KORLOY TECH-NEWS

Quality, Performance, Value - Guaranteed!

MGT SERIES

MULTI GROOVING TOOLS

KORLOY

MGT SERIES

Code system

• Insert Code System

(inch)

MG	M	N	000	00	M

- **MG** — **product code**
  - MG : Multi Grooving Square
  - MR : Multi Grooving Round
- **M** — **tolerance**
  - M class
  - G class
- **N** — **Hand**
  - (R/L/N)
- **000** — **width of cutting edge**
  - 300 → 0.118inch
- **00** — **G class insert corner-R**
  - R 0.2, R 0.3 → 0.3...
- **M** — **C/B shape**
  - M : Multi Turning
  - G : Grooving
  - A : Aluminum
  - PT : Parting tough
  - PS : Parting sharp

• Holder Code System

MC	H	R/L	25	25

- **MC** — **MGT-Cartridge System**
- **H** — **Holder Style**
  - H : Horizontal
  - V : Vertical
- **R/L** — **Hand**
- **25** — **Height (inch)**
- **25** — **Width (inch)**

• Holder

Horizontal Type		Vertical Type	
MCHR	MCHL	MCVR	MCVL
			

• Cartridge Code System

MC	F	R/L	3	24/35	T16

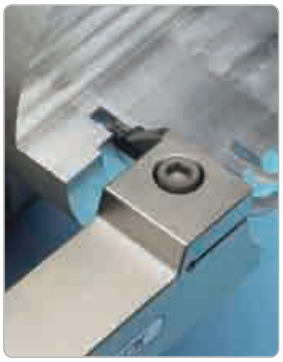
- **MC** — **MGT-Cartridge System**
- **F** — **Working Style**
  - E : External Process
  - F : Facing Process
- **R/L** — **Hand**
- **3** — **Cutting Width (inch)**
- **24/35** — **Face Working Dia.(inch)**
- **T16** — **Maximum Depth (inch)**

• Cartridge

External Process		Facing Process	
MCER	MCEL	MCFR	MCFL
			

Features

- **Inserts are offered with two edges, for better economical machining**
- **Multi function operations**
  - ···› Reduce cycle time & increase productivity with the ability to groove, turn, face or copy in an application.
- **Shorten time & save on tool cost**
  - ···› Korloy's MGT system allows a machinist to apply one tool against many applications, reducing the number of tools.
- **Flat Cutting Edge**
  - ···› MGT tools have a flat geometry on its cutting edge to ensure excellent surface roughness. Even in high feed applications by using a wiper function, Korloy ensures excellent surface roughness.



Geometry of chip breaker

	MGM(G)N-M	• Specially designed chip breaker allows a smoother chip flow versus conventional flat-top geometries through the use of a central chip breaker. • Specially placed convex dots assist with chip control in external machining, for a smoother chip flow. • Chip breaker designed for turning & grooving applications
	MGMN-G	• Specially designed chip breaker allows narrower chips to promote better chip flow. • Specifically designed for grooving applications
	MRMN-M	• Full radius geometry for applications that require profiling • Available for relief machining
	MRGN-A	• Specially designed high positive geometry, ideal for machining aluminum • The chip breaker's super buffed, high rake angle allows optimal chip flow of aluminum.
	MGMR-PS	• Sharply designed cutting edge • Recommended in machining low carbon steel and stainless steel • Specially designed chip breaker allows narrower chips to promote better chip flow. • Able to machine feed rates and small diameter cutting
	MGMR-PT	• Stronger cutting edge with a negative land for tougher applications • Able to machine at feed rates as high and bar stock • Chip breaker design helps narrow chips for better flow
	MGMN-L	• Sharp cutting edge • For auto CNC machine • Low cutting resistance • For small Dia. processing
	MGMN-R	• Strong cutting edge • For high feed rate processing
	MGMN-T	• For turning & grooving • Reduced chip width & smooth chip control by dot designed on the top corner
	MFMN300	• Specially designed chip breaker allows narrower chips to promote better chip flow • Chip breaker specially designed for face-grooving
	MGMN-A	• Smooth chip flow • Reduced built up on cutting edge

Parting off (MGMN/MGMR/L)

(inch)

Workpiece	Cutting Speed											Feed				
	CVD					PVD					Uncoated	Cutting width				
	NC3120	NC3030	NCM325	NC5330	NC500H	PC230	PC8110	PC5300	PC3500	PC6510	ST30A	0.079	0.118	0.158	0.197	0.236
SM□□C	260~590			260~590		260~590						0.001~0.006	0.001~0.008	0.003~0.012	0.004~0.016	0.005~0.020
SCM	230~490	230~490	230~490	230~490	230~490	230~490			230~490			0.001~0.006	0.001~0.008	0.003~0.012	0.004~0.016	0.005~0.020
GC/GCD				160~330						160~330	160~330	0.002~0.005	0.004~0.010	0.004~0.012	0.004~0.014	0.004~0.016
STS			160~390	160~390			160~390	200~460				0.001~0.004	0.001~0.006	0.003~0.010	0.004~0.014	0.005~0.016
Non-ferrous metal (AL, Copper)											660~1480	0.002~0.004	0.002~0.008	0.002~0.012	0.002~0.012	0.002~0.014

Facing (FGD/FGM/FMM/MFMN/MGMN)

(inch)

Workpiece	Cutting Speed								Feed		
	CVD				PVD			Uncoated	Cutting width		
	NC6110	NC3030	NC5330	NC3120	PC3500	PC215K	PC8110 / PC5300	H01	0.148	0.158	0.197
SM□□C			330~528	330~528					0.002~0.004	0.002~0.005	0.002~0.006
SCM		160~430	160~430	160~430	160~430				0.002~0.004	0.002~0.005	0.002~0.006
GC/GCD	390~490		390~490			390~490			0.002~0.004	0.002~0.005	0.002~0.006
STS			200~490				200~490		0.002~0.004	0.002~0.005	0.002~0.006
Non-ferrous metal (AL, Copper)								660~2640	0.002~0.006	0.003~0.006	0.003~0.006

Grooving, Turning (MGMN/MRMN)

(inch)

Workpiece	Cutting Speed												Feed					
	CVD				PVD				Cermet		Uncoated		Cutting width					
	NC3010	NC3120	NC3030	NC5330	PC215K	PC5300	PC230	PC3500	CN20	CT10	ST30A	ST20	0.020~0.039	0.039~0.079	0.079~0.118	0.118~0.157	0.157~0.197	0.236~0.315
SM□□C	260~660	260~660		260~660		260~590	260~660		260~400	260~400		260~400	0.001~0.003	0.002~0.004	0.002~0.004	0.002~0.005	0.002~0.006	0.002~0.006
SCM	260~590	260~590	260~590	260~590		260~530	260~590	260~590	260~400		260~400	260~400	0.001~0.003	0.002~0.003	0.002~0.003	0.002~0.004	0.002~0.005	0.002~0.006
GC/GCD				200~430		200~430							0.001~0.003	0.002~0.003	0.002~0.003	0.002~0.004	0.002~0.004	0.002~0.005
STS				200~330	200~330						200~330		0.001~0.003	0.002~0.004	0.002~0.004	0.002~0.005	0.002~0.005	0.002~0.006
Non-ferrous metal (AL, Copper)					490~990						490~1320		0.002~0.005	0.002~0.006	0.002~0.006	0.003~0.006	0.003~0.006	0.004~0.008

Face grooving tools

For Grooving

MFMN300	MGMN400-M	Horizontal MGFHR	Vertical MGFVR
			
Cutting width 0.118inch	Cutting Width 0.158inch	Machined diameter Ø0.945~7.874inch	Machined diameter Ø0.945~2.362inch

- Features
  - ···› Economical tools utilizing a double ended cutting edge system
  - ···› Newly designed chip breakers that help ensure chip control for various face grooving applications
  - ···› Korloy face grooving tools line-up of holders gives you more options and benefits

For Deep Grooving

FGD	FGM	FMM	Horizontal FGHH	Vertical FGVH
				
Deep face grooving (G class)	Wide face grooving turning (G class)	Wide face grooving turning (M class)	Machined diameter Ø0.984~5.512inch	Machined diameter Ø0.984~5.512inch

- Features
  - ···› These tools are suitable for deep grooving with a single cutting edge(T-max 0.984inch).
  - ···› A variety of chip breakers enable a machinist to apply a wide range of functions in machining.
  - ···› A variety of holders ensures multiple application ranges.
- Note
  - ···› FGM and FMM have similar application rages but are NOT interchangeable with each other's holder.

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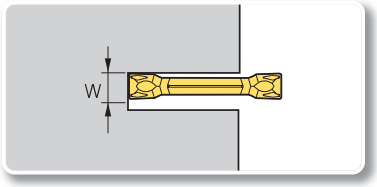
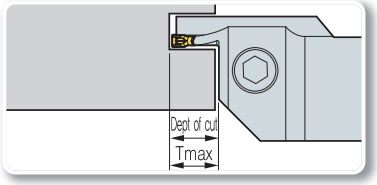
Selection System of Holder

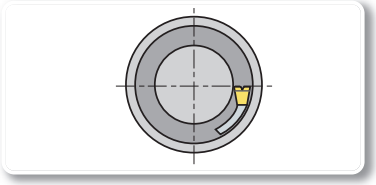
• Follow these 3 simple directions to choose the right insert and holder for your application



• Choose the insert and holder that best applies to your application according to the cutting width and workpiece shape to be machined.



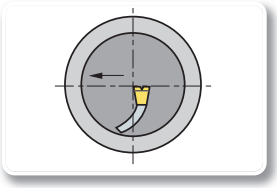
• Choose the holder with the shortest overhang that will still meet the cutting depth required.



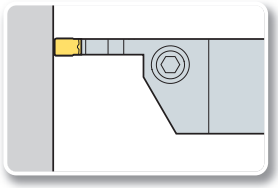
• Choose the largest size of shank depending on the initial grooving diameter required in the application.

Notice for Face Grooving

• Before machining, check and adjust the following holder position.



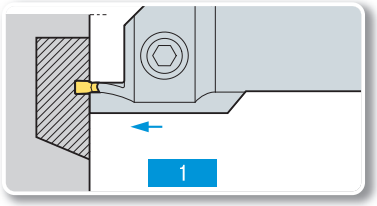
• Check the cutting edge height at the center of the workpiece.
• Machine towards the center and check for burrs.



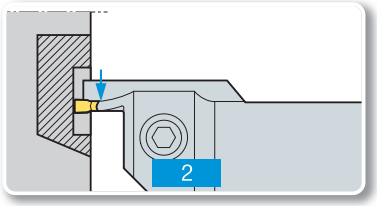
• For better surface roughness, set up the insert in order to perpendicular at center line.

Optimization of Face Grooving

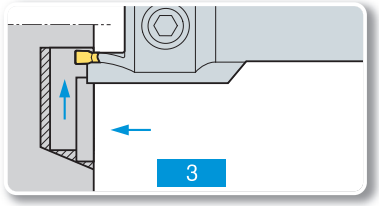
• Roughing : When face grooving, decrease the cutting speed 40% below a normal face turning operation.



• Grooving at the initial diameter

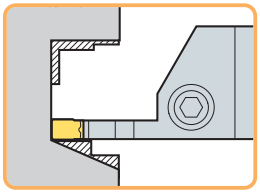


• Face turning away from center

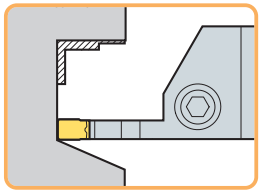


• Face turning to center

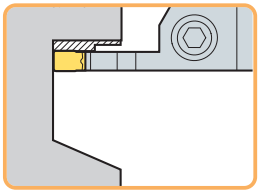
• Finishing : When face grooving, decrease the cutting speed 40% below a normal face turning operation.



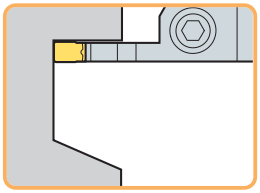
• Grooving at the initial diameter to the final cutting depth and face turning away from center



• Radius operation toward final dimension at the bottom



• Face turning to center

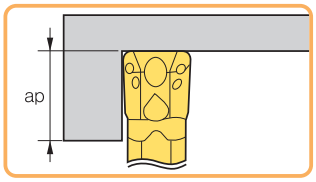


• Grooving for the right dimension you want

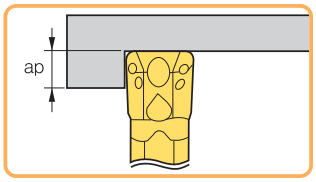
Turning and Grooving

Selection of Insert

- Feed rate
  - ···› Decide maximum feed rate after considering the insert's characteristics and machine capabilities. (Fmax = W x 0.075)
  - ···› Max feed rate should not be larger than the corner radius of the insert.
  - ···› In grooving applications, chip evacuation problems can be remedied by using step feed methods at small intervals.



- Depth of cut
  - ···› The minimum depth of cut should be bigger than corner radius of insert.
  - ···› When deciding on the max depth of cut, please consider the machine's cutting load.
  - ···› Depending on the shape of the insert, deflection of workpiece and clearance angle can be changed.

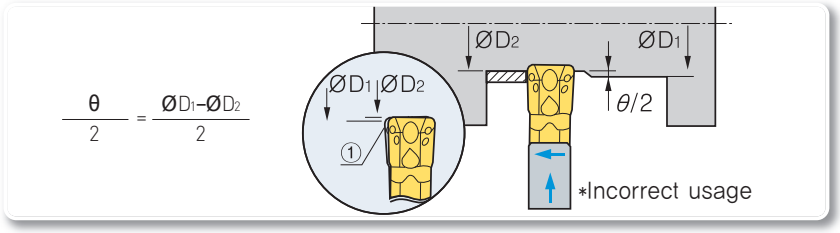


Notice for turning

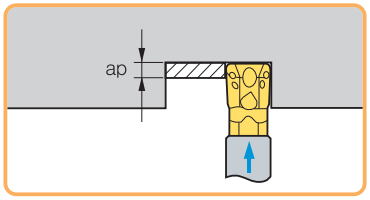
- MGT tools are designed to incur side cutting force from its clearance angle; this feature gives you advantage over a standard ISO insert. The standard MGT insert also provides a "wiper" effect to improve surface roughness.

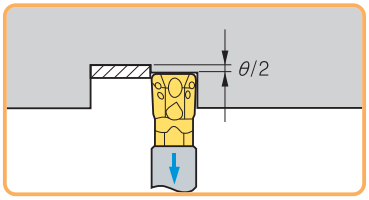
Notice for Finishing (offset need final quality)

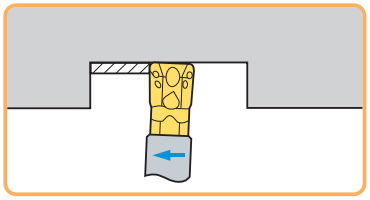
- After desired diameter is grooved, continuous turning operation might cause some deflection of the workpiece. In these cases, follow the given formula, offsetting these factors enables the desired diameter that you want.



- To eliminate the difference in the machined diameter by utilizing the clearance angle (which is common in the final turning operation) follow the directions above when machining to obtain a good surface roughness without offsetting in an application follows the directions below.
  1) Groove to the desired diameter.
  2) Pull the tool backs a total distance of θ/2.
  3) Continue the external turning operation to desired diameter.







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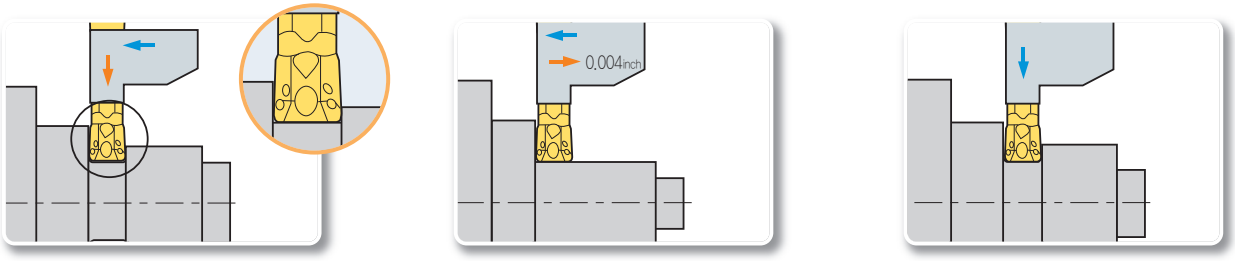
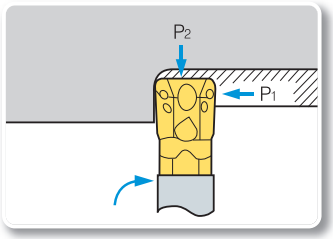
Notice for MGT turning applications

- M.G.T tools are available for grooving and turning as a multifunctional tool. When using a M.G.T tool keep in mind that the tool imitates a standard ISO turning application. The application uses a positive clearance angle where a tool's cutting force and depth of cut are all applied in an appli-cation. This might create normal wear on the insert, after turning, a grooving process might not meet the desired diameter on the workpiece. To off set this, adjust the tool 0.004 inches and return to the original position of the grooving application.



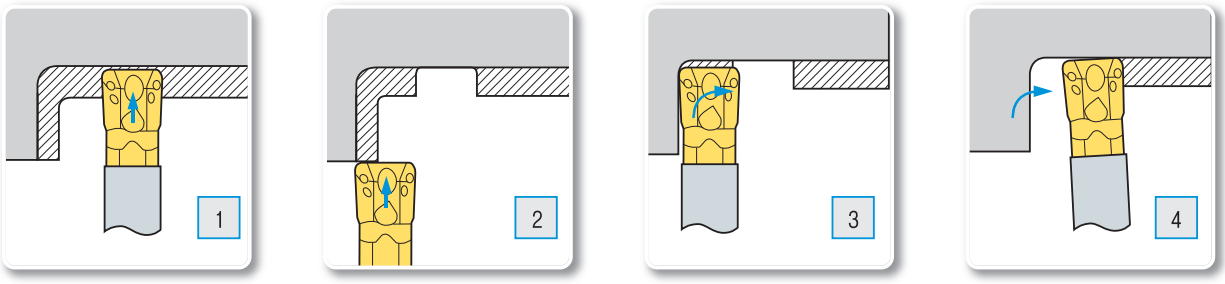
*Incorrect usage

Machining workpiece with a radius smaller than the insert's corner radius



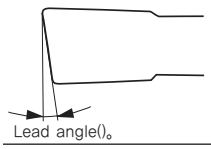
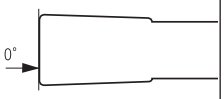
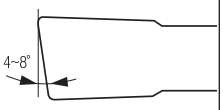
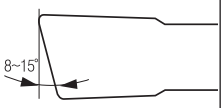
* Incorrect usage

- Stabilize your tool pressure. MGT tools create a cutting load when machining a workpiece with a radius larger than the corner radius of insert (shown in the picture). The initial unequal cutting force might break the insert or holder.



Parting off & Grooving

Insert

Lead angle applications		Lead angle 0°(Neutral)	
	• 4° – Pipe (Tubing and hollow bar) • 6° – Pipe and solid bar • 8° – Solid bar • 15° – Small diameter Solid bar		• Parting off on solid bar type • Occurring the center stub when parting off • Prevents to be deflected workpiece by cutting diretion during parting off. • Availble for use deep parting depth
Lead angle 4° ~ 8°		**Lead angle 8°~15°**	
	• Reduces the center stub when parting off on solid bar type. • Reduces the burr when parting off on tubing or hollow bar type.		• Parting off on small diameter and hollow bar type • Reduces the burr and center stub when parting off on small diameter solid bar type.

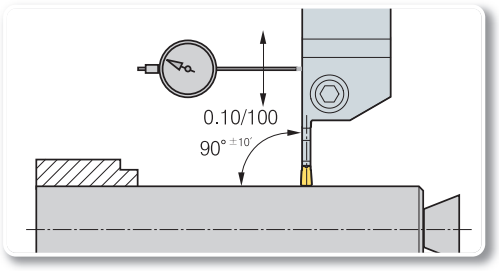
※ Available Inserts : MGMR/L □□□□ – □□□ – PS/PT
Lead angle(°)

Selection of Insert

- To properly match the insert and cutting condition, the followingfactors should be considered
  - ···› Width of insert
  - ···› Chip breaker
  - ···› Grade and nose R
- The relationship between the cutting width and cutting depth
  - ···› Neutral type, inserts with a 0 degree lead angle are best when used applications maximum depth of cut.
  - ···› In general alloy steel, the maximum depth of cut = W x 0.8
- Insert with lead angle
  - ···› To reduce burrs, we recommend using insert with a lead angle. The Insert that has larger lead angles reduces burrs but will also decrease tool life. In the case where burrs are acceptable, we recommend using a neutral type insert.

Setting of Holders

- The cutting position should be exactly mounted on machined axis in order to create a perpendicular direction or 90 to minimize vibration.



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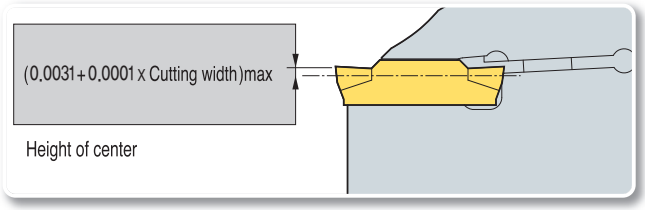
Setting of Parting off

- The edge height of an insert should be set within ±0.004inch based on the center line
  ···› Parting off should be done as close to the chuck as possible to minimize vibration.



Notice

- Keep a consistent cutting speed and feed.
- Use proper amounts of coolant for better performance.
- Properly clean insert pocket before mounting insert.

Usage

- When insert is worn, immediately replace with a new insert. This is to prevent the damage on the workpiece.
- If the holder seat is worn or damaged, replace with a new one immediately for stable clamping.
- Do not grind or regrind the holder seat.

Selection of Chip Breaker

- Our chip breakers are designed to narrow chips during grooving operations. Narrow chips usually offer the following advantages.
  ···› Decrease friction between chips and the workpiece. This usually gives a better surface roughness finish.
  ···› With better chip flow, a machinist is able to increase feed rates due to a reduced cutting load

MGT - Machining Al Wheels

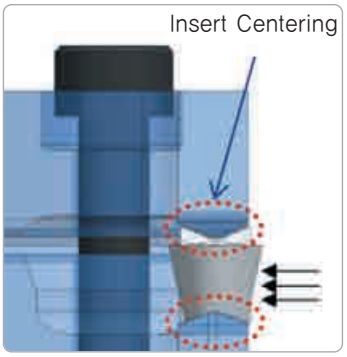
Features

- Optimally designed inserts for aluminum wheel machining
- Longer tool life when matched with the best grade for application
- Unique clamping mechanism strongly clamps the insert
- A variety of insert types for multi application functions

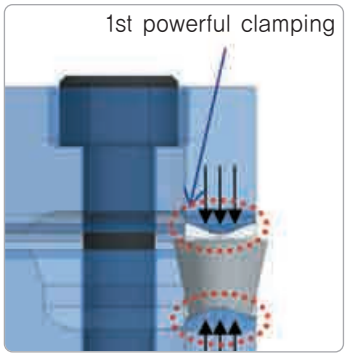
Various insert types

MRGN-A(For general)	MRGN-A5(For copying)	MRGN-AM(Medium finishing)	MRGN-AP(PCD)	MVGN-A(For fine finishing)
				
High rake angle, Sharp cutting edge	Reinforced clamping force	For ductile cast iron	Improved chip control	High rake and relief angle

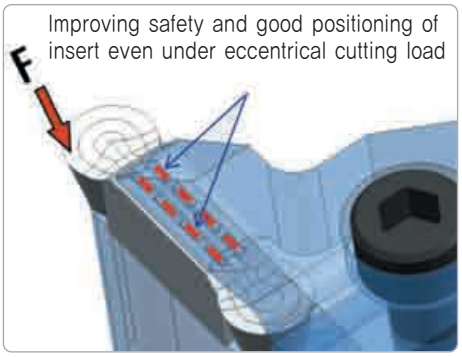
New clamping system



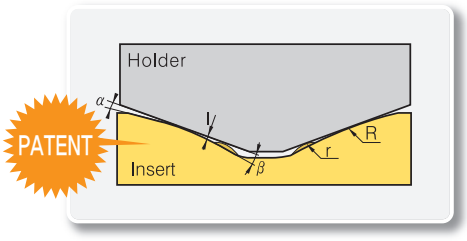
[Before tightening]

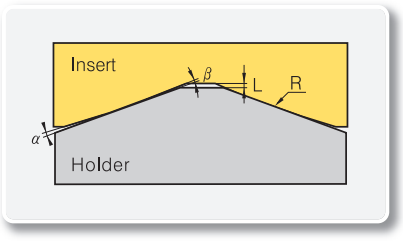


[After tightening]



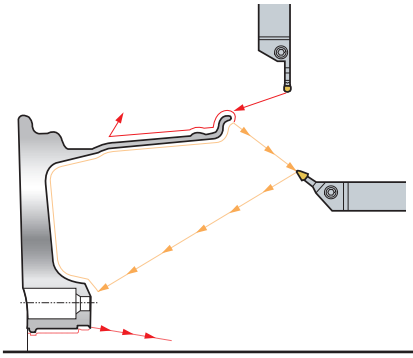
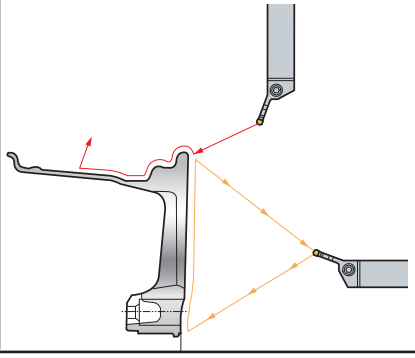
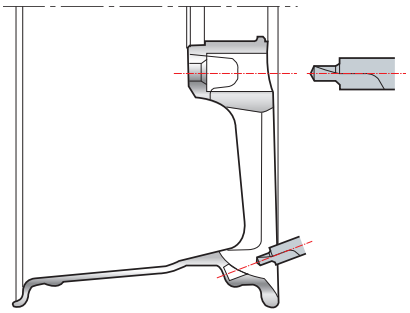
• Reinforcing the clamping force due to radius designed on the top & bottom side of insert and convex"DOT"on the top of insert





MGT SERIES

Application of Al Wheels

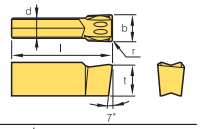
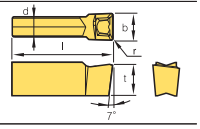
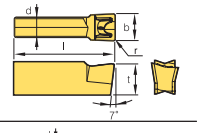
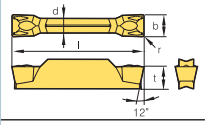
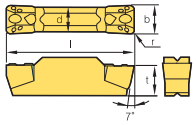
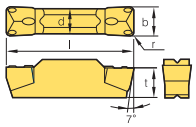
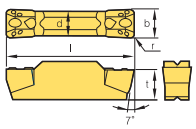
MACHINING A	MACHINING B	MACHINING C
		

Recommended cutting condition

Workpiece		Hardness Brinell(HB)	vc(sfm)	fn(ipr)
Aluminum alloy (Forged)	Unhardened	50 ~ 70	3,300~8,300	0.004~0.024
	Hardened	90 ~ 110	1,000~3,300	0.004~0.020
Aluminum alloy (Cast)	Unhardened	70 ~ 80	1,000~3,300	0.004~0.020
	Hardened	80 ~ 110	650~2,000	0.004~0.016
Copper alloy		90 ~ 110	1,000~2,600	0.004~0.020
Magnesium alloy		70 ~ 80	1,000~3,300	0.004~0.020

Available Inserts

(inch)

Application	Picture	Designation		Coated									Cermet	Dimensions					Configuration
				NC3010	NC3220	NC3030	NC3120	PC5300	PC9030	NC5330	PC6510	PC8110	CN20	b	r	l	d	t	
Face Grooving	FGD	FGD	300R-03			●								0.118	3/256	0.159	0.079	0.157	
			400R-04											0.157	1/64	0.177	0.118	0.177	
			500R-04											0.197	1/64	0.197	0.156	0.197	
Face Grooving	FGM	FGM	300R-03											0.118	3/256	0.159	0.079	0.157	
			400R-04			●								0.157	1/64	0.177	0.118	0.177	
			500R-04											0.197	1/64	0.197	0.156	0.197	
Face Grooving	FMM	FMM	300R-03			●						●		0.118	3/256	0.159	0.079	0.154	
			400R-04			●					●	●		0.157	1/64	0.177	0.118	0.156	
			500R-04			●						●		0.197	1/64	0.197	0.156	0.174	
Face Grooving	MFMN	MFMN	300				●	●						0.118	1/128	0.118	0.079	0.118	
Grooving-Turning	MGGN-M	MGGN	300-02-M										●	0.118	1/128	0.189	0.093	0.189	
			300-04-M										●	0.118	1/64	0.189	0.093	0.189	
			300-08-M											0.118	1/32	0.189	0.093	0.189	
			400-02-M										●	0.157	1/128	0.189	0.130	0.189	
			400-04-M										●	0.157	1/26	0.189	0.130	0.189	
			400-08-M											0.157	1/32	0.189	0.130	0.189	
			500-02-M											0.197	1/128	0.228	0.161	0.228	
			500-04-M										●	0.197	1/64	0.228	0.161	0.228	
			500-08-M											0.197	1/32	0.228	0.161	0.228	
			600-02-M											0.236	1/128	0.228	0.197	0.228	
			600-04-M											0.236	1/64	0.228	0.197	0.228	
			600-08-M											0.236	1/32	0.228	0.197	0.228	
Grooving	MGMN-G	MGMN	150-G		○		●	●						0.059	0.006	0.138	0.047	0.138	
			200-G		○	●	○		●					0.079	1/128	0.138	0.063	0.138	
			250-G		○			●	●					0.098	1/128	0.152	0.079	0.152	
			300-G			●	○		●	●				0.118	7/128	0.189	0.093	0.189	
			400-G				●	●						0.157	5/64	0.189	0.130	0.189	
			500-G											0.197	3/32	0.228	0.161	0.228	
			600-G											0.236	1/8	0.228	0.197	0.228	
Grooving-Turning	MGMN-M	MGMN	200-M		○	●	○	●	●	●				0.079	1/128	0.138	0.047	0.138	
			250-M		○		●	●	●					0.098	1/128	0.152	0.079	0.152	
			300-02-M											0.118	1/128	0.189	0.093	0.189	
			300-M	●	○	●	○	●	●					0.118	1/64	0.189	0.093	0.189	
			350-03-M											0.138	3/256	0.189	0.130	0.189	
			400-02-M											0.157	1/128	0.189	0.130	0.189	
			400-M		○	●	○	●	●	●				0.157	1/64	0.189	0.130	0.189	
			500-04-M			●								0.197	1/64	0.228	0.161	0.228	
			500-M		○	●	●			●				0.197	1/32	0.228	0.161	0.228	
			600-M		○	●	●			●				0.236	1/32	0.228	0.197	0.228	
			800-M			●								0.315	1/32	0.256	0.236	0.256	

● : Stock item ○ : Under preparing for stock

MGT SERIES

Available Inserts

(inch)

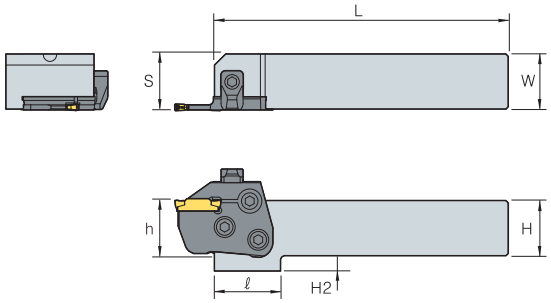
Application	Picture	Designation		Coated									Cermet		Dimensions						Configuration
				NC3220	NC3120	PC8110	PC9030	PC3525	PC5300	PC6510	PC230	NC5330	H01	G10	b	r	l	d	t	a°	
Grooving	MGMN-L	MGMN	300-02-L						●						0.118	1/128	0.827	0.093	0.189		
			400-02-L						●						0.157	1/128	0.827	0.130	0.189		
			500-04-L						●						0.197	1/64	1.024	0.161	0.228		
Grooving Parting off	MGMN-R	MGMN	300-02-R						●						0.118	1/128	0.827	0.093	0.189		
			400-02-R						●						0.157	1/128	0.827	0.130	0.189		
			500-04-R						●						0.197	1/64	1.024	0.161	0.228		
Grooving Turning	MGMN-T	MGMN	300-T						●						0.118	1/64	0.827	0.093	0.189		
			400-T						●						0.157	1/64	0.827	0.130	0.189		
			500-T						●						0.197	1/32	1.024	0.161	0.228		
Grooving	MGGN-A	MGGN	300-02-A												0.118	1/128	0.827	0.093	0.189		
			300-04-A												0.118	1/64	0.827	0.093	0.189		
			300-08-A												0.118	1/32	0.827	0.093	0.189		
Parting off	MGMR/L-PS	MGMR/L	300-6D-PS		●			●							0.118	0.008	0.827	0.098	0.118	0.189	
			300-8D-PS		●			●							0.118	0.008	0.827	0.098	0.118	0.189	
			300-15D-PS		●			●							0.118	0.008	0.827	0.098	0.118	0.189	
			400-4D-PS		●			●							0.157	0.012	0.827	0.13	0.157	0.189	
			500-4D-PS		●			●							0.197	0.012	1.024	0.161	0.197	0.228	
Parting off	MGMR/L-PT	MGMR/L	200-6D-PT		●			●							0.079	0.008	0.63	0.063	0.079	0.142	
			300-6D-PT		●			●							0.118	0.008	0.827	0.093	0.118	0.189	
			300-8D-PT	●	●			●							0.118	0.008	0.827	0.093	0.118	0.189	
			300-15D-PT		●			●							0.118	0.008	0.827	0.093	0.118	0.189	
			400-4D-PT		●			●							0.157	0.012	0.827	0.13	0.157	0.189	
			500-4D-PT		●			●							0.197	0.012	1.024	0.161	0.197	0.228	
Aluminum	MRGN-A	MRGN	400-A												0.157	5/64	0.827	0.130	0.157	0.189	
			500-A												0.197	3/32	1.024	0.161	0.197	0.228	
			600-A										●		0.236	15/64	1.024	0.197	0.236	0.228	
			800-A										●		0.315	5/32	1.220	0.236	0.315	0.256	
Reliefing Profiling	MRMN-M	MRMN	200-M	○	●										0.079	3/64	0.630	0.059	0.079	0.138	
			300-M	○	●				●		●	●			0.118	1/14	0.827	0.093	0.118	0.189	
			400-M	○	●					●					0.157	5/64	0.827	0.130	0.157	0.189	
			500-M	○	●				●		●	●			0.197	3/32	1.024	0.161	0.197	0.228	
			600-M	○	●							●			0.236	1/8	1.024	0.197	0.236	0.228	
			800-M	○	●							●			0.315	5/32	1.220	0.236	0.315	0.256	

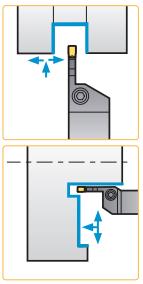
Application	Picture	Designation		Coated	Uncoated	Dimensions					Configuration
				DA150	G10	b	r	l	d	t	
For Aluminum Wheel	MVGN-A	MVGN	8N-A-R1.2		●	0.315	3/64	1.181	0.315	0.272	
			8N-A-R1.6		●	0.315	1/16	1.181	0.315	0.272	
For Aluminum Wheel	MRGN-A	MRGN	6N-A			0.236	1/8	1.024	0.283	0.232	
			6N-AM			0.236	1/8	1.024	0.283	0.232	
			6N-AP			0.236	1/8	1.024	0.283	0.232	
			6N-A5			0.236	1/8	1.024	0.283	0.232	
			8N-A			0.315	5/32	1.181	0.315	0.256	
			8N-AM			0.315	5/32	1.181	0.315	0.256	
			8N-AP			0.315	5/32	1.181	0.315	0.256	
			8N-A5			0.315	5/32	1.181	0.315	0.256	

● : Stock item ○ : Under preparing for stock

MCHR/L (Holder) For Grooving, Turning, Parting off, Reliefing, Profiling machining

MCER/L | MCFR/L





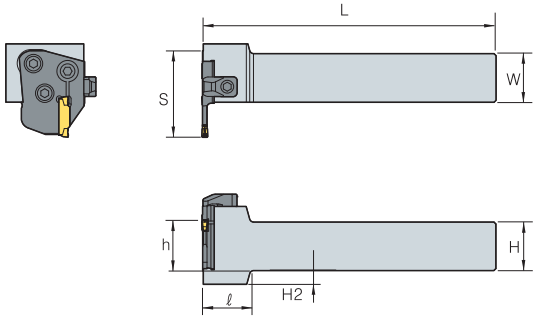
• R type insert

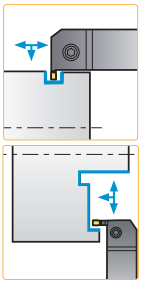
(inch)

Designation		H=(h)	W	L	S	ℓ	H_2	Cartridge	Clamp	Clamp Screw	Hinge Screw	Clamping screw	Wrench
MCHR/L	2020	0.787	0.787	5.236	0.815	1.181	0.472	MCER/L MCFR/L	CXH8N	DHA0818F	RHA0613	FHGA0618	HW40L
	2525	0.984	0.984	5.236	1.012	1.181	0.276						
	3232	1.260	1.260	6.024	1.287	-	-						

MCVR/L (Holder) For Face Grooving, Turning machining

MCER/L | MCFR/L





• R type insert

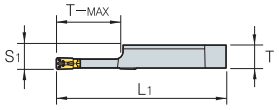
(inch)

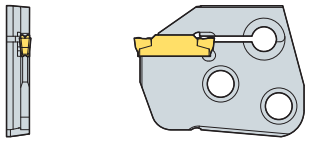
Designation		H=(h)	W	L	S	ℓ	H_2	Cartridge	Clamp	Clamp Screw	Hinge Screw	Clamping screw	Wrench
MCVR/L	2020	0.787	0.787	5.906	1.469	1.181	0.472	MCER/L MCFR/L	CXH8N	DHA0818F	RHA0613	FHGA0618	HW40L
	2525	0.984	0.984	5.906	1.693	1.181	0.276						
	3232	1.260	1.260	6.693	1.969	-	-						

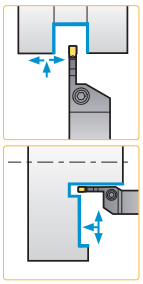
MGT SERIES

MCER/L (Cartridge) For Grooving, Turning, Parting off, Reliefing, Profiling machining

MGMN | MGMR
MGGN | MRMN







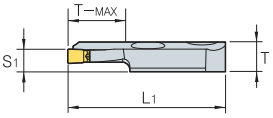
• R type insert

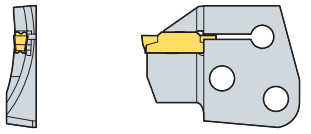
(inch)

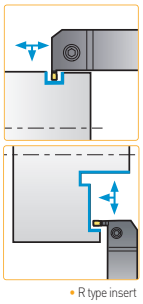
Designation		T	L_1	S_1	T-max	Inserts		Holder
						width	Designation	
MCER/L	3-T16	0.236	1.752	0.250	0.630	0.118	MGMN	MCHR/L MCVR/L
	4-T16	0.235	1.752	0.250	0.630	0.157	MGMR/L	
	5-T20	0.231	1.909	0.250	0.787	0.197	MGGN	
	6-T20	0.229	1.909	0.250	0.787	0.236	MRMN	

MCFR/L (Cartridge) For Face Grooving, Turning machining

MFNM | MGMN







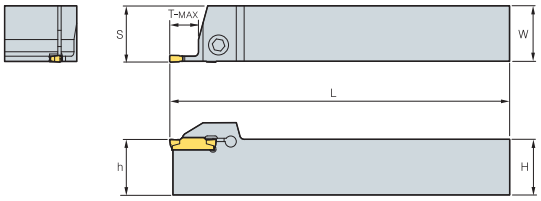
• R type insert

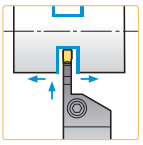
(inch)

Designation		T	L_1	S_1	T-max	Inserts		Holder
						width	Designation	
MCFR/L3	-24/35-T16	0.315	1.752	0.250	0.630	0.118	MFMN300	MCHR/L MCVR/L
	-29/40-T16	0.315	1.752	0.250	0.630	0.118		
	-34/50-T16	0.315	1.752	0.250	0.630	0.118		
	-44/70-T16	0.315	1.752	0.250	0.630	0.118		
	-64/99-T16	0.315	1.752	0.250	0.630	0.118		
MCFR/L4	-44/60-T16	0.314	1.752	0.250	0.630	0.157	MGMN400	
	-60/120-T16	0.314	1.752	0.250	0.630	0.157		
	-112/200-T16	0.314	1.752	0.250	0.630	0.157		

MGEHR/L For Grooving, Turning, Parting off, Reliefing, Profiling machining

MGMN | MGMR | MGGN
MRMN | MRGN





• R type insert

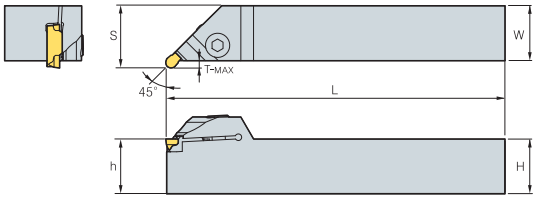
(inch)

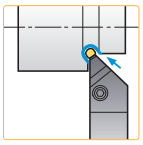
Designation		H=(h)	W	L	S	T-MAX	Inserts	Screw	Wrench
MGEHR/L	10-1.5	5/8	5/8	4	0.635	0.57	MGMN150-G	LTX0514	TW20L
	12-1.5	3/4	3/4	5	0.760	0.57			
	16-1.5	1	1	6	1.010	0.57			
	08-2	1/2	1/2	4	0.589	0.57	MGMN200-G MGMN200-M MGMR200-□□-□□	MHA0512	HW40L
	10-2	5/8	5/8	4	0.635	0.57			
	12-2	3/4	3/4	5	0.760	0.57			
	16-2	1	1	6	1.010	0.57			
	10-2.5	5/8	5/8	4	0.637	0.65	MGMN250-G MGMN250-M	MHA0512	HW40L
	12-2.5	3/4	3/4	5	0.762	0.65			
	16-2.5	1	1	6	1.012	0.65			
	10-3	5/8	5/8	4	0.639	0.72	MGMN300-M/T MGGN300-□□-M MRMN300-M MGMR300-□□-□□ MGMN300-□□-L/R	BHA0616	HW50L
	12-3	3/4	3/4	5	0.764	0.70			
	12-3-T03	3/4	3/4	5	0.764	0.39			
	16-3	1	1	6	1.014	0.70			
	16-3-T03	1	1	6	1.014	0.39			
	20-3	1 1/4	1 1/4	6 3/4	1.264	0.70			
	20-3-T03	1 1/4	1 1/4	6 3/4	1.264	0.39			
	12-4	3/4	3/4	5	0.766	0.70	MGMN400-M/T MGGN400-□□-M MRMN400-M MGMR400-□□-□□ MGMN400-□□-L/R		
	12-4-T03	3/4	3/4	5	0.766	0.39			
	16-4	1	1	6	1.016	0.70			
	16-4-T03	1	1	6	1.016	0.39			
	20-4	1 1/4	1 1/4	6 3/4	1.266	0.70			
	20-4-T03	1 1/4	1 1/4	6 3/4	1.266	0.39			
	12-5	3/4	3/4	5	0.770	0.90	MGMN500-M/T MGGN500-□□-M MRMN500-M MGMR500-□□-□□ MGMN500-□□-L/R		
	12-5-T05	3/4	3/4	5	0.770	0.59			
	16-5	1	1	6	1.020	0.90			
	16-5-T05	1	1	6	1.020	0.59			
	20-5	1 1/4	1 1/4	6 3/4	1.270	0.90			
	20-5-T05	1 1/4	1 1/4	6 3/4	1.270	0.59			
	12-6	3/4	3/4	5	0.774	0.90	MGMN600-M MGGN600-□□-M MRMN600-M		
	12-6-T05	3/4	3/4	5	0.774	0.59			
	16-6	1	1	6	1.024	0.90			
	16-6-T05	1	1	6	1.024	0.59			
	20-6	1 1/4	1 1/4	6 3/4	1.274	0.90			
	20-6-T05	1 1/4	1 1/4	6 3/4	1.274	0.59			
	16-8	1	1	6	1.043	1.10	MRMN800-M MGMN800-M		
	16-8-T05	1	1	6	1.043	0.59			
	20-8	1 1/4	1 1/4	6 3/4	1.293	1.10			
	20-8-T05	1 1/4	1 1/4	6 3/4	1.293	0.59			
	16-6A	1	1	6	1.024	0.90	MRGN600-A		
	16-6A-T05	1	1	6	1.024	0.59			
	20-6A	1 1/4	1 1/4	6 3/4	1.274	0.90			
	20-6A-T05	1 1/4	1 1/4	6 3/4	1.293	0.59			
	16-8A	1	1	6	1.043	1.10	MRGN800-A		
	16-8A-T05	1	1	6	1.043	0.59			
	20-8A	1 1/4	1 1/4	6 3/4	1.293	1.10			
	20-8A-T05	1 1/4	1 1/4	6 3/4	1.293	0.59			

MGT SERIES

MGEUR/L For Reliefing, Profiling machining

MRMN | MRGN



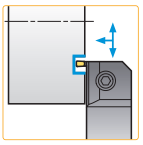


• R type insert

(inch)

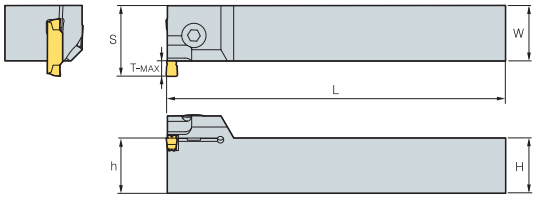
Designation		H=(h)	W	L	S	T-MAX	Inserts	Screw	Wrench
MGEUR/L	12-3	3/4	3/4	5	0.967	0.11	MRMN300-M	BHA0616	HW50L
	16-3	1	1	6	1.217	0.11			
	20-3	1 1/3	1 1/4	6 3/4	1.467	0.11			
	12-4	3/4	3/4	5	0.967	0.11	MRMN400-M		
	16-4	1	1	6	1.217	0.11			
	20-4	1 1/4	1 1/4	6 3/4	1.467	0.11			
	12-5	3/4	3/4	5	1.026	0.15	MRMN500-M		
	16-5	1	1	6	1.276	0.15			
	20-5	1 1/4	1 1/4	6 3/4	1.526	0.15			
	12-6	3/4	3/4	5	1.222	0.15	MRMN600-M		
	16-6	1	1	6	1.276	0.15			
	20-6	1 1/4	1 1/4	6 3/4	1.526	0.15			
	16-8	1	1	6	1.354	0.19	MRMN800-M		
	20-8	1 1/4	1 1/4	6 3/4	1.604	0.19			
	16-6A	1	1	6	1.276	0.15	MRGN600-A		
	20-6A	1 1/4	1 1/4	6 3/4	1.526	0.15			
	16-8A	1	1	6	1.354	0.19	MRGN800-A		
	20-8A	1 1/4	1 1/4	6 3/4	1.604	0.19			

MGEVR/L For Grooving, Turning, Profiling machining



• R type insert

MGMN | MRMN
MGGN | MRGN



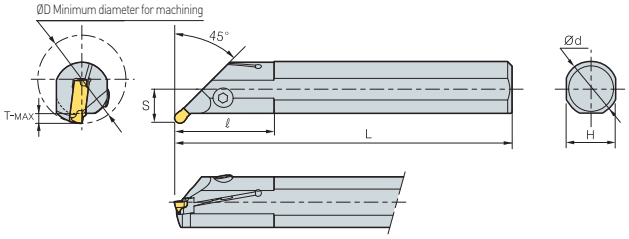
(inch)

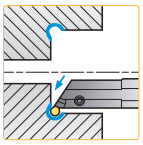
Designation		H=(h)	W	L	S	T-MAX	Min. diameter	Inserts	Screw	Wrench
MGEVR/L	12-1.5	3/4	3/4	5	0.868	0.11	10	MGMN150-G	LTX0514	TW20L
	16-1.5	1	1	6	1.118	0.11	10			
	20-1.5	1 1/4	1 1/4	6 3/4	1.368	0.11	10			
	12-2	3/4	3/4	5	0.888	0.13	5 1/8	MGMN200-M	BHA0616	HW50L
	16-2	1	1	6	1.138	0.13	5 1/8	MGMN200-G		
	20-2	1 1/4	1 1/4	6 3/4	1.388	0.13	5 1/8			
	12-2.5	3/4	3/4	5	0.907	0.15	4	MGMN250-M		
	16-2.5	1	1	6	1.157	0.15	4	MGMN250-G		
	20-2.5	1 1/4	1 1/4	6 3/4	1.407	0.15	4			
	12-3	3/4	3/4	5	0.967	0.21	4 5/16	MGMN300-M/T MGGN300-□□-M MRMN300-M		
	16-3	1	1	6	1.217	0.21	4 5/16			
	20-3	1 1/4	1 1/4	6 3/4	1.467	0.21	4 5/16	MGMN300-□□-L/R		
	12-4	3/4	3/4	5	0.967	0.21	4	MGMN400-M/T MGGN400-□□-M MRMN400-M		
	16-4	1	1	6	1.217	0.21	4			
	20-4	1 1/4	1 1/4	6 3/4	1.467	0.21	4	MGMN400-□□-L/R		
	12-5	3/4	3/4	5	1.026	0.27	4	MGMN500-M/T MGGN500-□□-M MRMN500-M		
	16-5	1	1	6	1.276	0.27	4			
	20-5	1 1/4	1 1/4	6 3/4	1.526	0.27	4	MGMN500-□□-L/R		
	12-6	3/4	3/4	5	1.222	0.27	3 1/2	MGMN600-M		
	16-6	1	1	6	1.276	0.27	3 1/2	MGGN600-□□-M		
	20-6	1 1/4	1 1/4	6 3/4	1.526	0.27	3 1/2	MRMN600-M		
	16-8	1	1	6	1.354	0.35	2	MRMN800-M		
	20-8	1 1/4	1 1/4	6 3/4	1.604	0.35	2	MGMN800-M		
	16-8A	1	1	6	1.276	0.27	3 1/2	MRGN600-A		
	20-8A	1 1/4	1 1/4	6 3/4	1.526	0.27	3 1/2			
	16-8A	1	1	6	1.354	0.35	2	MRGN800-A		
	20-8A	1 1/4	1 1/4	6 3/4	1.604	0.35	2			

MGT SERIES

MGIUR/L For Reliefing, Profiling machining

MRMN | MRGN





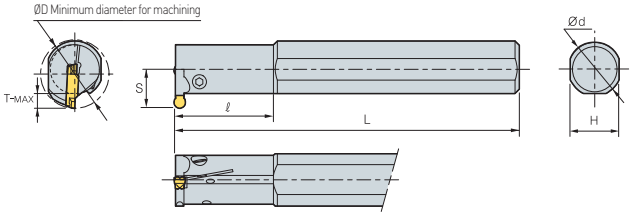
• R type insert

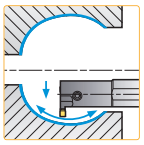
(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Inserts	Screw	Wrench
MGIUR/L	23-12-3	1 7/16	3/4	6	1.772	0.13	0.670	0.512	MRMN300-M	MHA0512	HW40L
	26-16-3	1 5/8	1	8	1.772	0.13	0.920	0.610			
	32-20-3	2	1 1/4	10	2.559	0.13	1.170	0.748			
	23-12-4	1 7/16	3/4	6	1.772	0.13	0.670	0.512	MRMN400-M		
	26-16-4	1 5/8	1	8	1.772	0.13	0.920	0.610			
	32-20-4	2	1 1/4	10	2.559	0.13	1.170	0.748			
	26-16-5	1 5/8	1	8	1.772	0.13	1.920	0.610	MRMN500-M	BHA0616	HW50L
	32-20-5	2	1 1/4	8	1.772	0.13	1.170	0.748		BHA0620	
	26-16-6	1 5/8	1	10	2.559	0.13	1.920	0.748	MRMN600-M	BHA0616	
	32-20-6	2	1 1/4	10	2.559	0.13	1.170	0.748		BHA0620	
	26-16-8	1 5/8	1	8	1.772	0.13	0.920	0.610	MRMN800-M	BHA0616	
	32-20-8	2	1 1/4	10	2.559	0.25	1.170	0.748		BHA0620	
	26-16-6A	1 5/8	1	8	1.772	0.25	0.920	0.610	MRGN600-A	BHA0616	
	32-20-6A	2	1 1/4	10	2.559	0.13	1.170	0.748		BHA0620	
	26-16-8A	1 5/8	1	8	1.772	0.25	0.920	0.728	MRGN800-A	BHA0616	
	32-20-8A	2	1 1/4	10	2.559	0.25	1.170	0.866		BHA0620	

MGIVR/L For Grooving, Turning, Profiling machining

MGMN | MGGN
MRMN | MRGN



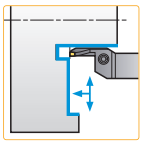


(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Inserts	Screw	Wrench
MGIVR/L	12-10-1.5	3/4	5/8	5	1.378	0.15	0.545	0.445	MGMN150-G	MHB0310	HW25L
	16-12-1.5	1	3/4	6	1.772	0.15	0.670	0.516		MHA0512	HW40L
	18-16-1.5	1 1/4	1	8	1.772	0.15	0.920	0.638			
	12-10-2	3/4	5/8	5	1.378	0.19	0.545	0.448	MGMN200-G	MHB0310	HW25L
	16-12-2	1	3/4	6	1.772	0.19	0.670	0.551	MGMN200-M	MHA0512	HW40L
	18-16-2	1 1/4	1	8	1.772	0.19	0.920	0.677	MRMN200-M		
	12-10-2.5	3/4	5/8	5	1.378	0.23	0.545	0.482	MGMN250-G	MHB0310	HW25L
	16-12-2.5	1	3/4	6	1.772	0.23	0.670	0.594	MGMN250-M	MHB0512	HW40L
	18-16-2.5	1 1/4	1	8	1.772	0.23	0.920	0.717			
	16-12-3	1	3/4	6	1.772	0.23	0.670	0.614	MGMN300-M/G/T MGGN300-□□-M MRMN300-M MRMN300-□□-L/R	MHA0512	HW40L
	20-16-3	1 1/4	1	8	1.772	0.23	0.920	0.744			
	24-20-3	1 1/2	1 1/4	10	2.559	0.23	1.170	0.846			
	16-12-4	1	3/4	6	1.772	0.23	0.670	0.614	MGMN400-M/G/T MGGN400-□□-M MRMN400-M MRMN400-□□-L/R		
	20-16-4	1 1/4	1	8	1.772	0.23	0.920	0.744			
	24-20-4	1 1/2	1 1/4	10	2.559	0.23	1.170	0.846			
	20-16-5	1 1/4	1	8	1.772	0.31	0.920	0.764	MGMN500-M/G/T MGGN500-□□-M MRMN500-M MRMN500-□□-L/R	BHA0616	HW50L
	24-20-5	1 1/2	1 1/4	10	2.559	0.31	1.170	0.846		BHA0620	
	20-16-6	1 1/4	1	8	1.772	0.31	0.920	0.764	MGMN600-M/G	BHA0616	
	24-20-6	1 1/2	1 1/4	10	2.559	0.31	1.170	0.846	MGGN600-□□-M	BHA0620	
				10	2.559	0.39	1.170	0.921	MRMN600-M		
	29-24-8	1 1/2	1 1/4	12	2.756	0.39	1.380	1.071	MRMN800-M		
	29-24-8	1 13/16	1 1/2						MGMN800-M		
	20-16-6A	1 1/4	1	8	1.772	0.31	0.920	0.764	MRGN600-A	BHA0616	
	24-20-6A	1 1/2	1 1/4	10	2.559	0.31	1.170	0.846		BHA0620	
	24-20-8A	1 1/2	1 1/4	10	2.559	0.39	1.170	0.921	MRGN800-A		
	29-24-8A	1 13/16	1 1/2	12	2.756	0.39	1.380	1.071			

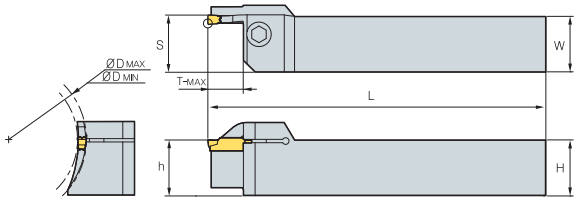
MGT SERIES

MGFHR/L For Face Grooving machining



• R type insert

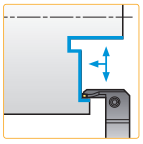
MFMN | MGMN



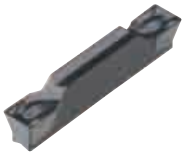
(inch)

Designation		H=(h)	W	L	S	T-MAX	min. (ØD)	max. (ØD)	Inserts	Screw	Wrench
MGFHR/L	16-3-09/13-T03	1	1	6	1.008	0.393	0.945	1.378	MFMN300	BHA0616	HW50L
	16-3-11/15-T03	1	1	6	1.008	0.393	1.142	1.575			
	16-3-13/19-T03	1	1	6	1.008	0.393	1.339	1.969			
	16-3-17/27-T03	1	1	6	1.008	0.393	1.732	2.756			
	16-3-25/38-T03	1	1	6	1.008	0.393	2.520	3.898			
	16-4-24/47-T05	1	1	6	1.008	0.393	2.441	4.724	MGMN400-M/T		
	16-4-44/78-T05	1	1	6	1.008	0.393	4.409	7.874	MGMN400-□□-L/R		

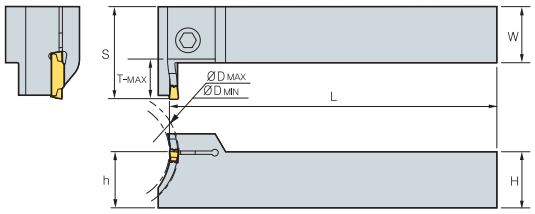
MGFVR/L For Face Grooving machining



• R type insert



MFMN | MGMN

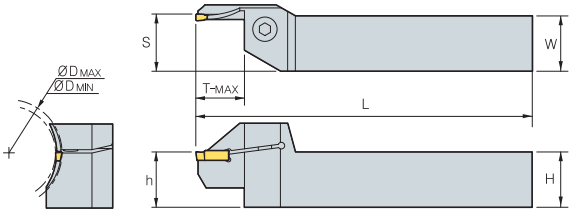


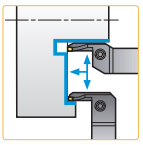
(inch)

Designation		H=(h)	W	L	S	T-MAX	min. (ØD)	max. (ØD)	Inserts	Screw	Wrench
MGFVR/L	16-3-09/13-T03	1	1	6	1.417	0.393	0.945	1.378	MFMN300	MHA0512	HW40L
	16-3-11/15-T03	1	1	6	1.417	0.393	1.142	1.575			
	16-3-13/19-T03	1	1	6	1.417	0.393	1.339	1.969			
	16-3-17/27-T03	1	1	6	1.417	0.393	1.732	2.755			
	16-3-25/38-T03	1	1	6	1.417	0.393	2.519	3.897			
	16-4-17/25-T03	1	1	6	1.614	0.590	1.732	2.362	MGMN400-M/T MGMN400-□□-L/R	BHA0616	HW50L
	16-4-23/47-T05	1	1	6	1.614	0.590	2.362	4.724			
	16-4-44/78-T05	1	1	6	1.614	0.590	4.409	7.874			

FGHH For Face Grooving, Turning machining

FGD | FGM | FMM





• R type insert

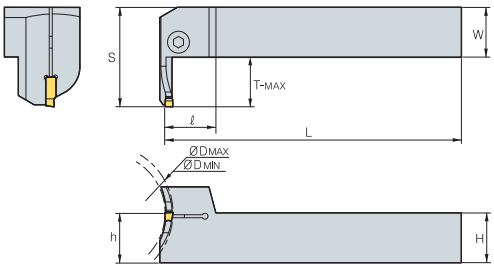
(inch)

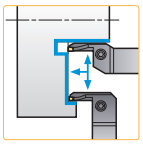
Designation			H=(h)	W	L	S	T-MAX	ØD MIN	ØD MAX	Inserts	Screw	Wrench
FGHH	12R-3	09/11	3/4	3/4	5	0.774	0.472	0.984	1.181	FMM300R-03	BHA0616	HW50L
		11/13	3/4	3/4	5	0.774	0.472	1.181	1.378			
		13/18	3/4	3/4	5	0.774	0.472	1.378	1.890			
		18/23	3/4	3/4	5	0.774	0.866	1.890	2.362	FGD300R-03 FGM300R-03		
		23/29	3/4	3/4	5	0.774	0.866	2.362	2.953			
		29/39	3/4	3/4	5	0.774	0.866	2.953	3.937			
		39/55	3/4	3/4	5	0.774	0.866	3.937	5.512			
	16R-3	09/11	1	1	6	1.024	0.472	0.984	1.181	FMM300R-03		
		11/13	1	1	6	1.024	0.472	1.181	1.378			
		13/18	1	1	6	1.024	0.472	1.378	1.890			
		18/23	1	1	6	1.024	0.866	1.890	2.362	FGD300R-03 FGM300R-03		
		23/29	1	1	6	1.024	0.866	2.362	2.953			
		29/39	1	1	6	1.024	0.866	2.953	3.937			
		39/55	1	1	6	1.024	0.866	3.937	5.512			
	12R-4	09/11	3/4	3/4	5	0.774	0.472	0.984	1.181	FMM400R-04		
		11/13	3/4	3/4	5	0.774	0.472	1.181	1.378			
		13/18	3/4	3/4	5	0.774	0.472	1.378	1.890			
		18/23	3/4	3/4	5	0.774	0.984	1.890	2.362	FGD400R-04 FGM400R-04		
		23/29	3/4	3/4	5	0.774	0.984	2.362	2.953			
		29/39	3/4	3/4	5	0.774	0.984	2.953	3.937			
		39/55	3/4	3/4	5	0.774	0.984	3.937	5.512			
	16R-4	09/11	1	1	6	1.024	0.472	0.984	1.181	FMM400R-04		
		11/13	1	1	6	1.024	0.472	1.181	1.378			
		13/18	1	1	6	1.024	0.472	1.378	1.890			
		18/23	1	1	6	1.024	0.984	1.890	2.362	FGD400R-04 FGM400R-04		
		23/29	1	1	6	1.024	0.984	2.362	2.953			
		29/39	1	1	6	1.024	0.984	2.953	3.937			
		39/55	1	1	6	1.024	0.984	3.937	5.512			
	12R-5	09/11	3/4	3/4	5	0.774	0.472	0.984	1.181	FMM500R-04		
		11/13	3/4	3/4	5	0.774	0.472	1.181	1.378			
		13/15	3/4	3/4	5	0.774	0.787	1.378	1.575			
		15/18	3/4	3/4	5	0.774	0.787	1.575	1.890			
		18/23	3/4	3/4	5	0.774	0.984	1.890	2.362	FGD500R-04 FGM500R-04		
		23/29	3/4	3/4	5	0.774	0.984	2.362	2.953			
		29/39	3/4	3/4	5	0.774	0.984	2.953	3.937			
		39/55	3/4	3/4	5	0.774	0.984	3.937	5.512			
	16R-5	09/11	1	1	6	1.024	0.472	0.984	1.181	FMM500R-04		
		11/13	1	1	6	1.024	0.472	1.181	1.378			
		13/15	1	1	6	1.024	0.787	1.378	1.575			
		15/18	1	1	6	1.024	0.787	1.575	1.890			
		18/23	1	1	6	1.024	0.984	1.890	2.362	FGD500R-04 FGM500R-04		
		23/29	1	1	6	1.024	0.984	2.362	2.953			
		29/39	1	1	6	1.024	0.984	2.953	3.937			
		39/55	1	1	6	1.024	0.984	3.937	5.512			

MGT SERIES

FGVH For Face Grooving, Turning machining

FGD | FGM | FMM





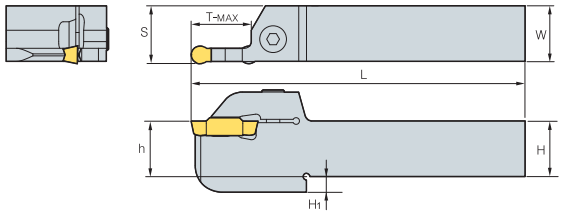
• R type insert

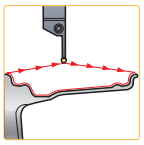
(inch)

Designation			H=(h)	W	L	S	T-MAX	ØD MIN	ØD MAX	Inserts	Screw	Wrench
FGVH	12R-3	09/11	3/4	3/4	5	0.774	0.472	0.984	1.181	FMM300R-03	BHA0616	HW50L
		11/13	3/4	3/4	5	0.774	0.472	1.181	1.378			
		13/18	3/4	3/4	5	0.774	0.472	1.378	1.890			
		18/23	3/4	3/4	5	0.774	0.866	1.890	2.362	FGD300R-03 FGM300R-03		
		23/29	3/4	3/4	5	0.774	0.866	2.362	2.953			
		29/39	3/4	3/4	5	0.774	0.866	2.953	3.937			
		39/55	3/4	3/4	5	0.774	0.866	3.937	5.512			
	16R-3	09/11	1	1	6	1.024	0.472	0.984	1.181	FMM300R-03		
		11/13	1	1	6	1.024	0.472	1.181	1.378			
		13/18	1	1	6	1.024	0.472	1.378	1.890			
		18/23	1	1	6	1.024	0.866	1.890	2.362	FGD300R-03 FGM300R-03		
		23/29	1	1	6	1.024	0.866	2.362	2.953			
		29/39	1	1	6	1.024	0.866	2.953	3.937			
		39/55	1	1	6	1.024	0.866	3.937	5.512			
	12R-4	09/11	3/4	3/4	5	0.774	0.472	0.984	1.181	FMM400R-04		
		11/13	3/4	3/4	5	0.774	0.472	1.181	1.378			
		13/18	3/4	3/4	5	0.774	0.472	1.378	1.890			
		18/23	3/4	3/4	5	0.774	0.984	1.890	2.362	FGD400R-04 FGM400R-04		
		23/29	3/4	3/4	5	0.774	0.984	2.362	2.953			
		29/39	3/4	3/4	5	0.774	0.984	2.953	3.937			
		39/55	3/4	3/4	5	0.774	0.984	3.937	5.512			
	16R-4	09/11	1	1	6	1.024	0.472	0.984	1.181	FMM400R-04		
		11/13	1	1	6	1.024	0.472	1.181	1.378			
		13/18	1	1	6	1.024	0.472	1.378	1.890			
		18/23	1	1	6	1.024	0.984	1.890	2.362	FGD400R-04 FGM400R-04		
		23/29	1	1	6	1.024	0.984	2.362	2.953			
		29/39	1	1	6	1.024	0.984	2.953	3.937			
		39/55	1	1	6	1.024	0.984	3.937	5.512			
	12R-5	09/11	3/4	3/4	5	0.774	0.472	0.984	1.181	FMM500R-04		
		11/13	3/4	3/4	5	0.774	0.472	1.181	1.378			
		13/15	3/4	3/4	5	0.774	0.787	1.378	1.575			
		15/18	3/4	3/4	5	0.774	0.787	1.575	1.890			
		18/23	3/4	3/4	5	0.774	0.984	1.890	2.362	FGD500R-04 FGM500R-04		
		23/29	3/4	3/4	5	0.774	0.984	2.362	2.953			
		29/39	3/4	3/4	5	0.774	0.984	2.953	3.937			
		39/55	3/4	3/4	5	0.774	0.984	3.937	5.512			
	16R-5	09/11	1	1	6	1.024	0.472	0.984	1.181	FMM500R-04		
		11/13	1	1	6	1.024	0.472	1.181	1.378			
		13/15	1	1	6	1.024	0.787	1.378	1.575			
		15/18	1	1	6	1.024	0.787	1.575	1.890			
		18/23	1	1	6	1.024	0.984	1.890	2.362	FGD500R-04 FGM500R-04		
		23/29	1	1	6	1.024	0.984	2.362	2.953			
		29/39	1	1	6	1.024	0.984	2.953	3.937			
		39/55	1	1	6	1.024	0.984	3.937	5.512			

MGEHR

MRGN





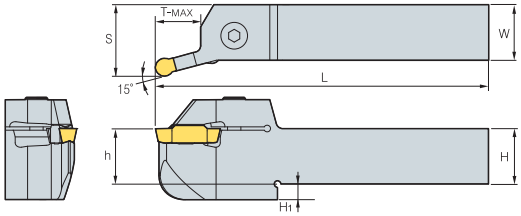
• R type insert

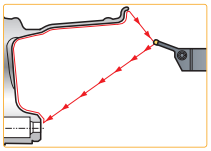
(inch)

Designation		H=(h)	H1	W	L	S	T-MAX	Inserts	Screw	Wrench
MGEHR/L	16N-6A	1	0.276	1	6	1.006	0.93	MRGN6N-A MRGN6N-AP MRGN6N-AM	BHA0620	HW50L
	20N-6A	1 1/4	0.315	1 1/4	6	1.281	1.06			
	16N-6A5	1	0.276	1	6	1.006	0.93	MRGN6N-A5		
	20N-6A5	1 1/4	0.315	1 1/4	6	1.281	1.06			
	16N-8A	1	0.276	1	6	1.006	0.93	MRGN8N-A MRGN8N-AP MRGN8N-AM		
	20N-8A	1 1/4	0.315	1 1/4	6	1.281	1.06			
	16N-8A5	1	0.276	1	6	1.006	0.93	MRGN8N-A5		
	20N-8A5	1 1/4	0.315	1 1/4	6	1.281	1.06			

MGEHR/L-15

MRGN





• R type insert

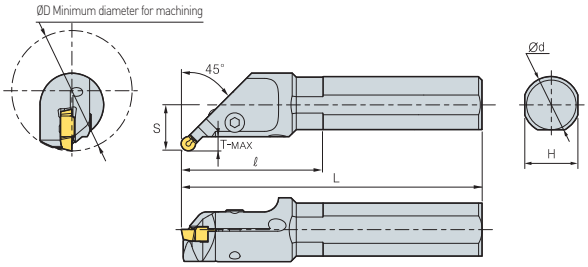
(inch)

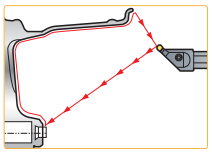
Designation		H=(h)	H1	W	L	S	T-MAX	Inserts	Screw	Wrench
MGEHR/L	16N-6A-15	1	0.276	1	6	1.268	0.79	MRGN6N-A MRGN6N-AP MRGN6N-AM	BHA0620	HW50L
	20N-6A-15	1 1/4	0.315	1 1/4	6	1.543	0.98			
	16N-6A5-15	1	0.276	1	6	1.268	0.79	MRGN6N-A5		
	20N-6A5-15	1 1/4	0.315	1 1/4	6	1.543	0.98			
	16N-8A-15	1	0.276	1	6	1.268	0.79	MRGN8N-A MRGN8N-AP MRGN8N-AM		
	20N-8A-15	1 1/4	0.315	1 1/4	6	1.543	0.98			
	16N-8A5-15	1	0.276	1	6	1.268	0.79	MRGN8N-A5		
	20N-8A5-15	1 1/4	0.315	1 1/4	6	1.543	0.98			

MGT SERIES

MGIUR/L–MR

MRGN





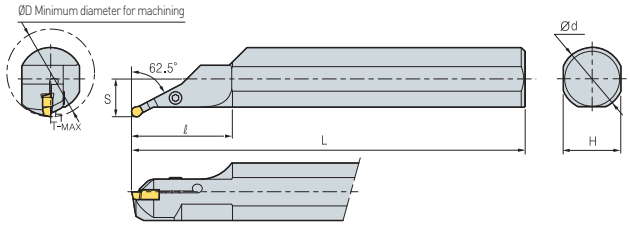
• R type insert

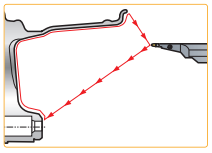
(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Inserts	Screw	Wrench
MGIUR/L	4420-8A-MR	2 43/64	1 1/4	7	2.560	0.315	1.181	1.023	MRGN8N-A/AM/AP	BHA0620	HW50L
	4420-8A5-MR	2 43/64	1 1/4	7	2.560	0.315	1.181	1.023	MRGN8N-A5		

MGIXR/L–MR

MRGN





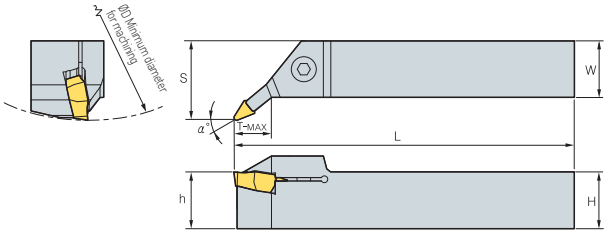
• R type insert

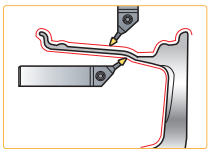
(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Inserts	Screw	Wrench
MGIXR/L	4632-8A-MR	2 3/4	2	14	3.150	0.303	1.811	1.188	MRGN8N-A/AM/AP	BHA0616	HW50L
	4632-8A5-MR	2 3/4	2	14	3.150	0.303	1.811	1.188	MRGN8N-A5		

MGEXR/L

MVGN





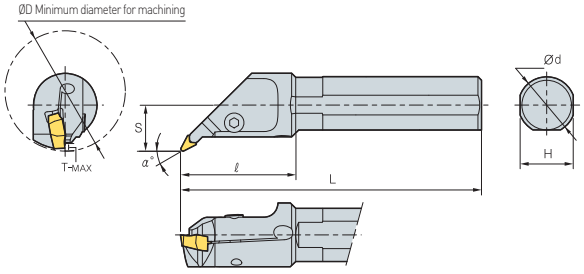
• R type insert

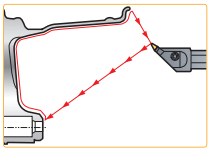
(inch)

Designation		H=(h)	W	L	S	T-MAX	α°	Inserts	Screw	Wrench
MGEXR/L	16N-8A-5V	1	1	6	1.142	0.98	51	MVGN8N-A-R1.2	BHA0620	HW50L
	16N-8A-22.5V	1	1	6	1.378	1.06	22.5	MVGN8N-A-R1.6		

MGIUR/L-MV

MVGN





• R type insert

(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	α°	Inserts	Screw	Wrench
MGIUR/L	4420-8A-NV	2 43/64	1 1/4	7	2.560	0.315	1.181	1.023	27.5	MVGN8N-A-R1.2 MVGN8N-A-R1.6	BHA0616	HW50L

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