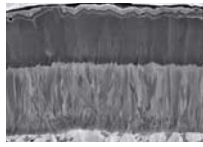
NC3225

- High cutting performance in medium speed and medium interrupted cutting
- 1st recommended grade



NC3235

- High cutting performance in medium to low speed and heavy interrupted cutting
- Good chipping resistance and fracture resistance

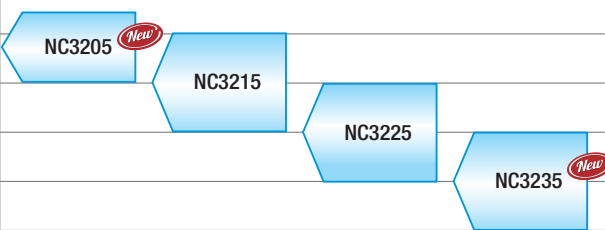


Grade	Universal machinability	High cutting speed	Interrupted cutting	General use of workpiece	High productivity
NC3205 	★★★	★★★★★	★★	★★	★★★
NC3215	★★★	★★★	★★	★★	★★★★★
NC3225	★★★★★	★★	★★★	★★★	★★★★★
NC3235 	★★★	★★	★★★★★	★★★★★	★★★

[The features of CVD coated grade]

Grade	ISO	Feature
NC3205 	P01 ~ P15	Good wear resistance and deformation resistance in high speed and continuous cutting
NC3215	P05 ~ P25	Good wear resistance and heat resistance in medium to high speed and light interrupted cutting
NC3225	P15 ~ P35	Good wear resistance and chipping resistance in medium speed and medium interrupted cutting
NC3235 	P25 ~ P45	Good fracture resistance and chipping resistance in medium to low speed and heavy interrupted cutting

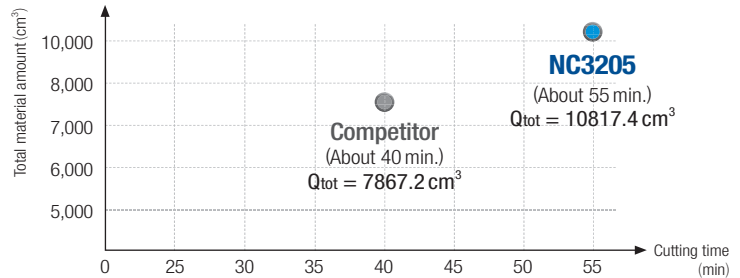
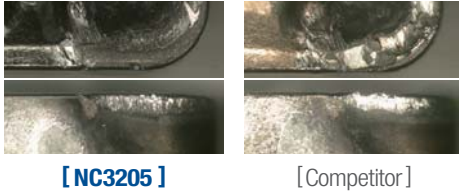
[Selection system of CVD coated grade]

Workpiece	Machining type	Grade	Recommended cutting speed (m/min)	ISO	Application range
P Steel	Continuous cutting	NC3205 	315 (220 ~ 410)	P01	
				P10	
	Interrupted cutting	NC3215	285 (190 ~ 380)	P20	
		NC3225	255 (160 ~ 350)	P30	
		NC3235 	195 (100 ~ 290)	P40	

Performance evaluation

Wear resistance

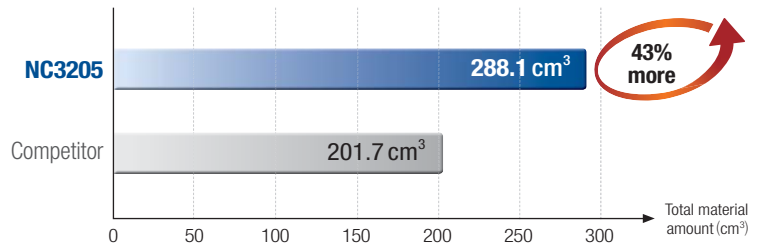
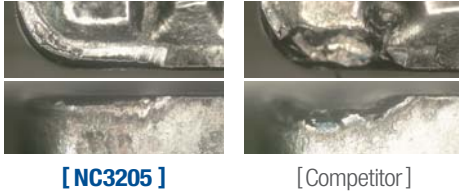
Workpiece	Alloy steel (42CrMo4, HB180)		
Cutting condition	vc (m/min) = 330, f_n (mm/rev) = 0.3, ap (mm) = 1.5, wet		
Tool	Insert CNMG120408-MP (NC3205)	Holder	PCLNL2525-M12N



• Material removal rate Q (cm³/min) : 196.7

Chipping resistance

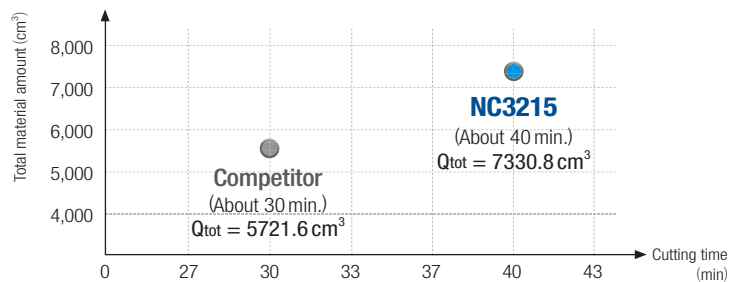
Workpiece	Chrome alloy steel (20Cr4H, HB260)		
Cutting condition	vc (m/min) = 250, f_n (mm/rev) = 0.2, ap (mm) = 2.0, dry		
Tool	Insert CNMG120408-MP (NC3205)	Holder	PCLNL2525-M12N



• Material removal rate Q (cm³/min) : 209.1 • Cutting time (min) : 1.38

Wear resistance

Workpiece	Alloy steel (42CrMo4, HB180)		
Cutting condition	vc (m/min) = 300, f_n (mm/rev) = 0.3, ap (mm) = 2.0, wet		
Tool	Insert CNMG120408-MP (NC3215)	Holder	PCLNL2525-M12N

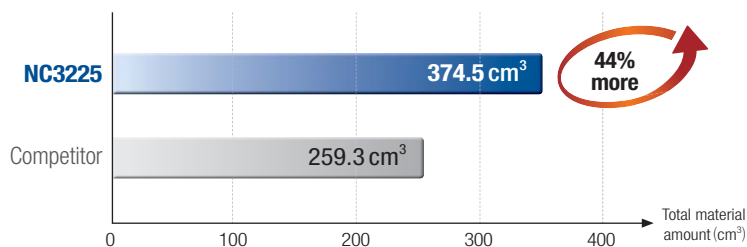
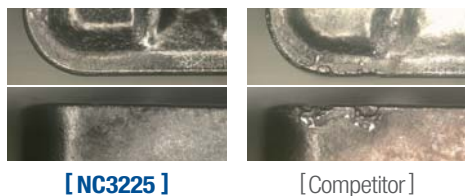


• Material removal rate Q (cm³/min) : 178.8

Performance evaluation

Chipping resistance

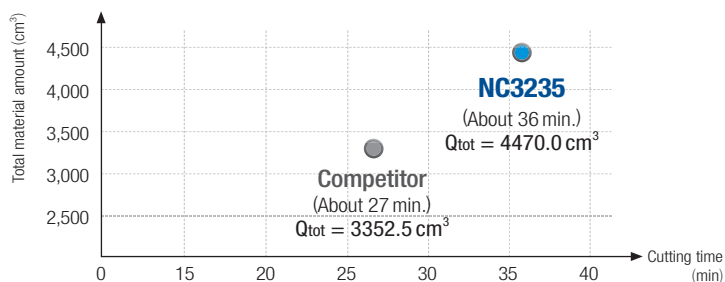
Workpiece	Chrome alloy steel(20Cr4H, HB260)		
Cutting condition	vc (m/min) = 300, fn (mm/rev) = 0.2, ap (mm) = 1.5, wet		
Tool	Insert CNMG120408-MP (NC3225)	Holder PCLNL2525-M12N	



• Material removal rate Q (cm³/min) : 250.9 • Cutting time (min) : 1.49

Wear resistance

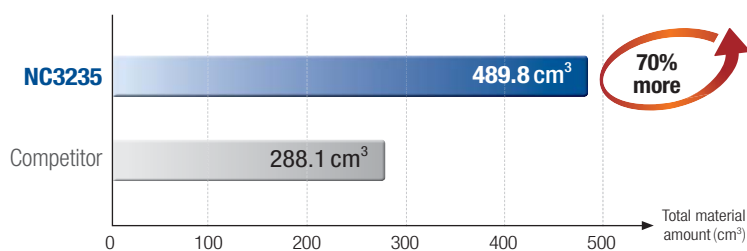
Workpiece	Carbon steel(C45,160HB)		
Cutting condition	vc (m/min) = 250, fn (mm/rev) = 0.25, ap (mm) = 2.0, wet		
Tool	Insert CNMG120408-MP (NC3235)	Holder PCLNL2525-M12N	



• Material removal rate Q (cm³/min) : 124.2

Chipping resistance

Workpiece	Chrome alloy steel(20Cr4H, HB260)		
Cutting condition	vc (m/min) = 200, fn (mm/rev) = 0.2, ap (mm) = 1.5, wet		
Tool	Insert CNMG120408-MP (NC3235)	Holder PCLNL2525-M12N	



• Material removal rate Q (cm³/min) : 167.3 • Cutting time (min) : 2.9

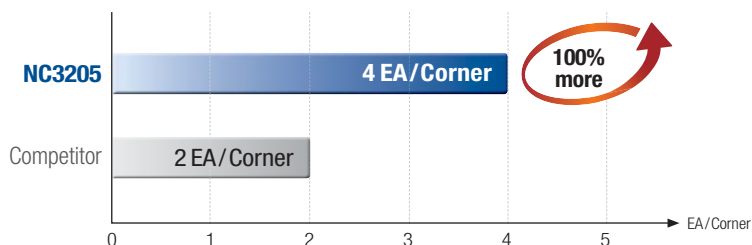
Application examples

Alloy steel (42CrMo4)

Workpiece use Heavy equipment parts

Cutting condition $vc(m/min) = 350$, $fn(mm/rev) = 0.35$, $ap(mm) = 0.3$, wet

Tool **Insert** CNMG190608-HM (NC3205) **Holder** PCBNR3232-P19



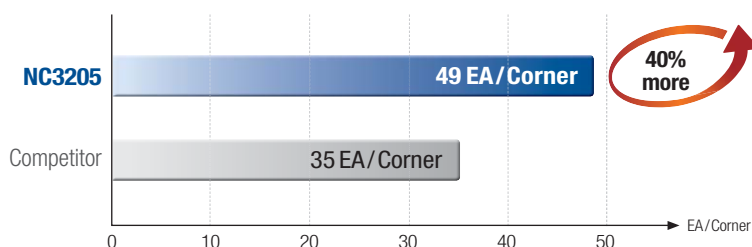
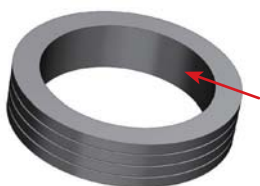
- Ensured good performance in high cutting speed with high heat due to excellent substrate with heat resistance and wear resistance
- 100% longer tool life with NC3205 than competitor's P05 grade

Carbon steel (C48)

Workpiece use Ring gear

Cutting condition $vc(m/min) = 300$, $fn(mm/rev) = 0.25$, $ap(mm) = 0.8$, wet

Tool **Insert** SNMG120412-LP (NC3205) **Holder** PSKNL2525-M12



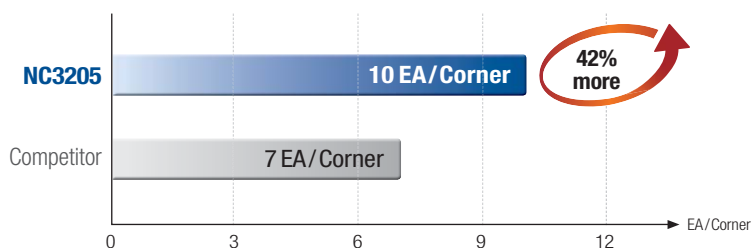
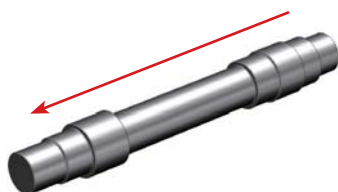
- High cutting performance in high hardness and high cutting speed by high oxidation resistance and wear resistance
- 40% longer tool life with NC3205 than competitor's P05 grade

Carbon steel (C45)

Workpiece use Axle

Cutting condition $vc(m/min) = 400$, $fn(mm/rev) = 0.55$, $ap(mm) = 0.5$, wet

Tool **Insert** DNMG150612-MP (NC3205) **Holder** PDJNL2525-M15

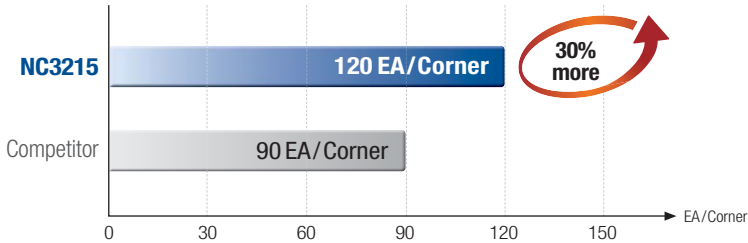
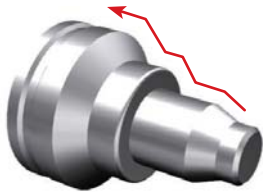


- Highly stable coating realizes stable tool life in various shape cutting
- 42% longer tool life with NC3205 than competitor's P05 grade

Application examples

Carbon steel (C45)

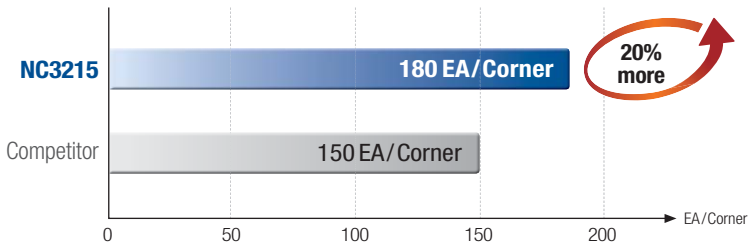
Workpiece use	BJ case		
Cutting condition	$vc(m/min) = 200 \sim 250$, $fn(mm/rev) = 0.25 \sim 0.35$, $ap(mm) = 1.0 \sim 2.0$, wet		
Tool	Insert DNMG150612-LP (NC3215)	Holder	PDJNL2525-M15



- Increased wear resistance due to LP retaining cutting edge space with good chip evacuation
- Stable tool life in high cutting speed from applying NC3215

Carbon steel (C20)

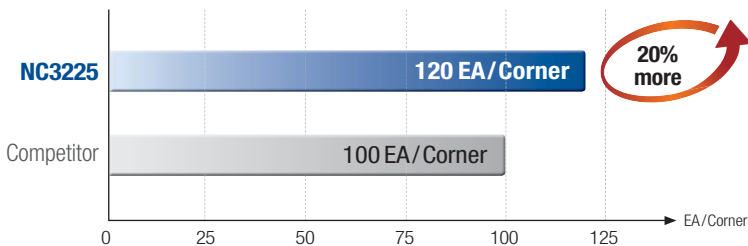
Workpiece use	Nipple		
Cutting condition	$vc(m/min) = 250 \sim 380$, $fn(mm/rev) = 0.2 \sim 0.3$, $ap(mm) = 1.5 \sim 2.0$, wet		
Tool	Insert CNMG120408-MP (NC3215)	Holder	PCLNL2525-M12N



- Stable chip evacuation and tool life in various cutting and cutting condition
- 20% longer tool life with NC3215 than competitor's P15 grade

Carbon steel (C500)

Workpiece use	Under disk		
Cutting condition	$vc(m/min) = 150$, $fn(mm/rev) = 0.2$, $ap(mm) = 1.5$, wet		
Tool	Insert CNMG120412-LP (NC3225)	Holder	PCLNL2525-M12N

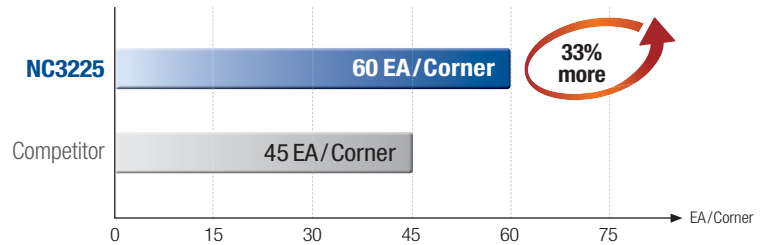
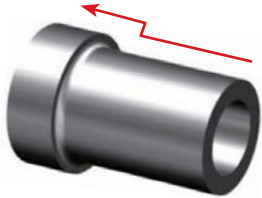


- Stable tool life in complex cutting with continuous and interrupted mixed conditions
- 20% longer tool life with NC3225 than competitor's P25 grade

Application examples

Alloy steel (SNCM439)

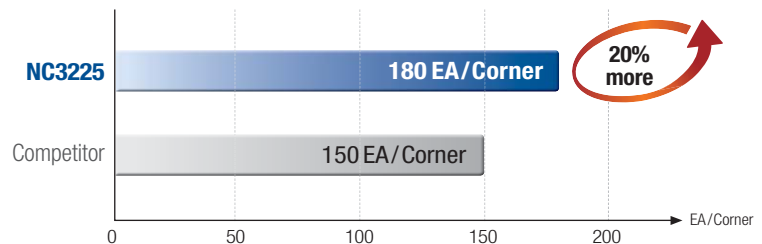
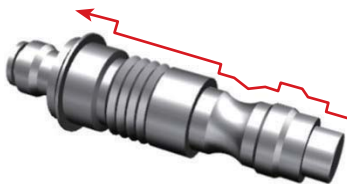
Workpiece use	Cylinder block part		
Cutting condition	$vc(m/min) = 100$, $fn(mm/rev) = 0.15$, $ap(mm) = 3.0$, wet		
Tool	Insert CNMG120408-MP (NC3225)	Holder PCLNL2525-M12N	



- Stable tool life through good chip evacuation of MP in external cutting with high depth of cut (3.0mm)
- 33% longer tool life with the New CVD coating NC3225 application than competitor's P25 grade

Carbon steel (C40)

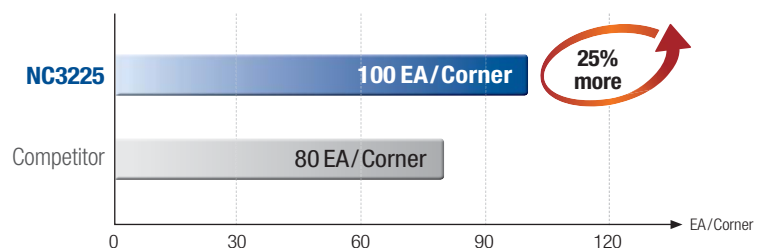
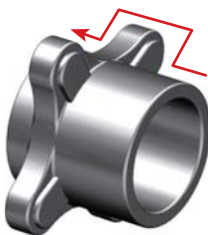
Workpiece use	Input shaft		
Cutting condition	$vc(m/min) = 170$, $fn(mm/rev) = 0.30$, $ap(mm) = 2.7 \sim 3.0$, wet		
Tool	Insert DNMG150408-MP (NC3225)	Holder PDJNL2525-M15	



- Cutting without plastic deformation and wear on the insert due to the exclusive coating for high depth of cut and high feed Steel cutting
- 20% longer tool life with NC3225 than competitor's P25 grade

Carbon steel (C45)

Workpiece use	Wheel bearing		
Cutting condition	$vc(m/min) = 230$, $fn(mm/rev) = 0.30$, $ap(mm) = 0.5 \sim 1.5$, wet		
Tool	Insert CNMG120408-MP (NC3225)	Holder PCLNL2525-M12N	

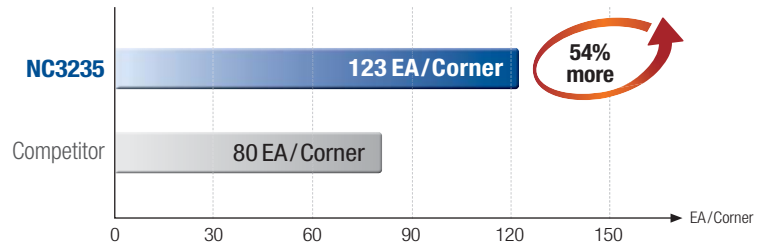
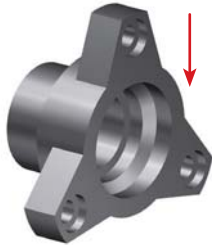


- Stable wear and regular tool life from the CVD coating NC3225
- Increased productivity due to longer tool life reducing times of changing tools

Application examples

Carbon steel (C45)

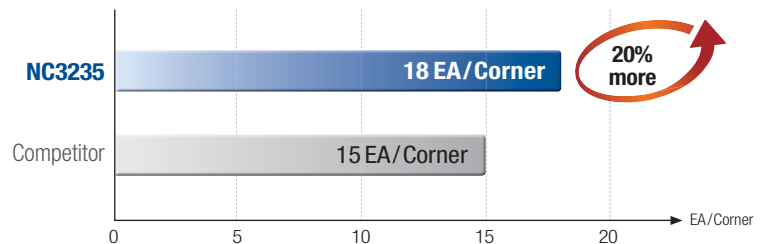
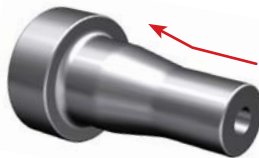
Workpiece use	Pinion flange
Cutting condition	$vc(m/min) = 319$, $fn(mm/rev) = 0.25$, $ap(mm) = 2.1$, dry
Tool	Insert: SNMG120412-HM (NC3235) Holder: PSKNL2525-M12



- Stable cutting without insert fracture due to applying high toughness substrate in even heavy interrupted machining
- Stable tool life in high cutting speed with the New CVD coating NC3235

Alloy steel (42CrMo4)

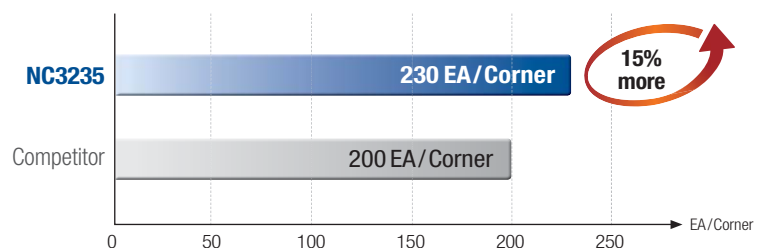
Workpiece use	Output shaft
Cutting condition	$vc(m/min) = 230$, $fn(mm/rev) = 0.35$, $ap(mm) = 3.0$, wet
Tool	Insert: CNMG120408-GR (NC3235) Holder: PCLNL2525-M12N



- Cutting in high depth of cut and high feed cutting without insert's plastic deformation and wear due to New CVD coating NC3235
- Fine chip evacuation from applying increased lubrication coating

Chrome alloy steel (20Cr4)

Workpiece use	Hub U/D brake
Cutting condition	$vc(m/min) = 300$, $fn(mm/rev) = 0.25$, $ap(mm) = 1.0$, wet
Tool	Insert: CNMG090408-CP (NC3235) Holder: PCLNL2020-K09



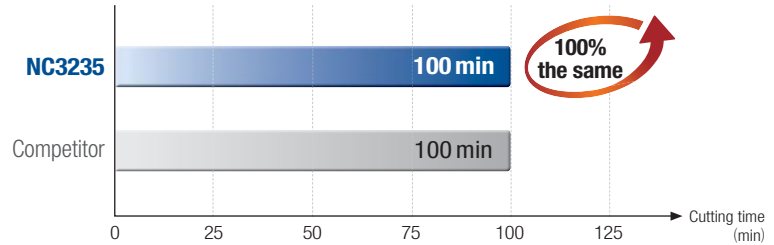
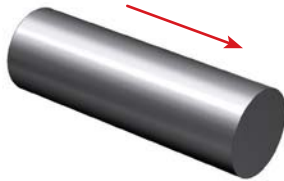
- Stable wear and regular tool life from the New CVD coating NC3235
- Increased productivity due to longer tool life reducing times of changing tools

Application examples

Duplex stainless steel alloy (1.4501*)

(*: DIN)

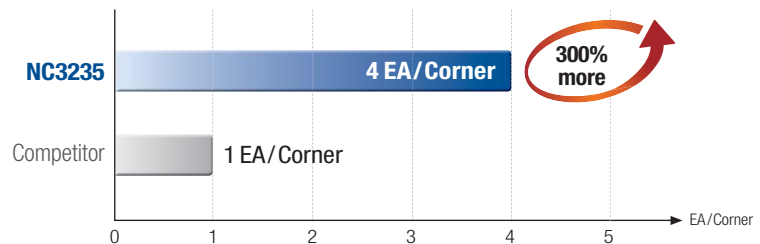
Workpiece use	Cylinder
Cutting condition	vc (m/min) = 40, fn (mm/rev) = 0.75, ap (mm) = 15.0, dry
Tool	Insert: SNMM250924-GH (NC3235) Holder: PSBNR5050-T25-6



- Increases fracture resistance and tool life in high feed and high depth of cut cutting with M series workpiece though NC3235 applied high toughness substrate
- Good cutting performance and stable tool life in various Hard-to-cut material cuttings

HRSA (17753)

Workpiece use	Generator part
Cutting condition	vc (m/min) = 40, fn (mm/rev) = 0.4, ap (mm) = 6.0, wet
Tool	Insert: CNMG190616-GR (NC3235) Holder: PCBNR3232-P19

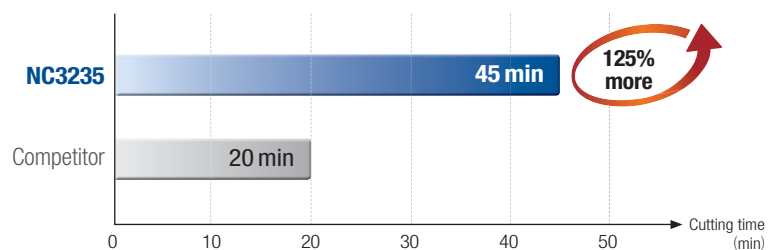


- Increased BUE resistance with less notch wear in low speed roughing with M series workpiece
- Applying the New CVD coating NC3235 with improved surface finish

Duplex stainless steel alloy (1.4462*)

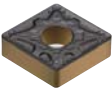
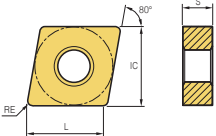
(*: DIN)

Workpiece use	Generator part
Cutting condition	vc (m/min) = 50, fn (mm/rev) = 0.45, ap (mm) = 10.0, wet
Tool	Insert: CNMG190616-GS (NC3235) Holder: PCBNR3232-P19



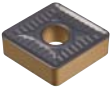
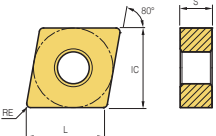
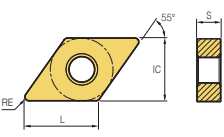
- Long tool life in cutting with high amount of workpiece of M series
- Applying high toughness substrate

 Stock items

Picture	Designation	Coated				Dimension(mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 CNMG-MP*	CNMG 120404-VB	●	●	●		12.8959	12.7	4.76	0.397	0.25 (0.35~0.15)	1.15 (0.30~2.00)	
	120408-VB	●	●	●		12.8959	12.7	4.76	0.794	0.30 (0.45~0.15)	1.25 (0.50~2.00)	
	120412-VB		●	●		12.8959	12.7	4.76	1.191	0.35 (0.50~0.20)	1.25 (0.50~2.00)	
	120408-VL	●	●	●		12.8959	12.7	4.76	0.794	0.23 (0.35~0.10)	0.85 (0.20~1.50)	
	120412-VL		●			12.8959	12.7	4.76	1.191	0.23 (0.35~0.10)	0.85 (0.20~1.50)	
	090308-LP			●		9.6719	9.525	3.18	0.794	0.25 (0.35~0.15)	1.15 (0.30~2.00)	
	120404-LP		●	●		12.8959	12.7	4.76	0.397	0.30 (0.45~0.15)	1.25 (0.50~2.00)	
	120408-LP		●	●		12.8959	12.7	4.76	0.794	0.35 (0.50~0.20)	1.25 (0.50~2.00)	
	120412-LP		●	●		12.8959	12.7	4.76	1.191	0.23 (0.35~0.10)	0.85 (0.20~1.50)	
	120408-LW		●	●		12.8959	12.7	4.76	0.794	0.23 (0.35~0.10)	0.85 (0.20~1.50)	
	120412-LW			●		12.8959	12.7	4.76	1.191	0.15 (0.30~0.10)	0.40 (0.30~1.50)	
	120404-VC	●	●	●		12.8959	12.7	4.76	0.397	0.23 (0.35~0.10)	1.15 (0.30~2.00)	
	120408-VC	●	●	●		12.8959	12.7	4.76	0.794	0.25 (0.40~0.10)	1.50 (0.50~2.50)	
	120412-VC		●	●		12.8959	12.7	4.76	1.191	0.29 (0.45~0.13)	1.90 (0.80~3.00)	
	090304-VF			●		9.6719	9.525	3.18	0.397	0.38 (0.60~0.15)	3.00 (1.00~5.00)	
	120408-VM			●		12.8959	12.7	4.76	0.794	0.45 (0.70~0.20)	3.50 (1.00~6.00)	
	120404-HM			●		12.8959	12.7	4.76	0.397	0.15 (0.30~0.07)	0.75 (0.50~1.50)	
	120408-HM			●		12.8959	12.7	4.76	0.794	0.25 (0.50~0.10)	2.50 (1.00~5.00)	
	120412-HM		●			12.8959	12.7	4.76	1.191	0.18 (0.30~0.05)	2.40 (0.80~4.00)	
	090304-MP		●	●		9.6719	9.5250	3.18	0.397	0.24 (0.40~0.08)	2.40 (0.80~4.00)	
	090308-MP		●	●		9.6719	9.5250	3.18	0.794	0.25 (0.55~0.12)	2.40 (0.80~4.00)	
	120404-MP	●	●	●		12.8959	12.7	4.76	0.397	0.15 (0.30~0.05)	2.50 (0.90~5.00)	
	120408-MP	●	●	●	●	12.8959	12.7	4.76	0.794	0.25 (0.50~0.10)	2.50 (1.00~5.00)	
	120412-MP	●	●	●		12.8959	12.7	4.76	1.191	0.30 (0.60~0.13)	2.50 (1.30~5.00)	
	120416-MP	●	●	●		12.8959	12.7	4.76	1.588	0.25 (0.40~0.15)	2.00 (0.50~4.00)	
	160608-MP		●	●		16.1199	15.875	6.35	0.794	0.25 (0.40~0.15)	2.00 (0.50~4.00)	
	160612-MP		●	●		16.1199	15.875	6.35	1.191	0.25 (0.40~0.10)	2.20 (0.40~4.00)	
	160616-MP		●	●		16.1199	15.875	6.35	1.588	0.30 (0.45~0.15)	2.50 (0.50~4.50)	
	120408-GR	●	●	●		12.8959	12.7	4.76	0.794	0.33 (0.50~0.15)	2.90 (0.80~5.00)	
	120412-GR		●	●		12.8959	12.7	4.76	1.191	0.42 (0.55~0.28)	3.00 (1.00~5.00)	
	160608-GR		●	●		16.1199	15.875	6.35	0.794	0.30 (0.50~0.15)	3.50 (0.80~7.00)	
	160612-GR		●	●		16.1199	15.875	6.35	1.191	0.30 (0.55~0.15)	3.50 (0.80~7.00)	
	160616-GR		●	●		16.1199	15.875	6.35	1.588	0.30 (0.60~0.13)	4.00 (1.80~8.00)	
	190612-GR		●	●	●	19.3440	19.05	6.35	1.191	0.35 (0.50~0.20)	4.00 (1.00~7.00)	
	190616-GR		●	●	●	19.3440	19.05	6.35	1.588	0.38 (0.50~0.25)	4.15 (1.30~7.00)	
	120404-B25			●		12.8959	12.7	4.76	0.397	0.35 (0.70~0.20)	4.00 (1.50~8.00)	
	120408-B25	●	●	●		12.8959	12.7	4.76	0.794	0.35 (0.70~0.25)	4.00 (1.30~8.00)	
	120412-B25		●	●		12.8959	12.7	4.76	1.191	0.38 (0.75~0.25)	4.00 (1.80~8.00)	
	160608-B25	●	●			16.1199	15.875	6.35	0.794	0.53 (0.75~0.30)	5.85 (1.70~10.0)	
	160612-B25	●	●			16.1199	15.875	6.35	1.191	0.55 (0.80~0.30)	5.90 (1.80~10.0)	
	160616-B25	●	●			16.1199	15.875	6.35	1.588	0.75 (1.00~0.50)	3.00 (1.00~5.00)	
	190608-B25	●	●			19.3440	19.05	6.35	0.794	0.42 (0.60~0.23)	3.25 (1.50~5.00)	
	190612-B25	●	●			19.3440	19.05	6.35	1.191	0.43 (0.60~0.25)	3.50 (2.00~5.00)	
	190616-B25	●	●			19.3440	19.05	6.35	1.588	0.43 (0.60~0.25)	4.25 (2.00~6.50)	
	120404-VP2			●		12.8959	12.7	4.76	0.397	0.44 (0.60~0.27)	4.25 (2.00~6.50)	
	190612-VR		●	●		19.3440	19.05	6.35	1.191	0.44 (0.60~0.27)	4.25 (2.00~6.50)	
	190616-VR		●	●		19.3440	19.05	6.35	1.588	0.43 (0.60~0.25)	5.50 (3.00~8.00)	
	120408-VW	●				12.8959	12.7	4.76	0.794	0.45 (0.60~0.30)	5.50 (3.00~8.00)	

* : Standard insert shape

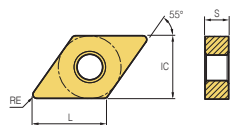
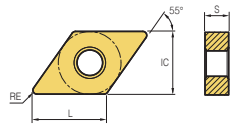
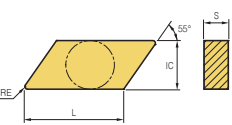
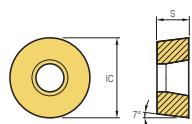
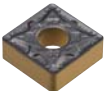
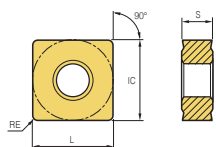
● : Stock item

Picture	Designation	Coated				Dimension (mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 CNMM-HV*	CNMM 120408-GH			●		12.8959	12.7	4.76	0.794	0.47 (0.70~0.23)	5.50 (3.00~8.00)	
	120412-GH			●		12.8959	12.7	4.76	1.191	0.20 (0.50~0.10)	3.30 (1.00~6.60)	
	190612-GH		●			19.3440	19.05	6.35	1.191	0.53 (0.70~0.35)	6.00 (2.00~10.0)	
	190616-GH		●	●		19.3440	19.05	6.35	1.588	0.55 (0.75~0.35)	6.10 (2.20~10.0)	
	190624-GH		●			19.3440	19.05	6.35	2.381	0.33 (0.50~0.15)	2.25 (0.50~4.00)	
	250924-GH		●	●		25.7920	25.4	9.52	2.381	0.50 (0.70~0.30)	5.25 (2.50~8.00)	
	190612-HL			●		19.3440	19.05	6.35	1.191	0.50 (0.70~0.30)	5.50 (3.00~8.00)	
	250924-HG			●		25.7920	25.4	9.52	2.381	0.68 (0.90~0.45)	5.50 (3.00~8.00)	
	250924-HV			●		25.7920	25.4	9.52	2.381	0.88 (1.20~0.55)	6.50 (4.00~9.00)	
	190612-VT		●			19.3440	19.05	6.35	1.191	0.88 (1.20~0.55)	8.50 (5.00~12.0)	
	190616-VT		●			19.3440	19.05	6.35	1.588	0.88 (1.20~0.55)	8.50 (5.00~12.0)	
	190624-VT		●			19.3440	19.05	6.35	2.381	0.58 (0.85~0.30)	6.50 (3.00~10.0)	
	250924-VT		●			25.7920	25.4	9.52	2.381	0.95 (1.40~0.50)	9.50 (4.00~15.0)	
	190612-VH		●			19.3440	19.05	6.35	1.191	0.80 (1.00~0.60)	9.50 (6.00~13.0)	
	190616-VH		●			19.3440	19.05	6.35	1.588	0.85 (1.10~0.60)	9.50 (6.00~13.0)	
	190624-VH		●			19.3440	19.05	6.35	2.381	1.10 (1.60~0.60)	10.0 (7.00~13.0)	
	250924-VH		●			25.7920	25.4	9.52	2.381	1.18 (1.60~0.75)	12.0 (7.00~17.0)	
 DNMG-MP*	DNMG 150408-B25			●		15.5083	12.7	4.76	0.794	0.85 (1.10~0.60)	7.50 (5.00~10.0)	
	150604-B25		●	●		15.5083	12.7	6.35	0.397	1.05 (1.40~0.70)	10.5 (6.00~15.0)	
	150608-B25		●	●		15.5083	12.7	6.35	0.794	1.05 (1.40~0.70)	10.5 (6.00~15.0)	
	150612-B25		●	●		15.5083	12.7	6.35	1.191	0.31 (0.45~0.17)	2.50 (1.00~4.00)	
	150408-GR		●			15.5083	12.7	4.76	0.794	0.36 (0.55~0.17)	2.75 (1.50~4.00)	
	150608-GR			●	●	15.5083	12.7	6.35	0.794	0.40 (0.55~0.25)	2.75 (1.50~4.00)	
	150612-GR			●		15.5080	12.7	6.35	1.191	0.36 (0.55~0.17)	2.75 (1.50~4.00)	
	150404-HM			●		15.5083	12.7	4.76	0.397	0.36 (0.55~0.17)	2.75 (1.50~4.00)	
	150608-HM			●		15.5083	12.7	6.35	0.794	0.40 (0.55~0.25)	2.75 (1.50~4.00)	
	150612-HR		●			15.5083	12.7	6.35	1.191	0.25 (0.50~0.20)	2.50 (1.00~7.00)	
	150616-HR		●			15.5083	12.7	6.35	1.588	0.35 (0.50~0.20)	4.00 (1.00~7.00)	
	110404-LP		●	●		11.6279	9.525	4.76	0.397	0.35 (0.70~0.25)	3.00 (1.30~7.00)	
	150404-LP		●	●		15.5083	12.7	4.76	0.397	0.15 (0.30~0.05)	2.00 (0.90~4.00)	
	150408-LP		●	●		15.5083	12.7	4.76	0.794	0.25 (0.50~0.10)	2.50 (1.00~5.00)	
	150412-LP		●			15.5080	12.7	4.76	1.191	0.35 (0.70~0.25)	3.50 (1.30~7.00)	
	150604-LP		●	●		15.5083	12.7	6.35	0.397	0.40 (0.65~0.25)	4.00 (1.80~8.00)	
	150608-LP		●	●		15.5083	12.7	6.35	0.794	0.19 (0.30~0.07)	0.90 (0.30~1.50)	
	150612-LP		●	●		15.5083	12.7	6.35	1.191	0.23 (0.35~0.10)	1.15 (0.30~2.00)	
	150608-LW		●			15.5083	12.7	6.35	0.794	0.25 (0.40~0.10)	1.50 (0.50~2.50)	
	110404-MP		●	●		11.6279	9.525	4.76	0.397	0.29 (0.45~0.13)	1.90 (0.80~3.00)	
	110408-MP		●	●		11.6279	9.525	4.76	0.794	0.25 (0.40~0.10)	1.50 (0.50~2.50)	
	150404-MP		●	●		15.5083	12.7	4.76	0.397	0.25 (0.40~0.10)	1.50 (0.50~2.50)	
	150408-MP	●	●	●		15.5083	12.7	4.76	0.794	0.29 (0.45~0.13)	1.90 (0.80~3.00)	
	150412-MP	●	●	●		15.5080	12.7	4.76	1.191	0.33 (0.50~0.15)	2.60 (0.70~4.50)	
	150604-MP	●	●	●	●	15.5083	12.7	6.35	0.397	0.15 (0.30~0.05)	1.75 (0.90~3.50)	
	150608-MP	●	●	●	●	15.5083	12.7	6.35	0.794	0.25 (0.40~0.15)	2.00 (0.50~4.00)	
	150612-MP	●	●	●		15.5083	12.7	6.35	1.191	0.25 (0.40~0.10)	2.20 (0.40~4.00)	
	150404-VB			●		15.5083	12.7	4.76	0.397	0.30 (0.45~0.15)	2.50 (0.50~4.50)	
	150408-VB		●	●		15.5083	12.7	4.76	0.794	0.33 (0.50~0.15)	2.90 (0.80~5.00)	
	150412-VB		●	●		15.5080	12.7	4.76	1.191	0.25 (0.40~0.10)	2.20 (0.40~4.00)	
	150604-VB	●	●	●		15.5083	12.7	6.35	0.397	0.30 (0.45~0.15)	2.50 (0.50~4.50)	
	150608-VB	●	●	●		15.5083	12.7	6.35	0.794	0.33 (0.50~0.15)	2.90 (0.80~5.00)	
	150612-VB		●	●		15.5083	12.7	6.35	1.191	0.23 (0.35~0.10)	1.15 (0.30~2.00)	

* : Standard insert shape

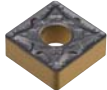
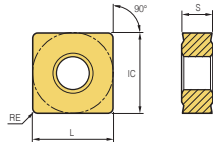
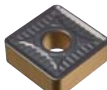
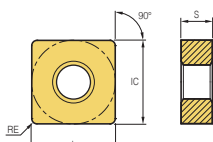
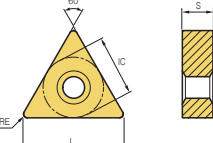
● : Stock item

 Stock items

Picture	Designation	Coated				Dimension (mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 DNMG-MP*	DNMG 150404-VC	●				15.5083	12.7	4.76	0.397	0.30 (0.45~0.15)	1.25 (0.50~2.00)	
	150408-VC	●	●			15.5083	12.7	4.76	0.794	0.30 (0.45~0.15)	1.25 (0.50~2.00)	
	150412-VC	●	●			15.5080	12.7	4.76	1.191	0.23 (0.35~0.10)	1.15 (0.30~2.00)	
	150604-VC	●	●			15.5083	12.7	6.35	0.397	0.30 (0.45~0.15)	1.25 (0.50~2.00)	
	150608-VC	●	●			15.5083	12.7	6.35	0.794	0.35 (0.50~0.20)	1.50 (0.50~2.50)	
	150612-VC	●	●			15.5083	12.7	6.35	1.191	0.18 (0.35~0.10)	1.00 (0.30~2.00)	
	150404-VL		●			15.5083	12.7	4.76	0.397	0.15 (0.25~0.05)	0.80 (0.10~1.50)	
	150408-VL		●	●		15.5083	12.7	4.76	0.794	0.18 (0.30~0.05)	0.85 (0.20~1.50)	
	150604-VL	●				15.5083	12.7	6.35	0.397	0.15 (0.25~0.05)	0.80 (0.10~1.50)	
	150608-VL	●	●	●		15.5083	12.7	6.35	0.794	0.18 (0.30~0.05)	0.85 (0.20~1.50)	
	150608-VM			●		15.5083	12.7	6.35	0.794	0.25 (0.50~0.10)	2.50 (1.00~5.00)	
	150608-VP2			●		15.5083	12.7	6.35	0.794	0.18 (0.35~0.05)	1.50 (0.10~3.00)	
 DNMX	DNMX 150604L-SH	●	●			15.5083	12.7	6.35	0.397	0.23 (0.30~0.15)	2.50 (1.00~4.00)	
	150604R-SH	●	●			15.5083	12.7	6.35	0.397	0.23 (0.30~0.15)	2.50 (1.00~4.00)	
	150608L-SH	●	●			15.5083	12.7	6.35	0.794	0.33 (0.50~0.15)	3.25 (1.50~5.00)	
	150608R-SH	●	●			15.5083	12.7	6.35	0.794	0.33 (0.50~0.15)	3.25 (1.50~5.00)	
 KNUX	KNUX 160405L-11	●	●	●		19.7155	-	4.76	0.5	0.28 (0.35~0.20)	3.50 (1.00~6.00)	
	160405R-11	●	●	●		19.7155	-	4.76	0.5	0.28 (0.35~0.20)	3.50 (1.00~6.00)	
	160410L-11	●	●			19.7155	-	4.76	1	0.45 (0.60~0.30)	3.75 (1.50~6.00)	
	160410R-11	●	●			19.7155	-	4.76	1	0.45 (0.60~0.30)	3.75 (1.50~6.00)	
	160405R-12	●	●			19.7155	-	4.76	0.5	0.30 (0.35~0.25)	3.75 (1.50~6.00)	
	160410R-12	●	●			19.7155	-	4.76	1	0.55 (0.70~0.40)	3.75 (1.50~6.00)	
 RCMX	RCMX 1003M0			●		-	10	3.97	-	0.38 (0.50~0.25)	2.75 (1.50~4.00)	
	1204M0			●	●	-	12	4.76	-	0.45 (0.60~0.30)	3.75 (2.50~5.00)	
	1606M0			●		-	16	6.35	-	0.55 (0.70~0.40)	5.00 (3.00~7.00)	
 SNMG-MP*	SNMG 120404-LP		●			12.7000	12.7	4.76	0.397	0.23 (0.35~0.10)	1.15 (0.30~2.00)	
	120408-LP		●	●		12.7000	12.7	4.76	0.794	0.25 (0.40~0.10)	1.50 (0.50~2.50)	
	120412-LP		●	●		12.7000	12.7	4.76	1.191	0.25 (0.45~0.13)	1.50 (0.80~3.00)	
	120408-VC		●			12.7000	12.7	4.76	0.794	0.28 (0.40~0.15)	2.00 (0.50~3.50)	
	120408-VP2		●			12.7000	12.7	4.76	0.794	0.23 (0.45~0.10)	2.25 (0.50~4.50)	
	120404-VB	●				12.7000	12.7	4.76	0.397	0.21 (0.36~0.06)	1.50 (0.50~3.00)	
	120408-VB	●	●			12.7000	12.7	4.76	0.794	0.21 (0.36~0.06)	1.50 (0.50~3.00)	
	090304-MP	●	●			9.5250	9.525	3.18	0.397	0.15 (0.30~0.05)	1.50 (0.90~3.00)	
	090308-MP	●	●			9.5250	9.525	3.18	0.794	0.23 (0.45~0.10)	1.75 (1.00~3.50)	
	120404-MP	●	●			12.7000	12.7	4.76	0.397	0.25 (0.40~0.10)	2.20 (0.40~4.00)	
	120408-MP	●	●	●		12.7000	12.7	4.76	0.794	0.30 (0.45~0.15)	2.50 (0.50~4.50)	
	120412-MP	●	●	●		12.7000	12.7	4.76	1.191	0.33 (0.50~0.15)	2.90 (0.80~5.00)	
	120416-MP	●	●			12.7000	12.7	4.76	1.588	0.30 (0.55~0.28)	2.00 (1.00~5.00)	
	120404-B25		●			12.7000	12.7	4.76	0.397	0.31 (0.45~0.17)	2.25 (1.00~3.50)	
	120408-B25	●	●	●		12.7000	12.7	4.76	0.794	0.42 (0.60~0.23)	3.25 (1.50~5.00)	
	120412-B25	●	●			12.7000	12.7	4.76	1.191	0.43 (0.60~0.25)	3.50 (2.00~5.00)	
	120416-B25	●	●			12.7000	12.7	4.76	1.588	0.53 (0.70~0.35)	3.75 (2.50~5.00)	
	150616-B25		●			15.8750	15.875	6.35	1.600	0.53 (0.70~0.35)	4.00 (2.00~6.00)	
	190608-B25	●	●			19.0500	19.05	6.35	0.794	0.43 (0.60~0.25)	5.50 (3.00~8.00)	
	190612-B25	●	●			19.0500	19.05	6.35	1.191	0.45 (0.60~0.30)	5.50 (3.00~8.00)	

* : Standard insert shape

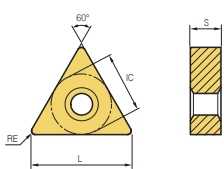
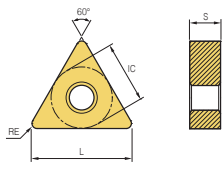
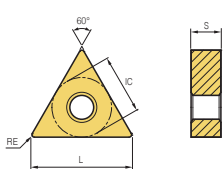
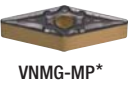
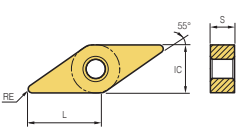
● : Stock item

Picture	Designation	Coated				Dimension (mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 SNMG-MP*	190616-B25	●	●			19.0500	19.05	6.35	1.588	0.53 (0.70~0.35)	5.50 (3.00~8.00)	
	250724-B25	●				25.4000	25.4	7.94	2.381	0.75 (1.00~0.50)	8.50 (5.00~12.0)	
	120408-HM	●				12.7000	12.7	4.76	0.794	0.25 (0.50~0.10)	2.50 (1.00~5.00)	
	120412-HM	●	●			12.7000	12.7	4.76	1.191	0.34 (0.50~0.18)	3.00 (1.00~5.00)	
	120408-GR	●				12.7000	12.7	4.76	0.794	0.35 (0.50~0.20)	4.00 (1.00~7.00)	
	150612-GR	●	●			15.8750	15.875	6.35	1.191	0.52 (0.75~0.29)	4.20 (1.40~7.00)	
	190612-GR	●	●			19.0500	19.05	6.35	1.191	0.55 (0.80~0.30)	5.35 (1.70~9.00)	
	190616-GR	●	●	●		19.0500	19.05	6.35	1.588	0.55 (0.80~0.30)	5.35 (1.70~9.00)	
	190612-VR	●	●			19.0500	19.05	6.35	1.191	0.53 (0.70~0.35)	6.00 (2.00~10.0)	
	190616-VR	●	●			19.0500	19.05	6.35	1.588	0.55 (0.75~0.35)	6.10 (2.20~10.0)	
 SNMM-HV*	SNMM 120412-GH			●		12.7000	12.7	4.76	1.191	0.35 (0.70~0.30)	4.00 (2.50~8.00)	
	190612-GH	●		●		19.0500	19.05	6.35	1.191	0.50 (0.70~0.30)	5.25 (2.50~8.00)	
	190616-GH	●				19.0500	19.05	6.35	1.588	0.73 (1.00~0.45)	6.50 (4.00~9.00)	
	190624-GH	●				19.0500	19.05	6.35	2.381	0.88 (1.20~0.55)	6.50 (4.00~9.00)	
	250724-GH	●				25.4000	25.4	7.94	2.381	0.88 (1.20~0.55)	8.50 (5.00~12.0)	
	250924-GH	●	●			25.4000	25.4	9.52	2.381	0.88 (1.20~0.55)	8.50 (5.00~12.0)	
	250924-HG	●		●		25.4000	25.4	9.52	2.381	0.80 (1.20~0.40)	8.25 (3.50~13.0)	
	250924-HV	●		●		25.4000	25.4	9.52	2.381	0.95 (1.40~0.50)	9.50 (4.00~15.0)	
	190612-VT	●				19.0500	19.05	6.35	1.191	0.80 (1.00~0.60)	9.50 (6.00~13.0)	
	190616-VT	●				19.0500	19.05	6.35	1.588	0.85 (1.10~0.60)	9.50 (6.00~13.0)	
	190624-VT	●				19.0500	19.05	6.35	2.381	1.10 (1.60~0.60)	1.00 (7.00~13.0)	
	250724-VT	●				25.4000	25.4	7.94	2.381	1.18 (1.60~0.75)	11.0 (7.00~15.0)	
	250924-VT	●				25.4000	25.4	9.52	2.381	1.18 (1.60~0.75)	12.0 (7.00~17.0)	
	190616-VH	●				19.0500	19.05	6.35	1.588	0.80 (1.10~0.50)	7.50 (5.00~10.0)	
	190624-VH	●				19.0500	19.05	6.35	2.381	0.90 (1.20~0.60)	9.00 (6.00~12.0)	
	250924-VH	●				25.4000	25.4	9.52	2.381	1.05 (1.40~0.70)	10.5 (6.00~15.0)	
 TNMG-MP*	TNMG 160404-VB	●	●			16.4980	9.525	4.76	0.397	0.20 (0.35~0.10)	1.00 (0.30~1.50)	
	160408-VB	●	●			16.4980	9.525	4.76	0.794	0.30 (0.45~0.15)	3.75 (0.50~7.00)	
	160412-VB			●		16.4980	9.525	4.76	1.191	0.33 (0.45~0.20)	1.65 (0.80~2.50)	
	160408-VF	●				16.4980	9.525	4.76	0.794	0.25 (0.40~0.10)	1.00 (0.50~1.50)	
	160404-LP	●	●			16.4980	9.525	4.76	0.397	0.23 (0.35~0.10)	1.15 (0.30~2.00)	
	160408-LP	●	●			16.4980	9.525	4.76	0.794	0.25 (0.40~0.10)	1.50 (0.50~2.50)	
	160412-LP	●	●			16.4980	9.525	4.76	1.191	0.20 (0.45~0.13)	1.50 (0.45~0.80)	
	160404-VC	●	●			16.4980	9.525	4.76	0.397	0.23 (0.35~0.10)	1.15 (0.30~2.00)	
	160408-VC	●	●	●		16.4980	9.525	4.76	0.794	0.28 (0.40~0.15)	1.75 (0.50~3.00)	
	160412-VC	●	●			16.4980	9.525	4.76	1.191	0.30 (0.45~0.15)	1.75 (0.50~3.00)	
	220408-VC	●	●			21.9970	12.7	4.76	0.794	0.28 (0.40~0.15)	1.75 (0.50~3.00)	
	160404-VL	●				16.4980	9.525	4.76	0.397	0.15 (0.30~0.07)	0.75 (0.50~1.50)	
	160408-VL	●	●			16.4980	9.525	4.76	0.794	0.18 (0.35~0.10)	0.75 (0.50~1.50)	
	160412-VL	●				16.4980	9.525	4.76	1.191	0.21 (0.55~0.13)	0.85 (0.60~1.70)	
	160404-HM	●	●			16.4980	9.525	4.76	0.397	0.15 (0.30~0.05)	2.00 (0.90~4.00)	
	160408-HM	●	●			16.4980	9.525	4.76	0.794	0.25 (0.50~0.10)	2.50 (1.00~4.00)	
	220404-HM	●				21.9970	12.7	4.76	0.397	0.15 (0.30~0.05)	3.30 (0.90~6.60)	
	220408-HM	●				21.9970	12.7	4.76	0.794	0.25 (0.50~0.10)	3.30 (1.00~6.60)	
	110308-MP			●		10.9990	6.35	3.18	0.794	0.23 (0.42~0.15)	1.20 (0.50~3.50)	
	160404-MP	●	●	●		16.4980	9.525	4.76	0.397	0.25 (0.40~0.10)	1.95 (0.40~3.50)	
	160408-MP	●	●	●		16.4980	9.525	4.76	0.794	0.30 (0.45~0.15)	2.25 (0.50~4.00)	
	160412-MP	●	●	●		16.4980	9.525	4.76	1.191	0.33 (0.50~0.15)	2.65 (0.80~4.50)	
	220404-MP	●	●			21.9970	12.7	4.76	0.397	0.20 (0.35~0.10)	3.00 (0.40~5.00)	
	220408-MP	●	●			21.9970	12.7	4.76	0.794	0.25 (0.50~0.10)	3.30 (1.00~6.60)	

* : Standard insert shape

● : Stock item

 Stock items

Picture	Designation	Coated				Dimension (mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 TNMG-MP*	TNMG 220412-MP	●	●			21.9970	12.7	4.76	1.191	0.30 (0.50~0.15)	3.50 (0.80~6.00)	
	220416-MP	●	●			21.9970	12.7	4.76	1.588	0.43 (0.60~0.25)	4.65 (1.30~8.00)	
	160408-GR		●			16.4980	9.525	4.76	0.794	0.35 (0.50~0.20)	4.00 (1.00~7.00)	
	160412-GR		●			16.4980	9.525	4.76	1.191	0.39 (0.54~0.23)	4.60 (1.20~8.00)	
	220408-GR		●	●		21.9970	12.7	4.76	0.794	0.42 (0.61~0.22)	4.45 (1.10~7.80)	
	220412-GR		●	●	●	21.9970	12.7	4.76	1.191	0.53 (0.78~0.28)	4.50 (1.20~7.80)	
	270612-GR			●		27.4960	15.875	6.35	1.191	0.71 (0.75~0.31)	6.20 (1.50~7.80)	
	160408-VM		●	●		16.4980	9.525	4.76	0.794	0.30 (0.50~0.10)	3.00 (1.00~5.00)	
	160412-VM		●			16.4980	9.525	4.76	1.191	0.37 (0.60~0.13)	3.15 (1.30~5.00)	
	160404-B25		●	●		16.4980	9.525	4.76	0.397	0.31 (0.45~0.17)	2.75 (2.00~3.50)	
	160408-B25		●	●	●	16.4980	9.525	4.76	0.794	0.36 (0.55~0.17)	2.75 (2.00~3.50)	
	160412-B25			●		16.4980	9.525	4.76	1.191	0.40 (0.55~0.25)	2.75 (2.00~3.50)	
	220404-B25		●	●		21.9970	12.7	4.76	0.397	0.31 (0.45~0.17)	3.25 (1.50~5.00)	
	220408-B25		●	●		21.9970	12.7	4.76	0.794	0.36 (0.55~0.17)	3.50 (2.00~5.00)	
	220412-B25		●	●		21.9970	12.7	4.76	1.191	0.40 (0.55~0.25)	3.50 (2.00~5.00)	
	220416-B25			●		21.9970	12.7	4.76	1.588	0.45 (0.60~0.30)	3.50 (2.00~5.00)	
	270612-B25			●		27.4960	15.875	6.35	1.191	0.40 (0.55~0.25)	5.00 (3.00~7.00)	
	330716-B25		●	●		32.9960	19.05	7.94	1.588	0.60 (0.80~0.40)	6.00 (3.00~9.00)	
 TNMM	TNMM 220612-GH			●		21.9970	12.7	6.35	1.191	0.47 (0.50~0.20)	6.00 (1.00~8.00)	
	270612-GH			●		27.4960	15.875	6.35	1.191	0.43 (0.60~0.25)	4.65 (1.30~8.00)	
 TNMX-SH*	TNMX 160404L			●		16.4980	9.525	4.76	0.397	0.28 (0.30~0.12)	3.00 (1.00~3.50)	
	160404R			●		16.4980	9.525	4.76	0.397	0.28 (0.30~0.12)	3.00 (1.00~3.50)	
	160408R			●		16.4980	9.525	4.76	0.794	0.33 (0.35~0.15)	3.13 (1.30~3.40)	
	160404L-SH		●	●		16.4980	9.525	4.76	0.397	0.21 (0.30~0.12)	2.25 (1.00~3.50)	
	160404R-SH		●	●		16.4980	9.525	4.76	0.397	0.21 (0.30~0.12)	2.25 (1.00~3.50)	
	160408L-SH		●	●		16.4980	9.525	4.76	0.794	0.30 (0.45~0.15)	2.50 (1.00~4.00)	
	160408R-SH		●	●		16.4980	9.525	4.76	0.794	0.30 (0.45~0.15)	2.50 (1.00~4.00)	
 VNMG-MP*	VNMG 160404-VB	●	●	●		16.6060	9.525	4.76	0.397	0.23 (0.35~0.10)	0.90 (0.30~1.50)	
	160408-VB	●	●	●		16.6060	9.525	4.76	0.794	0.30 (0.45~0.15)	1.25 (0.50~2.00)	
	160412-VB		●	●		16.6060	9.525	4.76	1.191	0.33 (0.45~0.20)	1.65 (0.80~2.50)	
	160404-VC		●	●		16.6060	9.525	4.76	0.397	0.23 (0.35~0.10)	1.15 (0.30~2.00)	
	160408-VC		●	●		16.6060	9.525	4.76	0.794	2.08 (4.00~0.15)	1.75 (0.50~3.00)	
	160412-VC		●	●		16.6060	9.525	4.76	1.191	0.28 (0.40~0.15)	1.90 (0.80~3.00)	
	160408-VF			●		16.6060	9.525	4.76	0.794	0.25 (0.40~0.10)	1.00 (0.50~1.50)	
	160404-VL	●	●	●		16.6060	9.525	4.76	0.397	0.13 (0.20~0.05)	0.55 (0.10~1.00)	
	160408-VL	●	●	●		16.6060	9.525	4.76	0.794	0.18 (0.25~0.10)	0.85 (0.20~1.50)	
	160412-VL	●	●			16.6060	9.525	4.76	1.191	0.23 (0.30~0.15)	1.25 (0.50~2.00)	
	160408-VM			●		16.6060	9.525	4.76	0.794	0.30 (0.50~0.10)	2.50 (1.00~4.00)	
	160404-LP		●	●		16.6060	9.525	4.76	0.397	0.20 (0.35~0.10)	0.50 (0.30~1.50)	
	160408-LP		●	●		16.6060	9.525	4.76	0.794	0.20 (0.40~0.10)	0.80 (0.50~2.00)	
	160412-LP		●			16.6060	9.525	4.76	1.191	0.20 (0.45~0.13)	1.20 (0.80~2.50)	
	160408-HM			●		16.6060	9.525	4.76	0.794	0.25 (0.50~0.10)	2.00 (1.00~4.00)	
	160412-HM			●		16.6060	9.525	4.76	1.191	0.25 (0.50~0.20)	2.00 (1.50~4.00)	
	160404-MP	●	●	●		16.6060	9.525	4.76	0.397	0.25 (0.40~0.10)	1.95 (0.40~3.50)	
	160408-MP	●	●	●		16.6060	9.525	4.76	0.794	0.30 (0.45~0.15)	2.25 (0.50~4.00)	
	160412-MP		●	●		16.6060	9.525	4.76	1.191	0.30 (0.50~0.15)	1.50 (0.80~4.50)	

* : Standard insert shape

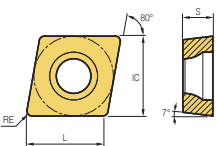
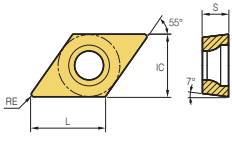
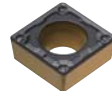
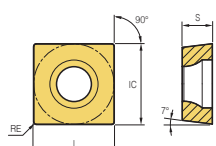
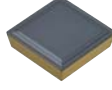
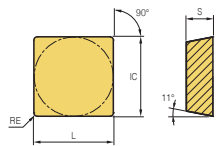
● : Stock item

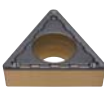
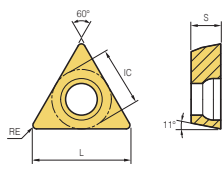
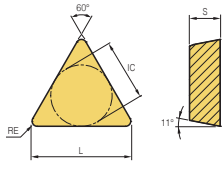
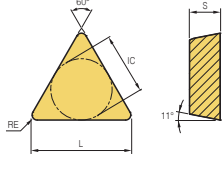
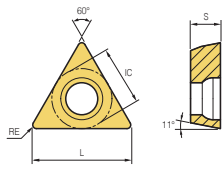
Picture	Designation	Coated				Dimension (mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 WNMG-MP*	WNMG 080404-VB		●	●		8.6870	12.7	4.76	0.397	0.23 (0.35~0.10)	0.90 (0.30~1.50)	
	080408-VB		●	●		8.6870	12.7	4.76	0.794	0.30 (0.45~0.15)	1.25 (0.50~2.00)	
	080412-VB		●			8.6870	12.7	4.76	1.191	0.32 (0.45~0.18)	1.65 (0.80~2.50)	
	060408-LP		●	●		6.5150	9.525	4.76	0.794	0.25 (0.50~0.10)	1.75 (1.00~3.50)	
	080404-LP		●	●		8.6870	12.7	4.76	0.397	0.23 (0.35~0.10)	1.15 (0.30~2.00)	
	080408-LP		●	●		8.6870	12.7	4.76	0.794	0.25 (0.40~0.10)	1.50 (0.50~2.50)	
	080412-LP		●	●		8.6870	12.7	4.76	1.191	0.29 (0.45~0.13)	1.90 (0.80~3.00)	
	080408-VC		●			8.6870	12.7	4.76	0.794	0.20 (0.45~0.12)	2.00 (0.50~3.50)	
	080408-VC	●	●	●		8.6870	12.7	4.76	0.794	0.30 (0.45~0.15)	2.33 (0.15~4.50)	
	080412-VC		●	●		8.6870	12.7	4.76	1.191	0.30 (0.45~0.15)	2.33 (0.15~4.50)	
	080408-VL			●		8.6870	12.7	4.76	0.794	0.18 (0.35~0.10)	0.75 (0.20~1.50)	
	060408-VM			●		6.5150	9.525	4.76	0.794	0.25 (0.50~0.10)	2.00 (1.00~4.00)	
	080408-VM			●		8.6870	12.7	4.76	0.794	0.25 (0.50~0.10)	2.50 (1.00~5.00)	
	080408-VP2			●		8.6870	12.7	4.76	0.794	0.25 (0.50~0.10)	2.50 (1.00~5.00)	
	080408-HM		●	●		8.6870	12.7	4.76	0.794	0.25 (0.50~0.10)	2.50 (1.00~5.00)	
	060404-MP		●	●		6.5150	9.525	4.76	0.397	0.20 (0.40~0.10)	2.00 (0.50~3.00)	
	060408-MP		●	●		6.5150	9.525	4.76	0.794	0.25 (0.45~0.15)	2.00 (0.50~3.00)	
	080404-MP	●	●	●		8.6870	12.7	4.76	0.397	0.30 (0.45~0.15)	2.50 (0.50~4.50)	
	080408-MP	●	●	●	●	8.6870	12.7	4.76	0.794	0.30 (0.45~0.15)	2.50 (0.50~4.50)	
	080412-MP	●	●	●		8.6870	12.7	4.76	1.191	0.33 (0.50~0.15)	2.90 (0.80~5.00)	
	080416-MP	●	●	●		8.6870	12.7	4.76	1.588	0.37 (0.55~0.18)	2.55 (0.10~5.00)	
	080416-HR		●			8.6870	12.7	4.76	1.588	0.51 (0.70~0.32)	4.40 (1.80~7.00)	
	080408-GR			●		8.6870	12.7	4.76	0.794	0.25 (0.50~0.20)	3.50 (1.00~7.00)	
	080412-GR		●	●		8.6870	12.7	4.76	1.191	0.38 (0.50~0.25)	4.15 (1.30~7.00)	
	080404-B25			●		8.6870	12.7	4.76	0.397	0.31 (0.45~0.17)	3.00 (1.00~5.00)	
	080408-B25		●	●		8.6870	12.7	4.76	0.794	0.42 (0.60~0.23)	3.25 (1.50~5.00)	
	080412-B25		●	●		8.6870	12.7	4.76	1.191	0.43 (0.60~0.25)	3.50 (2.00~5.00)	
 CCMT-MP*	CCMT 060202-VF				●	6.4480	6.35	2.38	0.198	0.13 (0.20~0.05)	0.65 (0.30~1.00)	
	060204-VF				●	6.4480	6.35	2.38	0.397	0.18 (0.25~0.10)	0.65 (0.30~1.00)	
	09T302-VF				●	9.6719	9.525	3.97	0.198	0.10 (0.16~0.04)	1.15 (0.80~1.50)	
	09T304-VF				●	9.6719	9.525	3.97	0.397	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	09T308-VF				●	9.6719	9.525	3.97	0.794	0.18 (0.25~0.10)	0.90 (0.30~1.50)	
	120404-VF				●	12.8959	12.7	4.76	0.397	0.15 (0.22~0.07)	1.05 (0.10~2.00)	
	060204-VL	●	●	●		6.4480	6.35	2.38	0.397	0.07 (0.10~0.04)	0.49 (0.08~0.90)	
	060208-VL	●	●	●		6.4480	6.35	2.38	0.794	0.09 (0.12~0.06)	0.55 (0.10~1.00)	
	09T304-VL			●	●	9.6719	9.525	3.97	0.397	0.08 (0.10~0.05)	0.55 (0.10~1.00)	
	09T308-VL			●	●	9.6719	9.525	3.97	0.794	0.12 (0.15~0.08)	0.55 (0.10~1.00)	
	120404-HMP				●	12.8959	12.7	4.76	0.397	0.24 (0.27~0.09)	2.60 (0.30~3.60)	
	060202-MP		●	●		6.4480	6.35	2.38	0.198	0.08 (0.12~0.04)	0.85 (0.20~1.50)	
	060204-MP	●	●	●	●	6.4480	6.35	2.38	0.397	0.10 (0.15~0.05)	0.90 (0.30~1.50)	
	060208-MP	●				6.4480	6.35	2.38	0.794	0.11 (0.15~0.07)	1.25 (0.50~2.00)	
	09T302-MP		●	●		9.6719	9.525	3.97	0.198	0.11 (0.15~0.07)	1.15 (0.30~2.00)	
	09T304-MP	●	●	●	●	9.6719	9.525	3.97	0.397	0.17 (0.25~0.08)	1.50 (0.50~2.50)	
	09T308-MP	●	●	●		9.6719	9.525	3.97	0.794	0.20 (0.30~0.10)	1.50 (0.50~2.50)	
	120404-MP				●	12.8959	12.7	4.76	0.397	0.20 (0.30~0.10)	2.00 (0.50~3.50)	
	120408-MP				●	12.8959	12.7	4.76	0.794	0.18 (0.35~0.15)	1.75 (0.80~3.50)	
	060202-FP		●			6.4480	6.35	2.38	0.198	0.03 (0.10~0.01)	0.20 (0.05~0.80)	
	060204-FP		●	●		6.4480	6.35	2.38	0.397	0.05 (0.10~0.01)	0.25 (0.10~0.90)	
	09T302-FP		●			9.6719	9.525	3.97	0.198	0.03 (0.10~0.01)	0.25 (0.05~1.00)	
	09T304-FP		●	●		9.6719	9.525	3.97	0.397	0.05 (0.10~0.01)	0.40 (0.10~1.00)	
	09T308-FP		●	●		9.6719	9.525	3.97	0.794	0.07 (0.12~0.04)	0.40 (0.10~1.00)	

* : Standard insert shape

● : Stock item

 Stock items

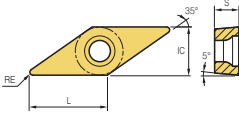
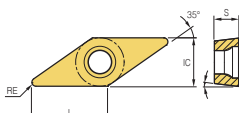
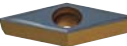
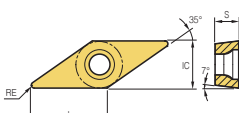
Picture	Designation	Coated				Dimension (mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 CCMT-MP*	CCMT 060202-C25	●	●			6.4480	6.35	2.38	0.198	0.08 (0.12~0.03)	1.20 (0.40~2.00)	
	060204-C25	●	●	●		6.4480	6.35	2.38	0.397	0.10 (0.15~0.05)	1.45 (0.60~2.30)	
	060208-C25	●	●			6.4480	6.35	2.38	0.794	0.14 (0.20~0.07)	1.55 (0.80~2.30)	
	09T304-C25	●	●	●		9.6719	9.525	3.97	0.397	0.17 (0.25~0.08)	1.90 (0.80~3.00)	
	09T308-C25	●	●	●		9.6719	9.525	3.97	0.794	0.20 (0.30~0.10)	2.00 (1.00~3.00)	
	120404-C25	●	●			12.8959	12.7	4.76	0.397	0.21 (0.32~0.10)	1.90 (0.80~3.00)	
	120408-C25	●	●	●		12.8959	12.7	4.76	0.794	0.24 (0.36~0.12)	2.35 (1.20~3.50)	
	120412-C25	●	●			12.8959	12.7	4.76	1.191	0.28 (0.40~0.15)	2.45 (1.40~3.50)	
 DCMT-MP*	DCMT 070202-VF			●		7.7519	6.35	2.38	0.198	0.07 (0.10~0.03)	0.53 (0.06~1.00)	
	070204-VF			●		7.7519	6.35	2.38	0.397	0.13 (0.20~0.05)	0.75 (0.30~1.20)	
	11T302-VF			●		11.6279	9.525	3.97	0.198	0.10 (0.15~0.04)	0.79 (0.08~1.50)	
	11T304-VF			●		11.6279	9.525	3.97	0.397	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	070204-VL		●	●		7.7519	6.35	2.38	0.397	0.18 (0.25~0.10)	0.90 (0.30~1.50)	
	070208-VL		●	●		7.7519	6.35	2.38	0.794	0.20 (0.40~0.05)	2.00 (0.10~4.00)	
	11T304-VL	●	●	●		11.6279	9.525	3.97	0.397	0.08 (0.10~0.05)	0.55 (0.10~1.00)	
	11T308-VL	●	●	●		11.6279	9.525	3.97	0.794	0.12 (0.15~0.08)	0.55 (0.10~1.00)	
	070202-FP		●			7.7519	6.35	2.38	0.198	0.03 (0.10~0.01)	0.20 (0.05~0.80)	
	070204-FP		●	●		7.7519	6.35	2.38	0.397	0.05 (0.10~0.01)	0.25 (0.10~0.90)	
	11T302-FP		●			11.6279	9.525	3.97	0.198	0.03 (0.10~0.01)	0.25 (0.05~1.00)	
	11T304-FP		●	●		11.6279	9.525	3.97	0.397	0.05 (0.10~0.01)	0.40 (0.10~1.00)	
	11T308-FP		●	●		11.6279	9.525	3.97	0.794	0.07 (0.12~0.04)	0.40 (0.10~1.00)	
	11T304-HMP		●			11.6279	9.525	3.97	0.397	0.16 (0.23~0.08)	1.65 (0.30~3.00)	
	070202-C25		●			7.7519	6.35	2.38	0.198	0.09 (0.15~0.03)	1.15 (0.30~2.00)	
	070204-C25		●	●		7.7519	6.35	2.38	0.397	0.13 (0.20~0.05)	1.50 (0.50~2.50)	
	070208-C25		●	●		7.7519	6.35	2.38	0.794	0.16 (0.25~0.06)	1.65 (0.80~2.50)	
	11T302-C25		●	●		11.6279	9.525	3.97	0.198	0.15 (0.25~0.04)	1.50 (0.50~2.50)	
	11T304-C25		●	●	●	11.6279	9.525	3.97	0.397	0.19 (0.30~0.08)	1.90 (0.80~3.00)	
	11T308-C25		●	●	●	11.6279	9.525	3.97	0.794	0.20 (0.30~0.10)	2.00 (1.00~3.00)	
	070202-MP		●	●		7.7519	6.35	2.38	0.198	0.08 (0.12~0.04)	0.96 (0.12~1.80)	
	070204-MP	●	●	●		7.7519	6.35	2.38	0.397	0.10 (0.15~0.05)	1.05 (0.30~1.80)	
	070208-MP		●	●		7.7519	6.35	2.38	0.794	0.15 (0.22~0.08)	1.05 (0.30~1.80)	
	11T302-MP		●	●		11.6279	9.525	3.97	0.198	0.10 (0.15~0.04)	1.15 (0.30~2.00)	
	11T304-MP	●	●	●	●	11.6279	9.525	3.97	0.397	0.14 (0.20~0.08)	1.40 (0.50~2.30)	
	11T308-MP	●	●	●		11.6279	9.525	3.97	0.794	0.20 (0.30~0.10)	1.40 (0.50~2.30)	
 SCMT-MP*	SCMT 09T308-VL			●		9.6719	9.525	3.97	0.794	0.12 (0.15~0.08)	0.55 (0.10~1.00)	
	09T304-FP		●			9.6719	9.525	3.97	0.397	0.05 (0.10~0.01)	0.40 (0.10~1.00)	
	09T308-FP		●	●		9.6719	9.525	3.97	0.794	0.07 (0.12~0.04)	0.40 (0.10~1.00)	
	09T304-C25		●	●		9.6719	9.525	3.97	0.397	0.17 (0.25~0.08)	1.80 (0.60~3.00)	
	09T308-C25		●	●		9.6719	9.525	3.97	0.794	0.20 (0.30~0.10)	2.00 (1.00~3.00)	
	120404-C25		●	●		12.8959	12.7	4.76	0.397	0.20 (0.30~0.10)	2.30 (0.80~3.80)	
	120408-C25		●	●		12.8959	12.7	4.76	0.794	0.25 (0.38~0.12)	2.50 (1.20~3.80)	
	09T304-MP		●	●		9.6719	9.525	3.97	0.397	0.15 (0.25~0.05)	1.55 (0.30~2.80)	
	09T308-MP	●	●	●		9.6719	9.525	3.97	0.794	0.20 (0.30~0.10)	1.65 (0.50~2.80)	
	120404-MP		●	●		12.8959	12.7	4.76	0.397	0.20 (0.30~0.10)	1.65 (0.50~2.80)	
	120408-MP		●	●		12.8959	12.7	4.76	0.794	0.18 (0.35~0.15)	1.80 (0.80~3.50)	
 SPMR	SPMR 120304-F			●		12.7000	12.7	3.18	0.397	0.23 (0.25~0.10)	1.67 (0.50~2.00)	

Picture	Designation	Coated				Dimension (mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 TCMT-MP*	TCMT 16T304-VF			●		16.4980	9.525	3.97	0.397	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	16T304-VL		●			16.4980	9.525	3.97	0.397	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	16T308-VL	●	●	●		16.4980	9.525	3.97	0.794	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	110202-FP		●			10.9990	6.35	2.38	0.198	0.03 (0.10~0.01)	0.20 (0.05~0.80)	
	110204-FP		●			10.9990	6.35	2.38	0.397	0.05 (0.10~0.01)	0.25 (0.10~0.90)	
	090204-C25		●	●		9.6300	5.56	2.38	0.397	0.12 (0.18~0.06)	1.45 (0.40~2.50)	
	090208-C25		●	●		9.6300	5.56	2.38	0.794	0.17 (0.25~0.08)	1.65 (0.80~2.50)	
	110202-C25			●		10.9990	6.35	2.38	0.198	0.08 (0.12~0.04)	1.20 (0.40~2.00)	
	110204-C25		●	●	●	10.9990	6.35	2.38	0.397	0.13 (0.20~0.06)	1.55 (0.60~2.50)	
	110208-C25		●	●		10.9990	6.35	2.38	0.794	0.17 (0.25~0.08)	1.65 (0.80~2.50)	
	16T304-C25		●	●	●	16.4980	9.525	3.97	0.397	0.18 (0.28~0.08)	1.90 (0.80~3.00)	
	16T308-C25		●	●	●	16.4980	9.525	3.97	0.794	0.20 (0.30~0.10)	2.00 (1.00~3.00)	
	110204-HMP			●		10.9990	6.35	2.38	0.397	0.13 (0.19~0.06)	1.35 (0.20~2.50)	
	090204-MP	●				9.6300	5.56	2.38	0.397	0.12 (0.18~0.05)	0.55 (0.10~1.00)	
	110202-MP		●	●		10.9990	6.35	2.38	0.198	0.08 (0.12~0.03)	0.85 (0.20~1.50)	
	110204-MP	●	●	●		10.9990	6.35	2.38	0.397	0.10 (0.15~0.05)	0.85 (0.20~1.50)	
	110208-MP		●	●		10.9990	6.35	2.38	0.794	0.19 (0.28~0.10)	1.13 (0.25~2.00)	
	16T304-MP		●	●	●	16.4980	9.525	3.97	0.397	0.14 (0.20~0.08)	1.40 (0.30~2.50)	
	16T308-MP		●	●	●	16.4980	9.525	3.97	0.794	0.20 (0.30~0.10)	1.50 (0.50~2.50)	
	16T312-MP			●	●	16.4980	9.525	3.97	1.191	0.30 (0.40~0.20)	1.50 (0.50~2.50)	
	TPGN 160304			●		16.4980	9.525	3.18	0.397	0.14 (0.20~0.07)	3.00 (1.00~5.00)	
	160308			●		16.4980	9.525	3.18	0.794	0.18 (0.25~0.10)	3.00 (1.00~5.00)	
	TPMR 110304-F			●		10.9990	6.35	3.18	0.397	0.17 (0.20~0.05)	1.20 (0.30~1.50)	
	160304-F			●		16.4980	9.525	3.18	0.397	0.17 (0.25~0.08)	1.25 (0.50~2.00)	
 TPMT-VL*	TPMT 110304-VF			●		10.9990	6.35	3.18	0.397	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	110308-VF			●		10.9990	6.35	3.18	0.794	0.18 (0.25~0.10)	0.90 (0.30~1.50)	
	110304-MP		●	●		10.9990	6.35	3.18	0.397	0.10 (0.20~0.05)	0.50 (0.10~1.00)	
	110308-MP		●	●		10.9990	6.35	3.18	0.794	0.14 (0.20~0.08)	1.40 (0.30~2.50)	
	160404-MP		●	●		16.4980	9.525	4.76	0.397	0.10 (0.20~0.05)	1.15 (0.30~2.00)	
	160408-MP		●	●		16.4980	9.525	4.76	0.794	0.25 (0.45~0.15)	1.50 (0.50~4.00)	
	090202-FP		●			9.6300	5.56	3.18	0.198	0.03 (0.06~0.01)	0.16 (0.04~0.50)	
	090204-FP		●	●		9.6300	5.56	3.18	0.397	0.04 (0.08~0.01)	0.18 (0.05~0.60)	
	110302-FP		●			10.9990	6.35	3.18	0.198	0.03 (0.10~0.01)	0.20 (0.05~0.80)	
	110304-FP		●	●		10.9990	6.35	3.18	0.397	0.05 (0.10~0.01)	0.25 (0.10~0.90)	
	110308-FP		●	●		10.9990	6.35	3.18	0.794	0.06 (0.10~0.01)	0.25 (0.10~0.90)	
	160404-FP		●			16.4980	9.525	4.76	0.397	0.05 (0.10~0.01)	0.40 (0.10~1.00)	
	160408-FP		●			16.4980	9.525	4.76	0.794	0.07 (0.12~0.04)	0.40 (0.10~1.00)	
	110304-VL		●			10.9990	6.35	3.18	0.397	0.10 (0.15~0.05)	0.70 (0.10~1.30)	

* : Standard insert shape

● : Stock item

 Stock items

Picture	Designation	Coated				Dimension(mm)				Cutting condition		Geometry
		NC3205	NC3215	NC3225	NC3235	L	IC	S	RE	fn (mm/rev)	ap (mm)	
 VBMT-MP*	VBMT 160408			●		16.6060	9.525	4.76	0.794	0.20 (0.25~0.15)	1.35 (0.70~2.00)	
	160404-VB			●		16.6060	9.525	4.76	0.397	0.14 (0.20~0.08)	0.85 (0.20~1.50)	
	160408-VB			●		16.6060	9.525	4.76	0.794	0.17 (0.23~0.10)	1.00 (0.50~1.50)	
	160404-VF			●		16.6060	9.525	4.76	0.397	0.13 (0.20~0.05)	0.65 (0.30~1.00)	
	160404-VL	●	●	●		16.6060	9.525	4.76	0.397	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	160408-VL	●	●	●		16.6060	9.525	4.76	0.794	0.15 (0.20~0.10)	0.90 (0.30~1.50)	
	110302-FP		●			11.0710	6.35	3.18	0.198	0.03 (0.10~0.01)	0.20 (0.05~0.80)	
	110304-FP		●			11.0710	6.35	3.18	0.397	0.05 (0.10~0.01)	0.25 (0.10~0.90)	
	110308-FP		●			11.0710	6.35	3.18	0.794	0.06 (0.10~0.01)	0.25 (0.10~0.90)	
	160404-FP		●	●		16.6060	9.525	4.76	0.397	0.05 (0.10~0.01)	0.40 (0.10~1.00)	
	160408-FP		●	●		16.6060	9.525	4.76	0.794	0.07 (0.12~0.04)	0.40 (0.10~1.00)	
	160408-HMP			●		16.6060	9.525	4.76	0.794	0.31 (0.33~0.13)	2.13 (0.60~2.60)	
	110304-MP	●	●	●		11.0710	6.35	3.18	0.397	0.10 (0.15~0.05)	0.85 (0.20~1.50)	
	110308-MP	●	●	●		11.0710	6.35	3.18	0.794	0.19 (0.28~0.10)	1.15 (0.30~2.00)	
	160404-MP	●	●	●	●	16.6060	9.525	4.76	0.397	0.14 (0.20~0.08)	1.15 (0.30~2.00)	
	160408-MP	●	●	●		16.6060	9.525	4.76	0.794	0.18 (0.25~0.10)	1.40 (0.50~2.30)	
	160412-MP		●	●		16.6060	9.525	4.76	1.191	0.23 (0.35~0.10)	1.40 (0.50~2.30)	
 VCMT-MP*	VCMT 110304-VF			●		11.0710	6.35	3.18	0.397	0.11 (0.18~0.03)	0.68 (0.15~1.20)	
	160404-VF			●		16.6060	9.525	4.76	0.397	0.12 (0.20~0.04)	0.83 (0.15~1.50)	
	080202-VL		●	●		8.2990	4.76	2.38	0.198	0.13 (0.20~0.05)	0.65 (0.30~1.00)	
	080204-VL		●	●		8.2990	4.76	2.38	0.397	0.18 (0.25~0.10)	0.65 (0.30~1.00)	
	160404-VL		●	●		16.6060	9.525	4.76	0.397	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	160408-VL		●	●		16.6060	9.525	4.76	0.794	0.13 (0.20~0.05)	0.90 (0.30~1.50)	
	080202-FP		●			8.2990	4.76	2.38	0.198	0.03 (0.10~0.01)	0.20 (0.05~0.80)	
	080204-FP		●			8.2990	4.76	2.38	0.397	0.05 (0.10~0.01)	0.25 (0.10~0.90)	
	080208-FP		●			8.2990	4.76	2.38	0.794	0.06 (0.10~0.01)	0.25 (0.10~0.90)	
	160404-FP		●			16.6060	9.525	4.76	0.397	0.05 (0.10~0.01)	0.40 (0.10~1.00)	
	160408-FP		●	●		16.6060	9.525	4.76	0.794	0.07 (0.12~0.04)	0.40 (0.10~1.00)	
	080202-MP		●	●		8.2990	4.76	2.38	0.198	0.08 (0.15~0.03)	0.55 (0.10~1.00)	
	080204-MP		●	●		8.2990	4.76	2.38	0.397	0.11 (0.18~0.03)	0.55 (0.10~1.00)	
	160404-MP		●	●		16.6060	9.525	4.76	0.397	0.13 (0.18~0.08)	1.15 (0.30~2.00)	
	160408-MP		●	●		16.6060	9.525	4.76	0.794	0.17 (0.23~0.10)	1.40 (0.50~2.30)	
 VCGT	VCGT 160404-VP1			●		16.6060	9.525	4.76	0.397	0.13 (0.20~0.05)	0.99 (0.18~1.80)	
	160408-VP1		●			16.6060	9.525	4.76	0.794	0.14 (0.20~0.06)	1.30 (0.20~1.80)	

* : Standard insert shape

● : Stock item

⚠ For the safe metalcutting

- Use safety supplies such as protective gloves to prevent possible injury while touching the edge of tools.
- Use safety glasses or safety cover to hedge possible dangers. Inappropriate usage or excessive cutting condition may lead tool's breakage or even the fragment's scattering.
- Clamp the workpiece tightly enough to prevent its movement while its machining.
- Properly manage the tool change phase because the inordinately used tool can be easily broken under the excessive cutting load or severe wear, and it may threat the operator's safety.
- Use safety cover because chips evacuated during cutting are hot and sharp and may cause burns and cuts. To remove chips safely, stop machining, put on protective gloves, and use a hook or other tools.
- Prepare for fire prevention measures as the use of the non-water soluble cutting oil may cause fire.
- Use safety cover and other safety supplies because the spare parts or the inserts can be pulled out due to centrifugal force while high speed machining.



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