

Cutting Tools

2023▶24

Aerospace Industry

Automotive Industry

Shipbuilding Industry

Railway Industry

KORLOY

Index



Grades & Chip Breakers



Turning



Multi Functional Tools



Threading



Milling



Drill



Tooling System



Parts



Technical Information



Old-Fashioned
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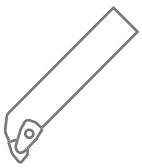
2023▸2024
KORLOY CUTTING TOOLS



Turning



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SAFETY GUIDE OF CARBIDE PRODUCTS

KORLOY Inc. is continuously trying to develop safer and higher quality products
Please be aware of the safety guidelines below prior to using KORLOY Inc. products

- It is generally accepted that the proper handling of cemented carbide tools requires awareness of safety as noted above. For more information, please contact us.
- KORLOY does not accept any responsibility for any accident caused by inappropriate use, abuse of tools, or changes to the products.

1. PL (Product Liability)

In accordance with the PL (Product Liability) law, we have attached a WARNING label on the case of KORLOY products.
There is no warning on the surface of the tools. Please read this safety guidelines before using carbide tools and provide safety education to all users.

2. Basic characteristics of CEMENTED CARBIDE tools

Cemented carbide tools are made of carbides, nitrides, carbonitrides, oxides of Tungsten (W), Titanium (Ti), Alluninyum (Al), Silicon (Si), Tantalum (Ta), Boron (B) etc. and metal component like Cobalt (Co), Nickel (Ni), Chrom (Cr), Molybdenum (Mo) as binder. Cemented carbides tools have high hardness and specific gravity. Generally there's no smell but according to usage and treatment, appreance and color could be changed

3. Precaution for CEMENTED CARBIDE tools

1) Cemented carbides are extremely hard and brittle at the same time. Impact shock or excessive clamping power could cause fracture or breaking of the tool.
2) Cemented carbides have large specific gravity, thus they require special attention as a heavy material when you handle big sizes or large quantities.
3) Cemented carbides have different thermal expansion coefficient with steel and ferrous materials. Shrink fit or swell fit products may cause trouble if they are used at undesirable conditions like extremly high or low temperatures.
4) There are several cemented carbide products having sharp cutting edges.Be careful not to handle the tools with bare hands which may cause cuts or injury, especially when removing the tools from the case, do not touch the cutting edge and be careful not to drop it.
5) Storing carbide tools in a corrosive atmosphere may cause erosion which can reduce toughness.
6) Please refer to the catalouge safety guidance prior to handling the tools.
7) Do not absue tools under inappropriate conditions.

4. Precaution for machining (grinding, welding, EDM) of CEMENTED CARBIDE tools

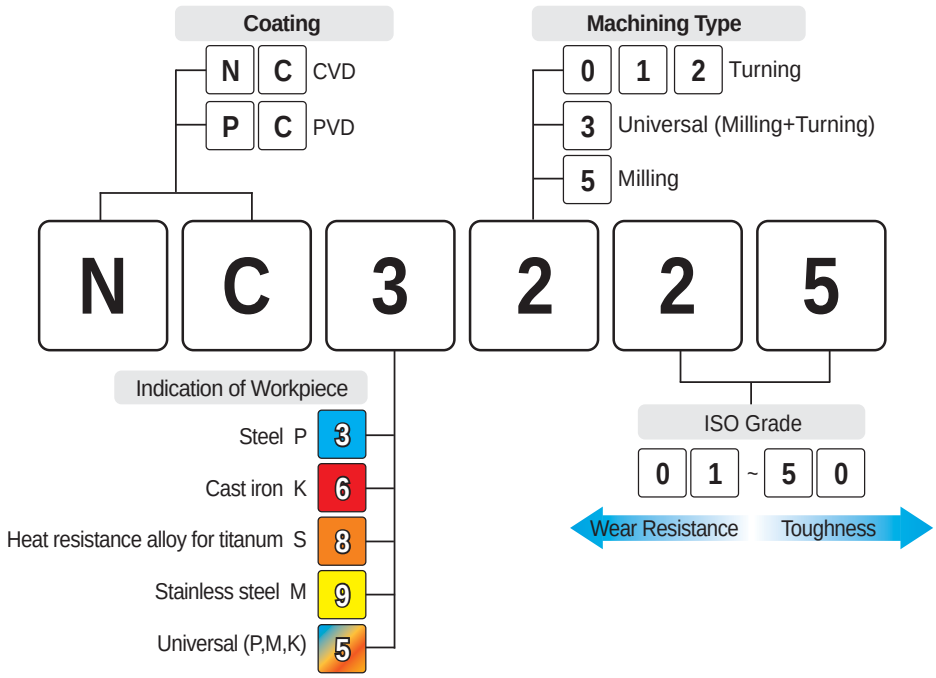
1) Surface condition can affect the toughness of the tool, so it is recommended to use a diamond grinding wheel.
2) Grinding of cemented carbide creates mist and dust. It contains harmful compositions like Cobalt (Co), thus it is recommended to use a mask, mist collection, and other protective facilities. If the dust gets in your skin or eye, rinse immeditely with continously running water.
3) In case of grinding with coolant, coolant contains harmful metal components which cause environmental problems. Handle the coolant according to the manufacturer's recommendations.
4) Check for cracks after re-grinding carbide tool and reuse.
5) Marking with laser or electric pen may cause cracks on the carbide tool. The crack can shortened tool life.
6) EDM of carbide may cause residual cracks on the carbide tool, so if necessary , remove the crack with a grinding process.
7) Brazing of carbide tools at extremly high or low temperatures compare with the melting point of brazing materials may cause loosening or breakage.
8) Overheating a oil base coolant may cause a fire or flames, thus be prepared for fire prevention.

5. METALCUTTING SAFETY

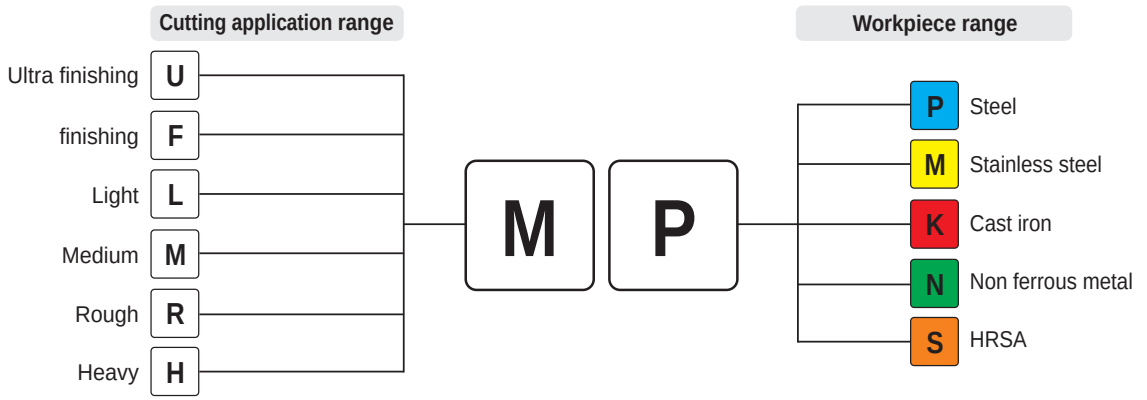
	DANGEROUS FACTOR	SAFETY COUNTERPLAN
Cutting tools	· Sharp cutting edge of cutting tools may cut your bare-hand	· Use gloves when pulling out the insert from the case or mounting it on the machine
	· Inappropriate conditions or usage may cause fragmentation and expel parts of tools which may cause injury	· Use glasses or safety cover for your safety · Use the tools within the recommended range · Please refer to catalogue and safety guidelines first
	· Severe load on tool and premature wear of cutting edge may bring excessive cutting force on tool, causing fracture of the tool and may cause injury	· Use glasses or safety cover for your safety · Change the tool as required before excessive wear or fracture
	· Chips evacuated during cutting are hot and sharp and maycause burns and cuts	· Use glasses or safety cover for your safety · Stop machining and put safety glove on and use a hook tool to remove chips
	· Touching the workpiece immediately after cutting may cause burns	· Use gloves or safety cover for your safety
	· Be aware of sparks, fire, or explosion of hot chips generated during the cutting operation	· Do not use at the place where having explosive materials · Prepare for fire extinguishments
	· In case of high RPM machining, vibration and chattering may occur due to the improper balance of the machine	· Use glasses or safety cover for your safety · Check first if there's any chattering, vibration or strange noises prior to your main cutting operation
	· Touching a burr remaining on the workpiece with a bare-hand may cause a cut	· Do not touch the burr with bare-hand · Use gloves or safety cover for your safety
	· Loose clamping of the workpiece may cause the tool to fracture and result in damage to the cutter body and possible injury	· Clamp the workpiece tightly
	· Tools are operated to right-hand direction normally · Left-hand direction operation can cause fracture of tool and body damage	· Do not use left-hand direction without notice · Check the package of product to check the availability of left-hand operation
Indexable tools	· Loose clamping of inserts and parts may result in ejection of the tool during cutting and may cause serious injury	· Check the clamping of inserts and parts prior to machining,and use original parts only
	· Over loaded clamping of inserts by a lever (such as a pipe) may cause dangerous fracturing of parts and inserts	· Do not use lever inappropriately
	· In case of high speed machining, parts and inserts can be forced out by centrifugal force	· Use within recommended condition · Use glasses or safety cover for your safety
Rotating tools	· Since cutter has sharp cutting edges touching with a bare-hand may cause a cut	· Use gloves or safety cover for your safety
	· It is dangerous to use glove with rotating machine · Contact with body or clothes is dangerous with rotating parts	· Do not wear gloves when you work with rotating machine · Keep your body and clothes away from rotating machine
	· Vibration generated by balancing trouble may cause a fracture and ejection of the tool which may cause serious injury	· RPM should be controled within recommended condition · Check the balance of rotating part periodically
	· In case of drilling, the uncut bottom core can fly out of the part with high speed and cause serious injury	· Use gloves or safety cover for your safety
	· The edges of small diameter drill are sharp and easy to break	· Concentrate on safety regulation in using tools. · Use glove or safety cover for your safety.
Brazed tools	· Fragmentation and ejection of brazed carbide tip may cause injury	· Check the brazed tip before using · Do not use at high temperature cutting condition
ETC	· There's a possibility of breaking the carbide tip after several brazing	· Do not use brazing a tip that has been brazed several times
	· Abusing may cause fragmentation of tool and is very dangerous	· Stick to safety regulations and guidelines

KORLOY Inc. Code System

Grade Name for Coated Carbide



Chip Breaker



The same chip breaker code is used for both negative type and positive type.

Terminology of Tool Formula

TERM	CODE	UNIT
Tool diameter	D	inch
Cutting speed	vc	sfm
Revolution per minute	n	min
Feed per minute	vf	ipm
Feed per revolution	fn	ipr
Feed per tooth	fz	ipr
Tooth	z	-
Axial depth of cut	ap	inch
Radial depth of cut	ae	inch
Peak feed	pf	inch

TERM	CODE	UNIT
Horse power requirement	Pc	kW
Specific cutting resistance	kc	MPa
Torque	Mc	N.m
Thrust	Tc	N
Cycle time	tc	min
Tool life	T	min
Flank wear	V_S	inch
Crater wear	Kt	inch
Nose radius	r	inch

Introduction of Digital Catalogue

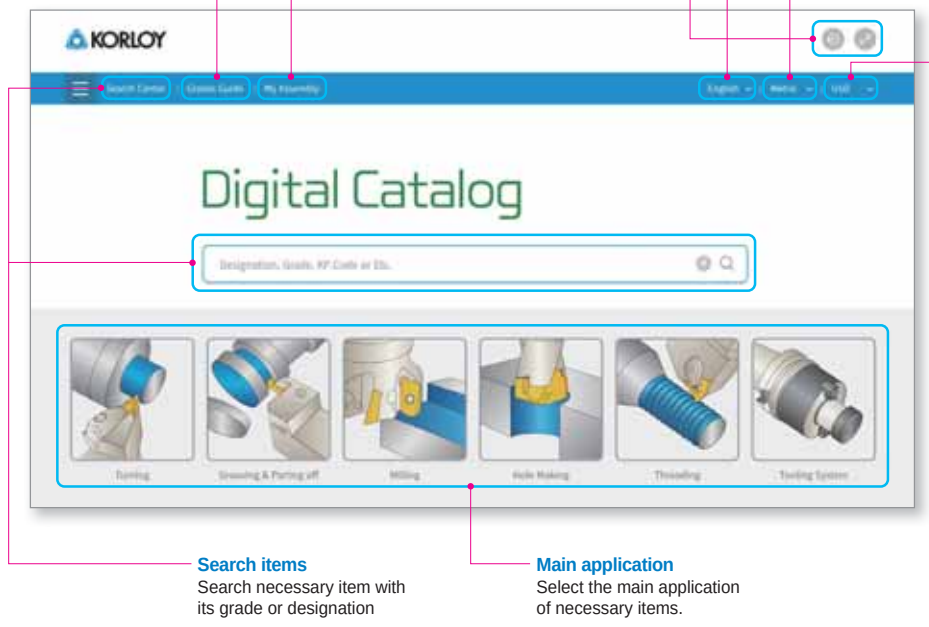
1. Connect to the Digital Catalogue on PC or Mobile

https://catalog.korloy.com

❸ **Special tooling**
For special tooling such as gear, edge miller, railway, non-standard indexable & facemill

2. Guideline for Main Screen

PC

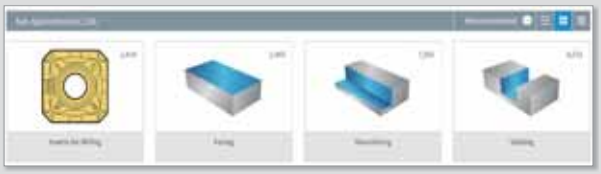


Mobile



3. Details

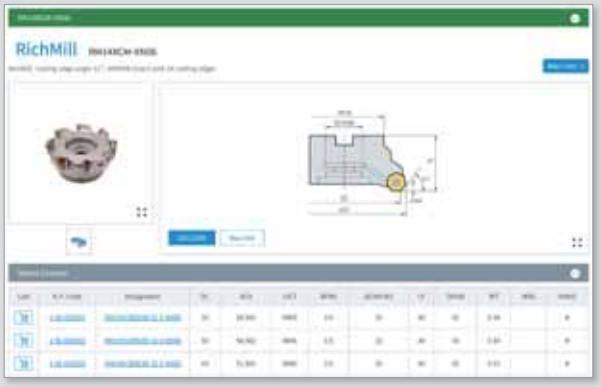
Sub application



Item group



Item

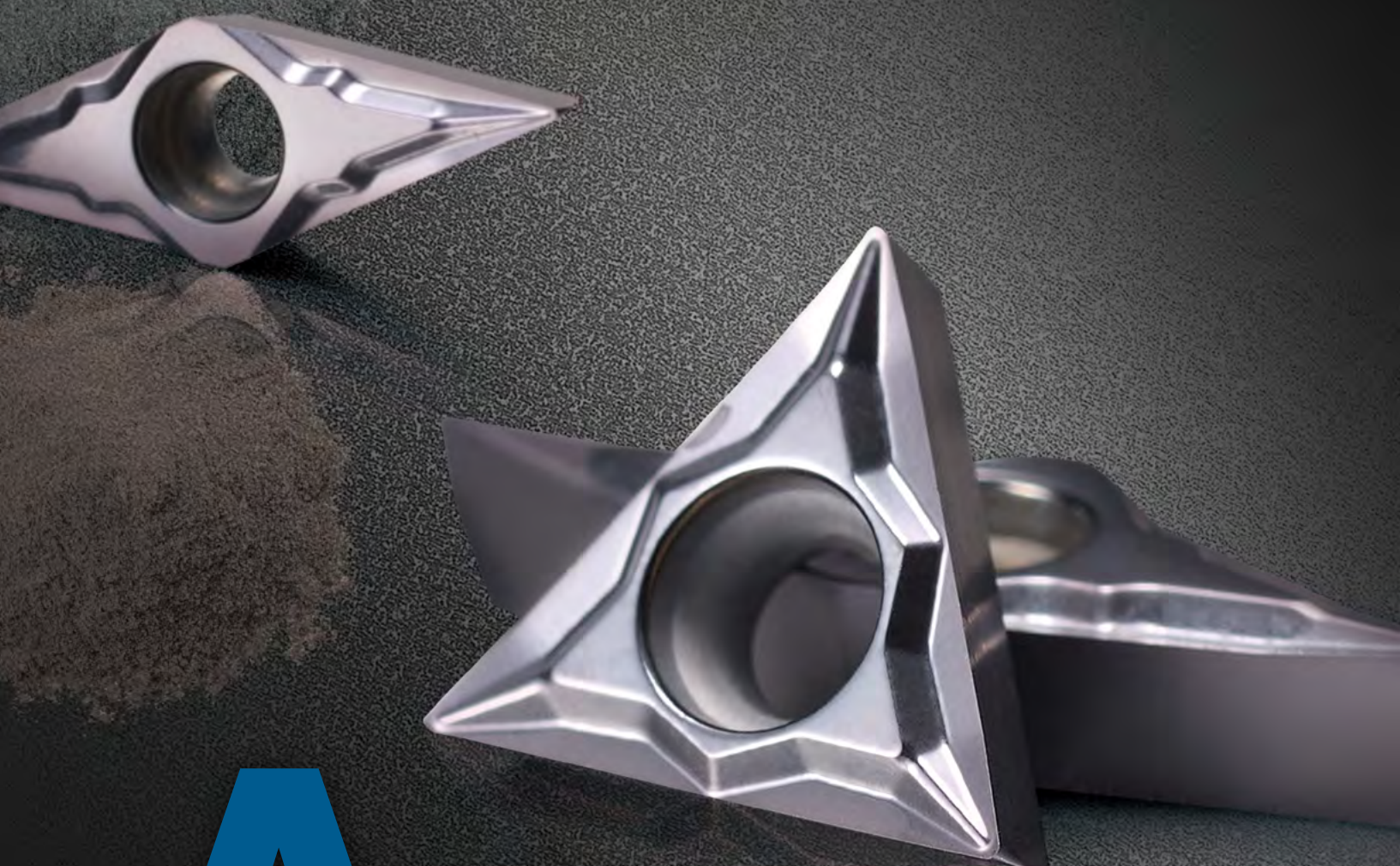


Item data, 2/3D modeling, etc.



GRADES & CHIP BREAKERS

KORLOY's new grades are designed with optimal substrates for each application and are PVD coated for high temperature, high hardness and oxidation resistance, or CVD coated for high tempeure and wear resistance. Additionally, the improved post-coating treatment provides superior surface finishes to ensure the highest levels of quality and productivity.



A

A

Grades

A02 KORLOY Grades System

Turning Grades

A04 Turning Grade Selections
A05 CVD Coated Grades
A10 PVD Coated Grades
A12 Uncoated Carbide Grades
A13 Cermet Grades
A15 Coated Cermet Grades

Milling Grades

A16 Milling Grade Selections
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A23 Uncoated Carbide Grades
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Solid Endmills & Solid Drills

A25 Solid Endmills Grade Selections
A26 Solid Endmills Grades
A27 Solid Drills Grade Selections
A28 Solid Drills Grades

Others (Turning/Milling/Endmills)

A29 Diamond Coated Grades
A30 DLC Coated Grades
A31 cBN Insert Grades
A36 PCD Insert Grades

Chip Breakers

A37 Chip Breakers for Turning
A42 Chip Breakers for Milling
A49 Chip Breakers for Drilling

Grades System

Cutting Tool

Uncoated carbide	P	Steel	ST10	ST20	ST30A								
	M	Stainless steel	U20										
	K	Cast iron	H01	H05	G10								
	S	Titanium alloy	H01	H05									
	N	Aluminum ally/Copper ally	H01	H05									
	H	Hardened steel	H01										
Coated carbide for turning	P	Steel	NC3215	NC3225	NC3120	NC3030	NC5330	PC5300	PC5400	PC3035			
	M	Stainless steel	PC8105	PC8110	PC8115	PC8120	NC9115	NC9125	NC5330	NC9135	PC5300	PC9030	PC5400
	K	Cast iron	NC6310	NC6315	NC5330	PC5300	PC5400						
	S	Heat resistant alloy	PC8105	PC8110	PC8115	PC8120	NC9125	NC9135	PC5300	PC5400			
	N	Non-ferrous metal	ND3000	PD1005	PD1010								
	H	Hardened steel	PC8105	PC8110	PC8115								
Multi-functional	P	Steel	NC3210	NC3225	NC3030	NC5330	PC3035						
	M	Stainless steel	PC9030	PC5300									
	K	Cast iron	NC6315	PC5300									
	S	Heat resistant alloy	PC8110	PC5300									
	N	Non-ferrous metal	H01	H05									
	H	Hardened steel	PC8110	PC5300									
Coated Carbide for Milling	P	Steel	NC5330	NCM535	PC3700	PC5300	PC5400	NCM545					
	M	Stainless steel	NC5330	PC5300	PC9530	PC5400	PC9540						
	K	Cast iron	PC6510	NC5330	NCM535	PC5300	PC5400	NCM545					
	S	Heat resistant alloy	PC5300	PC5400	PC9540								
	N	Non-ferrous metal	ND3000	PD1005	PD1010								
	H	Hardened steel	PC2005	PC2010	PC2015	PC210F	PC2505	PC2510					
Coated carbide for drills, endmills	P	Steel	PC3700	PC5300	PC5335	PC9530	PC9540	NC5330	NCM535				
	M	Stainless steel	PC5300	PC5335	PC9530	PC9540							
	K	Cast iron	PC6510	PC5300									
	S	Heat resistant alloy	PC5300	PC9530	PC9540								
	N	Non-ferrous metal	H01										

Grades System

Cutting tool

Turning ce rmet	P	Steel	CN1500	CN2500						
	K	Cast iron	CN1500	CN2500						
Coated carbide for turning cermet	P	Steel	CC1500	CC2500						
	K	Cast iron	CC1500	CC2500						
Milling cermet	P	Steel	CN2500	CN30						
Solid endmills	P M K	Steel	PC203F	PC215F	PC303S	PC310U	PC315E	PC320	PC320S	
	S	Heat resistant alloy	PC320	PC320S	SL					
	N	Non-ferrous metal	ND3000	ND2100	PD1005	PD1010	PC210C	H01	H05S	
	H	Hardened steel	PC203F	PC303S	PC310U					
Solid drills	P M K	Steel	PC325U	PC215G	PC315G	PC230F				
	S	Heat resistant alloy	PC325T							
	N	Non-ferrous metal	FG2	FA1	ND2100					
cBN	K	Cast iron	DBN500	DBN700A						
	S	Heat resistant alloy	DBN700							
	H	Hardened steel	DB1000	DB2000	DBNX20	DBN250	DBN350	DBN400		
Coated cBN	H	Hardened steel	DNC100	DNC250	DNC350	DNC400				
PCD	N	Non-ferrous metal	DP90	DP150	DP200					

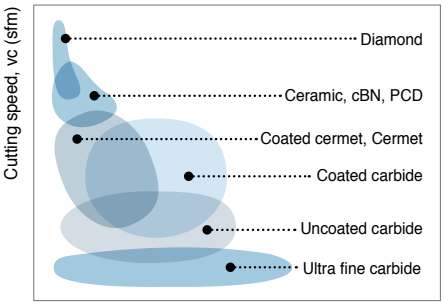
Wear resistance tool

Ultra fine grain cemented carbide	Z	Ultra fine grain cemented carbide	FS1	FA1	FCC		
Uncoated carbide	V	Wear parts	D1	D2	D3	G5	
	I	Corrosion resistance	IN10	IN20	IN40		

Mining tool

Uncoated carbide	E	General	GR10	GR20	GR30	GR35	GR40

Application range



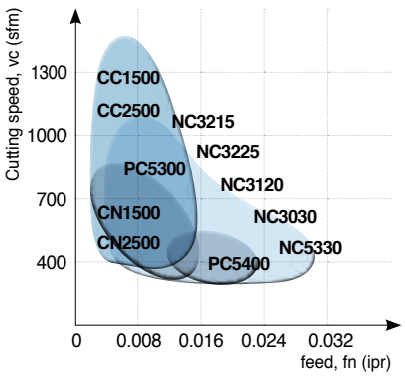
Turning Grade Selections

Selection system

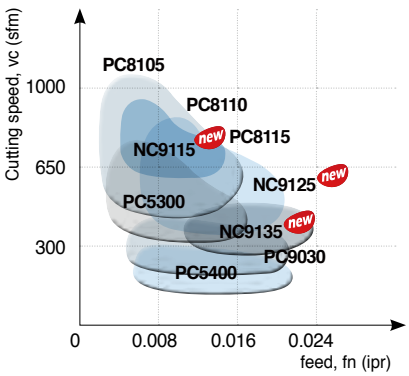
Workpiece	P						M				K				S				N				H			
	Steel						Stainless steel				Cast iron				HRSA				Nonferrous				Hardened			
ISO	P01	P10	P20	P30	P40	P50	M10	M20	M30	M40	K01	K10	K20	K30	S01	S10	S20	S30	N01	N10	N20	N30	H01	H10	H20	H30
Coated carbide		NC3215	NC3225	NC3120	NC3030	NC5330		PC8105	PC8110	PC8115		NC6310 new	NC6315	NC5330		PC8105	PC8110	PC8115		ND3000 new	PD1005 new	PD1010 new		PC8105	PC8110	PC8115
						PC5300		PC8120 new	NC9115 new	NC9125 new				PC5300		PC8120 new	NC9125 new	NC9135 new								
						PC5400		NC5330	PC5300	PC9030				PC5400		PC5300	PC5400									
								NC9135 new	PC5400																	
Cermet		CC1500	CC2500	CN1500	CN2500							CC1500	CC2500	CN1500	CN2500											
cBN / PCD											DBN700	DBN800	DBN500			DB7000				DP90	DP150	DP200		DNC100	DNC250	DNC400
																										DNC350
Uncoated carbide		ST10	ST20	ST30A				U20				H01	H05	G10		H01	H05			H01	H05			H01		

Application range of turning grades

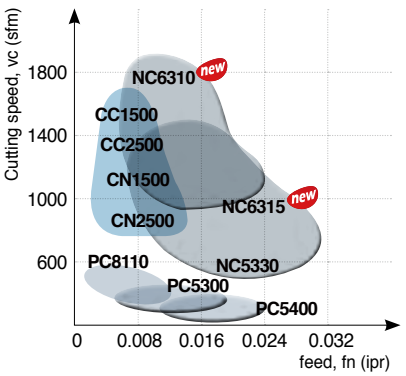
P Steel



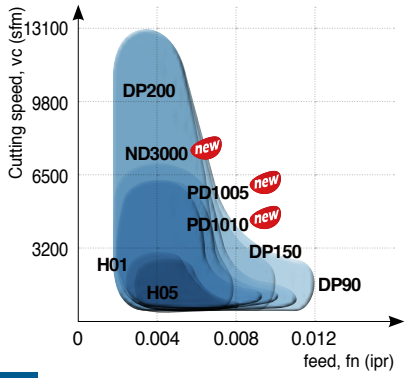
M Stainless steel



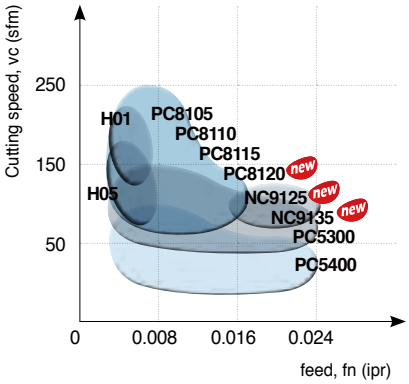
K Cast iron



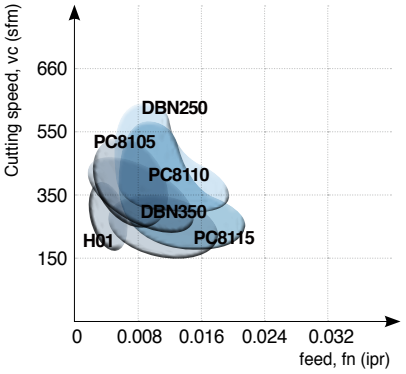
N Non-ferrous metal



S Heat resistant alloy



H Hardened steel



CVD Coated Grades

NC3215 / NC3225

- Universal grade especially for machining forged automobile components and bearing steel both in continuous and interrupted cutting
- Available for all kinds of steels - carbon steel, alloy steel, rolled steel, tool steel, mild steel, bearing steel and other special kinds of steel
- New coating technology increases welding resistance and chipping resistance, which leads to longer tool life.

Features

• Stable tool life
→ Higher production stability

• Longer tool life & Higher removal rate
→ High cutting conditions and shorter cutting time available

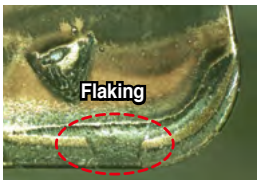
• Ideal combination of a grade and chip breakers
→ Prolongs tool life
→ Wide applications ranging from roughing to finishing

Stable tool like



NC3215/NC3225

Unstable tool life



Competitor

Increased wear resistance



NC3215/NC3225

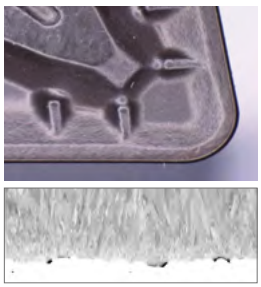
Poor wear resistance



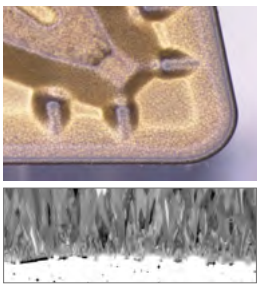
Competitor

• Disperse cutting force ⟶ Reduce chipping ⟶ Increase tool life ⟶ Improved productivity

New coating

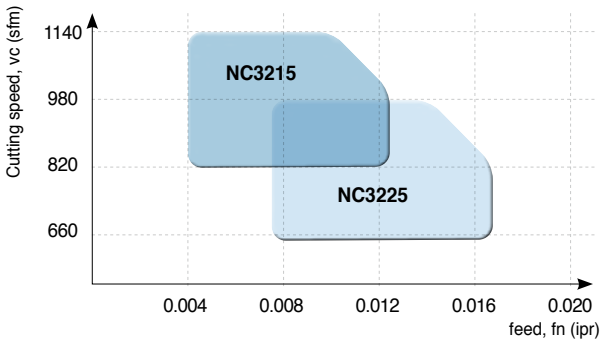


Previous coating

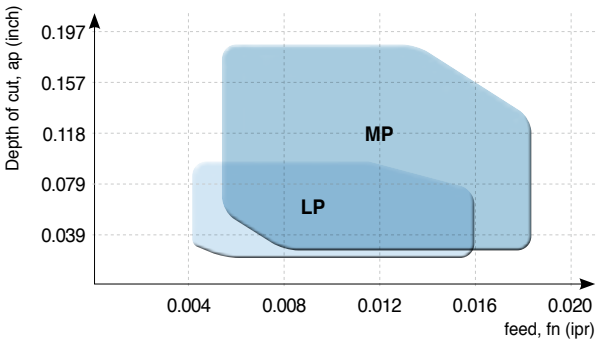


Application range

Grades line up



MP / LP chip breaker line up



CVD Coated Grades

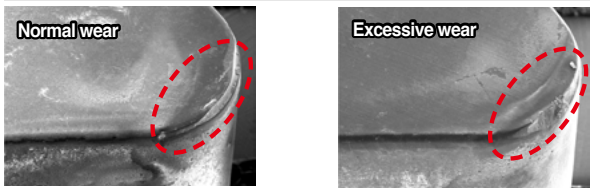
CVD coated grade for high efficiency and quality turning of cast iron

NC6310 new / NC6315 new

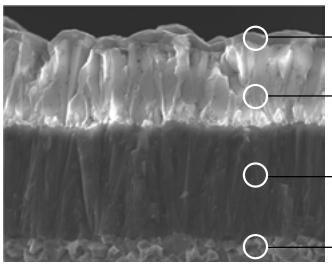
- CVD coating with improved wear resistance and chipping resistance.
- Solutions for the most common issues in cast iron machining: Preventing excessive wear on rake and flank surfaces of insert, chipping and burr

Features of NC6310

Normal wear on rake surface and nose radius

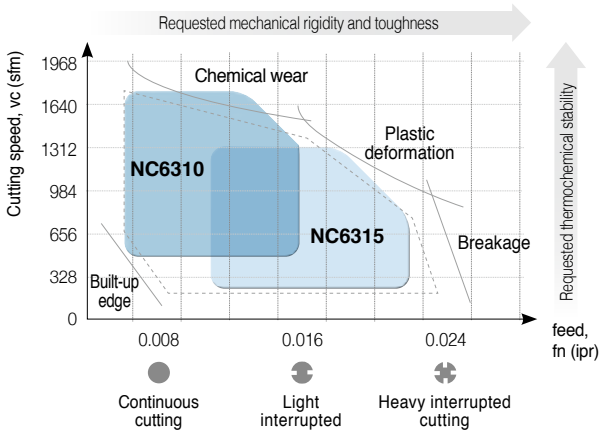


NC6310 | Existing grade (K10)



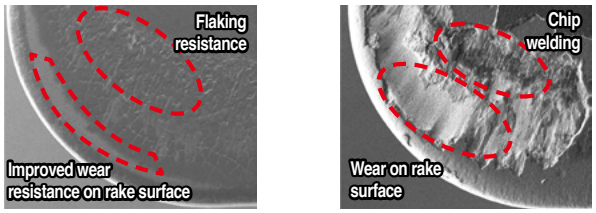
- Titanium layer with excellent lubrication identifying wear
- Alumina layer specialized for heat resistance
- Titanium layer with improved fracture resistance
- Functional substrate optimized for high speed cast iron machining

Recommended machining range for each grade



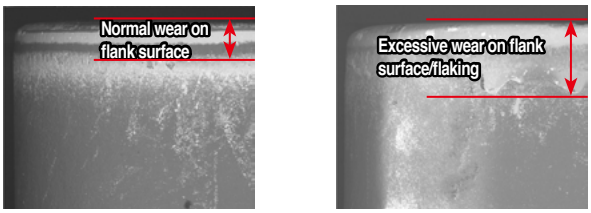
Features of NC6315

Improved flaking resistance and wear resistance on rake surface

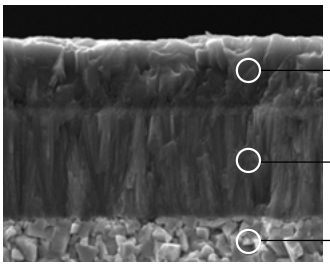


NC6315 | Existing grade (K15)

Normal wear on flank surface



NC6315 | Existing grade (K15)



- Alumina layer with better surface finish and improved wear resistance and welding resistance
- Titanium layer with improved fracture resistance
- Functional substrate optimized for high feed and heavy interrupted cast iron machining

CVD Coated Grades

Turning grade for stainless steel

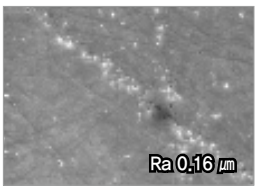
NC9115 new / NC9125 new / NC9135 new

- Optimized for reducing built-up edges, notch wear, plastic deformation and burrs, and for machining stainless steel
- Ideal combination of a grade and MM/RM chip breakers for stable tool life and wide applications ranging from roughing to finishing
- Stable tool life even at high speeds, feeds and depth of cuts (for STS316, vc over 492 sfm available), shortening cutting time
- Excellent versatility responding to workpiece change, covering the austenite, the martensite and the ferrite
- NC9115 is for P20 class, mild steel and forged steel machining.

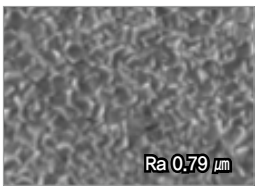
Features

• Improved surface finish thanks to the new lubricative CVD coating

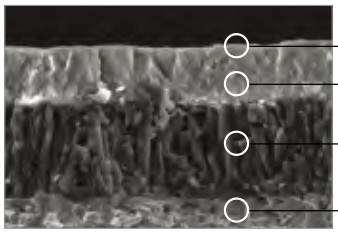
Lubricative coating layer to prevent built-up edge



NC9100 Series



Existing coating



Top coat with improved welding resistance

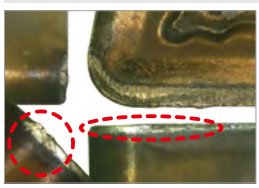
Alumina coating layer for high speed cutting

Titanium coating layer with stronger resistance to chipping

Tough substrate optimized for continuous cutting and both light & heavy interruption

• Lubricative coating layers → Improves welding resistance

Inhibited built-up edge and blade damage



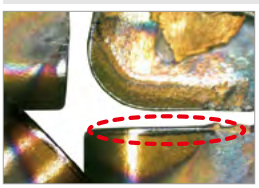
NC9125 (M25)



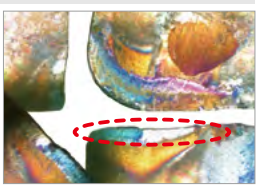
Competitor (M25)

• Coated layers of stronger chipping resistance and the substrate of high toughness → Inhibits notch wear creation

Inhibited wear on notch and relief surface



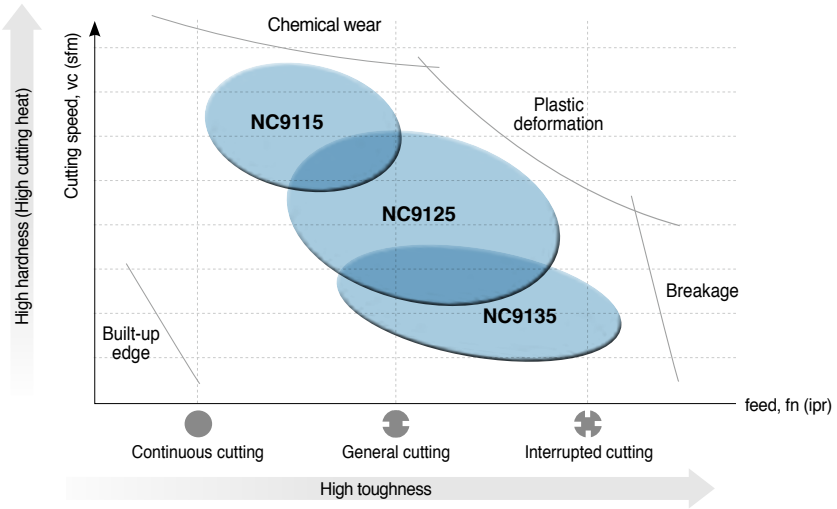
NC9135 (M35)



Competitor (M35)

CVD Coated Grades

Grade line up



Recommended grade and chip breaker per stainless steel type

[Austenitic stainless steel]

Grade	Cutting speed (sfm)				
	164	328	492	656	820
NC9115			525	722	
NC9125			492	656	
NC9135		328	492		

[Duplex stainless steel]

Grade	Cutting speed (sfm)				
	164	328	492	656	820
NC9115			394	525	
NC9125			328	459	
NC9135		197	328		

[Ferritic / Martensitic stainless steel]

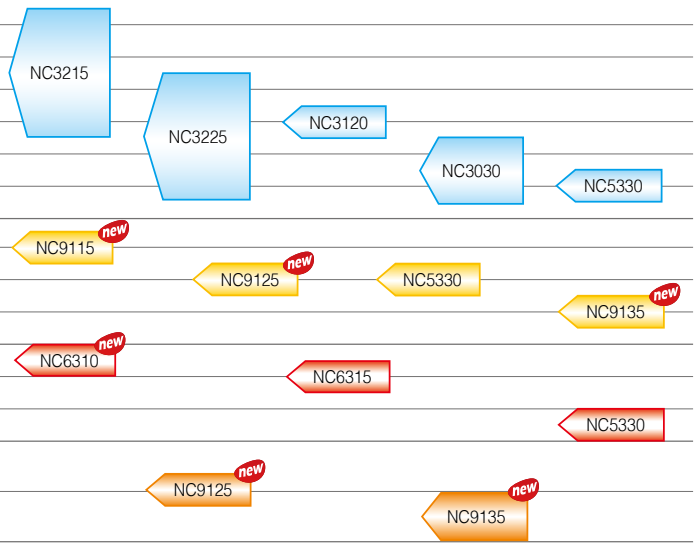
Grade	Cutting speed (sfm)				
	164	328	492	656	820
NC9115			492		820
NC9125			394	722	
NC9135		328	492		

[Precipitation hardened (PH) stainless steel]

Grade	Cutting speed (sfm)				
	164	328	492	656	820
NC9115	164	361			
NC9125	131	361			
NC9135	98	328			

Selection system of CVD coated grade

Workpiece		Machining type	Recommended grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	Continuous cutting	NC3215	968 (558~1148)	P05	
					P10	
		Interrupted cutting	NC3225	853 (492~984)	P15	
					P20	
			NC3120	853 (394~984)	P25	
			NC3030	673 (394~820)	P30	
			NC5330	605 (360~853)	P35	
M	Stainless steel	Continuous cutting	NC9115 new	787 (722~853)	M10	
			NC9125 new	689 (623~755)	M20	
		Interrupted cutting	NC9135 new	591 (525~656)	M30	
					M40	
K	Cast iron	Continuous cutting	NC6310 new	1247 (984~1800)	K10	
			NC6315	919 (656~1476)	K20	
		Interrupted cutting	NC5330	623 (361~886)	K30	
S	HRSA	Continuous cutting	NC9125 new	131 (66~197)	S10	
		Interrupted cutting	NC9135 new		S20	



The features of CVD coated grade

CVD coated grade	ISO	Features
NC3215	P05~P25	• Continuous machining of general steel and forged steel at high speed • Substrate with excellent thermal crack/plastic deformation resistance, coating with improved chipping resistance for continuous machining • MT-TiCN + Al_2O_3 + TiN
NC3225	P15~P35	• Universal grade for general steel and forged steel • 1st recommended grade for general machining with the use of high toughness substrate and coating layer with improved welding/chipping resistance • MT-TiCN + Al_2O_3 + TiN
NC3120	P20~P25	• Medium to roughing for steel • Combining excellent fracture resistance substrate with chipping resistance and heat resistance Al_2O_3 increased stability • MT-TiCN + TiC + Al_2O_3
NC3030	P25~P35	• Medium to low speed machining of steel and interrupted roughing • Harmony between substrate with excellent wear/fracture resistance and Al2O3 film with excellent thermal/chipping resistance • Increased stability in wide ranges of cutting conditions • MT-TiCN + TiC + Al_2O_3 + TiN
NC5330	P30~P35 M25~M35 K15~K25 S15~S25	• Stainless Steel - General cutting for mild steel & forging steel • Excellent cutting performance in hard to cut materials which are vulnerable to built up edge, due to the high tough substrate with improved fracture resistance and the coated layers • MT-TiCN + Al_2O_3 + TiN
NC9115 new	M10~M20	• High speed cutting for ferritic and martensitic stainless steels • MT-TiCN + Al_2O_3 + TiN
NC9125 new	M20~M30	• General cutting of stainless steel and heat resistant alloys • MT-TiCN + Al_2O_3 + TiN
NC9135 new	M30~M40	• Interrupted cutting of stainless steel and heat resistant alloys • MT-TiCN + Al_2O_3 + TiN
NC6310 new	K01~K10	• High speed and continuous cutting of grey cast iron • Increased tool life due to coating layer with high wear resistance • MT-TiCN + Al_2O_3 + TiN
NC6315	K10 ~ K20	• Universal grade for ductile and gray cast Iron • Excellent performance thanks to the alumina (Al_2O_3) coating's improved grip on the tough substrate • MT-TiCN + Al_2O_3

PVD Coated Grades

Turning grade for heat resistant alloy and stainless steel

PC8105

- Micro grain carbide minimizes chipping of cutting edge due to enhanced edge strength
- Latest PVD coating technology with high hardness and high temperature oxidation resistance
- Excellent tool life when finishing heat resistant alloys and stainless steels at high speeds

PC8115

- Ultra fine matrix technology increases wear resistance and chipping resistance.
- PVD coating technology with high hardness and oxidation resistance at high temperature
- Strong cutting edge and excellent chipping resistance guarantees stable machining
- Long tool life when machining heat resistant alloy and stainless steel at middle to low speed and medium cutting to roughing

PC8110

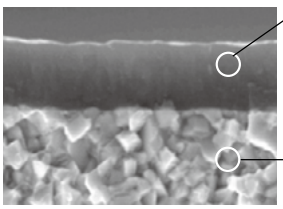
- Substrate with superior wear resistance and plastic deformation resistance at high temperature
- PVD coating technology with high hardness and oxidation resistance at high temperature
- Long tool life when machining heat resistant alloy and stainless steel at high speed

PC8120 new

- Control technology for uniform ultra-fine substrate increases wear resistance and chipping resistance.
- The new PVD dioxide film enhances oxidation resistance and heating resistance.
- Special technology of coating surface treatment prevents chipping and realizes stable machining.

Features

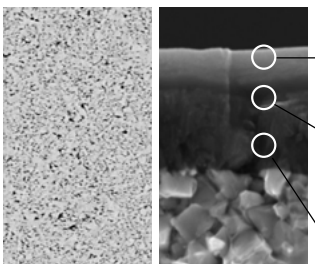
Features of PC8105/10/15 series



It prevents wear at a high temperature to apply excellent surface roughness and coating with oxidation resistance and high hardness

It improves wear resistance to equalize submicron matrix, secure stability between corners and improve chipping- and wear resistance

PC8120

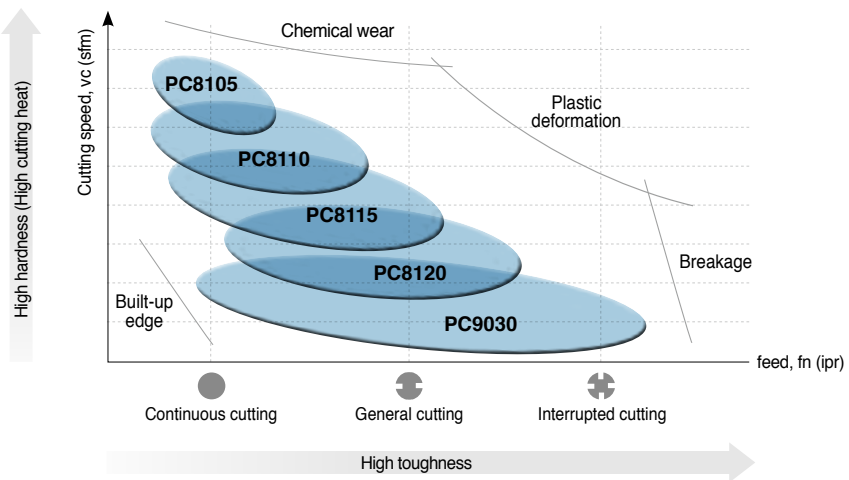


PVD multi-layer
→ Reducing cracks

PVD oxidation layer
→ Good oxidation resistance and heating resistance

PVD nitride
→ Good wear resistance

Grades line up



Selection system of PVD coated grade

Workpiece		Machining type	Recommended grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	Continuous cutting	PC5300	574 (328~820)	P30	PC5300
		Interrupted cutting		476 (262~394)	P40	PC5400
			PC5400	410 (262~525)	P50	
M	Stainless steel	Continuous cutting	PC8105	574 (394~755)	M01	
			PC8110	525 (361~689)	M10	PC8105 PC8110
			PC8115/8120 new	492 (328~656)	M20	PC8115 PC8120 new
		Interrupted cutting	PC5300	443 (262~623)	M30	PC5300 PC9030
			PC9030	427 (262~591)	M40	PC5400
			PC5400	361 (262~459)	M50	
K	Cast iron	Continuous cutting	PC8110	443 (312~591)	K10	PC8110
					K20	PC5300
		Interrupted cutting	PC5300	344 (246~459)	K30	PC5400
S	Heat resistant alloy	Continuous cutting	PC8105	180 (131~230)	S01	PC8105
			PC8110	164 (115~213)	S10	PC8110 PC8115 PC8120 new
			PC8115/8120 new	148 (98~197)	S20	PC5300
		Interrupted cutting	PC5300	131 (66~197)	S30	PC5400
			PC5400	115 (66~164)	S40	
H	Hardened	Interrupted cutting	PC8105	361 (262~459)	H01	PC8105
			PC8110	328 (230~427)	H05	PC8110
			PC8115	295 (213~377)	H10	PC8115
					H15	

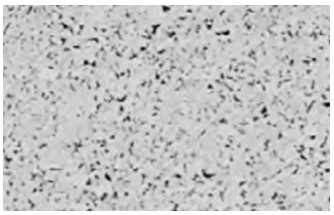
The features of PVD coated grade

PVD coated grade	ISO	Features
PC8105	M05~M15 S01~S10 H01~H05	• For high speed and continuous finishing of hard-to-cut materials and STS • Excellent cutting performance with high wear resistance and oxidation resistance • Ultra fine substrate and the new TiAlN coating layer
PC8110	M10~M20 K10~K20 S05~S15 H05~H10	• For high speed and continuous medium cutting of hard-to-cut materials and STS • Excellent tool life with high wear/plastic deformation resistance at high temperature • New TiAlN coating layer and substrate with excellent thermal resistance
PC8115	M15~M25 S10~S20 H10~H15	• For medium to low speed and medium to rough cutting of hard-to-cut materials and STS • Excellent tool life with high wear resistance and chipping resistance • Ultra fine substrate and the new TiAlN coating layer
PC8120 new	M15~M25 S10~S20	• For hard-to-cut materials and STS roughing • Applied ultra-fine substrate and new PVD oxidation layer • Better chipping resistance and fracture resistance than PC8115
PC5300	P30~P40 M20~M30 K20~K25 S15~S25	• Universal grade for stainless,HRSA,steel and interrupted cast iron machining • High chipping and welding resistance for longer tool life • New TiAlN coating and ultra fine grain substrate adopted
PC9030	M25~M35	• Medium,roughing and heavy interrupted cutting for stainless steel • TiAlN coating and ultra fine grain substrate adopted • High chipping and welding resistance for stable machining
PC5400	P35~P45 M30~M40 K30~K35 S25~S35	• For medium cutting for hard-to-cut materials, stainless steel, steel, and cast iron at medium or low speed • Stable machinability with chipping resistance, fracture resistance and welding resistance • Ultra fine substrate with high toughness and new AlCiN layer

Uncoated Carbide Grades

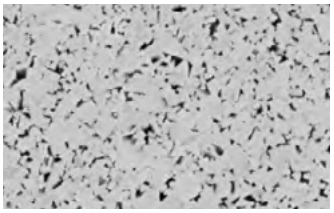
Uncoated carbide grade for turning application of titanium

H01



- Increased wear resistance and chipping resistance with the use of ultra fine substrate
- Improved welding resistance and chipping resistance with the use of special surface treatment and sharp cutting edge of VP chip breaker
- Excellent tool life when finishing titanium alloy at high speed

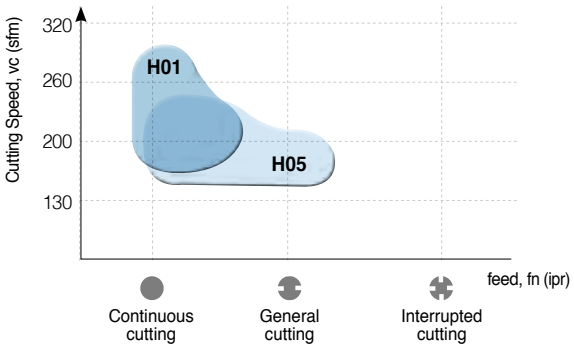
H05



- The 1st recommended grade for machining titanium alloy in a variety of cutting conditions
- Improved welding resistance and chipping resistance with the use of special surface treatment and sharp cutting edge of VP chip breaker
- Ideal for medium cutting of titanium alloy

Grade line up

Titanium alloy



Selection system of uncoated carbide grade

Workpiece		Recommended grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	ST10	361 (230~459)	P10	ST10
		ST20	262 (164~361)	P20	ST20
		ST30A	230 (131~295)	P30	ST30A
M	Stainless steel	U20	230 (131~295)	M25	U20
K	Cast iron	H01	344 (197~459)	K01	H01
		H05	344 (197~459)	K10	H05
		G10	361 (164~394)	K20	G10
N	Aluminum alloy	H01	1969 (1476~2461)	N10	H01
	Copper alloys	H05	1394 (1050~1739)	N20	H05
S	Titanium alloy	H01	180 (131~230)	S01	H01
		H05	164 (115~213)	S10	H05
H	High hardness steel	H01	262 (180~344)	H10	H01

Main composition and application range

Workpiece	Composition	Features	Workpiece
P	WC-TiC-TaC-Co	Heat resistance, excellent plastic deformation resistance	Carbon steel, Alloy steel, Stainless steel
M	WC-TiC-TaC-Co	General tools stable heat resistance with strength	Carbon steel, Alloy steel, Stainless steel, Cast steel
K	WC-Co	High strength and superior wear resistance	Cast iron, Non-ferrous metal, Plastic, etc.
S	WC-Co	Excellent wear resistance and chipping resistance	Titanium alloy

The physical properties of uncoated carbide grade

Workpiece	Grade	Hardness (HRA)	TRS (kgf/mm^2)	Young's modulus ($10^3 kgf/mm^2$)	Thermal expansion coefficient ($10^{-6}/°C$)	Thermal conductivity ($cal/cm \cdot sec \cdot °C$)
P	ST10	92.1	175	48	6.2	25
	ST20	91.9	200	56	5.2	45
	ST30A	91.3	230	53	5.2	-
M	U20	91.1	210	-	-	88
	ST30A	91.3	230	53	5.2	-
K	H01	92.9	210	66	4.7	109
	G10	90.9	250	63	-	105
S	H01	92.9	210	66	4.7	109
	H05	91.8	250	-	-	-

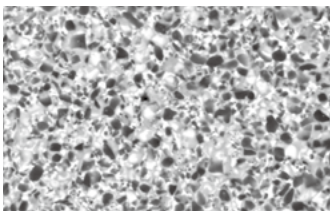
1KPa = $102kgf/m^2$, 1w/mk = $2.39 \times 10^{-3} cal/cm \cdot sec \cdot °C$

Cermet Grades

Solution for turning application of steel

CN1500

- For continuous machining of cold/hot forged steel and Sintered ferrous alloy at high speed and low depth of cut
- Excellent wear resistance and crater resistance
- Improved surface roughness acquired by optimized cutting edges



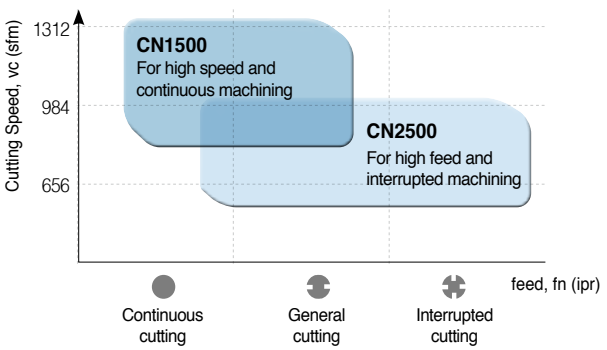
CN2500

- For high interrupted machining of cold/hot forged steel and Sintered ferrous alloy at high feed and high depth of cut
- Excellent resistance against chipping, fracture and thermal crack
- Improved surface roughness acquired by optimized cutting edges

Recommended cutting condition

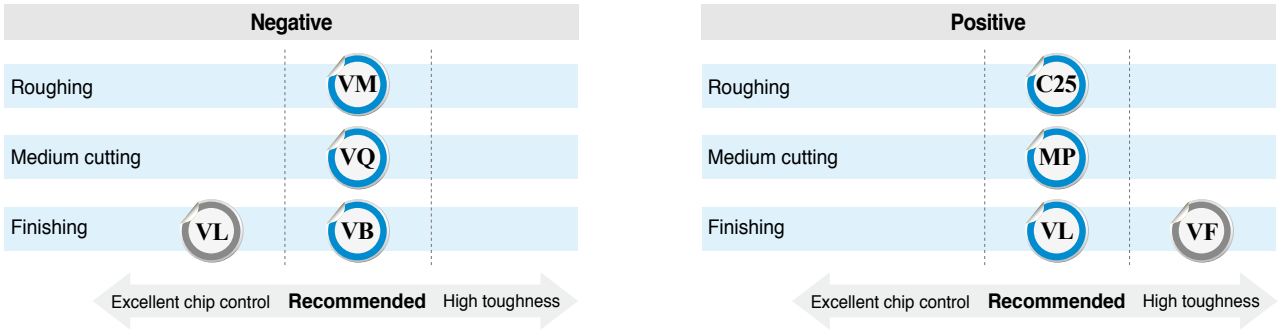
Division	Workpiece	Grade	Recommended cutting speed (sfm)		
			Minimum	Recommended	Maximum
Turning	1010 (AISI) C10E (DIN)	CN1500	492	**886**	1312
		CN2500	427	**787**	1148
	1045 (AISI) C45 (DIN)	CN1500	492	**820**	1148
		CN2500	427	**722**	984
	4140(H)(AISI) 42CrM04	CN1500	394	**722**	984
		CN2500	328	**656**	820

Grades line up



Cermet Grades

Chip breakers line up



Selection system of cermet grade

Workpiece		Machining type	Recommended grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	Continuous cutting	CN1500	820 (492~1148)	P10	CN1500
		Interrupted cutting	CN2500	722 (427~984)	P20	CN2500
					P30	

Comparison of chip breakers

Insert type	Machining type	Application range	Chip breakers				
			KORLOY	Competitor A	Competitor B	Competitor C	Competitor D
Nega type	Continuous cutting	For machining mild steel with enhanced chip control	**VL**	FA	GP	TF	FA
	General cutting	For low interrupted cutting with stronger cutting edges than VG chip breaker	**VB**	FG	XP CQ	TSF TS	LU SE
	General cutting	For medium cutting to finishing at low interruption	**VQ**	MC	HQ	AS, ZM	SU
	Interrupted cutting	For medium cutting to roughing at high interruption	**VM**	MT	HS	TM	GU
Posi type	Continuous cutting	For machining mild steel with enhanced chip control	**VL**	FA	GP	PF	FP
	Continuous cutting	Enhanced chip control when machining internal diameter with stronger cutting edges than VL chip breaker	**VF**	FG-PC	HQ	PS	LU
	General cutting	For medium cutting to finishing at low interruption	**MP**	FG	HQ	PS	LU
	Interrupted cutting	For medium cutting to roughing at high interruption	**C25**	MT	GK	24	SC

Coated Cermet Grades

Coated cermet for machining carbon steel, alloy steel and sintered ferrous components

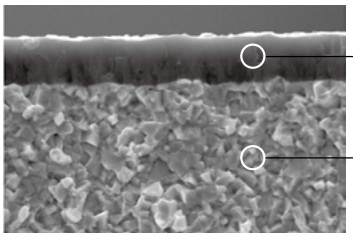
CC1500 new

- Maximized resistance to built-up edge and oxidation in continuous cutting at high speeds and low depth of cuts
- Superior wear resistance vs. existing tools in continuous cutting of carbon steel and alloy steel

CC2500 new

- Maximized resistance to built-up edge and oxidation in interrupted cutting at high feeds and high depth of cuts
- Superior impact resistance vs. existing tools in interrupted cutting of carbon steel and alloy steel

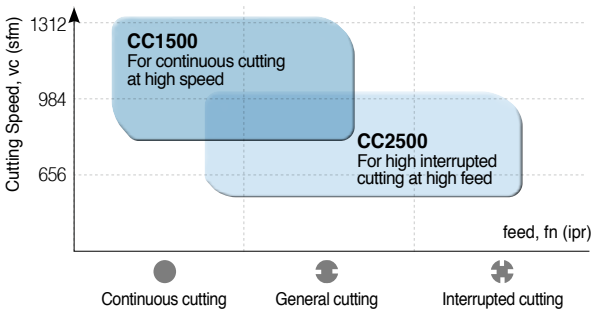
Features



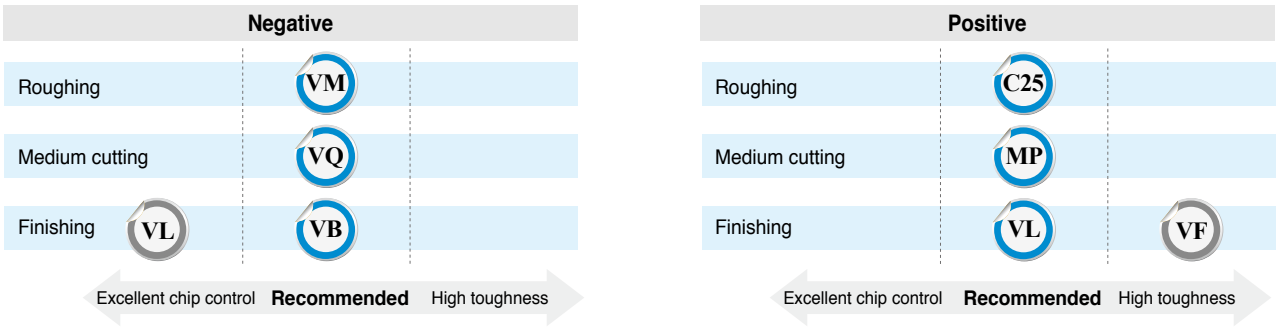
Recommended cutting condition

Division	Workpiece	Grade	Recommended cutting speed (sfm)		
			Minimum	Recommended	Maximum
Turning	1010 A36	CC1500	656	**1148**	1476
		CC2500	591	**951**	1312
	1045	CC1500	656	**984**	1312
		CC2500	591	**886**	1148
	4140	CC1500	591	**886**	1148
		CC2500	492	**820**	984

Grade line up



Chip breakers line up



Selection system of coated cermet grade

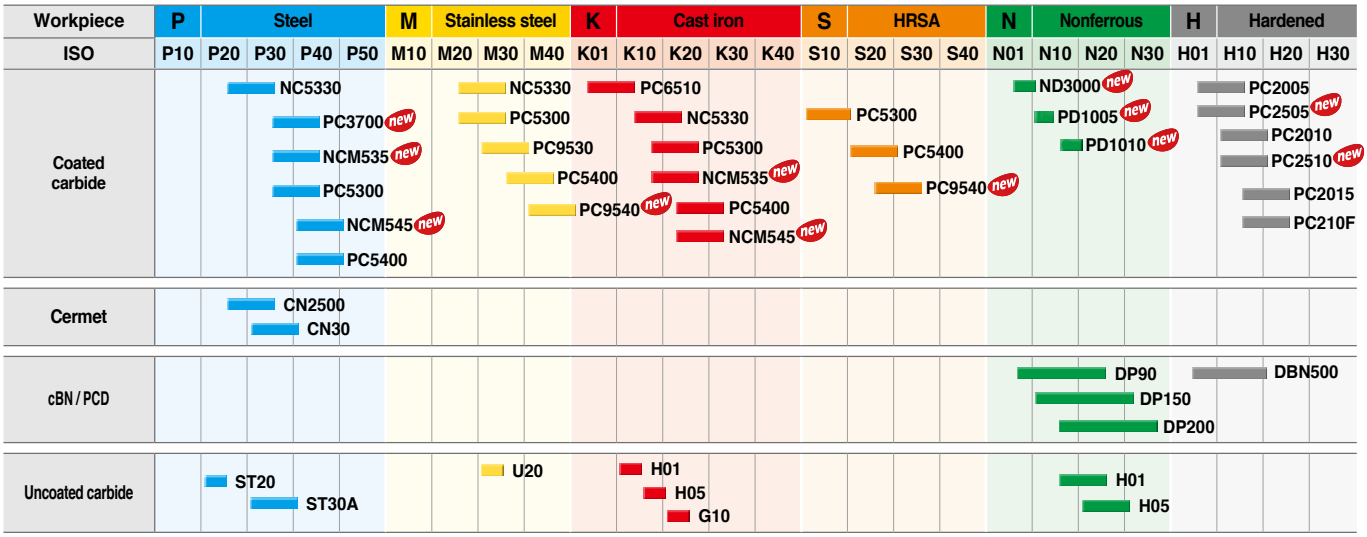
Workpiece		Machining type	Recommended grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	Continuous cutting	CC1500	1066 (656~1476)	P10	CC1500
		Interrupted cutting	CC2500	869 (591~1148)	P20	CC2500
					P30	
K	Cast iron	Continuous cutting	CC1500	886 (591~1148)	K10	CC1500
		Interrupted cutting	CC2500	820 (492~984)	K20	CC2500

The features of coated cermet grade

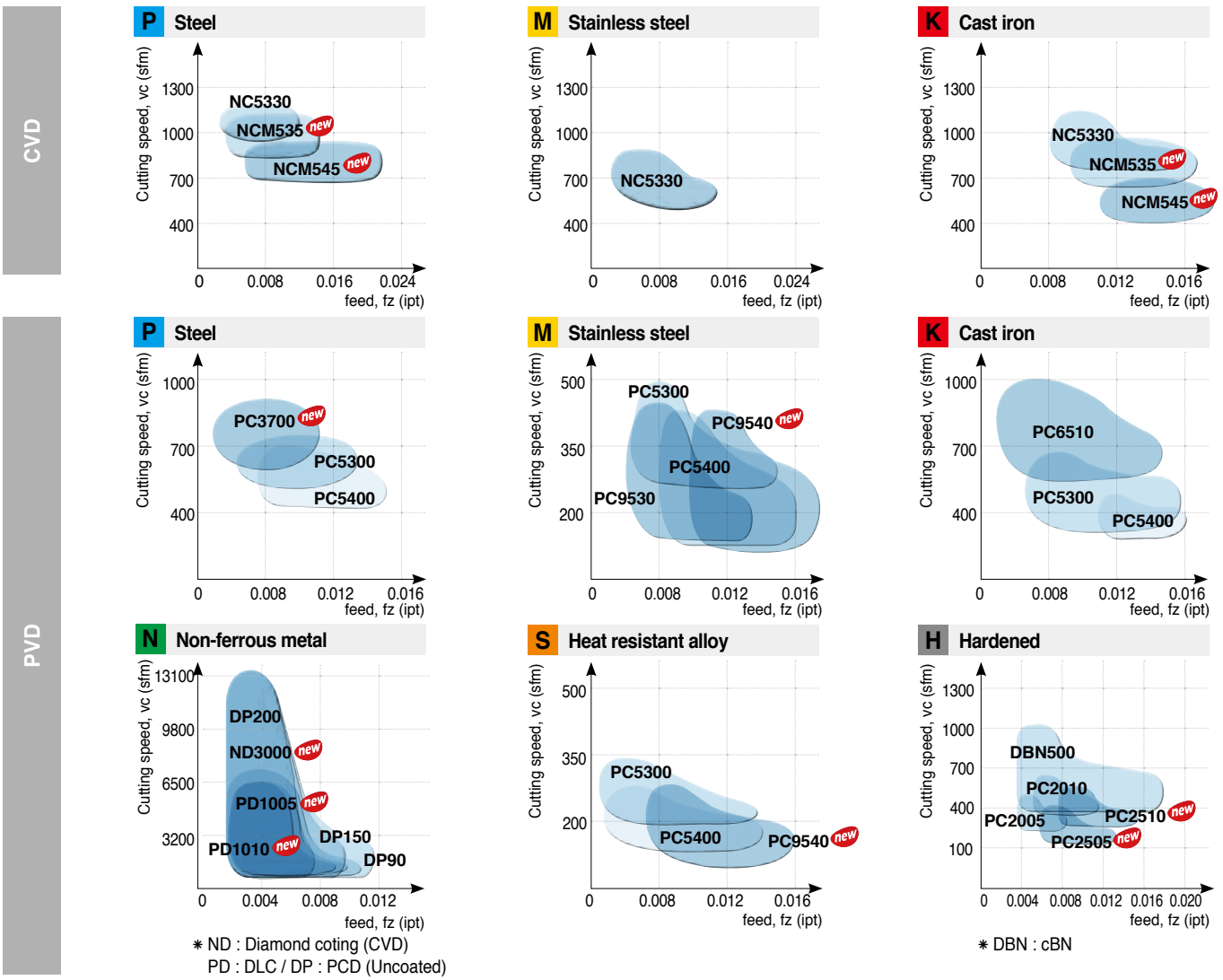
Coated cermet	ISO	Features		
CC1500	P10 ~ P20 / K05 ~ K15	• PVD coated Cermet	• Light cutting for steel and cast iron in high speed machining	• Optimized for precision boring
CC2500	P20 ~ P30 / K10 ~ K20	• PVD coated Cermet	• Light cutting for steel and cast iron in medium or high speed machining	• Dry and wet cutting are available

Milling Grade Selections

Selection system



Application range



* ND : Diamond coting (CVD)
PD : DLC / DP : PCD (Uncoated)

* DBN : cBN

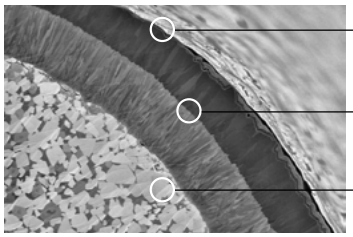
CVD Coated Grades

Milling Solutions for Steel and Cast Iron

NCM535 new / NCM545 new

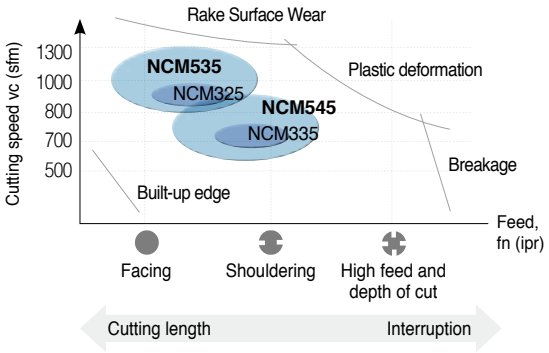
- Improved chipping resistance / heat and crack resistance: Applied after treatment with good chipping resistance and heat and crack resistance
- Improved wear and heat resistance: Applied high toughness substrate and high functional CVD alumina

Features



- Lubricated coating with good surface finish and welding resistance
- CVD functional alumina with wear and heat resistance
- High toughness substrate with thermal conductivity

Guideline for grade application



Selection system of CVD coated grade

Workpiece		Machining type	Recommended grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	Continuous cutting	NC5330	656 (492~820)	P20	NC5330
					P25	
		Continuous cutting	NCM535 new	984 (656~1312)	P30	NCM535 new
					P35	
		Interrupted cutting	NCM545 new	656 (492~820)	P40	NCM545 new
					P45	
M	Stainless steel	Continuous cutting	NC5330	490 (390~590)	M10	NC5330
					M20	
K	Cast iron	Continuous cutting	NC5330	623 (361~886)	K10	
					K20	NC5330
			NCM535 new	820 (656~984)	K30	NCM535 new
						NCM545 new

The features of CVD milling grade

CVD coated grade	ISO	Features
NC5330	P20~P30 M20~M30 K15~K25	• For high speed milling of steel and stainless steel • Superior wear resistance and chipping resistance grade for steel and stainless steel • MT-TiCN + Al_2O_3 + TiN
NCM535 new	P30~P40 K20~K30	• Rising CVD milling grade for high productivity in large steel and cast iron machining at high speed • High toughness and thermal conductivity substrate and high functional CVD coating layer with heat resistance • High chipping resistance and heat and crack resistance from excellent after treatment • MT-TiCN + Al_2O_3
NCM545 new	P40~P50 K30~K40	• For steel and cast iron milling with high toughness • High toughness substrate and high functional CVD coating layer • High chipping resistance and heat and crack resistance from excellent after treatment • MT-TiCN + Al_2O_3

PVD Coated Grades

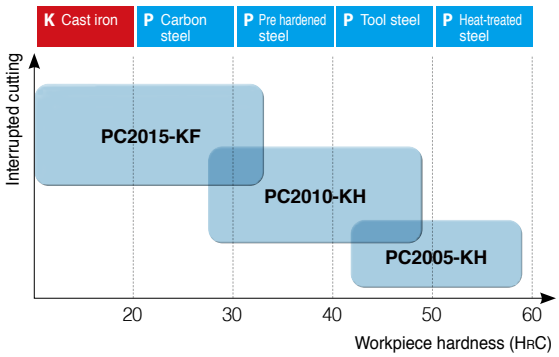
PVD coated grade for finishing high hardened steel

PC2005 / PC2010 / PC2015

- Finishing grade lineup for tool steel and plastic die steel
- PC2005 with extremely hard substrate and coatings
- PC2010 with high hardened cutting edges, ideally suited for pre-hardened steel and interrupted cutting
- PC2015 for carbon steel and casting machining, demonstrating excellent performance in hard-to-cut materials

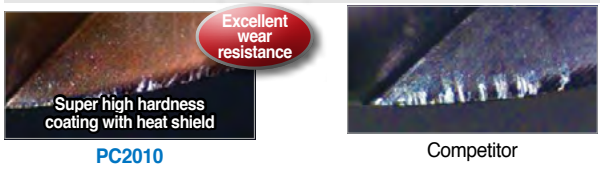
Application guideline per workpiece

Recommended grade and chip breaker

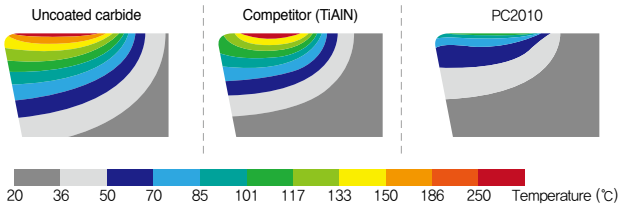


Features

Wear comparison



Result of heat conductivity



- Heat shield coating was applied to prevent thermal crack.
- Ultra fine WC was combined with high contents cobalt to be optimized for machining pre hardened steel.

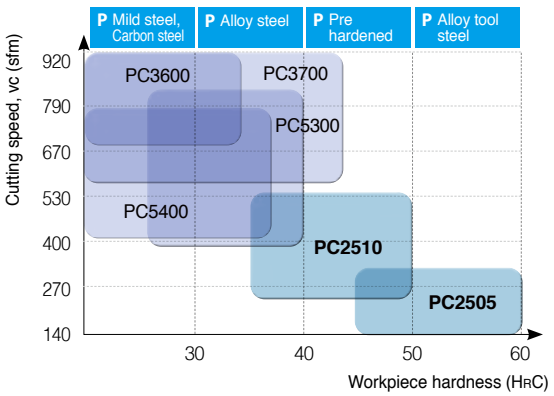
PVD coated grade for roughing high hardened steel

PC2505 new / PC2510 new

- Roughing grade series for high hardened steel
- PC2505 with excellent wear resistance, ideal for machining die steel and high hardened steels over HRC50
- PC2510 with stabilized toughness, ideal for interrupted cutting of high hardened steel and wet cutting accompanied by massive thermal shock

Application guideline per workpiece

Recommended grade

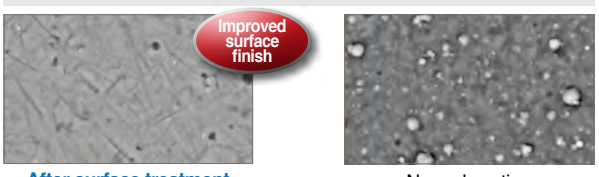


Features

Ultra fine substrate with high toughness



Surface Treatment



PVD Coated Grades

Milling grade specialized for steel

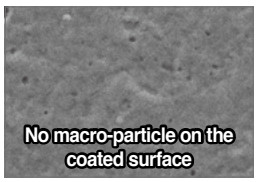
PC3700 new

- Excellent chip removal rate due to a tough substrate specialized for steel, and lubricative PVD coating of high-hardness
- A highly chipping-resistant grade for minimized deviation and extended tool life under various cutting conditions

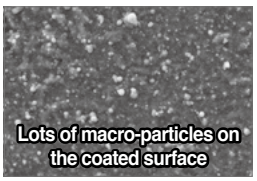
Features

• Smooth surface due to special surface treatment
→ Smooth chip evacuation, improved chipping resistance and surface finish of the workpiece

Special coating surface treatment

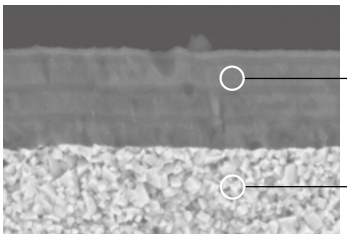


PC3700



Existing products

• Substrate for general milling applications of steel and PVD coating treatment

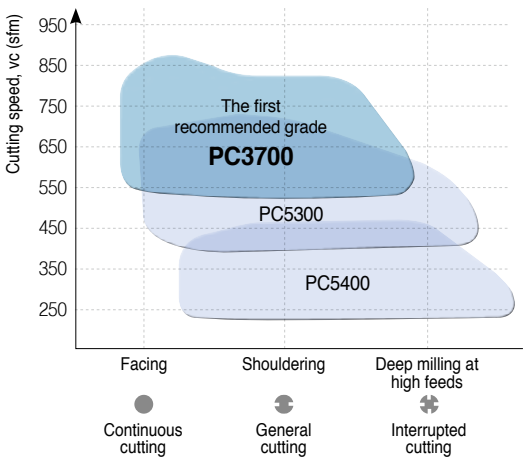


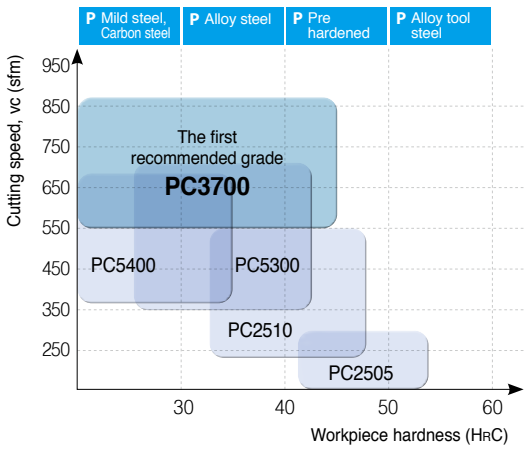
Stronger resistance to welding and chipping due to the multi-layer coating technology with high hardness and lubricating treatment

Ensuring general machinability due to wear and breakage resistant materials optimized for milling applications of steel

Application range

Recommended grades and cutting conditions for p-type milling application





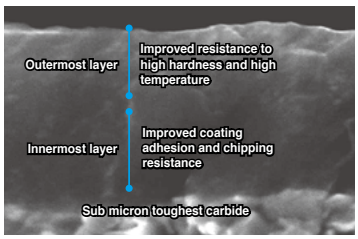
PVD Coated Grades

Universal PVD grade

PC5300

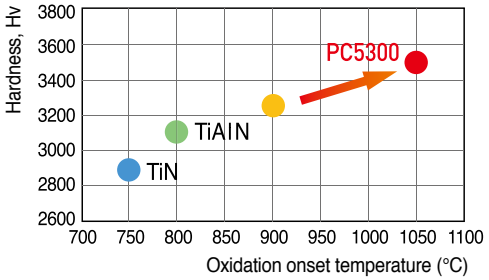
- Advanced PVD coating with high hardness and high temp stability
- High tough substrate and coating films produce excellent surface finish
- Universal tooling capability covering P, M, K, S with this single grade, PC5300
- Stable machining resulting from excellent edge hardness and chipping resistance

Features



- Latest PVD coating technology developed by KORLOY
- New concept of coating equipped with high temperature oxidation resistance and high hardness

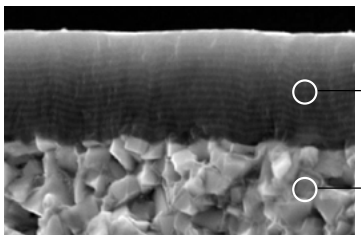
High temp properties



PC5400

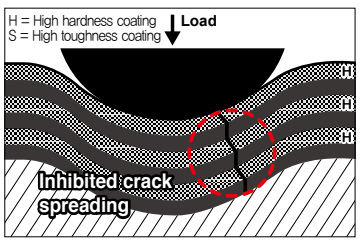
- New PVD coating layer with high toughness and lubrication
- High adhesive strength and toughness between the substrate and coating layer
- Excellent cutting edge strength and chipping resistance ensure stable machinability for P, M, K, S.

Features



Improved lubrication
High toughness and strong adhesion

Ultrafine substrate of high toughness



Crack creation on the coating surface after leaving an indentation by 60kg



Normal coating



High toughness coating

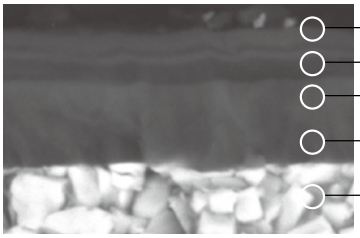
PVD Coated Grades

Optimal PVD grade for medium to rough cutting and highly interrupted milling in stainless steel

PC9540 new

- Longer tool life due to higher breakage resistance applying high toughness substrate controlling crack growth
- Excellent and new PVD dioxide film with oxidation and heat resistance overcoming the limit of hard-to-cut materials machining
- Stable machinability by preventing welding and chipping due to applying special coating surface treatmen

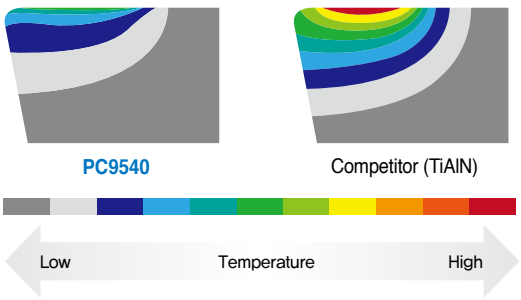
Features



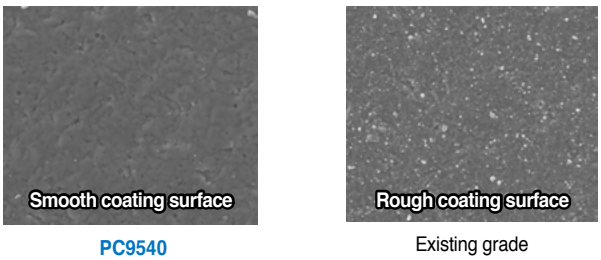
- Improved surface finish → Good welding resistance
- PVD multilayer → Controlling crack growth
- PVD dioxide film → Good oxidation and heat resistance
- PVD nitride film → Good wear resistance
- High toughness substrate → Good breakage resistance

Application range

New PVD dioxide film (comparison of thermal conductivity)

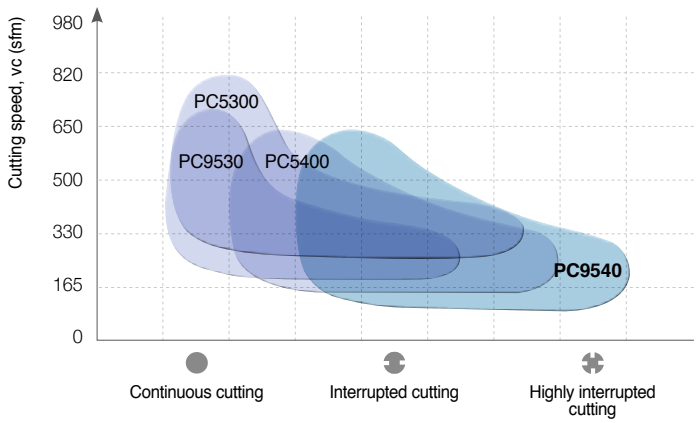


Special coating surface treatment technology



PC9540 — Existing grade

Application range



Selection system of PVD coated grade

Workpiece		Machining type	Recommended grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	Continuous cutting	PC3600	771 (591~2690)	P20	PC3600
			PC3700 new	771 (591~2690)	P30	PC3700 new
		Interrupted cutting	PC5300	640 (492~787)	P40	PC5300
			PC5400	476 (262~689)	P50	PC5400
M	Stainless steel	Continuous cutting	PC5300	427 (328~525)	M20	PC5300
			PC9530	427 (328~525)	M30	PC9530
		Interrupted cutting	PC5400	394 (312~509)	M40	PC5400
			PC9540 new	361 (262~459)	M50	PC9540 new
K	Cast iron	Continuous cutting	PC6510	591 (459~755)	K01	PC6510
					K10	
		Interrupted cutting	PC5300	476 (361~591)	K20	PC5300
			PC5400	410 (279~525)	K30	PC5400
S	HRSA	Continuous cutting	PC5300	180 (131~230)	S10	
					S20	PC5300
		Interrupted cutting	PC5400	131 (98~164)	S30	PC5400
			PC9540 new	131 (98~164)	S40	PC9540 new
H	High hardness steel	Continuous cutting	PC2005	197 (131~262)	H01	PC2005
			PC2010	180 (131~230)	H10	PC2505 new, PC2010
			PC2015	164 (115~213)	H20	PC2510 new, PC2015
			PC210F	164 (115~213)	H30	PC210F

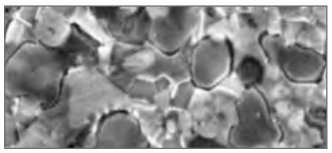
The features of PVD coated grade

PVD coated grade	ISO	Features
PC3600	P20~P30	• Milling grade for medium and roughing of steel • New coating layer with superior wear resistance and oxidation resistance with high toughness substrate
PC3700 new	P30~P40	• Exclusive grade for milling grade • Lubricated and high hardness multi-layered coating
PC5300	P30~P40 K20~K30 M20~M30 S15~S25	• Superior universal grade for steel, cast iron, hard to cut material, stainless steel • New coating and ultra fine grain provide wear resistance and oxidation resistance • TiAlN Series new coating
PC5400	P35~P45 K25~K35 M30~M40 S25~S35	• Universal grade for interrupted machining of steel, cast iron, hard-to-cut materials and stainless steel with stable machinability • New coating layer with high toughness and lubrication on ultra fine grain substrate with high toughness • AlCiN series new coating
PC6510	K05~K15	• High speed milling grade for cast iron and aluminum • K-Gold coating
PC9530	M25~M35 S20~S30	• Medium to rough cutting of hard to cut materials such as stainless steel, Cr-Ni steel, etc. • The toughest sub-micron substrate provides excellent cutting performance at high feed • TiAlN coating
PC9540 new	M35~M45 S30~S40	• Exclusive high toughness grade for stainless steel milling • PVD dioxide film with good heat resistance
PC2005	H01~H10 P01~P10 K01~K10	• Exclusive for Laser Mill in milling of high hardness workpieces and press mold steel • Utmost wear resistance due to high hardness substrate and coating • Ultra high hardness K-Brown coating
PC2010	H05~H15	• Exclusive for Laser Mill in milling of pre hardened steel and plastic mold steel • High hardness enhanced cutting edges due to ultra fine WC and high contents binder for expanding application range to high hardness steel and pre hardened steel • Ultra high hardness K-Brown coating
PC2015	H10~H20	• Exclusive for Laser Mill in milling of carbon steel and cast • Highly lubricative K-SILVER coating • Lubricative coating layer and high contents substrate for machining mild steel and hard-to-cut cast materials
PC210F	H10~H20 P25~P35 K15~K25 M15~M25 S10~S20	• High speed milling grade for hardened steel, cast iron, and stainless steel(Laser Mill) • New coating and ultra fine grain provide wear resistance and oxidation resistance • TiAlN Series new coating
PC2505 new	H01~H10	• Roughing grade for high hardened steel and pressed die steel • Excellent wear resistance ideal for machining die steel and high hardened steel over HRC50
PC2510 new	H05~H15	• Roughing grade for pre-hardened steel and plastic die steel • Stabilized toughness ideal for interrupted cutting of high hardened steel and wet cutting accompanied by massive thermal shock

Uncoated Carbide Grades

Features

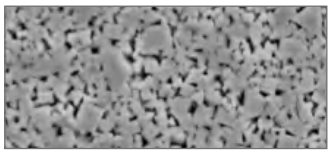
- Due to KORLOY's advanced sintering technology, our uncoated carbide grades have a fine alloy structure which is necessary to get superior quality from a uncoated cutting tool



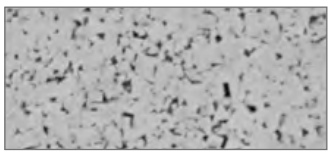
P type

Advantages

- Consist of P,M,K carbide grades and can be used in all kinds of workpiece
- Excellent quality at machining with coolant, due to the superior thermal crack resistance of the carbide
- Due to the special design of carbides, it has fine micro structure and low affinity with workpiece
- It has excellent toughness and produces lower cutting loads



M type



K type

Selection system of uncoated carbide grade

Workpiece		Grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	ST20	295 (230~361)	P20	ST20
		ST30A	262 (197~328)	P30	ST30A
M	Stainless steel	U20	295 (230~361)	M20	U20
				M30	
K	Cast iron	H01, H05	492 (361~623)	K10	H01, H05
		G10	394 (295~492)	K20	G10
N	Aluminum alloy	H01	1969 (1476~2461)	N10	H01
	Copper alloys	H05	1394 (1050~1739)	N20	H05

Main composition and application range

Workpiece	Composition	Features	Workpiece
P	WC-TiC-TaC-Co	Excellent thermal shock resistance and plastic deformation resistance	Carbon steel, Alloy steel, Stainless steel
M	WC-TiC-TaC-Co	General grades with thermal shock resistance and hardness	Carbon steel, Alloy steel, Stainless steel, Cast steel
K	WC-Co	High hardness and superior wear resistance	Cast iron, Non-ferrous metal, Non metal

The physical properties of uncoated carbide grade

Workpiece	Grade	Hardness (HRA)	TRS (kgf/mm^2)	Young's modulus ($10^3 kgf/mm^2$)	Thermal expansion coefficient(10^{-6}/°C)	Thermal conductivity (cal/cm·sec·°C)
P	ST10	92.1	175	48	6.2	25
	ST20	91.9	200	56	5.2	45
	ST30A	91.3	230	53	5.2	-
M	U20	91.1	210	-	-	88
K	H01	92.9	210	66	4.7	109
	G10	90.9	250	63	-	105

1KPa = 102kgf/m^2, 1w/mk = 2.39×10^{-3}cal/cm·sec·°C

Cermet Grades

Features

- High hardness substrate ensures long tool life in high speed milling
- High toughness cutting edge ensures long tool life even in high impact machining
- Chemically stable substrate provides excellent surface finish of the workpiece

Selection system of cermet grade

Workpiece		Machining type	Grade	Recommended cutting speed (sfm)	ISO	Application range
P	Steel	Continuous cutting	CN2500	820 (656~984)	P20	CN2500
		Interrupted cutting	CN30	492 (328~656)	P30	CN30

The features of cermet grade

Cermet Grade	ISO	Features
CN2500	P20~P30	• Universal grade from finishing to roughing of steel • Functionally gradient material
CN30	P25~P35	• For milling of steel • Cermet with high toughness

The physical properties of cermet grade

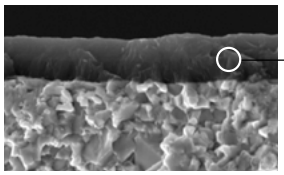
Workpiece	Grade	Hardness (Hv)	TRS (kgf/mm^2)	SG (g·cm^{-3})
P	CN2500	< 1800	210 <	6.8~7.0
	CN30	< 1500	240 <	7.0~7.3

Solid Endmill Grade Selections

PC303S / PC310U

- Ultrafine substrate & high hardness coatings for excellent wear resistance
- Special surface treatment provides higher chipping resistance

Features

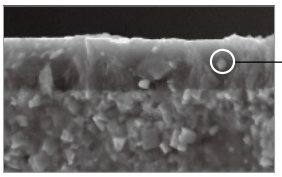


Exceptional wear resistance resulting from extremely hard coating layers

SL

- Applied high lubrication coating and special surface treatment technology

Features

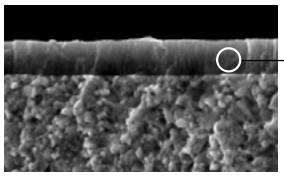


Enhanced welding resistance, chipping resistance and machining stability due to surface treatment technology

PC315E

- Fine substrate & lubricative coatings for stable machinability

Features

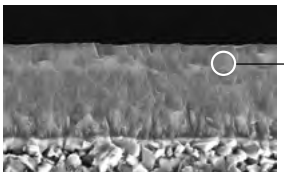


Lubricative coatings for excellent machinability

PC305H

- Enhanced wear resistance and stability from frictional heat due to high hardness substrate and high hardness coating

Features



Applied layer of AlTiSiN series

Selection system

Workpiece		Grade	ISO	Application range
P	Steel	PC303S	P01	
		PC310U	P10	PC303S, PC203F, PC305H, PC310U
		PC315F	P20	
		PC320	P30	PC315E, PC320, PC215F, PC215F
			P40	
M	Stainless steel	PC303S	M01	
		PC310U	M10	PC303S, PC203F, PC305H, PC310U
		PC320S	M20	PC320S, PC315E, PC320, PC215F
		PC315E	M30	
K	Cast iron	PC303S	K01	
		PC310U	K10	PC303S, PC203F, PC305H, PC310U
		PC315E	K20	
		PC320	K30	PC315E, PC320, PC215F
			K40	
S	HRSA	PC320S	S20	PC320S, PC315E, PC320, PC215F, SL
		PC315E	S30	
N	Nonferrous	ND3000 new	N01	ND3000 new
		ND2100 new	N05	ND2100 new, PD1005 new, PD1010 new, H01, H05S, PC210C
		PD3000	N10	
		H01	N20	
H	High hardness steel	PC303S	H01	
		PC203F	H10	PC303S, PC203F, PC305H, PC310U
		PC310U	H20	

Solid Endmill Grades

Grade information for each product

Item	Grade	
	Coated	Uncoated
H-Star Endmill	PC305H	-
V Endmill	PC215F	-
Z Endmill	PC315E	-
F Endmill	PC203F	-
T Endmill	PC2510, ND3000	H01
I+ Endmill	PC320	-
Z+ Endmill	PC320U	-
S+ Endmill	PC320S	-

Item	Carbide		HSS	
	Coated	Uncoated	Coated	Uncoated
R+ Endmill	PC10T, PC20T PC30T, PC40T	FN30T	HC10T, HC20T, HC30T	HN20T, HN30T
Aluminum Solid Endmill	PD1005, PD1010	H01	-	-
A+ Endmill	-	H05S	-	-
M+ Endmill	PC40T	-	-	-
C-Max	PC210C	-	-	-
Super Endmill	SL	-	-	-
D Endmill	ND3000	-	-	-
Composite Router Endmill	ND2100	-	-	-
Brazed Endmill	PC221F	FCC	-	-

The features of Coated grade

Workpiece	ISO	Features
PC305H	P05~P15, M05~M15, K05~K15, H05~H15	• Grade with higher Si, enhanced wear resistance and stability from frictional heat due to applying the new AlTiSiN series layer
PC315E PC320	P20~P35, K20~K35	• Excellent wear/welding resistance in high speed machining due to the combination of ultra fine substrate and PVD coating • For low/medium speed machining of general steel • New film applied with excellent chipping/wear resistance
PC320S	M20~M30, S20~S30	• Low to medium speed cutting of stainless steel and heat resistant alloys • Advanced coating layers with increased resistance to built-up edge and oxidation • Excellent resistance to wear and built-up edge at high speeds due to the ultrafine substrate and dedicated coating layers
SL	S20~S30	• Exclusive Endmill for Inconel • Coating layer with oxidation resistance and high hardness • Reducing fracture on cutting edge and enhancing wear resistance
PC210C	N10~N20	• Medium to high speed cutting of copper and copper electrode • Medium to high speed cutting of acrylic materials • K-Silver coating with excellent lubrication and wear and chipping resistant substrate
ND3000* new	N01~N05	• For electrode machining of graphite at medium to high speeds • Dia. coating layer with high wear resistance and lubrication
ND2100* new	N03~N08	• For composite materials • Diamond-coated layers with excellent adhesion
PD1005	N05~N10	• For Non-ferrous metals(Aluminum alloy) machining • DLC(Diamond Like Carbon) coating layer with high wear resistance and lubrication

*: CVD

Features of KORLOY endmills

Index	Features
H-Star Endmill (Endmill for high hardness steel)	• Carbide endmill for high hardness (HRC50~63) steel • Suitable for precision cutting due to high precision tolerance on radius and tool diameter
Z Endmill / I+ Endmill (Endmill for general cutting)	• Excellent in machining various workpieces such as carbon steel, alloy steel, cast iron, pre hardened steel, etc. under HRC45 • Longer tool life with the use of ultra fine substrate and new coating technology
T Endmill (For dental purpose)	• Endmill for dental prostheses made of zirconia, titanium, Co-Cr, wax, PMMA, and glass ceramic • Custom-made tools for each type of milling machines for dental purpose
Z+ Endmill	• Universal endmill applicable to a variety of workpiece materials under HRC47 • Roughing and finishing availability • Improved tool life thanks to the new substrate and the most advanced coating • Inhibited chipping and longer cutting time due to the optimized blade design
SSEA / A+ Endmill (Endmill for aluminum)	• Suitable for high speed machining in aluminum and other Non-ferrous materials • Can accomplish excellent surface finishing, superior chip removal in high feed rate
M+ Endmill (Multi-functional endmill)	• Various cutting with one Endmill: Drilling, Ramping, Slotting and Side Milling • Reducing cutting resistance and enhancing surface finish due to high tool rigidity
S+ Endmill (Endmill for hard-to-cut materials)	• Sharp cutting edge and high rake angle with streamline chip pocket shows good cutting performance in stainless steel machining where work hardening is a problem
R+ Endmill	• High efficient roughing endmill for medium to rough cutting • Excellent machining efficiency thanks to the high efficient roughing edge design • Reduced cutting force thanks to specifically designed corners, and irregular flute spacing and lead angle
D Endmill	• Diamond-coated endmill for graphite and ceramic • Excellent wear resistance thanks to the diamond coating of high hardness and high purity • Optimized for high speed and heavy duty cutting thanks to the strong grip of coating • Excellent cutting performance and finish thanks to the optimized blade design of high rake
Composite Router Endmill	• Router endmill for machining composite materials (CFRP & GFRP) • Minimized machining defects thanks to its design to prevent flaking, peeling off and burrs • Excellent resistance to wear and flaking thanks to the nano-crystalline diamond coating of high hardness and high purity
C-Max	• Ideally suited for machining copper, brass, bronze, and Non-ferrous materials thanks to the optimized combination between K-Silver coating with excellent lubrication and resistance to wear and chipping, and the dedicated substrate
Super Endmill	• High lubricated coating and special surface treatment • Improved welding and chipping resistance and machining stability due to surface treatment technology

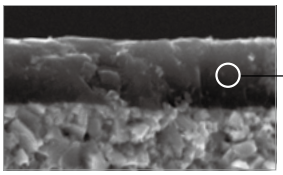
Solid Drills Grade Selections

Grade for Mach Solid Drill (MSD)

PC325U

- Special surface treatment provides improved lubrication and reduced cutting loads
- Stable tool life thanks to increased welding resistance

Features



Increased welding resistance in medium to high speed cutting due to highly lubricative coating layers

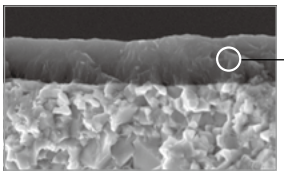
Increased wear resistance in carbon steel machining

Grade for Mach Solid Drill (MSD)

PC325T new

- Good wear resistance in HRSA machining at high temperature
- Good surface finish reduces friction resistance and increases chip evacuation

Features



High heat and oxide resistance increase tool lifeIncreased wear.

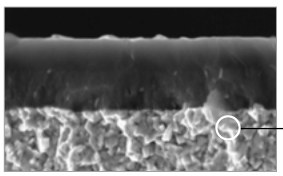
Good surface finish coating layer ensures lubrication and high quality in machining.

Grade for Mach Long Drill (MLD)

PC215G / PC315G

- Improved wear resistance due to the ultrafine substrate
- Reduced friction resistance and smooth chip flow due to improved coating lubrication

Features



Exceptional wear resistance due to the ultrafine substrate

Selection system

Workpiece		Grade	ISO	Application range
P	Steel	PC215G	P01	
		PC315G	P10	
		PC325U	P20	PC215G, PC315G, PC325U, PC230F
		PC230F	P30	
M	Stainless steel	PC215G	M01	
		PC315G	M10	
		PC205F	M20	PC215G, PC315G, PC325U
		PC325U	M30	
K	Cast iron	PC215G	K01	
		PC315G	K10	
		PC205F	K20	PC215G, PC315G, PC325U
		PC325U	K30	
N	Nonferrous	ND2100 new	N05	ND2100 new
		FG2 FA1	N10	FG2, FA1
			N20	
S	HRSA	PC325T new	S20	PC325T new
			S30	

Solid Drill Grades

Grade information for each product

Item	Grade	
	Coated	Uncoated
MSD Plus	PC325U	FG2
MSD Plus-S	PC325T	-
MSD Plus CFRP	ND2100	-
MSFD	PC325U	-
MLD Plus	PC215G, PC315G	FG2
VZD	PC230F	-
ESD Plus	PC325U	FG2
SSD Plus	-	FA1, FG2

The features of PVD coated grade

Workpiece	ISO	Features
PC325U	P20~P35 M20~M30 K20~K35	• Universal grade for machining steel, cast iron, stainless steel, etc. • Stable cutting performance with excellent wear/chipping resistance • Increased welding resistance due to lubricative new coating at medium to high speed
PC325T new	M20~M30 S20~S30	• Good wear resistance realizes HRSA machining at high temperature • Good wear and chipping resistance ensure stable machinability
PC215G	P15~P30 M15~M25 K15~K30	• Universal grade for machining steel, cast iron, etc. • Stable cutting performance with excellent wear/chipping resistance
PC315G	P15~P30 M15~M25 K15~K30	• Universal grade for machining steel, cast iron, stainless steel, etc. • Stable cutting performance with excellent wear/chipping resistance • Increased welding resistance due to lubricative new coating at medium to high speed
PC230F	P25~P35	• For machining general steel at medium to high speed • Stable cutting performance with excellent wear/chipping resistance
ND2100 new	N05~N10	• For machining composite materials • Diamond-coated layers with excellent adhesion
FG2 / FA1	N05~N25	• Increased wear/chipping resistance with the use of ultra fine substrate

Features of KORLOY drills

Index	Features
MSD Plus	• Increased welding resistance in medium to high speed cutting due to highly lubricative coating layers • Increased wear resistance in carbon steel machining • Reduced friction resistance around corners and flutes
MSD Plus-S	• Exclusive for HRSA grooving with good wear resistance at high temperature and chipping resistance. • New coating layer with good surface finish reduces frictional resistance and increases chip evacuation. • Preventing chipping on the cutting edge and fracture of tool ensures high productivity.
MSD Plus CFRP	• The best tool for hole making of CFRP workpieces • Excellent wear resistance due to the diamond-coated grade • Reduced burr creation in CFRP machining due to high rake cutting edges
MSFD	• High quality hole making capability with 180° point angle • Improved anti-chipping and welding resistance by edge honing and chamfering • Minimized creation of burrs compared to general drills
MLD Plus	• Higher rigidity due to straight-edge design • Smooth chip flow due to wider chip pockets and improved surface finish on flutes • Double margin system for stable machinability
ESD Plus	• Lubricative coating layer improves welding resistance at middle to high speed. • Increase wear resistance in machining carbon steel • Increased welding resistance and wear resistance with new PC325U grade applied.
SSD Plus	• New shape increases chip control • Surface finish and improved shape realize high quality of machining • Stable tool life increases productivity

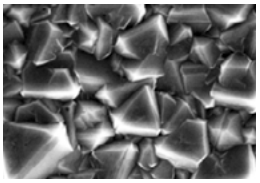
Diamond Coated Grades

Grade for graphite and ceramic

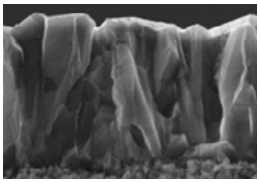
ND3000 new

- SP3-crystalline diamond coatings of high purity and high hardness
- Improved adhesion between coated layers and the substrate that is specialized for diamond coatings
- Excellent tool life when machining graphite and ceramic

Surface of ND3000



Cross section of ND3000's coated layers

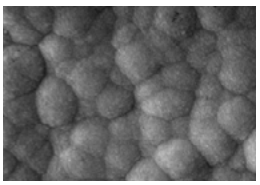


Grade for composite materials

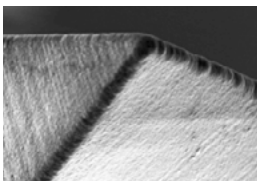
ND2100 new

- Improved surface finish and wear resistance due to the control technology of nano-crystalline diamond particles
- Improved flaking resistance due to the substrate that is specialized for diamond coatings
- High quality and high precision machining availability thanks to sharp edges
- Excellent tool life when machining composite materials

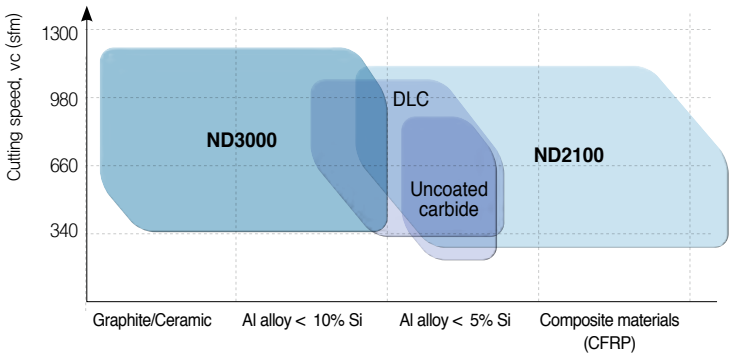
Surface of ND2100



Sharp edges of ND2100



Application range



Selection system

Workpiece			Grade	ISO	Application range
N	Nonferrous	Graphite/ Ceramic	ND3000 new	N01	ND3000 new
		Al alloy	ND3000 new ND2100 new	N05	ND2100 new
		Composite materials	ND2100 new	N10	

The features of diamond coated grade

Grade	ISO	Features
ND3000 new	N01~N05	• For continuous roughing of graphite, ceramic, and Al alloy at high speeds • Exceptional cutting performance due to high resistance to wear and flaking • High hardness diamond coatings of high purity SP3-crystalline structure
ND2100 new	N05~N10	• For continuous finishing of composite materials and Al alloy at high speeds • Stable machinability due to durable sharp edges • Nano-crystalline diamond coatings under particle control

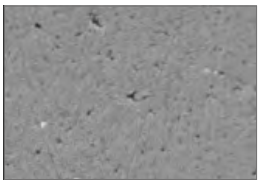
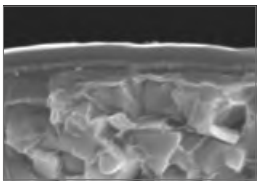
DLC Coated Grades

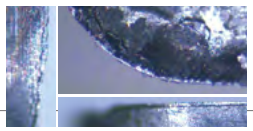
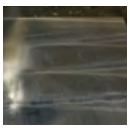
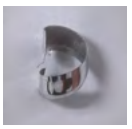
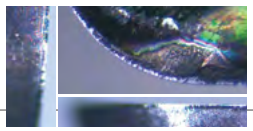
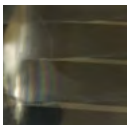
DLC-Coated Insert for Non-Ferrous Metals

PD1005 new / PD1010 new

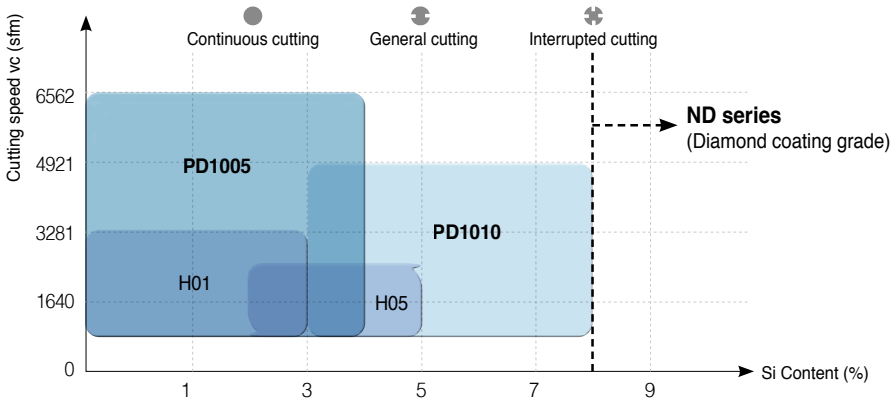
- High hardness and low friction DLC coating technology
- Lubrication and maximized wear resistance increases machinability and machining quality.
- Optimal substrate for each workpiece ensures stable and long tool life
- For non-ferrous metals such as aluminum, Al-Si alloy, copper and etc. machining

Features

Smooth coating surface	Hard DLC coating
	

Grade	Wear resistance and Welding resistance	Surface finish	Chip curl
Carbide non coated			
DLC PD1010			

Application range



Selection system

Workpiece			Grade	ISO	Application range
N	Non-ferrous metals	Aluminum and copper (Soft non-ferrous metals)	PD1005	N05	PD1005 new
		Aluminum alloy	PD1005 PD1010	N10	PD1010 new
		Al-Si alloy (Hardened non-ferrous metals)	PD1010	N15	

The features of DLC coating grade

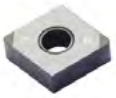
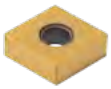
Grade	ISO	Features
PD1005 new	N05	• For high speed and continuous machining of Aluminum and copper • High wear and welding resistance realize good machinability • High performance of DLC coating with high hardness and low friction
PD1010 new	N10	• For medium to high and interrupted machining of aluminum alloy and Al-Si alloy • Stable tool life due to substrate with chipping resistance • High performance DLC coating with high hardness and low friction

cBN Inserts Grades

Features

- Excellent hardness and thermal resistance by sintering KORLOY's main constituents and special ceramic binder at high pressure and high temperature
- Excellent hardness and wear resistance for higher productivity in machining cast iron and heat-treated alloy at high speed

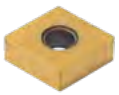
▶ Insert type

High presicion		Wear resistance		Productivity	
					
For regrinding type	One use type	Multi-corner type	Multi-corner type (coated)	Solid type	Grooving type

cBN insert

Multi edge coated type



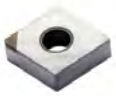


2NU-CNGA120408

- Easy handling of corners
- Strong Brazing
- Excellent tool life compared to non-coated inserts

One use type

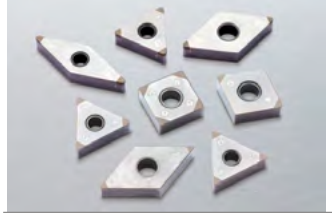


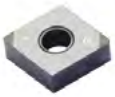


NU-CNGA120408

- Economic price • Easy handling of tools • A wide variety of series
- Smaller than expensive cBN and dramatic cost down
- Strong weld face and stable cutting performance

Multi edge type



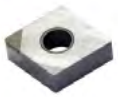


2NU-CNGA120408

- Price per edge is more reasonable compare to normal single cornered, one-used type
- Insert with several brazed cBN
- Wide application of continuous to interrupted machining

Regrinding type

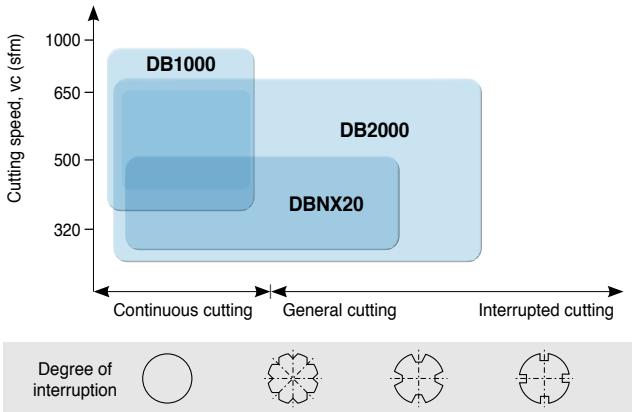




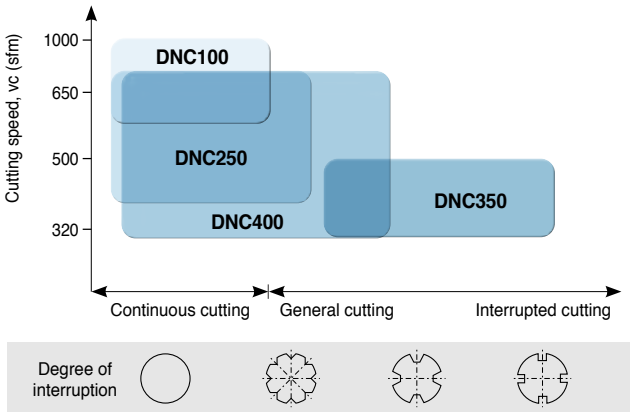
CNMA120408

- Long tool life
- Excellent wear resistance, High hardness
- Saved tool cost due to the regrinding insert 3~4 time

cBN application range



Coated cBN application range



Cutting condition of cBN grade

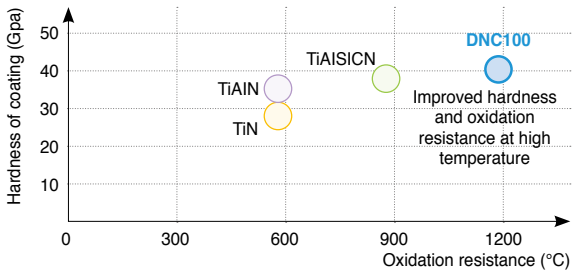
Workpiece		Grade		Insert color	Application	Cutting speed, vc (sfm)	Feed, fn (ipr)	Depth of cut, ap (inch)
H	High hardness steel	Coated	DNC100		Continuous cutting at high speed	591 ~ 984	0.001~0.012	0.001~0.012
			DNC250		Continuous and low interrupted cutting at high speed	394 ~ 722	0.002~0.012	0.002~0.012
			DNC300		Medium and low interrupted cutting	295 ~ 820	0.002~0.008	0.002~0.008
			DNC350		Medium and high interrupted cutting	295 ~ 492	0.002~0.012	0.002~0.012
			DNC400		Continuous and medium interrupted cutting	295 ~ 722	0.002~0.012	0.002~0.020
		Non coated	DB1000		Continuous cutting at high speed	427 ~ 820	0.001~0.006	0.001~0.008
			DB2000		Medium and low interrupted cutting	262 ~ 656	0.001~0.008	0.001~0.012
			DBNX20		Highly efficient cutting	394 ~ 492	0.001~0.012	0.001~0.020
			DBN250		Medium and low interrupted cutting	262 ~ 394	0.001~0.008	0.001~0.012
			DBN350		High interrupted cutting	394 ~ 722	0.001~0.008	0.001~0.012
S	HRSA		DB7000		Continuous cutting at high speed	328 ~ 984	0.002~0.008	0.004~0.039
K	Cast iron		DBN700A		Continuous cutting at high speed	1640 ~ 6562	0.004~0.016	0.004~0.016

Coated cBN

DNC100

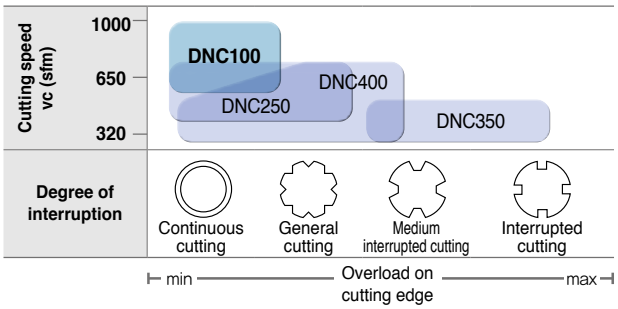
Features

- Excellent thermal resistance
- Coating layer with high hardness, oxidation resistance and chipping resistance





Application range



Recommended cutting condition

Cutting speed vc (sfm)	591 ~ 984
Feed fn (ipr)	0.001 ~ 0.012
Depth of cut per time ap (inch)	0.001 ~ 0.012

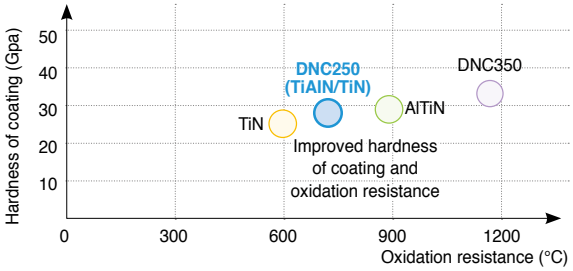
- Increased oxidation resistance and wear resistance due to high hardness coating layer
- Dramatically improved fracture resistance and chipping resistance

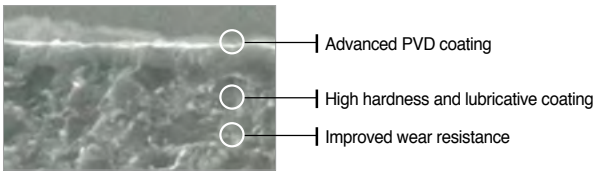
Multi-corner coated cBN for high efficient cutting of heat-treated alloy

DNC250

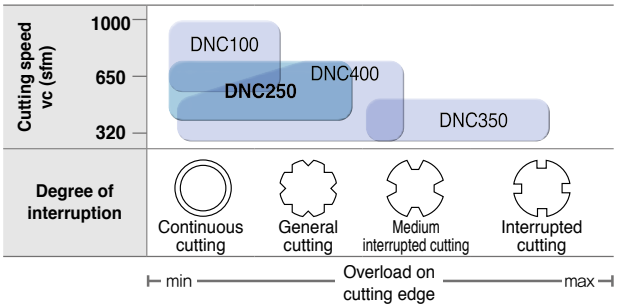
Features

- Stable and long tool life
- Cost effective by multi-cornered one-use insert





Application range



Recommended cutting condition

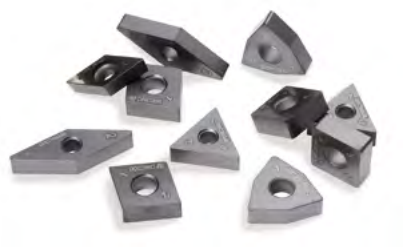
Cutting speed vc (sfm)	394 – 722
Feed fn (ipr)	0.002 – 0.012
Depth of cut per time ap (inch)	0.002 – 0.012

Coated cBN

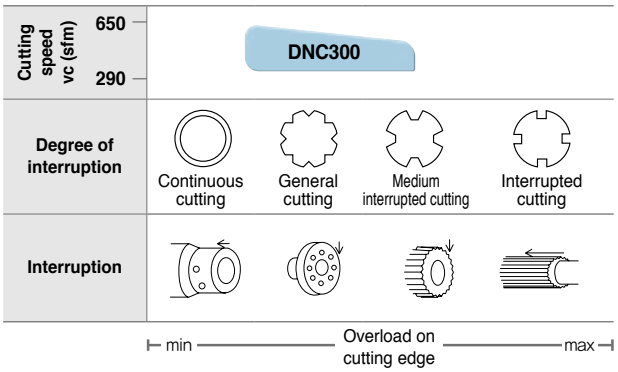
DNC300

Features

- 1st recommended grade for low to medium interrupted cutting
- Enhanced chipping resistance and wear resistance comparing to competitor's grade
- Minimizing flaking of coating by stable coating



Application range



Recommended cutting condition

Cutting speed vc (sfm)	295 – 656
Feed fn (ipr)	0.002 – 0.012
Depth of cut per time ap (inch)	0.020 – 0.010

- Enhanced oxidation resistance and wear resistance due to high hardness layer
- Highly increased chipping resistance, fracture resistance and wear resistance

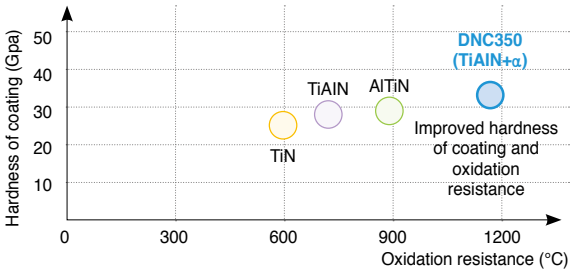
Coated cBN for high interrupted cutting

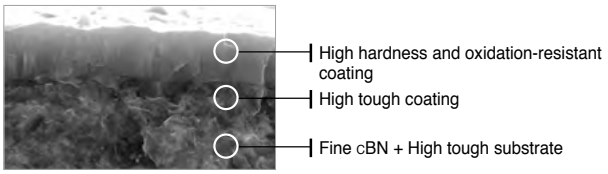
DNC350

Features

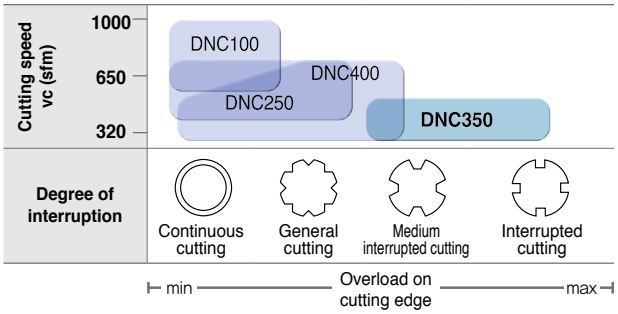
- Excellent tool life and productivity in interrupted cutting
- New PVD coating applied with high hardness and oxidation resistance







Application range



Recommended cutting condition

Cutting speed vc (sfm)	295 – 492
Feed fn (ipr)	0.002 – 0.012
Depth of cut per time ap (inch)	0.002 – 0.012

Solid type coated cBN

DNC400 new

Features

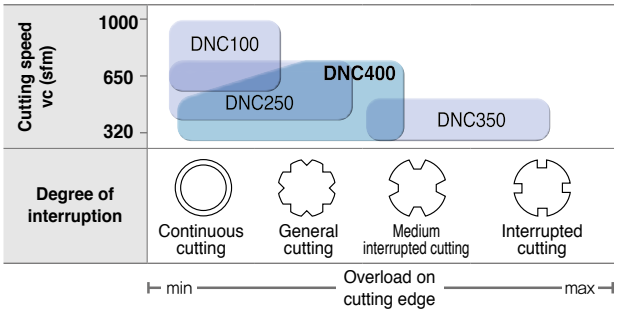
- For machining heat-treated steel in continuous and medium interrupted cutting
- Longer tool life due to coating layer
- Solid type for universal purpose

Features of solid type cBN

- Increased productivity at high speed and high depth of cut
- Ideal for removing cemented layer and the welds
- Better welding stability due to 3-face blazing
- Excellent cutting performance at varying depth of cuts



Application range



Recommended cutting condition

Feed fn (ipr)	**DNC400**	**0.002 – 0.012**
	DNC250	0.002 – 0.012
	DNC350	0.002 – 0.012
Depth of cut per time ap (inch)	**DNC400**	**0.002 – 0.020**
	DNC250	0.002 – 0.012
	DNC350	0.002 – 0.012

Non-coated cBN
DB1000

Features

- Non-coated cBN with the highest wear resistance at high speed
- Excellent tool life in continuous to light interrupted cutting
- Improved fracture resistance along with high wear resistance
  - Higher thermal resistance and hardness due to pure TiCN ceramic binder



Non-coated cBN
DB2000

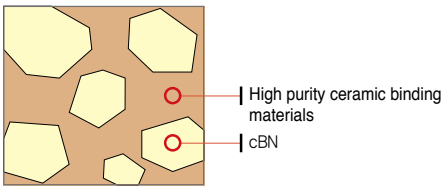
Features

- Universal grade for overall machining of heat-treated
  - Stable tool life in continuous to low/medium interrupted cutting
- Both fracture resistance and wear resistance acquired with the use of pure ceramic binder
- Stable surface roughness



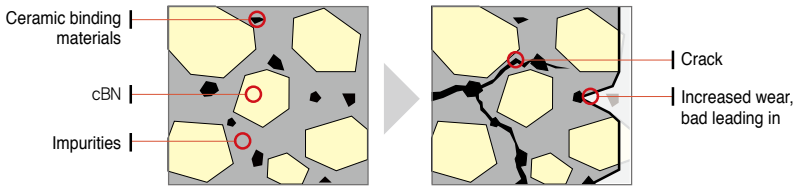
New technology of high purity ceramic binding materials

DB1000/DB2000



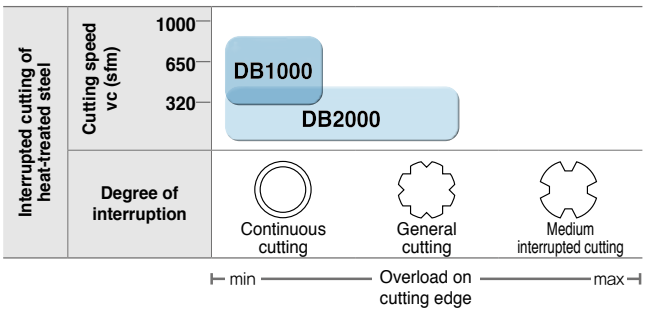
DB2000 dramatically minimizes impurities with the use of high purity ceramic binding materials and enhances thermal resistance and toughness.

Conventional grade



Impurities included in conventional grade's ceramic binder caused inferior thermal resistance and hardness of sintered compounds, which led to crack (fracture) and wear

Application range



Recommended cutting condition (DB1000)

Cutting speed vc (sfm)	427 – 820
Feed fn (ipr)	0.001 – 0.006
Depth of cut ap (inch)	0.001 – 0.008

Recommended cutting condition (DB2000)

Cutting speed vc (sfm)	262 – 656
Feed fn (ipr)	0.001 – 0.008
Depth of cut ap (inch)	0.001 – 0.012

PCD Insert Grades

Features

KORLOY PCD products are manufactured by using high quality PCD tips under ultra high temperatures and pressure. The PCD tip is welded on the qualified KORLOY carbide insert
KORLOY high quality PCD products meet a wide range of application needs in turning, milling, and endmills.

- Excellent tool life for aluminum alloy and copper alloy
- Excellent tool life for Ceramic, high-silicon aluminum and rock or stone
- Excellent tool life for rubber, carbon, graphite and wood

PCD grade

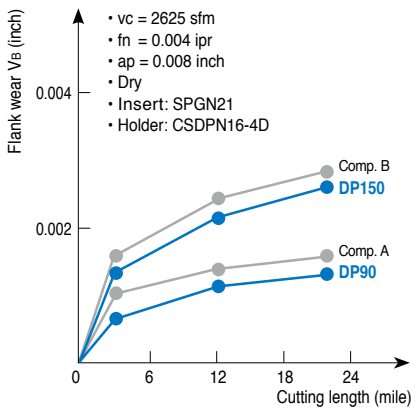
Grade	Features	Application	Grain size (㎛)	Hardness (Hv)	TRS (kgf/mm²)
DP90	Coarse diamond grain has been used to get excellent wear resistance enough to machine cemented-carbide, high Si aluminum alloy	Cemented carbide Ceramic roughing High Si aluminum alloy Rock, Stone	25~30	50~65	≒1.10
DP150	By use of fine diamond grain having good bonding property, it is suitable for machining of Non-ferrous metal, graphite	High Si aluminum alloy Copper, Bronze alloy Rubber, Wood, Carbon	5~10	50~60	≒1.95
DP200	By use of ultra fine diamond grain, it is possible to make sharp cutting edge. Thus it is appropriate grade to machine Non-ferrous material	Plastic Wood Precise finishing of aluminum	~2	45~55	≒2.45

Recommended cutting condition

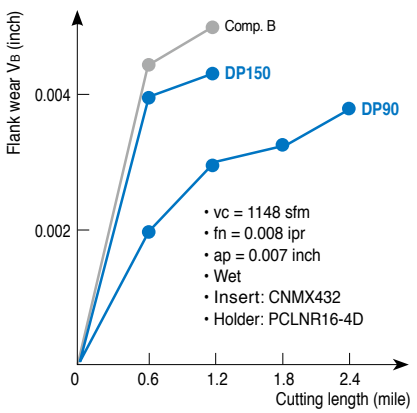
Workpiece	Cutting speed (sfm)	Feed (ipr)	Feed (ipr)	Recommended grade	
				1st	2nd
Aluminum alloy (4%~8% Si)	3281~9843	0.004~0.024	~0.118	DP150	DP200
Aluminum alloy (9%~14% Si)	1969~8202	0.004~0.020	~0.118	DP150	DP200
Aluminum alloy (15%~18% Si)	984~2297	0.004~0.016	~0.118	DP150	DP200
Copper, Bronze alloy	~3281	0.002~0.008	~0.118	DP150	DP200
Reinforced plastic	~3281	0.004~0.012	~0.08	DP150	DP200
Wood	~13123	0.004~0.016	-	DP150	DP200
Cemented carbide	33~98	~0.008	~0.02	DP90	DP150

Cutting performance

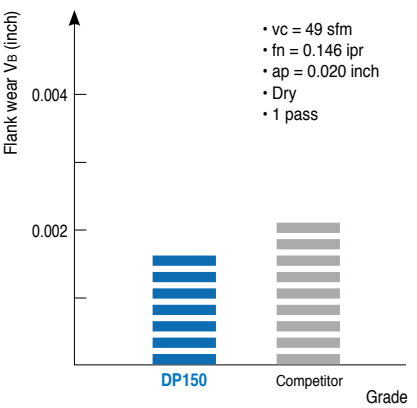
Continuous cutting test (Workpiece: Al-25%Si)



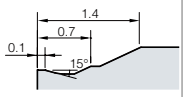
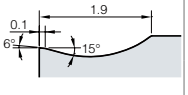
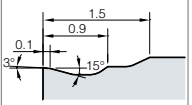
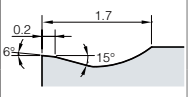
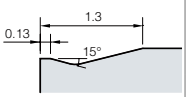
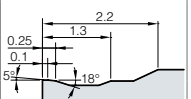
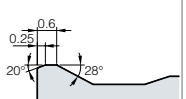
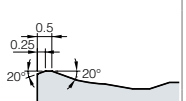
Interrupted cutting test (Workpiece: Al-20%Si)



Cutting test of cemented carbide



Chip Breakers for Turning

Geometry	Cutting edge	Application range	Features
		feed rate fn (ipr): 0.002 0.003 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 depth of cut ap (inch): 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 0.394 0.457 0.512	
V series **VL**		0.004~0.014 0.008~0.059	**For Finishing** • Stable chip control in high toughness material; low carbon steel, pipe steel & steel plates • Improved chip control for facing, copy machining and better surface finish
VB		0.006~0.018 0.020~0.079	**For Finishing** • Improved chip control for smaller depth of cuts • Excellent chip control in copying, corner R machining
VF		0.002~0.014 0.020~0.059	**For Finishing** • Good chip control quality on varied depth of cut • Excellent cutting edge strength has been acquired due to the special chip-breaker
VC		0.005~0.018 0.020~0.138	**For Medium to finish cutting** • Stable chip control in copying and internal machining with various depths of cut
VQ		0.004~0.016 0.039~0.118	**For Medium to finish cutting** • Medium to finishing cutting edges offer improved edge hardness • Increased chip control in low depth of cut cutting range • For cermet
VM		0.004~0.020 0.039~0.197	**For Medium cutting** • Wide available chip control range from medium-finishing to medium-roughing • Suitable chip breaker for CNC machining
VH		0.028~0.055 0.236~0.591	**For Heavy duty cutting** • Designed specifically for heavy machining • Specialized chip breaker for the heavy industries like Ship building, Power plant industry
VT		0.030~0.063 0.276~0.669	**For Heavy duty cutting** • Designed specifically for heavy machining • Specialized chip breaker for the heavy industries like Ship building, Power plant industry

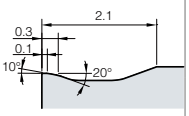
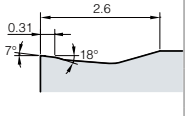
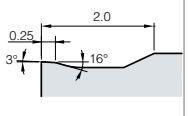
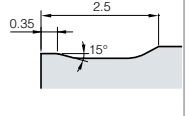
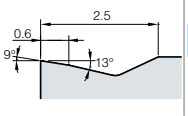
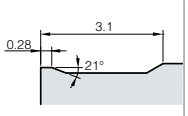
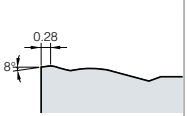
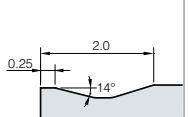
Notice: Application ranges are based on main cutting material

Chip Breakers for Turning

	Geometry	Cutting edge	Application range feed rate fn (ipr) 0.002 0.003 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 depth of cut ap (inch) 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 0.394 0.457 0.512	Features
V series	VP1	1.2, 18°	0.002~0.008 0.004~0.059	**For Finishing** • High positive cutting edge • Reduced contract chip minimizes temperature to improve tool life
	VP2	2.5, 13°	0.002~0.016 0.020~0.157	**For Medium to finish cutting** • Stable chip control and high machinability in copying with various depths of cut
	VP3	2.4, 0.5, 15°	0.002~0.018 0.020~0.177	**For Medium cutting** • High positive cutting edge with wide land • Stable cutting performance in interrupted machining with high toughness • Stable machinability and chip control in machining with high depth of cut
	VP4	2.6, 0.17, 8°, 18°	0.006~0.018 0.039~0.177	**For Roughing** • The first recommended chip breaker for inconel cutting • High hard and resistant rake angle to prevent notch wear in roughing of rugged surfaces
	VR	2.9, 0.32, 18°	0.010~0.022 0.047~0.276	**For Roughing** • High feed machining with the combination of wide land and pockets • Shallow chip breaker design prevents chip blocking at high feed • Decreased wear on major cutting edge due to special treatment on blade
-P series	LP	1.6, 1.2, 0.13, 6°, 20°	0.004~0.016 0.020~0.098	**For Medium to finish cutting** • Angle land decreases cutting resistance for better surface roughness • Special dot design prevents chip blocking by clear chip breaking
	MP	2.2, 0.2, 5°, 18°	0.006~0.018 0.020~0.177	**For Medium cutting** • Increased productivity due to excellent chip control in various conditions • Stable tool life by reducing cutting load at high speed and high feed
	CP	2.0, 0.15, 18°	0.005~0.014 0.020~0.138	**For Medium to finish cutting** • Chip breaker with strong cutting edge in high interrupted finishing and medium cutting • Effective chip control in low depth of cut to high depth of cut due to 2-step rear angle

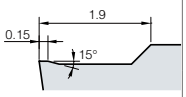
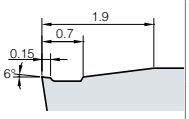
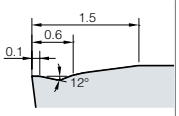
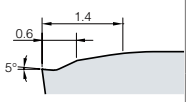
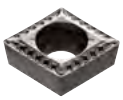
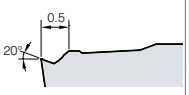
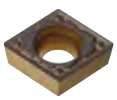
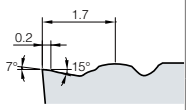
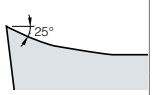
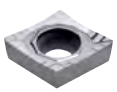
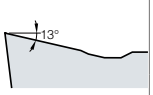
Notice: Application ranges are based on main cutting material

Chip Breakers for Turning

	Geometry	Cutting edge	Application range	Features
			feed rate fn (ipr): 0.002 0.003 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 depth of cut ap (inch): 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 0.394 0.457 0.512	
-M series	MM		0.005~0.018 0.020~0.217	**For Medium cutting** • The first recommended chip breaker for continuous stainless applications cutting • Improved tool life and surface finish due to dual lands combining both machinability and toughness • Wide chip pockets for stable chip evacuation at high depth of cuts and high feeds
-M series	RM		0.006~0.022 0.079~0.236	**For Roughing** • The first recommended chip breaker for interrupted cutting or roughing of stainless steel • Inhibited notch wear and burr creation at high depth of cuts and feeds • Reduced cutting loads and longer tool life at high feeds
-K series	MK		0.004~0.020 0.039~0.197	**For Medium cutting** • 1st recommended chip breaker for cast iron continuous cutting • Suitable for continuous cutting of ductile and gray cast iron • Excellent tool life and surface finish thanks to angle lands improving cutting performance
-K series	RK		0.008~0.024 0.059~0.236	**For Roughing** • 1st recommended chip breaker in cast iron continuous cutting and roughing • Suitable for machining ductile and gray cast iron at high speeds and high feeds • Improved toughness and chipping resistance due to flat lands
H series	HA		0.001~0.012 0.020~0.098	**For Medium to finish cutting** • Sharp cutting edge generates low cutting force • Specially designed tough main cutting edge • Suitable for cutting of low carbon steel, stainless steel, aluminum
G series	GR		0.012~0.031 0.118~0.315	**For Roughing** • Suitable for deep depth of cut and high feed cutting of steel and cast iron • Suitable for intermittent cutting
G series	GH		0.012~0.051 0.118~0.433	**For Heavy duty cutting** • Suitable for heavy duty cutting due to strong cutting edge • Wide chip control range with low cutting force
B series	B25		0.020~0.039 0.157~0.394	**For General cutting** • Suitable for general cutting condition cutting

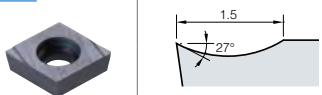
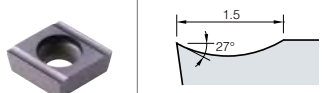
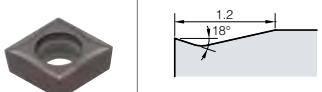
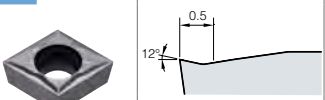
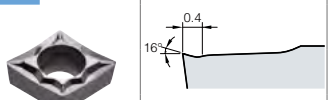
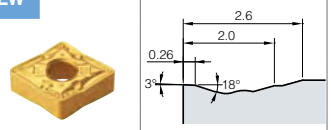
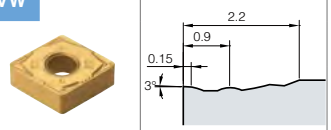
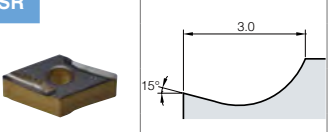
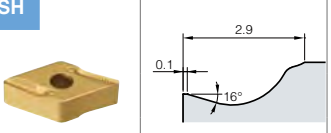
Notice: Application ranges are based on main cutting material

Chip Breakers for Turning

Geometry		Cutting edge	Application range (feed rate fn (ipr): 0.002 0.003 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 / depth of cut ap (inch): 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 0.394 0.457 0.512)	Features
C-Posi series	C25 		0.004~0.014 0.039~0.118	**For Roughing** • Suitable for interrupted cutting and cast iron machining • Good surface finish due to low cutting force • Suitable for both boring and outer diameter turning
H-Posi series	HMP 		0.003~0.016 0.020~0.138	**For Medium cutting** • Excellent chip control at wide range of cutting conditions • Machining versatility over a wide range of materials
V-Posi series	VF 		0.002~0.010 0.004~0.059	**For Finishing** • Improved surface finish and size accuracy due to stable inner boring
	VL 		0.002~0.008 0.004~0.039	**For Finishing** • Superior chip control in low carbon steel, pipes, and steel plates
P-Posi series	FP 		0.001~0.008 0.004~0.039	**For Finishing** • For chip control in low depth of cut mild cutting • Enhanced surface finish and reduced cutting load
	MP 		0.002~0.012 0.012~0.118	**For Medium cutting** • Sharp cutting edge and wide chip pocket for low cutting load • Stable chip control at varying depth of cuts • Excellent cutting performance when machining automobile components
AL series	AK 		0.001~0.016 0.004~0.157	**For Medium to finish cutting** • Exclusive chip breaker for aluminum and aluminum alloy cutting
	AR 		0.002~0.020 0.020~0.157	**For Medium to finish cutting** • High stability of cutting edge secures great performance in high speed and interrupted machining • High speed of medium and interrupted operation

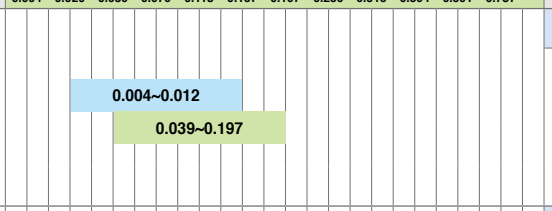
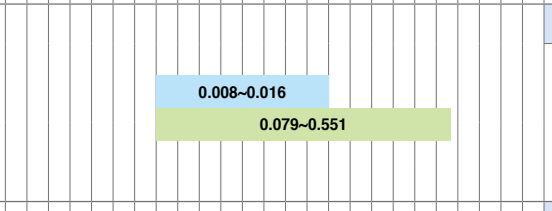
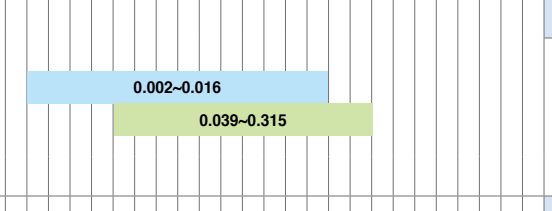
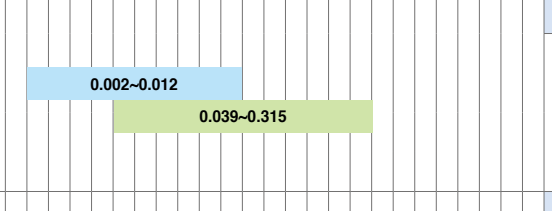
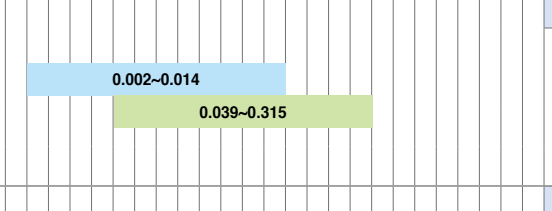
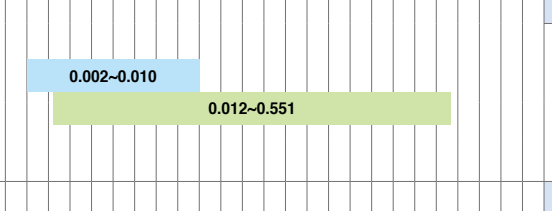
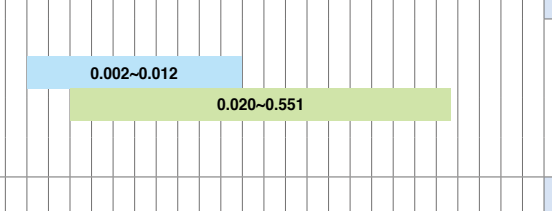
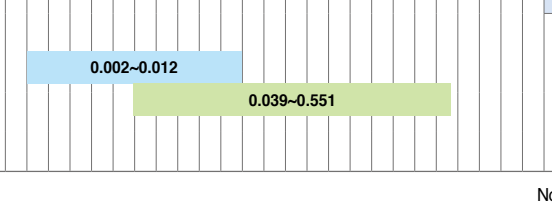
Notice: Application ranges are based on main cutting material

Chip Breakers for Turning

Geometry		Cutting edge	Application range feed rate fn (ipr) 0.002 0.003 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 depth of cut ap (inch) 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 0.394 0.457 0.512	Features
Auto tool series	KF		0.001~0.005 0.001~0.039	For Finishing • Shallow depth of cut with sharp edge • Longer tool life at high speed cutting due to low cutting force • Good surface finish
	KM		0.002~0.006 0.002~0.059	For Medium to finish cutting • Improved chip control makes tool life long and better machining
	VP1		0.002~0.012 0.020~0.157	For Medium cutting • For medium cutting with strong cutting edge • For wide range of cutting by optimal width of chip breaker for each cutting depth
	MS		0.001~0.010 0.012~0.118	For medium cutting (for surface roughness) • Reduced welding and cutting heat by sharp cutting edge • Enhanced chip evacuation in low to high feed cutting
	FS		0.001~0.008 0.004~0.079	For Finishing • For various workpiece (P, M, S) cutting • Good surface finish and low cutting load due to sharp cutting edge
Wiper series	LW		0.006~0.024 0.039~0.197	For Medium cutting • Guarantees excellent surface roughness and good chip controls at high feed machining
	VW		0.006~0.020 0.020~0.138	For Medium to finish cutting • Improved surface roughness at shallow depth of cut and high feed due to strong cutting edge
Shaft series	SR		0.005~0.018 0.039~0.177	For Medium to finish cutting • Shallow depth of cut with sharp edge • Longer tool life at high speed cutting due to low cutting force • Good surface finish
	SH		0.006~0.020 0.059~0.197	For Medium cutting • Good chip flow increases tool life and machinability.

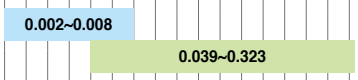
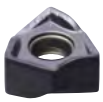
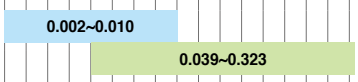
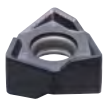
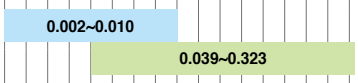
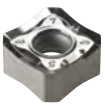
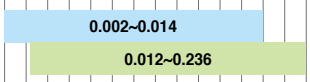
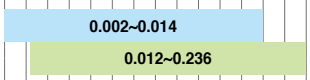
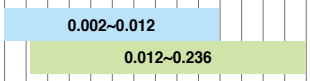
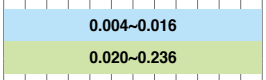
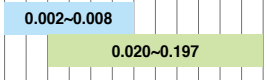
Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

Geometry		Cutting edge	Application range	Features
MX series	MX			**For Roughing** • Possible to increase productivity through increase feed and depth • Excellent heat resistance due to the special chip breaker design of top face of insert
Mill Max Heavy	MM			**For Roughing** • Specialized tool for high depth of cut roughing with high rigidity cutting edge ensures stable machining.
Rich Mill series-RM3	MA			**For Aluminum machining** • Sharp cutting edge for low cutting load, which is ideal for machining steel, hard-to-cut materials and aluminum
	ML			**For machining hard-to-cut materials** • Low cutting resistance for light cutting and machining hard-to-cut materials with excellent tool life and surface roughness
	MM			**For General cutting** • Available for most of applications with universal design for general milling
Rich Mill series-RM4	MA			**For Aluminum machining** • Sharp cutting edge design ensures low cutting resistance and excellent machining in difficult- tocut materials, aluminum and light machining
	MF			**For Light cutting** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
	MM			**For General cutting** • Suitable geometry design for general milling has wider ranges of machining

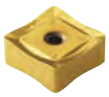
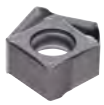
Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

Geometry		Cutting edge	Application range	Features
			feed rate fn (ipr): 0.002 0.004 0.006 0.008 0.010 0.012 0.014 0.016 0.031 0.047 0.055 0.063 depth of cut ap (inch): 0.004 0.020 0.039 0.079 0.118 0.157 0.197 0.236 0.315 0.394 0.591 0.787	
Rich Mill series-RM6	MA			**For Aluminum machining** • Specialized sharp cutting edge for aluminum machining ensures machinability. • Buffing treatment on the surface realizes good chip flow and welding resistance.
	ML			**For Machining hard-to-cut materials** • Low cutting load chip breaker for light cutting • Long tool life and high quality of machining in hard-to- cut material cutting
	MM			**For General cutting** • Optimally designed shape for general shoulder milling in various cutting ranges
Rich Mill series-RM8	MA			**For Aluminum machining** • Sharp cutting edge and lubricated top face show excellent chip flow and welding resistance in aluminum machining
	MF			**For Light cutting** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
	ML			**For Machining hard-to-cut materials** • Chip breaker with low cutting load resistance ensures long tool life and high quality in light and hard-to-cut material cutting.
	MM			**For General cutting** • Suitable geometry design for general milling has wider ranges of machining
Rich Mill series-RMT8	MF			**For Light cutting** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining

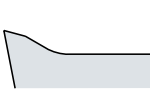
Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

Geometry		Cutting edge	Application range	Features
			feed rate fn (ipr): 0.002 0.004 0.006 0.008 0.010 0.012 0.014 0.016 0.031 0.047 0.055 0.063 depth of cut ap (inch): 0.004 0.020 0.039 0.079 0.118 0.157 0.197 0.236 0.315 0.394 0.591 0.787	
Rich Mill series-RMT8	MM		0.002~0.012 0.020~0.315	**For General cutting** • Suitable geometry design for general milling has wider ranges of machining
Rich Mill series-RM8-X	ML		0.002~0.012 0.039~0.118	**For Machining hard-to-cut materials** • Stable tool life and good cutting quality in hard-to-cut material cutting due to double reverse positive relief surface and low cutting load chip breaker
	MM	 SAGX	0.002~0.012 0.039~0.118	**For high hardness cutting** • Stable tool life and good cutting quality due to double reverse positive relief surface and high rigidity chip breaker
	MM	 SNMX	0.004~0.012 0.039~0.118	**For General cutting** • For general cutting range with optimal shape for general milling
Rich Mill series-RM14	ML	 Neutral	0.002~0.012 0.039~0.118	**For HRSA cutting** • Excellent cutting performance in heat resistance STS cutting from neutral type flat cutting edge and sharp chip breaker
	ML	 Right-handed	0.002~0.012 0.039~0.118	**For cast iron and STS cutting** • Excellent cutting performance in general STS and cast iron cutting from right-handed helix cutting edge and sharp chip breaker
Rich Mill series-RM16	MA		0.002~0.012 0.012~0.217	**For Aluminum machining** • Sharp cutting edge design ensures low cutting resistance and excellent machining in difficult- tocut materials, aluminum and light machining
	MF		0.002~0.016 0.012~0.217	**For Light cutting** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining

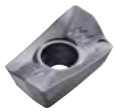
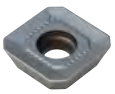
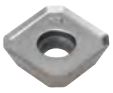
Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

Geometry		Cutting edge	Application range	Features
			feed rate fn (ipr): 0.002 0.004 0.006 0.008 0.010 0.012 0.014 0.016 0.031 0.047 0.055 0.063 depth of cut ap (inch): 0.004 0.020 0.039 0.079 0.118 0.157 0.197 0.236 0.315 0.394 0.591 0.787	
Rich Mill series-RM16	ML		0.002~0.014 0.012~0.217	**For Machining hard-to-cut materials** • Low cutting resistance for excellent tool life and surface roughness in machining hard-to-cut materials
	MM		0.004~0.018 0.020~0.217	**For General cutting** • Suitable geometry design for general milling has wider ranges of machining
	W		0.002~0.012 0.012~0.079	**For Finishing of milling (Wiper)** • Wiper insert provides improved surface roughness due to special cutting edge
Rich Mill series-RMR	ML		0.002~0.016 0.039~0.118	**For Machining hard-to-cut materials** • Stable tool life and cutting performance in hard-to-cut material cutting from hard clamping side preventing reverse positive revolution and low cutting resistance chip breaker
Alpha Mill series	MA		0.004~0.016 0.020~0.630	**For Aluminum machining** • Sharp cutting edge and lubricated top face show excellent chip flow and welding resistance in aluminum machining
	MF		0.002~0.006 0.020~0.630	**For Light cutting** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
	MM		0.004~0.010 0.020~0.630	**For General cutting** • Suitable geometry design for general milling has wider ranges of machining
	ML		0.002~0.006 0.020~0.630	**For Hard-to-cut material machining** • The chip breaker with low cutting resistance ensures superior machinability in hard-to-cut materials

Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

Geometry		Cutting edge	Application range (feed rate fn (ipr): 0.002 0.004 0.006 0.008 0.010 0.012 0.014 0.016 0.031 0.047 0.055 0.063 / depth of cut ap (inch): 0.004 0.020 0.039 0.079 0.118 0.157 0.197 0.236 0.315 0.394 0.591 0.787)	Features
Alpha Mill series	MN		0.004~0.010 0.020~0.630	**For Roughing (nick)** • Design for easy chip cutting ensures high machinability in toughing.
Alpha Mill-X series	MM		0.002~0.014 0.039~0.650	**For General cutting** • Shape for general milling with most cutting range
	ML		0.002~0.012 0.039~0.650	**For Hard-to-cut material machining** • Chip breaker for cutting with low cutting load guarantees long tool life and qualified machining in light cutting and HRSA machining.
Future Mill series	MF		0.002~0.008 0.020~0.197	**For Light cutting** • Special design for light cutting of gummy materials like stainless steel and hard to machine material provide fine surface finish and longer tool life
	MM		0.002~0.012 0.039~0.197	**For General cutting** • Chip breaker design to cover general cutting condition provides wide available application range • Ground type and as sintered type is available
	MR		0.002~0.014 0.059~0.197	**For Roughing** • Strongest cutting edge strength provide stable tool life even in case of severe cutting with heavy intermittent and heavy roughing
	MA		0.004~0.014 0.020~0.197	**For Aluminum machining** • Sharp cutting edge and lubricated top face show excellent chip flow and welding resistance in aluminum machining
Future Mill series P-posi	MA		0.012~0.024 0.012~0.236	**For Aluminum machining** • Excellent surface roughness due to buffed surface in machining aluminum

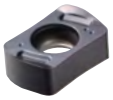
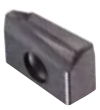
Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

	Geometry	Cutting edge	Application range	Features
			feed rate fn (ipr): 0.002 0.004 0.006 0.008 0.010 0.012 0.014 0.016 0.031 0.047 0.055 0.063 depth of cut ap (inch): 0.004 0.020 0.039 0.079 0.118 0.157 0.197 0.236 0.315 0.394 0.591 0.787	
Future Mill series P-posi	ML		0.012~0.020 0.012~0.118	**For Hard-to-cut material machining** • Low cutting resistance and high hardness cutting edges for excellent surface roughness in machining titanium and Inconel
	MF		0.005~0.020 0.012~0.236	**For Light cutting** • Low cutting resistance for light cutting
	MM		0.008~0.028 0.012~0.236	**For General cutting** • Universal purpose for most of milling applications
	None C/B		0.012~0.020 0.012~0.020	**For Machining high hardness steel** • Ideal for machining high hardness mold steel and heat resistant alloy
Triple Mill series	ML		0.004~0.012 0.039~0.610	**For Hard-to-cut material machining** • Stable tool life and cutting performance in hard-to-cut material cutting due to low cutting load chip breaker
	MM		0.004~0.012 0.039~0.610	**For General cutting** • For general cutting range with optimal shape for general milling
HFM	MF		0.012~0.039 0.004~0.016	**For Light cutting** • Chip breaker for cutting with low cutting load is optimal for light cutting.
	None C/B		0.012~0.031 0.004~0.016	**For Machining high hardness steel** • Shape with hard cutting edge is optimal for high hardness alloy steel machining.

Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

Geometry		Cutting edge	Application range (feed rate fn (ipr): 0.002 0.004 0.006 0.008 0.010 0.012 0.014 0.016 0.031 0.047 0.055 0.063 / depth of cut ap (inch): 0.004 0.020 0.039 0.079 0.118 0.157 0.197 0.236 0.315 0.394 0.591 0.787)	Features
HFMD	ML		0.012~0.031 0.008~0.039	**For Hard-to-cut material machining** • Chip breaker for cutting with low cutting load and hard cutting edge ensure high qualified machining.
	MF		0.012~0.039 0.008~0.039	**For Light cutting** • Chip breaker for cutting with low cutting load is for light cutting.
	MM		0.012~0.047 0.008~0.039	**For General cutting** • Shape for general machining with high feed is available for most machining range.
TP2P	MA		0.002~0.010 0.039~0.650	**For Aluminum machining** • Sharp cutting edge for aluminum machining ensures good machinability. • Buffed surface realizes chip flow and welding resistance.
	ML		0.002~0.010 0.039~0.650	**For Hard-to-cut material machining** • Chip breaker for cutting with low cutting load guarantees long tool life and qualified machining in light cutting and HRSA machining.
	MM		0.002~0.010 0.039~0.650	**For General cutting** • Specialized shape for general slotting is applicable in most cutting ranges.
Pro-XL Mill	MA		0.002~0.008 0.394~2.244	**For Aluminum machining** • Sharp cutting edge with buffing on the surface for aluminum machining ensures chip flow and welding resistance.
Pro-V Mill	MA		0.004~0.012 0.039~0.669	**For Aluminum machining** • Shape for general slotting is applicable in most cutting ranges.

Notice: Application ranges are based on main cutting material

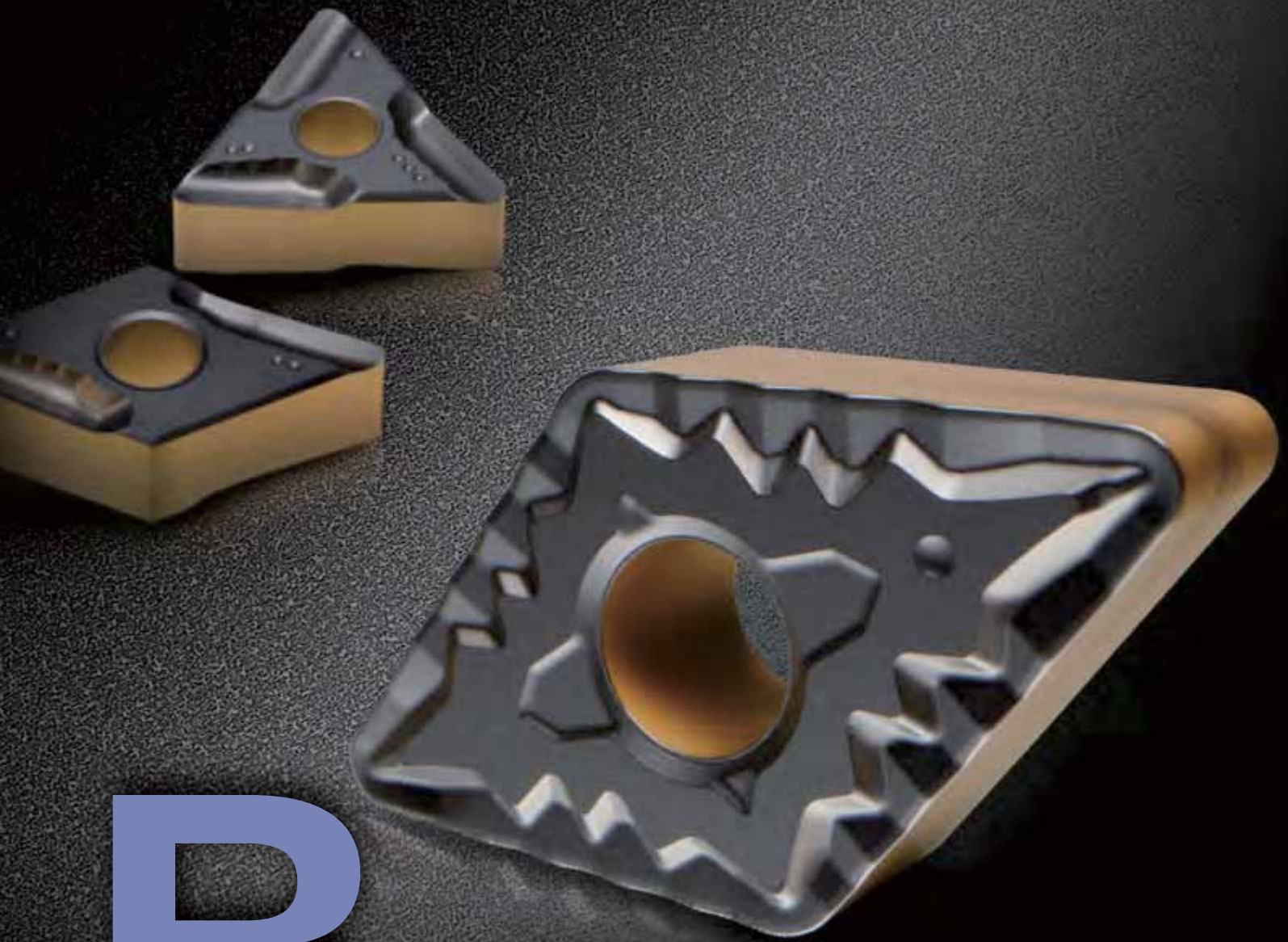
Chip Breakers for Milling

Geometry	Cutting edge	Application range	Features
KING Drill series		feed rate fn (ipr): 0.002 0.003 0.004 0.006 0.010 0.016 0.025 0.039 0.063 0.098 0.157 0.248 depth of cut ap (inch): 1.181 2.362 3.543 4.724 5.906 7.087 8.268 9.449 10.630 11.811 12.992 35.433	
PD 		0.002~0.008 2.362~11.811	**For General cutting** • Chip breaker with strong cutting edge for universal applications with steel, stainless steel, and cast iron
LD 		0.002~0.006 1.575~9.843	**For Light cutting** • Superior chip control in machining of mild steel, forged steel and stainless steel
RD 		0.002~0.008 2.362~11.811	**Reinforced chipping resistance** • Improved central chipping resistance due to reinforced corners of the KING Drill central inserts • Excellent cutting performance even in machining where there is frequent corner breakage of central inserts • e.g. Machining heat-treated steel or stainless steel, and high feed machining, etc.
ND 		0.002~0.004 3.937~15.748	**Non-ferrous metals** • Chip breaker with sharp and polished cutting edge for aluminum and Non-ferrous metals. Machining with KING Drill ensures good chip flow and resistance to chip welding.

Notice: Application ranges are based on main cutting material

TURNING

KORLOY turning tools cover a wide application range with a full line-up of ISO tools that produce high quality and high precision parts for all manufacturers' requirements.



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Turning Chip Breakers

B02 Application Range of KORLOY Main Chip Breakers
B04 Recommended Chip Breakers for Workpiece
B16 Features of Chip Breakers

Inserts

B34 Turning Insert Code System (ISO)
B36 Turning Inserts (Negative)
B73 Turning Inserts (Positive)
B102 Aluminum Inserts (Positive)
B110 cBN Inserts
B113 PCD Inserts

Save Turn

B114 Technical Information for Save Turn
B115 Save Turn Inserts
B116 Save Turn Holders
B119 Save Turn Boring Bars

Auto Tools

B121 Technical Information for Auto Tools
B122 Auto Tools (ISO)
B127 Auto Tools (KHP)
B136 Auto Tools (Blade)
B139 Auto Tools (multi utility)
B142 Auto Tools (KGT/MGT)
B145 Auto Tools (MSB Tool)
B151 MSB Plus
B163 Sleeve

Multi Turn

B164 Technical Information for Multi Turn
B166 Multi Turn

Bearing Solutions

B167 Technical Information for Bearing Solutions
B168 Bearing Solutions
B173 Special Order Form for Bearing Inserts

External Tool Holders

B174 External Tool Holder Code System (ISO)
B175 Index for External Holders
B178 Instructions of External Holder Assembly
B179 Double Clamp System
B184 Lever Lock System
B191 Wedge Clamp System
B193 Clamp on System
B195 Multi Lock System
B202 Screw on System
B209 Ceramic Holders

High Pressure Coolant

B211 Technical Information for KHP Coolant
B214 KHP Coolant

Boring Bar

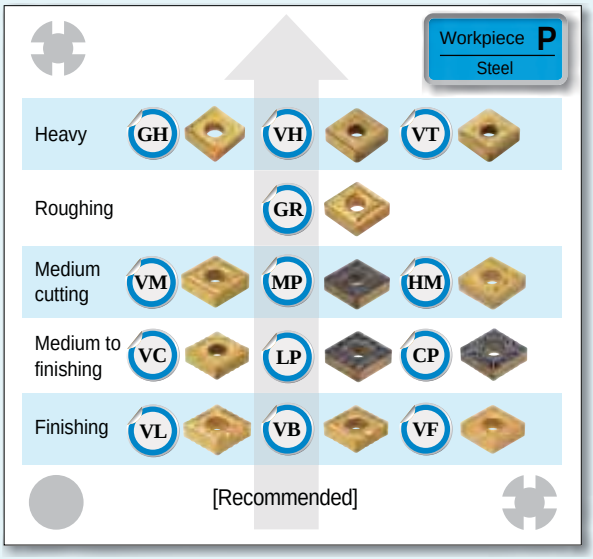
B216 Boring Bar Code System (ISO)
B217 Index for Boring Bars
B219 Instructions of Boring Bar Assembly
B220 Double Clamp System
B222 Lever Lock System
B224 Clamp on System
B225 Multi Lock System
B227 Screw on System
B237 Compact Mini

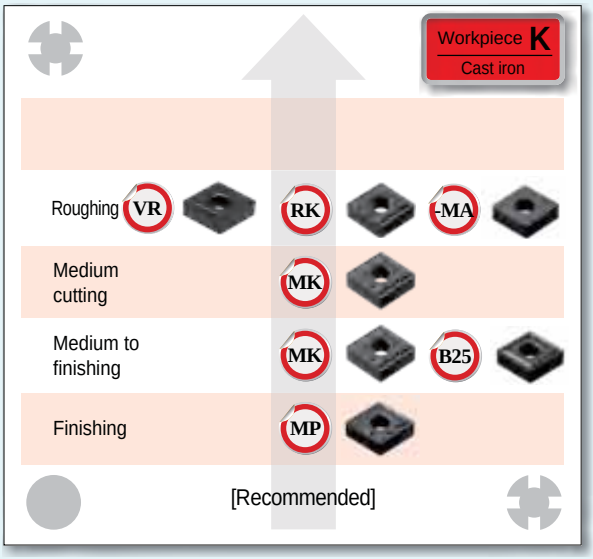
Cartridges

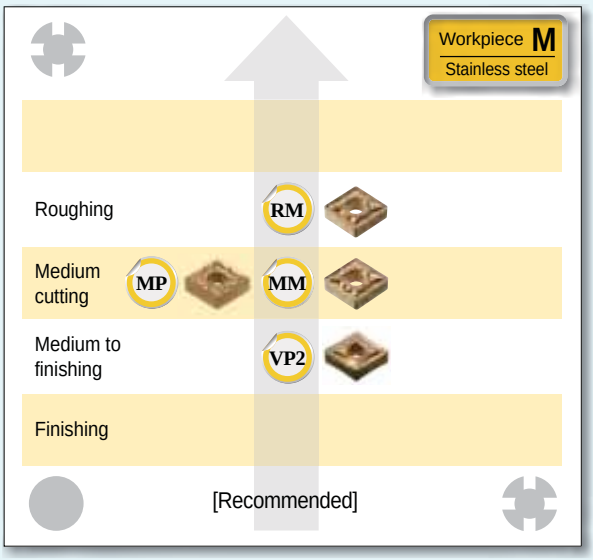
B240 Cartridge Code System (ISO)
B241 Index for Cartridges
B242 Clamp on System/Screw on System
B244 Screw on System

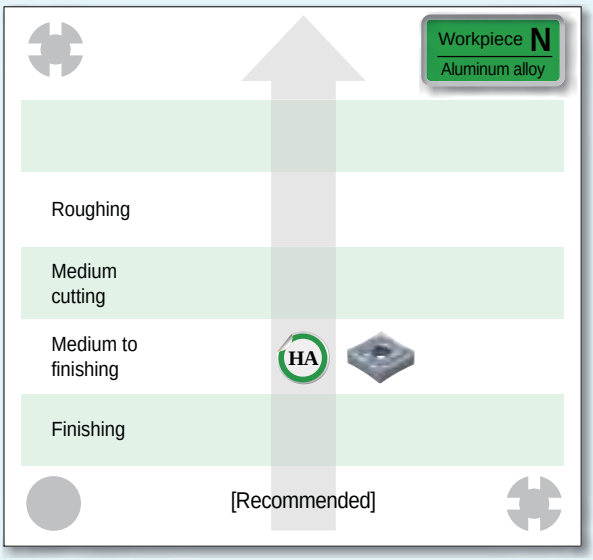
Application Range of KORLOY Main Chip Breakers

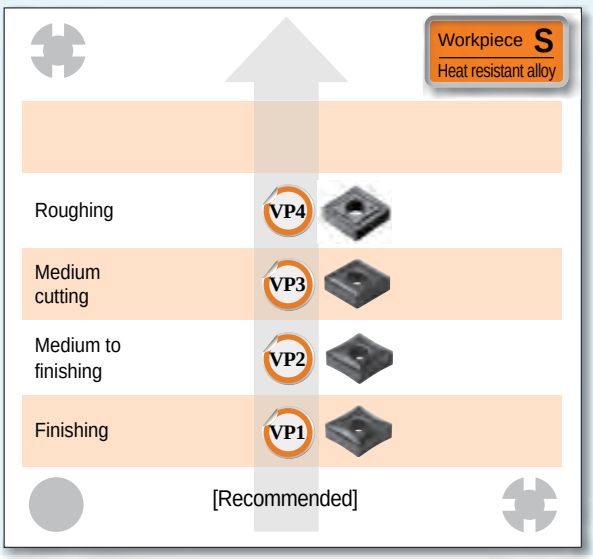
Negative inserts





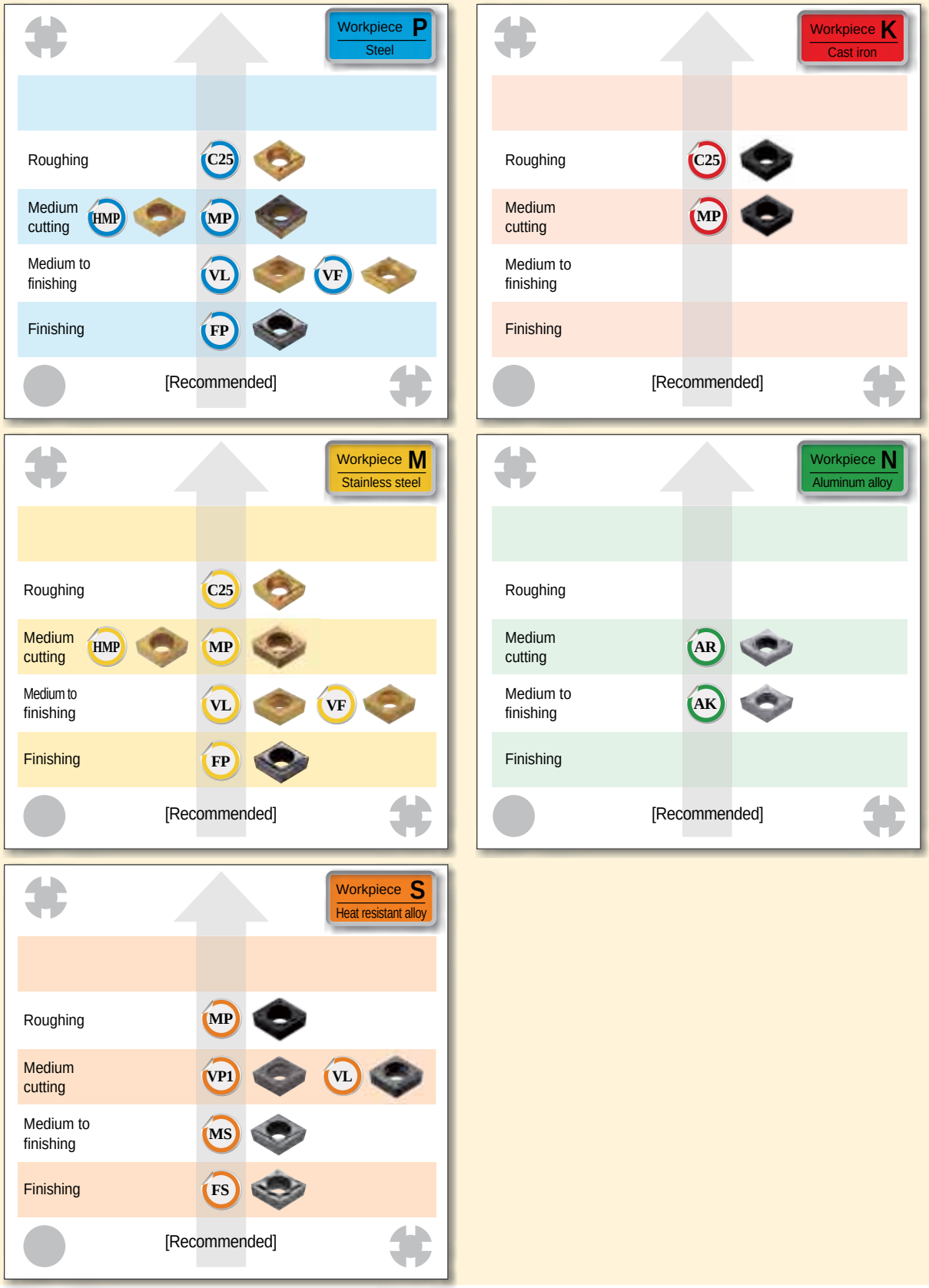






Application Range of KORLOY Main Chip Breakers

Positive inserts

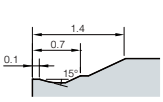
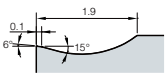
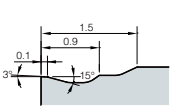
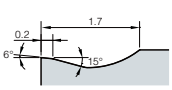
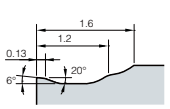
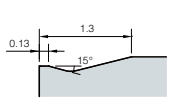


Recommended Chip Breakers for Workpiece

Workpiece **P** Steel

Materials: 1010, 1015, 1025, 8615, 5120, 4130

Hardness: under 180HB

	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape 80°	55°	90°	60°	35°	80°
Negative	0.008 ~ 0.031 ~ 0.059 Finishing	VL		0.004 ~ 0.008 ~ 0.014	NC3215 NC3225 CN1500 CN2500	1000 820 853 755	CNMG  p. B36	DNMG  p. B43	SNMG  p. B50	TNMG  p. B58	VNMG  p. B66	WNMG  p. B68
	0.020 ~ 0.039 ~ 0.079 Finishing	VB		0.006 ~ 0.008 ~ 0.016	NC3215 NC3225 CN1500 CN2500	1115 820 787 689	CNMG  p. B36	DNMG  p. B43		TNMG  p. B58		WNMG  p. B68
	0.020 ~ 0.039 ~ 0.059 Finishing	VF		0.002 ~ 0.006 ~ 0.014	NC3215 NC3220 NC3225 NC5330	1000 886 886 689	CNMG  p. B36	DNMG  p. B43	SNMG  p. B50	TNMG  p. B58	VNMG  p. B66	WNMG  p. B68
	0.020 ~ 0.059 ~ 0.138 Medium to finishing	VC		0.005 ~ 0.010 ~ 0.018	NC3215 NC3220 NC3225 NC5330	935 820 837 656	CNMG  p. B36	DNMG  p. B44	SNMG  p. B50	TNMG  p. B59	VNMG  p. B66	WNMG  p. B68
	0.020 ~ 0.039 ~ 0.138 Medium to finishing	LP		0.004 ~ 0.010 ~ 0.016	NC3215 NC3225 NC5330	984 820 656	CNMG  p. B36	DNMG  p. B43	SNMG  p. B50	TNMG  p. B58	VNMG  p. B66	WNMG  p. B68
	0.020 ~ 0.051 ~ 0.138 Medium to finishing	VQ		0.005 ~ 0.008 ~ 0.017	NC3215 NC3225 NC5330	985 820 656	CNMG  p. B38	DNMG  p. B45	SNMG  p. B52	TNMG  p. B60	VNMG  p. B67	WNMG  p. B70
	0.020 ~ 0.051 ~ 0.138 Medium to finishing	CP		0.004 ~ 0.011 ~ 0.014	NC3215P NC3225P	935 820	CNMG p. B36	DNMG p. B44	SNMG p. B50	TNMG p. B50	VNMG p. B66	WNMG p. B68
	0.020 ~ 0.059 ~ 0.177 Medium cutting	MP		0.006 ~ 0.012 ~ 0.018	NC3215 NC3225 NC5330	984 869 656	CNMG p. B37	DNMG p. B44	SNMG p. B51	TNMG p. B59	VNMG p. B66	WNMG p. B69
	0.039 ~ 0.098 ~ 0.197 Medium cutting	VM		0.004 ~ 0.010 ~ 0.020	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	968 853 853 673 722 656	CNMG p. B37	DNMG p. B45	SNMG p. B51	TNMG p. B59	VNMG p. B67	WNMG p. B69
	0.059 ~ 0.098 ~ 0.217 Medium cutting	HM		0.005 ~ 0.011 ~ 0.020	NC3215 NC3225 NC5330	985 870 656	CNMG p. B37	DNMG p. B44	SNMG p. B51	TNMG p. B59	VNMG p. B66	WNMG p. B69

●: The first recommended cutting condition

Recommended Chip Breakers for Workpiece

Workpiece P Steel

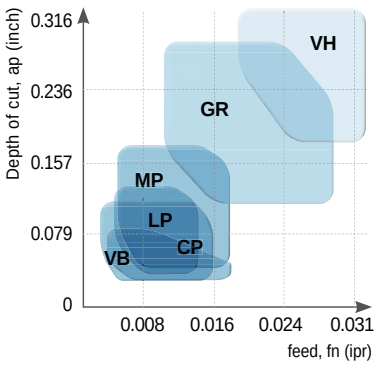
Materials: 1010, 1015, 1025, 8615, 5120, 4130

Hardness: under 180HB

	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape					
							80°	55°	90°	60°	35°	80°
Negative	0.039 ~ 0.118 ~ 0.177 Roughing	GR	3.1, 0.28, 21°	0.008 ~ 0.014 ~ 0.020	NC3125 NC3225 NC5330	591~1214 492~1083 427~917	CNMG p. B38	DNMG p. B45	SNMG p. B52	TNMG p. B60		WNMG p. B69
	0.118 ~ 0.0276 ~ 0.433 Heavy	GH	0.28, 8°	0.012 ~ 0.031 ~ 0.051	NC3125 NC3225 NC5330	591~1214 492~1083 427~917	CNMM p. B42		SNMM p. B57			
	0.236 ~ 0.394 ~ 0.591 Heavy (General)	VH	0.6, 0.25, 20°, 28°	0.028 ~ 0.039 ~ 0.055	NC3215 NC3030 NC500H NC5330	164~820 164~492 164~492 164~492	CNMM p. B42		SNMM p. B57			
	0.276 ~ 0.472 ~ 0.669 Heavy (High feed cutting)	VT	0.5, 0.25, 20°, 20°	0.030 ~ 0.047 ~ 0.063	NC3215 NC3030 NC500H NC5330	164~820 164~492 164~492 164~492	CNMM p. B42		SNMM p. B57			

●: The first recommended cutting condition

P Negative



Recommended Chip Breakers for Workpiece

Workpiece **P** Steel

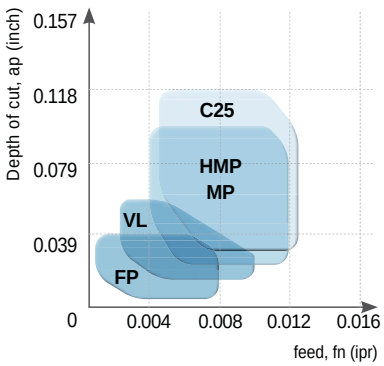
Materials: 1010, 1015, 1025, 8615, 5120, 4130

Hardness: under 180HB

	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape 80°	55°	90°	60°	35°	80°
Positive	0.004 ~ 0.020 ~ 0.039 Finishing	FP	0.5, 20°	0.000 ~ 0.002 ~ 0.008	NC3215 NC3225 CN1500 CN2500	1148 886 853 787	CCMT p. B73	DCMT p. B79	SCMT p. B84	TCMT p. B88	VB(C)MT p. B94	
	0.004 ~ 0.020 ~ 0.039 Medium to finishing	VL	1.4, 0.6, 5°	0.002 ~ 0.004 ~ 0.008	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	1000 886 886 689 853 787	CCMT p. B73	DCMT p. B79	SCMT p. B84	TCMT p. B88	VB(C)MT p. B94	
	0.004 ~ 0.020 ~ 0.059 Medium to finishing	VF	1.5, 0.6, 0.1, 12°	0.002 ~ 0.006 ~ 0.010	NC3215 NC3220 NC3225 NC5330 CC1500 CN1500 CN2500	1000 886 886 689 853 820 755	CCMT p. B73	DCMT p. B79	SCMT p. B84	TC(P)MT p. B88	VB(C)MT p. B94	
	0.024 ~ 0.059 ~ 0.098 Medium cutting	HMP	1.9, 0.7, 0.15, 6°	0.004 ~ 0.008 ~ 0.012	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	1050 935 935 738 787 656	CCMT p. B73	DCMT p. B79	SCMT p. B84	TCMT p. B88	VB(C)MT p. B94	
	0.024 ~ 0.039 ~ 0.098 Medium cutting	MP	1.7, 0.2, 7°, 15°	0.004 ~ 0.008 ~ 0.012	NC3215 NC3225 CN1500 CN2500	984 820 787 656	CCMT p. B73	DCMT p. B79	SCMT p. B84	TC(P)MT p. B88	VB(C)MT p. B94	
	0.031 ~ 0.079 ~ 0.118 Roughing	C25	1.9, 0.15, 15°	0.005 ~ 0.010 ~ 0.013	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	1050 935 935 738 755 689	CCMT p. B74	DCMT p. B80	SCMT p. B84	TCMT p. B89		

●: The first recommended cutting condition

P Positive

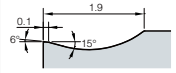
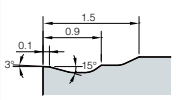
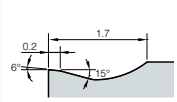
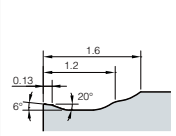
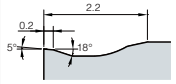
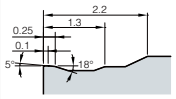


Recommended Chip Breakers for Workpiece

Workpiece P Steel

Materials: 1045, 1049, 4140, 1522

Hardness: under 180~260HB

	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape					
							80°	55°	90°	60°	35°	80°
Negative	0.020 ~ 0.039 ~ 0.079 Finishing	VB		0.006 ~ 0.008 ~ 0.016	NC3215 NC3225 CN1500 CN2500	1115 820 755 623	CNMG  p. B36	DNMG  p. B43		TNMG  p. B58		WNMG  p. B68
	0.020 ~ 0.039 ~ 0.059 Finishing	VF		0.003 ~ 0.006 ~ 0.014	NC3215 NC3225 NC5330	1000 886 820	CNMG  p. B36	DNMG  p. B43	SNMG  p. B50	TNMG  p. B58	VNMG  p. B66	WNMG  p. B68
	0.020 ~ 0.039 ~ 0.138 Medium to finishing	VC		0.005 ~ 0.010 ~ 0.018	NC3215 NC3220 NC3225 NC5330	935 837 820 656	CNMG  p. B36	DNMG  p. B44	SNMG  p. B50	TNMG  p. B59	VNMG  p. B66	WNMG  p. B68
	0.020 ~ 0.039 ~ 0.098 Medium cutting	LP		0.004 ~ 0.010 ~ 0.016	NC3215 NC3225 NC5330	984 820 656	CNMG  p. B36	DNMG  p. B43	SNMG  p. B50	TNMG  p. B58	VNMG  p. B66	WNMG  p. B68
	0.020 ~ 0.059 ~ 0.177 Medium cutting	MP		0.006 ~ 0.012 ~ 0.018	NC3215 NC3225 NC5330	984 820 656	CNMG  p. B37	DNMG  p. B44	SNMG  p. B51	TNMG  p. B59	VNMG  p. B66	WNMG  p. B69
	0.039 ~ 0.098 ~ 0.197 Medium cutting	VM		0.006 ~ 0.010 ~ 0.020	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	853 804 804 673 689 558	CNMG  p. B37	DNMG  p. B45	SNMG  p. B51	TNMG  p. B59	VNMG  p. B67	WNMG  p. B69
	0.039 ~ 0.118 ~ 0.177 Medium to roughing	GR		0.008 ~ 0.014 ~ 0.020	NC3125 NC3225 NC5330	591~1214 492~1083 427~917	CNMG p. B38	DNMG p. B45	SNMG p. B52	TNMG p. B60		WNMG p. B69
	0.236 ~ 0.394 ~ 0.591 Heavy (General)	VH		0.028 ~ 0.039 ~ 0.055	NC3215 NC3030 NC500H NC5330	164~820 164~492 164~492 164~492	CNMM p. B42		SNMM p. B57			
	0.276 ~ 0.472 ~ 0.669 Heavy (High feed cutting)	VT		0.030 ~ 0.047 ~ 0.063	NC3215 NC3030 NC500H NC5330	164~820 164~492 164~492 164~492	CNMM p. B42		SNMM p. B57			

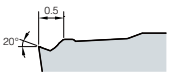
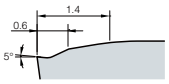
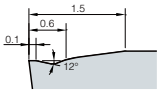
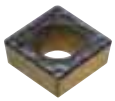
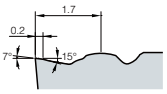
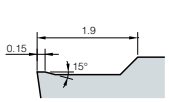
●: The first recommended cutting condition

Recommended Chip Breakers for Workpiece

Workpiece **P** Steel

Materials: 1045, 1049, 4140, 1522

Hardness: under 180~260HB

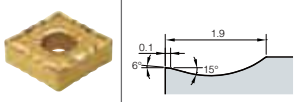
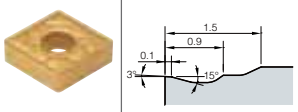
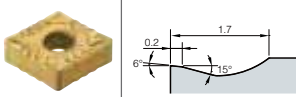
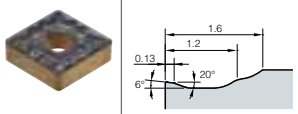
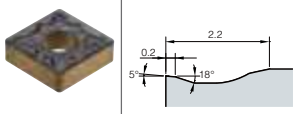
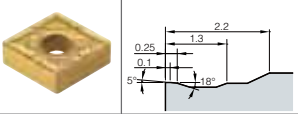
	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape 80°	55°	90°	60°	35°	80°
Positive	0.004 ~ 0.020 ~ 0.039 Finishing	FP 		0.000 ~ 0.002 ~ 0.008	NC3215 NC3225 CN1500 CN2500	1148 886 853 787	CCMT  p. B73	DCMT  p. B79	SCMT  p. B84	TCMT  p. B88	VB(C)MT  p. B94	
	0.016 ~ 0.020 ~ 0.039 Medium to finishing	VL 		0.002 ~ 0.004 ~ 0.010	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	1132 1017 1017 787 820 689	CCMT  p. B73	DCMT  p. B79	SCMT  p. B84	TCMT  p. B88	VB(C)MT  p. B94	
	0.004 ~ 0.020 ~ 0.059 Medium to finishing	VF 		0.002 ~ 0.006 ~ 0.010	NC3215 NC3220 NC3225 NC5330 CC1500 CN1500 CN2500	869 984 984 755 853 787 689	CCMT  p. B73	DCMT  p. B79	SCMT  p. B84	TC(P)MT  p. B88	VB(C)MT  p. B94	
	0.024~ 0.059 ~ 0.098 Medium cutting	MP 		0.004 ~ 0.006 ~ 0.012	NC3215 NC3225	984 820	CCMT  p. B73	DCMT  p. B79	SCMT  p. B84	TC(P)MT  p. B88	VB(C)MT  p. B94	
	0.031 ~ 0.079 ~ 0.118 Roughing	C25 		0.005 ~ 0.006 ~ 0.013	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	1020 935 935 738 328 262	CCMT  p. B74	DCMT  p. B80	SCMT  p. B84	TCMT  p. B89		

●: The first recommended cutting condition

Recommended Chip Breakers for Workpiece

Workpiece **P** Steel

Materials: 4320, 4340, 5140, F2, D3, 4140, Hardened steel
Hardness: 260~350HB

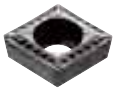
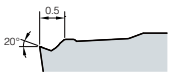
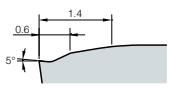
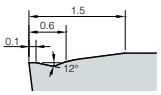
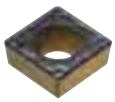
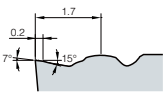
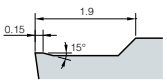
	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape: 80°	55°	90°	60°	35°	80°
Negative	0.020 ~ **0.039** ~ 0.079 Finishing	VB		0.006 ~ **0.008** ~ 0.016	NC3215 NC3225 CN1500 CN2500	656 486 722 656	CNMG  p. B36	DNMG  p. B43		TNMG  p. B58		WNMG  p. B68
	0.020 ~ **0.039** ~ 0.059 Finishing	VF		0.003 ~ **0.006** ~ 0.012	NC3215 NC3220 NC3225	591 522 522	CNMG  p. B36	DNMG  p. B43	SNMG  p. B50	TNMG  p. B58	VNMG  p. B66	WNMG  p. B68
	0.020 ~ **0.059** ~ 0.138 Medium to finishing	VC		0.005 ~ **0.010** ~ 0.018	NC3215 NC3220 NC3225 NC5330	551 486 492 656	CNMG  p. B36	DNMG  p. B44	SNMG  p. B50	TNMG  p. B59	VNMG  p. B66	WNMG  p. B68
	0.020 ~ **0.039** ~ 0.098 Medium cutting	LP		0.004 ~ **0.010** ~ 0.016	NC3215 NC3225 NC5330	984 820 656	CNMG  p. B36	DNMG  p. B43	SNMG  p. B50	TNMG  p. B58	VNMG  p. B66	WNMG  p. B68
	0.020 ~ **0.059** ~ 0.177 Medium cutting	MP		0.006 ~ **0.010** ~ 0.018	NC3215 NC3225 NC5330	984 820 656	CNMG  p. B37	DNMG  p. B44	SNMG  p. B51	TNMG  p. B59	VNMG  p. B66	WNMG  p. B69
	0.039 ~ **0.098** ~ 0.197 Medium cutting	VM		0.004 ~ **0.010** ~ 0.002	NC3215 NC3220 NC3225 CN1500 CN2500	571 502 502 394 328	CNMG  p. B37	DNMG  p. B45	SNMG  p. B51	TNMG  p. B59	VNMG  p. B67	WNMG  p. B69
	0.039 ~ **0.118** ~ 0.177 Medium to roughing	GR		0.008 ~ **0.014** ~ 0.020	NC3125 NC3225 NC5330	591~1214 492~1083 427~917	CNMG p. B38	DNMG p. B45	SNMG p. B52	TNMG p. B60		WNMG p. B69
	0.236 ~ **0.394** ~ 0.591 Heavy (General)	VH		0.028 ~ **0.039** ~ 0.055	NC3215 NC3030 NC500H NC5330	164~820 164~492 164~492 164~492	CNMM p. B42		SNMM p. B57			
	0.276 ~ **0.472** ~ 0.669 Heavy (High feed cutting)	VT		0.030 ~ **0.047** ~ 0.063	NC3215 NC3030 NC500H NC5330	164~820 164~492 164~492 164~492	CNMM p. B42		SNMM p. B57			

●: The first recommended cutting condition

Recommended Chip Breakers for Workpiece

Workpiece **P** Steel

Materials: 4320, 4340, 5140, F2, D3, 4140, Hardened steel
Hardness: 260~350HB

	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape 80°	55°	90°	60°	35°	80°
Positive	0.004 ~ 0.020 ~ 0.039 Finishing	FP	 	0.000 ~ 0.002 ~ 0.008	NC3215 NC3225 CN1500 CN2500	1181 866 853 787	CCMT  p. B73	DCMT  p. B79	SCMT  p. B84	TCMT  p. B88	VB(C)MT  p. B94	
	0.016 ~ 0.020 ~ 0.059 Medium to finishing	VL	 	0.002 ~ 0.004 ~ 0.010	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	1000 1017 1017 787 689 623	CCMT  p. B73	DCMT  p. B79	SCMT  p. B84	TCMT  p. B88	VB(C)MT  p. B94	
	0.004 ~ 0.020 ~ 0.059 Medium to finishing	VF	 	0.002 ~ 0.006 ~ 0.010	NC3215 NC3220 NC3225 NC5330 CC1500 CN1500 CN2500	1083 984 984 755 853 820 787	CCMT  p. B73	DCMT  p. B79	SCMT  p. B84	TC(P)MT  p. B88	VB(C)MT  p. B94	
	0.024~ 0.059 ~ 0.098 Medium cutting	MP	 	0.004 ~ 0.010 ~ 0.012	NC3215 NC3225 NC5300 CN1500 CN2500	1000 935 738 787 722	CCMT  p. B73	DCMT  p. B79	SCMT  p. B84	TC(P)MT  p. B88	VB(C)MT  p. B94	
	0.031 ~ 0.079 ~ 0.118 Roughing	C25	 	0.005 ~ 0.006 ~ 0.013	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	1020 935 935 738 328 262	CCMT  p. B74	DCMT  p. B80	SCMT  p. B84	TCMT  p. B89		

●: The first recommended cutting condition

Recommended Chip Breakers for Workpiece

Workpiece **M** Stainless steel

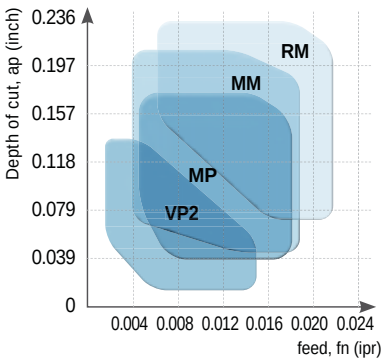
Materials: 304, 316, 430, 630
Ferrite, austenite, martensite, precipitation hardening stainless steels

Hardness: 135~300HB

	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape 80°	55°	90°	60°	35°	80°
Negative	0.020 ~ 0.059 ~ 0.157 Medium to finishing	VP2	2.5, 13°	0.004 ~ 0.008 ~ 0.016	PC8105 PC8110 PC8115 PC5300 PC5400	607 558 525 443 394	CNMG p. B41	DNMG p. B47	SNMG p. B55	TNMG p. B63		WNMG p. B71
	0.039 ~ 0.079 ~ 0.177 Medium cutting	MP	2.2, 0.2, 5°, 18°	0.006 ~ 0.012 ~ 0.018	PC8105 PC8110 PC8115 PC5300 PC5400	574 525 492 427 361	CNMG p. B37	DNMG p. B44	SNMG p. B51	TNMG p. B59	VNMG p. B66	WNMG p. B69
	0.020 ~ 0.118 ~ 0.217 Medium cutting	MM	2.1, 0.3, 0.1, 10°, 20°	0.005 ~ 0.010 ~ 0.018	NC9115 NC9125 NC9135 PC8110 PC8115 PC5300	623 558 427 525 492 427	CNMG p. B40	DNMG p. B46	SNMG p. B54	TNMG p. B62	VNMG p. B67	WNMG p. B71
	0.079 ~ 0.157 ~ 0.236 Roughing	RM	2.6, 0.31, 7°, 18°	0.006 ~ 0.012 ~ 0.022	NC9115 NC9125 NC9135 PC8110 PC8115 PC5300	623 558 427 525 492 427	CNMG p. B40	DNMG p. B47	SNMG p. B55	TNMG p. B63	VNMG p. B67	WNMG p. B71

●: The first recommended cutting condition

M Negative



Recommended Chip Breakers for Workpiece

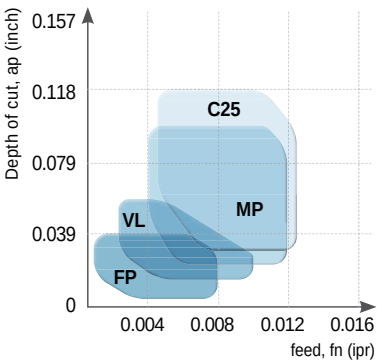
Workpiece **M** Stainless steel

Materials: 304, 316, 430, 630
Ferrite, austenite, martensite, precipitation hardening stainless steels
Hardness: 135~300HB

	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape 80°	55°	90°	60°	35°	80°
Positive	0.004 ~ 0.020 ~ 0.039 Finishing	VL	1.4, 0.6, 5°	0.002 ~ 0.004 ~ 0.008	PC8105 PC8110 PC8115 PC5300 PC5400 NC5330 NC9025	705 640 623 541 443 541 541	CCMT p. B73	DCMT p. B79	SCMT p. B84	TCMT p. B88	VB(C)MT p. B94	
	0.012 ~ 0.039 ~ 0.079 Medium to finishing	HMP	1.9, 0.7, 0.15, 6°	0.002 ~ 0.004 ~ 0.010	PC8105 PC8110 PC8115 PC5300 PC5400 NC5330 NC9025	623 574 557 442 393 492 492	CCMT p. B73	DCMT p. B79	SCMT p. B84	TCMT p. B88	VB(C)MT p. B94	
	0.012 ~ 0.059 ~ 0.118 Medium to finishing	MP	1.7, 0.2, 15°	0.002 ~ 0.006 ~ 0.014	PC8105 PC8110 PC8115 PC5300 PC5400 NC5330 NC9025	623 574 558 443 394 492 492	CCMT p. B73	DCMT p. B79	SCMT p. B84	TC(P)MT p. B88	VB(C)MT p. B94	
	0.039 ~ 0.079 ~ 0.118 Medium cutting	C25	1.9, 0.15, 15°	0.004 ~ 0.010 ~ 0.014	PC8110 PC5300 PC9030	558 509 509	CCMT p. B74	DCMT p. B80	SCMT p. B84	TCMT p. B89		

●: The first recommended cutting condition

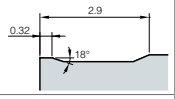
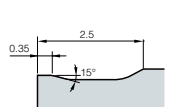
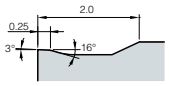
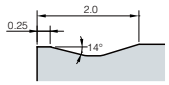
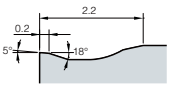
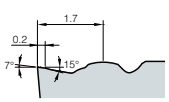
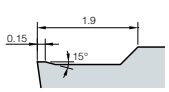
M Positive



Recommended Chip Breakers for Workpiece

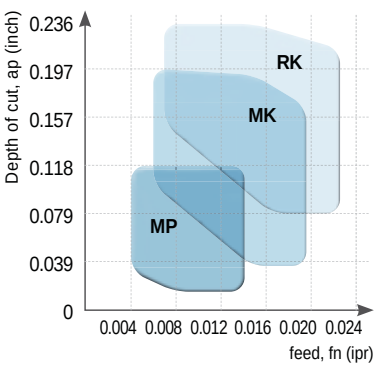
Workpiece **K** Cast iron

Materials: No208B, No55B, 60-40-18, 80-55-06, etc : Gray cast iron, Ductile cast iron
Hardness: 135~185HB
Tensile strength: under 450N/mm²

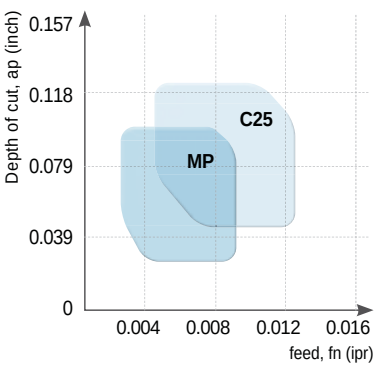
	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape: 80°	55°	90°	60°	35°	80°
Negative	0.039 ~ 0.118 ~ 0.177 Roughing	VR		0.008 ~ 0.014 ~ 0.024	NC6310	656~820	CNMG p. B39	DNMG p. B46	SNMG p. B54	TNMG p. B62		WNMG p. B70
	0.059 ~ 0.118 ~ 0.236 Roughing	RK		0.008 ~ 0.012 ~ 0.024	NC6310	492~1476	CNMG p. B39	DNMG p. B46	SNMG p. B54	TNMG p. B62		WNMG p. B70
	0.039 ~ 0.098 ~ 0.236 Roughing	C/B none		0.006 ~ 0.012 ~ 0.024	DB1000 DBN500 DBN700A NC6310 NC6315	492~656 656~1640 1640~6560 459~1378 394~951	CNMA p. B39	DNMA p. B46	SNMA p. B53	TNMA p. B61		
	0.039 ~ 0.098 ~ 0.197 Medium ~ Medium to finishing	MK		0.004 ~ 0.010 ~ 0.020	NC6310	492~1476	CNMG p. B38	DNMG p. B46	SNMG p. B53	TNMG p. B61	VNMG p. B67	WNMG p. B70
	0.020 ~ 0.079 ~ 0.138 Medium to finishing	B25		0.008 ~ 0.014 ~ 0.024	NC6310 NC6315	459~1247 394~951	CNMG p. B38	DNMG p. B45	SNMG p. B52	TNMG p. B60		
	0.020 ~ 0.039 ~ 0.098 Finishing	MP		0.004 ~ 0.010 ~ 0.018	NC6310 NC6315	459~1247 394~951	CNMG p. B37	DNMG p. B44	SNMG p. B51	TNMG p. B59	VNMG p. B66	WNMG p. B69
Positive	0.039 ~ 0.118 ~ 0.177 Roughing	MP		0.004 ~ 0.008 ~ 0.014	NC6310	738~951	CCMT p. B73	DCMT p. B79	SCMT p. B84	TC(P)MT p. B88	VB(C)MT p. B94	
	0.059 ~ 0.118 ~ 0.236 Roughing	C25		0.004~ 0.010 ~ 0.016	NC6310 NC6315	935~1115 656	CCMT p. B74	DCMT p. B80	SCMT p. B84	TCMT p. B89		

●: The first recommended cutting condition

K Negative



K Positive



Recommended Chip Breakers for Workpiece

Workpiece N Aluminum alloy

Materials: Aluminum alloy
Hardness: 20~110HB

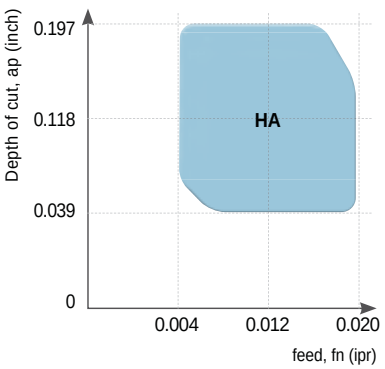
	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape 80°	55°	90°	60°	35°	80°
Negative	0.020 ~ 0.079 ~ 0.236 Medium cutting	HA	2.5, 0.6, 9°, 13°	0.004 ~ 0.008 ~ 0.020	H01	1640	CNMG p. B41	DNMG p. B48	SNMG p. B56	TNMG p. B63	VNMG p. B67	WNMG p. B72
Positive	0.004 ~ 0.039 ~ 0.157 Medium to finishing	AK	25°	0.001 ~ 0.008 ~ 0.016	H01 ND1000 PD1000	3281 3281 3281	CCGT p. B103	DCGT p. B104	SCGT p. B106	TCGT p. B107	VB(C)GT p. B108	RCGT p. B105
	0.020 ~ 0.059 ~ 0.157 Medium cutting	AR	13°	0.002 ~ 0.012 ~ 0.020	H01 ND1000 PD1000	3281 3281 3281	CCGT p. B103	DCGT p. B104	SCGT p. B106	TCGT p. B107	VB(C)GT p. B108	RCGT p. B105

Materials: Copper, Bronze alloy
Hardness: 20~110HB

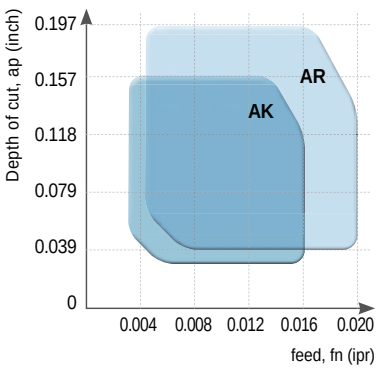
	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (m/min)	Insert shape 80°	55°	90°	60°	35°	80°
Negative	0.020 ~ 0.079 ~ 0.157 Medium to finishing	HA	2.5, 0.6, 9°, 13°	0.004 ~ 0.008 ~ 0.020	H01	3281	CNMG p. B41	DNMG p. B48	SNMG p. B56	TNMG p. B63	VNMG p. B67	WNMG p. B72
Positive	0.004 ~ 0.039 ~ 0.118 Medium to finishing	AK	25°	0.001 ~ 0.008 ~ 0.012	H01	3281	CCGT p. B103	DCGT p. B104	SCGT p. B106	TCGT p. B107	VB(C)GT p. B108	RCGT p. B105
	0.020 ~ 0.059 ~ 0.118 Medium cutting	AR	13°	0.002 ~ 0.010 ~ 0.016	H01	3281	CCGT p. B103	DCGT p. B104	SCGT p. B106	TCGT p. B107	VB(C)GT p. B108	RCGT p. B105

●: The first recommended cutting condition

N Negative



N Positive



Recommended Chip Breakers for Workpiece

Workpiece **S** Heat resistant alloy

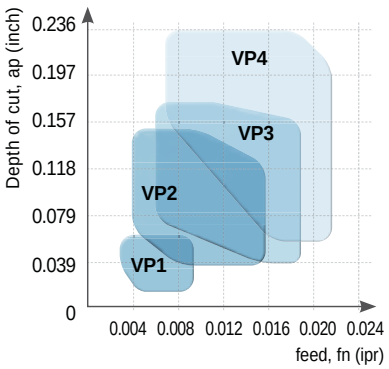
Materials: Inconel, Nimonic, Stellite, Ti alloy

Hardness: 160~350HB

	Depth of cut (inch)	C/B	Cutting edge	Feed (ipr)	Grade	Cutting Speed (sfm)	Insert shape 80°	55°	90°	60°	35°	80°
Negative	0.004 ~ **0.020** ~ 0.059 Finishing	VP1	1.2, 18°	0.002 ~ **0.004** ~ 0.008	PC8110 PC5300 NC5330	197 164 164	CNGG p. B40	DNGG p. B47				
	0.020 ~ **0.059** ~ 0.157 Medium to finishing	VP2	2.5, 13°	0.004 ~ **0.008** ~ 0.016	PC8110 PC5300	197 148	CNMG p. B41	DNMG p. B47	SNMG p. B55	TNMG p. B63		WNMG p. B71
	0.002 ~ **0.079** ~ 0.118 Medium cutting	VP3	2.4, 0.5, 15°	0.002 ~ **0.006** ~ 0.010	PC8110 PC5300	197 131	CNMG p. B41	DNMG p. B47	SNMG p. B55	TNMG p. B63	VNMG p. B67	WNMG p. B71
	0.039 ~ **0.098** ~ 0.157 Roughing	VP4	2.6, 0.17, 8°, 18°	0.006 ~ **0.008** ~ 0.014	PC8115	197 131	CNMG p. B41	DNMG p. B48	SNMG p. B55	TNMG p. B63		WNMG p. B71
Positive	0.020 ~ **0.079** ~ 0.157 Medium cutting	VP1	1.2, 18°	0.002 ~ **0.009** ~ 0.012	PC8110 PC5300	197 148	CCGT p. B74	DCGT p. B81			VCGT p. B98	
	0.008 ~ **0.039** ~ 0.098 Medium cutting	MS	0.5, 12°	0.001 ~ **0.004** ~ 0.010	PC8110 PC5300	197 148	CCGT p. B74	DCGT p. B80			VCGT p. B98	
	0.004 ~ **0.031** ~0.059 Finishing	FS	0.4, 16°	0.000~ **0.003** ~ 0.008	PC8110 PC5300	197 148	CCGT p. B74	DCGT p. B80		TCGT p. B89	VCGT p. B98	

●: The first recommended cutting condition

S Negative



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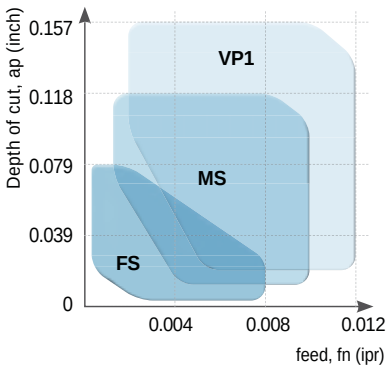


Features of Chip Breakers

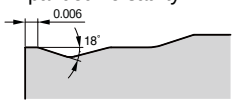
CP Chip Breaker new [For medium to finishing]

- Chip breaker with strong cutting edge for heavy interrruption in the range of medium to finishing
- Effective chip control in the range from low depth of cut to high depth of cut due to 2-stepped back angle
- Stable chip evacuation and breaking long chip in deep cutting by side rake angle and continuous bumps

Features of CP chip breaker

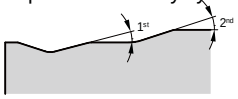
▶ Flat land

- Strong cutting edge in interrupted roughing
- Keeping the balance between continuous cutting and interrupted cutting
- Expanded versatility



▶ 2-steped back side

- Better chip control in low depth of cut machining
- Improved chip evacuation in high feed machining
- Expanded versatility by 2-steped rake angle





▶ Side rake angle + continuous bumps

- Enhanced surface finish
- Improved chip evacuation
- Breaking long chips

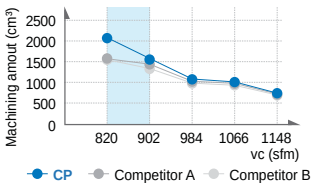
Performance evaluation

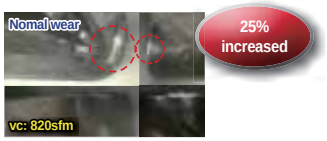
V-T (Vc-Tool life)

■ **Workpiece** Alloy steel (1522), External machining

■ **Cutting condition** vc (sfm) = 820, 984, 1148, fn (ipr) = 0.012, ap (inch) = 0.020, wet

■ **Tools** **Insert** : CNMG432-CP (NC3215P)
Holder: PCLNL16-4D





CP



Competitor A



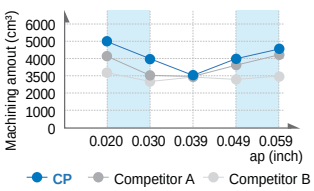
Competitor B

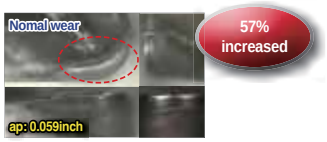
D-T (Depth of cut-Tool life)

■ **Workpiece** Alloy steel (1522), External machining

■ **Cutting condition** vc (sfm) = 820, fn (ipr) = 0.008, ap (inch) = 0.020, 0.030, 0.039, 0.049, 0.059, wet

■ **Tools** **Insert** : CNMG432-CP (NC3215P)
Holder : PCLNL16-4D





CP

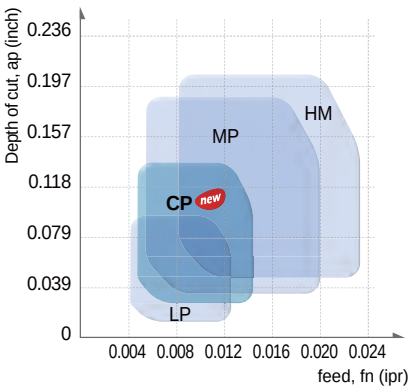


Competitor A



Competitor B

Application range



Features of Chip Breakers

FP Chip Breaker new [For chip control in finishing]

- Chip breaker applied on one side of insert controls chip in mild steel machining with low depth of cut
- Chip control in poor machining (with lower depth of cut than nose R, in machining minor cutting edge and in back cutting)
- Decreased cutting load and excellent surface finish due to 3-dimensional cutting edge and side rake angle

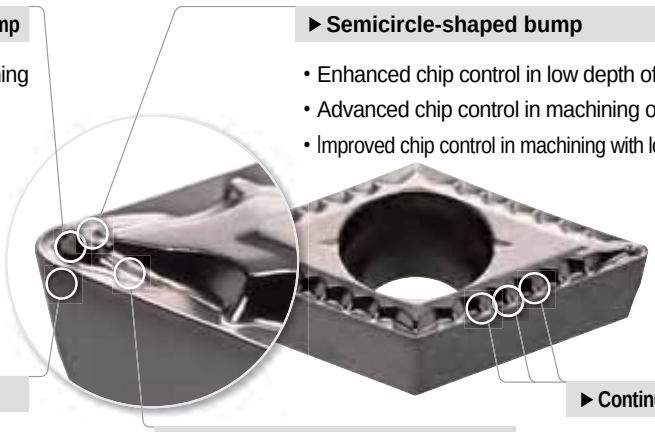
Features of FP chip breaker

▶ Concave form of semicircle-shaped bump

- Better chip curling in mild steel machining
- Enhanced chip control in low depth of cut and low feed machining

▶ Semicircle-shaped bump

- Enhanced chip control in low depth of cut machining
- Advanced chip control in machining of minor cutting edge
- Improved chip control in machining with lower depth of cut than nose R



▶ 3-dimensional side rake angle

- Ensuring surface finish and guiding chip to right dirction

▶ Assistant bump on flank surface

- Better chip curling in high depth of cut and low feed machining
- Preventing chip twist

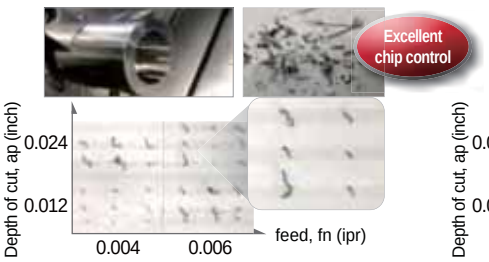
▶ Continuous bump on flank surface

- Cutting long chip

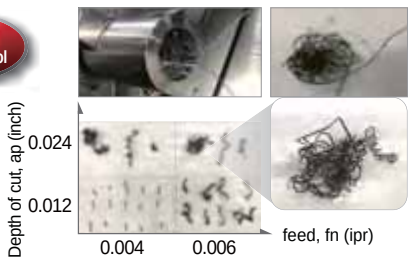
Performance evaluation

Chip control

- **Workpiece** Mild steel (1020), Ø1.575 Internal machining
- **Cutting condition** vc (sfm) = 656, n (rpm) = 1,600, fn (ipr) = 0.0012, ap (inch) = 0.0197, wet
- **Tools** **Insert** : CCMT32.51-FP (NC3215)
  H older: S10M-SCLCR3



FP



Competitor

Surface finish

- **Workpiece** Mild steel (1020), Ø1.181 External machining
- **Cutting condition** vc (sfm) = 656, n (rpm) = 2,000, fn (ipr) = 0.0031, ap (inch) = 0.0315, wet
- **Tools** **Insert** : CCMT32.51-FP (NC3215)
  Holder: SCLCR10-3A



FP



Competitor

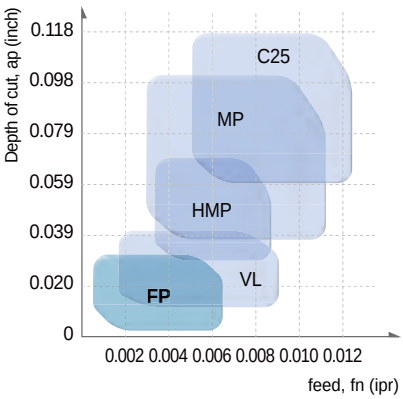


FP



Competitor

Application range



Features of Chip Breakers

FS Chip Breaker new [For finishing]

- Chip breaker for ultra-precision automatic Swiss lathe machining (for lower depth of cut and lower feed cutting range than VP1 and MS)
- Available for various workpieces, P, M and S
- Reduced cutting load and good surface finish due to sharp cutting edge

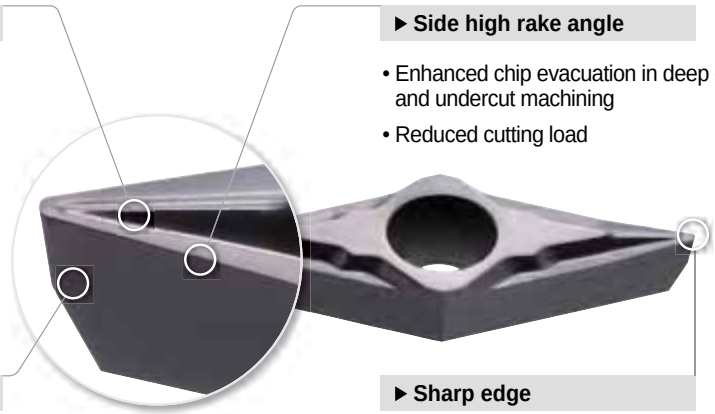
Features of FS chip breaker

▶ Variable elevated triangular pyramid shape

- Applicable for various cutting range due to optimally designed chip breaker
- Enhanced chip evacuation function per variation of cutting depth
- Enhanced chip control with low depth of cut
- Lowered cutting load in high feed machining

▶ Side high rake angle

- Enhanced chip evacuation in deep grooving and undercut machining
- Reduced cutting load



▶ Side grinding

- Periphery grinding G class
- High precision grinding

▶ Sharp edge

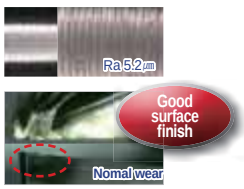


- Reduced cutting resistance
- Improved chip control

Performance evaluation

Workpiece size and surface finish

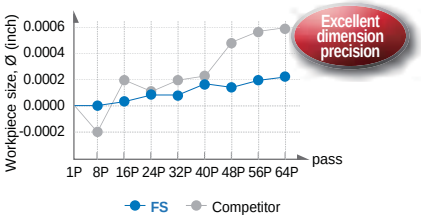
- **Workpiece** Stainless steel (416)
- **Cutting condition** vc (sfm) = 262, n (rpm) = 1,000, fn (ipr) = 0.0020, ap (inch) = 0.004, wet
- **Tools** **Insert** : VCGT220.2-FS (PC8110)
  Holder: SVJCR08-X11A



FS

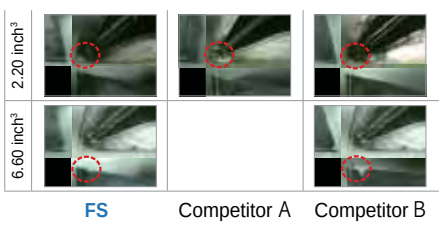


Competitor

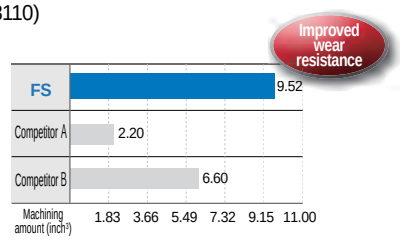


Wear resistance

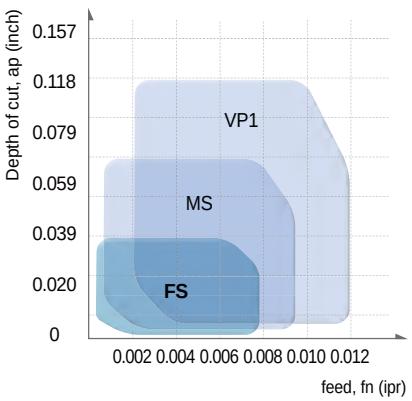
- **Workpiece** Alloy steel (4140)
- **Cutting condition** vc (sfm) = 328, n (rpm) = 1,000, fn (ipr) = 0.0020, ap (inch) = 0.020, wet
- **Tools** **Insert** : CCGT32.51-FS (PC8110)
  Holder : SCLCR08-X09A



FS Competitor A Competitor B



Application range



Features of Chip Breakers

MS Chip Breaker

new [For medium to finishing]

- Sharp cutting edge with welding resistance reducing the cutting heat is necessary for machining hard-to-cut materials
- Chip evacuation is increased in low to high feed cutting conditions

Features of MS chip breaker

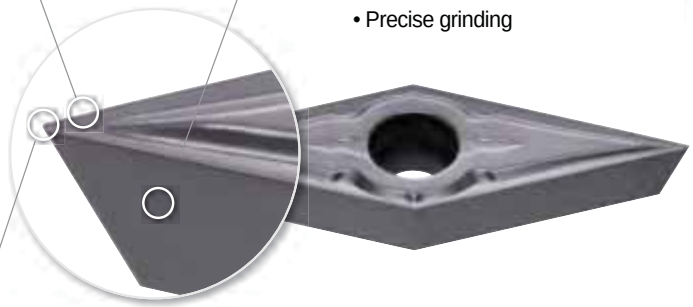
▸ Sharp cutting edge

- Decreased cutting heat
- Minimized welding

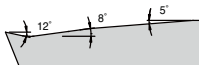
▸ Flank surface grinding

- G grade of periphery grinding
- Precise grinding





▸ 2-level angle back area



- Improved chip curl and chip control in low feed cutting range
- Better chip evacuation in high feed cutting range
- Reduced cutting resistance
- Protected cutting edge without chip blockage

Performance evaluation

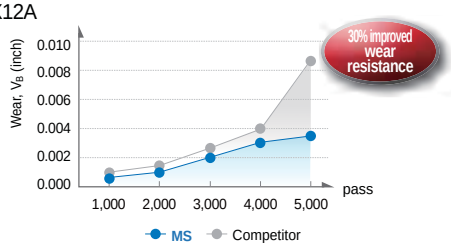
Wear resistance

■ **Workpiece** Pure titanium (R50700)
■ **Cutting condition** vc (sfm) = 328, n (rpm) = 3,500, fn (ipr) = 0.0012, ap (inch) = 0.0197, wet
■ **Tools** **Insert** : VCGT1203008FN-MS (PC8110)
Holder: SVJCR08-X12A

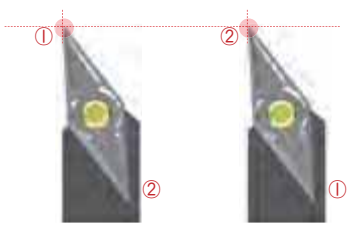


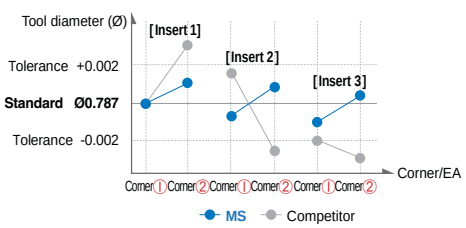
MS Competitor

▶ Ultra-fine substrate and high hardness coating ensurestable tool life.



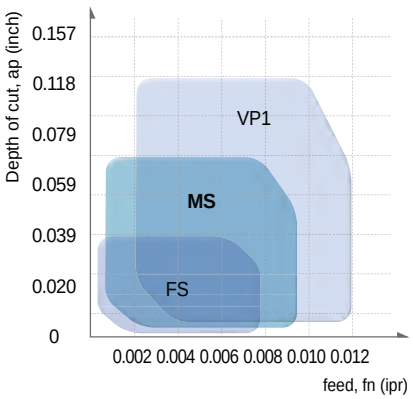
Dimension precision





▶ Changing tool offset in switching insert corners and items is not necessary using MS chip breaker due to tight dimension deviation management.

Application range



Features of Chip Breakers

LP Chip Breaker new [For medium to finishing]

- Chip breaker for forged steel of automobile parts and normal steel
- Quad dots improve productivity through efficient chip control at high feed
- Angle land minimizes cutting force

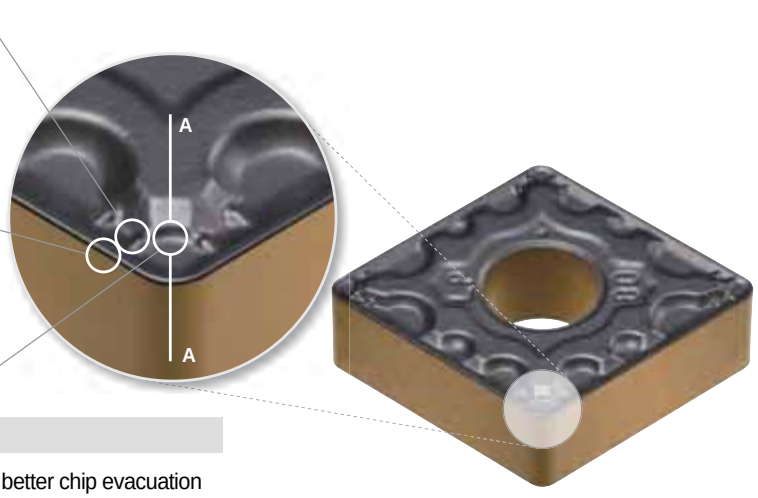
Features of LP chip breaker

▶ Front dot

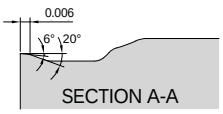
- Higher stability of chip curls at high feed
- Excellent chip control when copying
- Lower cutting force at low depth of cut and high feed

▶ Variable land

- Less crater wear
- Prevents chipping on minor cutting



▶ Flat zone

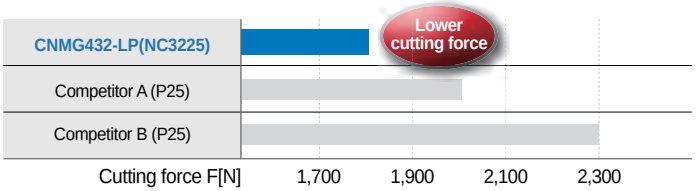


- Larger chip pocket for better chip evacuation at high feed
- Reduced cutting force with larger contact surface of chips

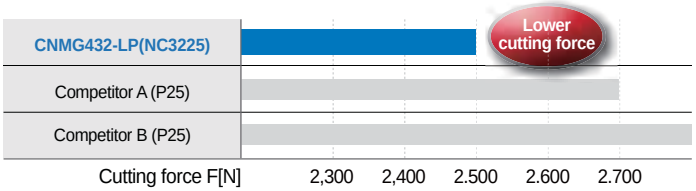
Performance evaluation (evaluation of cutting force)

- **Workpiece** 1045 (Carbon steal), Ø3.937 (inch), External machining
- **Cutting condition** vc (sfm) = 820, ap (inch) = 0.039, fn (ipr) = 0.010/0.016, wet
- **Tools** CNMG432-LP

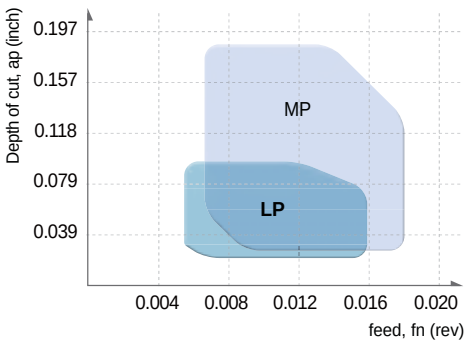
Medium feed (0.010 ipr)



High feed (0.016 ipr)



Application range



Features of Chip Breakers

MP Chip Breaker new [For medium cutting]

- Chip breaker for forged steel of automobile parts and all other steels
- Quad dots improve productivity through efficient chip control at high feed
- Angle land minimizes cutting force

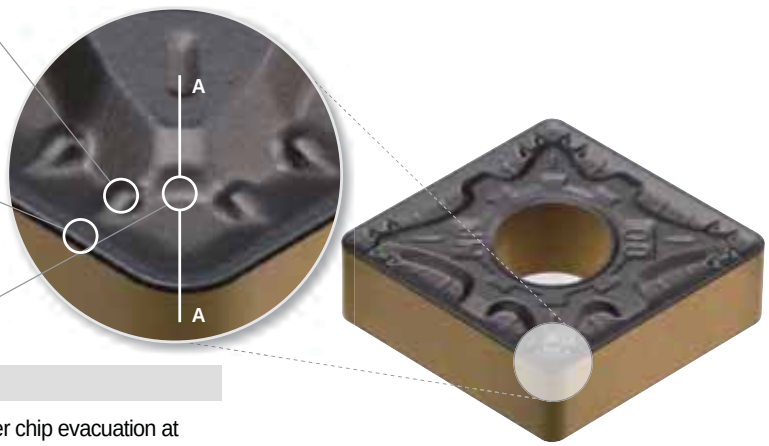
Features of MP chip breaker

▶ Front two step dot

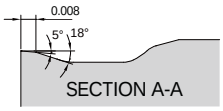
- Higher stability of chip curls at high feed
- Excellent chip control when copying
- Lower cutting force at high depth of cut

▶ Variable land

- Less crater wear
- Prevents chipping on minor cutting edge
- Higher toughness at high depth of cut



▶ Flat zone

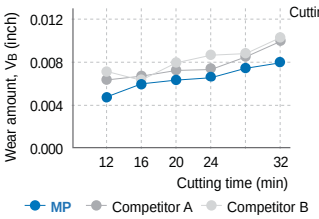


- Larger chip pocket for better chip evacuation at high feed
- Reduced cutting force with larger contact surface of chips

Performance evaluation

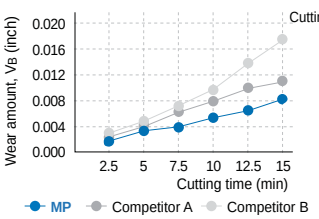
■ **Workpiece** 4140 (Alloy steel), Ø3.937(inch), External machining
■ **Cutting condition** vc (sfm) = 919, ap (inch) = 0.059, fn (ipr) = 0.010/0.016, wet
■ **Tools** CNMG432MG-MP

Medium feed (0.010 ipr)



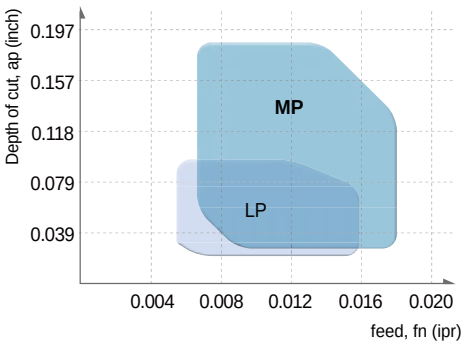


High feed (0.016 ipr)





Application range



Features of Chip Breakers

MM Chip Breaker new [For medium cutting]

- The 1st recommended chip breaker for stainless steel machining
- Change to: A dual land achieves sharp cutting performance and insert toughness
- Wide chip pockets for stable chip evacuation at high feeds/depths of cut

Features of MM chip breaker

▶ Variable Land

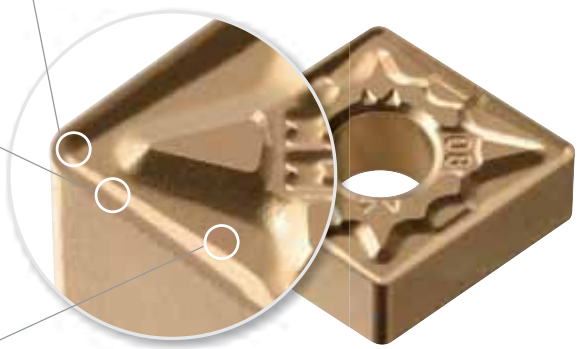
- Excellent chip control and sharp cutting at low depths of cut
- Delays crater wear
- Prevents plastic deformation

▶ Dual Land

- Balance between requirements of sharp and tough cutting edges
- Sharp cutting edge for high speed machining
- Prevents chipping in interrupted machining

▶ Wide Chip Pocket

- Stable chip evacuation at high speeds/feeds
- Improved surface finishes by reduced workpiece scratches caused by work-hardened chips at high depths of cut
- Prevents built-up edge



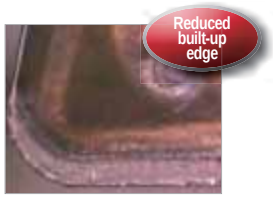
Performance evaluation

Built-up edge

■ **Workpiece** 405 (Ferrite)

■ **Cutting condition** vc (sfm) = 590, fn (ipr) = 0.012, ap (inch) = 0.12, wet

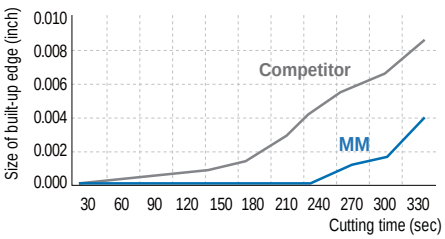
■ **Tools** **Insert** : CNMG432-MM (NC9125)
Holder: PCLNL16-4D



MM(NC9125)



Competitor

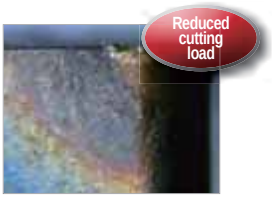


Plastic deformation

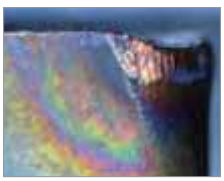
■ **Workpiece** 316 (Austenite)

■ **Cutting condition** vc (sfm) = 656, fn (ipr) = 0.014, ap (inch) = 0.08, dry

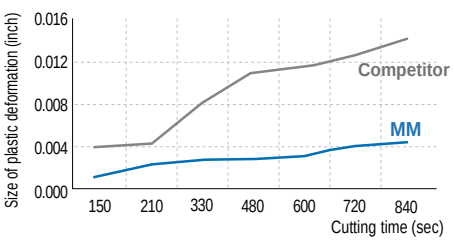
■ **Tools** **Insert** : CNMG432-MM (NC9135)
Holder: PCLNL16-4D



MM(NC9135)



Competitor



Features of Chip Breakers

RM Chip Breaker new [For roughing]

- The 1st recommended chip breaker for rough and interrupted machining of stainless steel
- Prevents notch wear and burrs at high feeds and depths of cut
- Reduced cutting force extends tool life in high feed machining

Features of RM chip breaker

▶ Variable Land

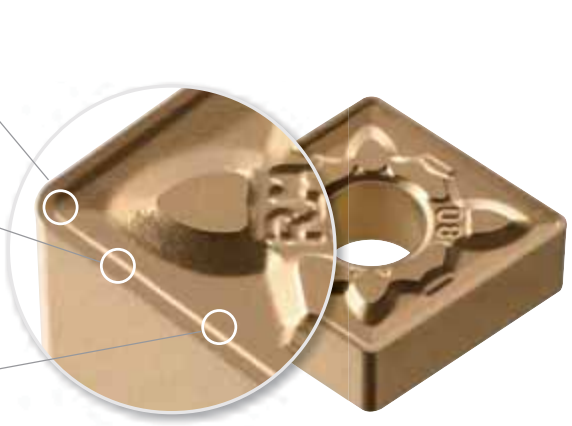
- Excellent chip control and sharp cutting at low depths of cut
- Delays crater wear
- Prevents plastic deformation

▶ Wide land & Gentle front angle

- Sharp cutting edges and a wide land reduce cutting force
- Reduced burrs
- Dispersed cutting load enables higher toughness

▶ Stepped Design

- Stepped design makes chip evacuation easier
- Smooth chip evacuation prevents plastic deformation



Performance evaluation

Notch wear

■ **Workpiece** 410 (Martensite)

■ **Cutting condition** vc (sfm) = 492, fn (ipr) = 0.01, ap (inch) = 0.12, wet

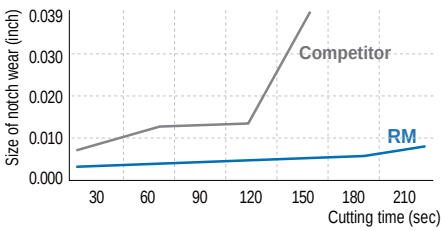
■ **Tools** **Insert** : CNMG432-RM (NC9115)
Holder: PCLNL16-4D



RM(NC9115)



Competitor



Burr

■ **Workpiece** Duplex

■ **Cutting condition** vc (sfm) = 394, fn (ipr) = 0.008, ap (inch) = 0.08, dry

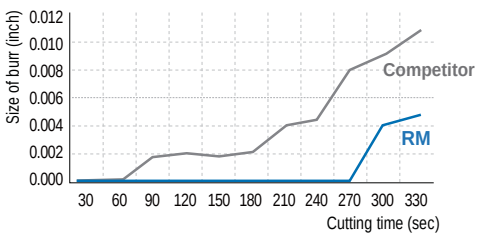
■ **Tools** **Insert** : CNMG432-RM (NC9125)
Holder: PCLNL16-4D



RM(NC9125)



Competitor



Features of Chip Breakers

MK Chip Breaker new [For medium cutting]

- Ideally suited for continuous cutting of ductile cast iron and gray cast iron
- Angle lands provide upgraded surface finish

Features of MK chip breaker

▶ Angle land

- Angle lands provide sharper cutting performance
- Maximized wear resistance in continuous cutting
- High quality results in surface finish



▶ Wide supporting area

- Higher clamping stability
- Prevents chipping at vibrations during operation



Performance evaluation

Wear resistance

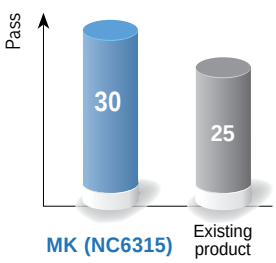
■ **Workpiece**	80-55-06 (AISI), Ø3.543 (Spherical tube) ⟶ Ø1.181 machining
■ **Cutting conditions**	vc (sfm) = 1312, fn (ipr) = 0.014, ap (inch) = 0.098, wet
■ **Cutting time**	30 passes with results of normal wear on rake/flank surface
■ **Tools**	**Insert** : CNMG432-MK (NC6315) **Holder** : DCLNR16-4D



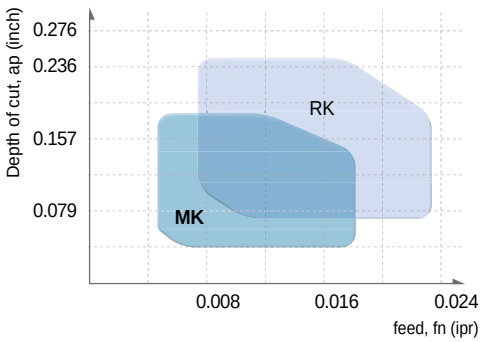
MK (NC6315)



Existing product



Application range



Features of Chip Breakers

RK Chip Breaker new [For roughing]

- Ideally suited for high speed / high feed cutting of ductile cast iron and gray cast iron
- Flat lands provide upgraded toughness and chipping resistance

Features of RK chip breaker

▶ Flat land

- Flat lands provide upgraded toughness and chipping resistance
- Stable machining availability under high cutting loads at high depth of cuts or interrupted cutting
- Optimized land width for high feed machining





▶ Wide supporting area

- Higher clamping stability
- Minimizes vibration and chipping.

Performance evaluation

Impact resistance

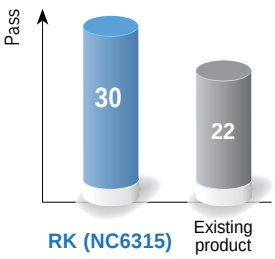
■ **Workpiece**	80-55-06 (AISI), Ø3.543 (Triangular tube) ⟶ Ø1.181 machining
■ **Cutting conditions**	vc (sfm) = 1246, fn (ipr) = 0.014, ap (inch) = 0.079, wet
■ **Cutting time**	15 passes with results of normal rake surface wear and good chipping resistance
■ **Tools**	**Insert** : CNMG432-RK (NC6315) **Holder** : DCLNR16-4D



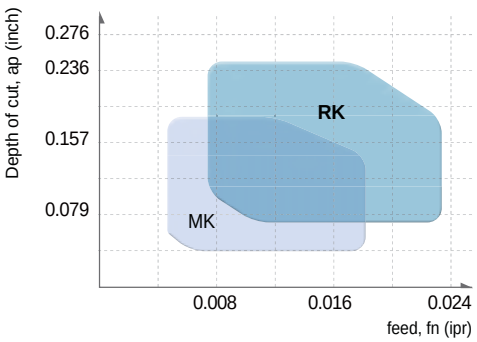
RK (NC6315)



Existing product



Application range



Features of Chip Breakers

VP1 Chip Breaker [For finishing]

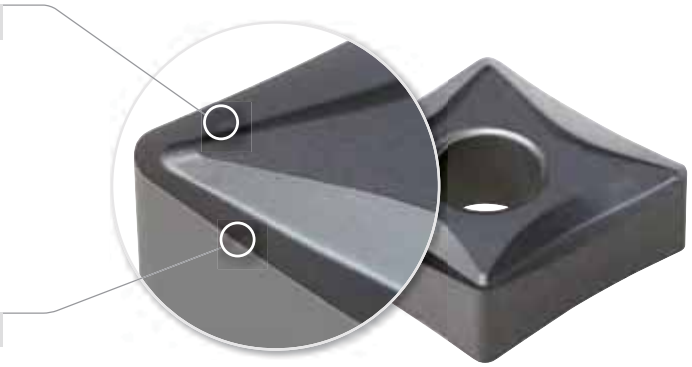
- Cutting edges designed in high-positive
  - Reduced contact area between rake surface and chip minimizes cutting heat and improved tool life
- Recommended cutting conditions: fn (ipr) = 0.002~0.008, ap (inch) = 0.004~0.060

Features of VP1 chip breaker

▶ Optimized design for finishing

- Obtains excellent cutting performance and quality surface finish at low depth of cut and high speed





▶ High-positive blade design

- Minimizes cutting heat by reducing the contact area between flank surface and chips
- Prevents built-up edge and extends tool life

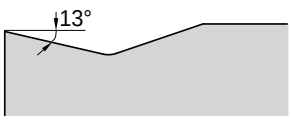
VP2 Chip Breaker [For medium to finishing]

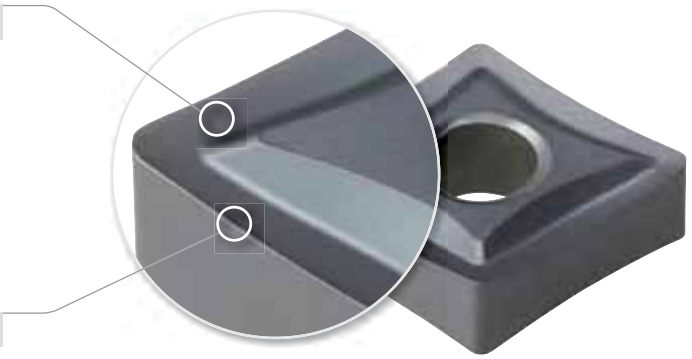
- High-positive cutting edge design/Side rake angle applied
  - Stable chip control improves machinability when ball machining at variable depths of cut
- Recommended cutting conditions: fn (ipr) = 0.004~0.016, ap (inch) = 0.020~0.177

Features of VP2 chip breaker

▶ Sharp blades and wide chip pockets

- Increase productivity
- Ideal for medium to finish cutting





▶ High-positive blade design

- Improves cutting performance with its stable chip control at varying depth of cuts

Features of Chip Breakers

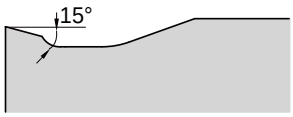
VP3 Chip Breaker [For medium cutting]

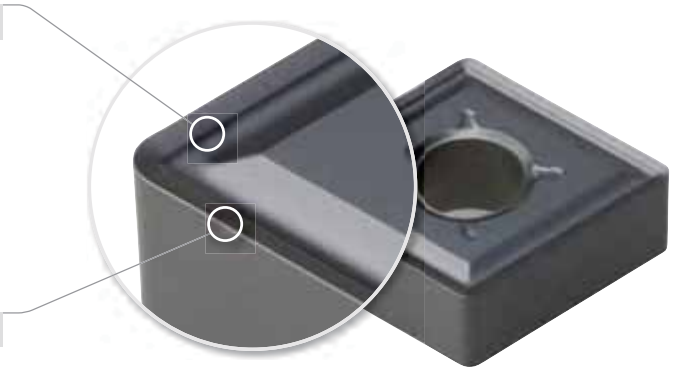
- High-positive cutting edge design/Wide land applied
  - Improved stability at interrupted cutting when toughness is required. Stable chip control and machinability at high depth of cut
- Recommended cutting conditions: fn (ipr) = 0.004~0.018, ap (inch) = 0.020~0.197

Features of VP3 chip breaker

▶ Chip pocket design leading to a R-shaped cutting edge

- Creates a stepped space between edge and land to make smooth chip flow at low and high depth of cuts





▶ High-positive blade design / Wide land

- Minimize heat concentration at high depth of cut
- Improves stability in interrupted machining of a tough workpiece

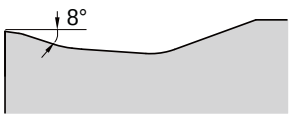
VP4 Chip Breaker new [For roughing]

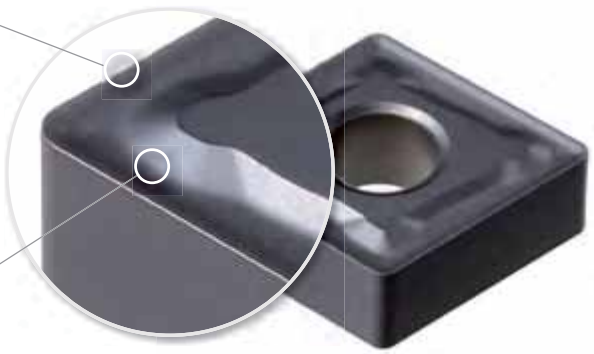
- The 1st recommended chip breakers for machining Inconel which remains highly resistant to and hard at high temperature
- Rough machining stability resulting from reinforced cutting edges and wide chip pockets

Features of VP4 chip breaker

▶ Rake angle design resistant to high hardness cutting

- Reinforces cutting edges and prevents notch wear in rough surface machining
- Prevents chipping in interrupted cutting





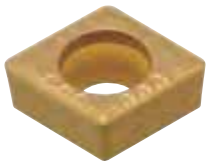
▶ Wide chip pockets

- Reduce cutting loads and improve stability even at high depth of cut in roughing

Features of Chip Breakers

Single-sided VL Chip Breaker

[For finishing]



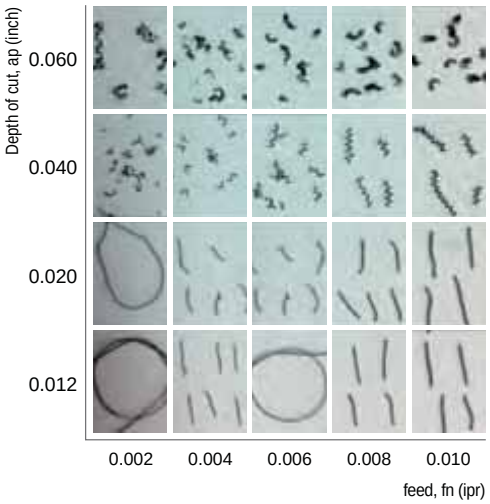
- The sharp flank surface and the chip breaker design significantly improve chip control when machining tough materials such as low carbon steel, pipe steel, and iron plates
- Sharp cutting edges reduce cutting resistance and provide excellent chip control at low depth of cuts, leading to stable machining on automated production lines

Features of VL chip breaker

- **Sharp cutting edges**
  - High rake cutting edges provide improved surface finishes
  - Low cutting resistance reduces cutting heat
- **2-step rear rake angle**
  - Stable chip control regardless of varying feed rates
  - Excellent machinability even when machining mild workpieces

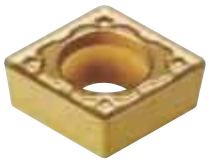
Chip control test

- **Workpiece** 4140 (Alloy steel), Ø1.968, Internal diameter turning
- **Cutting condition** vc (sfm) = 820, ap (inch) = 0.012~0.059, fn (ipr) = 0.002~0.010
- **Tools** CCMT21.52-VL (NC3225)



Single-sided MP Chip Breaker

[For medium to finishing]



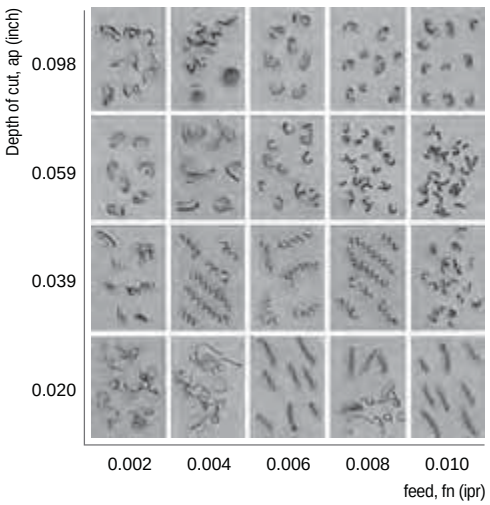
- For continuous cutting of forged steel at high feed
- Turning insert for internal machining of automobile components

Features of MP chip breaker

- **Three-dimensional 2 step chip breaker**
  - Stable chip control in unstable internal machining
  - Prevents chip blocking at internal diameter at varying depth of cut and feed.
- **Stronger cutting edge and wide chip pocket**
  - Increased chipping resistance in unstable internal machining

Chip control test

- **Workpiece** 4140(Alloy steel)
- **Cutting condition** vc (sfm) = 656 , ap (inch) = 0.020~0.098, fn (ipr) = 0.002~0.010
- **Tools** CCMT32.51-MP (NC3225)



Features of Chip Breakers

VL Chip Breaker [For finishing]



- Improved chip control for machining material that have high toughness such as low carbon steel, pipe, steel plate etc
- Improved chip control and decreased cutting load on external, facing, and copying applications
- Improved strength of the cutting edge for measurable efficiency in automated production

Features of VL chip breaker

• **2 steps designed chip-breaker**	- Suitable Mild steel - Stable chip control on the low feed and cutting depth
• **Designed with special dots**	- Stable chip breaking on the low cutting depth
• **Applied side rake angle**	- Improved chip control on facing, copying applications - Decreased cutting load and better surface finish

Chip control test

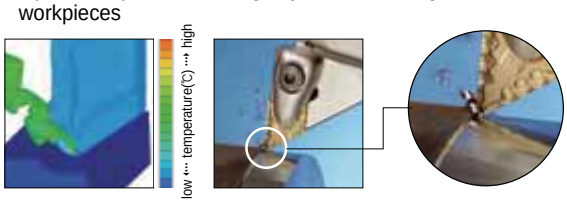
- **Workpiece** AISI1020
- **Cutting conditions** vc (sfm) = 830, ap (inch) = 0.02
fn (ipr) = 0.008 (Side), dry
- **Tools** DNMG432-VL (NC3225)



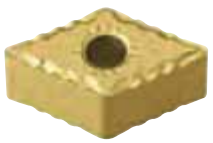
VL Chip Breakers | Competitor A | Competitor B | Competitor C

FEM Cutting simulation analysis in the design

- For design of geometry, chip shapes and chip flow are predictable
- Optimal chip breaker design by various cutting conditions and workpieces



VB Chip Breaker [For finishing]



- Excellent chip evacuation in continuous and high speed machining of various workpieces
- 3-dimensional chip breaker achieves lower cutting resistance, high rigidity of the cutting edge, and longer tool life
- Stable chip control in copying and internal machining

Features of VB chip breaker

• **6 bumps on the insert corner**	- Superior chip control and chip cutting in copying with various depths of cut
• **Side rake angle**	- Superb chip cutting in facing and copying. Superior tool life due to improved surface roughness and lower cutting resistance
• **Cutting edge on 100˚ part for medium machining (For CNMG)**	- Excellent chip evacuation and toughness in machining with high depth of cut

Performance

Better machining **Better Chip control** **Longer tool life**



VB Chip Breakers



Conventional chip breaker

Features of Chip Breakers

VC Chip Breaker [For medium to finishing]



- Superior chip evacuation in high speed and continuous machining of various workpieces (carbon steel, alloy steel etc.)
- KORLOY 3 dimensional chip breaker ensures longer tool life due to low cutting load and improved cutting edge strength
- Stable chip control in copying and internal machining

Features of VC chip breaker

• 4 bums on the insert corner
- Excellent chip control in various depths of cut and superb chip cutting in external, internal, copy machining and facing

Evaluation of chip control (copying)

VC Chip Breakers



Conventional chip breaker



VQ Chip Breaker [For medium to finishing_For cermet]



- Excellent cutting performance and reinforced cutting edges
- Improved chip control at low depth of cuts

Features of VQ chip breaker

• Three dimensional rake angle
- Improved surface finish thanks to sharp cutting performance
- Less cutting heat and longer tool life thanks to low cutting resistance

• Beveled protruding structure
- Smooth chip flow at low depth of cuts
- Wide application range

Performance evaluation

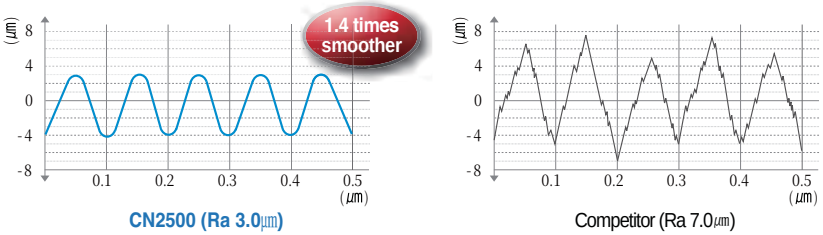
■ **Workpiece**	4140 (Alloy steel), Ø3.937 (inch), External diameter turning
■ **Cutting condition**	vc (sfm) = 919, ap (inch) = 0.059, fn (ipr) = 0.010
■ **Tools**	CNMG432-VQ (CN2500)

Wear comparison



CN2500-VQ　　Competitor

Surface roughness comparison



CN2500 (Ra 3.0㎛)　　Competitor (Ra 7.0㎛)

Features of Chip Breakers

VH/VT Chip Breaker [For heavy duty machining]

- Heavy duty chip breaker suitable for Heavy machining in the ship building and power plant industries
- Suitable for large vertical machines when machining shafts, rollers, rotors and optimal for the big flange machining

Features of VH chip breaker

▶ For good chip control in heavy machining (comprehensive type)



- Designed from the study of heavy cutting mechanism
- Smooth chip control from the high rake angle
- Wider cutting edge land provides stronger cutting
- Unique cutting edge treatment provides smooth cutting
- Optimized chip pocket design provides smooth chip flow

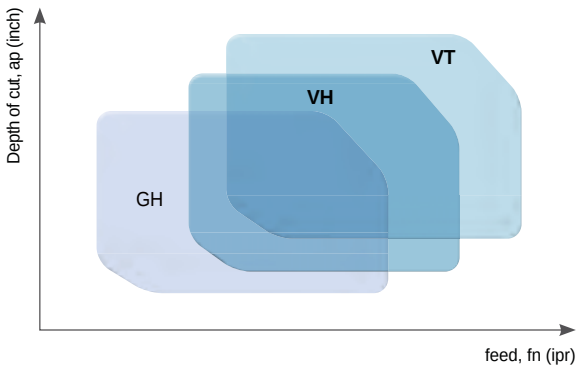
Features of VT chip breaker

▶ For long tool life and stable cutting (higher feeds, big depth) in heavy machining



- Designed from the study of heavy cutting mechanism
- Strong edge design provides long and stable cutting (2 step rake angle of cutting edge)
- Varied cutting edge land strengthens the cutting edge
- The positioning of the chip breaking convex dot deflect the machining heat, optimizes inserts wear & absorb shock

Applications range of chip breakers

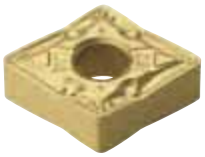


Features of Chip Breakers

LW/VW Chip Breaker [For high feed cutting]

- Improved productivity with higher feed rates and surface finishes
- Improved wear resistance and toughness

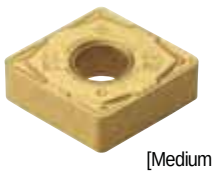
Features of LW chip breaker



[For medium cutting]

- **Curvilinear cutting edge** - Reduces cutting force
- **Cutting edge design able to handle deeper depth of cuts** - lower cutting load & reduces heat
- **Greater chip control at shallow depths of cuts** - Chip pocket design improves smooth chip flow
- **For shallow depth cutting and low speed machining** - 3D design at the corner

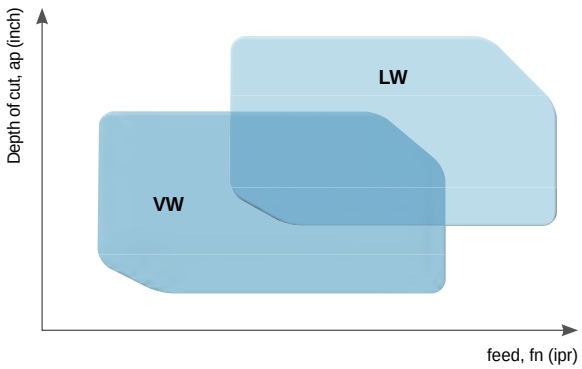
Features of VW chip breaker



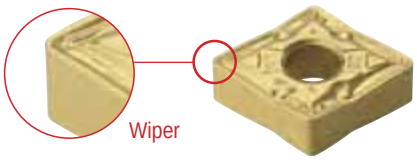
[Medium to finishing]

- **Excellent Finishing applications** - Excellent chip control
- **Insert design great for stable clmaping** - Chip breaker designed close to the cutting edge
- **Similar cutting edge to C/B for medium** - strong cutting edge
- **3 Dimensional dot design on cutting corner**
  - reduces cutting force and good chip control at shallow depth of cut

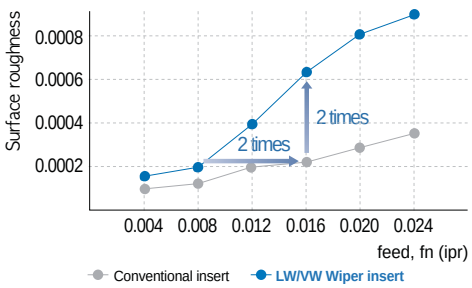
Applications range of chip breakers



Wiper Insert



- High productivity
- Improved surface roughness
- High feed-reducing machining time
- Improved tool life due to reduce cutting force



Features of Chip Breakers

SR/SH Chip Breaker new 〔 For machining a shaft 〕

- Specialized for machining slender bars and thin walls
- High rake helix angle to reduce cutting resistance
- For machining steel and stainless steel

Features of SR chip breaker



[For finishing]

- The first recommended chip breaker for machining a shaft
- For continuous finishing
- Improved chip and heat evacuation due to high rake cutting edge and 3-dimensional shape
- Good surface finish
- Preventing fracture due to chamfering on the cutting edge

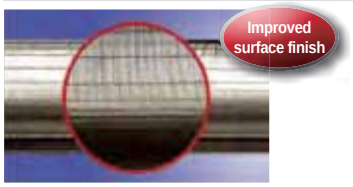
Features of SH chip breaker



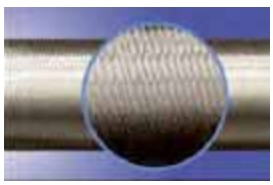
[For medium cutting]

- Specialized for interrupted and medium cutting
- Efficient heat evacuation due to concave shaped back side of insert

Surface finish evaluation

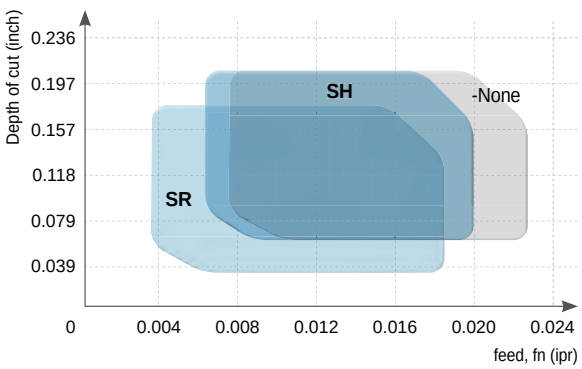


SR chip breaker



Other chip breakers

Applications range of chip breakers



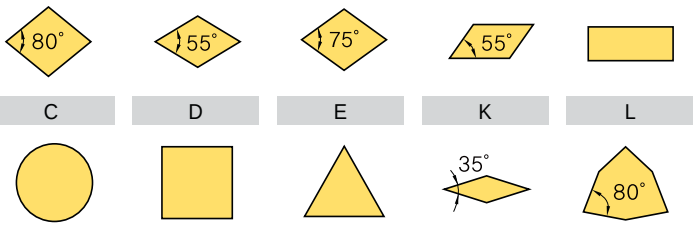
Machining	C/B	ap (inch)	fn (ipr)
Medium to rough cutting	None	0.059~0.197	0.008~0.022
Medium cutting	SH	0.059~0.197	0.006~0.020
Finish cutting	SR	0.039~0.177	0.005~0.018

C N M G 3

1	2	3	4	5
Insert Shape	Relief Angle	Tolerance	Cross Section Type	Cutting Edge Length, Diameter of Inscribed Circle

1 Insert Shape

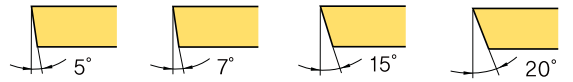
C N M G 3 3 2 - MP



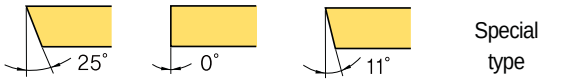
C	D	E	K	L
R	S	T	V	W

2 Relief Angle

C N M G 3 3 2 - MP



B	C	D	E

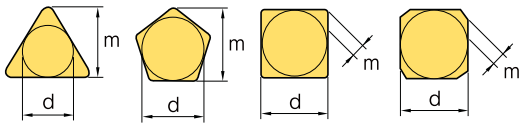


F	N	P	O
			Special type

3 Tolerance

C N M G 3 3 2 - MP

d: Inscribed circle
t: Thickness
m: Refer to figure



(inch)

Class	d	m	t
A	±0.0010	±0.0002	±0.0010
C	±0.0010	±0.0005	±0.0010
H	±0.0005	±0.0005	±0.0010
E	±0.0010	±0.0010	±0.0010
G	±0.0010	±0.0010	±0.0051
J *	±0.0020~±0.0059	±0.0002	±0.0010
K *	±0.0020~±0.0059	±0.0005	±0.0010
L *	±0.0020~±0.0059	±0.0010	±0.0010
M *	±0.0020~±0.0059	±0.003~±0.008	±0.0051
N *	±0.0032~±0.0071	±0.003~±0.007	±0.0010
U *	±0.0032~±0.01	±0.005~±0.015	±0.0051

* Sides are based on unground insert

Tolerance on C, H, R, T, W Insert Shape (exceptional case)

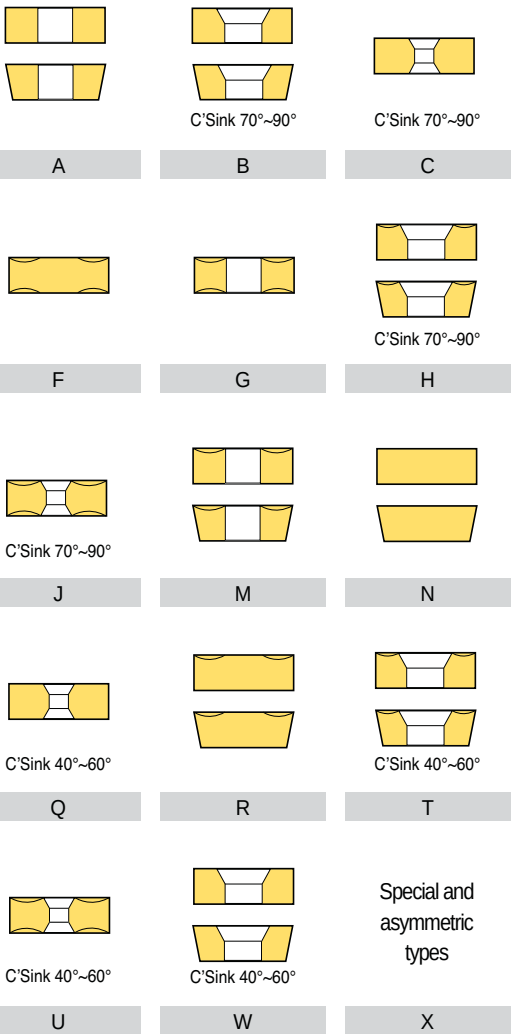
d	Tolerance on d		Tolerance on m	
	J, K, L, M, N	U	M, N	U
1/4	±0.0020	±0.0032	±0.0032	±0.0051
3/8	±0.0020	±0.0032	±0.0032	±0.0051
1/2	±0.0032	±0.0051	±0.0051	±0.0079
5/8	±0.0040	±0.0070	±0.0059	±0.0106
3/4	±0.0040	±0.0070	±0.0059	±0.0106
1	±0.0051	±0.01	±0.0070	±0.0150

Tolerance on D Insert Shape (exceptional case)

d	Tolerance on d	Tolerance on m
1/4	±0.0020	±0.0043
3/8	±0.0020	±0.0043
1/2	±0.0032	±0.0059
5/8	±0.0040	±0.0070
3/4	±0.0040	±0.0070

4 Cross Section Type

C N M G 3 3 2 - MP



A	B	C
F	G	H
J	M	N
Q	R	T
U	W	X

3 2 - MP

6 Height of Cutting Edge | 7 Nose “r” | 8 Chip Breaker for Turning

5 Cutting Edge Length, Diameter of Inscribed Circle

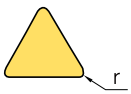
C N M G **3** 3 2 - MP

Symbol							Inch	IC
C	d	S	T	R	V	W		
Metric								d (inch)
03	04	03	06	03	-	02	1.2 (5)	5/32
04	05	04	08	04	08	S3	1.5 (6)	3/16
05	06	05	09	05	09	03	1.8 (7)	7/32
-	-	-	-	06	-	-	-	0.236
06	07	06	11	06	11	04	2	1/4
08	09	07	13	07	13	05	2.5	5/16
-	-	-	-	08	-	-	-	0.315
09	11	09	16	09	16	06	3	3/8
-	-	-	-	10	-	-	-	0.394
11	13	11	19	11	19	07	3.5	7/16
-	-	-	-	12	-	-	-	0.472
12	15	12	22	12	22	08	4	1/2
14	17	14	24	14	24	09	4.5	9/16
16	19	15	27	15	27	10	5	5/8
-	-	-	-	16	-	-	-	0.630
17	21	17	30	17	30	11	5.5	11/16
19	23	19	33	19	33	13	6	3/4
-	-	-	-	20	-	-	-	0.787
22	27	22	38	22	38	15	7	7/8
-	-	-	-	25	-	-	-	0.984
25	31	25	44	25	44	17	8	1
32	38	31	54	31	54	21	10	11/4
-	-	-	-	32	-	-	-	1.260

( ) Symbol for small size insert

7 Nose “r”

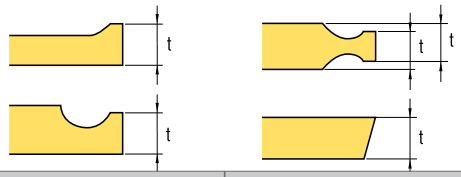
C N M G 3 3 **2** - MP



Symbol		Nose “r”	
Metric	Inch	Metric	Inch
003	0.1	0.03	0.0012
005	0.13	0.05	0.002
01	0.2	0.1	0.004
02	0.5	0.2	0.008
04	1	0.4	1/64
08	2	0.8	1/32
12	3	1.2	3/64
16	4	1.6	1/16
20	5	2.0	5/64
24	6	2.4	3/32
28	7	2.8	7/64
32	8	3.2	1/8
00	-	Round insert (Inch)	
M0	-	Round insert (Metric)	

6 Height of Cutting Edge

C N M G 3 **3** 2 - MP



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

( ) Symbol for small size insert

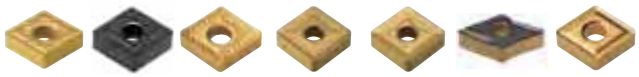
8 Chip Breaker for Turning

C N M G 3 3 2 - **MP**

Negative Insert Chip Breaker



VL VF VB VC VQ VW LW



VM VR GH VH VT SR B25



HA HM GR VP1 VP2 VP3 VP4



LP MP MM RM MK RK CP

Positive Insert Chip Breaker



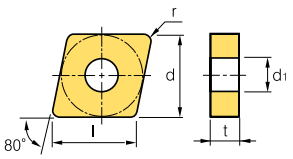
FP VL HMP MP C25 AK AR



FS MS VP1

CN○○

Rhombic 80° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4

Workpiece			Machining types
P	Steel		● Continuous cutting
M	Stainless steel		⧓ General cutting
K	Cast iron		✱ Interrupted cutting
N	Non-ferrous metal		
S	Heat resistant alloy, Titanium alloy		
H	Hardened steel		

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VB	CNMG	431-VB	●	●	●	●			●	●				●												0.006~0.024	0.040~0.200
			432-VB	●	●	●	●			●	●				●												0.008~0.028	0.040~0.240
			433-VB							●	●				●												0.008~0.020	0.040~0.240
Finishing	VF	CNMG	321-VF								●	●															0.003~0.012	0.020~0.059
			322-VF																								0.005~0.006	0.020~0.059
			431-VF									●			●												0.003~0.012	0.020~0.059
			432-VF												●												0.004~0.016	0.020~0.059
			433-VF																								0.004~0.020	0.024~0.059
Finishing	VL	CNMG	431-VL	●	●										●												0.002~0.010	0.004~0.040
			432-VL	●	●					●	●				●												0.004~0.014	0.008~0.060
			433-VL							●																	0.004~0.014	0.008~0.060
Medium to finishing	LP new	CNMG	321-LP																								0.003~0.012	0.012~0.059
			322-LP							●	●																0.004~0.012	0.012~0.059
			431-LP							●	●				●												0.004~0.014	0.012~0.079
			432-LP							●	●				●												0.004~0.016	0.020~0.098
			433-LP							●	●				●												0.005~0.028	0.031~0.118
Medium to finishing	CP new	CNMG	321-CP																								0.003~0.012	0.016~0.118
			322-CP																								0.004~0.012	0.016~0.118
			331-CP																								0.003~0.012	0.016~0.118
			332-CP																								0.004~0.012	0.016~0.118
			431-CP					●	●																		0.004~0.014	0.020~0.138
			432-CP					●	●																		0.005~0.014	0.020~0.138
			433-CP					●	●																		0.005~0.014	0.031~0.138
			542-CP					●	●																		0.006~0.016	0.031~0.177
			543-CP					●	●																		0.007~0.016	0.039~0.177
Medium to finishing	VC	CNMG	431-VC							●	●				●												0.004~0.014	0.012~0.079
			432-VC							●	●				●												0.006~0.016	0.020~0.118
			433-VC							●	●																0.008~0.018	0.020~0.118

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MCKNR/L	B195	MCRNR/L	B196
MCLNR/L	B195	PCBNR/L	B184
MCMNN	B195	PCLNR/L	B185

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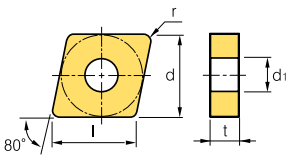
Rhombic 80° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4
64	3/4	1/4	5/16

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ⬌ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ⬌ ⬌ ● ⬌ ✱ ✱ ⬌ ✱ ● ⬌ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ●	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ⬌ ✱ ● ⬌ ⬌ ●
Hardened steel	H	● ⬌ ⬌ ● ⬌

Insert		Designation	Cermet		Coated		Coated																Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	HM	CNMG 321-HM																								0.005~0.016	0.020~0.150
		322-HM																								0.006~0.016	0.031~0.150
		431-HM						●	●	●													●			0.002~0.012	0.035~0.197
		432-HM						●	●	●								●					●			0.004~0.020	0.039~0.197
		433-HM					●																●			0.007~0.020	0.039~0.197
		643-HM							●																	0.005~0.024	0.051~0.276
Medium cutting	MP	CNMG 321-MP					●	●				●				●										0.004~0.016	0.016~0.150
		322-MP					●	●				●				●										0.006~0.016	0.020~0.157
		323-MP																								0.006~0.020	0.032~0.165
		331-MP																								0.004~0.016	0.016~0.150
		332-MP																								0.006~0.016	0.020~0.157
		333-MP																								0.006~0.020	0.031~0.165
		431-MP					●	●				●	●		●	●	●			●	●	●				0.004~0.016	0.016~0.150
		432-MP					●	●		●		●	●		●	●	●			●	●	●				0.006~0.016	0.020~0.157
		433-MP					●	●				●			●	●	●			●	●					0.006~0.020	0.032~0.165
		434-MP					●	●				●			●	●	●									0.011~0.022	0.039~0.197
		542-MP					●	●				●			●	●	●									0.006~0.020	0.020~0.276
		543-MP					●	●				●			●	●	●									0.007~0.024	0.032~0.276
		544-MP					●	●				●														0.006~0.024	0.031~0.276
		642-MP							●																	0.006~0.024	0.020~0.335
		643-MP							●																	0.004~0.016	0.016~0.150
		644-MP													●	●	●									0.006~0.016	0.020~0.157
Medium cutting	VM	CNMG 321-VM																								0.002~0.012	0.036~0.138
		322-VM							●	●																0.004~0.018	0.039~0.138
		431-VM	●	●					●	●		●						●	●				●			0.002~0.012	0.036~0.197
		432-VM	●	●				●	●	●		●						●	●		●		●			0.004~0.020	0.039~0.197
		433-VM							●	●		●						●	●		●					0.005~0.024	0.051~0.197
		434-VM										●														0.008~0.024	0.059~0.217
		542-VM										●														0.004~0.020	0.039~0.264
		543-VM																								0.005~0.024	0.051~0.264
		642-VM								●																0.005~0.026	0.051~0.276
		643-VM										●														0.006~0.028	0.059~0.276
		644-VM																								0.007~0.030	0.071~0.276

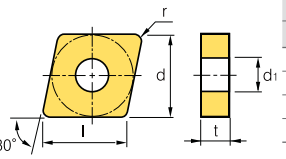
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MCKNR/L	B195	**MCRNR/L**	B196
MCLNR/L	B195	**PCBNR/L**	B184
MCMNN	B195	**PCLNR/L**	B185

CN○○

Rhombic 80° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4

Dimensions (inch)			
Size	d	t	d_1
64	3/4	1/4	5/16
85	1	5/16	23/64
86	1	3/8	23/64

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ⬌ ⬌ ✱ ✱ ● ⬌ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ✱ ⬌ ⬌ ● ⬌ ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌	
Heat resistant alloy, Titanium alloy	S	● ● ⬌ ✱ ● ⬌ ⬌ ● ⬌ ⬌	
Hardened steel	H	● ⬌ ⬌ ⬌ ⬌	

Insert	Designation	Cermet		Coated		Coated														Uncoated		Cutting Condition	
		CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to roughing	CNMG 431-B25	●	●			●	●		●		●						●								0.007~0.018	0.039~0.197
	432-B25	●	●			●	●	●	●		●						●	●		●		●			0.009~0.024	0.059~0.197
	433-B25		●			●	●		●		●														0.010~0.024	0.079~0.197
	542-B25					●	●		●		●														0.010~0.024	0.079~0.256
	543-B25					●	●				●														0.011~0.024	0.079~0.256
	544-B25					●	●				●														0.011~0.024	0.079~0.256
	641-B25								●		●														0.008~0.018	0.118~0.315
	642-B25					●	●	●	●		●														0.010~0.024	0.118~0.315
	643-B25					●	●	●	●		●						●	●		●					0.012~0.024	0.118~0.315
	644-B25					●	●																		0.009~0.028	0.118~0.315
Roughing	CNMG 432-GR					●	●	●	●		●	●	●												0.008~0.020	0.039~0.276
	433-GR						●	●	●		●	●	●												0.010~0.020	0.051~0.276
	434-GR																								0.010~0.024	0.071~0.236
	542-GR					●	●	●	●																0.008~0.028	0.039~0.315
	543-GR					●	●	●	●		●	●	●												0.010~0.028	0.051~0.315
	544-GR					●	●	●	●																0.010~0.030	0.071~0.315
	642-GR							●	●		●														0.008~0.028	0.067~0.394
	643-GR					●	●	●	●		●	●													0.012~0.030	0.067~0.394
	644-GR					●	●	●	●		●														0.012~0.031	0.071~0.394
	646-GR																								0.014~0.033	0.079~0.472
	856-GR																								0.016~0.039	0.091~0.591
	866-GR							●	●		●														0.016~0.039	0.091~0.591
Medium to finishing	CNMG 321-VQ																								0.002~0.012	0.020~0.138
	322-VQ																								0.003~0.012	0.031~0.157
	332-VQ										●														0.002~0.012	0.020~0.138
	333-VQ										●														0.003~0.012	0.031~0.157
	431-VQ	●	●	●	●																				0.002~0.012	0.031~0.157
	432-VQ	●	●	●	●																				0.003~0.016	0.031~0.157
	433-VQ																								0.004~0.016	0.039~0.157
Medium cutting	CNMG 431-MK											●	●												0.002~0.012	0.035~0.157
	432-MK											●	●												0.004~0.020	0.039~0.197
	433-MK											●	●												0.005~0.024	0.051~0.197
	434-MK																								0.006~0.024	0.051~0.197
	542-MK																								0.011~0.028	0.071~0.276
	543-MK																								0.011~0.028	0.078~0.315
	544-MK																								0.011~0.029	0.078~0.315
	642-MK												●												0.013~0.031	0.098~0.354
	643-MK												●												0.014~0.031	0.102~0.374
	644-MK																								0.014~0.031	0.102~0.394



Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MCKNR/L	B195	MCRNR/L	B196
MCLNR/L	B195	PCBNR/L	B184
MCMNN	B195	PCLNR/L	B185

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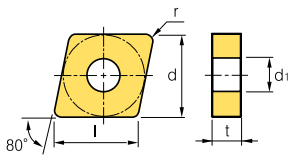
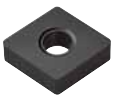
Rhombic 80° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4
64	3/4	1/4	5/16

Workpiece			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05
Steel	P		●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱								
Stainless steel	M									⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	✱		
Cast iron	K		●	✱	●	⬌	⬌					⬌	⬌	⬌										●	⬌
Non-ferrous metal	N																							●	⬌
Heat resistant alloy, Titanium alloy	S											●				●	●	⬌	✱	●	⬌	⬌		●	⬌
Hardened steel	H																			●	⬌	⬌		●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Roughing		CNMA 332																								0.004~0.012	0.020~0.118
		431												●										●		0.006~0.024	0.008~0.197
		432											●	●										●		0.006~0.025	0.008~0.315
		433											●	●												0.006~0.028	0.012~0.315
		434											●	●												0.008~0.039	0.012~0.394
		542																								0.006~0.031	0.012~0.394
		543												●												0.006~0.031	0.012~0.394
		544												●												0.008~0.039	0.012~0.394
		642												●												0.006~0.024	0.008~0.472
		643												●												0.008~0.031	0.008~0.472
		644											●	●												0.008~0.039	0.008~0.472
Roughing	RK 	CNMG 431-RK																								0.008~0.019	0.051~0.236
		432-RK											●	●												0.008~0.020	0.059~0.236
		433-RK											●	●												0.011~0.021	0.071~0.236
		434-RK												●												0.011~0.025	0.078~0.236
		542-RK												●												0.011~0.028	0.071~0.276
		543-RK											●	●												0.011~0.028	0.078~0.315
		544-RK												●												0.011~0.029	0.078~0.315
		643-RK												●												0.014~0.031	0.102~0.374
		644-RK												●												0.014~0.031	0.102~0.394
Roughing	VR 	CNMG 431-VR																								0.008~0.020	0.039~0.256
		432-VR																								0.010~0.022	0.047~0.276
		433-VR																								0.012~0.024	0.059~0.276
		434-VR																								0.014~0.026	0.067~0.276
		43.52-VR																								0.010~0.022	0.047~0.276
		43.53-VR																								0.012~0.024	0.059~0.276
		543-VR																								0.014~0.028	0.078~0.315
		544-VR																								0.014~0.030	0.087~0.315
		643-VR					●	●																		0.014~0.028	0.078~0.394
		644-VR					●	●																		0.014~0.030	0.087~0.394

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MCKNR/L	B195	**MCRNR/L**	B196
MCLNR/L	B195	**PCBNR/L**	B184
MCMNN	B195	**PCLNR/L**	B185

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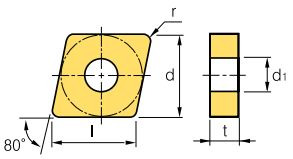
Rhombic 80° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4
64	3/4	1/4	5/16
86	1	3/8	23/64

Workpiece																									
Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱									
Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	⬌	✱		
Cast iron	K	●	✱	●	⬌	⬌					⬌	⬌	⬌											●	⬌
Non-ferrous metal	N																							●	⬌
Heat resistant alloy, Titanium alloy	S										●				●	●	⬌	✱	●	⬌	⬌			●	⬌
Hardened steel	H																		●	⬌	⬌			●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	MM	CNMG 321-MM																								0.003~0.014	0.020~0.197
		322-MM														●	●						●			0.004~0.016	0.020~0.197
		323-MM																								0.005~0.018	0.020~0.197
		331-MM																								0.003~0.014	0.020~0.197
		332-MM																								0.004~0.016	0.020~0.197
		333-MM																								0.005~0.018	0.020~0.197
		431-MM														●	●	●			●	●	●			0.004~0.016	0.020~0.217
		432-MM													●	●	●	●			●	●	●			0.005~0.018	0.020~0.217
		433-MM													●	●	●	●			●	●	●			0.006~0.024	0.020~0.217
		434-MM														●	●	●				●				0.008~0.026	0.020~0.217
		542-MM														●	●	●				●				0.005~0.018	0.020~0.276
		543-MM														●	●	●				●	●			0.006~0.024	0.020~0.276
		544-MM														●	●	●				●	●			0.007~0.026	0.020~0.276
		642-MM														●	●	●				●				0.005~0.018	0.020~0.335
		643-MM														●	●	●			●	●	●			0.006~0.024	0.020~0.335
		644-MM														●	●	●				●	●			0.007~0.026	0.020~0.335
Roughing	RM (new)	CNMG 431-RM														●	●	●				●	●			0.004~0.020	0.078~0.236
		432-RM													●	●	●	●			●	●	●			0.006~0.022	0.078~0.236
		433-RM													●	●	●	●			●	●	●			0.008~0.024	0.078~0.236
		434-RM														●	●	●				●				0.010~0.028	0.078~0.236
		542-RM														●	●	●				●				0.006~0.022	0.078~0.315
		543-RM														●	●	●				●				0.008~0.024	0.078~0.315
		544-RM														●	●	●				●				0.010~0.028	0.078~0.315
		642-RM														●	●	●				●				0.006~0.022	0.078~0.394
		643-RM														●	●	●				●				0.008~0.024	0.078~0.394
		644-RM														●	●	●				●				0.010~0.028	0.078~0.394
		866-RM																								0.016~0.047	0.157~0.551
Finishing	VP1	CNMG 431-VP1																		●	●			●		0.002~0.006	0.004~0.059
		432-VP1																		●	●			●		0.003~0.008	0.004~0.059
Finishing	VP1	CNGG 430.5-VP1																			●					0.001~0.004	0.004~0.039
		431-VP1																			●					0.002~0.006	0.004~0.059
		432-VP1																								0.003~0.008	0.004~0.059

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MCKNR/L	B195	MCRNR/L	B196
MCLNR/L	B195	PCBNR/L	B184
MCMNN	B195	PCLNR/L	B185

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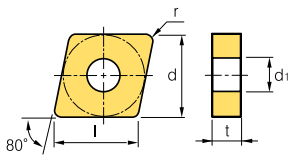
Rhombic 80° Negative



Dimensions (inch)			
Size	d	t	d_1
43	1/2	3/16	13/64
54	5/8	1/4	1/4
64	3/4	1/4	5/16

Workpiece			Machining types
Steel	P		● Continuous cutting
Stainless steel	M		⧓ General cutting
Cast iron	K		✱ Interrupted cutting
Non-ferrous metal	N		
Heat resistant alloy, Titanium alloy	S		
Hardened steel	H		

Insert	Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	VP2	CNMG 431-VP2						●									●	●	●	●	●			●		0.002~0.012	0.004~0.118
		432-VP2															●	●	●	●	●			●		0.004~0.016	0.020~0.177
		542-VP2																								0.005~0.018	0.031~0.197
		642-VP2																								0.005~0.020	0.039~0.205
		643-VP2																								0.006~0.020	0.047~0.217
		644-VP2																								0.007~0.020	0.059~0.217
Medium cutting	VP3	CNMG 431-VP3															●	●	●	●	●			●	●	0.002~0.012	0.004~0.118
		432-VP3															●	●	●	●	●			●	●	0.004~0.016	0.020~0.177
		433-VP3															●	●	●	●	●			●	●	0.005~0.020	0.020~0.197
		434-VP3																								0.010~0.018	0.039~0.157
		542-VP3																								0.006~0.014	0.031~0.236
		543-VP3																								0.008~0.016	0.039~0.236
		544-VP3																								0.008~0.016	0.039~0.236
		642-VP3																								0.008~0.020	0.039~0.276
		643-VP3																								0.010~0.022	0.039~0.315
		644-VP3																								0.012~0.024	0.039~0.315
Medium cutting	VP3	CNGG 431-VP3																	●	●	●			●		0.002~0.012	0.004~0.018
		432-VP3																	●	●				●		0.004~0.016	0.020~0.177
		433-VP3																		●	●					0.005~0.020	0.020~0.197
Roughing	VP4 new	CNMG 432-VP4																			●	●				0.006~0.014	0.039~0.157
		433-VP4																			●	●				0.008~0.016	0.039~0.157
		542-VP4																								0.008~0.018	0.039~0.256
		543-VP4																								0.010~0.020	0.059~0.256
		642-VP4																			●	●				0.006~0.018	0.039~0.315
		643-VP4																			●	●				0.008~0.020	0.047~0.335
Medium to finishing	HA	CNMG 431-HA																					●	●		0.002~0.008	0.031~0.138
		432-HA																		●			●	●		0.004~0.016	0.031~0.138
		433-HA																					●			0.005~0.022	0.031~0.138
Finishing	VW [Wiper]	CNMG 431-VW																								0.004~0.012	0.020~0.118
		432-VW					●																			0.006~0.020	0.020~0.157
		433-VW																								0.008~0.020	0.031~0.157

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MCKNR/L	B195	MCRNR/L	B196
MCLNR/L	B195	PCBNR/L	B184
MCMNN	B195	PCLNR/L	B185

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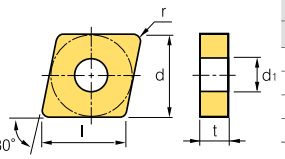
Rhombic 80° Negative



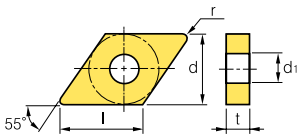
Dimensions (inch)			
Size	d	t	d_1
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
53	1/2	3/16	13/64
54	5/8	1/4	1/4

Dimensions (inch)			
Size	d	t	d_1
64	3/4	1/4	5/16
85	1	5/16	23/64
86	1	3/8	23/64

| Workpiece | | | Cutting Condition | | |

DN○○

Rhombic 55° Negative

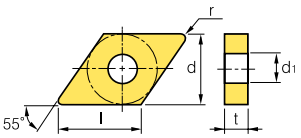


Dimensions (inch)			
Size	d	t	d1
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
44	1/2	1/4	13/64

| Workpiece | | |

DN○○

Rhombic 55° Negative



Dimensions (inch)			
Size	d	t	d_1
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
44	1/2	1/4	13/64

Workpiece			Machining types
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation		Cermet		Coated		Coated														Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	CP	DNMG 331-CP					●	●																		0.003~0.012	0.016~0.118
		DNMG 332-CP																								0.004~0.012	0.016~0.118
		DNMG 33.51-CP																								0.003~0.012	0.016~0.118
		DNMG 33.52-CP																								0.004~0.012	0.016~0.118
		DNMG 431-CP					●	●																		0.004~0.014	0.020~0.138
		DNMG 432-CP					●	●																		0.005~0.014	0.020~0.138
		DNMG 433-CP					●	●																		0.005~0.014	0.031~0.138
		DNMG 441-CP					●	●																		0.004~0.014	0.020~0.138
		DNMG 442-CP					●	●																		0.005~0.014	0.020~0.138
		DNMG 443-CP					●	●																		0.005~0.014	0.031~0.138
Medium to finishing	VC	DNMG 431-VC							●	●																0.004~0.014	0.012~0.079
		DNMG 432-VC							●	●				●												0.006~0.016	0.020~0.118
		DNMG 433-VC							●	●																0.006~0.018	0.020~0.118
		DNMG 441-VC							●	●																0.004~0.014	0.012~0.079
		DNMG 442-VC							●	●				●												0.006~0.016	0.020~0.118
		DNMG 443-VC							●	●																0.006~0.018	0.020~0.118
Medium cutting	HM	DNMG 331-HM										●											●			0.002~0.020	0.031~0.157
		DNMG 332-HM																					●			0.004~0.020	0.039~0.157
		DNMG 431-HM								●																0.002~0.012	0.035~0.197
		DNMG 432-HM									●															0.004~0.020	0.039~0.197
		DNMG 441-HM									●	●				●							●			0.002~0.012	0.035~0.197
		DNMG 442-HM								●	●	●											●			0.004~0.020	0.039~0.197
		DNMG 443-HM										●														0.007~0.020	0.039~0.197
Medium cutting	MP	DNMG 331-MP							●	●				●				●	●							0.004~0.016	0.016~0.150
		DNMG 332-MP							●	●				●				●	●							0.006~0.016	0.020~0.157
		DNMG 333-MP																								0.006~0.020	0.032~0.165
		DNMG 33.51-MP																								0.004~0.016	0.016~0.150
		DNMG 33.52-MP																								0.006~0.016	0.020~0.157
		DNMG 33.53-MP																								0.006~0.020	0.031~0.165
		DNMG 431-MP							●	●				●			●	●	●		●					0.004~0.016	0.016~0.157
		DNMG 432-MP							●	●				●			●	●	●	●	●					0.006~0.018	0.020~0.177
		DNMG 433-MP							●	●				●			●				●					0.006~0.020	0.032~0.197
		DNMG 434-MP																								0.006~0.020	0.033~0.197
		DNMG 441-MP							●	●				●	●		●	●	●	●	●					0.004~0.016	0.016~0.157
		DNMG 442-MP							●	●				●	●		●	●	●	●	●					0.006~0.018	0.020~0.177
		DNMG 443-MP							●	●				●			●	●	●	●	●					0.006~0.020	0.032~0.197
		DNMG 444-MP																								0.006~0.022	0.033~0.197

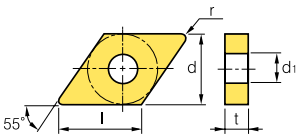
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MDJNR/L	B196	PDJNR/L	B185
MDNNN	B196	PDNNR/L	B186
MDQNR/L	B197		

DN○○

Rhombic 55° Negative



Dimensions (inch)			
Size	d	t	d1
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
44	1/2	1/4	13/64

Workpiece		
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ⬌ ✱ ● ● ⬌ ✱
Stainless steel	M	✱ ⬌ ⬌ ✱ ⬌ ⬌ ● ⬌ ✱ ✱ ✱ ● ⬌ ⬌
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ● ● ● ● ● ● ● ⬌
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ● ⬌ ✱ ● ⬌ ⬌
Hardened steel	H	● ⬌ ⬌ ● ⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated																		Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	VM	DNMG	331-VM							●			●														0.002~0.012	0.035~0.157
			332-VM																								0.004~0.020	0.039~0.157
			333-VM																								0.005~0.020	0.051~0.157
			431-VM	●									●						●	●							0.002~0.012	0.035~0.197
			432-VM	●	●						●		●						●	●							0.004~0.020	0.039~0.197
			433-VM										●						●	●							0.005~0.024	0.051~0.197
			441-VM	●	●					●	●		●						●	●				●			0.002~0.012	0.035~0.197
			442-VM	●					●	●	●		●						●	●				●			0.004~0.020	0.039~0.197
			443-VM										●						●	●							0.005~0.024	0.051~0.197
Medium to roughing	B25	DNMG	431-B25		●			●	●				●														0.007~0.018	0.039~0.157
			432-B25		●			●	●				●														0.007~0.022	0.059~0.157
			433-B25					●	●				●														0.010~0.022	0.059~0.157
			441-B25	●				●	●		●		●														0.007~0.022	0.059~0.157
			442-B25	●				●	●		●		●											●			0.007~0.022	0.059~0.157
			443-B25					●	●				●														0.010~0.022	0.059~0.157
Roughing	GR	DNMG	432-GR					●			●																0.008~0.020	0.039~0.276
			433-GR																								0.010~0.035	0.051~0.276
			434-GR																								0.012~0.030	0.071~0.276
			442-GR						●	●	●		●	●													0.008~0.020	0.039~0.276
			443-GR						●		●																0.010~0.028	0.051~0.276
			444-GR										●														0.008~0.030	0.071~0.276
Medium to finishing	VQ [Cermet]	DNMG	331-VQ	●	●																						0.002~0.012	0.020~0.138
			332-VQ																								0.003~0.016	0.031~0.157
			333-VQ																								0.004~0.016	0.039~0.157
			33.52-VQ										●														0.003~0.016	0.031~0.157
			33.53-VQ										●														0.004~0.016	0.039~0.157
			431-VQ	●	●	●	●																				0.002~0.012	0.031~0.138
			432-VQ	●	●	●	●																				0.003~0.016	0.031~0.157
			433-VQ																								0.004~0.016	0.020~0.165
			441-VQ	●	●	●	●																				0.002~0.012	0.031~0.157
			442-VQ	●	●	●	●																				0.003~0.016	0.031~0.157
			443-VQ																								0.004~0.016	0.020~0.165

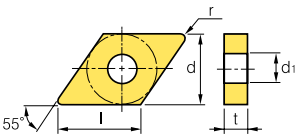
Cutting edge geometry A37~A49 Recommended chip breaker B04~B15 Code system B34~B35

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MDJNR/L	B196	PDJNR/L	B185
MDNNN	B196	PDNNR/L	B186
MDQNR/L	B197		

DN○○

Rhombic 55° Negative



Dimensions (inch)			
Size	d	t	d_1
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
44	1/2	1/4	13/64
64	3/4	1/4	5/16

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ✱ ✱ ✱ ⬌ ⬌ ⬌ ● ● ⬌ ✱ ✱ ✱ ✱ ● ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌	
Heat resistant alloy, Titanium alloy	S	● ● ● ⬌ ✱ ● ⬌ ⬌	
Hardened steel	H	● ⬌ ⬌ ⬌	

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	MK new	DNMG	431-MK												●												0.002~0.012	0.036~0.197
			432-MK												●												0.004~0.020	0.039~0.197
			433-MK																								0.005~0.024	0.051~0.197
			441-MK											●	●												0.002~0.012	0.036~0.197
			442-MK											●	●												0.004~0.020	0.039~0.197
			443-MK												●												0.005~0.024	0.051~0.197
Roughing		DNMA	332																								0.007~0.018	0.031~0.118
			431																								0.007~0.022	0.016~0.157
			432																								0.010~0.022	0.031~0.157
			433												●												0.010~0.026	0.059~0.157
			441																								0.007~0.022	0.016~0.157
			442												●												0.010~0.022	0.031~0.157
			443												●												0.010~0.026	0.047~0.157
			642																								0.012~0.031	0.098~0.512
Roughing	RK new	DNMG	432-RK												●												0.006~0.020	0.059~0.197
			433-RK												●												0.008~0.024	0.071~0.197
			442-RK											●	●												0.006~0.020	0.059~0.197
			443-RK												●												0.008~0.024	0.071~0.197
Roughing	VR	DNMG	432-VR																								0.010~0.022	0.047~0.276
			433-VR																								0.012~0.024	0.059~0.276
			442-VR																								0.010~0.022	0.047~0.276
			443-VR																								0.012~0.024	0.059~0.276
Medium cutting	MM new	DNMG	331-MM																					●			0.003~0.014	0.020~0.197
			332-MM														●	●						●			0.004~0.016	0.020~0.197
			333-MM																								0.005~0.018	0.020~0.197
			33.51-MM																								0.003~0.014	0.020~0.197
			33.52-MM																								0.004~0.016	0.020~0.197
			33.53-MM																								0.005~0.018	0.020~0.197
			431-MM														●	●	●				●	●			0.004~0.016	0.020~0.252
			432-MM													●	●	●	●			●	●	●			0.005~0.018	0.020~0.252
			433-MM													●	●	●	●								0.006~0.024	0.020~0.252
			434-MM																								0.006~0.024	0.020~0.236
			441-MM														●	●	●				●	●			0.004~0.016	0.020~0.252
			442-MM													●	●	●	●			●	●	●			0.005~0.018	0.020~0.252
			443-MM													●	●	●	●				●	●			0.006~0.024	0.020~0.252
			444-MM																								0.007~0.026	0.020~0.315

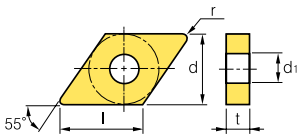
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MDJNR/L	B196	PDJNR/L	B185
MDNNN	B196	PDNNR/L	B186
MDQNR/L	B197		

DN○○

Rhombic 55° Negative



Dimensions (inch)			
Size	d	t	d_1
43	1/2	3/16	13/64
44	1/2	1/4	13/64

Workpiece			Machining types
Steel	P		● Continuous cutting
Stainless steel	M		⧓ General cutting
Cast iron	K		✱ Interrupted cutting
Non-ferrous metal	N		
Heat resistant alloy, Titanium alloy	S		
Hardened steel	H		

Insert	Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Roughing	RM (new)	DNMG 431-RM														●	●	●				●				0.004~0.020	0.078~0.236
		432-RM													●	●	●	●				●				0.006~0.022	0.078~0.236
		433-RM																●				●				0.008~0.024	0.078~0.236
		434-RM																								0.010~0.028	0.079~0.236
		441-RM														●	●	●				●	●			0.004~0.020	0.078~0.236
		442-RM													●	●	●				●		●			0.006~0.022	0.078~0.236
		443-RM													●	●	●									0.008~0.024	0.078~0.236
		444-RM																								0.010~0.028	0.079~0.236
Finishing	VP1	DNMG 431-VP1																		●	●	●		●		0.002~0.006	0.004~0.059
		432-VP1																		●	●	●		●		0.002~0.008	0.004~0.059
		441-VP1																		●	●	●		●		0.002~0.006	0.004~0.059
		442-VP1																		●	●	●		●		0.002~0.008	0.004~0.059
Finishing	VP1	DNGG 431-VP1																								0.003~0.008	0.004~0.059
		432-VP1																								0.003~0.008	0.004~0.059
		441-VP1																								0.003~0.008	0.004~0.059
		442-VP1																								0.003~0.008	0.004~0.059
Medium to finishing	VP2	DNMG 431-VP2																●	●	●	●	●		●		0.002~0.012	0.004~0.118
		432-VP2																●	●	●	●	●		●		0.004~0.016	0.020~0.177
		441-VP2																●	●	●	●	●		●		0.002~0.012	0.004~0.118
		442-VP2						●										●	●	●	●	●		●		0.004~0.016	0.020~0.177
Medium to finishing	VP3	DNMG 431-VP3																●	●		●	●		●	●	0.002~0.012	0.004~0.118
		432-VP3																●	●		●	●		●	●	0.004~0.018	0.020~0.197
		433-VP3																●	●	●	●	●		●		0.005~0.020	0.020~0.197
		441-VP3																●	●	●	●	●			●	0.002~0.012	0.004~0.118
		442-VP3																●	●	●	●	●		●	●	0.004~0.018	0.020~0.197
		443-VP3																●	●	●	●	●		●	●	0.005~0.020	0.020~0.197
Medium cutting	VP3	DNGG 431-VP3																		●	●	●		●		0.002~0.012	0.004~0.118
		432-VP3																		●	●	●		●		0.004~0.018	0.020~0.197
		433-VP3																				●				0.005~0.020	0.020~0.197
		441-VP3																			●	●		●		0.002~0.012	0.004~0.118
		442-VP3																		●	●	●		●		0.004~0.018	0.020~0.197
		443-VP3																		●	●	●		●		0.005~0.020	0.020~0.197

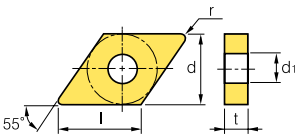
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MDJNR/L	B196	PDJNR/L	B185
MDNNN	B196	PDNNR/L	B186
MDQNR/L	B197		

DN○○

Rhombic 55° Negative



Dimensions (inch)			
Size	d	t	d1
43	1/2	3/16	13/64
44	1/2	1/4	13/64

Workpiece			Machining types
Steel	P		● Continuous cutting
Stainless steel	M		⧓ General cutting
Cast iron	K		✱ Interrupted cutting
Non-ferrous metal	N		
Heat resistant alloy, Titanium alloy	S		
Hardened steel	H		

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	H01	H05	fn (ipr)	ap (inch)
Roughing	VP4	DNMG	432-VP4																								0.006~0.014	0.039~0.157
			433-VP4																								0.008~0.016	0.039~0.157
			442-VP4																			●	●				0.006~0.014	0.039~0.157
			443-VP4																			●	●				0.008~0.016	0.039~0.157
Medium to finishing	HA	DNMG	431-HA																					●	●		0.002~0.012	0.031~0.138
			432-HA																					●	●		0.004~0.016	0.031~0.138
			441-HA																		●			●	●		0.002~0.012	0.031~0.138
			442-HA																					●	●		0.004~0.016	0.031~0.138
Finishing	VW [Wiper]	DNMG	431-VW																								0.004~0.014	0.012~0.118
			432-VW																								0.004~0.016	0.012~0.118
			441-VW																								0.004~0.014	0.012~0.118
			442-VW																								0.004~0.016	0.012~0.118
Medium cutting	LW [Wiper]	DNMG	432-LW																								0.006~0.020	0.028~0.177
			433-LW																								0.008~0.024	0.039~0.197
			442-LW					●	●																		0.006~0.020	0.028~0.177
			443-LW					●	●																		0.008~0.024	0.039~0.197
Medium to finishing	SR [Shaft]	DNMX	431R-SR																								0.004~0.016	0.028~0.177
			432R-SR																								0.005~0.018	0.039~0.177
			441R-SR																								0.004~0.016	0.028~0.177
			442R-SR																								0.005~0.018	0.039~0.177
			431L-SR																								0.004~0.016	0.028~0.177
			432L-SR																								0.005~0.018	0.039~0.177
			441L-SR																								0.004~0.016	0.028~0.177
			442L-SR																								0.005~0.018	0.039~0.177
Medium cutting	SH [Wiper]	DNMX	431R-SH																								0.006~0.012	0.039~0.157
			432R-SH																								0.006~0.020	0.059~0.197
			441R-SH																								0.006~0.012	0.039~0.157
			442R-SH																								0.006~0.020	0.059~0.197
			431L-SH																								0.006~0.012	0.039~0.157
			432L-SH																								0.006~0.020	0.059~0.197
			441L-SH					●																			0.006~0.012	0.039~0.157
			442L-SH																								0.006~0.020	0.059~0.197

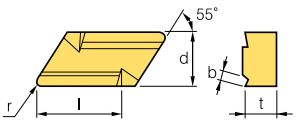
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MDJNR/L	B196	PDJNR/L	B185
MDNNN	B196	PDNNR/L	B186
MDQNR/L	B197		

KN○○

Parallelogram **55° Negative**

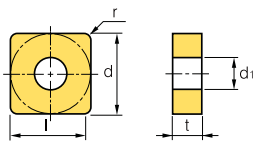


Dimensions (inch)		
Size	d	t
16	3/8	3/16

Workpiece		
Steel	P	● ✱ ● ● ● ● ● ✱ ✱ ✱ ● ● ● ✱ ● ● ● ● ●

SN○○

○ Square 90° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64

Workpiece																								
Steel	P	●	✱	●	⬌	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱						
Stainless steel	M										⬌	⬌	⬌			⬌	⬌	✱	●	⬌	⬌	⬌	✱	
Cast iron	K	●	✱	●	⬌	⬌		⬌					⬌	⬌	⬌								●	⬌
Non-ferrous metal	N																						●	⬌
Heat resistant alloy, Titanium alloy	S												●				●	●	●	⬌	⬌		●	⬌
Hardened steel	H																		●	⬌	⬌		●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VB	SNMG	431-VB	●		●	●			●	●																0.006~0.014	0.012~0.078
			432-VB	●	●	●	●			●	●																0.006~0.016	0.022~0.078
Finishing	VF	SNMG	321-VF																								0.003~0.012	0.020~0.059
			322-VF																								0.003~0.012	0.020~0.059
			431-VF																								0.003~0.012	0.020~0.059
			432-VF												●												0.004~0.016	0.020~0.059
			433-VF																								0.008~0.020	0.020~0.059
Finishing	VL	SNMG	432-VL																			●					0.004~0.014	0.008~0.060
Medium to finishing	LP	SNMG	322-LP																								0.004~0.012	0.012~0.059
			332-LP																								0.004~0.012	0.012~0.059
			431-LP							●	●				●												0.004~0.014	0.012~0.078
			432-LP							●	●				●												0.004~0.016	0.022~0.098
			433-LP							●	●																0.005~0.018	0.032~0.118
Medium to finishing	CP	SNMG	321-CP																								0.003~0.012	0.016~0.118
			322-CP																								0.004~0.012	0.016~0.118
			331-CP																								0.003~0.012	0.016~0.118
			332-CP																								0.004~0.012	0.016~0.118
			431-CP					●	●																		0.004~0.014	0.020~0.138
			432-CP					●	●																		0.005~0.014	0.020~0.138
			433-CP					●	●																		0.005~0.014	0.031~0.138
Medium to finishing	VC	SNMG	432-VC								●				●												0.006~0.016	0.020~0.157

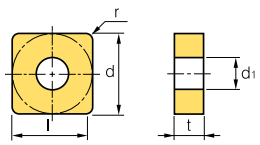
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B197	**MSRNR/L**	B198	**PSDNN**	B187
MSDNN	B197	**MSSNR/L**	B199	**PSKNR/L**	B188
MSKNR/L	B198	**PSBNR/L**	B187	**PSSNR/L**	B189

SN○○

Square 90° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4
64	3/4	3/16~1/4	5/16

Workpiece			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05
Steel	P		●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱								
Stainless steel	M								⬌	⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	✱		
Cast iron	K		●	✱	●	⬌	⬌					⬌	⬌	⬌										●	⬌
Non-ferrous metal	N																							●	⬌
Heat resistant alloy, Titanium alloy	S											●				●	●	⬌	✱	●	⬌	⬌		●	⬌
Hardened steel	H																			●	⬌	⬌		●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Medium cutting	HM	SNMG	431-HM																					●			0.006~0.017	0.024~0.165
			432-HM					●		●	●				●									●			0.004~0.020	0.039~0.197
			433-HM					●																●			0.007~0.020	0.039~0.197
Medium cutting	MP	SNMG	321-MP					●	●				●														0.004~0.016	0.016~0.150
			322-MP					●	●				●														0.006~0.016	0.020~0.157
			323-MP																								0.006~0.020	0.031~0.165
			331-MP																								0.004~0.016	0.016~0.150
			332-MP																								0.006~0.016	0.020~0.157
			333-MP																								0.006~0.020	0.031~0.165
			431-MP					●	●				●			●	●	●			●	●					0.004~0.016	0.016~0.157
			432-MP					●	●				●			●	●	●			●	●					0.006~0.018	0.020~0.177
			433-MP					●	●				●			●	●	●									0.006~0.020	0.032~0.197
			434-MP					●	●				●														0.007~0.024	0.032~0.276
			542-MP																								0.006~0.020	0.020~0.276
			543-MP																								0.007~0.024	0.031~0.335
			642-MP																								0.006~0.020	0.020~0.335
			643-MP																								0.007~0.024	0.031~0.335
Medium cutting	VM	SNMG	321-VM																								0.002~0.012	0.035~0.138
			322-VM																								0.004~0.197	0.039~0.138
			431-VM	●									●						●	●							0.002~0.012	0.035~0.197
			432-VM	●						●	●		●						●	●		●		●			0.004~0.020	0.039~0.197
			433-VM										●						●	●							0.005~0.024	0.051~0.197
			643-VM																								0.010~0.024	0.098~0.295
			644-VM																								0.010~0.024	0.098~0.295

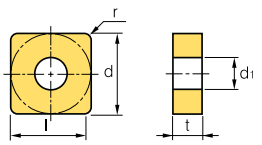
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B197	**MSRNR/L**	B198	**PSDNN**	B187
MSDNN	B197	**MSSNR/L**	B199	**PSKNR/L**	B188
MSKNR/L	B198	**PSBNR/L**	B187	**PSSNR/L**	B189

SN○○

○ Square 90° Negative



Dimensions (inch)			
Size	d	t	d1
32	3/8	1/8	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4

Dimensions (inch)			
Size	d	t	d1
64	3/4	3/16~1/4	5/16
85	1	5/16	23/64
86	1	3/8	23/64

Workpiece																							
Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱							
Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	⬌	✱
Cast iron	K	●	✱	●	⬌	⬌					⬌	⬌	⬌									●	⬌
Non-ferrous metal	N																					●	⬌
Heat resistant alloy, Titanium alloy	S									●				●	●	⬌	✱	●	⬌	⬌		●	⬌
Hardened steel	H																	●	⬌	⬌		●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to roughing	B25 	SNMG 322-B25																								0.007~0.018	0.031~0.138
		431-B25	●	●			●	●		●		●														0.007~0.018	0.039~0.138
		432-B25	●	●			●	●		●		●						●	●				●			0.009~0.024	0.059~0.197
		433-B25		●			●	●		●		●														0.010~0.024	0.079~0.197
		434-B25					●	●		●		●														0.014~0.028	0.098~0.197
		435-B25																								0.016~0.028	0.118~0.197
		542-B25								●																0.010~0.024	0.059~0.236
		543-B25																								0.010~0.024	0.079~0.236
		544-B25						●																		0.014~0.028	0.079~0.236
		642-B25					●	●		●																0.010~0.024	0.118~0.315
		643-B25					●	●		●		●														0.014~0.028	0.118~0.315
		644-B25					●	●		●											●					0.014~0.028	0.157~0.472
		854-B25																								0.014~0.028	0.157~0.472
		856-B25					●					●														0.020~0.039	0.197~0.472
		866-B25					●																			0.020~0.039	0.217~0.472
Roughing	GR 	SNMG 431-GR																								0.006~0.018	0.003~0.236
		432-GR								●		●	●	●												0.008~0.020	0.039~0.276
		433-GR								●				●												0.008~0.020	0.039~0.276
		542-GR								●																0.010~0.024	0.039~0.276
		543-GR					●	●	●	●																0.011~0.030	0.055~0.276
		642-GR								●																0.012~0.031	0.067~0.354
		643-GR						●	●	●		●														0.012~0.031	0.067~0.354
		644-GR					●	●	●	●		●														0.012~0.032	0.075~0.484
		646-GR																								0.014~0.032	0.079~0.492
		856-GR								●																0.018~0.047	0.102~0.551
		866-GR							●	●																0.020~0.047	0.102~0.551
Medium to finishing	VQ  [Cermet]	SNMG 321-VQ																								0.002~0.012	0.002~0.138
		322-VQ										●														0.003~0.012	0.003~0.157
		323-VQ																								0.004~0.012	0.039~0.157
		431-VQ	●	●																						0.002~0.012	0.031~0.157
		432-VQ	●	●																						0.003~0.016	0.031~0.157

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B197	MSRNR/L	B198	PSDNN	B187
MSDNN	B197	MSSNR/L	B199	PSKNR/L	B188
MSKNR/L	B198	PSBNR/L	B187	PSSNR/L	B189

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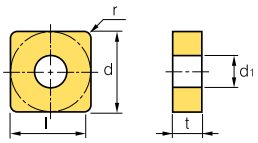
Square 90° Negative



Dimensions (inch)			
Size	d	t	d1
32	3/8	1/8	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4

Dimensions (inch)			
Size	d	t	d1
64	3/4	3/16~1/4	5/16
85	1	5/16	23/64
86	1	3/8	23/64

Workpiece		
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ⬌ ✱ ● ● ⬌ ✱
Stainless steel	M	✱ ⬌ ⬌ ✱ ⬌ ⬌ ● ● ⬌ ✱ ⬌ ✱ ⬌ ✱ ● ⬌ ⬌ ✱
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ✱ ⬌ ⬌ ⬌ ● ⬌
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ● ⬌ ✱ ● ⬌ ⬌ ● ⬌ ⬌
Hardened steel	H	● ⬌ ⬌ ● ⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated		Coated																Uncoated		Cutting Condition	
		CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	SNGG 321R																								0.005~0.014	0.039~0.118
	322R																								0.006~0.014	0.039~0.118
	431R																								0.006~0.014	0.039~0.157
	432R																								0.006~0.014	0.039~0.157
	433R																								0.006~0.014	0.039~0.157
	321L																								0.005~0.014	0.039~0.118
	322L																								0.006~0.014	0.039~0.118
	431L																								0.006~0.014	0.039~0.157
	432L																								0.006~0.014	0.039~0.157
	433L																								0.006~0.014	0.039~0.157
Medium cutting	SNMG 322-MK																								0.006~0.018	0.031~0.138
	431-MK																								0.003~0.018	0.031~0.157
	432-MK												●												0.004~0.020	0.039~0.197
	433-MK												●												0.005~0.024	0.051~0.197
	434-MK																								0.006~0.025	0.059~0.236
	542-MK																								0.010~0.024	0.071~0.236
	543-MK																								0.008~0.028	0.071~0.276
	544-MK																								0.009~0.028	0.078~0.295
	642-MK																								0.012~0.030	0.091~0.374
	643-MK												●												0.013~0.031	0.098~0.394
	644-MK																								0.014~0.031	0.106~0.394
Roughing	SNMA 321																								0.004~0.018	0.020~0.177
	322																								0.006~0.020	0.020~0.177
	323																								0.008~0.020	0.020~0.177
	430.5																								0.004~0.020	0.039~0.177
	431																								0.006~0.024	0.039~0.197
	432												●												0.006~0.028	0.039~0.236
	433												●												0.008~0.032	0.059~0.236
	434												●												0.012~0.039	0.078~0.236
	435																								0.012~0.028	0.098~0.197
	543																								0.008~0.032	0.078~0.315
	544												●												0.010~0.034	0.098~0.394
	642																								0.008~0.032	0.078~0.394
	643												●												0.008~0.032	0.078~0.394
	644											●	●												0.010~0.034	0.098~0.394
	646																								0.014~0.036	0.118~0.394
	856																								0.016~0.039	0.118~0.512
	866																								0.016~0.039	0.118~0.512

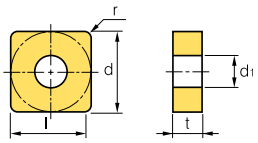
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B197	MSRNR/L	B198	PSDNN	B187
MSDNN	B197	MSSNR/L	B199	PSKNR/L	B188
MSKNR/L	B198	PSBNR/L	B187	PSSNR/L	B189

SN○○

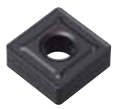
○ Square 90° Negative



Dimensions (inch)			
Size	d	t	d1
32	3/8	1/8	5/32
33	3/8	1/8~3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4

Dimensions (inch)			
Size	d	t	d1
64	3/4	3/16~1/4	5/16
85	1	5/16	23/64
86	1	3/8	23/64

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ● ● ⬌ ⬌ ⬌ ● ✱ ⬌ ✱ ✱ ● ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ● ● ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌	
Heat resistant alloy, Titanium alloy	S	● ⬌ ● ● ⬌ ✱ ● ⬌ ⬌ ● ⬌	
Hardened steel	H	● ⬌	

Insert	Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	Coated NC3225	Coated NC3120	Coated NC3030	Coated NC3235	Coated NC5330	Coated NC6310	Coated NC6315	Coated NC9115	Coated NC9125	Coated NC9135	Coated PC5300	Coated PC5400	Coated PC8105	Coated PC8110	Coated PC8115	Coated PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Roughing		SNGA 321																								0.007~0.020	0.020~0.177
		322																								0.007~0.020	0.020~0.177
		431																								0.006~0.024	0.059~0.315
		432																								0.006~0.024	0.059~0.315
		433																								0.008~0.031	0.059~0.315
		542																								0.008~0.031	0.079~0.394
		543																								0.008~0.035	0.079~0.394
		642																								0.006~0.024	0.118~0.472
		643																								0.008~0.031	0.118~0.472
Roughing	RK 	SNMG 431-RK												●												0.006~0.020	0.047~0.236
		432-RK											●	●												0.009~0.021	0.059~0.236
		433-RK											●	●												0.011~0.021	0.071~0.236
		434-RK												●												0.011~0.021	0.078~0.236
		543-RK																								0.008~0.028	0.071~0.276
		544-RK																								0.009~0.028	0.078~0.295
		643-RK																								0.013~0.031	0.098~0.394
		644-RK																								0.014~0.031	0.106~0.394
Roughing	VR 	SNMG 432-VR																								0.010~0.022	0.047~0.276
		433-VR																								0.012~0.024	0.059~0.276
		434-VR																								0.014~0.024	0.079~0.276
		643-VR					●	●																		0.014~0.028	0.078~0.394
		644-VR					●	●																		0.014~0.030	0.087~0.394
Medium cutting	MM 	SNMG 321-MM																								0.003~0.014	0.020~0.197
		322-MM																								0.004~0.016	0.020~0.197
		323-MM																								0.005~0.018	0.020~0.197
		331-MM																								0.003~0.014	0.020~0.197
		332-MM																								0.004~0.016	0.020~0.197
		431-MM													●	●	●	●				●	●			0.004~0.016	0.020~0.252
		432-MM													●	●	●	●			●	●	●			0.005~0.018	0.020~0.252
		433-MM														●	●	●				●	●			0.006~0.024	0.020~0.252
		434-MM																								0.007~0.026	0.020~0.252
		542-MM																								0.005~0.018	0.020~0.315
		543-MM														●	●	●				●	●			0.006~0.024	0.020~0.315
		544-MM														●	●									0.007~0.026	0.020~0.315
		642-MM														●	●	●				●				0.005~0.018	0.020~0.374
		643-MM														●	●	●				●	●			0.006~0.024	0.020~0.374
		644-MM														●	●						●			0.007~0.026	0.020~0.374
		866-MM															●									0.008~0.031	0.039~0.394

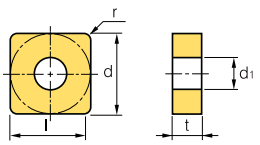
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B197	**MSRNR/L**	B198	**PSDNN**	B187
MSDNN	B197	**MSSNR/L**	B199	**PSKNR/L**	B188
MSKNR/L	B198	**PSBNR/L**	B187	**PSSNR/L**	B189

SN○○

Square 90° Negative



Dimensions (inch)			
Size	d	t	d_1
43	1/2	3/16	13/64
54	5/8	1/4	1/4
64	3/4	3/16~1/4	5/16
86	1	3/8	23/64

Workpiece			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	H01	H05
	Steel	P	●	✱	●	⧓	●	⧓	⧓	✱	✱	✱	●	⧓		✱									
	Stainless steel	M								⧓	⧓	⧓		●	⧓	✱	⧓	✱	●	⧓	⧓	⧓	✱		
	Cast iron	K	●	✱	●	⧓	⧓				⧓	⧓	●											●	⧓
	Non-ferrous metal	N																						●	⧓
	Heat resistant alloy, Titanium alloy	S										●			●	●	⧓	✱	●	⧓	⧓	⧓		●	⧓
	Hardened steel	H																	●	⧓	⧓			●	⧓

Machining types
● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Roughing	RM	SNMG	431-RM												●	●	●	●				●					0.004~0.020	0.078~0.236
			432-RM												●	●	●	●			●	●		●			0.006~0.022	0.078~0.236
			433-RM													●	●	●				●					0.008~0.024	0.078~0.236
			434-RM																								0.010~0.028	0.078~0.236
			542-RM																								0.008~0.024	0.008~0.236
			543-RM													●	●	●				●					0.008~0.024	0.078~0.315
			544-RM																								0.010~0.028	0.078~0.315
			642-RM													●	●	●				●					0.008~0.024	0.078~0.394
			643-RM													●	●	●				●					0.010~0.028	0.078~0.394
			644-RM													●	●										0.009~0.028	0.078~0.394
			646-RM																								0.012~0.030	0.118~0.394
			866-RM																								0.016~0.047	0.157~0.551
Medium to finishing	VP2	SNMG	431-VP2															●	●	●	●	●			●		0.002~0.014	0.004~0.118
			432-VP2						●									●	●	●	●	●			●		0.004~0.018	0.020~0.177
			433-VP2															●	●	●	●	●			●		0.004~0.020	0.020~0.197
Medium cutting	VP3	SNMG	431-VP3															●	●	●	●	●			●	●	0.002~0.012	0.004~0.118
			432-VP3															●	●	●	●	●			●	●	0.004~0.018	0.039~0.197
			433-VP3															●	●	●	●	●				●	0.005~0.020	0.039~0.197
			434-VP3																								0.010~0.018	0.020~0.157
			542-VP3																								0.006~0.014	0.031~0.236
			543-VP3																								0.008~0.016	0.039~0.236
			544-VP3																								0.008~0.016	0.039~0.236
			642-VP3																								0.006~0.014	0.031~0.276
			643-VP3																								0.008~0.016	0.039~0.276
			644-VP3																								0.010~0.018	0.039~0.276
Medium cutting	VP3	SNGG	431-VP3																	●	●				●		0.002~0.012	0.016~0.157
			432-VP3																	●	●	●			●		0.004~0.018	0.020~0.157
			433-VP3																	●	●	●					0.005~0.020	0.020~0.157
Roughing	VP4	SNMG	432-VP4																			●	●				0.006~0.014	0.039~0.157
			433-VP4																			●	●				0.008~0.016	0.039~0.157
			543-VP4																			●	●				0.008~0.018	0.039~0.197
			642-VP4																			●					0.008~0.020	0.039~0.354
			643-VP4																			●	●				0.009~0.022	0.039~0.354
			644-VP4																				●				0.010~0.024	0.039~0.354

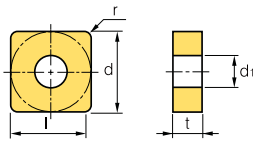
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B197	MSRNR/L	B198	PSDNN	B187
MSDNN	B197	MSSNR/L	B199	PSKNR/L	B188
MSKNR/L	B198	PSBNR/L	B187	PSSNR/L	B189

SN○○

○ Square 90° Negative

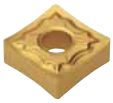
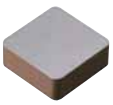


Dimensions (inch)			
Size	d	t	d1
32	3/8	1/8	5/32
42	1/2	1/8	13/64
43	1/2	3/16	13/64
53	5/8	3/16	1/4

Dimensions (inch)			
Size	d	t	d1
63	3/4	3/16	-
84	1	1/4	23/64
86	1	3/8	23/64

Workpiece			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05
Workpiece	Steel	P	●	✱	●	⬬	●	⬬	⬬	✱	✱	✱	●	●	⬬		✱								
	Stainless steel	M								✱	⬬	⬬			●	⬬	✱	⬬	✱	●	⬬	⬬	✱		
	Cast iron	K	●	✱	●	⬬	⬬					⬬	⬬	⬬										●	⬬
	Non-ferrous metal	N																						●	⬬
	Heat resistant alloy, Titanium alloy	S										●				●	●	⬬	✱	●	⬬	⬬		●	⬬
	Hardened steel	H																		●	⬬	⬬		●	⬬

Machining types
● Continuous cutting
⬬ General cutting
✱ Interrupted cutting

Insert	Designation		Cermet		Coated		Coated																	Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	HA 	SNMG 431-HA																					●	●		0.004~0.014	0.031~0.138
		SNMG 432-HA																					●	●		0.004~0.016	0.031~0.138
		SNMG 433-HA																								0.005~0.022	0.031~0.138
Roughing		SNGN 320.5																								0.002~0.012	0.020~0.157
		SNGN 321																								0.004~0.014	0.020~0.157
		SNGN 322																								0.004~0.016	0.039~0.157
		SNGN 421																								0.005~0.020	0.051~0.197
		SNGN 422																								0.006~0.024	0.059~0.236
		SNGN 423																								0.007~0.024	0.067~0.236
		SNGN 430.5																								0.004~0.018	0.039~0.197
		SNGN 431																								0.005~0.020	0.051~0.197
		SNGN 432																								0.006~0.024	0.059~0.236
		SNGN 433																								0.007~0.024	0.067~0.236
		SNGN 436																								0.008~0.026	0.079~0.236
		SNGN 530.5																								0.004~0.020	0.020~0.236
		SNGN 532																								0.006~0.024	0.059~0.315
		SNGN 533																								0.007~0.024	0.079~0.315
		SNGN 534																								0.008~0.026	0.098~0.335
		SNGN 630.5																								0.004~0.024	0.079~0.335
		SNGN 633																								0.007~0.028	0.098~0.394
		SNGN 634																								0.008~0.030	0.098~0.394
		SNGN 841																								0.012~0.031	0.118~0.472
		SNGN 844																								0.014~0.039	0.157~0.472
Medium to roughing		SNUN 432																								0.009~0.024	0.059~0.197
		SNUN 433																								0.010~0.024	0.079~0.197
		SNUN 633																								0.012~0.039	0.118~0.394
		SNUN 433TN																								0.010~0.024	0.079~0.197
		SNUN 866TN																								0.012~0.047	0.118~0.472
Medium cutting		SNMX 432R																								0.006~0.014	0.039~0.157

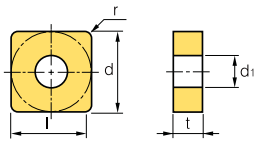
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B197	**MSRNR/L**	B198	**PSDNN**	B187
MSDNN	B197	**MSSNR/L**	B199	**PSKNR/L**	B188
MSKNR/L	B198	**PSBNR/L**	B187	**PSSNR/L**	B189

SN○○

○ Square 90° Negative



Dimensions (inch)			
Size	d	t	d_1
43	1/2	3/16	13/64
54	5/8	1/4	1/4
64	3/4	3/16~1/4	5/16
85	1	5/16	23/64
86	1	3/8	23/64

Workpiece			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05
Workpiece	Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱								
	Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	✱		
	Cast iron	K	●	✱	●	⬌	⬌				⬌	⬌	⬌											●	⬌
	Non-ferrous metal	N																						●	⬌
	Heat resistant alloy, Titanium alloy	S										●				●	●	⬌	✱	●	⬌	⬌		●	⬌
	Hardened steel	H																		●	⬌	⬌		●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Medium cutting		SNGX	**432R**																								0.039~0.157	0.006~0.014
Roughing	GR	SNMM	**432-GR**																								0.008~0.020	0.039~0.276
			433-GR								●																0.010~0.026	0.051~0.276
			643-GR								●																0.010~0.026	0.051~0.453
			644-GR																								0.013~0.033	0.071~0.453
Heavy	GH	SNMM	**432-GH**							●		●															0.012~0.024	0.000~0.001
			433-GH						●		●																0.012~0.028	0.000~0.001
			543-GH								●																0.012~0.028	0.098~0.315
			643-GH					●		●	●		●														0.012~0.028	0.118~0.315
			644-GH					●		●	●		●														0.018~0.039	0.157~0.354
			646-GH					●		●	●		●														0.022~0.047	0.157~0.354
			856-GH					●		●	●		●														0.022~0.047	0.197~0.472
			866-GH					●		●	●		●														0.022~0.047	0.197~0.472
Heavy	VH [General]	SNMM	**643-VH**					●																			0.020~0.036	0.197~0.394
			644-VH					●																			0.020~0.043	0.197~0.394
			646-VH					●																			0.024~0.047	0.236~0.472
			854-VH																								0.028~0.055	0.236~0.551
			856-VH					●			●																0.028~0.055	0.236~0.591
			865-VH																								0.028~0.055	0.236~0.591
			866-VH					●																			0.028~0.055	0.236~0.591
Heavy	VT [High feed cutting]	SNMM	**643-VT**					●					●														0.024~0.036	0.236~0.512
			644-VT					●			●																0.024~0.043	0.236~0.512
			646-VT					●																			0.024~0.063	0.276~0.512
			854-VT																								0.030~0.063	0.276~0.591
			856-VT					●			●																0.030~0.063	0.276~0.591
			865-VT																								0.030~0.063	0.276~0.591
			866-VT					●			●																0.030~0.063	0.276~0.669

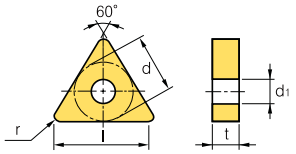
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B197	**MSRNR/L**	B198	**PSDNN**	B187
MSDNN	B197	**MSSNR/L**	B199	**PSKNR/L**	B188
MSKNR/L	B198	**PSBNR/L**	B187	**PSSNR/L**	B189

TN○○

Triangular 60° Negative



Dimensions (inch)			
Size	d	t	d_1
3.5	1/4	1/8	0.113
22	1/4	1/8~3/16	3/32
33	1/2	3/16	5/32
43	1/2	3/16	13/64

Workpiece			P			M			K			N			S			H		
Steel	P	●	✱	●	⧓	●	⧓	●	⧓	⧓	✱	✱	✱	●	●	⧓		✱					
Stainless steel	M										⧓	⧓	⧓			⧓	●	⧓	⧓	⧓	⧓	✱	
Cast iron	K	●	✱	●	⧓	⧓		⧓					⧓	⧓	⧓							●	⧓
Non-ferrous metal	N																					●	⧓
Heat resistant alloy, Titanium alloy	S												●			●	●	●	⧓	⧓	⧓	●	⧓
Hardened steel	H																	●	⧓	⧓	⧓	●	⧓

Machining types
● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VB	TNMG	331-VB	●	●	●	●			●	●																0.004~0.014	0.012~0.059
			332-VB	●	●	●	●			●	●				●												0.006~0.018	0.020~0.276
			333-VB							●	●																0.007~0.018	0.031~0.118
			432-VB								●				●												0.006~0.018	0.020~0.098
			433-VB																								0.008~0.020	0.039~0.276
Finishing	VL	TNMG	331-VL	●						●																	0.002~0.010	0.004~0.039
			332-VL	●						●	●				●												0.004~0.014	0.008~0.059
			333-VL							●																	0.006~0.016	0.008~0.059
			432-VL																								0.004~0.014	0.008~0.059
			433-VL																								0.004~0.014	0.020~0.078
Finishing	VF	TNMG	221-VF	●											●												0.002~0.079	0.008~0.039
			331-VF	●								●			●							●					0.003~0.012	0.020~0.059
			332-VF							●		●			●												0.004~0.016	0.020~0.059
			333-VF																								0.006~0.020	0.020~0.059
			431-VF												●									●			0.004~0.016	0.020~0.059
			432-VF																								0.004~0.016	0.020~0.059
Medium to finishing	LP	TNMG	221-LP																								0.003~0.012	0.012~0.059
			222-LP																								0.004~0.012	0.012~0.059
			331-LP							●	●				●												0.004~0.014	0.012~0.078
			332-LP							●	●				●												0.004~0.016	0.020~0.098
			333-LP							●	●																0.005~0.018	0.032~0.118
Medium to finishing	CP	TNMG	3.521-CP																								0.003~0.010	0.016~0.098
			3.522-CP																								0.004~0.010	0.016~0.098
			331-CP					●	●																		0.004~0.014	0.020~0.118
			332-CP					●	●																		0.005~0.012	0.020~0.118
			333-CP					●	●																		0.005~0.012	0.031~0.118
			432-CP					●	●																		0.006~0.014	0.031~0.157
			433-CP					●	●																		0.007~0.014	0.039~0.157

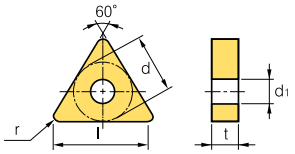
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

● : Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MTENN	B199	**PTFNR/L**	B189	**WTJNR/L**	B191
MTFNR/L	B199	**PTGNR/L**	B190	**WTXNR/L**	B191
MTGNR/L	B200	**PTTNR/L**	B190		
MTJNR/L	B200	**WTENN**	B191		

TN○○

Triangular 60° Negative



Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8~3/16	3/32
33	1/2	3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4

Workpiece			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05
Steel	P		●	✱	●	➨	●	➨	➨	✱	✱	✱	●	●	➨		✱								
Stainless steel	M									➨	➨	➨			●	➨	✱	➨	➨	✱	●	➨	➨	✱		
Cast iron	K		●	✱	●	➨	➨					➨	➨	➨										●	➨
Non-ferrous metal	N																							●	➨
Heat resistant alloy, Titanium alloy	S											●				●	●	➨	✱	●	➨	➨	➨	●	➨
Hardened steel	H																			●	➨	➨	➨	●	➨

Machining types
● Continuous cutting
➨ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated																	Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	VC	TNMG	331-VC					●	●				●														0.004~0.014	0.012~0.079
			332-VC					●	●				●														0.006~0.016	0.020~0.118
			333-VC					●	●				●														0.006~0.018	0.020~0.118
			432-VC					●	●																		0.006~0.016	0.020~0.118
			433-VC					●	●																		0.006~0.018	0.020~0.118
Medium cutting	HM	TNMG	222-HM							●																	0.007~0.016	0.059~0.118
			331-HM						●	●	●								●					●			0.002~0.012	0.035~0.157
			332-HM					●	●	●	●													●			0.004~0.020	0.039~0.157
			333-HM																					●			0.005~0.024	0.051~0.157
			431-HM						●																		0.006~0.018	0.024~0.197
			432-HM						●	●	●																0.007~0.019	0.031~0.228
Medium cutting	MP	TNMG	222-MP					●	●																		0.006~0.017	0.020~0.138
			331-MP					●	●				●	●		●	●	●			●	●					0.004~0.016	0.016~0.138
			332-MP					●	●				●			●	●	●			●	●					0.006~0.018	0.020~0.157
			333-MP					●	●				●			●	●	●			●	●					0.006~0.020	0.032~0.177
			334-MP																								0.007~0.020	0.039~0.177
			431-MP					●	●				●			●	●	●									0.004~0.014	0.016~0.197
			432-MP					●	●				●			●	●	●									0.006~0.018	0.020~0.217
			433-MP					●	●				●			●	●	●									0.006~0.020	0.032~0.236
			434-MP					●	●				●														0.008~0.022	0.039~0.236
			543-MP																								0.011~0.024	0.047~0.315
Medium cutting	VM	TNMG	222-VM																								0.002~0.012	0.031~0.157
			331-VM	●						●	●		●						●	●							0.002~0.012	0.035~0.197
			332-VM	●	●			●	●	●	●		●						●	●				●			0.004~0.020	0.039~0.197
			333-VM	●				●		●									●	●							0.005~0.024	0.051~0.197
			431-VM																●	●							0.002~0.012	0.035~0.260
			432-VM							●			●						●	●		●					0.004~0.020	0.039~0.260
			433-VM																								0.005~0.024	0.051~0.260

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MTENN	B199	**PTFNR/L**	B189	**WTJNR/L**	B191
MTFNR/L	B199	**PTGNR/L**	B190	**WTXNR/L**	B191
MTGNR/L	B200	**PTTNR/L**	B190		
MTJNR/L	B200	**WTENN**	B191		

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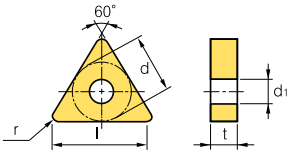
Triangular 60° Negative



Dimensions (inch)			
Size	d	t	d1
22	1/4	1/8~3/16	3/32
32	3/8	1/8	5/32
33	1/2	3/16	5/32
43	1/2	3/16	13/64

Dimensions (inch)			
Size	d	t	d1
54	5/8	1/4	1/4
65	3/4	5/16	5/16
66	3/4	3/8	5/16

Workpiece																						
Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱						
Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	✱
Cast iron	K	●	✱	●	⬌	⬌				⬌	⬌	⬌									●	⬌
Non-ferrous metal	N																				●	⬌
Heat resistant alloy, Titanium alloy	S									●				●	●	⬌	✱	●	⬌	⬌	●	⬌
Hardened steel	H																	●	⬌	⬌	●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to roughing	B25	TNMG	222-B25																						0.007~0.016	0.059~0.118
			331-B25	●	●			●	●		●		●													0.007~0.018	0.079~0.138
			332-B25	●	●			●	●		●		●											●		0.007~0.022	0.079~0.138
			333-B25		●			●	●				●													0.010~0.022	0.079~0.138
			334-B25																							0.012~0.024	0.098~0.118
			431-B25					●	●		●		●													0.007~0.018	0.059~0.197
			432-B25					●	●		●		●													0.007~0.022	0.079~0.197
			433-B25					●	●		●		●													0.010~0.022	0.079~0.197
			434-B25					●	●				●													0.012~0.024	0.079~0.197
			436-B25																							0.014~0.028	0.118~0.276
			438-B25																							0.016~0.030	0.138~0.276
			542-B25								●															0.007~0.022	0.079~0.197
			543-B25						●		●		●													0.010~0.022	0.118~0.276
			544-B25																							0.012~0.024	0.118~0.276
			654-B25					●	●																	0.014~0.028	0.118~0.354
			666-B25																							0.016~0.031	0.118~0.354
Roughing	GR	TNMG	322-GR						●		●															0.008~0.020	0.039~0.276
			333-GR						●																	0.009~0.021	0.047~0.315
			432-GR						●		●		●													0.009~0.024	0.043~0.307
			433-GR						●	●	●															0.011~0.031	0.047~0.307
			434-GR								●															0.012~0.030	0.059~0.307
			542-GR								●															0.012~0.030	0.059~0.307
			543-GR						●	●	●															0.012~0.030	0.059~0.307
			544-GR								●															0.014~0.039	0.063~0.307
			666-GR								●															0.016~0.039	0.079~0.354
Finishing	SC	TNGG	330.5R-SC																							0.001~0.008	0.004~0.059
			331R-SC																							0.002~0.010	0.012~0.079
			330.5L-SC																							0.001~0.008	0.004~0.059
			331L-SC																							0.002~0.010	0.012~0.079
Medium to finishing	VQ [Cermet]	TNMG	221-VQ																							0.002~0.012	0.020~0.138
			331-VQ	●	●	●	●																			0.002~0.014	0.020~0.138
			332-VQ	●	●	●	●																			0.003~0.016	0.031~0.157
			333-VQ																							0.004~0.016	0.032~0.138
			431-VQ																							0.002~0.014	0.020~0.157

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

● : Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MTENN	B199	**PTFNR/L**	B189	**WTJNR/L**	B191
MTFNR/L	B199	**PTGNR/L**	B190	**WTXNR/L**	B191
MTGNR/L	B200	**PTTNR/L**	B190		
MTJNR/L	B200	**WTENN**	B191		

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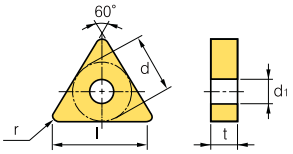
Triangular 60° Negative



Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8~3/16	3/32
33	1/2	3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4
66	3/4	3/8	5/16

Workpiece																								
Steel	P	●	✱	●	⬌	●	✱	⬌	✱	✱	✱	●	●	⬌		✱								
Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	⬌	✱	
Cast iron	K	●	✱	●	⬌	⬌				⬌	⬌	⬌											●	⬌
Non-ferrous metal	N																						●	⬌
Heat resistant alloy, Titanium alloy	S								●				●	●	⬌	✱	●	⬌	⬌				●	⬌
Hardened steel	H																●	⬌	⬌				●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	TNGG	221R																								0.002~0.012	0.002~0.010
		330.5R																								0.003~0.012	0.020~0.138
		331R	●																							0.005~0.012	0.039~0.138
		332R																								0.006~0.014	0.051~0.138
		431R																								0.005~0.012	0.039~0.197
		432R																								0.006~0.014	0.051~0.197
		433R																								0.007~0.016	0.059~0.197
		221L																								0.002~0.012	0.002~0.010
		330.5L																								0.003~0.012	0.020~0.138
		331L	●																							0.005~0.012	0.039~0.138
		332L																								0.006~0.014	0.051~0.138
		431L																								0.005~0.012	0.039~0.197
		432L																								0.006~0.014	0.051~0.197
		433L																								0.007~0.016	0.059~0.197
Medium cutting	TNMG	331-MK											●	●												0.002~0.012	0.036~0.138
		332-MK												●												0.004~0.020	0.039~0.157
		333-MK												●												0.005~0.024	0.047~0.177
		334-MK																								0.005~0.024	0.047~0.177
		431-MK																								0.006~0.018	0.059~0.197
		432-MK																								0.008~0.020	0.051~0.217
		433-MK																								0.009~0.020	0.055~0.217
		434-MK																								0.010~0.021	0.063~0.236
		543-MK																								0.010~0.022	0.118~0.276
Roughing	TNMA	222																								0.002~0.012	0.020~0.118
		331											●	●												0.004~0.012	0.039~0.157
		332											●	●												0.004~0.016	0.039~0.157
		333												●												0.004~0.020	0.059~0.177
		334												●												0.006~0.022	0.059~0.177
		431																								0.004~0.014	0.039~0.157
		432												●												0.006~0.016	0.059~0.197
		433												●												0.008~0.020	0.059~0.197
		434												●												0.010~0.022	0.059~0.197
		435																								0.012~0.026	0.079~0.197
		438																								0.014~0.028	0.079~0.197
		542																								0.008~0.018	0.079~0.276
		543																								0.010~0.022	0.118~0.276
		544																								0.012~0.026	0.118~0.276
		666																								0.014~0.030	0.118~0.354

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MTENN	B199	PTFNR/L	B189	WTJNR/L	B191
MTFNR/L	B199	PTGNR/L	B190	WTXNR/L	B191
MTGNR/L	B200	PTTNR/L	B190		
MTJNR/L	B200	WTENN	B191		

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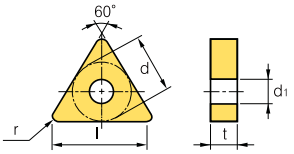
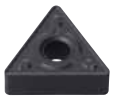
Triangular 60° Negative



Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8~3/16	3/32
33	1/2	3/16	5/32
42	1/2	1/8	13/64
43	1/2	3/16	13/64
54	5/8	1/4	1/4

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ⬌ ✱ ⬌ ✱ ● ⬌ ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ✱ ⬌ ⬌ ⬌ ● ●	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	✱ ● ● ⬌ ✱ ⬌ ⬌ ● ⬌
Hardened steel	H	● ⬌

Insert	Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	Coated NC3225	Coated NC3120	Coated NC3030	Coated NC3235	Coated NC5330	Coated NC6310	Coated NC6315	Coated NC9115	Coated NC9125	Coated NC9135	Coated PC5300	Coated PC5400	Coated PC8105	Coated PC8110	Coated PC8115	Coated PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Roughing		TNGA 220.5																								0.002~0.012	0.008~0.118
		221																								0.002~0.012	0.016~0.118
		321																								0.004~0.014	0.016~0.157
		330.5																								0.004~0.012	0.008~0.157
		331																								0.004~0.014	0.016~0.197
		332																								0.005~0.016	0.020~0.197
		421																								0.004~0.014	0.020~0.197
		430.5																								0.002~0.012	0.008~0.118
		431																								0.004~0.014	0.016~0.197
		432																								0.004~0.016	0.020~0.197
		433																								0.005~0.018	0.039~0.217
		543																								0.005~0.018	0.039~0.276
		546																								0.008~0.022	0.079~0.276
Roughing	RK new 	TNMG 332-RK											●	●												0.009~0.021	0.059~0.197
		333-RK											●	●												0.009~0.021	0.071~0.197
		334-RK												●												0.009~0.021	0.071~0.197
		432-RK												●												0.009~0.021	0.059~0.236
		433-RK												●												0.011~0.021	0.071~0.236
		434-RK												●												0.011~0.021	0.008~0.236
Roughing	VR 	TNMG 331-VR																								0.008~0.020	0.031~0.276
		332-VR																								0.010~0.022	0.047~0.276
		333-VR																								0.014~0.026	0.067~0.276
		334-VR																								0.014~0.028	0.078~0.394
		432-VR																								0.014~0.028	0.078~0.394
		433-VR																								0.014~0.028	0.078~0.394
		434-VR																								0.014~0.030	0.087~0.394
Medium cutting	MM new 	TNMG 331-MM													●	●	●	●			●	●	●			0.004~0.016	0.020~0.189
		332-MM													●	●	●	●			●	●	●			0.005~0.018	0.020~0.189
		333-MM														●	●	●					●			0.007~0.026	0.020~0.189
		334-MM																								0.007~0.026	0.020~0.189
		431-MM																								0.004~0.016	0.020~0.256
		432-MM														●	●	●				●	●			0.005~0.018	0.020~0.256
		433-MM														●	●	●				●	●			0.006~0.024	0.020~0.256
		434-MM																								0.007~0.026	0.020~0.256

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MTENN	B199	**PTFNR/L**	B189	**WTJNR/L**	B191
MTFNR/L	B199	**PTGNR/L**	B190	**WTXNR/L**	B191
MTGNR/L	B200	**PTTNR/L**	B190		
MTJNR/L	B200	**WTENN**	B191		

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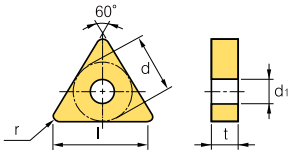
Triangular 60° Negative



Dimensions (inch)			
Size	d	t	d_1
33	1/2	3/16	5/32
43	1/2	3/16	13/64

Workpiece		
Steel	P	
Stainless steel	M	
Cast iron	K	
Non-ferrous metal	N	
Heat resistant alloy, Titanium alloy	S	
Hardened steel	H	

Machining types
- ● Continuous cutting
- ✱ General cutting
- ✱ Interrupted cutting

Insert	Designation	Cermet		Coated		Coated															Uncoated		Cutting Condition	
		CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	H01	H05	fn (ipr)	ap (inch)
Roughing RM new	TNMG **331-RM**												●	●	●	●			●	●		●			0.004~0.020	0.078~0.217
	332-RM												●	●	●	●			●	●		●			0.006~0.022	0.078~0.217
	333-RM													●	●										0.008~0.024	0.078~0.217
	432-RM													●	●	●				●					0.004~0.020	0.078~0.295
	433-RM													●	●	●				●					0.006~0.022	0.078~0.295
	434-RM																								0.010~0.028	0.079~0.295
Medium to finishing VP2	TNMG **331-VP2**															●	●	●	●	●			●		0.002~0.012	0.004~0.118
	332-VP2															●	●	●	●	●			●		0.004~0.018	0.020~0.197
	333-VP2																●	●	●	●			●		0.005~0.022	0.032~0.130
	431-VP2															●	●		●						0.002~0.012	0.032~0.197
	432-VP2															●	●		●						0.004~0.016	0.032~0.197
Medium cutting VP3	TNMG **331-VP3**															●	●	●	●	●			●		0.002~0.012	0.004~0.118
	332-VP3															●	●	●	●	●			●	●	0.004~0.018	0.020~0.197
	333-VP3																								0.008~0.016	0.020~0.138
	431-VP3																								0.008~0.012	0.031~0.157
	432-VP3																								0.010~0.014	0.031~0.197
	433-VP3																								0.012~0.016	0.039~0.197
	434-VP3																								0.012~0.016	0.039~0.197
Medium cutting VP3	TNGG **331-VP3**																	●	●	●			●		0.002~0.012	0.004~0.118
	332-VP3																	●	●	●			●		0.004~0.018	0.020~0.197
Roughing VP4 new	TNMG **332-VP4**																			●	●				0.006~0.014	0.039~0.157
	333-VP4																			●	●				0.008~0.016	0.039~0.157
Medium to finishing HA	TNMG **331-HA**																		●			●	●		0.002~0.012	0.031~0.138
	332-HA																		●			●	●		0.004~0.016	0.031~0.138
	333-HA																								0.005~0.022	0.031~0.138
	432-HA																					●			0.004~0.016	0.031~0.209

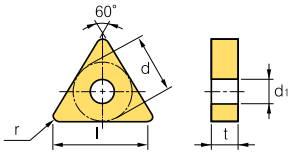
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MTENN	B199	**PTFNR/L**	B189	**WTJNR/L**	B191
MTFNR/L	B199	**PTGNR/L**	B190	**WTXNR/L**	B191
MTGNR/L	B200	**PTTNR/L**	B190		
MTJNR/L	B200	**WTENN**	B191		

TN○○

Triangular 60° Negative



Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8~3/16	3/32
32	3/8	1/8	5/32
33	1/2	3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4

Workpiece			CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05
	Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱							
	Stainless steel	M							⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	✱		
	Cast iron	K	●	✱	●	⬌	⬌				⬌	⬌	⬌										●	⬌
	Non-ferrous metal	N																					●	⬌
	Heat resistant alloy, Titanium alloy	S								●				●	●	✱	✱	●	⬌	⬌			●	⬌
	Hardened steel	H																●	⬌	⬌			●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	Coated NC3225	Coated NC3120	Coated NC3030	Coated NC3235	Coated NC5330	Coated NC6310	Coated NC6315	Coated NC9115	Coated NC9125	Coated NC9135	Coated PC5300	Coated PC5400	Coated PC8105	Coated PC8110	Coated PC8115	Coated PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Finishing	VW [Wiper]	TNMG	331-VW																								0.004~0.014	0.012~0.118
			332-VW																								0.004~0.016	0.012~0.118
Medium cutting	LW [Wiper]	TNMG	332-LW																								0.006~0.020	0.028~0.177
			333-LW																								0.008~0.024	0.039~0.197
Medium cutting		TNGN	220.5																								0.002~0.010	0.008~0.098
			221																								0.004~0.012	0.020~0.098
			222																								0.004~0.012	0.031~0.098
			320.5																								0.002~0.012	0.008~0.118
			321																								0.004~0.012	0.020~0.157
			322																								0.004~0.016	0.031~0.157
			331																								0.004~0.016	0.020~0.157
			332																								0.004~0.016	0.039~0.157
			333																								0.004~0.020	0.059~0.177
			431																								0.004~0.014	0.039~0.157
			432																								0.006~0.016	0.059~0.197
			433																								0.008~0.020	0.059~0.197
			434																								0.010~0.022	0.059~0.197
			436																								0.012~0.026	0.079~0.197
			547.5																								0.014~0.028	0.079~0.197
Medium to finishing	SR [Shaft]	TNMX	331R-SR																								0.004~0.014	0.028~0.138
			332R-SR																								0.005~0.016	0.039~0.138
			331L-SR																								0.004~0.014	0.028~0.138
			332L-SR																								0.005~0.016	0.039~0.138
Medium cutting	SH [Shaft]	TNMX	331R-SH					●	●																		0.006~0.012	0.020~0.157
			332R-SH					●	●																		0.006~0.018	0.039~0.157
			331L-SH					●	●																		0.006~0.012	0.020~0.157
			332L-SH					●	●																		0.006~0.018	0.039~0.157

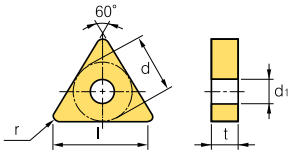
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

● : Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MTENN	B199	**PTFNR/L**	B189	**WTJNR/L**	B191
MTFNR/L	B199	**PTGNR/L**	B190	**WTXNR/L**	B191
MTGNR/L	B200	**PTTNR/L**	B190		
MTJNR/L	B200	**WTENN**	B191		

TN ○○

Triangular 60° Negative



Dimensions (inch)			
Size	d	t	d_1
33	1/2	3/16	5/32
43	1/2	3/16	13/64
54	5/8	1/4	1/4
66	3/4	3/8	5/16

Workpiece																									
Steel	P	●	✱	●	⬍	●	⬍	⬍	✱	✱	✱	●	●	⬍		✱									
Stainless steel	M								⬍	⬍	⬍			●	⬍	✱	⬍	✱	●	⬍	⬍	✱			
Cast iron	K	●	✱	●	⬍	⬍					⬍	⬍	⬍										●	⬍	
Non-ferrous metal	N																						●	⬍	
Heat resistant alloy, Titanium alloy	S										●				●	●	⬍	✱	●	⬍	⬍		●	⬍	
Hardened steel	H																		●	⬍	⬍		●	⬍	

Machining types
- ● Continuous cutting
- ⬍ General cutting
- ✱ Interrupted cutting

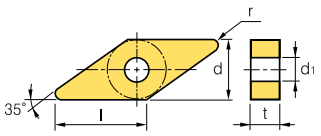
Insert		Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Medium to roughing		TNMX	330.5R		●																						0.004~0.012	0.020~0.118
			331R						●	●	●		●														0.005~0.012	0.039~0.138
			332R						●	●	●																0.006~0.014	0.051~0.134
			431R																								0.005~0.012	0.039~0.197
			432R																								0.006~0.014	0.051~0.197
			331L						●	●	●																0.005~0.012	0.039~0.138
			332L							●	●																0.006~0.014	0.051~0.134
Roughing	GR 	TNMM	432-GR																								0.009~0.024	0.043~0.307
			433-GR																								0.011~0.031	0.047~0.307
			434-GR																								0.012~0.030	0.059~0.307
Heavy	GH 	TNMM	332-GH																								0.008~0.020	0.039~0.276
			432-GH																								0.010~0.024	0.051~0.276
			433-GH						●																		0.008~0.020	0.039~0.315
			434-GH																								0.010~0.024	0.051~0.315
			544-GH																								0.013~0.028	0.071~0.315
			546-GH																								0.014~0.020	0.071~0.512
			666-GH																								0.014~0.028	0.091~0.512

Cutting edge geometry A37~A49 Recommended chip breaker B04~B15 Code system B34~B35

●: Korea Stock

Available tool holders					
Designation	Page	Designation	Page	Designation	Page
MTENN	B199	PTFNR/L	B189	WTJNR/L	B191
MTFNR/L	B199	PTGNR/L	B190	WTXNR/L	B191
MTGNR/L	B200	PTTNR/L	B190		
MTJNR/L	B200	WTENN	B191		

VN○○



Dimensions (inch)			
Size	d	t	d_1
33	3/8	3/16	5/32

Rhombic 35° Negative

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ⬌ ⬌ ⬌ ● ⬌ ✱ ● ⬌ ⬌ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ● ⬌	✱ Interrupted cutting
Non-ferrous metal	N	⬌ ⬌ ● ⬌	
Heat resistant alloy, Titanium alloy	S	● ● ● ⬌ ⬌ ● ⬌	
Hardened steel	H	● ⬌ ● ⬌	

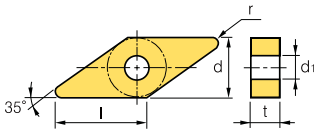
Insert		Designation		Cermet		Coated		Coated														Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VB	VNMG	331-VB	●	●	●	●			●	●				●												0.004~0.014	0.012~0.039
			332-VB	●	●	●	●			●	●				●												0.006~0.018	0.020~0.079
			333-VB							●	●																0.008~0.018	0.032~0.098
Finishing	VF	VNMG	330.5-VF									●															0.002~0.008	0.012~0.039
			331-VF	●								●			●							●					0.003~0.012	0.020~0.059
			332-VF	●							●	●			●												0.004~0.016	0.020~0.059
			333-VF																								0.006~0.020	0.020~0.059
Finishing	VL	VNMG	331-VL	●	●					●	●				●												0.002~0.008	0.004~0.040
			332-VL	●	●					●	●				●												0.004~0.010	0.008~0.059
			333-VL							●																	0.006~0.012	0.020~0.078
Medium to finishing	LP new	VNMG	331-LP							●	●																0.004~0.014	0.012~0.059
			332-LP							●	●																0.004~0.016	0.020~0.078
			333-LP							●	●																0.004~0.018	0.032~0.098
Medium to finishing	CP new	VNMG	331-CP					●	●																		0.004~0.014	0.020~0.118
			332-CP					●	●																		0.005~0.012	0.020~0.118
			333-CP					●	●																		0.005~0.012	0.031~0.118
Medium to finishing	VC	VNMG	331-VC	●		●				●	●																0.004~0.014	0.012~0.079
			332-VC	●						●	●																0.006~0.016	0.020~0.118
			333-VC							●	●																0.006~0.016	0.032~0.118
Medium cutting	HM	VNMG	331-HM									●	●											●			0.005~0.016	0.031~0.150
			332-HM								●	●	●											●			0.008~0.018	0.031~0.177
			333-HM								●																0.004~0.024	0.039~0.157
Medium cutting	MP new	VNMG	331-MP							●	●				●			●	●	●	●	●					0.004~0.016	0.016~0.138
			332-MP							●	●				●	●		●	●	●	●	●					0.006~0.018	0.020~0.157
			333-MP							●	●				●												0.006~0.020	0.032~0.177
			334-MP																								0.007~0.020	0.039~0.177

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MVJNR/L	B200	MVVNN	B201
MVQNR/L	B201	MVUNR/L	B226

VNOO



Dimensions (inch)			
Size	d	t	d_1
33	3/8	3/16	5/32
43	1/2	3/16	5/32

Rhombic 35° Negative

Workpiece			P	M	K	N	S	H
	Steel	P	● ✱	● ⬌	● ✱ ⬌	● ⬌ ✱	● ⬌ ✱	● ⬌
	Stainless steel	M	● ✱	● ⬌	⬌ ✱	● ⬌ ✱	● ⬌ ✱	● ⬌
	Cast iron	K	● ✱	● ⬌	⬌ ✱	● ⬌ ✱	● ⬌ ✱	● ⬌
	Non-ferrous metal	N			⬌ ✱	● ⬌ ✱	● ⬌ ✱	● ⬌
	Heat resistant alloy, Titanium alloy	S			⬌ ✱	● ⬌ ✱	● ⬌ ✱	● ⬌
	Hardened steel	H			⬌ ✱	● ⬌ ✱	● ⬌ ✱	● ⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

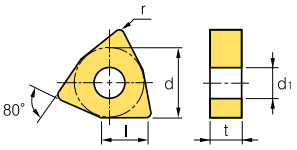
Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	VM	VNMG	331-VM	●							●		●						●	●							0.003~0.018	0.020~0.138
			332-VM	●					●	●	●		●						●	●		●		●			0.004~0.020	0.039~0.157
			333-VM																								0.008~0.020	0.059~0.157
			431-VM																								0.003~0.018	0.039~0.197
			432-VM																								0.004~0.020	0.059~0.197
Medium to finishing	VQ [Cermet]	VNMG	331-VQ	●	●	●	●																				0.004~0.016	0.020~0.138
			332-VQ	●	●	●	●																				0.005~0.018	0.020~0.138
			333-VQ																								0.006~0.018	0.032~0.138
Medium cutting	MK new	VNMG	331-MK												●												0.003~0.018	0.020~0.118
			332-MK											●	●												0.004~0.020	0.039~0.138
			333-MK												●												0.008~0.020	0.059~0.157
Medium cutting	MM new	VNMG	331-MM														●	●	●				●	●			0.004~0.016	0.020~0.189
			332-MM														●	●	●				●	●			0.005~0.018	0.020~0.189
			333-MM																								0.006~0.024	0.020~0.157
Medium cutting	RM new	VNMG	331-RM																								0.004~0.020	0.078~0.197
			332-RM																								0.006~0.022	0.078~0.197
			333-RM																								0.008~0.024	0.078~0.197
Medium cutting	VP3	VNMG	331-VP3																●	●	●	●	●			●	0.002~0.012	0.004~0.118
			332-VP3																●	●	●	●	●		●	●	0.004~0.018	0.020~0.197
			333-VP3																								0.008~0.016	0.020~0.138
Medium cutting	VP3	VNGG	331-VP3																		●	●	●		●		0.002~0.012	0.004~0.118
			332-VP3																								0.004~0.018	0.020~0.197
Medium to finishing	HA	VNGG	332-HA																			●					0.004~0.016	0.031~0.138

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MVJNR/L	B200	MVVNN	B201
MVQNR/L	B201	MVUNR/L	B226

WN○○



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	3/16	5/32
43	1/2	3/16	5/32

Trigon **80° Negative**

Workpiece			Machining types
Steel	P		● Continuous cutting
Stainless steel	M		⬌ General cutting
Cast iron	K		✱ Interrupted cutting
Non-ferrous metal	N		
Heat resistant alloy, Titanium alloy	S		
Hardened steel	H		

Insert		Designation	Cermet		Coated		Coated															Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VB	WNMG 431-VB							●	●				●												0.004~0.014	0.012~0.059
		432-VB							●	●				●												0.006~0.018	0.020~0.079
		433-VB							●	●																0.007~0.018	0.032~0.098
Finishing	VF	WNMG 331-VF												●												0.003~0.012	0.020~0.059
		332-VF																								0.004~0.016	0.020~0.059
		431-VF									●			●												0.003~0.012	0.020~0.059
		432-VF												●												0.004~0.016	0.020~0.059
		433-VF																								0.008~0.020	0.020~0.059
Finishing	VL	WNMG 331-VL																								0.002~0.010	0.008~0.059
		431-VL																								0.002~0.010	0.004~0.040
		432-VL								●				●												0.004~0.014	0.008~0.060
Medium to finishing	LP new	WNMG 32.52-LP																								0.003~0.012	0.012~0.059
		331-LP																								0.003~0.012	0.012~0.059
		332-LP							●	●																0.004~0.012	0.012~0.059
		431-LP							●	●				●												0.004~0.014	0.012~0.078
		432-LP							●	●				●												0.004~0.016	0.020~0.098
		433-LP							●	●				●												0.005~0.018	0.032~0.118
Medium to finishing	CP new	WNMG 331-CP																								0.003~0.012	0.016~0.118
		332-CP																								0.004~0.012	0.016~0.118
		431-CP					●	●																		0.004~0.014	0.020~0.138
		432-CP					●	●																		0.005~0.014	0.020~0.138
		433-CP					●	●																		0.005~0.014	0.031~0.138
		434-CP					●	●																		0.006~0.014	0.031~0.138
Medium to finishing	VC	WNMG 431-VC							●	●																0.006~0.016	0.006~0.157
		432-VC							●	●																0.006~0.018	0.006~0.177
		433-VC							●	●				●												0.006~0.018	0.006~0.177

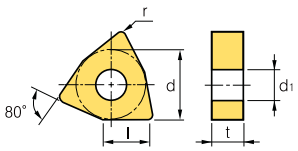
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MWLNR/L	B201	WWLNR/L	B192
PWLNR/L	B223		

WN○○

Trigon 80° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	3/16	5/32
43	1/2	3/16	5/32

Workpiece																																			
Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱																			
Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	⬌	✱												
Cast iron	K	●	✱	●	⬌	⬌					⬌	⬌	⬌																	●	⬌				
Non-ferrous metal	N																													●	⬌				
Heat resistant alloy, Titanium alloy	S										●				●	●	⬌	✱	●	⬌	⬌									●	⬌				
Hardened steel	H																		●	⬌	⬌									●	⬌				

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

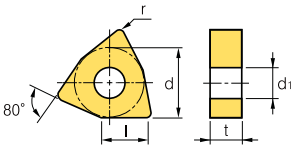
Insert		Designation	Cermet		Coated		Coated																Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	HM	WNMG 331-HM												●												0.006~0.017	0.017~0.118
		332-HM							●	●													●			0.004~0.020	0.039~0.157
		431-HM							●	●													●			0.006~0.017	0.020~0.165
		432-HM					●	●	●	●		●											●			0.004~0.020	0.039~0.197
		433-HM																					●			0.004~0.020	0.039~0.197
Medium cutting	MP	WNMG 32.51-MP																								0.004~0.016	0.016~0.110
		32.52-MP																								0.006~0.018	0.020~0.118
		331-MP					●	●				●				●										0.004~0.016	0.016~0.110
		332-MP					●	●				●	●			●										0.006~0.018	0.020~0.118
		333-MP																								0.006~0.020	0.032~0.126
		431-MP					●	●				●			●	●	●			●	●	●				0.004~0.016	0.016~0.157
		432-MP					●	●				●			●	●	●			●	●	●				0.006~0.018	0.020~0.177
		433-MP					●	●				●			●	●	●			●	●					0.006~0.020	0.032~0.197
		434-MP					●	●				●														0.007~0.022	0.039~0.197
Medium cutting	VM	WNMG 330.5-VM										●						●	●							0.002~0.012	0.035~0.138
		331-VM						●	●			●						●	●							0.004~0.018	0.039~0.138
		332-VM																								0.004~0.020	0.039~0.157
		333-VM							●			●						●	●							0.005~0.024	0.051~0.157
		431-VM						●	●	●		●						●	●		●		●			0.002~0.012	0.035~0.197
		432-VM							●			●						●	●							0.004~0.020	0.039~0.197
		433-VM																								0.004~0.020	0.039~0.197
Medium to roughing	B25	WNMG 431-B25					●	●				●														0.007~0.018	0.039~0.197
		432-B25					●	●		●		●														0.009~0.024	0.059~0.197
		433-B25					●	●				●														0.010~0.024	0.079~0.197
Roughing	GR	WNMG 431-GR																								0.006~0.020	0.003~0.236
		432-GR						●	●	●		●	●													0.008~0.020	0.039~0.276
		433-GR					●	●	●	●		●	●													0.010~0.020	0.051~0.276
		434-GR																								0.010~0.024	0.071~0.236

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MWLNR/L	B201	WWLNR/L	B192
PWLNR/L	B223		

WN○○



Dimensions (inch)			
Size	d	t	d_1
33	3/8	3/16	5/32
43	1/2	3/16	5/32

Trigon **80° Negative**

Workpiece			Machining types
Steel	P		● Continuous cutting
Stainless steel	M		⧓ General cutting
Cast iron	K		✱ Interrupted cutting
Non-ferrous metal	N		
Heat resistant alloy, Titanium alloy	S		
Hardened steel	H		

	Insert	Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	VQ [Cermet]	WNMG	331-VQ																								0.002~0.012	0.020~0.157
			332-VQ																								0.003~0.012	0.032~0.157
			333-VQ																								0.004~0.012	0.012~0.157
			431-VQ	●	●	●	●																				0.002~0.012	0.020~0.157
			432-VQ	●	●	●	●																				0.003~0.016	0.032~0.157
			433-VQ																								0.004~0.014	0.032~0.138
Medium cutting	MK new	WNMG	332-MK											●	●												0.003~0.012	0.032~0.098
			431-MK												●												0.004~0.018	0.039~0.118
			432-MK												●												0.004~0.020	0.039~0.138
			433-MK												●												0.004~0.020	0.039~0.157
			434-MK																								0.006~0.020	0.047~0.165
Roughing		WNMA	331																								0.004~0.012	0.020~0.118
			332												●												0.004~0.012	0.020~0.118
			333																								0.004~0.012	0.039~0.118
			431												●												0.006~0.024	0.039~0.197
			432												●												0.006~0.024	0.039~0.236
			433												●												0.006~0.028	0.059~0.236
			434																								0.006~0.028	0.059~0.236
Roughing	RK new	WNMG	332-RK																								0.004~0.016	0.039~0.138
			333-RK																								0.009~0.016	0.059~0.197
			431-RK												●												0.009~0.020	0.059~0.236
			432-RK											●	●												0.009~0.021	0.059~0.236
			433-RK											●	●												0.011~0.021	0.071~0.236
			434-RK												●												0.010~0.024	0.078~0.236
Roughing	VR	WNMG	332-VR																								0.008~0.016	0.039~0.236
			431-VR																								0.008~0.020	0.031~0.276
			432-VR																								0.010~0.022	0.047~0.276
			433-VR																								0.012~0.024	0.059~0.276
			434-VR																								0.016~0.024	0.059~0.157

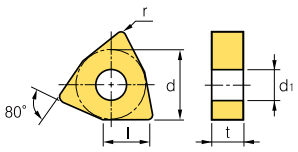
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MWLNR/L	B201	**WWLNR/L**	B192
PWLNR/L	B223		

WN○○

Trigon 80° Negative



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	5/32
33	3/8	3/16	5/32
43	1/2	3/16	5/32
64	3/4	1/4	5/16

Workpiece																									
Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	⬌		✱										
Stainless steel	M								⬌	⬌	⬌		●	⬌	✱	⬌	✱	●	⬌	⬌	⬌	✱			
Cast iron	K	●	✱	●	⬌	⬌				⬌	⬌												●	⬌	
Non-ferrous metal	N																						●	⬌	
Heat resistant alloy, Titanium alloy	S								●				●	●	⬌	✱	●	⬌	⬌	⬌			●	⬌	
Hardened steel	H																●	⬌	⬌				●	⬌	

Machining types
- ● Continuous cutting
- ⬌ General cutting
- ✱ Interrupted cutting

Insert		Designation	Cermet		Coated		Coated															Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	MM new	WNMG 32.51-MM																								0.003~0.014	0.020~0.157
		32.52-MM																								0.004~0.016	0.020~0.157
		32.53-MM																								0.005~0.018	0.020~0.157
		331-MM																								0.003~0.014	0.020~0.157
		332-MM													●	●							●			0.004~0.016	0.020~0.157
		333-MM													●	●							●			0.005~0.018	0.020~0.157
		431-MM													●	●	●			●	●		●			0.004~0.016	0.020~0.157
		432-MM												●	●	●	●				●		●			0.005~0.018	0.020~0.157
		433-MM												●	●	●	●				●		●			0.006~0.024	0.020~0.157
Roughing	RM new	WNMG 331-RM													●	●										0.004~0.020	0.059~0.118
		332-RM													●	●										0.006~0.022	0.059~0.118
		333-RM													●	●										0.008~0.024	0.059~0.118
		431-RM														●	●				●		●			0.004~0.020	0.078~0.157
		432-RM												●	●	●	●			●	●		●			0.006~0.022	0.078~0.157
		433-RM												●	●	●	●				●					0.008~0.024	0.078~0.157
Medium to finishing	VP2	WNMG 431-VP2															●	●		●						0.004~0.018	0.020~0.197
		432-VP2						●									●	●	●	●	●			●		0.005~0.020	0.020~0.197
		433-VP2															●	●	●	●	●			●		0.002~0.012	0.004~0.118
Medium cutting	VP3	WNMG 332-VP3																								0.024~0.015	0.016~0.138
		333-VP3																								0.024~0.015	0.016~0.138
		431-VP3															●	●	●	●	●			●	●	0.004~0.018	0.020~0.197
		432-VP3															●	●	●	●	●			●	●	0.005~0.020	0.020~0.197
		433-VP3															●	●	●	●	●			●		0.002~0.012	0.004~0.118
		643-VP3																								0.008~0.016	0.039~0.197
Medium cutting	VP3	WNGG 431-VP3																								0.004~0.018	0.020~0.197
Roughing	VP4 new	WNMG 432-VP4																			●	●				0.006~0.014	0.039~0.157
		433-VP4																			●	●				0.008~0.016	0.039~0.157

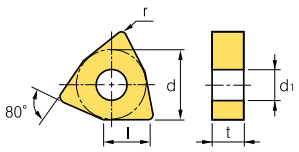
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MWLNR/L	B201	WWLNR/L	B192
PWLNR/L	B223		

WN○○

Trigon 80° Negative



Dimensions (inch)			
Size	d	t	d_1
33	3/8	3/16	5/32
43	1/2	3/16	5/32
54	5/8	1/4	1/4
64	3/4	1/4	5/16

Workpiece																							
Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱							
Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	⬌	✱
Cast iron	K	●	✱	●	⬌	⬌					⬌	⬌	⬌									●	⬌
Non-ferrous metal	N																					●	⬌
Heat resistant alloy, Titanium alloy	S									●				●	●	⬌	✱	●	⬌	⬌		●	⬌
Hardened steel	H																	●	⬌	⬌		●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	HA	WNMG	331-HA																				●	●		0.002~0.012	0.031~0.098
			332-HA																				●	●		0.004~0.016	0.031~0.098
			431-HA																				●	●		0.002~0.012	0.031~0.138
			432-HA																				●	●		0.004~0.016	0.031~0.138
			433-HA																							0.005~0.022	0.031~0.138
Finishing	VW [Wiper]	WNMG	331-VW																							0.002~0.012	0.016~0.118
			332-VW																							0.003~0.012	0.016~0.138
			431-VW																							0.004~0.012	0.020~0.118
			432-VW																							0.006~0.020	0.020~0.157
			433-VW																							0.007~0.020	0.039~0.157
Medium cutting	LW [Wiper]	WNMG	332-LW					●	●								●									0.006~0.024	0.020~0.138
			333-LW																							0.008~0.028	0.031~0.138
			432-LW					●	●				●				●									0.006~0.024	0.039~0.197
			433-LW					●																		0.008~0.028	0.039~0.236
Medium to finishing	SR [Shaft] new	WNMX	431R-SR																							0.004~0.014	0.028~0.118
			432R-SR																							0.005~0.016	0.039~0.118
			431L-SR																							0.004~0.014	0.028~0.118
			432L-SR																							0.005~0.016	0.039~0.118
Medium cutting	SH [Shaft]	WNMX	431R-SH																							0.006~0.012	0.039~0.157
			432R-SH																							0.006~0.020	0.059~0.197
			431L-SH																							0.006~0.012	0.039~0.157
			432L-SH																							0.006~0.020	0.059~0.197
Medium to roughing	B25	WNMM	542-B25								●															0.012~0.031	0.118~0.315
			643-B25																							0.016~0.035	0.157~0.394

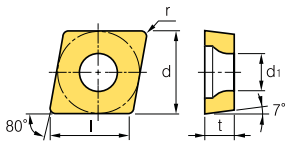
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
MWLNR/L	B201	WWLNR/L	B192
PWLNR/L	B223		

CC○○

Rhombic 80° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64
43	1/2	3/16	7/32

Workpiece			
Steel	P	● ✱	● ✱	● ✱ ✱ ✱ ✱ ✱ ● ● ✱	✱	● ✱ ✱ ✱ ✱ ✱ ✱ ✱
Stainless steel	M			✱ ✱ ✱	● ✱ ✱ ✱ ✱ ✱ ✱ ✱
Cast iron	K	● ✱	● ✱	✱ ✱ ✱ ✱ ✱	● ✱
Non-ferrous metal	N				● ✱
Heat resistant alloy, Titanium alloy	S			●	● ● ✱ ✱ ✱ ✱ ✱	● ✱
Hardened steel	H				✱ ✱ ✱	● ✱

Machining types
● Continuous cutting
✱ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing(Mild steel)	FP new [Mild steel]	CCMT	21.50.5-FP		●			●																		0.0004~0.0039	0.0020~0.0031
			21.51-FP	●	●	●	●	●	●								●					●				0.0004~0.0039	0.0039~0.0354
			32.50.5-FP		●			●																		0.0004~0.0039	0.0020~0.0394
			32.51-FP	●	●	●	●	●	●								●					●				0.0004~0.0039	0.0039~0.0394
			32.52-FP	●	●	●	●	●	●								●					●				0.0016~0.0047	0.0039~0.0394
Finishing	VF	CCMT	21.50.5-VF						●										●			●					0.002~0.008	0.001~0.040
			21.51-VF	●	●				●										●			●					0.004~0.010	0.001~0.040
			32.50.5-VF						●																		0.002~0.006	0.003~0.060
			32.51-VF	●	●				●										●			●					0.002~0.008	0.012~0.060
			32.52-VF		●				●				●						●								0.004~0.010	0.012~0.060
			431-VF						●																		0.003~0.009	0.004~0.080
Finishing	VL	CCMT	21.50.5-VL																								0.002~0.007	0.008~0.055
			21.51-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.002~0.004	0.003~0.036
			21.52-VL					●	●				●				●	●									0.002~0.005	0.004~0.039
			32.51-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●		●	●	0.002~0.004	0.004~0.039
			32.52-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●		●	●	0.003~0.006	0.004~0.039
			431-VL																								0.002~0.005	0.012~0.059
			432-VL																								0.003~0.006	0.012~0.059
			433-VL																								0.003~0.006	0.012~0.059
Medium to finishing	HMP	CCMT	21.50.5-HMP	●															●			●		●			0.001~0.005	0.004~0.059
			21.51-HMP		●					●	●		●						●			●		●			0.002~0.007	0.008~0.094
			21.52-HMP							●	●		●						●			●		●			0.003~0.009	0.016~0.094
			32.50.5-HMP																			●		●			0.003~0.009	0.004~0.079
			32.51-HMP		●					●	●		●		●				●			●		●			0.003~0.009	0.012~0.118
			32.52-HMP		●					●	●		●						●			●		●			0.004~0.012	0.020~0.118
			431-HMP						●	●	●								●					●			0.004~0.011	0.012~0.142
			432-HMP							●	●		●						●					●			0.009~0.014	0.020~0.142
			433-HMP																								0.006~0.017	0.028~0.142
Medium to finishing	MP new	CCMT	21.50.5-MP	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.002~0.005	0.008~0.059
			21.51-MP	●	●	●	●	●	●				●		●	●	●	●	●	●	●	●	●				0.002~0.006	0.012~0.059
			21.52-MP												●												0.003~0.006	0.020~0.078
			32.50.5-MP	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.003~0.006	0.012~0.078
			32.51-MP	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●				0.003~0.010	0.020~0.098
			32.52-MP	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●				0.004~0.012	0.020~0.098
			431-MP						●						●		●	●									0.004~0.012	0.020~0.138
			432-MP						●					●	●		●	●									0.006~0.014	0.031~0.138
			433-MP														●	●									0.010~0.016	0.039~0.138

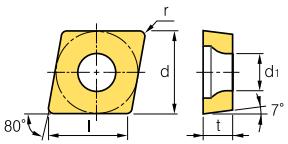
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SCACR/L	B123, 202	**SCLCR/L**	B123, 202, 227, 237

CC○○

Rhombic 80° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64
43	1/2	3/16	7/32

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ⬌ ✱ ✱ ✱ ● ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ✱ ⬌ ⬌ ● ⬌ ⬌ ● ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌	
Heat resistant alloy, Titanium alloy	S	✱ ● ● ⬌ ✱ ⬌ ⬌ ● ⬌	
Hardened steel	H	● ⬌ ⬌ ⬌ ● ⬌	

Insert		Designation		Cermet		Coated		Coated														Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	C25	CCMT	21.50.5-C25	●	●	●	●	●	●		●		●						●	●		●					0.001~0.005	0.016~0.079
			21.51-C25	●	●	●	●	●	●	●	●		●	●	●				●	●		●		●			0.002~0.006	0.024~0.091
			21.52-C25	●	●	●	●	●	●		●		●		●				●	●		●					0.003~0.008	0.031~0.091
			32.50.5-C25																								0.002~0.008	0.020~0.098
			32.51-C25	●	●	●	●	●	●	●	●		●	●	●				●	●		●		●			0.003~0.010	0.031~0.118
			32.52-C25	●	●	●	●	●	●	●	●		●	●	●				●	●		●		●			0.004~0.012	0.039~0.118
			431-C25					●	●		●		●	●	●				●	●		●					0.004~0.013	0.031~0.118
			432-C25	●	●	●	●	●	●	●	●		●	●	●				●	●		●					0.005~0.014	0.047~0.138
			433-C25					●	●				●		●												0.006~0.016	0.055~0.138
Finishing	VP1	CCMT	21.51-VP1																								0.002~0.005	0.004~0.059
			32.51-VP1																								0.002~0.008	0.004~0.059
			32.52-VP1																								0.003~0.008	0.020~0.078
			431-VP1																								0.003~0.008	0.008~0.078
			432-VP1																								0.004~0.010	0.020~0.078
			433-VP1																								0.004~0.012	0.032~0.098
Finishing	FS new [High precision]	CCGT	21.50.2-FS																●			●					0.0004~0.0071	0.0012~0.0630
			21.50.5-FS																●			●					0.0008~0.0079	0.0016~0.0669
			21.51-FS																●			●					0.0016~0.0083	0.0024~0.0709
			32.50.2-FS																●			●					0.0004~0.0079	0.0016~0.0709
			32.50.5-FS																●			●					0.0008~0.0091	0.0020~0.0787
			32.51-FS																●			●					0.0016~0.0091	0.0031~0.0787
			32.52-FS																●			●					0.0024~0.0098	0.0039~0.0866
Finishing	FS new [Ultra high precision]	CCGT	21.50.2MFN-FS																								0.0004~0.0071	0.0012~0.0630
			21.50.5MFN-FS																								0.0008~0.0079	0.0016~0.0669
			21.51MFN-FS																								0.0016~0.0083	0.0024~0.0709
			32.50.2MFN-FS																								0.0004~0.0079	0.0016~0.0709
			32.50.5MFN-FS																								0.0008~0.0091	0.0020~0.0787
			32.51MFN-FS																								0.0016~0.0091	0.0031~0.0787
			32.52MFN-FS																								0.0024~.0.0098	0.0039~0.0866
Medium cutting	MS new [High precision]	CCGT	32.50.2-MS																●			●					0.0008~0.0091	0.0020~0.0787
			32.50.5-MS																●			●					0.0012~0.0098	0.0028~0.0984
			32.51-MS																●			●					0.0020~0.0098	0.0035~0.0984
Medium cutting	MS new [Ultra high precision]	CCGT	32.50.2MFN-MS																●			●					0.0008~0.0091	0.0020~0.0787
			32.50.5MFN-MS																●			●					0.0012~0.0098	0.0028~0.0984
			32.51MFN-MS																●			●					0.0020~0.0098	0.0035~0.0984

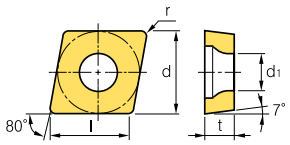
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

● : Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SCACR/L	B123, 202	SCLCR/L	B123, 202, 227, 237

CC○○

Rhombic 80° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d1
*1.2	9/64	7/128	5/64
*1.5	11/64	9/128	3/32
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

*: The d and t are special dimensions.

Workpiece			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05
Workpiece	Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱								
	Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	✱		
	Cast iron	K	●	✱	●	⬌	⬌				⬌	⬌	⬌	⬌										●	⬌
	Non-ferrous metal	N																						●	⬌
	Heat resistant alloy, Titanium alloy	S										●				●	●	⬌	✱	●	⬌	⬌		●	⬌
	Hardened steel	H																		●	⬌	⬌		●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Finishing	VP1 [High precision]	CCGT	21.50.2-VP1																●		●	●	●		●		0.002~0.003	0.002~0.039
			21.50.5-VP1																●		●	●	●		●		0.001~0.004	0.003~0.059
			21.51-VP1																●		●	●	●		●		0.002~0.005	0.004~0.059
			32.50.2-VP1																●		●	●	●		●		0.001~0.005	0.002~0.039
			32.50.5-VP1																●		●	●	●		●		0.002~0.008	0.004~0.059
			32.51-VP1																●		●	●	●		●		0.002~0.006	0.003~0.059
Finishing	VP1 [Ultra high precision]	CCGT	21.50.2MFN-VP1																●			●					~0.002	0.002~0.051
			21.50.5MFN-VP1																●			●					0.002~0.003	0.002~0.039
			21.51MFN-VP1																●			●					0.002~0.004	0.003~0.059
			32.50.2MFN-VP1																●			●					0.005~0.005	0.004~0.059
			32.50.5MFN-VP1																●			●					0.002~0.006	0.003~0.059
			32.51MFN-VP1																●			●					0.005~0.008	0.004~0.059
Finishing	*	CCET	1.210.13R																								0.001~0.002	0.004~0.012
			1.210.2R																								0.001~0.002	0.004~0.012
			1.210.5R																								0.001~0.002	0.004~0.012
			1.211R																								0.001~0.002	0.004~0.012
			1.510.13R																								0.001~0.004	0.004~0.020
			1.510.2R																								0.001~0.004	0.004~0.020
			1.510.5R																								0.001~0.004	0.004~0.020
			1.511R																								0.001~0.004	0.004~0.020
			1.210.13L																								0.001~0.002	0.004~0.012
			1.210.2L																								0.001~0.002	0.004~0.012
			1.210.5L																				●	●			0.001~0.002	0.004~0.012
			1.211L																								0.001~0.002	0.004~0.012
			1.510.13L																								0.001~0.004	0.004~0.020
			1.510.2R																								0.001~0.004	0.004~0.020
			1.510.5L																				●	●			0.001~0.004	0.004~0.020
			1.511L																				●				0.001~0.004	0.004~0.020

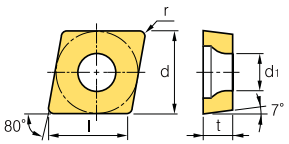
Cutting edge geometry A37~A49 Recommended chip breaker B04~B15 Code system B34~B35

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SCACR/L	B123, 202	SCLCR/L	B123, 202, 227, 237

CC○○

Rhombic 80° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
*1.2	9/64	7/128	5/64
*1.5	11/64	9/128	3/32
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

*: The d and t are special dimensions.

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ● ⬌ ✱ ⬌ ✱ ● ⬌ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ✱ ⬌ ⬌ ⬌ ● ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ● ⬌ ✱ ● ⬌ ⬌ ● ⬌
Hardened steel	H	● ⬌ ⬌ ● ⬌

Insert	Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	Coated NC3225	Coated NC3120	Coated NC3030	Coated NC3235	Coated NC5330	Coated NC6310	Coated NC6315	Coated NC9115	Coated NC9125	Coated NC9135	Coated PC5300	Coated PC5400	Coated PC8105	Coated PC8110	Coated PC8115	Coated PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Finishing	* CCGT	1.210.1R-KF																●			●					0.0004~0.002	0.004~0.012
		1.210.2R-KF																●			●					0.0004~0.002	0.004~0.012
		1.210.5R-KF																●			●					0.0004~0.002	0.004~0.012
		1.211R-KF																●			●					0.0004~0.002	0.004~0.012
		1.510.1R-KF																●			●					0.0004~0.004	0.004~0.020
		1.510.2R-KF																●			●					0.0004~0.004	0.004~0.020
		1.510.5R-KF																●			●					0.0004~0.004	0.004~0.020
		1.511R-KF																●			●					0.0004~0.004	0.004~0.020
		21.50.1R-KF																								~0.002	0.002~0.051
		21.50.2R-KF																								0.001~0.003	0.002~0.059
		21.50.5R-KF																								0.001~0.004	0.002~0.067
		32.50.1R-KF																								0.001~0.003	0.002~0.059
		32.50.2R-KF																								0.001~0.004	0.002~0.067
		32.50.5R-KF																								0.002~0.006	0.003~0.079
	KF	1.210.1L-KF																●			●					0.0004~0.002	0.004~0.012
		1.210.2L-KF																●			●					0.0004~0.002	0.004~0.012
		1.210.5L-KF																●			●					0.0004~0.002	0.004~0.012
		1.211L-KF																●			●					0.0004~0.002	0.004~0.012
		1.510.1L-KF																●			●					0.0004~0.004	0.004~0.020
		1.510.2L-KF																●			●					0.0004~0.004	0.004~0.020
		1.510.5L-KF																●			●					0.0004~0.004	0.004~0.020
		1.511L-KF																●			●					0.0004~0.004	0.004~0.020
		21.50.1L-KF																								~0.002	0.002~0.051
		21.50.2L-KF																								0.001~0.003	0.002~0.059
		21.50.5L-KF																								0.001~0.004	0.002~0.067
		32.50.1L-KF																								0.001~0.003	0.002~0.059
		32.50.2L-KF																								0.001~0.004	0.002~0.067
		32.50.5L-KF																								0.002~0.006	0.003~0.079
	[High precision]																										
Finishing	CCET	21.50.13MFR-KF																●			●					~0.002	0.002~0.051
		21.50.2MFR-KF																●			●					0.001~0.003	0.002~0.059
		21.50.5MFR-KF																●			●					0.001~0.004	0.002~0.067
		32.50.13MFR-KF																●			●					0.001~0.003	0.002~0.059
		32.50.2MFR-KF																●			●					0.001~0.004	0.002~0.067
		32.50.5MFR-KF																●			●					0.002~0.006	0.003~0.079
		21.50.13MFL-KF																●			●					~0.002	0.002~0.051
		21.50.2MFL-KF																●			●					0.001~0.003	0.002~0.059
		21.50.5MFL-KF																●			●					0.001~0.004	0.002~0.067
		32.50.13MFL-KF																●			●					0.001~0.003	0.002~0.059
		32.50.2MFL-KF																●			●					0.001~0.004	0.002~0.067
		32.50.5MFL-KF																●			●					0.002~0.006	0.003~0.079
	[Ultra high precision]																										

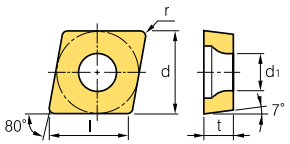
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SCACR/L	B123, 202	SCLCR/L	B123, 202, 227, 237

CC○○

Rhombic 80° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ⬌ ⬌ ● ⬌ ⬌ ✱ ✱ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ● ⬌ ⬌ ⬌	✱ Interrupted cutting
Non-ferrous metal	N	⬌ ⬌ ● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ⬌ ✱ ● ⬌ ⬌ ● ⬌
Hardened steel	H	● ⬌ ⬌ ● ⬌

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	KM [High precision]	CCGT	21.50.1R-KF																●			●					~0.002	0.002~0.051
			21.50.2R-KF																●			●					0.001~0.003	0.002~0.059
			21.50.5R-KF																●			●		●			0.001~0.004	0.002~0.067
			21.51R-KM																●			●					0.002~0.005	0.002~0.067
			32.50.1R-KF																●			●					0.001~0.003	0.002~0.059
			32.50.2R-KF																●			●					0.001~0.004	0.002~0.067
			32.50.5R-KF																●			●					0.002~0.006	0.003~0.079
			32.51R-KM																●			●					0.002~0.006	0.002~0.079
			21.50.1L-KF																●			●					~0.002	0.002~0.051
			21.50.2L-KF																●			●					0.001~0.003	0.002~0.059
			21.50.5L-KF																●			●					0.001~0.004	0.002~0.067
			21.51L-KM																●			●					0.002~0.005	0.002~0.067
			32.50.1L-KF																●			●					0.001~0.003	0.002~0.059
			32.50.2L-KF																●			●					0.001~0.004	0.002~0.067
			32.50.5L-KF																●			●					0.002~0.006	0.003~0.079
			32.51L-KM																●			●					0.002~0.006	0.002~0.079
Medium to finishing	KM [Ultra high precision]	CCET	21.50.13MFR-KM																●			●					~0.002	0.002~0.051
			21.50.2MFR-KM																●			●					0.001~0.003	0.002~0.059
			21.50.5MFR-KM																●			●					0.001~0.004	0.002~0.067
			32.50.13MFR-KM																●			●					0.001~0.003	0.002~0.059
			32.50.2MFR-KM																●			●					0.001~0.004	0.002~0.067
			32.50.5MFR-KM																●			●					0.002~0.006	0.003~0.079
			21.50.13MFL-KM																●			●					~0.002	0.002~0.051
			21.50.2MFL-KM																●			●					0.001~0.003	0.002~0.059
			21.50.5MFL-KM																●			●					0.001~0.004	0.002~0.067
			32.50.13MFL-KM																●			●					0.001~0.003	0.002~0.059
			32.50.2MFL-KM																●			●					0.001~0.004	0.002~0.067
			32.50.5MFL-KM																●			●					0.002~0.006	0.003~0.079

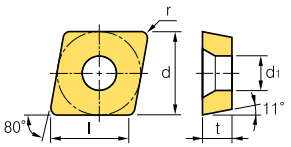
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SCACR/L	B123, 202	SCLCR/L	B123, 202, 227, 237

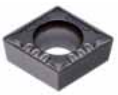
CP○○

Rhombic 80° Positive
Relief Angle: 11°



Dimensions (inch)			
Size	d	t	d_1
2.5	5/16	3/32	9/64
21.5	1/4	3/32	7/64
32	3/8	1/8	11/64

Workpiece			Machining types
Steel	P	● ✱ ● ⬣ ● ⬣ ⬣ ✱ ✱ ✱ ● ● ⬣ ✱	● Continuous cutting
Stainless steel	M	⬣ ⬣ ⬣ ✱ ● ⬣ ⬣ ✱ ● ⬣ ✱ ⬣ ✱ ● ⬣ ⬣ ✱	⬣ General cutting
Cast iron	K	● ✱ ● ⬣ ⬣ ⬣ ⬣ ● ⬣ ⬣	✱ Interrupted cutting
Non-ferrous metal	N	● ⬣
Heat resistant alloy, Titanium alloy	S	● ✱ ● ⬣ ● ⬣
Hardened steel	H	● ⬣

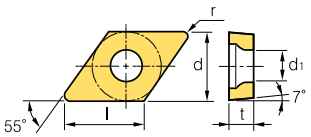
Insert	Designation		Cermet CN1500	Cermet CN2500	Coated CC1500	Coated CC2500	Coated NC3215	Coated NC3225	Coated NC3120	Coated NC3030	Coated NC3235	Coated NC5330	Coated NC6310	Coated NC6315	Coated NC9115	Coated NC9125	Coated NC9135	Coated PC5300	Coated PC5400	Coated PC8105	Coated PC8110	Coated PC8115	Coated PC9030	Uncoated H01	Uncoated H05	Cutting Condition fn (ipr)	Cutting Condition ap (inch)
Finishing	VF 	CPMT	2.51.51-VF																							0.002~0.008	0.012~0.047
			2.51.52-VF																							0.004~0.008	0.012~0.047
			321-VF									●														0.002~0.008	0.012~0.059
			322-VF									●														0.004~0.008	0.012~0.059
Finishing	VL 	CPMT	2.51.51-VL																							0.001~0.003	0.003~0.039
			2.51.52-VL																							0.001~0.005	0.004~0.039
			321-VL																							0.002~0.004	0.004~0.039
			322-VL																							0.003~0.006	0.004~0.039
Medium to finishing	HMP 	CPGT	322-HMP																							0.002~0.008	0.028~0.079
Medium cutting	C25 	CPMT	21.51-C25																							0.002~0.006	0.024~0.091
Finishing		CPGT	2.5150.5																							0.002~0.008	0.004~0.079
			2.51.51	●																						0.003~0.008	0.012~0.079
			2.51.52																							0.004~0.010	0.020~0.079
			320.5																							0.002~0.008	0.012~0.059
			321	●																						0.002~0.010	0.020~0.079
			322																							0.003~0.012	0.028~0.098

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders	
Designation	Page
SCLPR/L	B228

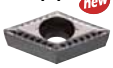
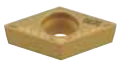
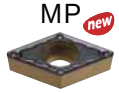
DC○○



Dimensions (inch)			
Size	d	t	d_1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

Rhombic **55° Positive**
Relief Angle: 7°

Workpiece			Machining types
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	FP new  [Mild steel]	DCMT	21.50.5-FP		●			●																		0.0004~0.0039	0.0020~0.0031
			21.51-FP	●	●	●	●	●	●								●					●				0.0004~0.0039	0.0039~0.0354
			21.52-FP																							0.0004~0.0039	0.0039~0.0394
			32.50.5-FP		●			●																		0.0004~0.0039	0.0020~0.0394
			32.51-FP	●	●	●	●	●	●								●					●				0.0004~0.0039	0.0039~0.0394
			32.52-FP	●	●	●	●	●	●								●					●				0.0016~0.0047	0.0039~0.0394
Finishing	VF 	DCMT	21.50.5-VF		●				●													●				0.001~0.004	0.002~0.040
			21.51-VF		●				●										●			●				0.002~0.008	0.012~0.047
			32.50.5-VF	●					●																	0.002~0.006	0.003~0.059
			32.51-VF	●	●				●										●			●				0.002~0.008	0.012~0.059
			32.52-VF	●	●														●			●				0.004~0.010	0.012~0.059
Finishing	VL 	DCMT	21.50.5-VL																							0.002~0.004	0.003~0.036
			21.51-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●		●	●	0.002~0.004	0.003~0.036
			21.52-VL					●	●				●						●								0.002~0.005	0.004~0.039
			32.50.5-VL																							0.001~0.004	0.003~0.032
			32.51-VL	●	●	●	●	●	●				●			●	●	●	●	●		●				●	0.002~0.004	0.004~0.039
			32.52-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●		●	●	0.003~0.006	0.004~0.039
			32.53-VL																							0.003~0.006	0.012~0.059
Medium to finishing	HMP 	DCMT	21.50.5-HMP								●													●		0.001~0.005	0.004~0.059
			21.51-HMP							●	●		●						●			●		●			0.002~0.007	0.008~0.091
			21.52-HMP							●	●		●									●		●			0.003~0.009	0.016~0.091
			32.50.5-HMP								●								●			●		●			0.002~0.009	0.004~0.079
			32.51-HMP		●				●	●	●		●						●			●		●			0.003~0.009	0.012~0.118
			32.52-HMP							●	●		●						●			●		●			0.004~0.012	0.020~0.118
Medium to finishing	MP new 	DCMT	21.50.5-MP	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.002~0.005	0.005~0.071
			21.51-MP	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.002~0.006	0.012~0.071
			21.52-MP	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.003~0.009	0.012~0.071
			32.50.5-MP	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.002~0.006	0.012~0.078
			32.51-MP	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●				0.002~0.008	0.020~0.091
			32.52-MP	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●				0.003~0.012	0.020~0.091
			32.53-MP														●	●									0.010~0.014	0.031~0.118

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SDACR/L	B202	**SDQCR/L**	B229
SDJCR/L	B123, 203	**SDUCR/L**	B230
SDNCN	B124, 203	**SDZCR/L**	B231

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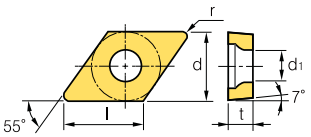


Dimensions (inch)			
Size	d	t	d1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

Rhombic 55° Positive
Relief Angle: 7°

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ⬌ ✱ ⬌ ✱ ● ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ✱ ⬌ ⬌ ● ●	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌	
Heat resistant alloy, Titanium alloy	S	✱ ● ● ✱ ⬌ ⬌ ● ⬌ ⬌	
Hardened steel	H	● ⬌ ⬌ ● ⬌	

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	C25	DCMT	21.50.5-C25	●	●	●	●	●	●				●						●	●		●					0.001~0.006	0.012~0.079
			21.51-C25	●	●	●	●	●	●		●		●		●				●	●		●		●			0.002~0.008	0.020~0.098
			21.52-C25	●	●	●	●	●	●		●		●		●				●	●		●					0.002~0.010	0.031~0.098
			32.50.5-C25	●	●	●	●	●	●				●						●	●		●					0.002~0.010	0.020~0.098
			32.51-C25	●	●	●	●	●	●	●	●		●	●	●				●	●		●		●			0.003~0.012	0.031~0.118
			32.52-C25	●	●	●	●	●	●	●	●		●	●	●				●	●		●		●			0.004~0.012	0.039~0.118
Finishing	VP1	DCMT	21.51-VP1																								0.002~0.005	0.004~0.059
			32.51-VP1																								0.002~0.008	0.004~0.059
			32.52-VP1																								0.003~0.009	0.004~0.059
Finishing	FS new [High precision]	DCGT	20.50.2-FS																●			●					0.0004~0.0071	0.0012~0.0630
			20.50.5-FS																●			●					0.0008~0.0079	0.0016~0.0669
			32.50.2-FS																●			●					0.0004~0.0079	0.0016~0.0709
			32.50.5-FS																●			●					0.0008~0.0091	0.0020~0.0787
			32.51-FS																●			●					0.0016~0.0091	0.0031~0.0787
			32.52-FS																●			●					0.0024~0.0098	0.0039~0.0866
Finishing	FS new [Ultra high precision]	DCGT	20.50.2MFN-FS																								0.0004~0.0071	0.0012~0.0630
			20.50.5MFN-FS																								0.0008~0.0079	0.0016~0.0669
			32.50.2MFN-FS																								0.0004~0.0079	0.0016~0.0709
			32.50.5MFN-FS																								0.0008~0.0091	0.0020~0.0787
			32.51MFN-FS																								0.0016~0.0091	0.0031~0.0787
			32.52MFN-FS																								0.0024~0.0098	0.0039~0.0866
Medium cutting	MS new [High precision]	DCGT	32.50.2-MS																●			●					0.0008~0.0091	0.0020~0.0787
			32.50.5-MS																●			●					0.0012~0.0098	0.0028~0.0984
			32.51-MS																●			●					0.0020~0.0098	0.0035~0.0984
Medium cutting	MS new [Ultra high precision]	DCGT	32.50.2MFN-MS																●			●					0.0008~0.0091	0.0020~0.0787
			32.50.5MFN-MS																●			●					0.0012~0.0098	0.0028~0.0984
			32.51MFN-MS																●			●					0.0020~0.0098	0.0035~0.0984

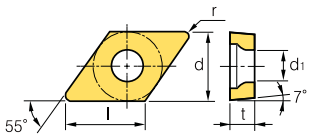
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SDACR/L	B202	SDQCR/L	B229
SDJCR/L	B123, 203	SDUCR/L	B230
SDNCN	B124, 203	SDZCR/L	B231

DC○○

Rhombic 55° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ⬌ ✱ ⬌ ✱ ● ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ● ● ●	✱ Interrupted cutting
Non-ferrous metal	N	● ●	
Heat resistant alloy, Titanium alloy	S	● ● ● ✱ ● ⬌ ⬌ ⬌ ● ●	
Hardened steel	H	● ⬌ ⬌ ● ●	

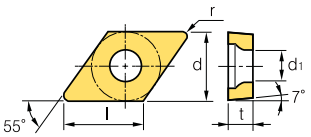
Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VP1 [High precision]	DCGT	21.50.2-VP1																●		●	●	●		●		0.001~0.002	0.002~0.039
			21.50.5-VP1																●		●	●	●		●		0.001~0.004	0.003~0.059
			21.51-VP1																●		●	●	●		●		0.002~0.005	0.004~0.059
			32.50.2-VP1																●			●					0.001~0.005	0.002~0.039
			32.50.5-VP1																●		●	●	●		●		0.002~0.006	0.003~0.059
			32.51-VP1																●		●	●	●		●		0.002~0.008	0.004~0.059
Finishing	VP1 [Ultra high precision]	DCGT	21.50.2MFN-VP1																●			●					0.002~0.003	0.002~0.039
			21.50.5MFN-VP1																●			●					0.002~0.004	0.003~0.059
			21.51MFN-VP1																●			●					0.002~0.005	0.004~0.059
			32.50.2MFN-VP1																●			●					0.002~0.005	0.002~0.039
			32.50.5MFN-VP1																●			●					0.002~0.006	0.003~0.059
			32.51MFN-VP1																●			●					0.005~0.008	0.004~0.059
Finishing	KF [High precision]	DCGT	21.50.1R-KF																●			●					~0.002	0.002~0.051
			21.50.2R-KF																●			●					0.001~0.003	0.002~0.059
			21.50.5R-KF																●			●					0.001~0.004	0.002~0.059
			21.51R-KF																●			●					0.002~0.005	0.002~0.067
			32.50.1R-KF																●			●					0.001~0.003	0.002~0.059
			32.50.2R-KF																●			●					0.001~0.004	0.002~0.067
			32.50.5R-KF																●			●		●			0.002~0.006	0.003~0.079
			32.51R-KF																●			●					0.002~0.006	0.002~0.079
			21.50.1L-KF																●			●					~0.285	0.002~0.051
			21.50.2L-KF																●			●					0.001~0.003	0.002~0.059
			21.50.5L-KF																●			●					0.001~0.004	0.002~0.059
			21.51L-KF																●			●					0.002~0.005	0.002~0.067
			32.50.1L-KF																●			●					0.001~0.003	0.002~0.059
			32.50.2L-KF																●			●					0.001~0.004	0.002~0.067
			32.50.5L-KF																●			●					0.002~0.006	0.003~0.079
			32.51L-KF																●			●					0.002~0.006	0.002~0.079
Finishing	KF [Ultra high precision]	DCET	21.50.13MFR-KF																●			●					~0.002	0.002~0.051
			21.50.2MFR-KF																●			●					0.001~0.003	0.002~0.059
			21.50.5MFR-KF																●			●					0.001~0.004	0.002~0.067
			32.50.13MFR-KF																●			●					0.001~0.003	0.002~0.059
			32.50.2MFR-KF																●			●					0.001~0.004	0.002~0.067
			32.50.5MFR-KF																●			●					0.002~0.006	0.003~0.079
			21.50.13MFL-KF																●			●					~0.002	0.002~0.051
			21.50.2MFL-KF																●			●					0.001~0.003	0.002~0.059
			21.50.5MFL-KF																●			●					0.001~0.004	0.002~0.067
			32.50.13MFL-KF																●			●					0.001~0.003	0.002~0.059
			32.50.2MFL-KF																●			●					0.001~0.004	0.002~0.067
			32.50.5MFL-KF																●			●					0.002~0.006	0.003~0.079

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SDACR/L	B202	SDQCR/L	B229
SDJCR/L	B123, 203	SDUCR/L	B230
SDNCN	B124, 203	SDZCR/L	B231

DC○○



Dimensions (inch)			
Size	d	t	d_1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

Rhombic 55° Positive
Relief Angle: 7°

Workpiece			Machining types
Steel	P	● ✱ ● ⬢ ● ⬢ ⬢ ✱ ✱ ✱ ● ● ⬢ ✱	● Continuous cutting
Stainless steel	M	⬢ ⬢ ⬢ ✱ ✱ ✱ ● ⬢ ⬢ ✱ ✱ ✱ ● ⬢ ⬢ ✱	⬢ General cutting
Cast iron	K	● ✱ ● ⬢ ⬢ ⬢ ⬢ ⬢ ● ⬢ ⬢ ⬢ ● ⬢	✱ Interrupted cutting
Non-ferrous metal	N	● ⬢
Heat resistant alloy, Titanium alloy	S	● ● ⬢ ✱ ● ⬢ ⬢ ● ⬢
Hardened steel	H	● ⬢

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	KM [High precision]	DCGT	21.50.1R-KM																●			●					~0.002	0.002~0.051
			21.50.2R-KM																●			●					0.001~0.003	0.002~0.059
			21.50.5R-KM																●			●					0.001~0.004	0.002~0.059
			21.51R-KM																●								0.002~0.005	0.002~0.067
			32.50.1R-KM																●			●					0.001~0.003	0.002~0.059
			32.50.2R-KM																●			●					0.001~0.004	0.002~0.067
			32.50.5R-KM																●			●					0.002~0.006	0.003~0.079
			32.51R-KM																●			●					0.002~0.006	0.002~0.079
			21.50.1L-KM																●			●					~0.002	0.002~0.051
			21.50.2L-KM																●			●					0.001~0.003	0.002~0.059
			21.50.5L-KM																●			●					0.001~0.004	0.002~0.059
			21.51L-KM																●								0.002~0.005	0.002~0.067
			32.50.1L-KM																●			●					0.001~0.003	0.002~0.059
			32.50.2L-KM																●			●					0.001~0.004	0.002~0.067
			32.50.5L-KM																●			●					0.002~0.006	0.003~0.079
			32.51L-KM																●								0.002~0.006	0.002~0.079
Medium to finishing	KM [Ultra high precision]	DCET	21.50.13MFR-KM																●			●					~0.002	0.002~0.051
			21.50.2MFR-KM																●			●					0.001~0.003	0.002~0.059
			21.50.5MFR-KM																●			●					0.001~0.004	0.002~0.067
			32.50.13MFR-KM																●			●					0.001~0.003	0.002~0.059
			32.50.2MFR-KM																●			●					0.001~0.004	0.002~0.067
			32.50.5MFR-KM																●			●					0.002~0.006	0.003~0.079
			21.50.13MFL-KM																●			●					~0.002	0.002~0.051
			21.50.2MFL-KM																●			●					0.001~0.003	0.002~0.059
			21.50.5MFL-KM																●			●					0.001~0.004	0.002~0.067
			32.50.13MFL-KM																								0.001~0.003	0.002~0.059
			32.50.2MFL-KM																●			●					0.001~0.004	0.002~0.067
			32.50.5MFL-KM																●			●					0.002~0.006	0.003~0.079

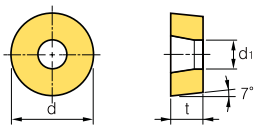
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SDACR/L	B202	SDQCR/L	B229
SDJCR/L	B123, 203	SDUCR/L	B230
SDNCN	B124, 203	SDZCR/L	B231

RC○○

Round R° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
08	0.315	1/8	9/64
10	0.394	1/8~5/32	9/64
12	0.472	3/16	11/67
16	0.630	1/4	13/64
20	0.787	1/4	25/97
25	0.984	5/16	9/32
32	1.260	3/8	3/8

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	✱ ⬌ ⬌ ✱ ⬌ ⬌ ⬌ ● ⬌ ✱ ⬌ ✱ ⬌ ● ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ●	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ● ⬌ ✱ ● ⬌ ⬌
Hardened steel	H	● ⬌ ⬌ ● ⬌

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	VM	RCMT	0803M0-VM																								0.002~0.012	0.031~0.098
			10T3M0-VM																								0.002~0.014	0.036~0.118
			1204M0-VM																								0.004~0.020	0.039~0.138
			1606M0-VM																								0.005~0.024	0.051~0.256
Medium cutting		RCMX	1003M0						●		●		●		●												0.010~0.020	0.059~0.157
			1204M0						●	●	●		●		●												0.012~0.024	0.098~0.197
			1606M0						●		●		●		●												0.016~0.028	0.118~0.276
			2006M0								●				●												0.019~0.035	0.138~0.354
			2507M0								●				●												0.022~0.047	0.157~0.472
			3209M0								●				●												0.026~0.059	0.197~0.591

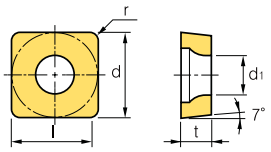
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
PRDCN	B186	**PRGCR/L**	B187

SC○○

Square 90° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64
43	1/2	3/16	7/32

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ⬌ ✱ ✱ ✱ ⬌ ⬌ ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ✱ ⬌ ⬌ ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	✱ ● ● ⬌ ✱ ⬌ ⬌ ● ⬌
Hardened steel	H	⬌ ● ⬌

Insert	Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	FP new [Mild steel]	SCMT 32.51-FP		●			●																			0.0004~0.0039	0.0039~0.0394
		SCMT 32.52-FP	●	●	●	●	●	●								●					●					0.0016~0.0047	0.0039~0.0394
Finishing	VF	SCMT 32.51-VF						●										●								0.002~0.008	0.012~0.059
Finishing	VL	SCMT 32.51-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.002~0.004	0.004~0.039
		SCMT 32.52-VL	●	●	●	●	●	●				●			●	●		●	●	●	●	●				0.003~0.006	0.004~0.039
Medium to finishing	HMP	SCMT 32.51-HMP							●	●								●					●			0.003~0.009	0.012~0.118
		SCMT 32.52-HMP							●	●								●					●			0.004~0.012	0.020~0.118
		SCMT 431-HMP																								0.004~0.011	0.012~0.142
		SCMT 432-HMP								●								●					●			0.005~0.014	0.024~0.142
Medium to finishing	MP new	SCMT 32.51-MP					●	●				●		●	●	●	●	●		●	●					0.002~0.010	0.012~0.110
		SCMT 32.52-MP					●	●				●		●	●	●	●	●		●	●					0.004~0.012	0.020~0.110
		SCMT 431-MP					●	●							●	●	●	●								0.004~0.012	0.020~0.110
		SCMT 432-MP					●	●						●	●	●	●	●		●	●					0.006~0.014	0.032~0.138
		SCMT 433-MP																								0.010~0.016	0.039~0.138
Medium to finishing	C25	SCMT 21.51-C25								●																0.003~0.010	0.016~0.098
		SCMT 32.51-C25	●	●	●	●	●	●		●		●		●				●	●		●					0.003~0.010	0.024~0.118
		SCMT 32.52-C25	●	●	●	●	●	●	●	●		●	●	●				●	●		●					0.004~0.012	0.039~0.118
		SCMT 431-C25	●	●	●	●	●	●				●		●				●	●		●		●			0.004~0.012	0.031~0.150
		SCMT 432-C25	●	●	●		●	●	●	●		●	●	●				●	●		●		●			0.005~0.015	0.047~0.150

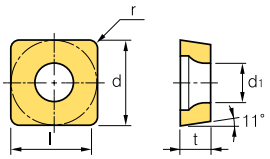
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SSBCR/L	B204	SSKCR/L	B205, 231
SSDCN	B204	SSSCR/L	B205, 244

SP○○

Square 90° Positive
Relief Angle: 11°



Dimensions (inch)			
Size	d	t	d_1
32	3/8	1/8	11/64
32.5	3/8	5/32	11/64
42	1/2	1/8	-
53	5/8	3/16	-
63	3/4	3/16	-
84	1	1/4	-

Workpiece			Machining types
Steel	P		● Continuous cutting
Stainless steel	M		⬬ General cutting
Cast iron	K		✱ Interrupted cutting
Non-ferrous metal	N		
Heat resistant alloy, Titanium alloy	S		
Hardened steel	H		

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VL	SPMT	32.51-VL																							0.002~0.007	0.008~0.055
			32.52-VL																							0.003~0.009	0.008~0.055
Finishing	VF	SPMT	321-VF																							0.002~0.008	0.012~0.059
			322-VF																							0.004~0.010	0.012~0.059
Finishing	F	SPMR	321-F																							0.002~0.008	0.012~0.079
			421-F						●		●															0.004~0.010	0.020~0.079
Finishing	F	SPGR	321-F																							0.004~0.010	0.012~0.079
			421-F																							0.006~0.010	0.020~0.079
Medium cutting	M	SPMR	322-M						●		●															0.004~0.016	0.039~0.138
			422-M						●		●															0.004~0.016	0.059~0.157
			423-M								●															0.008~0.016	0.059~0.157
Medium cutting	M	SPGR	322-M																							0.004~0.016	0.039~0.138
			422-M																							0.008~0.016	0.059~0.157
Medium to finishing		SPUN	421																							0.004~0.012	0.039~0.197
			422																							0.006~0.016	0.039~0.197
			422SN																							0.006~0.016	0.039~0.197
			533																							0.008~0.020	0.039~0.197
			633								●															0.008~0.020	0.059~0.276
			634																							0.010~0.024	0.079~0.276
			845																							0.012~0.031	0.118~0.394

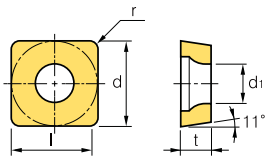
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
CSDPN	B193	SSKPR/L	B231
CSKPR/L	B194		

SP○○

Square **90° Positive**
Relief Angle: 11°

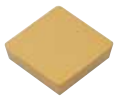


Dimensions (inch)			
Size	d	t	d_1
2.5	5/16	3/32	7/64
21.5	1/4	3/32	7/64
32	3/8	1/8	11/64
42	1/2	1/8	-

Dimensions (inch)			
Size	d	t	d_1
43	1/2	3/16	-
53	5/8	3/16	-
63	3/4	3/16	-

Workpiece		P	M	K	N	S	H
Steel	P	● ✱	● ⬌	● ⬌	● ⬌	✱	
Stainless steel	M		⬌	⬌	⬌	● ⬌	⬌
Cast iron	K	● ✱	● ⬌	⬌	⬌	● ⬌	⬌
Non-ferrous metal	N					● ⬌	⬌
Heat resistant alloy, Titanium alloy	S			●	✱	● ⬌	⬌
Hardened steel	H					● ⬌	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

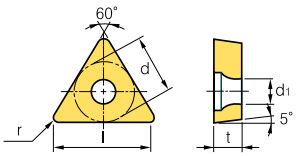
Insert	Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing		SPGN	**2.51.50.5**																							0.001~0.004	0.020~0.079
			2.51.52																							0.004~0.010	0.028~0.118
			320.5																							0.001~0.004	0.020~0.118
			321																							0.003~0.008	0.028~0.138
			322																							0.004~0.010	0.028~0.138
			420.5																							0.001~0.008	0.020~0.118
			421																							0.003~0.008	0.039~0.197
			422							●																0.004~0.010	0.039~0.197
			423																							0.006~0.012	0.039~0.197
			424																							0.007~0.013	0.039~0.197
			430.5																							0.001~0.008	0.020~0.118
			431																							0.003~0.008	0.039~0.197
			432																							0.004~0.010	0.039~0.197
			433																							0.006~0.012	0.039~0.197
			434																							0.007~0.013	0.039~0.197
			437.5																							0.008~0.024	0.079~0.197
			4310																							0.010~0.028	0.118~0.197
			531																							0.003~0.008	0.059~0.276
			532																							0.004~0.010	0.059~0.276
			533																							0.006~0.012	0.059~0.276
			534																							0.007~0.013	0.059~0.276
			535																							0.008~0.018	0.059~0.276
			631																							0.003~0.008	0.059~0.354
			632																							0.004~0.010	0.059~0.354
			633																							0.006~0.018	0.059~0.354
			634																							0.007~0.024	0.059~0.354
			636																							0.010~0.028	0.098~0.354
Medium to finishing		SPGA	**21.51**																							0.002~0.010	0.020~0.079
			322T	●																						0.004~0.010	0.028~0.118
			322T-Z																							0.004~0.010	0.028~0.118
			* Note: 08T: corner C0.8 08T-Z: corner R0.8																								
Medium to finishing		SPGT	**321R**																							0.003~0.009	0.012~0.118
			322R																							0.004~0.012	0.020~0.118
			321L																							0.003~0.009	0.012~0.118
			322L																							0.004~0.012	0.020~0.118

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
CSDPN	B193	**SSKPR/L**	B231
CSKPR/L	B194		

TB○○



Dimensions (inch)			
Size	d	t	d_1
52	5/32	1/16	11/128

Triangular **60° Positive**
Relief Angle: 5°

Workpiece			Machining types
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VL 	TBMT **520.5-VL**																								0.001~0.002	0.002~0.024
Finishing		TBGT **520.5**																					●	●		0.002~0.008	0.004~0.051
		521																								0.003~0.008	0.004~0.051

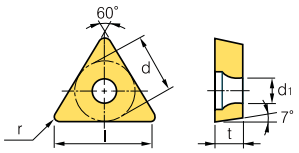
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders	
Designation	Page
STUBR/L	B237

TC○○

Triangular **60° Positive**
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
1.2	0.156	3/32	11/128
1.8	0.219	3/32	13/128
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64
43	1/2	3/16	-

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	✱ ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱ ✱ ✱ ● ● ● ●	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ✱ ✱ ⬌ ⬌ ⬌ ● ⬌
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	✱ ● ● ⬌ ✱ ● ⬌ ⬌ ● ⬌
Hardened steel	H	● ⬌

✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	FP new [Mild steel]	TCMT	**1.21.50.2-FP**																								0.0004~0.0031	0.0020~0.0028
			21.50.5FP		●			●																			0.0004~0.0039	0.0020~0.0031
			21.51-FP		●			●																			0.0004~0.0039	0.0039~0.0354
Finishing	VF	TCMT	**21.50.5-VF**																								0.001~0.005	0.002~0.028
			21.51-VF																●								0.002~0.008	0.012~0.047
			21.52-VF																●								0.004~0.010	0.012~0.047
			32.50.5-VF																								0.002~0.006	0.004~0.051
			32.51-VF						●				●						●								0.002~0.006	0.012~0.059
Finishing	VL	TCMT	**1.81.52-VL**																								0.003~0.008	0.004~0.047
			21.51-VL																								0.002~0.006	0.004~0.051
			21.52-VL																								0.003~0.008	0.004~0.051
			32.51-VL	●	●	●	●	●	●							●	●	●	●	●	●	●	●				0.002~0.006	0.012~0.059
			32.52-VL	●	●	●	●	●	●				●			●	●		●	●	●	●	●				0.002~0.006	0.012~0.059
Medium to finishing	HMP	TCMT	**1.81.51-HMP**							●													●				0.002~0.007	0.008~0.091
			1.81.52-HMP																								0.003~0.009	0.016~0.091
			21.50.5-HMP																								0.001~0.006	0.004~0.059
			21.51-HMP		●				●	●	●		●						●			●	●				0.002~0.007	0.008~0.098
			21.52-HMP								●								●				●				0.004~0.010	0.016~0.098
			32.51-HMP		●					●	●								●			●	●				0.003~0.009	0.012~0.118
			32.52-HMP							●	●		●						●				●				0.004~0.012	0.020~0.138
Medium to finishing	MP new	TCMT	**1.81.51-MP**													●	●	●									0.002~0.007	0.004~0.039
			1.81.52-MP													●	●	●									0.003~0.008	0.004~0.047
			21.50.5-MP					●	●				●			●	●	●			●	●					0.001~0.005	0.008~0.059
			21.51-MP					●	●				●			●	●	●			●	●					0.002~0.006	0.008~0.059
			21.52-MP					●	●				●			●	●	●	●		●	●					0.004~0.011	0.010~0.078
			32.50.5-MP																								0.003~0.010	0.008~0.059
			32.51-MP	●	●	●	●	●	●				●		●	●	●	●	●	●	●	●	●				0.003~0.008	0.012~0.098
			32.52-MP	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●				0.004~0.012	0.020~0.098
			32.53-MP					●	●				●					●				●					0.008~0.016	0.020~0.098
			432-MP																								0.008~0.016	0.020~0.138

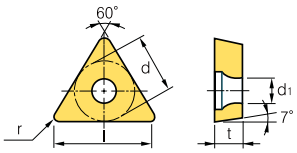
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
STACR/L	B124, 205	**STTCR/L**	B206, 245
STFCR/L	B206, 245	**STWCR/L**	B245
STGCR/L	B206		

TC○○

Triangular **60° Positive**
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
1.5	3/16	3/32	3/32
1.8	7/32~3/8	3/32~5/32	13/128
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ⬌ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	✱ ⬌ ⬌ ✱ ⬌ ⬌ ● ⬌ ⬌ ✱ ⬌ ✱ ⬌ ✱ ● ⬌ ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ● ⬌ ⬌ ✱ ⬌ ✱ ● ⬌ ⬌ ⬌ ● ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ⬌ ✱ ● ⬌ ⬌
Hardened steel	H	● ⬌ ⬌ ⬌ ● ⬌

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium cutting	C25	TCMT	**1.81.51-C25**	●	●	●	●	●	●		●		●		●				●	●		●					0.002~0.007	0.016~0.098
			1.81.52-C25	●	●	●	●	●	●				●		●				●	●		●					0.003~0.010	0.031~0.098
			21.50.5-C25	●	●	●	●	●	●				●						●	●		●					0.002~0.005	0.016~0.079
			21.51-C25	●	●	●	●	●	●		●		●		●				●	●		●					0.002~0.008	0.024~0.098
			21.52-C25	●	●	●	●	●	●		●		●		●				●	●		●		●			0.003~0.010	0.031~0.098
			32.51-C25	●	●	●	●	●	●	●	●		●		●				●	●		●		●			0.003~0.011	0.031~0.118
			32.52-C25	●	●	●	●	●	●	●	●		●		●				●	●		●		●			0.004~0.012	0.039~0.118
Finishing	VP1	TCMT	**32.51-VP1**																								0.002~0.008	0.004~0.059
			32.52-VP1																								0.003~0.009	0.004~0.059
Finishing	FS new [High precision]	TCGT	**21.50.2-FS**																●			●					0.0004~0.0063	0.0012~0.0551
			21.50.5-FS																●			●					0.0008~0.0071	0.0016~0.0591
			21.51-FS																●			●					0.0016~0.0075	0.0024~0.0630
Finishing	FS new [Ultra high precision]	TCGT	**21.50.2MFN-FS**																								0.0004~0.0063	0.0012~0.0551
			21.50.5MFN-FS																								0.0008~0.0071	0.0016~0.0591
			21.51MFN-FS																								0.0016~0.0075	0.0024~0.0630
Finishing	VP1	TCGT	**1.81.51-VP1**																								0.002~0.007	0.004~0.039
			32.51-VP1																								0.002~0.008	0.004~0.059
			32.52-VP1																								0.003~0.009	0.004~0.059
Finishing	KF [High precision]	TCGT	**1.51.50.1R-KF**																								~0.002	0.002~0.051
			1.51.50.2R-KF																								0.001~0.003	0.002~0.059
			1.51.50.5R-KF																								0.001~0.004	0.002~0.067
			1.51.50.1L-KF																								~0.002	0.002~0.051
			1.51.50.2L-KF																								0.001~0.003	0.002~0.059
			1.51.50.5L-KF																								0.001~0.004	0.002~0.067

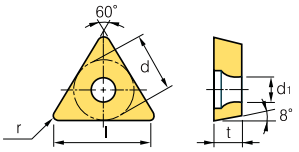
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
STACR/L	B124, 205	**STTCR/L**	B206, 245
STFCR/L	B206, 245	**STWCR/L**	B245
STGCR/L	B206		

TO○○

Triangular **60° Positive**
Relief Angle: 8°



Dimensions (inch)			
Size	d	t	d_1
1.2	5/32	1/16	11/128
1.8	7/32	3/32	7/64
2.52	10/31	15/128	5/32

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ● ⬌ ⬌ ✱ ✱ ⬌ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ●	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌	
Heat resistant alloy, Titanium alloy	S	● ● ● ✱ ● ⬌ ⬌ ●	
Hardened steel	H	● ⬌ ⬌ ●	

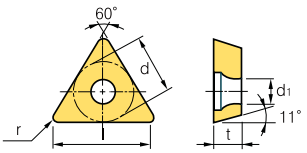
Insert	Designation	Cermet		Coated		Coated																Uncoated		Cutting Condition	
		CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	TOEH 1.210.5L																								0.002~0.007	0.004~0.059
	1.81.51L																								0.002~0.008	0.012~0.098
	2.521L																								0.002~0.010	0.012~0.098

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

Available tool holders			
Designation	Page	Designation	Page
STFPR/L	B233	STUPR/L	B238
CTFPR/L	B194	CTGPR/L	B194

TP○○

Triangular **60° Positive**
Relief Angle: 11°



Dimensions (inch)			
Size	d	t	d_1
1.8	7/32	3/32	1/128~1/64
22	1/4	3/32~1/8	9/64
33	3/8	3/16	-

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ● ⬌ ⬌ ✱ ✱ ⬌ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ●	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌	
Heat resistant alloy, Titanium alloy	S	● ● ● ✱ ● ⬌ ⬌ ●	
Hardened steel	H	● ⬌ ⬌ ●	

Insert	Designation	Cermet		Coated		Coated																Uncoated		Cutting Condition	
		CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
Finishing	TPMT 1.81.50.5-FP	●	●	●	●	●	●								●					●					0.0004~0.0035	0.0020~0.0028
	1.81.51-FP	●	●	●	●	●	●								●					●					0.0004~0.0035	0.0031~0.0039
	220.5-FP	●	●	●	●	●	●								●					●					0.0004~0.0039	0.0020~0.0031
	221-FP	●	●	●	●	●	●								●					●					0.0004~0.0039	0.0039~0.0354
	222-FP	●	●	●	●	●	●								●					●					0.0016~0.0039	0.0039~0.0394
	331-FP		●			●																			0.0004~0.0039	0.0039~0.0394
	332-FP		●			●																			0.0016~0.0047	0.0039~0.0394

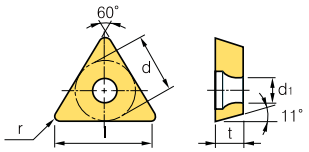
FP new
[Mild steel]

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35** ●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
STFPR/L	B233	STUPR/L	B238
CTFPR/L	B194	CTGPR/L	B194

TP ○○

Triangular **60° Positive**
Relief Angle: 11°



Dimensions (inch)			
Size	d	t	d_1
1.8	7/32	3/32	1/128~1/64
22	1/4	3/32~1/8	9/64
32	3/8	1/8	-
33	3/8	3/16	-
43	1/2	3/16	-

Workpiece																								
Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱								
Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	⬌	✱	
Cast iron	K	●	✱	●	⬌	⬌					⬌	⬌	⬌											● ⬌
Non-ferrous metal	N																							● ⬌
Heat resistant alloy, Titanium alloy	S										●				●	●	⬌	✱	●	⬌	⬌			● ⬌
Hardened steel	H																		●	⬌	⬌			● ⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

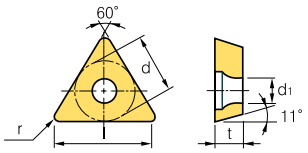
Insert		Designation		Cermet		Coated		Coated																	Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VF	TPMT	221-VF						●				●						●			●					0.002~0.008	0.012~0.059
			222-VF						●				●									●					0.004~0.010	0.012~0.059
			331-VF																								0.002~0.008	0.012~0.079
			332-VF																								0.004~0.010	0.012~0.079
Finishing	VL	TPMT	1.81.51-VL																								0.002~0.004	0.004~0.036
			1.81.52-VL																								0.002~0.005	0.004~0.039
			221-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.002~0.006	0.004~0.051
			222-VL					●									●	●									0.003~0.008	0.004~0.051
			331-VL																								0.002~0.008	0.012~0.059
			332-VL																								0.002~0.008	0.012~0.059
Medium to finishing	MP new	TPMT	1.81.50.5-MP																								0.001~0.006	0.004~0.039
			1.81.51-MP																								0.002~0.007	0.004~0.039
			220.5-MP																								0.001~0.005	0.008~0.059
			221-MP	●	●	●	●	●	●								●	●	●	●							0.002~0.008	0.008~0.059
			222-MP					●	●								●	●									0.004~0.011	0.012~0.078
			330.5-MP																								0.002~0.008	0.012~0.098
			331-MP					●	●																		0.003~0.008	0.012~0.098
			332-MP					●	●																		0.004~0.012	0.020~0.098
Finishing	F	TPMR	1.81.50.5F																								0.002~0.006	0.004~0.039
			1.81.51F																								0.002~0.006	0.004~0.039
			220.5-F																								0.002~0.006	0.004~0.059
			221-F						●	●	●				●									●			0.002~0.008	0.012~0.059
			222-F																								0.002~0.010	0.012~0.059
			321-F						●	●	●		●									●		●			0.003~0.010	0.020~0.079
			322-F																								0.003~0.010	0.020~0.118
Finishing	F	TPGR	220.5-F																								0.002~0.006	0.004~0.059
			221-F																								0.002~0.008	0.012~0.098
			321-F																								0.003~0.010	0.012~0.098
Medium cutting	M	TPMR	221-M																								0.004~0.010	0.028~0.118
			222-M								●				●												0.005~0.012	0.039~0.118
			321-M								●				●												0.004~0.010	0.039~0.197
			322-M						●	●	●				●												0.005~0.012	0.039~0.197
			323-M								●																0.006~0.014	0.039~0.197
			432-M						●																		0.005~0.012	0.059~0.276

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
STFPR/L	B233	STUPR/L	B238
CTFPR/L	B194	CTGPR/L	B194

TP ○○



Triangular **60° Positive**
Relief Angle: 11°

Dimensions (inch)			
Size	d	t	d_1
1.8	7/32	1/8	-
21.5	1/4	3/32	-
22	1/4	3/32~1/8	9/64
32	3/8	1/8	-

Dimensions (inch)			
Size	d	t	d_1
43	1/2	3/16	-
53	5/8	3/16	-
54	5/8	1/4	-
64	3/4	1/4	-

Workpiece																						
Steel	P	●	✱	●	⬌	●	⬌	⬌	✱	✱	✱	●	●	⬌		✱							
Stainless steel	M								⬌	⬌	⬌			●	⬌	✱	⬌	✱	●	⬌	⬌	⬌	✱
Cast iron	K	●	✱	●	⬌	⬌					✱	⬌	⬌	⬌								●	⬌
Non-ferrous metal	N																					●	⬌
Heat resistant alloy, Titanium alloy	S										●				●	●	⬌	✱	●	⬌	⬌	●	⬌
Hardened steel	H																		●	⬌	⬌	●	⬌

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	PC9030	H05	fn (ipr)	ap (inch)
Medium cutting	M	TPGR	**222-M**																								0.005~0.012	0.039~0.118
			322-M																								0.005~0.012	0.039~0.197
Medium to finishing		TPUN	**1.81.52**																								0.004~0.012	0.020~0.079
			21.52																								0.006~0.016	0.039~0.118
			221																								0.004~0.012	0.039~0.118
			222																								0.006~0.016	0.039~0.118
			321								●																0.004~0.012	0.039~0.197
			322								●								●								0.006~0.016	0.039~0.197
			322TN																								0.006~0.016	0.039~0.197
			323																								0.008~0.020	0.059~0.197
			323TN																								0.008~0.020	0.059~0.197
			431																								0.004~0.012	0.059~0.276
			432								●																0.006~0.016	0.059~0.276
			433																								0.008~0.020	0.059~0.276
			433TN																								0.008~0.020	0.059~0.276
			645																								0.012~0.028	0.118~0.394
Medium to finishing		TPGN	**1.81.51**																								0.003~0.008	0.028~0.079
			220.5																								0.002~0.006	0.020~0.079
			221								●														●		0.003~0.008	0.028~0.118
			222								●														●		0.004~0.010	0.039~0.118
			320.5																								0.002~0.007	0.039~0.197
			321						●		●														●		0.003~0.008	0.039~0.197
			322						●		●														●		0.004~0.010	0.039~0.197
			322.5																								0.004~0.010	0.039~0.197
			323																								0.006~0.012	0.039~0.197
			324																								0.006~0.012	0.039~0.197
			331																								0.003~0.008	0.039~0.197
			431								●																0.003~0.008	0.059~0.276
			432								●																0.004~0.010	0.059~0.276
			433								●																0.006~0.012	0.059~0.276
			437.5																								0.012~0.018	0.059~0.276
			4310																								0.012~0.020	0.059~0.276
			532																								0.006~0.010	0.118~0.315
			542																								0.006~0.010	0.118~0.315

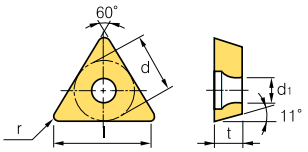
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
STFPR/L	B233	**STUPR/L**	B238
CTFPR/L	B194	**CTGPR/L**	B194

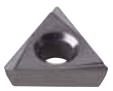
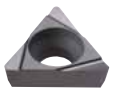
TP ○○

Triangular **60° Positive**
Relief Angle: 11°



Dimensions (inch)			
Size	d	t	d_1
1.5	3/16	3/32	3/32
1.8	7/32	3/32	0.118
22	1/4	1/8	9/64
23	1/4	3/32	9/64
33	3/8	3/16	11/64

Workpiece			Machining types
Steel	P		● Continuous cutting
Stainless steel	M		⬌ General cutting
Cast iron	K		✱ Interrupted cutting
Non-ferrous metal	N		
Heat resistant alloy, Titanium alloy	S		
Hardened steel	H		

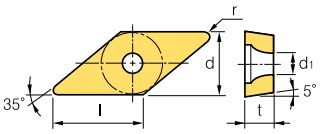
Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing		TPGH	**1.51.50.5L**																								0.001~0.005	0.002~0.067
			1.51.51L	●																							0.001~0.006	0.003~0.067
			230.5L																								0.002~0.006	0.002~0.079
			231L																								0.003~0.008	0.003~0.118
Medium to finishing		TPGT	**1.51.50.5R**																								0.002~0.008	0.012~0.059
			220.5R																								0.002~0.008	0.012~0.059
			221R																								0.002~0.008	0.020~0.079
			222R																								0.003~0.010	0.020~0.079
			331R																								0.002~0.008	0.028~0.118
			332R																								0.002~0.008	0.028~0.118
			1.51.50.5L																					●	●		0.002~0.008	0.012~0.059
			220.5L																								0.002~0.008	0.012~0.059
			221L	●																							0.002~0.008	0.020~0.079
			222L																								0.003~0.010	0.020~0.079
			331L																								0.002~0.008	0.028~0.118
			332L																								0.002~0.008	0.028~0.118
Medium to finishing		TPGX	**1.81.50.5L**																								0.004~0.008	0.012~0.039
			1.81.51L		●																						0.004~0.010	0.020~0.039
			1.81.52L																								0.004~0.012	0.039~0.039
			221L																								0.004~0.010	0.020~0.047

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
STFPR/L	B233	**STUPR/L**	B238
CTFPR/L	B194	**CTGPR/L**	B194

VB○○



Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8	7/64~1/9
33	3/8	3/16	11/64

Rhombic 35° Positive
Relief Angle: 5°

Workpiece			Machining types
Steel	P	● ✱ ● ● ● ● ● ✱ ✱ ✱ ● ● ● ✱	● Continuous cutting
Stainless steel	M	● ● ● ● ● ● ✱ ✱ ✱ ● ● ● ● ● ●	● General cutting
Cast iron	K	● ✱ ● ● ● ● ● ● ● ● ● ● ●	✱ Interrupted cutting
Non-ferrous metal	N	● ● ● ● ● ● ● ● ● ● ● ● ●	
Heat resistant alloy, Titanium alloy	S	● ● ● ● ● ● ● ● ● ● ● ● ●	
Hardened steel	H	● ● ● ● ● ● ● ● ● ● ● ● ●	

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	FP new [Mild steel]	VBMT	220.5-FP					●																			0.0004~0.0039	0.0020~0.0031
			221-FP		●			●																			0.0004~0.0039	0.0039~0.0354
			222-FP		●			●																			0.0004~0.0039	0.0039~0.0394
			331-FP	●	●	●	●	●	●								●					●					0.0004~0.0039	0.0039~0.0394
			332-FP	●	●	●	●	●	●								●					●					0.0016~0.0047	0.0039~0.0394
Finishing	VB	VBMT	220.5-VB																								0.002~0.006	0.008~0.047
			221-VB																								0.002~0.007	0.008~0.047
			222-VB																								0.003~0.008	0.024~0.047
			330.5-VB																								0.002~0.008	0.002~0.039
			331-VB	●	●				●																		0.002~0.008	0.008~0.059
			332-VB	●	●				●																		0.004~0.009	0.020~0.059
			333-VB																								0.005~0.010	0.031~0.059
Finishing	VF	VBMT	331-VF	●	●				●				●						●			●					0.002~0.008	0.012~0.040
			332-VF	●	●														●								0.004~0.010	0.012~0.040
Finishing	VL	VBMT	220.5-VL																								0.001~0.008	0.008~0.047
			221-VL																								0.002~0.008	0.008~0.047
			222-VL																								0.003~0.008	0.008~0.047
			330.5-VL																								0.001~0.008	0.012~0.059
			331-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.002~0.008	0.012~0.059
			332-VL	●	●	●	●	●	●				●			●	●	●	●	●	●	●	●				0.004~0.008	0.012~0.059
			333-VL													●	●	●			●	●	●				0.004~0.010	0.012~0.059
Medium to finishing	HMP	VBMT	221-HMP							●														●			0.001~0.008	0.006~0.106
			222-HMP							●																	0.002~0.010	0.016~0.106
			331-HMP							●	●		●		●				●			●		●			0.003~0.008	0.008~0.106
			332-HMP						●	●	●		●						●			●		●			0.004~0.011	0.020~0.106
			333-HMP																								0.004~0.013	0.020~0.106
Medium to finishing	MP new	VBMT	220.5-MP																								0.002~0.006	0.008~0.059
			221-MP					●	●								●	●									0.002~0.006	0.008~0.059
			222-MP					●	●																		0.004~0.011	0.012~0.078
			330.5-MP																								0.002~0.006	0.010~0.079
			331-MP	●	●	●	●	●	●				●	●		●	●	●	●	●	●	●	●				0.002~0.008	0.012~0.078
			332-MP	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●				0.004~0.010	0.020~0.091
			333-MP	●	●			●	●				●			●	●	●	●		●	●	●				0.004~0.014	0.020~0.091

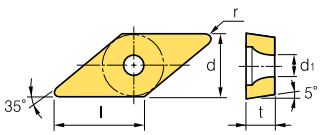
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVABR/L	B207	**SVVBN**	B208
SVHBR/L	B207	**SVQBR/L**	B234
SVJBR/L	B125, 207	**SVUBR/L**	B235

VB○○

Rhombic 35° Positive
Relief Angle: 5°



Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8	7/64~1/9
33	3/8	3/16	11/64

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ⬌ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ⬌ ⬌ ● ● ⬌ ✱ ⬌ ✱ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ● ● ⬌ ⬌ ⬌ ⬌	✱ Interrupted cutting
Non-ferrous metal	N	⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ● ●	
Heat resistant alloy, Titanium alloy	S	⬌ ⬌ ⬌ ⬌ ● ✱ ● ⬌ ● ● ⬌ ✱ ● ⬌ ⬌	
Hardened steel	H	⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ⬌ ● ⬌ ⬌	

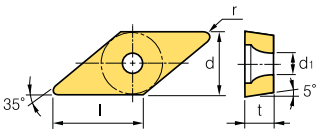
Insert	Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
			CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing		VBMT 331							●	●			●										●			0.003~0.008	0.020~0.059
		332						●	●	●				●									●			0.006~0.010	0.028~0.079
Medium to finishing		VBGT 331																								0.003~0.008	0.020~0.059
		332																								0.006~0.010	0.028~0.079
Finishing	VP1 	VBMT 330.5-VP1																								0.002~0.008	0.006~0.059
		331-VP1																								0.002~0.008	0.007~0.071
		332-VP1																								0.002~0.008	0.008~0.071
Finishing	FS new  [High precision]	VBGT 220.2-FS																●			●					0.0004~0.0063	0.0012~0.0551
		220.5-FS																●			●					0.0008~0.0071	0.0016~0.0591
		221-FS																●			●					0.0016~0.0075	0.0024~0.0630
		330.2-FS																●			●					0.0004~0.0063	0.0016~0.0709
		330.5-FS																●			●					0.0008~0.0071	0.0020~0.0787
		331-FS																●			●					0.0016~0.0075	0.0031~0.0787
Finishing	FS new  [Ultra high precision]	VBGT 220.2MFN-FS																								0.0004~0.0063	0.0012~0.0551
		220.5MFN-FS																								0.0008~0.0071	0.0016~0.0591
		221MFN-FS																								0.0016~0.0075	0.0024~0.0630
		330.2FN-FS																								0.0004~0.0063	0.0016~0.0709
		330.5MFN-FS																								0.0008~0.0071	0.0020~0.0787
		331MFN-FS																								0.0016~0.0075	0.0031~0.0787
Finishing	VP1 	VBGT 220.5-VP1																								0.001~0.004	0.003~0.059
		330.5-VP1																								0.002~0.008	0.006~0.059
		331-VP1																								0.002~0.008	0.007~0.071

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVABR/L	B207	SVVBN	B208
SVHBR/L	B207	SVQBR/L	B234
SVJBR/L	B125, 207	SVUBR/L	B235

VB○○



Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8	7/64~1/9

Rhombic **35° Positive**
Relief Angle: 5°

Workpiece			Machining types
	Steel	P	● Continuous cutting
	Stainless steel	M	⬌ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert		Designation		Cermet		Coated		Coated																Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	KF [High precision]	VBGT	220.1R-KF																●			●					~0.002	0.002~0.051
			220.2R-KF																●			●					0.001~0.003	0.002~0.059
			220.5R-KF																●			●		●			0.001~0.005	0.002~0.067
			220.1L-KF																●			●					~0.002	0.002~0.051
			220.2L-KF																●			●					0.001~0.003	0.002~0.059
			220.5L-KF																●			●					0.001~0.005	0.002~0.067
Medium to finishing	KM [High precision]	VBGT	22R-KM																								~0.002	0.002~0.051
			220R-KM																								0.001~0.003	0.002~0.059
			220.5R-KM																								0.001~0.005	0.002~0.067
			22L-KM																								~0.002	0.002~0.051
			220L-KM																								0.001~0.003	0.002~0.059
			220.5L-KM																								0.001~0.005	0.002~0.067

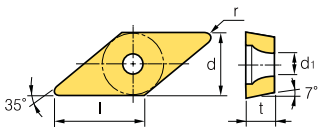
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVABR/L	B207	**SVVBN**	B208
SVHBR/L	B207	**SVQBR/L**	B234
SVJBR/L	B125, 207	**SVUBR/L**	B235

VC○○

Rhombic 35° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
1.5	3/16	3/32	3/32
22	1/4	1/8	7/64~9/64
33	3/8	3/16	11/64

Workpiece			Machining types
	Steel	P	● Continuous cutting
	Stainless steel	M	⬌ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	FP new [Mild steel]	VCMT	1.51.50.5-FP				●	●																		0.0004~0.0039	0.0020~0.0031
			1.51.51-FP				●	●																		0.0004~0.0039	0.0039~0.0354
			1.532-FP				●	●																		0.0016~0.0394	0.0039~0.0394
			331-FP																							0.0004~0.0039	0.0039~0.0394
			332-FP	●	●		●	●	●								●					●				0.0016~0.0047	0.0039~0.0394
Finishing	VF	VCMT	1.51.50.5-VF																							0.002~0.008	0.012~0.039
			1.51.51-VF										●													0.004~0.010	0.012~0.039
			221-VF						●																	0.001~0.007	0.006~0.047
			331-VF						●				●									●				0.002~0.008	0.006~0.060
Finishing	VL	VCMT	1.51.50.5-VL					●	●				●						●								0.001~0.003	0.004~0.032
			1.51.51-VL					●	●				●						●								0.002~0.004	0.004~0.036
			331-VL					●	●							●	●	●			●	●					0.002~0.008	0.012~0.059
			332-VL					●	●								●	●			●	●					0.002~0.008	0.012~0.059
			333-VL																								0.004~0.010	0.012~0.059
Medium to finishing	HMP	VCMT	331-HMP							●	●								●			●		●			0.002~0.008	0.012~0.106
			332-HMP							●	●								●			●		●			0.004~0.014	0.020~0.138
Medium to finishing	MP new	VCMT	1.51.50.5-MP					●	●																		0.001~0.006	0.004~0.039
			1.51.51-MP					●	●																		0.002~0.007	0.004~0.039
			220.5-MP																								0.002~0.007	0.008~0.071
			221-MP																								0.002~0.007	0.008~0.071
			331-MP					●	●					●	●	●	●				●	●					0.002~0.007	0.012~0.078
			332-MP					●	●					●	●	●	●	●			●	●					0.004~0.009	0.020~0.091
			333-MP													●	●	●			●	●					0.004~0.013	0.020~0.091
Finishing	VP1	VCMT	331-VP1																								0.002~0.008	0.007~0.071
			332-VP1																								0.002~0.008	0.008~0.071

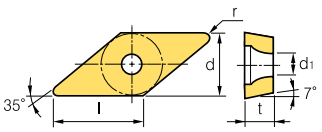
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVJCR/L	B125, 208, 234	SVQCR/L	B235
SVVCN	B208	SVUCR/L	B235

VC○○

Rhombic 35° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8	7/64~9/64
12(Metric)*	0.295	1/8	7/64
33	3/8	3/16	11/64

*Non-ISO standard

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ⬌ ✱ ⬌ ✱ ● ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ✱ ⬌ ⬌ ⬌ ● ●	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ● ⬌ ✱ ● ⬌ ⬌ ⬌ ● ⬌
Hardened steel	H	● ⬌

Insert		Designation		Cermet		Coated		Coated														Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	FS new [High precision]	VCGT	220.2-FS																●			●					0.0004~0.0063	0.0012~0.0551
			220.5-FS																●			●					0.0008~0.0071	0.0016~0.0591
			221-FS																●			●					0.0016~0.0075	0.0024~0.0630
			330.2-FS																●			●					0.0004~0.0063	0.0016~0.0709
			330.5-FS																●			●					0.0008~0.0071	0.0020~0.0787
			331-FS																●			●					0.0016~0.0075	0.0031~0.0787
Finishing	FS new [Ultra high precision]	VCGT	220.2MFN-FS																								0.0004~0.0063	0.0012~0.0551
			220.5MFN-FS																								0.0008~0.0071	0.0016~0.0591
			221MFN-FS																								0.0016~0.0075	0.0024~0.0630
			330.2FN-FS																								0.0004~0.0063	0.0016~0.0709
			330.5MFN-FS																								0.0008~0.0071	0.0020~0.0787
			331MFN-FS																								0.0016~0.0075	0.0031~0.0787
Medium cutting	MS new [High precision]	VCGT	110301-MS																●			●					0.0008~0.0091	0.0020~0.0787
			110302-MS																●			●					0.0012~0.0098	0.0028~0.0984
			110304-MS																●			●					0.0020~0.0098	0.0035~0.0984
Medium cutting	MS new [Ultra high precision]	VCGT	220.2MFN-MS																●			●					0.0008~0.0091	0.0020~0.0787
			220.5MFN-MS																●			●					0.0012~0.0098	0.0028~0.0984
			221MFN-MS																●			●					0.0020~0.0098	0.0035~0.0984
Medium cutting	MS new [Ultra high precision]	VCGT	1203008FN-MS																●			●					0.0008~0.0079	0.0020~0.0787
			120301FN-MS																●			●					0.0012~0.0102	0.0028~0.0984
			120302FN-MS																●			●					0.0020~0.0110	0.0035~0.0984
			120304FN-MS																●			●					0.0024~0.0118	0.0039~0.1102
Finishing	VP1 [High precision]	VCGT	220.2-VP1																●		●	●	●		●		0.001~0.006	0.002~0.006
			220.5-VP1																●		●	●	●		●		0.001~0.007	0.004~0.039
			221-VP1																●		●	●	●		●		0.001~0.007	0.006~0.047
			331-VP1						●																		0.002~0.008	0.007~0.071
			332-VP1					●																			0.002~0.008	0.008~0.071

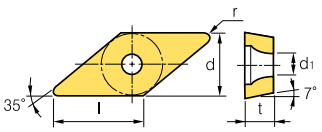
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVJCR/L	B125, 208, 234	SVQCR/L	B235
SVVCN	B208	SVUCR/L	B235

VC○○

Rhombic 35° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d1
22	1/4	1/8	7/64~9/64
12(Metric)*	0.295	1/8	7/64
*Non-ISO standard			

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ⬌ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ⬌ ● ⬌ ⬌ ✱ ⬌ ⬌ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ● ⬌ ⬌ ● ●	✱ Interrupted cutting
Non-ferrous metal	N	⬌ ⬌ ⬌ ⬌ ● ●
Heat resistant alloy, Titanium alloy	S	● ⬌ ● ✱ ⬌ ⬌ ⬌ ⬌
Hardened steel	H	● ⬌ ⬌ ● ⬌ ⬌

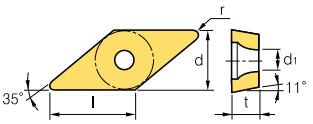
Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VP1 [Ultra high precision]	VCGT	220.2MFN-VP1																●			●					0.001~0.006	0.002~0.006
			220.5MFN-VP1																●			●					0.001~0.007	0.004~0.039
			221MFN-VP1																●			●					0.001~0.007	0.006~0.047
			1203008FN-VP1																								0.001~0.005	0.002~0.047
			120301FN-VP1																								0.002~0.005	0.003~0.047
			120302FN-VP1																								0.002~0.006	0.003~0.047
			120304FN-VP1																								0.002~0.008	0.004~0.059
Finishing	VP1 [Ultra high precision]	VCGX	120300MFR-VP1																●			●					0.001~0.004	0.002~0.020
			120301MFR-VP1																●			●					0.001~0.006	0.002~0.020
			120302MFR-VP1																●			●					0.001~0.007	0.004~0.039
			120304MFR-VP1																●			●					0.001~0.008	0.005~0.047
			120308MFR-VP1																●			●					0.002~0.008	0.006~0.047
Finishing	KF [High precision]	VCGT	220.1R-KF																								0.001 ~0.002	0.002~0.051
			220.2R-KF																								0.001~0.003	0.002~0.059
			220.5R-KF																					●			0.001~0.005	0.002~0.067
			220.1L-KF																								0.001~0.002	0.002~0.051
			220.2L-KF																								0.001~0.003	0.002~0.059
			220.5L-KF																								0.001~0.005	0.002~0.067
Finishing	KF [Ultra high precision]	VCET	220.13MFR-KF																●			●					0.001~0.002	0.002~0.051
			220.2MFR-KF																●			●					0.001~0.003	0.002~0.059
			220.5MFR-KF																●			●					0.001~0.005	0.002~0.067
			220.13MFL-KF																●			●					0.001~0.002	0.002~0.051
			220.2MFL-KF																●			●					0.001~0.003	0.002~0.059
			220.5MFL-KF																●			●					0.001~0.005	0.002~0.067
Finishing	KM [High precision]	VCGT	220.1R-KM																								0.001~0.002	0.002~0.051
			220.2R-KM																								0.001~0.003	0.002~0.059
			220.5R-KM																					●			0.001~0.005	0.002~0.067
			220.1L-KM																								0.001~0.002	0.002~0.051
			220.2L-KM																								0.001~0.003	0.002~0.059
			220.5L-KM																								0.001~0.005	0.002~0.067
Medium to finishing	KM [Ultra high precision]	VCET	220.13MFR-KM																●			●					0.001~0.002	0.002~0.051
			220.2MFR-KM																●			●					0.001~0.003	0.002~0.059
			220.5MFR-KM																●			●					0.001~0.005	0.002~0.067
			220.13MFL-KM																●			●					0.001~0.002	0.002~0.051
			220.2MFL-KM																●			●					0.001~0.003	0.002~0.059
			220.5MFL-KM																●			●					0.001~0.005	0.002~0.067

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVJCR/L	B125, 208, 234	SVQCR/L	B235
SVVCN	B208	SVUCR/L	B235

VP ○○



Dimensions (inch)			
Size	d	t	d_1
1.5	3/16	3/32	6/64
22	1/4	1/8	7/64

Rhombic 35° Positive
Relief Angle: 11°

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	⬌ ⬌ ⬌ ✱ ✱ ✱ ● ⬌ ⬌ ✱ ✱ ● ⬌ ⬌ ✱	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ✱ ✱ ⬌ ⬌ ⬌ ● ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌	
Heat resistant alloy, Titanium alloy	S	● ● ✱ ✱ ● ⬌ ⬌ ● ⬌	
Hardened steel	H	● ⬌	

Insert		Designation		Cermet		Coated		Coated															Uncoated		Cutting Condition	
				CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Finishing	VP1 [High precision]	VPGT	220.2-VP1																●		●	●	●				0.001~0.006	0.002~0.006
			220.5-VP1																●		●	●	●		●		0.001~0.007	0.004~0.039
			221-VP1																●		●	●	●		●		0.001~0.007	0.006~0.047
Finishing	VP1 [Ultra high precision]	VPGT	220.2MFN-VP1																●			●					0.001~0.006	0.002~0.006
			220.5MFN-VP1																●			●					0.001~0.007	0.004~0.039
			221MFN-VP1																●			●					0.001~0.007	0.006~0.047
Finishing	KF [Ultra high precision]	VPET	1.51.50.13MFR-KF																●			●					0.001~0.002	0.002~0.059
			1.51.50.2MFR-KF																●			●					0.001~0.003	0.002~0.059
			1.51.50.5MFR-KF																●			●					0.001~0.005	0.002~0.067
			1.51.50.13MFL-KF																●			●					0.001~0.002	0.002~0.059
			1.51.50.2MFL-KF																●			●					0.001~0.003	0.002~0.059
			1.51.50.5MFL-KF																●			●					0.001~0.005	0.002~0.067
Medium to finishing	KM [Ultra high precision]	VPET	1.51.50.13MFR-KM																●			●					0.001~0.002	0.002~0.059
			1.51.50.2MFR-KM																●			●					0.001~0.003	0.002~0.059
			1.51.50.5MFR-KM																●			●					0.001~0.005	0.002~0.067
			1.51.50.13MFL-KM																●			●					0.001~0.002	0.002~0.059
			1.51.50.2MFL-KM																●			●					0.001~0.003	0.002~0.059
			1.51.50.5MFL-KM																●			●					0.001~0.005	0.002~0.067

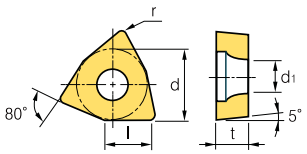
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVABR/L	B207	SVVBN	B208
SVJBR/L	B125, 207		

WB○○

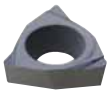
Trigon 80° Positive
Relief Angle: 5°



Dimensions (inch)			
Size	d	t	d_1
1.2	5/32	1/16	11/128
1.5	3/16	3/32	3/32

Workpiece			Machining types
Steel	P	● ✱ ● ⬌ ● ⬌ ⬌ ✱ ✱ ✱ ● ● ⬌ ✱	● Continuous cutting
Stainless steel	M	✱ ⬌ ⬌ ✱ ⬌ ⬌ ⬌ ● ⬌ ✱ ⬌ ✱ ⬌ ● ⬌ ⬌ ⬌	⬌ General cutting
Cast iron	K	● ✱ ● ⬌ ⬌ ⬌ ⬌ ⬌ ● ⬌ ⬌ ⬌ ● ⬌	✱ Interrupted cutting
Non-ferrous metal	N	● ⬌
Heat resistant alloy, Titanium alloy	S	● ● ⬌ ✱ ● ⬌ ⬌ ● ⬌
Hardened steel	H	● ⬌ ⬌ ● ⬌

Insert	Designation	Cermet		Coated		Coated															Uncoated		Cutting Condition	
		CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (ipr)	ap (inch)
Medium to finishing	WBGT 1.210.5R																								~0.002	0.004~0.012
	1.51.51R																								~0.004	0.004~0.020
	1.210.5L																					●	●		~0.003	0.004~0.016
	1.51.50.5L																								~0.003	0.004~0.016
	1.51.51L																								~0.004	0.004~0.020



Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders	
Designation	Page
SWUBR/L	B239

Technical Information for Aluminum

AK special chip breaker for aluminum

- Unique and 3-dimensional rake angle controls chip breaking and chip flow ensuring longer tool life and reducing cutting load
- High rake angle at cutting edge part reduces cutting load to increase tool life
- Buffed finish on top face controls chip flow reducing built-up edge



1. High rake angle & tabby pattern chip pocket - Low cutting load
2. Unique rake angle design - Effective chip breaking and good chip flow
3. Unique and 3-dimensional top face - Longer tool life & Excellent surface roughness
4. Tabby pattern & Sharp cutting edge - Distributing cutting load, long tool life
5. Buffed on top face - Excellent machining, Reducing built-up edge, Excellent chip flow

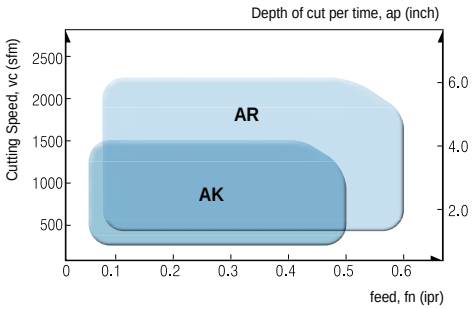
AR special chip breaker for aluminum

- AR chip breaker ensures reliability and good cutting performance at high feed, speed and interrupted machining

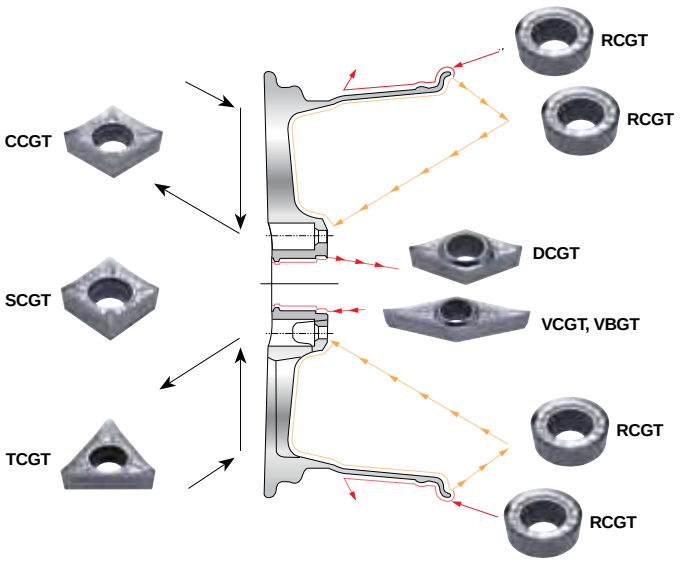


1. Flat corner cutting edge improved productivity at high feed machining and ensures good surface roughness and reliability owing to strong cutting edge
2. Specially buffed on top face controls chip flow reducing built-up edge
3. KORLOY's own technology applied for cutting edge and corner shape controlling chip flow ensures longer tool life
4. KORLOY special chip breaker design controls chip flow at high speed machining

AK and AR chip breaker specially developed for aluminum



	Recommendation range	Grades
AK	ap=0.004~0.20 inch fn=0.001~0.020 ipr	H01 (Uncoated cemented carbides K10~K20) ND1000 (Diamond coating) PD1000 (DLC coating)
AR	ap=0.004~0.20 inch fn=0.001~0.020 ipr	H01 (Uncoated cemented carbides K10~K20) ND1000 (Diamond coating) PD1000 (DLC coating)



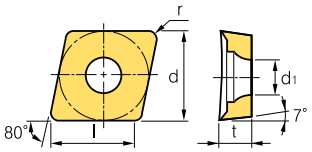
Features of H01 and cutting conditions

- Good for aluminum and alloy steel machining - Surface treatment reduces built-up edge
- 3-dimensional design reduces cutting resistance and ensures high machinability in high feed and speed machining

Workpiece		Hardness (HB)	kc (MPa)	vc (sfm)	fn (ipr)
Aluminum alloy (forged)	before heat treatment	50~70	500~600	3300~8250	0.004~0.024
	after heat treatment	90~110	700~900	990~3300	0.004~0.020
Aluminum alloy (cast)	before heat treatment	70~80	700~800	990~3300	0.004~0.024
	after heat treatment	80~100	800~950	660~1980	0.004~0.016
Copper alloy	-	90~110	700	820~1980	0.004~0.020
Non-ferrous metal, etc	-	100	1700	490~990	0.004~0.024

CC ○○

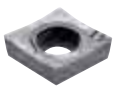
Rhombic 80° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64
43	1/2	3/16	7/32

Workpiece							
Steel	P						
Stainless steel	M						
Cast iron	K						
Non-ferrous metal	N	✱	●	✱	⬌	✱
Heat resistant alloy, Titanium alloy	S						
Hardened steel	H						

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation		Coated			Uncoated		Cutting Condition	
			PC5040	PD1005	PD1010	H01	H05	fn (ipr)	ap (inch)
AK 	CCGT	**21.50.5-AK**	●			●	●	0.001~0.005	0.002~0.118
		21.51-AK	●		●	●	●	0.001~0.006	0.004~0.118
		21.52-AK				●	●	0.001~0.008	0.004~0.157
		32.50.5-AK	●		●	●	●	0.001~0.008	0.002~0.118
		32.51-AK	●		●	●	●	0.001~0.012	0.004~0.197
		32.52-AK	●			●	●	0.001~0.020	0.004~0.197
		430.5-AK				●	●	0.001~0.012	0.002~0.157
		431-AK	●		●	●	●	0.001~0.020	0.004~0.197
		432-AK				●	●	0.002~0.031	0.004~0.217
AR 	CCGT	**21.50.5-AR**				●	●	0.001~0.012	0.012~0.157
		21.51-AR						0.001~0.014	0.020~0.177
		21.52-AR						0.002~0.020	0.020~0.177
		32.50.5-AR				●	●	0.001~0.018	0.012~0.157
		32.51-AR				●	●	0.002~0.020	0.020~0.177
		32.52-AR				●	●	0.002~0.024	0.020~0.236
		430.5-AR						0.002~0.020	0.012~0.197
		431-AR				●	●	0.002~0.024	0.020~0.236
		432-AR				●	●	0.002~0.026	0.020~0.236
		433-AR						0.003~0.028	0.020~0.256

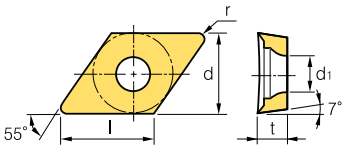
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SCACR/L	B123, 202	**SCLCR/L**	B123, 202, 227

DC ○○

Rhombic 55° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d1
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

Workpiece							Machining types
Steel	P						● Continuous cutting
Stainless steel	M						⧓ General cutting
Cast iron	K						✱ Interrupted cutting
Non-ferrous metal	N	✱	●	✱	⧓	✱	
Heat resistant alloy, Titanium alloy	S						
Hardened steel	H						

Insert	Designation		Coated			Uncoated		Cutting Condition	
			PC5040	PD1005	PD1010	H01	H05	fn (ipr)	ap (inch)
AK 	DCGT	**21.50.5-AK**	●			●	●	0.001~0.008	0.002~0.118
		21.51-AK	●		●	●	●	0.001~0.012	0.004~0.157
		21.52-AK	●			●	●	0.001~0.016	0.004~0.157
		32.50.5-AK	●		●	●	●	0.001~0.012	0.002~0.157
		32.51-AK	●		●	●	●	0.001~0.020	0.004~0.197
		32.52-AK	●		●	●	●	0.001~0.020	0.004~0.197
		32.53-AK				●	●	0.002~0.024	0.006~0.197
AR 	DCGT	**21.50.5-AR**				●	●	0.001~0.012	0.012~0.157
		21.51-AR				●	●	0.001~0.016	0.020~0.197
		21.52-AR				●	●	0.002~0.020	0.020~0.197
		32.50.5-AR						0.001~0.018	0.012~0.236
		32.51-AR				●	●	0.002~0.020	0.020~0.236
		32.52-AR				●	●	0.002~0.024	0.020~0.236
		32.53-AR				●	●	0.003~0.026	0.020~0.256

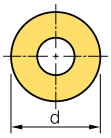
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

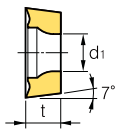
● : Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SDACR/L	B202	**SDQCR/L**	B229
SDJCR/L	B123, 203	**SDUCR/L**	B230
SDNCN	B124, 203	**SDZCR/L**	B231

RC ○○

Round **Positive**
Relief Angle: 7°





Dimensions (inch)			
Size	d	t	d_1
06	0.237	3/32	7/64
08	0.315	1/8	9/94
10	0.394	1/8~5/32	11/64
12	0.472	3/16	11/64

Workpiece							
Steel	P						
Stainless steel	M						
Cast iron	K						
Non-ferrous metal	N	✱	●	✱	◆	✱
Heat resistant alloy, Titanium alloy	S						
Hardened steel	H						

Machining types
● Continuous cutting
◆ General cutting
✱ Interrupted cutting

Insert	Designation		Coated			Uncoated		Cutting Condition	
			PC5040	PD1005	PD1010	H01	H05	fn (ipr)	ap (inch)
AK 	RCGT	**0602M0-AK**				●	●	0.002~0.008	0.020~0.079
		0803M0-AK				●	●	0.002~0.010	0.020~0.098
		1003M0-AK				●	●	0.004~0.012	0.039~0.118
		1204M0-AK				●	●	0.004~0.014	0.039~0.138
AR 	RCGT	**0602M0-AR**						0.002~0.008	0.020~0.079
		0803M0-AR						0.002~0.010	0.020~0.098
		1003M0-AR				●	●	0.004~0.012	0.039~0.118
		10T3M0-AR						0.004~0.012	0.039~0.118
		1204M0-AR						0.004~0.014	0.039~0.138

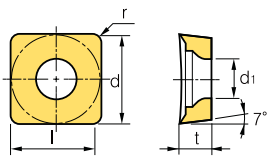
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SRDCN	B203	**SRGCR/L**	B204

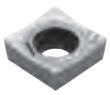
SC ○○

Square **90° Positive**
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d_1
32.5	8/3	5/32	11/64
43	1/2	3/16	7/32

Workpiece			Machining types
Steel	P		● Continuous cutting
Stainless steel	M		⧓ General cutting
Cast iron	K		✱ Interrupted cutting
Non-ferrous metal	N	✱ ● ✱ ⧓ ✱	
Heat resistant alloy, Titanium alloy	S		
Hardened steel	H		

Insert	Designation		Coated			Uncoated		Cutting Condition	
			PC5040	PD1005	PD1010	H01	H05	fn (ipr)	ap (inch)
AK 	SCGT	**32.50.5-AK**	●				●	0.001~0.012	0.004~0.157
		32.51-AK	●			●	●	0.002~0.016	0.004~0.197
		32.52-AK				●	●	0.001~0.016	0.004~0.197
		431-AK				●	●	0.001~0.020	0.004~0.197
		432-AK				●	●	0.002~0.024	0.004~0.217
		434-AK						0.002~0.024	0.004~0.217
AR 	SCGT	**32.50.5-AR**						0.001~0.016	0.020~0.197
		32.51-AR				●	●	0.002~0.020	0.020~0.236
		32.52-AR						0.002~0.020	0.020~0.256
		431-AR				●	●	0.002~0.024	0.020~0.256
		432-AR						0.002~0.024	0.020~0.276
		434-AR						0.002~0.024	0.020~0.276

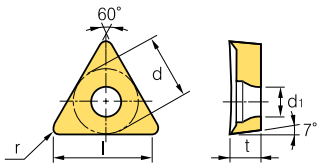
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SSBCR/L	B204	**SSKCR/L**	B205
SSDCN	B204	**SSSCR/L**	B205

TC ○○

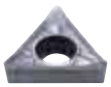
Triangular **60° Positive**
Relief Angle: 7°



Dimensions (inch)			
Size	**d**	**t**	**d_1**
1.8	7/32	3/32	13/128
21.5	1/4	3/32	7/64
32.5	3/8	5/32	11/64

Workpiece							
Steel	P						
Stainless steel	M						
Cast iron	K						
Non-ferrous metal	N	✱	●	✱	⬌	✱
Heat resistant alloy, Titanium alloy	S						
Hardened steel	H						

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation		Coated			Uncoated		Cutting Condition	
			PC5040	PD1005	PD1010	H01	H05	fn (ipr)	ap (inch)
AK 	TCGT	**1.81.50.5-AK**				●	●	0.000~0.005	0.002~0.118
		1.81.51-AK				●	●	0.001~0.006	0.004~0.157
		21.50.5-AK	●			●	●	0.001~0.008	0.002~0.157
		21.51-AK	●			●	●	0.001~0.012	0.004~0.157
		21.52-AK				●	●	0.001~0.016	0.004~0.197
		32.50.5-AK				●	●	0.001~0.012	0.002~0.197
		32.51-AK				●	●	0.001~0.016	0.004~0.217
		32.52-AK				●	●	0.001~0.020	0.004~0.217
		32.53-AK				●	●	0.002~0.024	0.006~0.217
		32.54-AK				●	●	0.002~0.031	0.006~0.217
		32.56.3-AK						0.002~0.035	0.008~0.276
AR 	TCGT	**1.81.50.5-AR**						0.001~0.007	0.012~0.118
		1.81.51-AR				●	●	0.001~0.010	0.012~0.197
		21.50.5-AR						0.001~0.012	0.012~0.157
		21.51-AR				●	●	0.001~0.016	0.012~0.197
		21.52-AR						0.002~0.018	0.020~0.236
		32.50.5-AR				●	●	0.001~0.018	0.012~0.197
		32.51-AR				●	●	0.002~0.020	0.020~0.236
		32.52-AR				●	●	0.002~0.024	0.020~0.236
		32.53-AR						0.002~0.026	0.020~0.236
		32.54-AR						0.003~0.028	0.020~0.256
		32.56.3-AR						0.004~0.039	0.031~0.276

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

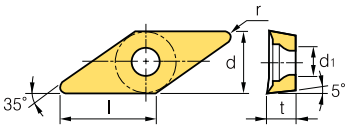
●: Korea Stock

Available tool holders			
Designation	**Page**	**Designation**	**Page**
STACR/L	B205	**STTCR/L**	B206, 245
STFCR/L	B206	**STWCR/L**	B245
STGCR/L	B206		

VB ○○



Rhombic **35° Positive**
Relief Angle: 5°



Dimensions (inch)			
Size	d	t	d1
22	1/4	1/8	7/64
33	3/8	3/16	11/64

Workpiece								Machining types
	Steel	P						● Continuous cutting
	Stainless steel	M						⧓ General cutting
	Cast iron	K						✱ Interrupted cutting
	Non-ferrous metal	N	✱	●	✱	⧓	✱	
	Heat resistant alloy, Titanium alloy	S						
	Hardened steel	H						

Insert	Designation		Coated			Uncoated		Cutting Condition	
			PC5040	PD1005	PD1010	H01	H05	fn (ipr)	ap (inch)
AK 	VBGT	**220.5-AK**				●	●	0.001~0.006	0.002~0.118
		221-AK				●	●	0.001~0.006	0.004~0.157
		222-AK					●	0.001~0.007	0.004~0.197
		330.5-AK						0.001~0.012	0.002~0.157
		331-AK				●	●	0.001~0.016	0.004~0.197
		332-AK				●	●	0.001~0.020	0.004~0.197
		333-AK					●	0.002~0.024	0.004~0.217
AR 	VBGT	**220.5-AR**						0.001~0.014	0.012~0.118
		221-AR						0.001~0.018	0.012~0.157
		222-AR						0.001~0.020	0.020~0.236
		330.5-AR						0.002~0.018	0.012~0.197
		331-AR				●	●	0.002~0.020	0.020~0.236
		332-AR				●	●	0.002~0.024	0.020~0.236
		333-AR						0.002~0.028	0.020~0.256

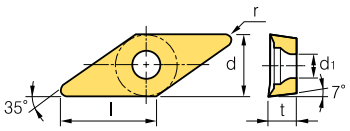
Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVABR/L	B207	**SVVBN**	B208
SVHBR/L	B207	**SVQBR/L**	B234
SVJBR/L	B125, 207	**SVUBR/L**	B235

VC ○○

Rhombic 35° Positive
Relief Angle: 7°



Dimensions (inch)			
Size	d	t	d1
2.5	5/16	1/8	7/64~9/64
22	1/4	1/8	7/64
33	3/8	3/16	11/64
43.5	1/2	7/32	7/32

Workpiece							
Steel	P						
Stainless steel	M						
Cast iron	K						
Non-ferrous metal	N	✱	●	✱	⬌	✱
Heat resistant alloy, Titanium alloy	S						
Hardened steel	H						

Machining types
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation		Coated			Uncoated		Cutting Condition	
			PC5040	PD1005	PD1010	H01	H05	fn (ipr)	ap (inch)
AK 	VCGT	220.2-AK				●		0.001~0.006	0.002~0.118
		220.5-AK	●			●	●	0.001~0.008	0.002~0.118
		221-AK	●		●	●	●	0.001~0.010	0.004~0.157
		222-AK				●	●	0.001~0.012	0.004~0.197
		2.520.5-AK	●			●	●	0.001~0.014	0.004~0.197
		2.521-AK	●			●	●	0.001~0.014	0.004~0.197
		2.522-AK						0.002~0.016	0.004~0.197
		330.5-AK				●	●	0.001~0.012	0.002~0.197
		331-AK			●	●	●	0.001~0.016	0.004~0.197
		332-AK			●	●	●	0.001~0.020	0.004~0.197
		333-AK				●	●	0.001~0.020	0.004~0.197
		43.54-AK				●	●	0.001~0.024	0.004~0.276
		43.56.3-AK					●	0.002~0.028	0.004~0.276
		43.57.5-AK				●	●	0.003~0.039	0.004~0.276
AR 	VCGT	220.2-AR						0.001~0.008	0.004~0.118
		220.5-AR				●	●	0.001~0.010	0.012~0.118
		221-AR				●	●	0.001~0.014	0.012~0.157
		222-AR						0.002~0.018	0.020~0.236
		2.520.5-AR					●	0.001~0.016	0.020~0.118
		2.521-AR				●	●	0.001~0.018	0.020~0.157
		2.522-AR						0.002~0.020	0.020~0.197
		330.5-AR				●	●	0.001~0.016	0.012~0.197
		331-AR				●	●	0.002~0.020	0.020~0.236
		332-AR				●	●	0.002~0.024	0.020~0.236
		333-AR						0.002~0.026	0.020~0.256
		43.54-AR						0.004~0.026	0.031~0.256
		43.56.3-AR						0.004~0.028	0.031~0.276
		43.57.5-AR				●	●	0.005~0.030	0.039~0.276

Cutting edge geometry **A37~A49** Recommended chip breaker **B04~B15** Code system **B34~B35**

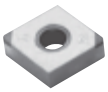
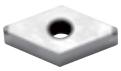
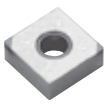
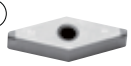
●: Korea Stock

Available tool holders			
Designation	Page	Designation	Page
SVJCR/L	B125, 208, 234	SVQCR/L	B235
SVVCN	B208	SVUCR/L	B235

cBN

Multi-Corner Type (Negative)

Dimensions (inch)			
Size	d	t	d_1
33	3/8	3/16	5/32
43	1/2	3/16	13/64
44	1/2	1/4	13/64

Insert	Designation		Coated					Uncoated						Available tool holders	
			DNC100	DNC250	DNC300	DNC350	DNC400	DB1000	DB2000	DBN250	DBN350	DBN700A	DBNX20	Designation	Page
CN○○ 80° Nega 	2NU-CNGA	431	●	●	●	●		●				●		DCBNR/L	B179
		431F		●		●								DCLNR/L	B179/B220
		431T		●		●		●						MCKNR/L	B195
		431W		●										MCLNR/L	B195/B225
		431WF		●										MCMNN	B195
		432	●	●	●	●		●	●			●		PCBNR/L	B184
		432F		●		●								PCLNR/L	B185/B222
		432T		●		●		●							
		432W		●		●		●				●			
		432WF							●						
		433	●	●	●	●									
		433F		●		●									
		433T		●		●									
		433W		●				●				●			
		433WT						●							
	T-2NU-CNGA	431		●											
		432		●		●									
	4NU-CNGA	431		●											
		432		●		●									
		433		●											
	4NS-CNGA	432					●								
		433					●								
DN○○ 55° Nega 	2NU-DNGA	431		●	●	●			●	●				DDJNR/L	B180
		431F		●		●								MDJNR/L	B196
		431T		●		●								MDNNN	B196
		432		●	●	●		●	●	●				MDQNR/L	B197
		432F		●		●								MDUNR/L	B225
		432T		●		●		●	●					PDJNR/L	B185
		433		●		●								PDNNR/L	B186
		433F		●		●								PDSNR/L	B222
		433T		●		●								PDUNR/L	B223
		441	●	●		●									
		442	●	●		●									
	4NU-DNGA	431		●		●									
		432		●		●									
		433		●		●									
		442		●											
	4NS-DNGA	442					●								
		443					●								
SN○○ 90° Nega 	4NU-SNGA	431		●								●		DSBNR/L MSBNR/L	B180 B197
		432		●								●		MSDNN MSKNR/L	B197 B198/B225
														MSRNR/L MSSNR/L	B198 B199
														PSBNR/L PSDNN	B187 B188
														PSKNR/L	B188/B223
TN○○ 60° Nega 	3NU-TNGA	331		●		●		●	●	●		●		MTENN MTFNR/L	B199 B199/B226
		331T		●										MTGNR/L MTJNR/L	B200 B200
		332		●		●						●		PTFNR/L PTGNR/L	B189/B223 B190
		332F		●										PTTNR/L WTENN	B190 B191
		332T		●										WTJNR/L WTXNR/L	B191 B191
		333				●									
VN○○ 35° Nega 	2NU-VNGA	331	●	●	●	●				●		●		MVJNR/L	B200
		331F		●		●								MVQNR/L	B201
		331T		●		●								MVUNR/L	B226
		332	●	●	●	●		●	●	●		●		MVVNN	B201
		332F		●		●									
		332T		●		●			●						
	T-2NU-VNGA	332		●				●							

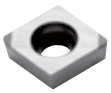
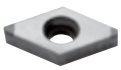
● : Korea Stock

cBN

Multi-Corner Type (Positive)

Dimensions (inch)			
Size	d	t	d_1
1.81.5	7/32	3/32	7/64
21.5	1/4	3/32	7/64
22	1/4	1/8	7/64

Dimensions (inch)			
Size	d	t	d_1
32.5	3/8	5/32	11/64
33	3/8	3/16	11/64

Insert	Designation		Coated					Uncoated						Available tool holders	
			DNC100	DNC250	DNC300	DNC350	DNC400	DB1000	DB2000	DBN250	DBN350	DBN700A	DBNX20	Designation	Page
CC○○ 80° Posi 	2NU-CCGW	**21.50.5**		●										SCACR/L	B202
		21.50.5T		●										SCLCR/L	B202/B227/B237
		21.51		●					●						
		21.51F		●											
		21.51T		●											
		21.52						●							
		32.50.5		●											
		32.51													
		32.51T		●											
		32.52	●	●		●			●	●		●			
		32.52T		●											
		32.52W		●											
DC○○ 55° Posi 	2NU-DCGW	**21.51**		●				●						SDACR/L	B202
		21.52		●										SDJCR/L	B203
		21.52T						●						SDNCN	B203
		32.50.5		●										SDQCR/L	B229
		32.51	●	●		●		●		●				SDUCR/L	B230
		32.51F		●										SDZCR/L	B231
		32.51T		●											
		32.52	●	●		●				●		●			
		32.52T		●											
	T-2NU-DCGW	**32.51**		●											
		32.52		●		●									
TC○○ 60° Posi 	3NU-TCGW	**1.81.51**		●										STACR/L	B205
		1.81.51F		●										STFCR/L	B206/B232
		1.81.51T		●										STGCR/L	B206
														STTCR/L	B206
TP○○ 60° Posi 	3NU-TPGW	**221**		●		●		●	●			●			
		221F		●											
		221T		●											
		222		●		●		●	●			●			
		222F		●											
		222T		●											
	3NU-TPGN	**222**						●	●					CTFPR/L	B194/B224
		331		●										CTGPR/L	B194
		332		●											
	3NU-TPGB	**221**		●						●				CTFPR/L	B194/B224
		221T		●										CTGPR/L	B194
		222		●						●					
		222F		●											
		222T		●											
VB○○ 35° Posi 	2NU-VBGW	**330.5**		●										SVABR/L	B207
		331	●	●		●		●		●		●		SVHBR/L	B207
		331F		●										SVJBR/L	B207
		331T		●										SVQBR/L	B234
		332	●	●		●			●	●				SVUBR/L	B235
		332F		●											
		332T		●											
	T-2NU-VBGW	**332**				●									
VC○○ 35° Posi 	2NU-VCGW	**331**		●		●									
		331F		●											
		331T		●											
		332		●											
		332F		●											
		332T		●					●	●					
	T-2NU-VCGW	**331**		●											
		332		●											

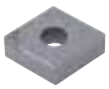
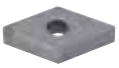
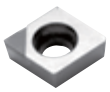
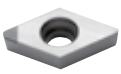
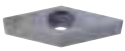
●: Korea Stock

cBN

Dimensions (inch)			
Size	d	t	d_1
22	1/4	1/8	-
32.5	3/8	5/32	11/64

Dimensions (inch)			
Size	d	t	d_1
33	3/8	3/16	5/32
43	1/2	3/16	13/64

Regrinding Type (Negative/Positive)

Insert	Designation		Coated					Uncoated						Available tool holders			
			DNC100	DNC250	DNC300	DNC350	DNC400	DB1000	DB2000	DBN250	DBN350	DBN700A	DBNX20	Designation		Page	
CN○○ 80° Nega 	CNMA	431								●				DCBNR/L	MCKNR/L	B179	B195
		432								●			●	DCLNR/L	MCLNR/L	B179/B220	B195/B225
	T-CNMA	432								●				PCBNR/L	MCMNN	B184	B195
														PCLNR/L		B185/B222	
DN○○ 55° Nega 	DNMA	431								●				DDJNR/L	MDJNR/L	B180	B196
		432								●	●			MDNNN	MDQNR/L	B196	B197
														MDUNR/L	PDJNR/L	B225	B185
														PDNNR/L	PDSNR/L	B186	B222
														PDUNR/L		B222	
TN○○ 60° Nega 	TNMA	331								●				MTENN	MTFNR/L	B199	B199/B226
		332								●				MTGNR/L	MTJNR/L	B200	B200
														PTFNR/L	PTGNR/L	B189/B223	B190
														PTTNR/L	WTENN	B190	B191
														WTJNR/L	WTXNR/L	B191	B191
VN○○ 35° Nega 	T-VNMA	331								●				MVJNR/L		B200	
	VNMA	331								●				MVQNR/L		B201	
		332								●				MVUNR/L		B226	
														MVVNN		B201	
CC○○ 80° Posi 	CCMW	32.51								●				SCACR/L		B202	
														SCLCR/L		B202/B227/B237	
DC○○ 50° Posi 	DCGW	32.52								●				SDACR/L		B202	
	T-DCGW	32.52								●				SDJCR/L		B203	
														SDNCN		B203	
VB○○ 35° Posi 	VBMW	331								●				SVABR/L		B207	
		332								●				SVHBR/L		B207	
														SVJBR/L		B207	
														SVQBR/L		B234	
														SVUBR/L		B235	
TP○○ 60° Posi 	T-TPGB	221									●			CTFPR/L		B194/B224	
	TPGB	221								●	●			CTGPR/L		B194	
		222								●							

●: Korea Stock

PCD

Dimensions (inch)			
Size	d	t	d_1
2.5	5/16	3/32	5/32
21.5	1/4	3/32	7/64
32	3/8	1/8	11/64

Dimensions (inch)			
Size	d	t	d_1
32.5	3/8	5/32	11/64
33	3/8	3/16	5/32
43	1/2	3/16	13/64

Insert (Negative/Positive)

Insert	Designation		PCD			Available tool holders			
			DP90	DP150	DP200	Designation		Page	
CN○○ 80° Nega	CNMM	**431**		●		DCBNR/L	DCLNR/L	B179	B179
		432		●		MCKNR/L	MCLNR/L	B195	B195
						MCMNN	PCBNR/L	B195	B184
						PCLNR/L		B185	
DN○○ 55° Nega	DNMM	**431**		●		DDJNR/L	MDJNR/L	B180	B196
		432		●		MDNNN	MDQNR/L	B196	B197
						MDUNR/L	PDJNR/L	B225	B185
						PDNNR/L	PDSNR/L	B186	B222
						PDUNR/L		B222	
CC○○ 80° Posi	CCMW	**431**		●		SCACR/L		B202	
	CCMT	**21.50.5**		●		SCLCR/L		B202/B227/B237	
		21.51		●					
		32.51		●					
		32.52		●					
DC○○ 55° Posi	DCMT	**21.50.5**		●		SDACR/L		B207	
		21.51		●		SDJCR/L		B203	
		32.50.5		●		SDNCN		B203	
		32.51		●		SDQCR/L		B229	
		32.52		●		SDUCR/L		B230	
	DCGT	**32.51**		●		SDZCR/L		B231	
TP○○ 60° Posi	TPGW	**631**		●					
		731		●					
		732		●					
		221		●					
		222		●					
VB○○ VC○○ 35° Posi	VBGW	**331**		●					
	VBMT	**221**		●		SVHBR/L		B207	
		222		●		SVJBR/L		B207	
		331		●		SVUBR/L		B235	
		332		●					
	VCMT	**221**		●		SVVCN		B208	
		222		●					
		331		●					
		332		●					
TP○○ 60° Posi	TPGN	**221**		●					
		222		●					
SP○○ 90° Posi	SPGN	**321**		●		CSDPN		B193	
						CSKPR/L		B194/B224	

●: Korea Stock

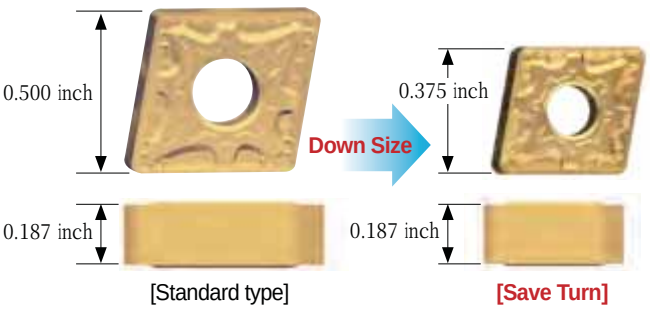
Economical small insert with powerful cutting performance

Save Turn

- Strongly recommended turning insert for machining smaller diameter than Ø3.937 inch
- Small but powerful and economical insert which performs the same like standard-sized inserts under the depth of cut of 0.118 inch

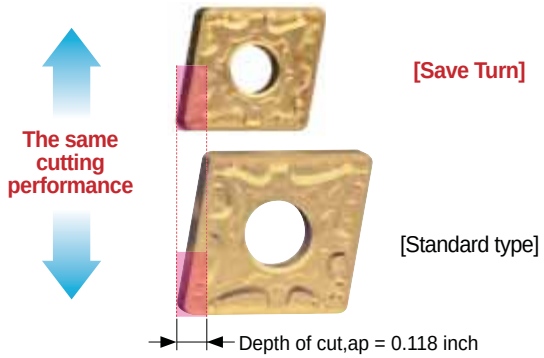
Features

Comparison of insert sizes



- Optimized size of the same performance like the standard type

Comparison of cutting performance

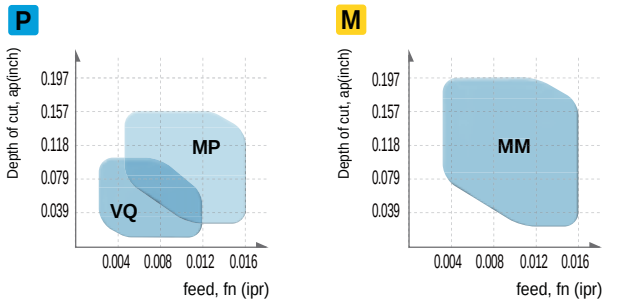


- Performs the same like standard type inserts under the depth of cut of 0.118 inch

Features of chip breaker

Insert shape	Cutting edge	Features
VQ		• For finishing steel • Efficient chip breaking and low cutting resistance • Various application available at low depth of cut • Recommended depth of cut: 0.020~0.098 inch
MP		• For medium cutting of steel • 4 dots for improved chip control in medium cutting to finishing • Stable chip evacuation at high depth of cut • Stable tool life due to lower cutting loads at high feed • Recommended depth of cut: 0.020~0.157 inch
MM		• For medium cutting of stainless steel • Limits plastic deformation caused by heat • Stable tool life thanks to the balanced cutting performance and toughness • Stable chip flow at high speeds and feeds • Recommended depth of cut: 0.020~0.197 inch

Application area of chip breaker



VQ : Depth of cut, ap = 0.020~0.098 inch / feed, fn = 0.002~0.012 ipr
MP : Depth of cut, ap = 0.020~0.157 inch / feed, fn = 0.006~0.016 ipr
MM : Depth of cut, ap = 0.020~0.197 inch / feed, fn = 0.004~0.016 ipr

Application example

Alloy steel (SCM4140)

■ **Cutting conditions**
vc (sfm) = 820, fn (ipr) = 0.010
ap (inch) = 0.079~0.118, continuous cutting, wet

■ **Cutting Result**



CNMG090408-HM
Save Turn

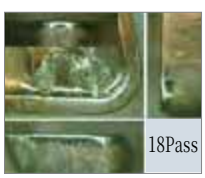


CNMG120408-HM
Standard type

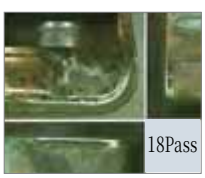
Alloy steel (SCM4140)

■ **Cutting conditions**
vc (sfm) = 820, fn (ipr) = 0.010
ap (inch) = 0.079~0.118, interrupted cutting, wet

■ **Cutting Result**

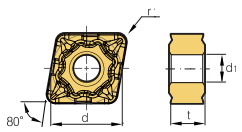
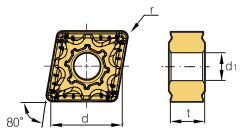
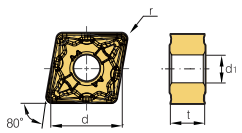
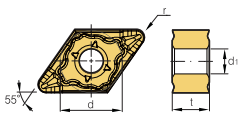
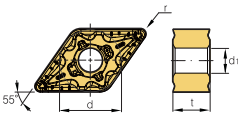
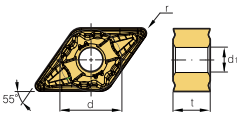
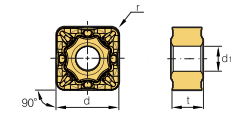
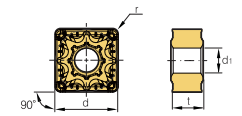
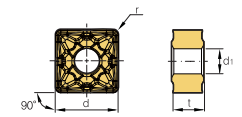
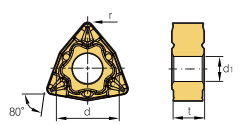
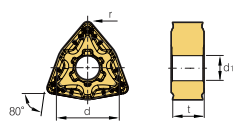
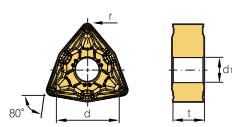


CNMG090408-HM
Save Turn



CNMG120408-HM
Standard type

Insert

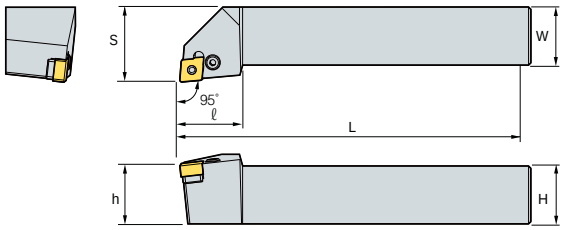
Type	Picture	Designation		Coated							Dimensions (inch)				cutting conditions		Configuration	Available tool holders page
				NC3215	NC3225	NC5330	NC6310	NC9125	NC9135	PC9030	d	t	r	d_1	ap (inch)	fn (ipr)		
C type	CNMG-VQ	CNMG	332-VQ			●					0.375	3/16	1/32	1/8	0.020~0.098	0.003~0.012		B116 B119
			333-VQ			●					0.375	3/16	3/64	1/8	0.020~0.098	0.004~0.012		
	CNMG-MP	CNMG	331-MP								0.375	3/16	1/64	1/8	0.020~0.157	0.004~0.016		B116 B119
			332-MP								0.375	3/16	1/32	1/8	0.020~0.157	0.006~0.016		
			333-MP								0.375	3/16	3/64	1/8	0.020~0.157	0.006~0.018		
	CNMG-MM	CNMG	331-MM								0.375	3/16	1/64	1/8	0.020~0.197	0.003~0.012		B116 B119
			332-MM								0.375	3/16	1/32	1/8	0.020~0.197	0.004~0.016		
			333-MM								0.375	3/16	3/64	1/8	0.020~0.197	0.005~0.018		
D type	DNMG-VQ	DNMG	33.52-VQ			●					0.375	7/32	1/32	1/8	0.020~0.098	0.003~0.012		B116 B117 B119 B120
			33.53-VQ			●					0.375	7/32	3/64	1/8	0.020~0.098	0.004~0.012		
	DNMG-MP	DNMG	33.51-MP								0.375	7/32	1/64	1/8	0.020~0.157	0.004~0.016		B116 B117 B119 B120
			33.52-MP								0.375	7/32	1/32	1/8	0.020~0.157	0.006~0.016		
			33.53-MP								0.375	7/32	3/64	1/8	0.020~0.157	0.006~0.018		
	DNMG-MM	DNMG	33.51-MM								0.375	7/32	1/64	1/8	0.020~0.197	0.003~0.012		B116 B117 B119 B120
			33.52-MM								0.375	7/32	1/32	1/8	0.020~0.197	0.004~0.016		
			33.53-MM								0.375	7/32	3/64	1/8	0.020~0.197	0.005~0.018		
S type	SNMG-VQ	SNMG	332-VQ			●					0.375	3/16	1/32	1/8	0.020~0.098	0.003~0.012		B117 B118 B120
			333-VQ			●					0.375	3/16	3/64	1/8	0.020~0.098	0.004~0.012		
	SNMG-MP	SNMG	331-MP								0.375	3/16	1/64	1/8	0.020~0.157	0.004~0.016		B117 B118 B120
			332-MP								0.375	3/16	1/32	1/8	0.020~0.157	0.006~0.016		
			334-MP								0.375	3/16	3/64	1/8	0.020~0.157	0.006~0.018		
	SNMG-MM	SNMG	331-MM								0.375	3/16	1/64	1/8	0.020~0.197	0.003~0.012		B117 B118 B120
			332-MM								0.375	3/16	1/32	1/8	0.020~0.197	0.004~0.016		
			333-MM								0.375	3/16	3/64	1/8	0.020~0.197	0.005~0.018		
W type	WNMG-VQ	WNMG	331-VQ								0.375	3/16	1/64	1/8	0.012~0.078	0.002~0.012		B119 B120
			332-VQ								0.375	3/16	1/32	1/8	0.020~0.078	0.003~0.012		
			333-VQ								0.375	3/16	3/64	1/8	0.020~0.078	0.004~0.012		
	WNMG-MP	WNMG	331-MP	●	●	●		●			0.375	3/16	1/64	1/8	0.020~0.138	0.004~0.016		B119 B120
			332-MP	●	●	●	●	●			0.375	3/16	1/32	1/8	0.020~0.138	0.006~0.016		
			333-MP								0.375	3/16	3/64	1/8	0.020~0.138	0.006~0.018		
	WNMG-MM	WNMG	331-MM								0.375	3/16	1/64	1/8	0.020~0.157	0.003~0.012		B119 B120
			332-MM					●	●	●	0.375	3/16	1/32	1/8	0.020~0.157	0.004~0.016		
			333-MM					●	●	●	0.375	3/16	3/64	1/8	0.020~0.157	0.005~0.018		

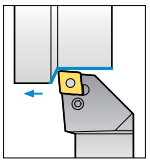
●: Korea Stock

PCLNR/L



CN□□





95°

• R type insert
(inch)

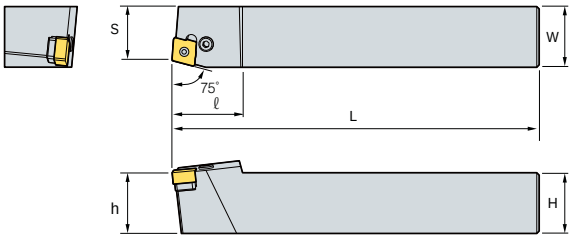
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PCLNR/L	**10-3A-3N**	5/8	5/8	4	0.787	0.625	0.787	CN□□33□□	LV3N	VHX0617N	SC32N	SP3	HW25L	LSP3
	12-3B-3N	3/4	3/4	4 1/2	1.000	0.787	1.000							
	16-3D-3N	1	1	6	1.250	1.000	1.063							

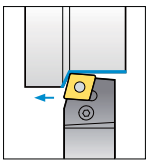
Applicable inserts **B115**

PCBNR/L



CN□□





75°

• R type insert
(inch)

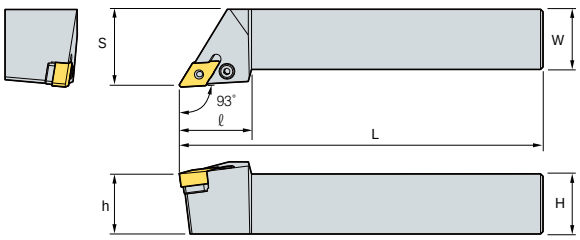
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PCBNR/L	**12-3B-3N**	3/4	3/4	4 1/2	0.669	0.787	1.063	CN□□33□□	LV3N	VHX0617N	SC32N	SP3	HW25L	LSP3
	16-3D-3N	1	1	6	0.866	1.000	1.142							

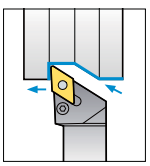
Applicable inserts **B115**

PDJNR/L



DN□□





93°

• R type insert
(inch)

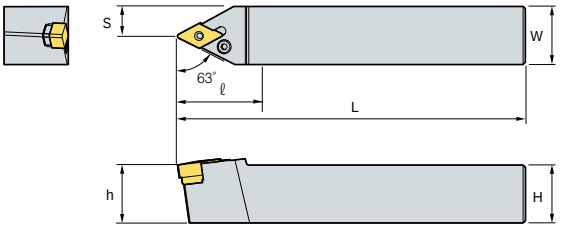
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PDJNR/L	**12-3B-3.5N**	3/4	3/4	4 1/2	1.000	0.787	1.000	DN□□33.5□□	LV3AN	VHX0617N	SD32N	SP3	HW25L	LSPS3
	16-3D-3.5N	1	1	6	1.260	1.000	1.181							

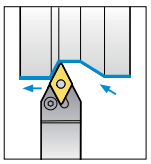
Applicable inserts **B115**

PDNNR/L



DN□□





63°

• R type insert
(inch)

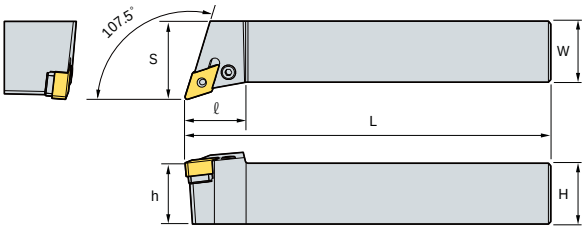
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PDNNR/L	12-3B-3.5N	3/4	3/4	4 1/2	1.000	0.787	1.181	DN□□33.5□□	LV3AN	VHX0617N	SD32N	SP3	HW25L	LSPS3
	16-3D-3.5N	1	1	6	1.260	1.000	1.181							

Applicable inserts **B115**

PDQNR/L



DN□□





107.5°

• R type insert
(inch)

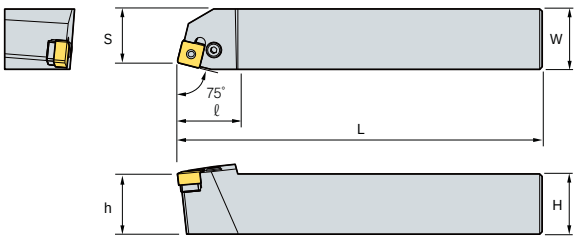
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PDQNR/L	12-3B-3.5N	3/4	3/4	4 1/2	1.000	0.787	1.181	DN□□33.5□□	LV3AN	VHX0617N	SD32N	SP3	HW25L	LSPS3
	16-3D-3.5N	1	1	6	1.260	1.000	1.181							

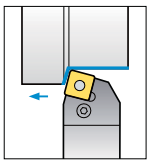
Applicable inserts **B115**

PSBNR/L



SN□□





75°

• R type insert
(inch)

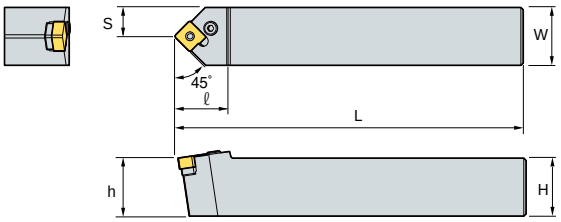
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PSBNR/L	12-3B-3N	3/4	3/4	4 1/2	0.669	0.787	1.000	SN□□33□□	LV3AN	VHX0617N	SS32N	SP3	HW25L	LSP3
	16-3D-3N	1	1	6	0.866	1.000	1.000							

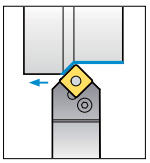
Applicable inserts **B115**

PSDNN



SN□□





45°

• R type insert

(inch)

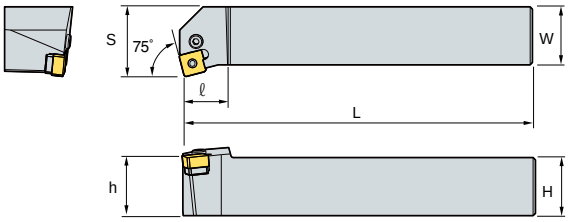
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PSDNN	**12-3B-3N**	3/4	3/4	4 1/2	0.669	0.787	1.000	SN□□33□□	LV3AN	VHX0617N	SS32N	SP3	HW25L	LSP3
	16-3D-3N	1	1	6	0.866	1.000	1.000							

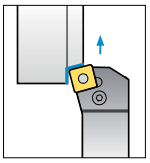
Applicable inserts **B115**

PSKNR/L



SN□□





75°

• R type insert

(inch)

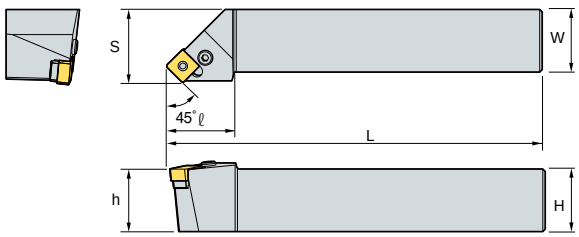
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PSKNR/L	**12-3B-3N**	3/4	3/4	4 1/2	0.669	0.787	1.000	SN□□33□□	LV3AN	VHX0617N	SS32N	SP3	HW25L	LSP3
	16-3D-3N	1	1	6	0.866	1.000	1.000							

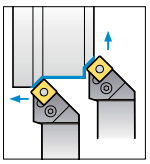
Applicable inserts **B115**

PSSNR/L



SN□□





45°

• R type insert

(inch)

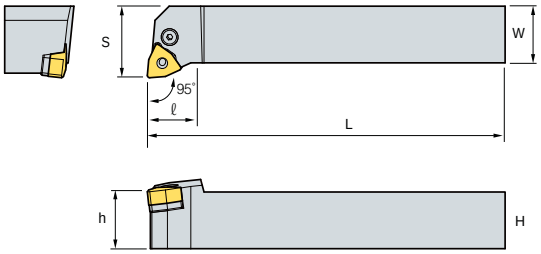
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PSSNR/L	**12-3B-3N**	3/4	3/4	4 1/2	0.669	0.787	1.000	SN□□33□□	LV3AN	VHX0617N	SS32N	SP3	HW25L	LSP3
	16-3D-3N	1	1	6	0.866	1.000	1.000							

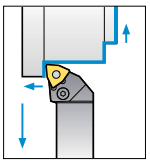
Applicable inserts **B115**

PWLNR/L



WN□□





95°

• R type insert

(inch)

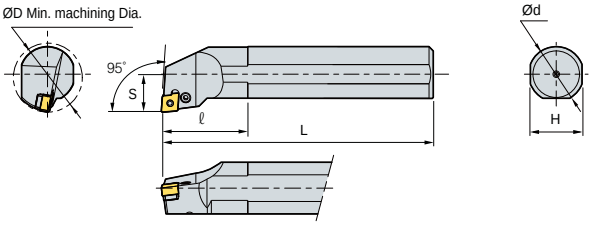
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PWLNR/L	**10-3A**	5/8	5/8	4	0.750	0.625	0.787	WN□□33□□	LV3AN	VHX0617N	SS32N	SP3	HW25L	LSP3
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.787							
	16-3D	1	1	6	1.250	1.000	0.787							

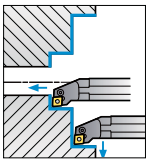
Applicable inserts **B115**

PCLNR/L



CN□□





95°

• R type insert

(inch)

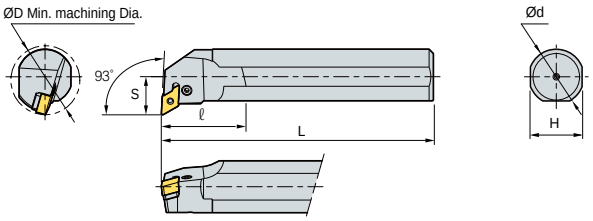
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S20Q-PCLNR/L-3-3N	1.000	1 1/4	0.709	7	0.512	1.969	CN□□32□□	LV3B	VHX0512B	–	–	HW20L	–
S25R-PCLNR/L-3-3N	1.260	1	0.906	8	0.669	1.969		LV3B	VHX0512B	SC32N	SP3	HW20L	–
S32S-PCLNR/L-3-3N	1.575	2	1.181	10	0.866	1.969		LV3N	VHX0617N	SC32N	SP3	HW25L	–

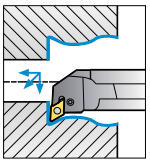
Applicable inserts **B115**

PDUNR/L



DN□□





93°

• R type insert

(inch)

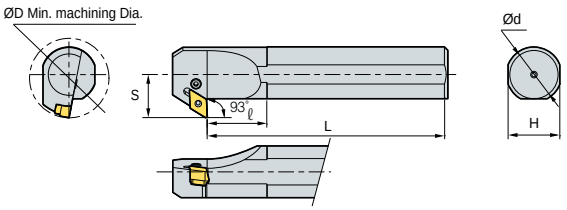
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S32S-PDUNR/L-3-3.5N	1.575	1	1.181	8	0.866	1.181	DN□□33.5□□	LV3AN	VHX0617N	SD32N	SP3	HW25L	–
S40T-PDUNR/L-3-3.5N	1.969	2 1/2	1.496	12	1.063	1.969							

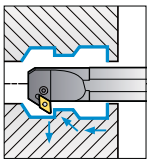
Applicable inserts **B115**

PDZNR/L



DN□□





93°

• R type insert

(inch)

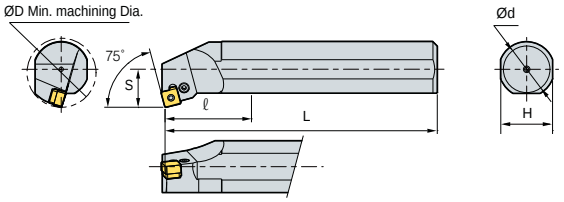
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S32S-PDZNR/L-3-3.5N	1.575	1	1.181	8	0.866	1.181	DN□□33.5□□	LV3AN	VHX0617N	SD32N	SP3	HW25L	–
S40T-PDZNR/L-3-3.5N	1.969	2 1/2	1.496	12	1.063	1.969							

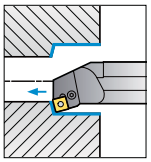
Applicable inserts **B115**

PSKNR/L



SN□□





75°

• R type insert

(inch)

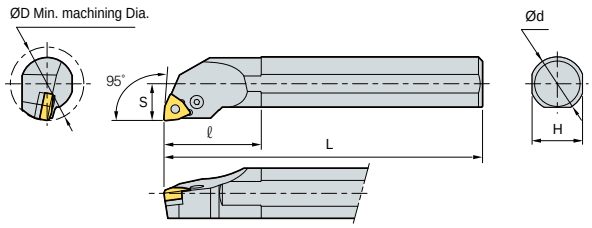
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S25R-PSKNR/L-3-3N	1.260	1	0.906	8	0.669	1.260	SN□□33□□	LV3B	VHX0512B	–	–	HW20L	–
S32S-PSKNR/L-3-3N	1.575	2	1.181	10	0.866	1.260		LV3N	VHX0617N	SS32N	–	HW25L	–

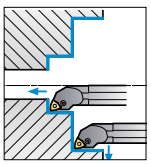
Applicable inserts **B115**

PWLNR/L



WN□□





95°

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S12S-PWLNR/L3	0.930	3/4	0.671	10	0.500	1.574	WN□□33□□	LV3B	VHX0512B	–	–	–	–
S16T-PWLNR/L3	1.200	1	0.921	12	0.640	1.575							
S20U-PWLNR/L3	1.470	1 1/4	1.171	14	0.765	1.772		LV3B	VHX0617B	SW317	SW317	HW25L	LSPS3

Applicable inserts **B115**

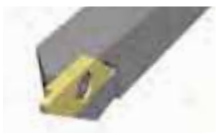
Excellent for precision machining

Auto Tools

- High precision machining of small parts and complex forms, etc.
- High quality products through stable machining
- Exclusive insert for automatic lathes

Type


ISO

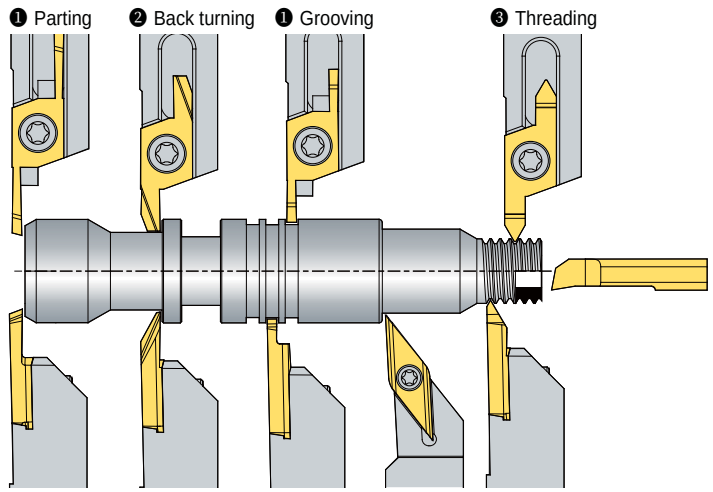

Blade


Multi utility


MGT


MSB Tools

Application example



Index

Specification	❶ Parting and Grooving						❷ Back turning		
Holder	SXGNR/L	SXGNR/L	SBHR/L	SBHR/L	MGEHR/L	KGEHR/L	SXGNR/L	SXGNR/L	SBHR/L
Insert	SG	SC	SBG	SBC	MGMN	KGMN	SB	SGB	SBB
Holder size	0.39~0.79inch	0.39~0.79inch	0.39~0.63inch	0.39~0.63inch	0.39~0.63inch	0.39~0.63inch	0.39~0.79inch	0.39~0.79inch	0.39~0.63inch
Insert shape									
Cutting width	0.04~0.12inch	0.04~0.12inch	0.03~0.08inch	0.03~0.08inch	0.06~0.10inch	0.06~0.10inch	0.08~0.16inch	0.08~0.12inch	0.13inch
ØDmax	Ø0.71	Ø0.71	Ø0.63	Ø0.63	Ø1.26	Ø1.26	Tmax 0.32	Tmax 0.34	Tmax 0.32
Page	B140	B140	B137	B137	B144	B143	B140	B140	B137

Specification	❸ Threading	
Holder	SXGNR/L	SBHR/L
Insert	ST	SBT
Shank diameter	0.39~0.79inch	0.39~0.63inch
Insert shape		
ØDmin	Pitch ranges 0.02~0.06 / 0.06~0.12	Pitch ranges 0.01~0.06 / 0.04~0.08
Page	B140	B137

Specification	❹ External turning and Copy machining				❺ External turning and Facing		
Holder	SDJCR/L	SDNCN	SVJBR/L	SVJCR/L	SCACR/L	SCLCR/L	STACR/L
Insert	DC□T	DC□T	VB□T	VC□T	CC□T	CC□T	TC□T
Holder size	0.32~0.63inch	0.32~0.63inch	0.39~0.63inch	0.39~0.63inch	0.32~0.63inch	0.32~0.63inch	0.32~0.39inch
Insert shape							
Feature	Offset 0				Offset 0		
Page	B123	B124	B125	B125	B123	B123	B124

Specification	❻ Internal turning (Boring)				
Holder	SCLCR/L	STUBR/L	STUPR/L	SWUBR/L	MSB
Insert	CC□T	TB□T	TP□T	WB□T	-
Shank diameter	Ø0.16~Ø0.39	Ø0.32	Ø0.32	Ø0.20~Ø0.32	Ø0.16~Ø0.24
Insert shape					
ØDmin	Ø0.20	Ø0.32	Ø0.39	Ø0.22	Ø0.13
Page	B237	B237	B238	B239	B147~B163

Auto Tools (ISO)

- ISO inserts for automatic lathes
- Precise R shape with the use of minus tolerance of nose R
- Tolerance class precise enough in no need for adjusting tools with the use of accurate cutting edge height
- Sharp blade for excellent chip control and surface roughness with low cutting force
- High precision tools for electrical/ electronics instruments and medical instruments



Code system (ISO type)

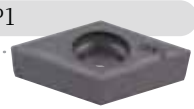
V C E T 11 03 01 M F R-KM

- V: Insert shape
- C: Relief angle
- E: Tolerance
- T: Cross section type
- 11: Cutting edge length, diameter of inscribed circle
- 03: Height of cutting edge
- 01: Nose radius
- M: Tolerance of nose R
  - M: Minus
- F: Condition of cutting edge
  - F: Sharpe
  - E: Honed
  - T: Land
  - S: Honed land
- R: Hand
  - R: Right
  - L: Left
  - N: Neutral
- KM: Chip breaker

VP1/MS/FS chip breaker

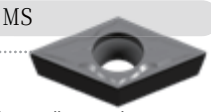
- Exclusive chip breaker for hard-to-cut materials such as titanium alloy, Inconel, stainless steel, etc.
- Minimized cutting heat by reducing contact area between chips and rake surface with the use of high positive blade

VP1



- Hard cutting edge for medium cutting
- Optimal width of chip breaker by each depth of cuts realizes wide workpiece machining

MS



- Good surface finish for medium cutting
- Preventing welding in titanium machining
- Increasing chip evacuation in high feed machining
- Protecting cutting edge due to structure for good chip evacuation

FS

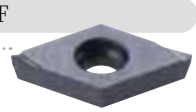


- For finishing (for surface roughness)
- 1st recommended chip breaker for chip control
- Better surface roughness, surface finish and chip control

KF/KM chip breaker, ground type for grooving

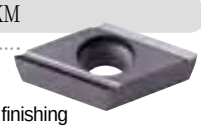
- Ground chip breaker with sharp cutting edge
- High precision insert of E-class tolerance with accurate nose radius

KF



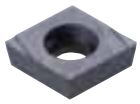
- For finishing
- Low cutting loads with sharp cutting edges
- Longer tool life due to lower chip evacuation resistance at high speed
- Excellent surface roughness

KM

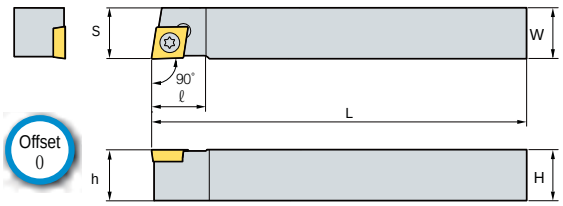


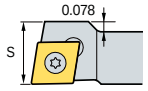
- For medium cutting to finishing
- Better chip flow due to wide chip pockets
- Longer tool life and better cutting action due to improved chip evacuation
- Excellent surface roughness

SCACR/L

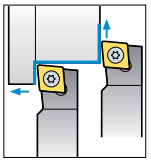


CC□T





※ Only SCACR/L06-X3A is designed as above picture.



90°

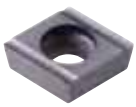
• R type insert

(inch)

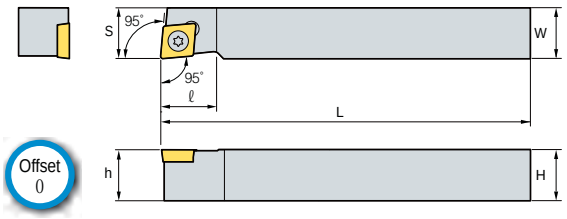
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SCACR/L	05-X2A	5/16	5/16	4 1/2	0.313	0.313	0.394	CC□T21.5□	FTKA02565	TW07P
	06-X2A	3/8	3/8	4 1/2	0.375	0.375	0.394			
	06-X3A	3/8	3/8	4 1/2	0.500	0.500	0.512	CC□T32.5□	FTKA0410	TW15P
	08-X3A	1/2	1/2	4 1/2	0.500	0.500	0.630			
	10-X3A	5/8	5/8	4 1/2	0.625	0.625	0.630			

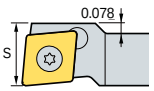
Applicable inserts **B73~B77, B103**

SCLCR/L

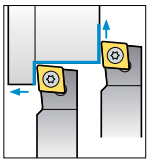


CC□T





※ Only SCLCR/L06-X3A is designed as above picture.



95°

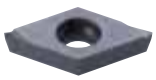
• R type insert

(inch)

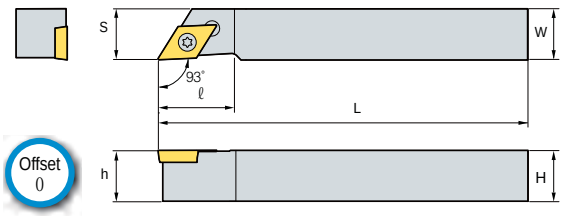
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SCLCR/L	05-X2A	5/16	5/16	4 1/2	0.313	0.313	0.394	CC□T21.5□	FTKA02565	TW07P
	06-X2A	3/8	3/8	4 1/2	0.375	0.375	0.394			
	06-X3A	3/8	3/8	4 1/2	0.500	0.500	0.512	CC□T32.5□	FTKA0410	TW15P
	08-X3A	1/2	1/2	4 1/2	0.500	0.500	0.630			
	10-X3A	5/8	5/8	4 1/2	0.625	0.625	0.630			

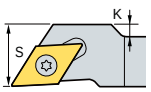
Applicable inserts **B73~B77, B103**

SDJCR/L

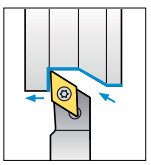


DC□T





※ Only SDJCR/L05-X2A, 06-X3A, 08-X3A is designed as above picture.



93°

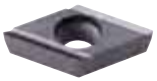
• R type insert

(inch)

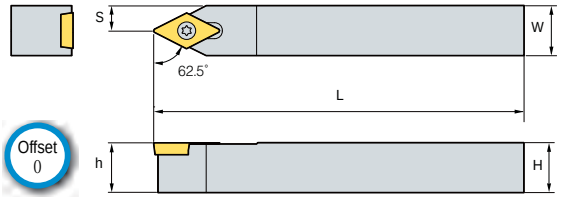
Designation		H	W	L	S	h	K	ℓ	Insert	Screw	Wrench
SDJCR/L	05-X2A	5/16	5/16	4 1/2	0.375	0.313	0.078	0.709	DC□T21.5□	FTKA02565	TW07P
	06-X2A	3/8	3/8	4 1/2	0.375	0.375	-	0.590			
	06-X3A	3/8	3/8	4 1/2	0.550	0.375	0.157	0.709	DC□T32.5□□	FTKA0410	TW15P
	08-X3A	1/2	1/2	4 1/2	0.550	0.500	0.078	0.709			
	10-X3A	5/8	5/8	4 1/2	0.625	0.625	-	0.866			

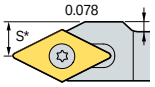
Applicable inserts **B79~B82, B104**

SDNCN

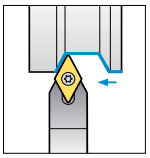


DC□T





※ Only SDNCN06-X3A is designed as above picture.



62.5°

• R type insert

(inch)

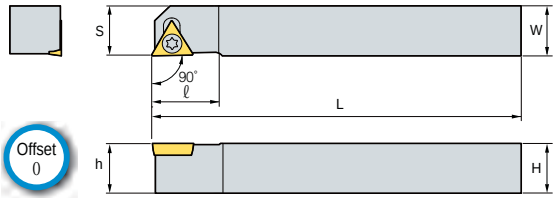
Designation		H	W	L	S	h	Insert	Screw	Wrench
SDNCN	05-X2A	5/16	5/16	4 1/2	0.125	0.313	DC□T21.5□	FTKA02565	TW07P
	06-X2A	3/8	3/8	4 1/2	0.158	0.375			
	06-X3A	3/8	3/8	4 1/2	0.276	0.375	DC□T32.5□	FTKA0410	TW15P
	08-X3A	1/2	1/2	4 1/2	0.250	0.500			
	10-X3A	5/8	5/8	4 1/2	0.313	0.625			

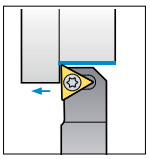
Applicable inserts **B79~B82, B104**

STACR/L



TC□T





90°

• R type insert

(inch)

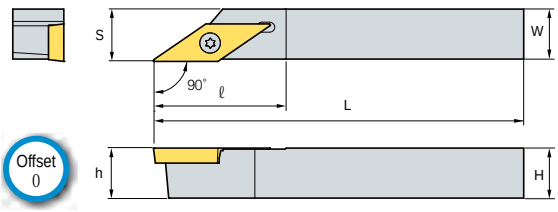
Designation		H	W	L	S	h	K	ℓ	Insert	Screw	Wrench
STACR/L	05-X1.5A	5/16	5/16	4 1/2	0.313	0.313	0.039	0.472	TC□T51.5□	FTNA0206	TW06P
	06-X1.5A	3/8	3/8	4 1/2	0.375	0.375	0.118	0.472			

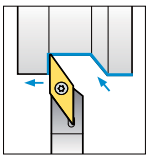
Applicable inserts **B88~B89, B107**

SVACR/L



VC□□





90°

• R type insert

(inch)

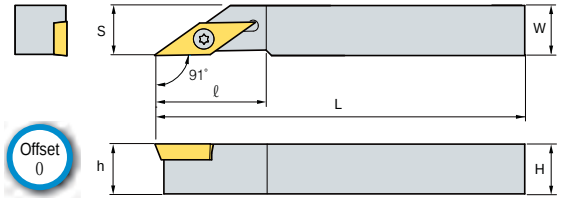
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SVACR/L	05-X12A	5/16	5/16	4 1/2	0.313	0.313	1.024	VC□T1203□□	FTKA02565	TW07P
	06-X12A	3/8	3/8	4 1/2	0.375	0.375	1.024			
	08-X12A	1/2	1/2	4 1/2	0.472	0.472	1.024			
	10-X12A	5/8	5/8	4 1/2	0.630	0.630	1.024			
SVACR/L	05-X12C	5/16	5/16	4 1/2	0.313	0.313	1.024	VC□X1203□□	FTKA02565	TW07P
	06-X12C	3/8	3/8	4 1/2	0.375	0.375	1.024			
	08-X12C	1/2	1/2	4 1/2	0.472	0.472	1.024			
	10-X12C	5/8	5/8	4 1/2	0.630	0.630	1.024			

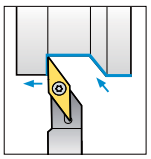
Applicable inserts **B97~B99, B109**

SVAPR/L



VP□T





91°

• R type insert

(inch)

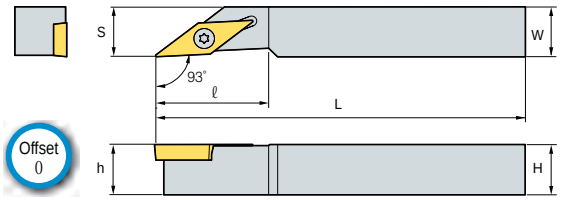
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SVAPR/L	05-X2A	5/16	5/16	4 1/2	0.313	0.313	0.866	VP□T22□□	FTKA02565	TW07P
	06-X2A	3/8	3/8	4 1/2	0.375	0.375	0.866			
	08-X2A	1/2	1/2	4 1/2	0.472	0.472	0.866			
	10-X2A	5/8	5/8	4 1/2	0.630	0.630	0.945			

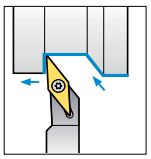
Applicable inserts **B100**

SVJBR/L



VB□T





93°

• R type insert

(inch)

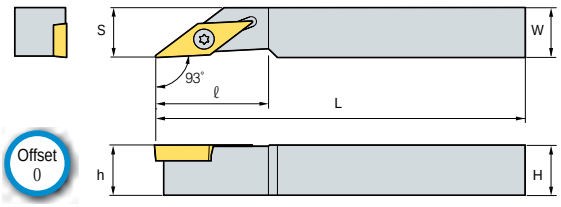
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SVJBR/L	06-X2A	3/8	3/8	4 1/2	0.375	0.375	0.866	VB□T22□	FTKA02565	TW07P
	08-X2A	1/2	1/2	4 1/2	0.500	0.500	0.866			
	10-X2A	5/8	5/8	4 1/2	0.625	0.625	0.945			

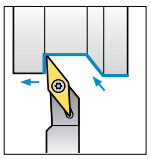
Applicable inserts **B94~B96, B108**

SVJCR/L



VC□□





93°

• R type insert

(inch)

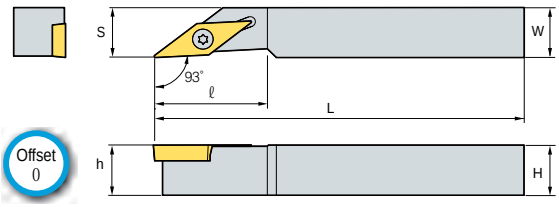
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SVJCR/L	06-X2A	3/8	3/8	4 1/2	0.375	0.375	0.866	VC□T22□□	FTKA02565	TW07P
	08-X2A	1/2	1/2	4 1/2	0.500	0.500	0.866			
	10-X2A	5/8	5/8	4 1/2	0.625	0.625	0.945			
	05-X12A	5/16	3/8	4 1/2	0.313	0.313	1.024	VC□T1203□□	FTKA02565	TW07P
	06-X12A	3/8	3/8	41/2	0.375	0.375	1.024			
	08-X12A	1/2	1/2	4 1/2	0.472	0.472	1.024			
	10-X12A	5/8	5/8	4 1/2	0.630	0.630	1.024			
SVJCR/L	05-X12C	5/16	3/8	4 1/2	0.313	0.313	1.024	VC□X1203□□	FTKA02565	TW07P
	06-X12C	3/8	3/8	41/2	0.375	0.375	1.024			
	08-X12C	1/2	1/2	4 1/2	0.472	0.472	1.024			
	10-X12C	5/8	5/8	4 1/2	0.630	0.630	1.024			

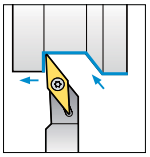
Applicable inserts **B97~B99, B109**

SVJPR/L



VP□T





93°

• R type insert
(inch)

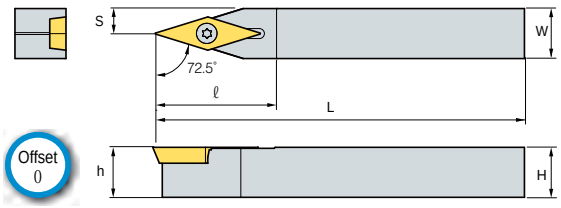
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SVJPR/L	05-X2A	5/16	3/8	4 1/2	0.313	0.375	0.866	VP□T22□□	FTKA02565	TW07P
	06-X2A	3/8	3/8	4 1/2	0.375	0.375	0.866			
	08-X2A	1/2	1/2	4 1/2	0.472	0.472	0.866			
	10-X2A	5/8	5/8	4 1/2	0.630	0.630	0.945			

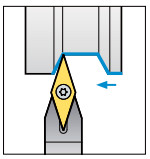
Applicable inserts **B100**

SVVPN



VP□T





72.5°

• R type insert
(inch)

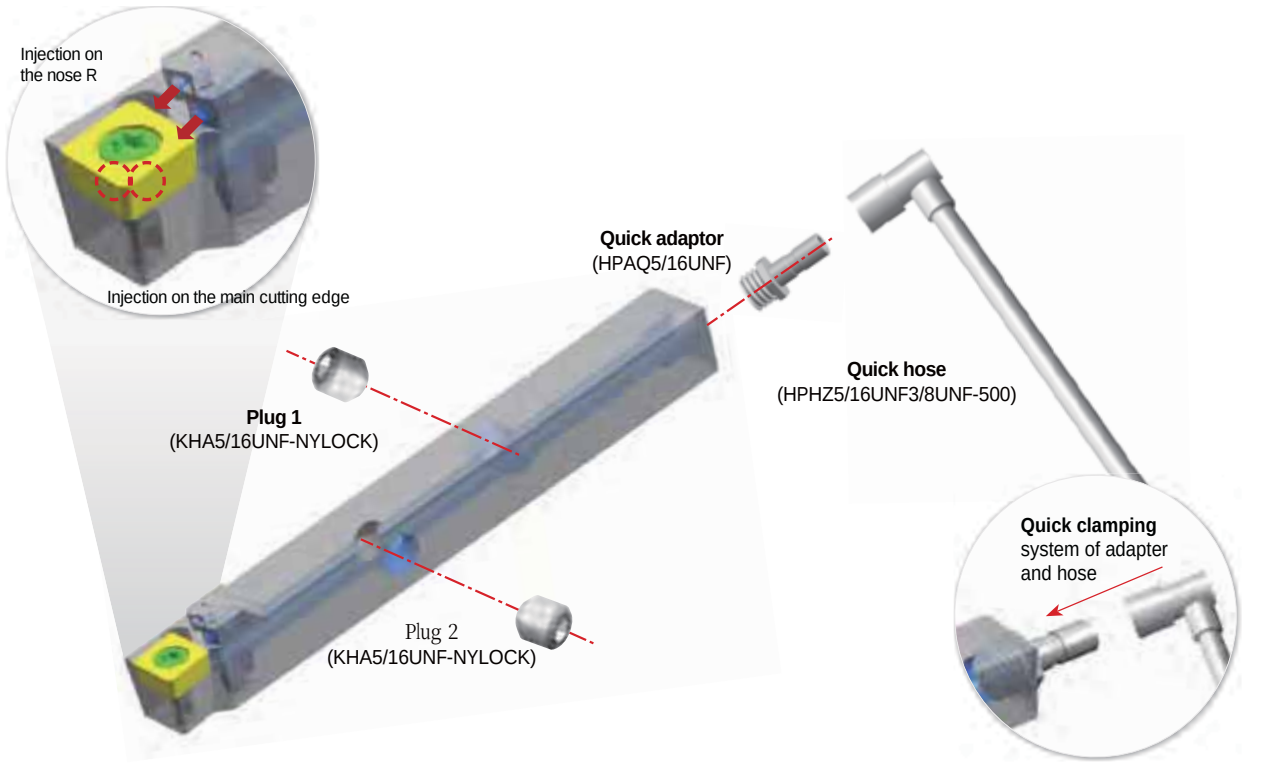
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SVVPN	05-X2A	5/16	3/8	4 1/2	0.157	0.315	0.945	VP□T22□□	FTKA02565	TW07P
	06-X2A	3/8	3/8	4 1/2	0.197	0.375	0.945			
	08-X2A	1/2	1/2	4 1/2	0.236	0.472	0.945			
	10-X2A	5/8	5/8	4 1/2	0.313	0.630	1.102			

Applicable inserts **B100**

Auto Tools (KHP)

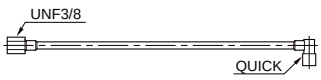
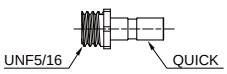
- KORLOY High pressure coolant for high productivity of automatic lathe
- High pressure coolant holder for high productivity of precise parts machining on automatic lathe
- Improved cooling and chip control due to injecting coolant through two holes to the main cutting edge and nose R concentrically
- Two holes with different injection angles each other increase chip control
- Easy clamping system of quick hose adapter and quick hose provides convenient using

Structure of holder

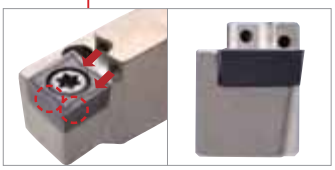


※ Quick adapter and quick hose are sold separately

Parts

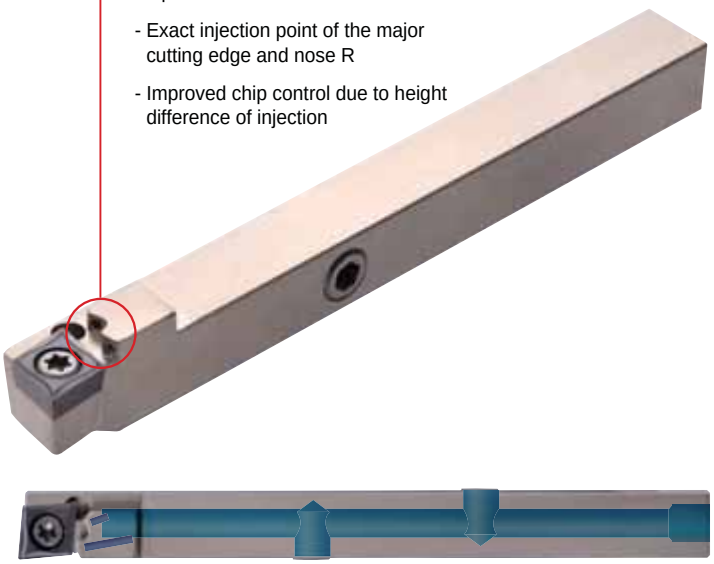
Shape		Configuration	Length	Q clamping dimensions	S clamping dimensionss
Quick to straight	HPHZ5/16UNF3/8UNF-500 	Q  S	19.7 inch	UNF5/16	-
Quick adapter	HPAQ5/16UNF 		0.7 inch	UNF5/16	

Features



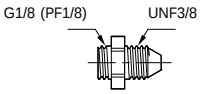
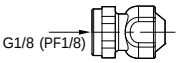
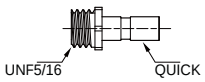
Injection nozzle

- Optimal coolant nozzle size
- Exact injection point of the major cutting edge and nose R
- Improved chip control due to height difference of injection



Max 300 bar		
Workpiece	**The minimum pressure**	**The maximum pressure**
P	100	300
M	120	
K	110	
N	100	
S	120	

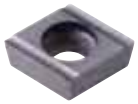
Parts

Devision	Designation	Shape	
Adaptor	HPA3/8UNF1/8PF		
Blank	HPB1/8PF		
Quick adaptor	HPAQ5/16UNF		

High pressure hose

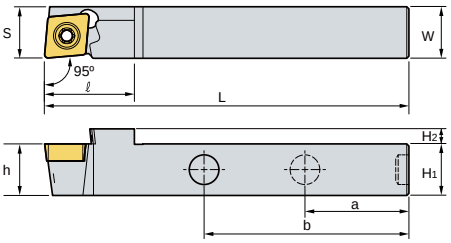
Shape		length	Q clamping dimensions	S clamping dimensionss
Quick to straight (HPHZ5/16UNF3/8UNF-500)		19.7 inch	UNF5/16	-

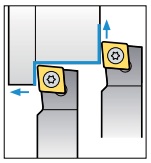
SCLCR/L



CC□T







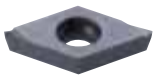
95°

• R type insert
(inch)

Designation	H1	H2	W	L	S	h	ℓ	a	b	Insert	Screw	Plug	Wrench
SCLCR/L 08-X3A-KHP	1/2	0.138	1/2	4 1/2	0.500	0.500	0.827	1.575	2.756	CC□T32.5□	FTKA0410	KHA0404-NYLOCK	TW15P

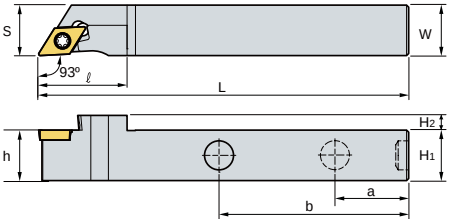
Applicable inserts **B66-69, B91**

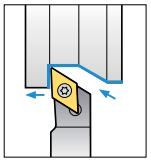
SDJCR/L



DC□T







93°

• R type insert
(inch)

Designation	H1	H2	W	L	S	h	ℓ	a	b	Insert	Screw	Plug	Wrench
SDJCR/L 08-X2A-KHP	1/2	0.138	1/2	4 1/2	0.500	0.500	0.827	1.575	2.756	DC□T21.5□	FTKA02565	KHA0404-NYLOCK	TW07P
08-X3A-KHP	1/2	0.138	1/2	4 1/2	0.551	0.500	1.173	1.575	2.756	DC□T32.5□	FTKA0408	KHA0404-NYLOCK	TW15P

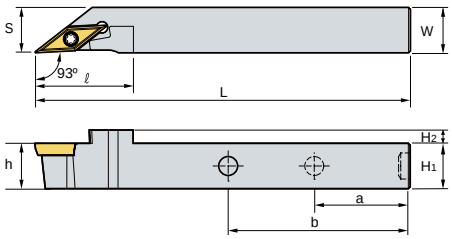
Applicable inserts **B71-73, B92**

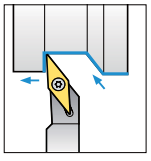
SVJCR/L



VC□□







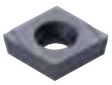
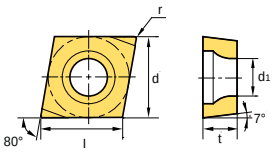
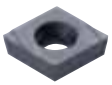
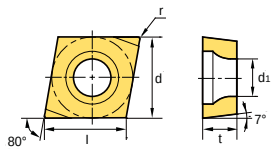
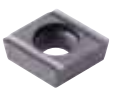
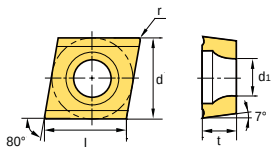
93°

• R type insert
(inch)

Designation	H1	H2	W	L	S	h	ℓ	a	b	Insert	Screw	Plug	Wrench
SVJCR/L 08-X2A-KHP	1/2	0.138	1/2	4 1/2	0.500	0.500	1.024	1.575	2.756	VC□T22□	FTKA02565	KHA0404-NYLOCK	TW07P
08-X12A-KHP	1/2	0.138	1/2	4 1/2	0.500	0.500	1.024	1.575	2.756	VC□□1203□□	FTKA02565	KHA0404-NYLOCK	TW07P

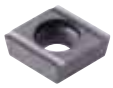
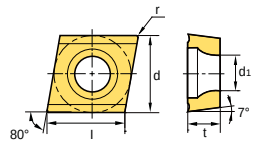
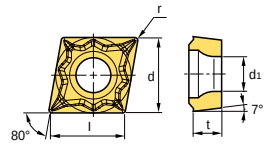
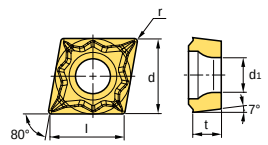
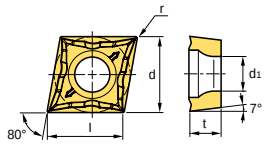
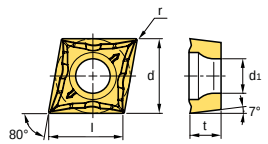
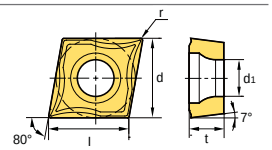
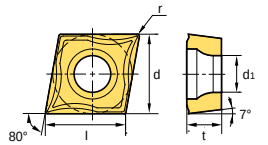
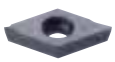
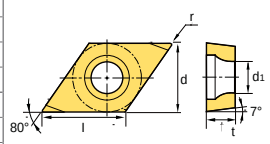
Applicable inserts **B86~B87, B97**

Insert

Picture	Designation	Coated				Uncoated	Dimensions (inch)					Configuration
		PC5300	PC8105	PC8110	PC8115	H01	l	d	t	r	d_1	
CCGT-KF  Finishing (High precision)	1.210.1R-KF	●		●			0.142	0.138	0.055	0.001	0.075	
	1.210.2R-KF	●		●			0.138	0.138	0.055	0.004	0.075	
	1.210.5R-KF	●		●			0.138	0.138	0.055	0.008	0.075	
	1.211R-KF	●		●			0.138	0.138	0.055	0.016	0.075	
	1.510.1R-KF	●		●			0.173	0.169	0.070	0.001	0.091	
	1.510.2R-KF	●		●			0.173	0.169	0.070	0.004	0.091	
	1.510.5R-KF	●		●			0.169	0.169	0.070	0.008	0.091	
	1.511R-KF	●		●			0.169	0.169	0.070	0.016	0.091	
	21.50.1R-KF						0.010	0.010	0.004	0.001	0.004	
	21.50.2R-KF						0.252	1/4	3/32	1/256	7/64	
	21.50.5R-KF						0.244	1/4	3/32	1/128	7/64	
	32.50.1R-KF						0.015	0.015	0.006	0.001	0.007	
	32.50.2R-KF						0.378	3/8	5/32	1/256	11/64	
	32.50.5R-KF						0.362	3/8	5/32	1/128	11/64	
	1.210.1L-KF	●		●			0.142	0.138	0.055	0.001	0.075	
	1.210.2L-KF	●		●			0.138	0.138	0.055	0.004	0.075	
	1.210.5L-KF	●		●			0.138	0.138	0.055	0.008	0.075	
	1.211L-KF	●		●			0.138	0.138	0.055	0.016	0.075	
	1.510.1L-KF	●		●			0.173	0.169	0.070	0.001	0.091	
	1.510.2L-KF	●		●			0.173	0.169	0.070	0.004	0.091	
	1.510.5L-KF	●		●			0.169	0.169	0.070	0.008	0.091	
	1.511L-KF	●		●			0.169	0.169	0.070	0.016	0.091	
	21.50.1L-KF						0.010	0.010	0.004	0.001	0.004	
	21.50.2L-KF						0.252	1/4	3/32	1/256	7/64	
	21.50.5L-KF						0.244	1/4	3/32	1/128	7/64	
	32.50.1L-KF						0.015	0.015	0.006	0.001	0.007	
	32.50.2L-KF						0.378	3/8	5/32	1/256	11/64	
	32.50.5L-KF						0.362	3/8	5/32	1/128	11/64	
CCET-KF  Finishing (Ultra high precision)	21.50.13MFR-KF	●		●			0.260	1/4	3/32	< 1/512	7/64	
	21.50.2MFR-KF	●		●			0.252	1/4	3/32	< 1/256	7/64	
	21.50.5MFR-KF	●		●			0.244	1/4	3/32	< 1/128	7/64	
	32.50.13MFR-KF	●		●			0.386	3/8	5/32	< 1/512	11/64	
	32.50.2MFR-KF	●		●			0.378	3/8	5/32	< 1/256	11/64	
	32.50.5MFR-KF	●		●			0.362	3/8	5/32	< 1/128	11/64	
	21.5.13MFL-KF	●		●			0.260	1/4	3/32	< 1/512	7/64	
	21.50.2MFL-KF	●		●			0.252	1/4	3/32	< 1/256	7/64	
	21.50.5MFL-KF	●		●			0.244	1/4	3/32	< 1/128	7/64	
	32.50.13MFL-KF	●		●			0.386	3/8	5/32	< 1/512	11/64	
	32.50.2MFL-KF	●		●			0.378	3/8	5/32	< 1/256	11/64	
	32.50.5MFL-KF	●		●			0.362	3/8	5/32	< 1/128	11/64	
CCGT-KM  Medium to finishing (High precision)	21.50.1R-KM	●		●			0.010	0.010	0.004	0.001	0.004	
	21.50.2R-KM	●		●			0.010	0.010	0.004	0.0002	0.004	
	21.50.5R-KM	●		●			0.010	0.010	0.004	0.0003	0.004	
	21.51R-KM	●		●			0.010	0.010	0.004	0.016	0.004	
	32.50.1R-KM	●		●			0.015	0.015	0.006	0.001	0.007	
	32.50.2R-KM	●		●			0.015	0.015	0.006	0.0002	0.007	
	32.50.5R-KM	●		●			0.014	0.015	0.006	0.0003	0.007	
	32.51R-KM	●		●			0.014	0.015	0.006	0.016	0.007	
	21.50.1L-KM	●		●			0.010	0.010	0.004	0.001	0.004	
	21.50.2L-KM	●		●			0.010	0.010	0.004	0.0002	0.004	
	21.50.5L-KM	●		●			0.010	0.010	0.004	0.0003	0.004	
	21.51L-KM	●		●			0.010	0.010	0.004	0.016	0.004	
	32.50.1L-KM	●		●			0.015	0.015	0.006	0.001	0.007	
	32.50.2L-KM	●		●			0.015	0.015	0.006	0.0002	0.007	
	32.50.5L-KM	●		●			0.014	0.015	0.006	0.0003	0.007	
	32.51L-KM	●		●			0.014	0.015	0.006	0.016	0.007	

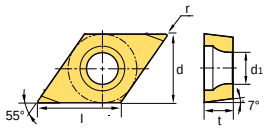
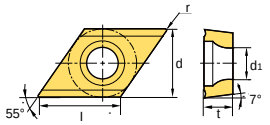
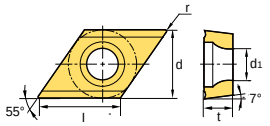
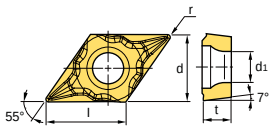
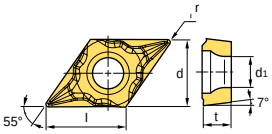
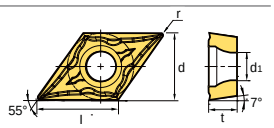
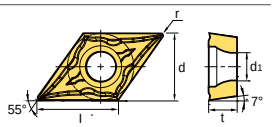
●: Korea Stock

Insert

Picture	Designation	Coated				Uncoated	Dimensions (inch)					Configuration
		PC5300	PC8105	PC8110	PC8115	H01	l	d	t	r	d1	
CCET-KM  Medium to finishing (Ultra high precision)	21.50.13MFR-KM	●		●			0.260	1/4	3/32	< 1/512	7/64	
	21.50.2MFR-KM	●		●			0.252	1/4	3/32	< 1/256	7/64	
	21.50.5MFR-KM	●		●			0.244	1/4	3/32	< 1/128	7/64	
	32.50.13MFR-KM	●		●			0.386	3/8	5/32	< 1/512	11/64	
	32.50.2MFR-KM	●		●			0.378	3/8	5/32	< 1/256	11/64	
	32.50.5MFR-KM	●		●			0.362	3/8	5/32	< 1/128	11/64	
	21.50.13MFL-KM	●		●			0.260	1/4	3/32	< 1/512	7/64	
	21.50.2MFL-KM	●		●			0.252	1/4	3/32	< 1/256	7/64	
	21.50.5MFL-KM	●		●			0.244	1/4	3/32	< 1/128	7/64	
	32.50.13MFL-KM	●		●			0.386	3/8	5/32	< 1/512	11/64	
	32.50.2MFL-KM	●		●			0.378	3/8	5/32	< 1/256	11/64	
	32.50.5MFL-KM	●		●			0.362	3/8	5/32	< 1/128	11/64	
CCGT-FS  Finishing (High precision)	21.50.2-FS	●		●			0.248	1/4	3/32	< 0.004	7/64	
	21.50.5-FS	●		●			0.244	1/4	3/32	< 0.008	7/64	
	21.51-FS	●		●			0.236	1/4	3/32	< 1/64	7/64	
	32.50.2-FS	●		●			0.386	3/8	5/32	< 0.004	11/64	
	32.50.5-FS	●		●			0.378	3/8	5/32	< 0.008	11/64	
	32.51-FS	●		●			0.362	3/8	5/32	< 1/64	11/64	
	32.52-FS	●		●			0.346	3/8	5/32	< 1/32	11/64	
CCGT-FS  Finishing (Ultra high precision)	21.50.2MFN-FS						0.248	1/4	3/32	< 0.004	7/64	
	21.50.5MFN-FS						0.244	1/4	3/32	< 0.008	7/64	
	21.51MFN-FS						0.236	1/4	3/32	< 1/64	7/64	
	32.50.2MFN-FS						0.386	3/8	5/32	< 0.004	11/64	
	32.50.5MFN-FS						0.378	3/8	5/32	< 0.008	11/64	
	32.51MFN-FS						0.362	3/8	5/32	< 1/64	11/64	
	32.52MFN-FS						0.346	3/8	5/32	< 1/32	11/64	
CCGT-MS  Medium cutting (High precision)	32.50.2-MS	●		●			0.386	3/8	5/32	< 0.004	11/64	
	32.50.5-MS	●		●			0.378	3/8	5/32	< 0.008	11/64	
	32.51-MS	●		●			0.362	3/8	5/32	< 1/64	11/64	
CCGT-MS  Medium cutting (Ultra high precision)	32.50.2MFN-MS	●		●			0.386	3/8	5/32	< 0.004	11/64	
	32.50.5MFN-MS	●		●			0.378	3/8	5/32	< 0.008	11/64	
	32.51MFN-MS	●		●			0.362	3/8	5/32	< 1/64	11/64	
CCGT-VP1  Finishing (High precision)	21.50.2-VP1	●	●	●	●	●	0.260	1/4	3/32	1/256	7/64	
	21.50.5-VP1	●	●	●	●	●	0.252	1/4	3/32	1/128	7/64	
	21.51-VP1	●	●	●	●	●	0.244	1/4	3/32	1/64	7/64	
	32.50.2-VP1	●	●	●	●	●	0.386	3/8	5/32	1/256	11/64	
	32.50.5-VP1	●	●	●	●	●	0.378	3/8	5/32	1/128	11/64	
	32.51-VP1	●	●	●	●	●	0.362	3/8	5/32	1/64	11/64	
CCGT-VP1  Finishing (Ultra high precision)	21.50.2MFN-VP1	●		●			0.260	1/4	3/32	< 1/256	7/64	
	21.50.5MFN-VP1	●		●			0.252	1/4	3/32	< 1/128	7/64	
	21.51MFN-VP1	●		●			0.244	1/4	3/32	< 1/64	7/64	
	32.50.2MFN-VP1	●		●			0.386	3/8	5/32	< 1/256	11/64	
	32.50.5MFN-VP1	●		●			0.378	3/8	5/32	< 1/128	11/64	
	32.51MFN-VP1	●		●			0.362	3/8	5/32	< 1/64	11/64	
DCGT-KF  Finishing (High precision)	21.50.1R-KF	●		●			0.307	0.250	0.094	0.001	0.004	
	21.50.2R-KF	●		●			0.307	0.250	0.094	0.004	0.004	
	21.50.5R-KF	●		●			0.307	0.250	0.094	0.008	0.004	
	21.51R-KF	●		●			0.307	0.250	0.094	0.016	0.004	
	32.50.1R-KF	●		●			0.457	0.375	0.156	0.001	0.007	
	32.50.2R-KF	●		●			0.457	0.375	0.156	0.004	0.007	
	32.50.5R-KF	●		●			0.457	0.375	0.156	0.008	0.007	
	32.51R-KF	●		●			0.457	0.375	0.156	0.016	0.007	
	21.50.1L-KF	●		●			0.307	0.250	0.094	0.001	0.004	
	21.50.2L-KF	●		●			0.307	0.250	0.094	0.004	0.004	
	21.50.5L-KF	●		●			0.307	0.250	0.094	0.008	0.004	
	21.51L-KF	●		●			0.307	0.250	0.094	0.016	0.004	
	32.50.1L-KF	●		●			0.457	0.375	0.156	0.001	0.007	
	32.50.2L-KF	●		●			0.457	0.375	0.156	0.004	0.007	
	32.50.5L-KF	●		●			0.457	0.375	0.156	0.008	0.007	
	32.51L-KF	●		●			0.457	0.375	0.156	0.016	0.007	

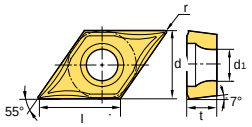
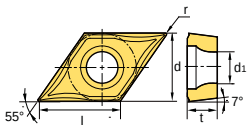
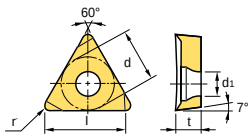
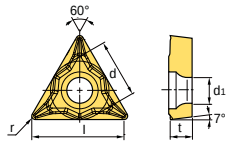
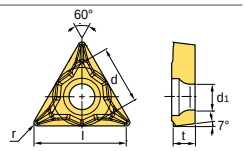
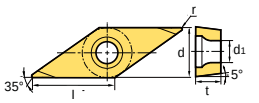
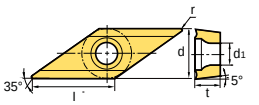
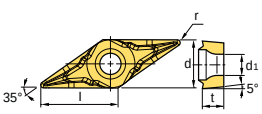
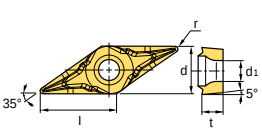
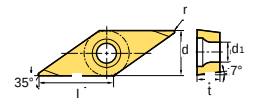
●: Korea Stock

Insert

Picture	Designation	Coated				Uncoated	Dimensions (inch)					Configuration
		PC5300	PC8105	PC8110	PC8115	H01	l	d	t	r	d1	
DCET-KF Finishing (Ultra high precision)	21.50.13MFR-KF	●		●			0.307	1/4	3/32	< 1/512	7/64	
	21.50.2MFR-KF	●		●			0.307	1/4	3/32	< 1/256	7/64	
	21.50.5MFR-KF	●		●			0.307	1/4	3/32	< 1/128	7/64	
	32.50.13MFR-KF	●		●			0.457	3/8	5/32	< 1/512	11/64	
	32.50.2MFR-KF	●		●			0.457	3/8	5/32	< 1/256	11/64	
	32.50.5MFR-KF	●		●			0.457	3/8	5/32	< 1/128	11/64	
	21.50.13MFL-KF	●		●			0.307	1/4	3/32	< 1/512	7/64	
	21.50.2MFL-KF	●		●			0.307	1/4	3/32	< 1/256	7/64	
	21.50.5MFL-KF	●		●			0.307	1/4	3/32	< 1/128	7/64	
	32.50.13MFL-KF	●		●			0.457	3/8	5/32	< 1/512	11/64	
	32.50.2MFL-KF	●		●			0.457	3/8	5/32	< 1/256	11/64	
	32.50.5MFL-KF	●		●			0.457	3/8	5/32	< 1/128	11/64	
DCGT-KM Medium to finishing (High precision)	0702003R-KM	●		●			0.012	0.010	0.004	0.001	0.004	
	070201R-KM	●		●			0.307	1/4	3/32	1/256	7/64	
	070202R-KM	●		●			0.307	1/4	3/32	1/128	7/64	
	070204R-KM	●		●			0.012	0.010	0.004	0.016	0.004	
	11T3003R-KM	●		●			0.018	0.015	0.006	0.001	0.007	
	11T301R-KM	●		●			0.457	3/8	5/32	1/256	11/64	
	11T302R-KM	●		●			0.457	3/8	5/32	1/128	11/64	
	11T304R-KM	●		●			0.018	0.015	0.006	0.016	0.007	
	0702003L-KM	●		●			0.012	0.010	0.004	0.001	0.004	
	070201L-KM	●		●			0.307	1/4	3/32	1/256	7/64	
	070202L-KM	●		●			0.307	1/4	3/32	1/128	7/64	
	070204L-KM	●		●			0.012	0.010	0.004	0.016	0.004	
	11T3003L-KM	●		●			0.018	0.006	0.006	0.001	0.007	
	11T301L-KM	●		●			0.457	3/8	5/32	1/256	11/64	
	11T302L-KM	●		●			0.457	3/8	5/32	1/128	11/64	
	11T304L-KM	●		●			0.018	0.006	0.006	0.016	0.007	
DCET-KM Medium to finishing (Ultra high precision)	21.50.13MFR-KM	●		●			0.307	1/4	3/32	< 1/512	7/64	
	21.50.2MFR-KM	●		●			0.307	1/4	3/32	< 1/256	7/64	
	21.50.5MFR-KM	●		●			0.307	1/4	3/32	< 1/128	7/64	
	32.50.13MFR-KM	●		●			0.457	3/8	5/32	< 1/512	11/64	
	32.50.2MFR-KM	●		●			0.457	3/8	5/32	< 1/256	11/64	
	32.50.5MFR-KM	●		●			0.457	3/8	5/32	< 1/128	11/64	
	21.50.13MFL-KM	●		●			0.307	1/4	3/32	< 1/512	7/64	
	21.50.2MFL-KM	●		●			0.307	1/4	3/32	< 1/256	7/64	
	21.50.5MFL-KM	●		●			0.307	1/4	3/32	< 1/128	7/64	
	32.50.13MFL-KM	●		●			0.457	3/8	5/32	< 1/512	11/64	
	32.50.2MFL-KM	●		●			0.457	3/8	5/32	< 1/256	11/64	
	32.50.5MFL-KM	●		●			0.457	3/8	5/32	< 1/128	11/64	
DCGT-FS new Finishing (High precision)	21.50.2-FS	●		●			0.299	1/4	3/32	0.004	7/64	
	21.50.5-FS	●		●			0.295	1/4	3/32	0.008	7/64	
	32.50.2-FS	●		●			0.457	3/8	5/32	0.004	11/64	
	32.50.5-FS	●		●			0.449	3/8	5/32	0.008	11/64	
	32.51-FS	●		●			0.441	3/8	5/32	1/64	11/64	
	32.52-FS	●		●			0.433	3/8	5/32	1/32	11/64	
DCGT-FS new Finishing (Ultra high precision)	21.50.2MFN-FS						0.299	1/4	3/32	< 0.004	7/64	
	21.50.5MFN-FS						0.295	1/4	3/32	< 0.008	7/64	
	32.50.2MFN-FS						0.457	3/8	5/32	< 0.004	11/64	
	32.50.5MFN-FS						0.449	3/8	5/32	< 0.008	11/64	
	32.51MFN-FS						0.441	3/8	5/32	< 1/64	11/64	
	32.52MFN-FS						0.433	3/8	5/32	< 1/32	11/64	
DCGT-MS new Medium cutting (High precision)	32.50.2-MS	●		●			0.449	3/8	5/32	0.004	11/64	
	32.50.5-MS	●		●			0.441	3/8	5/32	0.008	11/64	
	32.51-MS	●		●			0.433	3/8	5/32	1/64	11/64	
DCGT-MS new Medium cutting (Ultra high precision)	32.50.2MFN-MS	●		●			0.449	3/8	5/32	< 0.004	11/64	
	32.50.5MFN-MS	●		●			0.441	3/8	5/32	< 0.008	11/64	
	32.51MFN-MS	●		●			0.433	3/8	5/32	< 1/64	11/64	

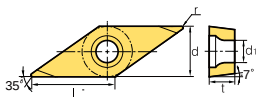
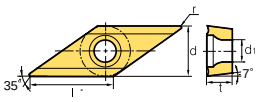
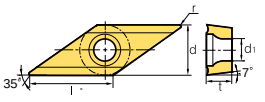
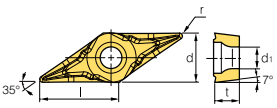
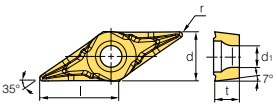
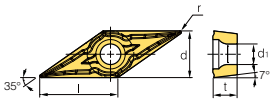
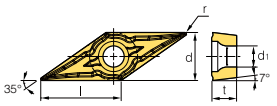
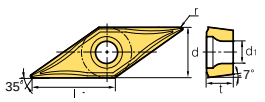
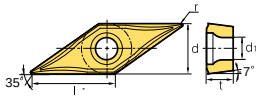
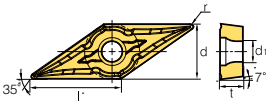
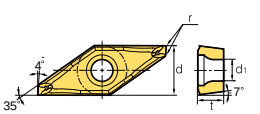
●: Korea Stock

Insert

Picture	Designation	Coated				Uncoated	Dimensions (inch)					Configuration
		PC5300	PC8105	PC8110	PC8115	H01	l	d	t	r	d1	
DCGT-VP1 Finishing (High precision)	21.50.2-VP1	●	●	●	●	●	0.307	1/4	3/32	1/256	7/64	
	21.50.5-VP1	●	●	●	●	●	0.307	1/4	3/32	1/128	7/64	
	21.51-VP1	●	●	●	●	●	0.307	1/4	3/32	1/64	7/64	
	32.50.2-VP1	●		●			0.457	3/8	5/32	1/256	11/64	
	32.50.5-VP1	●	●	●	●	●	0.457	3/8	5/32	1/128	11/64	
	32.51-VP1	●	●	●	●	●	0.457	3/8	5/32	1/64	11/64	
DCGT-VP1 Finishing (Ultra high precision)	21.50.2MFN-VP1	●		●			0.307	1/4	3/32	< 1/256	7/64	
	21.50.5MFN-VP1	●		●			0.307	1/4	3/32	< 1/128	7/64	
	21.51MFN-VP1	●		●			0.307	1/4	3/32	< 1/64	7/64	
	32.50.2MFN-VP1	●		●			0.457	3/8	5/32	< 1/256	11/64	
	32.50.5MFN-VP1	●		●			0.457	3/8	5/32	< 1/128	11/64	
	32.51MFN-VP1	●		●			0.457	3/8	5/32	< 1/64	11/64	
TCGT-KF Finishing (High precision)	1.51.50.1R-KF						0.321	0.187	0.094	0.001	0.094	
	1.51.50.2R-KF						0.315	0.187	0.094	0.004	0.094	
	1.51.50.5R-KF						0.303	0.187	0.094	0.008	0.094	
	1.51.50.1L-KF						0.321	0.187	0.094	0.001	0.094	
	1.51.50.2L-KF						0.315	0.187	0.094	0.004	0.094	
	1.51.50.5L-KF						0.303	0.187	0.094	0.008	0.094	
TCGT-FS new Finishing (High precision)	21.50.2-FS	●		●			0.366	1/4	3/32	0.004	7/64	
	21.50.5-FS	●		●			0.358	1/4	3/32	0.008	7/64	
	21.51-FS	●		●			0.339	1/4	3/32	1/64	7/64	
TCGT-FS new Finishing (Ultra high precision)	21.50.2MFN-FS						0.366	1/4	3/32	< 0.004	7/64	
	21.50.5MFN-FS						0.358	1/4	3/32	< 0.008	7/64	
	21.51MFN-FS						0.339	1/4	3/32	< 1/64	7/64	
VBGT-KF Finishing (High precision)	220.1R-KF	●		●			0.307	0.010	0.094	0.001	0.004	
	220.2R-KF	●		●			0.307	0.010	0.094	0.004	0.004	
	220.5R-KF	●		●			0.307	0.010	0.094	0.008	0.004	
	220.1L-KF	●		●			0.457	0.015	0.156	0.001	0.007	
	220.2L-KF	●		●			0.457	0.015	0.156	0.004	0.007	
	220.5L-KF	●		●			0.457	0.015	0.156	0.008	0.007	
VBGT-KM Medium to finishing (High precision)	220.1R-KM	●		●			0.307	0.010	0.094	0.001	0.004	
	220.2R-KM	●		●			0.307	0.010	0.094	0.004	0.004	
	220.5R-KM	●		●			0.307	0.010	0.094	0.008	0.004	
	220.1L-KM	●		●			0.457	0.015	0.156	0.001	0.007	
	220.2L-KM	●		●			0.457	0.015	0.156	0.004	0.007	
	220.5L-KM	●		●			0.457	0.015	0.156	0.008	0.007	
VBGT-FS new Finishing (High precision)	220.2 -FS	●		●			0.425	1/4	1/8	0.004	7/64	
	220.5 -FS	●		●			0.417	1/4	1/8	0.008	7/64	
	221 -FS	●		●			0.449	1/4	1/8	1/64	7/64	
	330.2 -FS	●		●			0.642	3/8	3/16	0.004	11/64	
	330.5 -FS	●		●			0.634	3/8	3/16	0.008	11/64	
	331 -FS	●		●			0.618	3/8	3/16	1/64	11/64	
VBGT-FS new Finishing (Ultra high precision)	220.2MFN-FS						0.425	1/4	1/8	< 0.004	7/64	
	220.5MFN-FS						0.417	1/4	1/8	< 0.008	7/64	
	221MFN-FS						0.449	1/4	1/8	< 1/64	7/64	
	330.2MFN-FS						0.642	3/8	3/16	< 0.004	11/64	
	330.5MFN-FS						0.634	3/8	3/16	< 0.008	11/64	
	331MFN-FS						0.618	3/8	3/16	< 1/64	11/64	
VCGT-KF Finishing (High precision)	220.1R-KM						0.017	0.010	0.125	0.001	0.004	
	220.2R-KM						0.017	0.010	0.125	0.004	0.004	
	220.5R-KM						0.017	0.010	0.125	0.008	0.004	
	220.1L-KM						0.017	0.010	0.125	0.001	0.004	
	220.2L-KM						0.017	0.010	0.125	0.004	0.004	
	220.5L-KM						0.017	0.010	0.125	0.008	0.004	

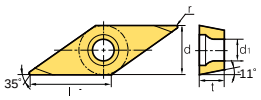
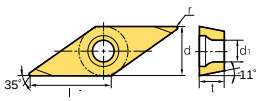
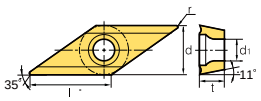
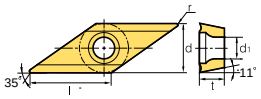
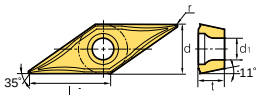
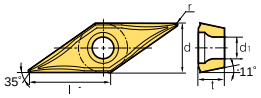
●: Korea Stock

Insert

Picture	Designation	Coated				Uncoated	Dimensions (inch)					Configuration
		PC5300	PC8105	PC8110	PC8115	H01	l	d	t	r	d1	
VCET-KF Finishing (Ultra high precision)	220.13MFR-KF	●		●			0.433	1/4	1/8	< 1/512	7/64	
	220.2MFR-KF	●		●			0.433	1/4	1/8	< 1/256	7/64	
	220.5MFR-KF	●		●			0.433	1/4	1/8	< 1/128	7/64	
	220.13MFL-KF	●		●			0.433	1/4	1/8	< 1/512	7/64	
	220.2MFL-KF	●		●			0.433	1/4	1/8	< 1/256	7/64	
	220.5MFL-KF	●		●			0.433	1/4	1/8	< 1/128	7/64	
VCGT-KM Medium to finishing (High precision)	21.50.1R-KM						0.017	0.010	0.005	0.001	0.004	
	220.2R-KM						0.433	1/4	1/8	1/256	7/64	
	220.5R-KM						0.433	1/4	1/8	1/128	7/64	
	21.50.1L-KM						0.017	0.010	0.005	0.001	0.004	
	220.2L-KM						0.433	1/4	1/8	1/256	7/64	
	220.5L-KM						0.433	1/4	1/8	1/128	7/64	
VCET-KM Medium to finishing (Ultra high precision)	220.13MFR-KM	●		●			0.433	1/4	1/8	< 1/512	7/64	
	220.2MFR-KM	●		●			0.433	1/4	1/8	< 1/256	7/64	
	220.5MFR-KM	●		●			0.433	1/4	1/8	< 1/128	7/64	
	220.13MFL-KM	●		●			0.433	1/4	1/8	< 1/512	7/64	
	220.2MFL-KM	●		●			0.433	1/4	1/8	< 1/256	7/64	
	220.5MFL-KM	●		●			0.433	1/4	1/8	< 1/128	7/64	
VCGT-FS new Finishing (High precision)	220.2-FS	●		●			0.425	1/4	1/8	0.004	7/64	
	220.5-FS	●		●			0.417	1/4	1/8	0.008	7/64	
	221-FS	●		●			0.449	1/4	1/8	1/65	7/64	
	330.2-FS	●		●			0.642	3/8	3/16	0.004	7/64	
	330.5-FS	●		●			0.634	3/8	3/16	0.008	11/64	
	331-FS	●		●			0.618	3/8	3/16	1/65	11/64	
VCGT-FS new Finishing (Ultra high precision)	220.2MFN-FS						0.425	1/4	1/8	< 0.004	7/64	
	220.5MFN-FS						0.417	1/4	1/8	< 0.008	7/64	
	221MFN-FS						0.449	1/4	1/8	< 1/65	7/64	
	330.2MFN-FS						0.642	3/8	3/16	< 0.004	11/64	
	330.5MFN-FS						0.634	3/8	3/16	< 0.008	11/64	
	331MFN-FS						0.618	3/8	3/16	< 1/65	11/64	
VCGT-MS new Medium cutting (High precision)	110301-MS	●		●			0.425	1/4	1/8	0.004	7/64	
	110302-MS	●		●			0.417	1/4	1/8	0.008	7/64	
	110304-MS	●		●			0.449	1/4	1/8	1/64	7/64	
VCGT-MS new Medium cutting (Ultra high precision)	220.2MFN-MS	●		●			0.425	1/4	1/8	< 0.004	7/64	
	220.5MFN-MS	●		●			0.417	1/4	1/8	< 0.008	7/64	
	221MFN-MS	●		●			0.449	1/4	1/8	< 1/64	7/64	
VCGT-VP1 Finishing (High precision)	220.2-VP1	●	●	●	●	●	0.433	1/4	1/8	1/256	7/64	
	220.5-VP1	●	●	●	●	●	0.433	1/4	1/8	1/128	7/64	
	221-VP1	●	●	●	●	●	0.433	1/4	1/8	1/64	7/64	
VCGT-VP1 Finishing (Ultra high precision)	220.2MFN-VP1	●		●			0.433	1/4	1/8	< 1/256	7/64	
	220.5MFN-VP1	●		●			0.433	1/4	1/8	< 1/128	7/64	
	221MFN-VP1	●		●			0.433	1/4	1/8	< 1/64	7/64	
VCGT-MS Medium cutting (Ultra high precision)	1203008FN-MS	●		●			0.433	0.295	0.118	< 0.003	7/64	
	120301FN-MS	●		●			0.433	0.295	0.118	< 1/256	7/64	
	120302FN-MS	●		●			0.433	0.295	0.118	< 1/128	7/64	
	120304FN-MS	●		●			0.433	0.295	0.118	< 1/64	7/64	
VCGX-VP1 Finishing (Ultra high precision) Chamfer type	120300MFR-VP1	●		●			0.433	0.295	1/8	< 0.0	7/64	
	120301MFR-VP1	●		●			0.433	0.295	1/8	< 1/256	7/64	
	120302MFR-VP1	●		●			0.433	0.295	1/8	< 1/128	7/64	
	120304MFR-VP1	●		●			0.433	0.295	1/8	< 1/64	7/64	
	120308MFR-VP1	●		●			0.433	0.295	1/8	< 1/32	7/64	

●: Korea Stock

Insert

Picture	Designation	Coated				Uncoated	Dimensions (inch)					Configuration
		PC5300	PC8105	PC8110	PC8115	H01	l	d	t	r	d_1	
VPGT-KF Finishing (High precision)	1.51.50.2R-KF	●		●			0.315	0.187	0.094	0.004	0.091	
	1.51.50.5R-KF	●		●			0.315	0.187	0.094	0.008	0.091	
	220.1R-KF	●		●			0.433	0.250	0.125	0.001	0.110	
	220.2R-KF	●		●			0.433	0.250	0.125	0.004	0.110	
	220.5R-KF	●		●			0.433	0.250	0.125	0.008	0.110	
	1.51.50.2L-KF	●		●			0.315	0.187	0.094	0.004	0.091	
	1.51.50.5L-KF	●		●			0.315	0.187	0.094	0.008	0.091	
	220.1L-KF	●		●			0.433	0.250	0.125	0.001	0.110	
	220.2L-KF	●		●			0.433	0.250	0.125	0.004	0.110	
	220.5L-KF	●		●			0.433	0.250	0.125	0.008	0.110	
VPET-KF Finishing (Ultra high precision)	1.51.50.13MFR-KF	●		●			0.315	3/16	3/32	< 1/512	6/64	
	1.51.50.2MFR-KF	●		●			0.315	3/16	3/32	< 1/256	6/64	
	1.51.50.5MFR-KF	●		●			0.315	3/16	3/32	< 1/128	6/64	
	1.51.50.13MFL-KF	●		●			0.315	3/16	3/32	< 1/512	6/64	
	1.51.50.2MFL-KF	●		●			0.315	3/16	3/32	< 1/256	6/64	
	1.51.50.5MFL-KF	●		●			0.315	3/16	3/32	< 1/128	6/64	
VPGT-KM Medium to finishing (High precision)	1.51.50.2R-KM	●		●			0.315	0.187	0.094	0.004	0.091	
	1.51.50.5R-KM	●		●			0.315	0.187	0.094	0.008	0.091	
	220.1R-KM	●		●			0.433	0.250	0.125	0.001	0.110	
	220.2R-KM	●		●			0.433	0.250	0.125	0.004	0.110	
	220.5R-KM	●		●			0.433	0.250	0.125	0.008	0.110	
	1.51.50.2L-KM	●		●			0.315	0.187	0.094	0.004	0.091	
	1.51.50.5L-KM	●		●			0.315	0.187	0.094	0.008	0.091	
	220.1L-KM	●		●			0.433	0.250	0.125	0.001	0.110	
	220.2L-KM	●		●			0.433	0.250	0.125	0.004	0.110	
	220.5L-KM	●		●			0.433	0.250	0.125	0.008	0.110	
VPET-KM Medium to finishing (Ultra high precision)	1.51.50.13MFR-KM	●		●			0.315	3/16	1/8	< 1/512	7/64	
	1.51.50.2MFR-KM	●		●			0.315	3/16	1/8	< 1/256	7/64	
	1.51.50.5MFR-KM	●		●			0.315	3/16	1/8	< 1/128	7/64	
	1.51.50.13MFL-KM	●		●			0.315	3/16	1/8	< 1/512	7/64	
	1.51.50.2MFL-KM	●		●			0.315	3/16	1/8	< 1/256	7/64	
	1.51.50.5MFL-KM	●		●			0.315	3/16	1/8	< 1/128	7/64	
VPGT-VP1 Medium cutting (High precision)	220.2-VP1	●	●	●	●	●	0.433	1/4	1/8	1/256	7/64	
	220.5-VP1	●	●	●	●	●	0.433	1/4	1/8	1/128	7/64	
	221-VP1	●	●	●	●	●	0.433	1/4	1/8	1/64	7/64	
VPGT-VP1 Medium cutting (Ultra high precision)	220.2MFN-VP1	●		●			0.433	1/4	1/8	< 1/256	7/64	
	220.5MFN-VP1	●		●			0.433	1/4	1/8	< 1/128	7/64	
	221MFN-VP1	●		●			0.433	1/4	1/8	< 1/64	7/64	

●: Korea Stock

Auto Tools (blade)

- Blade insert for automatic lathes
- For external machining of precise small parts
- 4 types - SSB (for back turning), SGB (for grooving), SBT (for threading), SBC (for parting off)
- Convenient use of one holder to all blade inserts
- Exclusive holder for close cutting action to the sub spindle

Code system

• Insert

Turning (Back turning)

SB	B	R	25	005
Small blade	Back turning	Hand (R: Right L: Left)	Length of insert	Nose radius

Grooving

SB	G	R	25	20
Small blade	Grooving	Hand (R: Right L: Left)	Length of insert	Width of cutting edge

Threading

SB	T	R	25	60 – N – 010		
Small blade	Threading	Hand (R: Right L: Left)	Length of insert	Angle of thread	Hand of thread (R: Right L: Left N: Neutral)	Nose radius

Parting

SB	C	R	25	20	16 – N	
Small blade	Cut off / Parting	Hand (R: Right L: Left)	Length of insert	Width of cutting edge	Max. machining diameter	Hand of thread (R: Right L: Left N: None)

• Holder

SB	H	R	10	10 – K25 – X		
Small blade	Holder	Hand (R: Right L: Left)	Height of shank	Width of shank	Length of insert	Sub spindle

Types of blade insert

Possible to apply various types of blade inserts to one holder



SBB: For back turning

- Approach angle: 59°
- Max. cutting depth: 0.157 inch
- Nose R: 0.002, 0.004, 0.008 inch



SBG: For grooving

- Width: 0.02~0.1 inch
- Nose R: 0.002 inch



SBT: For threading

- V profile: 60°
- Pitch: 0.008~0.04 inch
- Nose R: 0.002 inch



SBC: For cut off/Parting

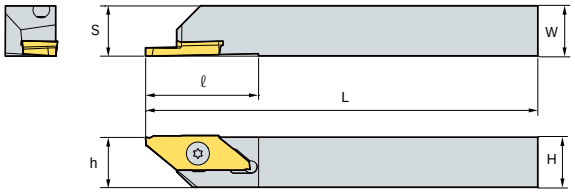
- Cutting width: 0.028~0.079 inch
- DMax.: 0.63 inch
- Nose R: 0.002 inch

SBHR/L



SBBR SBGR
SBTR SBCR

Offset 0



(inch)

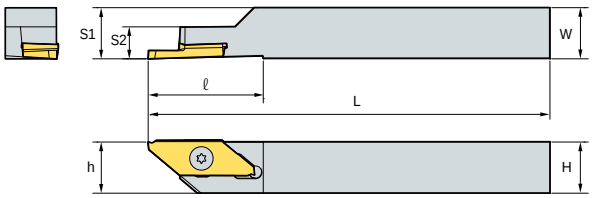
Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SBHR/L	06-K25	3/8	3/8	4 1/2	0.394	0.394	1.063	SB□R/L25	FTKA0409S	TW09P
	08-K25	1/2	1/2	4 1/2	0.472	0.472	1.063			
	10-K25	5/8	5/8	4 1/2	0.63	0.63	1.063			

SBHR/L-X (Sub spindle)



SBBR SBGR
SBTR SBCR

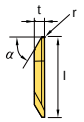
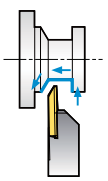
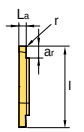
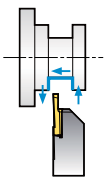
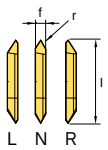
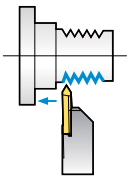
Offset 0



(inch)

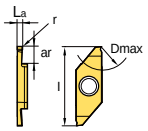
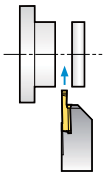
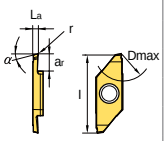
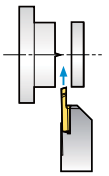
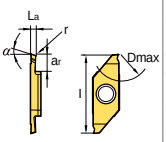
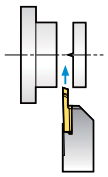
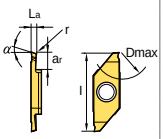
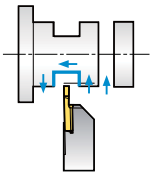
Designation		H	W	L	S1	S2	h	ℓ	Insert	Screw	Wrench
SBHR/L	06-K25-X	3/8	3/8	4 1/2	0.394	0.295	0.394	1.063	SB□R/L25	FTKA0407S	TW09P
	08-K25-X	1/2	1/2	4 1/2	0.472	0.295	0.472	1.063			

Insert

Application	Picture	Designation		Coated PC8110 R	PC8110 L	PC5300 R	PC5300 L	l	α	t	r	La	ar	f	D-MAX	Pitch range Min.	Pitch range Max.	Configuration	Feed direction
Back turning	 SBBR/L	SBBR/L	25005	●	●	●	●	0.984	59°	0.125	0.002	-	-	-	-	-	-		
			25010	●	●	●	●	0.984	59°	0.125	0.004	-	-	-	-	-	-		
			25020	●	●	●	●	0.984	59°	0.125	0.008	-	-	-	-	-	-		
Grooving	 SBGR/L	SBGR/L	2505	●	●	●	●	0.984	0°	-	0.002	0.020	0.053	-	-	-	-		
			2510	●	●	●	●	0.984	0°	-	0.002	0.039	0.108	-	-	-	-		
			2515	●	●	●	●	0.984	0°	-	0.002	0.059	0.148	-	-	-	-		
			2520	●	●	●	●	0.984	0°	-	0.002	0.079	0.148	-	-	-	-		
			2525	●	●	●	●	0.984	0°	-	0.002	0.098	0.148	-	-	-	-		
Threading	 SBTR/L	SBTR/L	2560-N-005	●	●	●	●	0.984	-	-	0.002	-	-	0.063	-	0.008	0.079	 L N R	
			2560-N-010	●	●	●	●	0.984	-	-	0.004	-	-	0.063	-	0.039	0.079		
			2560-R-005	●	●	●	●	0.984	-	-	0.002	-	-	0.024	-	0.008	0.059		
			2560-R-010	●	●	●	●	0.984	-	-	0.004	-	-	0.024	-	0.039	0.059		
			2560-L-005	●	●	●	●	0.984	-	-	0.002	-	-	0.024	-	0.008	0.059		
			2560-L-010	●	●	●	●	0.984	-	-	0.004	-	-	0.024	-	0.039	0.059		

●: Korea Stock

Insert

Application	Picture	Designation	Coated				Dimensions (inch)										Configuration	Feed direction
			PC8110		PC5300		l	α	t	r	La	ar	f	D-MAX	Pitch range			
			R	L	R	L									Min.	Max.		
Parting off	 SBCR/L	SBCR/L 250708-N	●	●	●	●	0.984	0°	-	0.002	0.028	0.169	-	0.315	-	-		
		251012-N	●	●	●	●	0.984	0°	-	0.002	0.039	0.248	-	0.472	-	-		
		251512-N	●	●	●	●	0.984	0°	-	0.002	0.059	0.248	-	0.472	-	-		
		252016-N	●	●	●	●	0.984	0°	-	0.002	0.079	0.335	-	0.630	-	-		
		250708-R	●	●	●	●	0.984	15°	-	0.002	0.028	0.169	-	0.315	-	-		
		251012-R	●	●	●	●	0.984	15°	-	0.002	0.039	0.248	-	0.472	-	-		
		251512-R	●	●	●	●	0.984	15°	-	0.002	0.059	0.248	-	0.472	-	-		
		252016-R	●	●	●	●	0.984	15°	-	0.002	0.079	0.335	-	0.630	-	-		
		250708-L	●	●	●	●	0.984	15°	-	0.002	0.028	0.169	-	0.315	-	-		
		251012-L	●	●	●	●	0.984	15°	-	0.002	0.039	0.248	-	0.472	-	-		
		251512-L	●	●	●	●	0.984	15°	-	0.002	0.059	0.248	-	0.472	-	-		
		252016-L	●	●	●	●	0.984	15°	-	0.002	0.079	0.335	-	0.630	-	-		
		251012-T	●	●	●	●	0.984	0°	-	0.002	0.039	0.248	-	0.472	-	-		
		251512-T	●	●	●	●	0.984	0°	-	0.002	0.059	0.248	-	0.472	-	-		
		252016-T	●	●	●	●	0.984	0°	-	0.002	0.079	0.335	-	0.630	-	-		

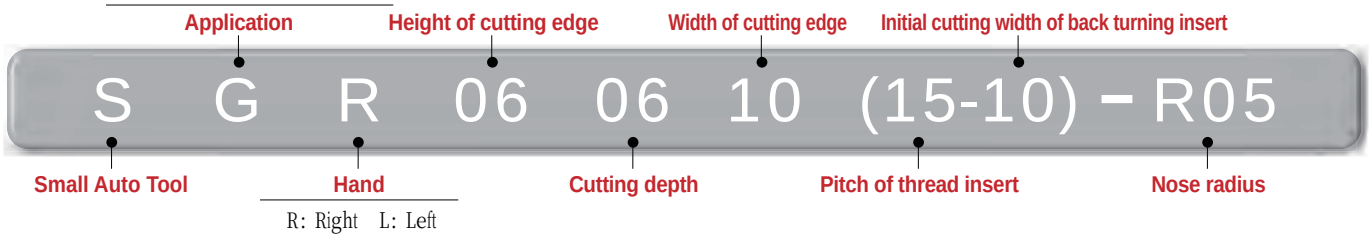
● : Korea Stock

Auto Tools (multi utility)

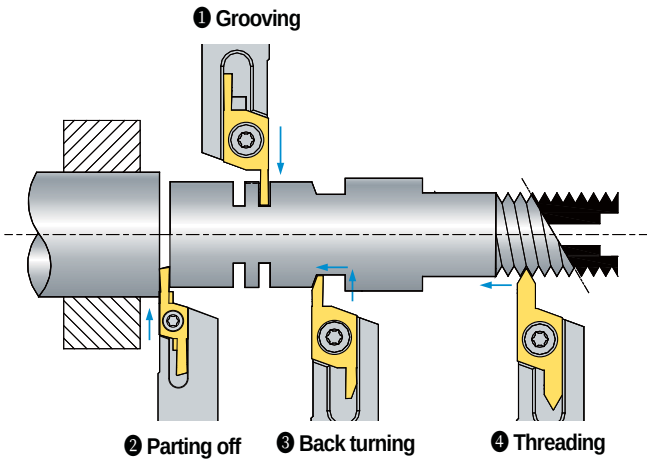
- Multifunctional insert for automatic lathes
- For external machining of precise small parts
- 5 types - SB (for back turning), SG (for grooving), ST (for threading), SC (for parting off), SGB (for grooving and back turning)
- Convenient use of one holder to all inserts
- Offset 0 to all ISO type holders

Code system

B: Back turning G: Grooving
C: Parting off T: Threading
GB : Grooving and back turning

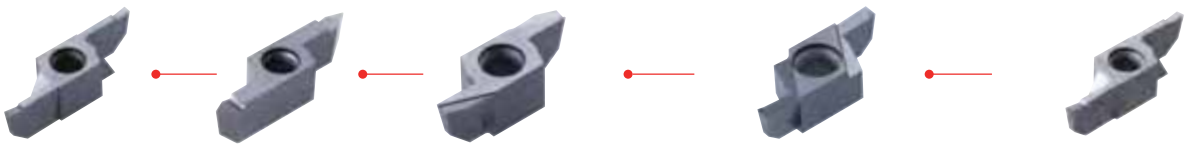


Application example



Types of multifunctional insert

Possible to apply various types of blade inserts to one holder (Ex: All designations of 06 size inserts can be applied to one 06 size holder.)



SG: Grooving | ST: Threading | SB: Back turning | SGB: Grooving and back turning | SC: Parting off

Recommended cutting conditions

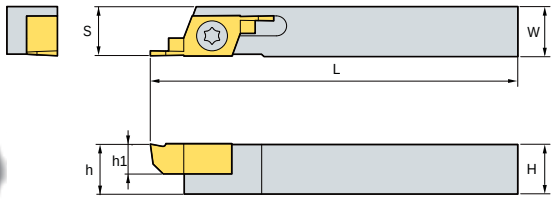
Workpiece		Turning		Grooving		Parting off		Back turning	
		Cutting speed, vc (sfm)	Feed, fn (ipr)	Cutting speed, vc (sfm)	Feed, fn (ipr)	Cutting speed, vc (sfm)	Feed, fn (ipr)	Cutting speed, vc (sfm)	Feed, fn (ipr)
P	Carbon steel	160~490	0.0004~0.0098	160~490	0.0008~0.0031	160~490	0.0004~0.0031	160~490	0.0004~0.0098
P	Free cutting steel	100~490	0.0008~0.0098	100~490	0.0008~0.0031	100~490	0.0004~0.0031	100~490	0.0004~0.0098
M	Stainless steel	160~400	0.0008~0.0079	160~400	0.0008~0.0020	160~400	0.0008~0.0020	160~400	0.0008~0.0079
N	Non-ferrous metal	230~660	0.0012~0.0098	230~660	0.0012~0.0039	230~660	0.0012~0.0039	230~660	0.0012~0.0118

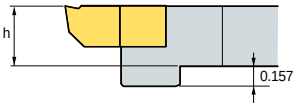
SXGNR/L



SBR, SGBR
SCR, STR, SGR

Offset
0





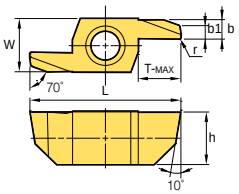
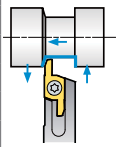
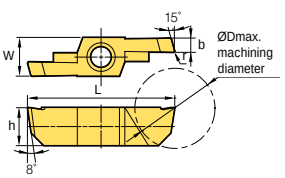
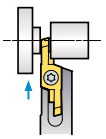
· SXGNR/L1212-X08A follows the configuration above.

• R type insert

(inch)

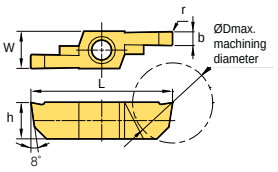
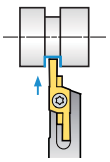
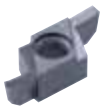
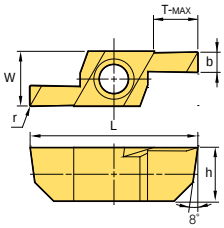
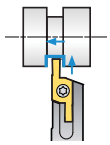
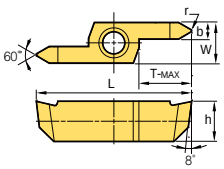
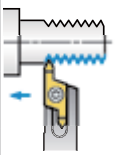
Designation		H	W	L	S	h	h1	Insert	Screw	Wrench
SXGNR/L	06-X6A	3/8	3/8	4 1/2	0.375	0.375	0.236	S□R/L06	FTNA0408	TW15P
	08-X6A	1/2	1/2	4 1/2	0.472	0.500	0.236			
	10-X6A	5/8	5/8	4 1/2	0.625	0.625	0.236			
	12-X6A	3/4	3/4	4 1/2	0.750	0.750	0.236			
	08-X8A	1/2	1/2	4 1/2	0.500	0.500	0.315	S□R/L08	FTNA0411	TW15P
	10-X8A	5/8	5/8	4 1/2	0.625	0.625	0.315			
	12-X8A	3/4	3/4	4 1/2	0.750	0.750	0.315			

Insert

Application	Picture	Designation		Coated PC9030 R	Coated PC9030 L	b1	b	W	L	r	h	T-MAX	ØD	Configuration	Feed direction
Back turning	SBR/L	SBR/L	060520-10-R00			0.039	0.079	0.315	0.866	0	0.236	0.217	-		
			060520-10-R05			0.039	0.079	0.315	0.866	0.002	0.236	0.217	-		
			060520-10-R10			0.039	0.079	0.315	0.866	0.004	0.236	0.217	-		
			060630-20-R00			0.079	0.118	0.315	0.945	0	0.236	0.256	-		
			060630-20-R05			0.079	0.118	0.315	0.945	0.002	0.236	0.256	-		
			060630-20-R10			0.079	0.118	0.315	0.945	0.004	0.236	0.256	-		
			080630-20-R00			0.079	0.118	0.315	0.906	0	0.315	0.256	-		
			080630-20-R05			0.079	0.118	0.315	0.906	0.002	0.315	0.256	-		
			080630-20-R10			0.079	0.118	0.315	0.906	0.004	0.315	0.256	-		
			080840-20-R00			0.079	0.157	0.315	1.063	0	0.315	0.335	-		
			080840-20-R05			0.079	0.157	0.315	1.063	0.002	0.315	0.335	-		
			080840-20-R10			0.079	0.157	0.315	1.063	0.004	0.315	0.335	-		
Parting off	SCR/L	SCR/L	060610-R00			-	0.039	0.315	0.945	0	0.236	-	0.433		
			060610-R05	●		-	0.039	0.315	0.945	0.002	0.236	-	0.433		
			060610-R10	●		-	0.039	0.315	0.945	0.004	0.236	-	0.433		
			060615-R00			-	0.059	0.315	0.945	0	0.236	-	0.433		
			060615-R05	●		-	0.059	0.315	0.945	0.002	0.236	-	0.433		
			060615-R10	●		-	0.059	0.315	0.945	0.004	0.236	-	0.433		
			060620-R00			-	0.079	0.315	0.945	0	0.236	-	0.433		
			060620-R05	●		-	0.079	0.315	0.945	0.002	0.236	-	0.433		
			060620-R10	●		-	0.079	0.315	0.945	0.004	0.236	-	0.433		
			081015-R00			-	0.059	0.315	1.22	0	0.315	-	0.709		
			081015-R05			-	0.059	0.315	1.22	0.002	0.315	-	0.709		
			081015-R10			-	0.059	0.315	1.22	0.004	0.315	-	0.709		
			081020-R00			-	0.079	0.315	1.22	0	0.315	-	0.709		
			081020-R05			-	0.079	0.315	1.22	0.002	0.315	-	0.709		
			081020-R10	●		-	0.079	0.315	1.22	0.004	0.315	-	0.709		
			081025-R00			-	0.098	0.315	1.22	0	0.315	-	0.709		
			081025-R05	●		-	0.098	0.315	1.22	0.002	0.315	-	0.709		
			081025-R10	●		-	0.098	0.315	1.22	0.004	0.315	-	0.709		
			081030-R00			-	0.118	0.315	1.22	0	0.315	-	0.709		
			081030-R05	●		-	0.118	0.315	1.22	0.002	0.315	-	0.709		
			081030-R10			-	0.118	0.315	1.22	0.004	0.315	-	0.709		

●: Korea Stock

Insert

Application	Picture	Designation		Coated PC9030 R	Coated PC9030 L	Dimensions (inch) b	W	L	r	h	T-MAX	ØD	Pitch (inch)	Configuration	Feed direction
Grooving	SGR/L 	SGR/L	060610-R00			0.039	0.315	0.945	0	0.236	-	0.433	-		
			060610-R05	●		0.039	0.315	0.945	0.002	0.236	-	0.433	-		
			060610-R10	●		0.039	0.315	0.945	0.004	0.236	-	0.433	-		
			060615-R00			0.059	0.315	0.945	0	0.236	-	0.433	-		
			060615-R05	●		0.059	0.315	0.945	0.002	0.236	-	0.433	-		
			060615-R10	●		0.059	0.315	0.945	0.004	0.236	-	0.433	-		
			060620-R00			0.079	0.315	0.945	0	0.236	-	0.433	-		
			060620-R05	●		0.079	0.315	0.945	0.002	0.236	-	0.433	-		
			060620-R10	●		0.079	0.315	0.945	0.004	0.236	-	0.433	-		
			081015-R00			0.059	0.315	1.220	0	0.315	-	0.709	-		
			081015-R05			0.059	0.315	1.220	0.002	0.315	-	0.709	-		
			081015-R10			0.059	0.315	1.220	0.004	0.315	-	0.709	-		
			081020-R00			0.079	0.315	1.220	0	0.315	-	0.709	-		
			081020-R05	●		0.079	0.315	1.220	0.002	0.315	-	0.709	-		
			081020-R10			0.079	0.315	1.220	0.004	0.315	-	0.709	-		
			081025-R00			0.098	0.315	1.220	0	0.315	-	0.709	-		
			081025-R05			0.098	0.315	1.220	0.002	0.315	-	0.709	-		
			081025-R10			0.098	0.315	1.220	0.004	0.315	-	0.709	-		
			081030-R00			0.118	0.315	1.220	0	0.315	-	0.709	-		
			081030-R05			0.118	0.315	1.220	0.002	0.315	-	0.709	-		
			081030-R10			0.118	0.315	1.220	0.004	0.315	-	0.709	-		
Grooving and back turning	SGBR/L 	SGBR/L	0604520-R00			0.079	0.315	0.866	0	0.236	0.217	-	-		
			0604520-R05			0.079	0.315	0.866	0.002	0.236	0.217	-	-		
			0604520-R10			0.079	0.315	0.866	0.004	0.236	0.217	-	-		
			0604525-R00			0.098	0.315	0.866	0	0.236	0.217	-	-		
			0604525-R05			0.098	0.315	0.866	0.002	0.236	0.217	-	-		
			0604525-R10			0.098	0.315	0.866	0.004	0.236	0.217	-	-		
			0605530-R00			0.118	0.315	0.945	0	0.236	0.256	-	-		
			0605530-R05			0.118	0.315	0.945	0.002	0.236	0.256	-	-		
			0605530-R10			0.118	0.315	0.945	0.004	0.236	0.256	-	-		
			0805525-R00			0.098	0.315	0.945	0	0.315	0.276	-	-		
			0805525-R05			0.098	0.315	0.945	0.002	0.315	0.276	-	-		
			0805525-R10			0.098	0.315	0.945	0.004	0.315	0.276	-	-		
			0806530-R00			0.118	0.315	1.024	0	0.315	0.315	-	-		
			0806530-R05			0.118	0.315	1.024	0.002	0.315	0.315	-	-		
			0806530-R10			0.118	0.315	1.024	0.004	0.315	0.315	-	-		
Threading	STR/L 	STR/L	06073215			0.126	0.315	0.984	0.002	0.236	0.276	-	0.5-1.5		
			06073230			0.126	0.315	0.984	0.007	0.236	0.276	-	1.5-3.0		
			08103215			0.126	0.315	1.220	0.002	0.315	0.413	-	0.5-1.5		
			08103230			0.126	0.315	1.220	0.007	0.315	0.413	-	1.5-3.0		

●: Korea Stock

Auto Tools (KGT/MGT)

- Grooving insert for automatic lathes
- Exclusive holder for automatic lathes
- Economic double sided insert
- Strong clamping system secures stable machining and precision.
- A wide selection of chip breakers according to various cutting conditions such as low/high feed, continuous/interrupted machining, etc.

Code system

• Insert

KG M N 300 - 04 - T

System code	Tolerance	Hand	Width of cutting edge	Corner nose radius of insert	Chip breaker
KG SYSTEM (KORLOY Grooving) MG SYSTEM (Multi Grooving)	M: Pressed class G: Ground class	N: Neutral R: Right L: Left I : Internal	0.079~0.315 inch	0.008 inch 0.012 inch 0.016 inch	L / R / T / C LP / RP

• Holder

KG E H R/L 16 - 3 T15

System code	Application	Holder type	Hand	Shank size	Cutting width	Max. cutting diameter
KG SYSTEM (KORLOY Grooving) MG SYSTEM (Multi Grooving)	E: External machining I : Internal machining	H: Horizontal type V: Vertical type U: Undercut type	R: Right L: Left	Height 1 inch, width 1 inch (For internal machining: Min. machining diameter)	0.079~0.315 inch	0.315~1.417 inch

Chip breaker line-up

KGT Type

KGMN-L



- Sharp cutting edge
- For low feed machining
- For small diameter parts

KGMN-R



- Reinforced cutting edge
- For high feed machining
- For interrupted cutting

KGMN-T



- Sharp cutting edge
- Stronger chip control
- For turning and grooving

KGMR/L-LP



- Sharp cutting edge
- For low feed machining
- Small diameter component
- Right/Left handed

KGMR/L-RP



- Strong cutting edge
- For high feed machining
- For iInterrupted cutting
- Right/Left handed

KGMN-C



- Improved chip control
- Copying
- Relief
- Cast iron
- Alloy steel
- Carbon steel
- Stainless

MGT Type

MGM(G)N-M



- Easier chip control by narrowing chip width with the use of chip breaker on rake surface center
- Smooth chip flow by small dots in external machining
- Available for both external machining and grooving

MGMN-G



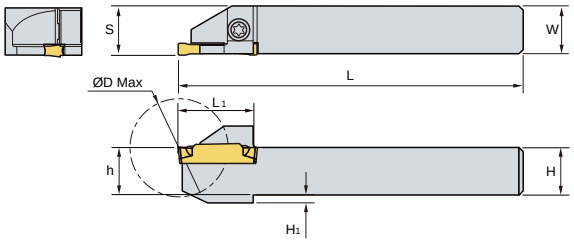
- Specially designed chip breaker allows narrower chips to promote better chip flow with the use of center dots
- Exclusive chip breaker for grooving

KGEHR/L-D00A

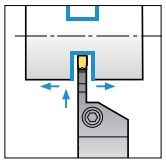
Compact type



KGGN KGMN KGMR/L
KRGN KRMN



Grooving, Turning, Parting off



• R type insert

(inch)

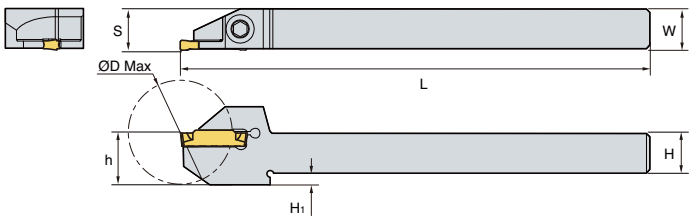
Designation		Dimensions (inch)							Insert	Screw	Wrench
		H	W	L1	L	S	h1	ØD_MAX			
KGEHR/L	06-2-D20A	3/8	3/8	-	5	0.383	0.079	0.787	KGMN200-□-□ KGMR/L200-□-□ KRGN200-□-□	ETNA0412	TW15L
	08-2-D25A	1/2	1/2	-	5	0.508	0.079	0.984			
	10-2-D32A	5/8	5/8	-	5	0.633	-	1.260			
	08-3-D25A	1/2	1/2	-	5	0.508	0.079	0.984	KGMN300-□-□ KGMR/L300-□-□ KRMG300-C KRGN300-□-□		
	10-3-D32A	5/8	5/8	-	5	0.633	-	1.260			

KGEHR/L-D00B

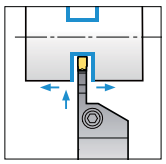
High rigidity type



KGGN KGMN KGMR/L
KRGN KRMN



Grooving, Turning, Parting off

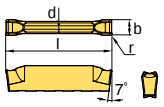
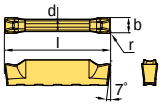
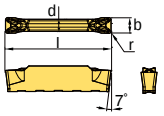


• R type insert

(inch)

Designation		Dimensions (inch)						Insert	Screw	Wrench
		H	W	L	S	h1	ØD_MAX			
KGEHR/L	06-2-D30B	3/8	3/8	5	0.383	0.260	1.181	KGMN200-□-□ KGMR/L200-□-□ KRMN200-C	MHA0512	HW40L
	08-2-D25B	1/2	1/2	5	0.508	0.138	0.984			
	08-2-D30B	1/2	1/2	5	0.508	0.138	1.181			
	10-2-D32B	5/8	5/8	5	0.633	-	1.260			
	08-3-D25B	1/2	1/2	5	0.508	0.138	0.984	KGMN300-□-□ KGMR/L300-□-□ KRMN300-C		
	10-3-D32B	5/8	5/8	5	0.633	-	1.260			

KGT Insert

Application	Picture	Designation		Coated							Dimensions (inch)					Configuration
				NC3120	NC3225	NC5330	NC6315	PC3035	PC5300	PC9030	b	r	l	d	α°	
Grooving	KGMN-L	KGMN	200-02-L		●	●		●	●	●	0.079	1/128	0.787	0.067	-	
			300-02-L		●	●		●	●	●	0.118	1/128	0.787	0.091	-	
Grooving·Parting off	KGMN-R	KGMN	200-02-R		●	●		●	●	●	0.079	1/128	0.787	0.067	-	
			300-02-R		●	●		●	●	●	0.118	1/128	0.787	0.091	-	
Grooving·turning	KGMN-T	KGMN	200-02-T		●	●	●	●	●	●	0.079	1/128	0.787	0.067	-	
			300-02-T		●	●	●	●	●	●	0.118	1/128	0.787	0.091	-	
			300-04-T		●	●	●	●	●	●	0.118	1/64	0.787	0.091	-	

●: Korea Stock

KGT Insert

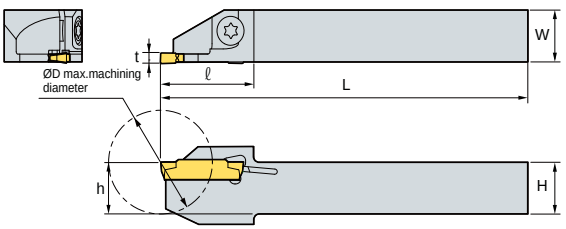
Application	Picture	Designation		Coated NC3120	NC3225	NC5330	NC6315	PC3035	PC5300	PC9030	b	r	l	d	α°	Configuration
Parting off (Right handed)	KGMR-LP	KGMR	200-6D-LP			●			●		0.079	1/128	0.787	0.067	6	
			200-15D-LP			●			●		0.079	1/128	0.787	0.067	15	
			300-6D-LP			●			●		0.118	1/128	0.787	0.091	6	
			300-15D-LP			●			●		0.118	1/128	0.787	0.091	15	
Parting off (Right handed)	KGMR-RP	KGMR	200-6D-RP			●			●		0.079	1/128	0.787	0.067	6	
			200-15D-RP			●			●		0.079	1/128	0.787	0.067	15	
			300-6D-RP			●			●		0.118	1/128	0.787	0.091	6	
			300-15D-RP			●			●		0.118	1/128	0.787	0.091	15	
Parting off (Left handed)	KGML-LP	KGML	200-6D-LP								0.079	1/128	0.787	0.067	6	
			200-15D-LP								0.079	1/128	0.787	0.067	15	
			300-6D-LP								0.118	1/128	0.787	0.091	5	
			300-15D-LP								0.118	1/128	0.787	0.091	15	
Parting off (Left handed)	KGML-RP	KGML	200-6D-RP								0.079	1/128	0.787	0.067	6	
			200-15D-RP								0.079	1/128	0.787	0.067	15	
			300-6D-RP								0.118	1/128	0.787	0.091	6	
			300-15D-RP								0.118	1/128	0.787	0.091	15	
Copying	KRMN-C	KRMN	200-C		●	●	●	●	●		0.079	3/64	0.787	0.067	-	
			300-C		●	●	●	●	●		0.118	1/14	0.787	0.087	-	

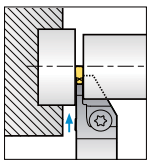
●: Korea Stock

MGEHR/L



MGMN





• R type insert

(inch)

Designation		ØD	H = h	W	L	ℓ	t	Insert	Screw	Wrench
MGEHR/L	06-X15A	0.787	3/8	3/8	4.5	0.709	0.059	MGMN150-G	ETNA0412	TW15L
	08-X15A	0.984	1/2	1/2	4.5	0.768	0.059			
	06-X20A	0.787	3/8	3/8	4.5	0.709	0.079	MGMN200-M MGMN200-G	ETNA 0412	TW 15L
	08-X20A	0.984	1/2	1/2	4.5	0.768	0.079			
	10-X20A	1.260	5/8	5/8	4.5	0.984	0.079			
	06-X25A	0.787	3/8	3/8	4.5	0.787	0.098	MGMN250-M MGMN250-G	ETNA 0412	TW 15L
	08-X25A	0.984	1/2	1/2	4.5	0.787	0.098			
	10-X25A	1.260	5/8	5/8	4.5	0.984	0.098			

MGT Insert

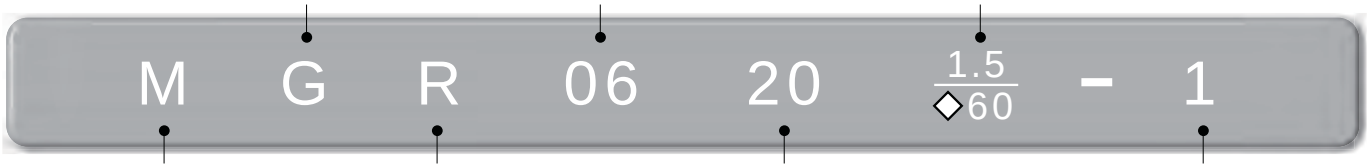
Application	Picture	Designation		Coateda NC3120	NC3225	NC3030	NC5330	NC6315	PC5300	PC9030	Uncoated H01	G10	ST30A	b	r	l	d	t	Configuration
Grooving	MGMN-G	MGMN	150-G		●	●			●	●	●			0.059	0.006	0.630	0.047	0.138	
			200-G	●	●	●				●	●			0.079	0.008	0.630	0.047	0.138	
			250-G		●	●			●	●				0.098	0.008	0.728	0.079	0.152	
Grooving	MGMN-M	MGMN	200-M	●	●	●	●		●	●	●			0.079	0.008	0.630	0.047	0.138	
			250-M	●	●	●			●	●				0.098	0.008	0.728	0.079	0.152	

●: Korea Stock

Auto Tools (MSB Tool)

- High hardness grade guarantees longer tool life
- Various kinds of machining (fitting, valve, medical parts, automobile component, and semiconductor equipment) are available
- Various types of MSB Tools (boring, grooving, threading)

Code system



Application

B : Boring
BC: Copying
BB: Back Boring
BF: Chamfering
G : Square Grooning
GR: Round Grooving
GF: Face Grooving
T : Threading

Shank Dia.

03: 3.0
04: 4.0
06: 6.0
08: 8.0
10: 10.0

Machining size

Boring		No Code	
Copying		Width of Groove	
Threading		60°	55°
		Pitch	tpi
◇	F	0.25~1.0	72~24
	A	0.5~1.5	48~16
	AG	0.5~3.0	48~8

Type

M: Micro

Hand

R: Right
L: Left

Max. aspect ratio

10: 10.0
15: 15.0
20: 20.0
25: 25.0
35: 35.0

Cutting edge

1: Single ended
None: Double ended

MSB Tools code system

Type		Application		Designation
01	Boring	Boring		MBR/L○○☆☆
02		Copying		MBCR/L○○☆☆
03		Back Boring		MBBR/L○○☆☆
04		Chamfering		MBFR/L○○☆☆
05	Grooving	Square Grooning		MGR/L○○☆☆-□□
06		Round Grooving		MGRR/L○○☆☆-□□
07		Face Grooving		MGFR/L○○00-□□
08	Threading	Partial	60°	MTR/L○○☆☆-◇60
			55°	MTR/L○○☆☆-◇55

Details

Mark	○○	Shank Dia.			
	☆☆	Max. depth of boring			
	□□	Width of groove			
	◇	Pitch / tpi	F	0.25~1.0	72~24
			A	0.5~1.5	48~16
			AG	0.5~3.0	48~8

M This is metric size. We can also provide in inch type

Grades

Grade	Coating	Application and features
Z12M	Carbide	Ultra fine grain substrate ensures superior wear resistance and toughness Application: Cast iron, Aluminum alloy and Non-ferrous metals machining
PC30M	TiN coating	TiN coated ultra fine grain substrate ensures long tool life Application: Stainless steel, heat resisting alloy and hard-to-cut material machining

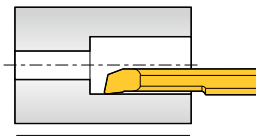
Machining types



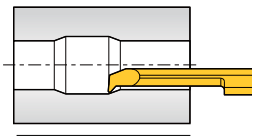


Types

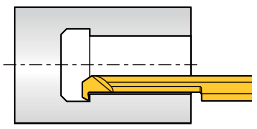
Boring



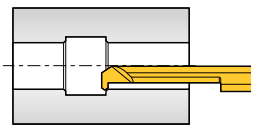
Boring
Min. dia. of machining: Ø0.13



Copying
Min. dia. of machining: Ø0.20

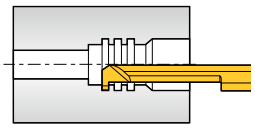


Back Boring
Min. dia. of machining: Ø0.13

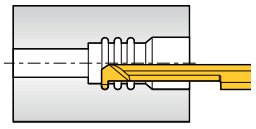


Chamfering
Min. dia. of machining: Ø0.20

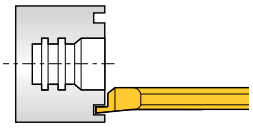
Grooving



Square Grooving
Min. dia. of machining: Ø0.13

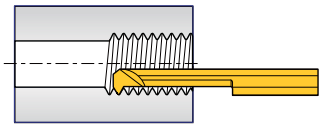


Round Grooving
Min. dia. of machining: Ø0.13



Face Grooving
Min. dia. of machining: Ø0.27

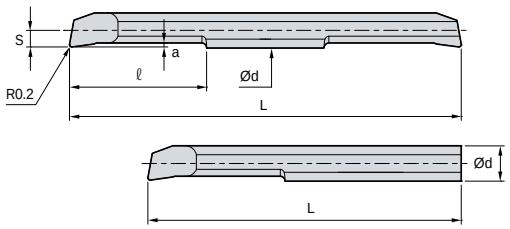
Threading

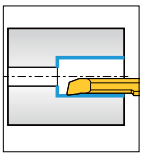


Threading
Min. dia. of machining: Ø0.13

Boring







(inch)

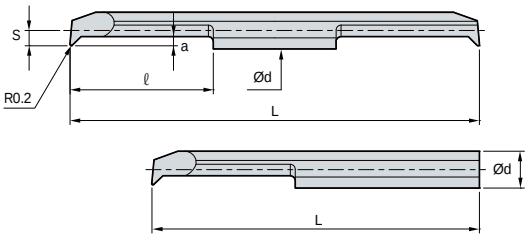
Twin Edge				Single Edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge	
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M				L Double ended	L Single ended	a	S
MBR	0310	●		MBR	0310-1			3.0	3.2	10	40	35	0.5	1.4
	0315	●			0315-1					15	50	45		
	0410	●			0410-1			4.0	4.2	10	40	35	0.6	1.9
	0415	●			0415-1					15	50	45		
	0420	●			0420-1					20	60	50		
	0610	●			0610-1			6.0	6.2	10	45	40	0.75	2.9
	0615	●			0615-1					15	55	45		
	0620	●			0620-1					20	65	50		
	0810	●			0810-1			8.0	8.2	10	50	45	0.8	3.9
	0820	●			0820-1					20	70	60		
	0830				0830-1					30	80	70		
	1015	●			1015-1			10.0	10.2	15	60	60	1.0	4.9
	1025	●			1025-1					25	80	70		
	1035	●			1035-1					35	100	80		

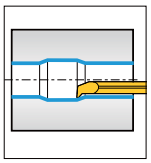
M This is metric size. We can also provide in inch type

●: Korea Stock

Copying







(inch)

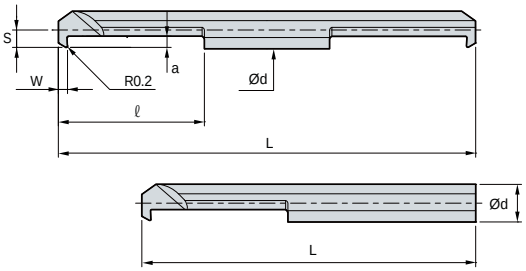
Twin Edge				Single Edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge	
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M				L Double ended	L Single ended	a	S
MBCR	0410	●		MBCR	0410-1			4.0	4.2	10	40	35	1.0	1.9
	0415	●			0415-1					15	50	45		
	0420	●			0420-1					20	60	50		
	0610	●			0610-1			6.0	6.2	10	45	40	1.3	2.9
	0615	●			0615-1					15	55	45		
	0620	●			0620-1					20	60	50		

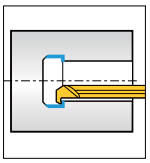
M This is metric size. We can also provide in inch type

●: Korea Stock

Back Boring







(inch)

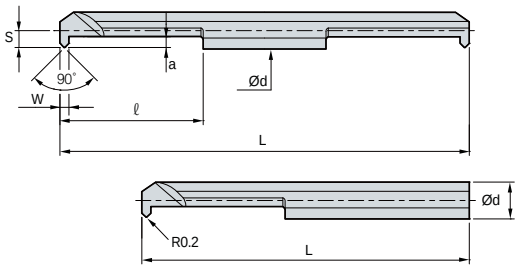
Twin Edge			Single Edge			Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge		
Designation	Coated PC30M	Uncoated Z12M	Designation	Coated PC30M	Uncoated Z12M				L		W	a	S
									Double ended	Single ended			
MBBR 0310	●		MBBR 0310-1			3.0	3.2	10	40	35	1.5	0.8	1.4
0315	●		0315-1					15	50	45			
0410	●		0410-1			4.0	4.2	10	40	35	2.0	1.3	1.9
0415	●		0415-1					15	50	45			
0420	●		0420-1					20	60	50			
0610	●		0610-1			6.0	6.2	10	45	40	2.0	1.9	2.9
0615	●		0615-1					15	55	45			
0620	●		0620-1					20	65	50			

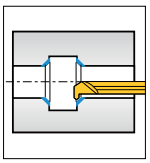
M This is metric size. We can also provide in inch type

●: Korea Stock

Chamfering







(inch)

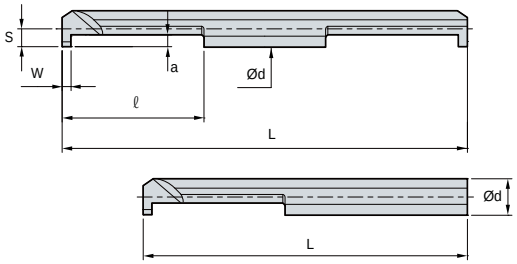
Twin Edge			Single Edge			Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge		
Designation	Coated PC30M	Uncoated Z12M	Designation	Coated PC30M	Uncoated Z12M				L		W	a	S
									Double ended	Single ended			
MBFR 0410	●		MBFR 0410-1			4.0	4.2	10	40	35	0.8	1.0	1.9
0415	●		0415-1					15	50	45			
0420	●		0420-1					20	60	50			
0610	●		0610-1			6.0	6.2	10	45	40	1.4	1.2	2.9
0615	●		0615-1					15	55	45			
0620	●		0620-1					20	65	50			

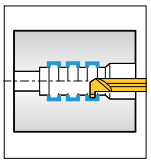
M This is metric size. We can also provide in inch type

●: Korea Stock

Square Grooving







(inch)

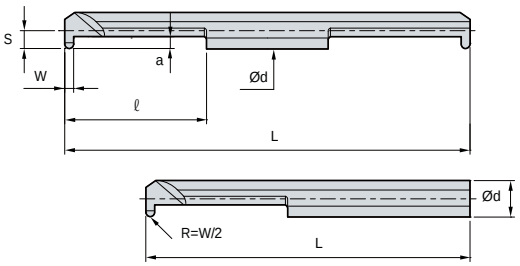
Twin Edge				Single Edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge		
Designation		Coated	Uncoated	Designation		Coated	Uncoated				L		W	a	S
		PC30M	Z12M			PC30M	Z12M				Double ended	Single ended			
MGR	0310-1.0	●		MGR	0310-1.0-1			3.0	3.2	10	40	35	1.0	0.8	1.4
	0315-1.0	●			0315-1.0-1					15	50	45			
	0310-1.5	●			0310-1.5-1					10	40	35	1.5		
	0315-1.5	●			0315-1.5-1					15	50	45			
	0410-1.0	●			0410-1.0-1			4.0	4.2	10	40	35	1.0	1.4	1.9
	0420-1.0				0420-1.0-1					20	60	50			
	0410-1.5				0410-1.5-1					10	40	35	1.5		
	0420-1.5				0420-1.5-1					20	60	50			
	0410-2.0	●			0410-2.0-1					10	40	35	2.0		
	0420-2.0				0420-2.0-1					20	60	50			
	0610-1.0	●			0610-1.0-1			6.0	6.2	10	45	40	1.0	1.8	2.9
	0620-1.0	●			0620-1.0-1					20	65	50			
	0610-1.5	●			0610-1.5-1					10	45	40	1.5		
	0620-1.5	●			0620-1.5-1					20	65	50			
	0610-2.0	●			0610-2.0-1					10	45	40	2.0		
	0620-2.0	●			0620-2.0-1					20	65	50			
	0610-2.5	●			0610-2.5-1					10	45	40	2.5	2.0	
	0620-2.5	●			0620-2.5-1					20	65	50			
	0820-1.5	●			0820-1.5-1			8.0	8.2	20	70	60	1.5	2.5	3.9
	0820-2.0	●			0820-2.0-1								2.0		
	0820-2.5	●			0820-2.5-1								2.5	3.5	
	0820-3.0	●			0820-3.0-1								3.0		
	1025-1.5	●			1025-1.5-1			10.0	10.2	25	80	70	1.5	2.5	4.9
	1025-2.0	●			1025-2.0-1								2.0		
	1025-2.5	●			1025-2.5-1								2.5	3.5	
	1025-3.0	●			1025-3.0-1								3.0		

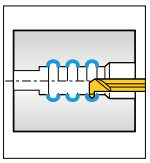
M This is metric size. We can also provide in inch type

●: Korea Stock

Round Grooving







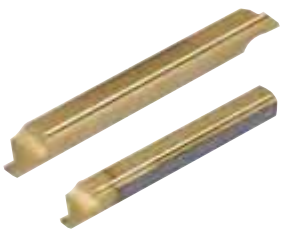
(inch)

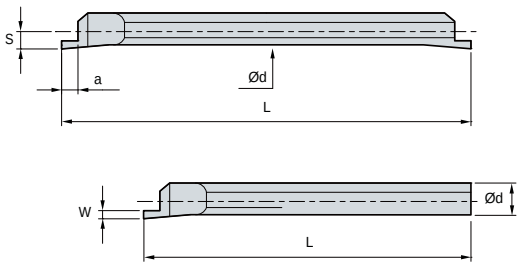
Twin Edge			Single Edge			Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge		
Designation	Coated PC30M	Uncoated Z12M	Designation	Coated PC30M	Uncoated Z12M				L Double ended	L Single ended	W	a	S
MGRR 0310-0.8	●		MGRR 0310-0.8-1			3.0	3.2	10	40	35	0.8	0.8	1.4
0315-0.8	●		0315-0.8-1					15	50	45			
0410-1.0	●		0410-1.0-1			4.0	4.2	10	40	35	1.0	1.0	1.9
0420-1.0	●		0420-1.0-1					20	60	50			
0610-1.0	●		0610-1.0-1			6.0	6.2	10	45	40	1.0	2.0	2.9
0620-1.0	●		0620-1.0-1					20	65	50			
0610-1.5	●		0610-1.5-1					10	45	40	1.5		
0620-1.5	●		0620-1.5-1					20	65	50			
0610-2.0	●		0610-2.0-1					10	45	40	2.0		
0620-2.0	●		0620-2.0-1					20	65	50			
0820-1.0	●		0820-1.0-1			8.0	8.2	20	70	60	1.0	2.3	3.9
0820-1.5	●		0820-1.5-1								1.5		
0820-2.0			0820-2.0-1								2.0		
1025-1.0	●		1025-1.0-1			10.0	10.2	25	80	70	1.0	2.8	4.9
1025-1.5	●		1025-1.5-1								1.5		
1025-2.0	●		1025-2.0-1								2.0		

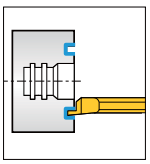
M This is metric size. We can also provide in inch type

●: Korea Stock

Face Grooving







(inch)

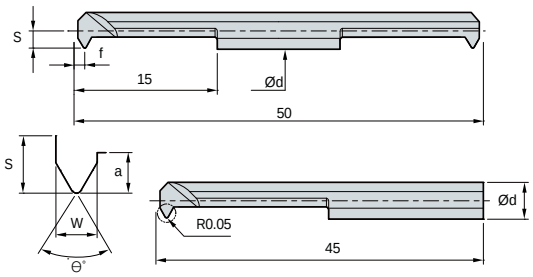
Twin Edge			Single Edge			Ød	Min.dia. of machining	Overall length		Detailed cutting edge		
Designation	Coated PC30M	Uncoated Z12M	Designation	Coated PC30M	Uncoated Z12M			L Double ended	L Single ended	W	a	S
MGFR 0400-1.0	●		MGFR 0400-1.0-1			4.0	6.0	50	45	1.0	1.5	1.8
0400-1.5	●		0400-1.5-1							1.5	2.0	
0600-1.0	●		0600-1.0-1			6.0	8.5	50	45	1.0	1.5	2.9
0600-1.5	●		0600-1.5-1							1.5	2.0	
0600-2.0	●		0600-2.0-1							2.0	2.5	
0800-1.0	●		0800-1.0-1			8.0	10.4	70	60	1.0	1.5	3.9
0800-1.5	●		0800-1.5-1							1.5	2.0	
0800-2.0	●		0800-2.0-1							2.0	2.5	
0800-2.5	●		0800-2.5-1							2.5	3.0	
0800-3.0	●		0800-3.0-1							3.0	3.5	
			0800-3.5-1							3.5	4.0	
1000-2.0	●		1000-2.0-1			10.0	12.4	80	70	2.0	2.5	4.9
1000-2.5	●		1000-2.5-1							2.5	3.0	
1000-3.0	●		1000-3.0-1							3.0	3.5	
1000-3.5	●		1000-3.5-1							3.5	4.0	
1000-4.0	●		1000-4.0-1							4.0	4.5	
1000-4.5	●		1000-4.5-1							4.5	5.0	

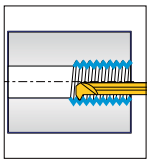
M This is metric size. We can also provide in inch type

●: Korea Stock

Threading







(inch)

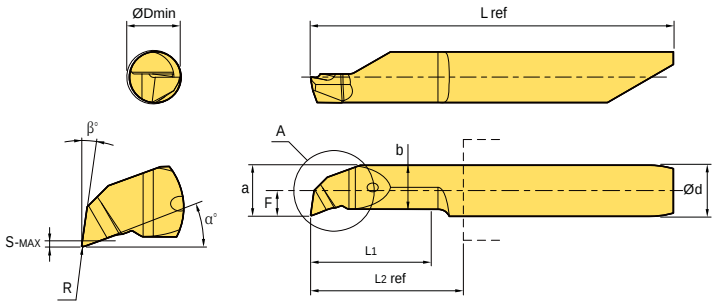
Twin Edge				Single Edge				Ød	Min.dia. of ma-chining	Threading			Detailed cutting edge		
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M			W	Pitch /tpi	θ°	S	a	f
MTR	0315-F60			MTR	0315-F60-1			3.0	3.3	1.2	0.5~1.0	60°	1.45	1.2	0.6
	0415-F60	●			0415-F60-1			4.0	4.3				1.95		
	0615-A60	●			0615-A60-1			6.0	6.2	2.0	0.5~1.5		2.90	2.2	1.0
	0315-F55	●			0315-F55-1			3.0	3.3	1.2	48~24	55°	1.45	1.2	0.6
	0415-F55	●			0415-F55-1			4.0	4.3				1.95		
	0615-A55	●			0615-A55-1			6.0	6.2	2.0	28~16		2.90	2.2	1.0

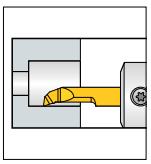
M This is metric size. We can also provide in inch type

●: Korea Stock

Boring HPC







For internal cutting

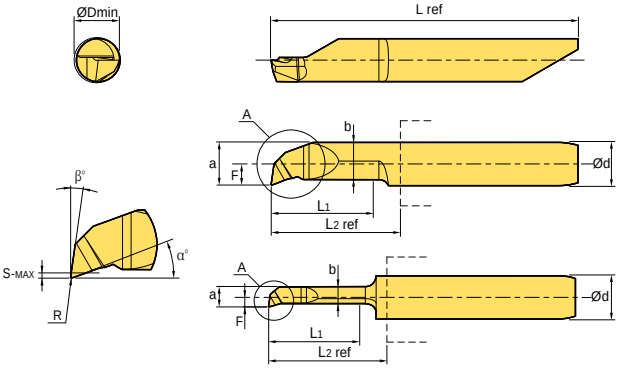
(inch)

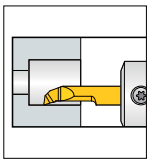
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions									
			L_1	R	F	S-MAX	a	b	α°	β°	L_2 ref	L ref
MBCR430L20C-R015	0.157 (4)	0.118 (3.0)	0.787	0.006	0.054	0.008	0.106	0.093	17.5	8	0.898	1.567
MBCR432L10C-R015	0.157 (4)	0.126 (3.2)	0.394	0.006	0.057	0.008	0.114	0.098	17.5	8	0.453	1.122
MBCR432L20C-R015	0.157 (4)	0.126 (3.2)	0.787	0.006	0.055	0.008	0.113	0.096	17.5	8	0.898	1.567
MBCR440L10C-R020	0.157 (4)	0.157 (4.0)	0.394	0.008	0.075	0.010	0.147	0.132	17.5	8	0.453	1.122
MBCR442L10C-R015	0.157 (4)	0.165 (4.2)	0.394	0.006	0.076	0.012	0.155	0.123	19.0	8	0.453	1.122
MBCR442L10C-R020	0.157 (4)	0.165 (4.2)	0.394	0.008	0.078	0.012	0.157	0.123	19.0	8	0.453	1.122
MBCR442L21C-R015	0.157 (4)	0.165 (4.2)	0.827	0.006	0.076	0.012	0.155	0.123	19.0	8	0.898	1.567
MBCR552L10C-R020	0.197 (5)	0.205 (5.2)	0.394	0.008	0.096	0.020	0.194	0.159	21.0	8	0.478	1.378
MBCR552L15C-R020	0.197 (5)	0.205 (5.2)	0.591	0.008	0.096	0.020	0.194	0.167	21.0	8	0.715	1.614
MBCR552L21C-R020	0.197 (5)	0.205 (5.2)	0.827	0.008	0.096	0.020	0.194	0.159	21.0	8	0.911	1.811
MBCR552L30C-R020	0.197 (5)	0.205 (5.2)	1.181	0.008	0.096	0.020	0.194	0.159	21.0	8	1.266	2.165
MBCR552L35C-R020	0.197 (5)	0.205 (5.2)	1.378	0.008	0.096	0.020	0.194	0.159	21.0	8	1.463	2.362

※ HPC: High pressure coolant

Boring







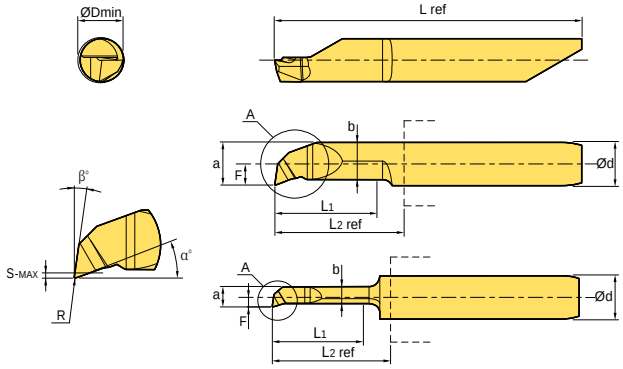
For internal cutting

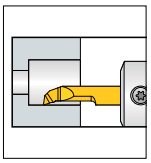
(inch)

Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
MBCR/L410L04-R005	0.157 (4)	0.039 (1.0)	0.157	0.002	0.019	0.004	0.038	0.028	16.4	8	0.346	1.014
MBCR/L410L04-R010	0.157 (4)	0.039 (1.0)	0.157	0.004	0.019	0.004	0.038	0.028	17.0	8	0.346	1.014
MBCR/L410L06-R005	0.157 (4)	0.039 (1.0)	0.236	0.002	0.019	0.006	0.038	0.028	16.4	8	0.346	1.014
MBCR/L410L06-R010	0.157 (4)	0.039 (1.0)	0.236	0.004	0.019	0.006	0.038	0.032	17.0	8	0.346	1.014
MBCR415L04-R005	0.157 (4)	0.059 (1.5)	0.157	0.002	0.029	0.006	0.108	0.045	16.0	8	0.453	1.122
MBCR/L415L09-R010	0.157 (4)	0.059 (1.5)	0.354	0.004	0.029	0.006	0.057	0.048	16.0	8	0.453	1.122
MBCR/L417L06-R005	0.157 (4)	0.067 (1.7)	0.236	0.002	0.024	0.008	0.056	0.040	16.0	8	0.453	1.122
MBCR/L417L06-R010	0.157 (4)	0.067 (1.7)	0.236	0.004	0.030	0.008	0.062	0.046	16.0	8	0.453	1.122
MBCR/L417L09-R005	0.157 (4)	0.067 (1.7)	0.354	0.002	0.024	0.008	0.056	0.041	16.0	8	0.453	1.122
MBCR/L417L09-R010	0.157 (4)	0.067 (1.7)	0.354	0.004	0.032	0.008	0.064	0.051	16.0	8	0.453	1.122
MBCR/L419L06-R005	0.157 (4)	0.075 (1.9)	0.236	0.002	0.028	0.008	0.064	0.047	16.0	8	0.453	1.122
MBCR/L419L09-R005	0.157 (4)	0.075 (1.9)	0.354	0.002	0.028	0.008	0.064	0.047	16.0	8	0.453	1.122
MBCR/L422L06-R005	0.157 (4)	0.087 (2.2)	0.236	0.002	0.035	0.008	0.074	0.061	17.7	8	0.453	1.122
MBCR/L422L06-R010	0.157 (4)	0.087 (2.2)	0.236	0.004	0.037	0.008	0.076	0.061	17.7	8	0.453	1.122
MBCR/L422L09-R005	0.157 (4)	0.087 (2.2)	0.354	0.002	0.035	0.008	0.074	0.061	17.7	8	0.453	1.122
MBCR/L422L09-R010	0.157 (4)	0.087 (2.2)	0.354	0.002	0.004	0.008	0.081	0.069	17.7	8	0.453	1.122
MBCR/L422L14-R010	0.157 (4)	0.087 (2.2)	0.551	0.004	0.041	0.008	0.080	0.069	17.7	8	0.717	1.386
MBER422L14-R010	0.157 (4)	0.087 (2.2)	0.551	0.004	0.041	0.008	0.080	0.069	17.7	8	0.717	1.386
MBCR/L427L10-R005	0.157 (4)	0.106 (2.7)	0.394	0.004	0.002	0.008	0.097	0.081	17.5	8	0.453	1.122
MBCR/L427L10-R015	0.157 (4)	0.106 (2.7)	0.394	0.006	0.047	0.008	0.095	0.081	17.5	8	0.453	1.122
MBCR/L427L15-R015	0.157 (4)	0.106 (2.7)	0.591	0.006	0.048	0.008	0.098	0.081	17.5	8	0.717	1.386
MBER427L15-R015	0.157 (4)	0.106 (2.7)	0.591	0.006	0.048	0.008	0.098	0.081	17.5	8	0.717	1.386
MBCR/L427L16-R005	0.157 (4)	0.106 (2.7)	0.630	0.002	0.048	0.008	0.097	0.081	17.5	8	0.717	1.386
MBER427L16-R005	0.157 (4)	0.106 (2.7)	0.630	0.002	0.048	0.008	0.097	0.081	17.5	8	0.717	1.386
MBCR430L10-R005	0.157 (4)	0.118 (3.0)	0.394	0.002	0.052	0.008	0.106	0.089	17.5	8	0.453	1.130
MBCR/L430L16-R005	0.157 (4)	0.118 (3.0)	0.630	0.002	0.052	0.008	0.106	0.089	17.5	8	0.717	1.386
MBCR/L430L20-R015	0.157 (4)	0.118 (3.0)	0.787	0.006	0.054	0.008	0.106	0.093	17.5	8	0.898	1.567
MBCR/L430L26-R005	0.157 (4)	0.118 (3.0)	1.024	0.002	0.052	0.008	0.106	0.089	17.5	8	1.130	1.799
MBCR/L432L10-R005	0.157 (4)	0.126 (3.2)	0.394	0.002	0.056	0.008	0.114	0.096	17.5	8	0.453	1.122
MBCR/L432L10-R015	0.157 (4)	0.126 (3.2)	0.394	0.006	0.057	0.008	0.114	0.098	17.5	8	0.453	1.122
MBCR/L432L16-R005	0.157 (4)	0.126 (3.2)	0.630	0.002	0.056	0.008	0.114	0.096	17.5	8	0.717	1.386
MBER432L16-R005	0.157 (4)	0.126 (3.2)	0.630	0.002	0.056	0.008	0.114	0.096	17.5	8	0.717	1.386
MBCR/L432L16-R015	0.157 (4)	0.126 (3.2)	0.630	0.006	0.057	0.008	0.113	0.098	17.5	8	0.717	1.386
MBER432L16-R015	0.157 (4)	0.126 (3.2)	0.630	0.006	0.057	0.008	0.113	0.098	17.5	8	0.717	1.386
MBCR/L432L20-R005	0.157 (4)	0.126 (3.2)	0.787	0.002	0.056	0.008	0.114	0.096	17.5	8	0.898	1.567
MBER432L20-R005	0.157 (4)	0.126 (3.2)	0.787	0.002	0.056	0.008	0.114	0.096	17.5	8	0.898	1.567
MBCR/L432L20-R015	0.157 (4)	0.126 (3.2)	0.787	0.006	0.055	0.008	0.113	0.096	17.5	8	0.898	1.567
MBER432L20-R015	0.157 (4)	0.126 (3.2)	0.787	0.006	0.055	0.008	0.113	0.096	17.5	8	0.898	1.567
MBER432L23-R010	0.157 (4)	0.126 (3.2)	0.906	0.004	0.056	0.008	0.114	0.096	17.5	8	0.898	1.799
MBCR437L10-R005	0.157 4)	0.146 (3.7)	0.394	0.002	0.070	0.008	0.137	0.120	17.5	8	0.453	1.122
MBCR/L437L10-R015	0.157 (4)	0.146 (3.7)	0.394	0.006	0.069	0.008	0.135	0.120	17.5	8	0.453	1.122
MBCR/L437L15-R015	0.157 (4)	0.146 (3.7)	0.591	0.006	0.069	0.008	0.135	0.120	17.5	8	0.717	1.386
MBER437L15-R015	0.157 (4)	0.146 (3.7)	0.591	0.006	0.069	0.008	0.135	0.120	17.5	8	0.717	1.386
MBCR/L437L20-R015	0.157 (4)	0.146 (3.7)	0.787	0.006	0.069	0.008	0.135	0.120	17.5	8	0.898	1.567
MBER437L20-R015	0.157 (4)	0.146 (3.7)	0.787	0.006	0.069	0.008	0.135	0.120	17.5	8	0.898	1.567
MBCR437L26-R005	0.157 (4)	0.146 (3.7)	1.024	0.002	0.070	0.008	0.137	0.120	17.5	8	1.130	1.799
MBCR442L10-R003	0.157 (4)	0.165 (4.2)	0.394	0.001	0.078	0.012	0.157	0.123	19.0	8	0.453	1.122
MBCR442L10-R005	0.157 (4)	0.165 (4.2)	0.394	0.002	0.077	0.012	0.156	0.136	21.0	8	0.453	1.122

Boring







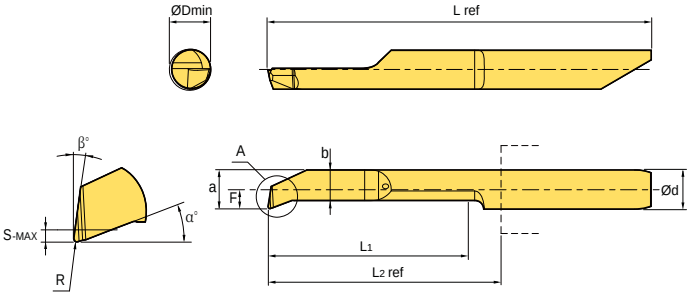
For internal cutting

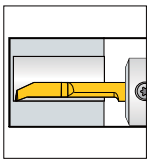
(inch)

Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
MBCR/L442L10-R015	0.157 (4)	0.165 (4.2)	0.394	0.006	0.076	0.012	0.155	0.123	19	8	0.453	1.122
MBCR/L442L16-R005	0.157 (4)	0.165 (4.2)	0.630	0.002	0.077	0.012	0.156	0.136	21	8	0.717	1.386
MBER442L16-R005	0.157 (4)	0.165 (4.2)	0.630	0.002	0.077	0.012	0.156	0.136	21	8	0.717	1.386
MBCR442L15-R003	0.157 (4)	0.165 (4.2)	0.591	0.001	0.078	0.012	0.157	0.123	19	8	0.717	1.386
MBCR/L442L16-R015	0.157 (4)	0.165 (4.2)	0.630	0.006	0.076	0.012	0.155	0.123	19	8	0.717	1.386
MBER442L16-R015	0.157 (4)	0.165 (4.2)	0.630	0.006	0.076	0.012	0.155	0.123	19	8	0.717	1.386
MBCR/L442L21-R005	0.157 (4)	0.165 (4.2)	0.827	0.002	0.077	0.012	0.156	0.136	21	8	0.898	1.567
MBER442L21-R005	0.157 (4)	0.165 (4.2)	0.827	0.002	0.077	0.012	0.156	0.136	21	8	0.898	1.567
MBCR/L442L21-R015	0.157 (4)	0.165 (4.2)	0.827	0.006	0.076	0.012	0.155	0.123	19	8	0.898	1.567
MBER442L21-R015	0.157 (4)	0.165 (4.2)	0.827	0.006	0.078	0.012	0.157	0.123	19	8	0.972	1.642
MBCR442L25-R003	0.157 (4)	0.165 (4.2)	0.984	0.001	0.078	0.012	0.157	0.123	19	8	1.130	1.799
MBCR/L442L26-R005	0.157 (4)	0.165 (4.2)	1.024	0.002	0.077	0.012	0.156	0.136	21	8	1.130	1.799
MBCR/L442L26-R015	0.157 (4)	0.165 (4.2)	1.024	0.006	0.076	0.012	0.155	0.123	19	8	1.130	1.799
MBCR442L30-R005	0.157 (4)	0.165 (4.2)	1.181	0.002	0.077	0.012	0.156	0.136	21	8	1.327	1.996
MBCR552L10-R005	0.197 (5)	0.205 (5.2)	0.394	0.002	0.096	0.020	0.194	0.167	19	8	0.478	1.378
MBCR/L552L10-R020	0.197 (5)	0.205 (5.2)	0.394	0.008	0.096	0.020	0.194	0.159	21	8	0.478	1.378
MBCR552L15-R003	0.197 (5)	0.205 (5.2)	0.591	0.001	0.096	0.020	0.194	0.167	21	8	0.715	1.614
MBCR/L552L16-R020	0.197 (5)	0.205 (5.2)	0.630	0.008	0.096	0.020	0.194	0.159	21	8	0.715	1.614
MBCR552L20-R005	0.197 (5)	0.205 (5.2)	0.787	0.002	0.096	0.020	0.194	0.167	21	8	0.911	1.811
MBCR552L20-R020	0.197 (5)	0.205 (5.2)	0.787	0.008	0.096	0.020	0.194	0.159	21	8	0.911	1.811
MBCR/L552L21-R020	0.197 (5)	0.205 (5.2)	0.827	0.008	0.096	0.020	0.194	0.159	21	8	0.911	1.811
MBER552L21-R020	0.197 (5)	0.205 (5.2)	0.827	0.008	0.096	0.020	0.194	0.159	21	8	0.911	1.811
MBCR/L552L26-R020	0.197 (5)	0.205 (5.2)	1.024	0.008	0.096	0.020	0.194	0.159	21	8	1.108	2.008
MBER552L26-R020	0.197 (5)	0.205 (5.2)	1.024	0.008	0.096	0.020	0.194	0.159	21	8	1.108	2.008
MBCR552L30-R005	0.197 (5)	0.205 (5.2)	1.181	0.002	0.095	0.020	0.194	0.167	21	8	1.266	2.165
MBCR/L552L30-R020	0.197 (5)	0.205 (5.2)	1.181	0.008	0.096	0.020	0.194	0.159	21	8	1.266	2.165
MBCR/L552L35-R020	0.197 (5)	0.205 (5.2)	1.378	0.008	0.096	0.020	0.194	0.159	21	8	1.463	2.362
MBCR/L662L16-R020	0.236 (6)	0.244 (6.2)	0.630	0.008	0.115	0.020	0.233	0.186	22	8	0.720	1.654
MBCR662L20-R005	0.236 (6)	0.244 (6.2)	0.787	0.002	0.115	0.020	0.233	0.186	22	8	0.917	1.850
MBCR/L662L21-R020	0.236 (6)	0.244 (6.2)	0.827	0.008	0.115	0.020	0.233	0.186	22	8	0.917	1.850
MBCR/L662L26-R020	0.236 (6)	0.244 (6.2)	1.024	0.008	0.115	0.020	0.233	0.186	22	8	1.114	2.047
MBCR662L30-R005	0.236 (6)	0.244 (6.2)	1.181	0.002	0.115	0.020	0.233	0.186	22	8	1.272	2.205
MBCR/L662L30-R020	0.236 (6)	0.244 (6.2)	1.181	0.008	0.115	0.020	0.233	0.186	22	8	1.272	2.205
MBER662L30-R020	0.236 (6)	0.244 (6.2)	1.181	0.008	0.115	0.020	0.233	0.186	22	8	1.272	2.205
MBCR/L662L35-R020	0.236 (6)	0.244 (6.2)	1.378	0.008	0.115	0.020	0.233	0.186	22	8	1.469	2.402
MBER662L35-R020	0.236 (6)	0.244 (6.2)	1.378	0.008	0.115	0.020	0.233	0.186	22	8	1.469	2.402
MBCR/L662L40-R020	0.236 (6)	0.244 (6.2)	1.575	0.008	0.115	0.020	0.233	0.186	22	8	1.665	2.598
MBCR772L15-R010	0.276 (7)	0.283 (7.2)	0.591	0.004	0.135	0.020	0.273	0.226	22	8	0.646	1.614
MBCR/L772L15-R020	0.276 (7)	0.283 (7.2)	0.591	0.008	0.135	0.020	0.273	0.226	22	8	0.646	1.614
MBCR/L772L25-R020	0.276 (7)	0.283 (7.2)	0.984	0.008	0.135	0.020	0.273	0.226	22	8	1.039	2.008
MBCR772L30-R020	0.276 (7)	0.283 (7.2)	1.181	0.008	0.135	0.020	0.273	0.226	22	8	1.236	2.205
MBCR/L772L35-R020	0.276 (7)	0.283 (7.2)	1.378	0.008	0.135	0.020	0.273	0.226	22	8	1.433	2.402
MBCR/L772L40-R020	0.276 (7)	0.283 (7.2)	1.575	0.008	0.135	0.020	0.273	0.226	22	8	1.630	2.598
MBER772L40-R020	0.276 (7)	0.283 (7.2)	1.575	0.008	0.135	0.020	0.273	0.226	22	8	1.630	2.598
MBCR/L772L45-R020	0.276 (7)	0.283 (7.2)	1.772	0.008	0.135	0.020	0.273	0.226	22	8	1.827	2.795
MBER772L45-R020	0.276 (7)	0.283 (7.2)	1.772	0.008	0.135	0.020	0.273	0.226	22	8	1.827	2.795
MBCR/L772L50-R020	0.276 (7)	0.283 (7.2)	1.969	0.008	0.135	0.020	0.273	0.226	22	8	2.024	2.992

Boring Chip Breaker HPC







For internal cutting

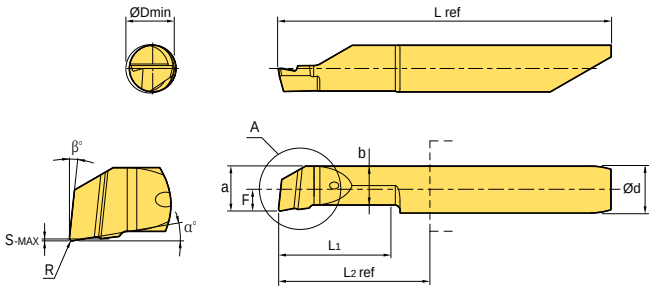
(inch)

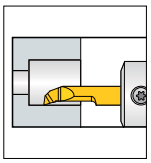
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
MBCBR442L20C-R015	0.157 (4)	0.165 (4.2)	0.787	0.006	0.077	0.012	0.156	0.123	21	8	0.898	1.567
MBCBR552L15C-R020	0.197 (5)	0.205 (5.2)	0.591	0.008	0.096	0.020	0.194	0.159	21	8	0.715	1.614
MBCBR552L25C-R020	0.197 (5)	0.205 (5.2)	0.984	0.008	0.096	0.020	0.194	0.159	21	8	1.108	2.008
MBCBR662L30C-R020	0.236 (6)	0.244 (6.2)	1.181	0.008	0.115	0.020	0.233	0.186	22	8	1.272	2.205

※ HPC: High pressure coolant

Boring Chip Former HPC







For internal cutting

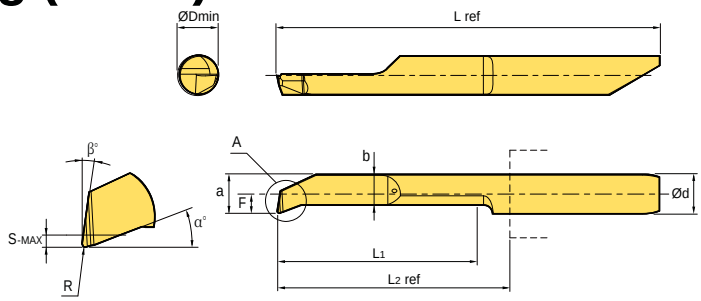
(inch)

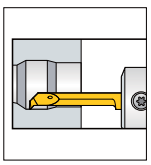
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
MBCFR442L10C-R015	0.157 (4)	0.165 (4.2)	0.394	0.006	0.073	0.002	0.152	0.132	7.5	6	0.453	1.122

※ HPC: High pressure coolant

Boring & Profiling (CBLF) HPC







For internal cutting

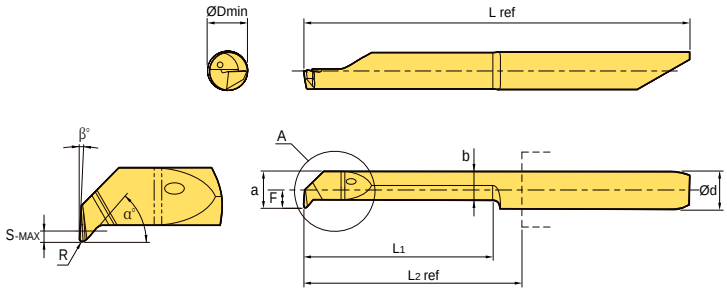
(inch)

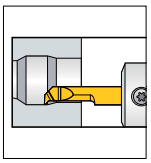
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
MCBLFR/L442L10C-R015	0.157 (4)	0.165 (4.2)	0.394	0.006	0.075	0.028	0.154	0.122	47	3	0.453	1.122
MCBLFR/L442L16C-R015	0.157 (4)	0.165 (4.2)	0.630	0.006	0.075	0.028	0.154	0.122	47	3	0.717	1.386
MCBLFR/L442L21C-R015	0.157 (4)	0.165 (4.2)	0.827	0.006	0.075	0.028	0.154	0.122	47	3	0.898	1.567
MCBLFR/L552L16C-R020	0.197 (5)	0.205 (5.2)	0.630	0.008	0.094	0.037	0.193	0.150	49	3	0.715	1.614
MCBLFR/L552L25C-R020	0.197 (5)	0.205 (5.2)	0.984	0.008	0.094	0.037	0.193	0.150	49	3	1.108	2.008
MCBLFR/L662L16C-R020	0.236 (6)	0.244 (6.2)	0.630	0.008	0.109	0.069	0.228	0.154	49	3	0.720	1.654
MCBLFR/L662L21C-R020	0.236 (6)	0.244 (6.2)	0.827	0.008	0.109	0.069	0.228	0.154	49	3	0.917	1.850
MCBLFR/L662L30C-R020	0.236 (6)	0.244 (6.2)	1.181	0.008	0.109	0.069	0.228	0.154	49	3	1.272	2.205

※ HPC: High pressure coolant

Boring & Profiling (CL) HPC







For internal cutting

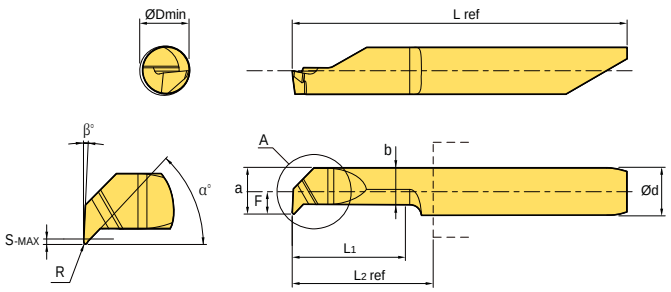
(inch)

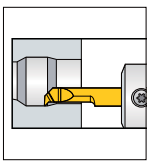
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
MCLR442L10C-R015	0.157 (4)	0.165 (4.2)	0.394	0.006	0.075	0.028	0.154	0.122	47	3	0.453	1.122
MCLR442L21C-R015	0.157 (4)	0.165 (4.2)	0.827	0.006	0.075	0.028	0.154	0.122	47	3	0.717	1.386
MCLR552L25C-R020	0.197 (5)	0.205 (5.2)	0.984	0.008	0.094	0.037	0.193	0.150	49	3	1.108	2.008

※ HPC: High pressure coolant

Boring & Profiling (CL)







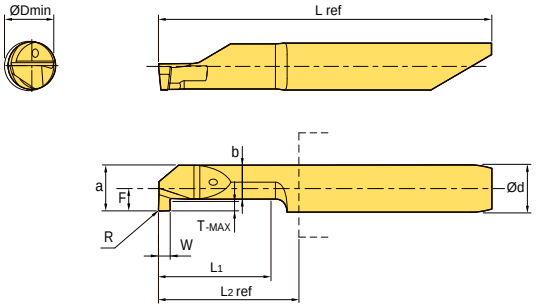
For internal cutting

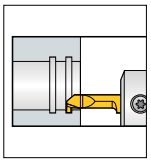
(inch)

Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
MCLR442L10-R010	0.157 (4)	0.165 (4.2)	0.394	0.004	0.075	0.028	0.154	0.122	47	3	0.453	1.122
MCLR/L442L10-R015	0.157 (4)	0.165 (4.2)	0.394	0.006	0.075	0.028	0.154	0.122	47	3	0.453	1.122
MCLR/L442L16-R015	0.157 (4)	0.165 (4.2)	0.630	0.006	0.075	0.028	0.154	0.122	47	3	0.717	1.386
MCLR4/L42L21-R015	0.157 (4)	0.165 (4.2)	0.827	0.006	0.075	0.028	0.154	0.122	47	3	0.898	1.567
MCLR552L07-R007	0.197 (5)	0.205 (5.2)	0.276	0.003	0.094	0.037	0.193	0.148	49	3	0.717	1.386
MCLR/L552L16-R020	0.197 (5)	0.205 (5.2)	0.630	0.008	0.094	0.037	0.193	0.150	49	3	0.715	1.614
MCLR/L552L25-R020	0.197 (5)	0.205 (5.2)	0.984	0.008	0.094	0.037	0.193	0.150	49	3	1.108	2.008
MCLR662L16-R010	0.236 (6)	0.244 (6.2)	0.630	0.004	0.109	0.069	0.228	0.154	49	3	0.720	1.654
MCLR/L662L16-R020	0.236 (6)	0.244 (6.2)	0.630	0.008	0.109	0.069	0.228	0.154	49	3	0.720	1.654
MCLR/L662L21-R020	0.236 (6)	0.244 (6.2)	0.827	0.008	0.109	0.069	0.228	0.154	49	3	0.917	1.850
MCLR/L662L30-R020	0.236 (6)	0.244 (6.2)	1.181	0.008	0.109	0.069	0.228	0.154	49	3	1.272	2.205

Quadrilateral Grooving HPC






For internal cutting

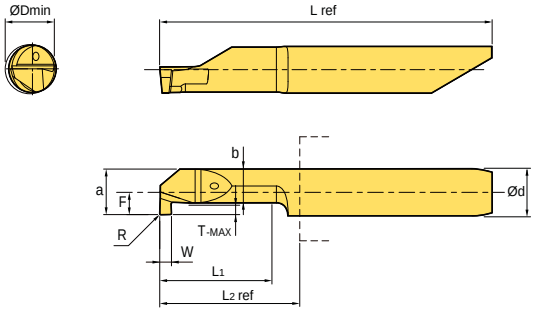
(inch)

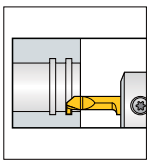
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
MGSR442L10C-W100	0.157 (4)	0.165 (4.2)	0.039	0.031	0.394	0.075	0.004	0.154	0.114	0.453	1.122
MGSR442L15C-W100	0.157 (4)	0.165 (4.2)	0.039	0.031	0.591	0.075	0.004	0.154	0.114	0.717	1.386
MGSR442L20C-W100	0.157 (4)	0.165 (4.2)	0.039	0.031	0.787	0.075	0.004	0.154	0.114	0.898	1.567
MGSR552L10C-W100	0.197 (5)	0.205 (5.2)	0.039	0.039	0.394	0.094	0.004	0.193	0.146	0.478	1.378
MGSR552L15C-W100	0.197 (5)	0.205 (5.2)	0.039	0.039	0.591	0.094	0.004	0.193	0.146	0.715	1.614
MGSR552L15C-W150	0.197 (5)	0.205 (5.2)	0.059	0.039	0.591	0.094	0.004	0.193	0.146	0.715	1.614
MGSR552L20C-W150	0.197 (5)	0.205 (5.2)	0.059	0.039	0.787	0.094	0.004	0.193	0.146	0.911	1.811

※ HPC: High pressure coolant

Quadrilateral Grooving





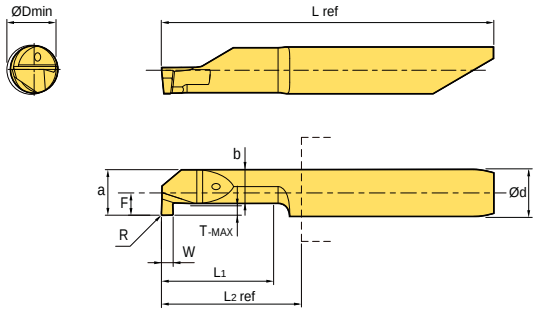

For internal cutting

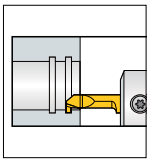
(inch)

Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
MGSR430L16-W070	0.157 (4)	0.118 (3)	0.028	0.024	0.630	0.055	0.004	0.106	0.069	0.453	1.567
MGSR440L10-W100	0.157 (4)	0.157 (4)	0.039	0.039	0.394	0.075	0.000	0.154	0.098	0.717	1.386
MGSR/L442L10-W079	0.157 (4)	0.165 (4.2)	0.031	0.031	0.394	0.077	0.004	0.156	0.114	0.453	1.122
MGSR/L442L10-W100	0.157 (4)	0.165 (4.2)	0.039	0.031	0.394	0.075	0.004	0.154	0.114	0.453	1.122
MGSR442L10-W150	0.157 (4)	0.165 (4.2)	0.059	0.031	0.394	0.075	0.004	0.114	0.114	0.717	1.386
MGSR/L442L15-W079	0.157 (4)	0.165 (4.2)	0.031	0.031	0.591	0.077	0.004	0.156	0.114	0.717	1.386
MGSR/L442L15-W100	0.157 (4)	0.165 (4.2)	0.039	0.031	0.591	0.075	0.004	0.154	0.114	0.717	1.386
MGSR/L442L20-W100	0.157 (4)	0.165 (4.2)	0.039	0.031	0.591	0.787	0.004	0.154	0.114	0.898	1.567
MGSR/L442L25-W079	0.157 (4)	0.165 (4.2)	0.031	0.031	0.984	0.077	0.004	0.156	0.114	1.130	1.799
MGSL552L06-W070	0.197 (5)	0.205 (5.2)	0.028	0.039	0.236	0.094	0.004	0.193	0.146	0.478	1.260
MGSR/L552L10-W100	0.197 (5)	0.205 (5.2)	0.039	0.039	0.394	0.094	0.004	0.193	0.146	0.478	1.378
MGSR552L10-W179	0.197 (5)	0.205 (5.2)	0.070	0.053	0.394	0.094	0.004	0.193	0.146	0.478	1.378
MGSR552L10-W150	0.197 (5)	0.205 (5.2)	0.059	0.039	0.394	0.094	0.004	0.193	0.146	0.478	1.378
MGSR552L10-W200	0.197 (5)	0.205 (5.2)	0.079	0.039	0.394	0.094	0.004	0.193	0.146	0.478	1.378
MGSR/L552L15-W100	0.197 (5)	0.205 (5.2)	0.039	0.039	0.591	0.094	0.004	0.193	0.146	0.715	1.614
MGSR/L552L15-W150	0.197 (5)	0.205 (5.2)	0.059	0.039	0.591	0.094	0.004	0.193	0.146	0.715	1.614
MGSR552L15-W200	0.197 (5)	0.205 (5.2)	0.079	0.039	0.591	0.094	0.004	0.193	0.146	0.715	1.614
MGSR/L552L20-W100	0.197 (5)	0.205 (5.2)	0.039	0.039	0.787	0.094	0.004	0.193	0.146	0.911	1.811
MGSR/L552L20-W150	0.197 (5)	0.205 (5.2)	0.059	0.039	0.787	0.094	0.004	0.193	0.146	0.911	1.811
MGSR552L20-W200	0.197 (5)	0.205 (5.2)	0.079	0.039	0.787	0.094	0.004	0.193	0.146	0.911	1.811
MGSR552L21-W050	0.197 (5)	0.205 (5.2)	0.020	0.039	0.827	0.094	0.004	0.193	0.146	0.911	1.811
MGSR652L10-W160	0.236 (6)	0.205 (5.2)	0.063	0.071	0.394	0.087	0.004	0.205	0.114	0.484	1.417
MGSR662L06-W150	0.236 (6)	0.244 (6.2)	0.059	0.071	0.236	0.016	0.004	0.134	0.067	0.484	1.575
MGSR662L09-W080	0.236 (6)	0.244 (6.2)	0.031	0.071	0.354	0.117	0.004	0.235	0.157	0.445	1.378
MGSR662L10-W079	0.236 (6)	0.244 (6.2)	0.031	0.071	0.394	0.114	0.004	0.232	0.157	0.484	1.417
MGSR/L662L10-W100	0.236 (6)	0.244 (6.2)	0.039	0.071	0.394	0.114	0.004	0.232	0.157	0.484	1.417

Quadrilateral Grooving







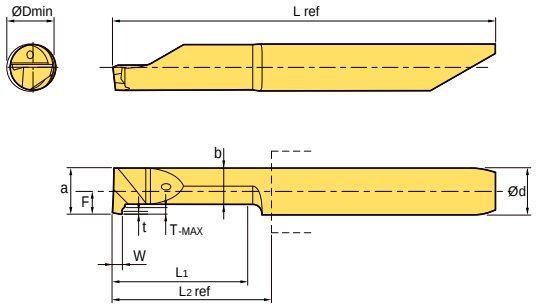
For internal cutting

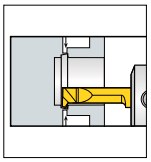
(inch)

Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
MGSR662L10-W117	0.236 (6)	0.244 (6.2)	0.046	0.071	0.394	0.114	0.004	0.232	0.157	0.484	1.417
MGSR/L662L10-W150	0.236 (6)	0.244 (6.2)	0.059	0.071	0.394	0.114	0.004	0.232	0.157	0.484	1.417
MGSR662L10-W157	0.236 (6)	0.244 (6.2)	0.062	0.071	0.394	0.114	0.004	0.234	0.157	0.484	1.417
MGSR662L10-W198	0.236 (6)	0.244 (6.2)	0.078	0.071	0.394	0.114	0.004	0.234	0.157	0.484	1.417
MGSR/L662L10-W200	0.236 (6)	0.244 (6.2)	0.079	0.071	0.394	0.114	0.004	0.232	0.157	0.484	1.417
MGSR662L15-W079	0.236 (6)	0.244 (6.2)	0.031	0.071	0.591	0.114	0.004	0.234	0.157	0.720	1.654
MGSR/L662L15-W100	0.236 (6)	0.244 (6.2)	0.039	0.071	0.591	0.114	0.004	0.232	0.157	0.720	1.654
MGSR662L15-W117	0.236 (6)	0.244 (6.2)	0.046	0.071	0.591	0.117	0.004	0.235	0.157	0.720	1.654
MGSR/L662L15-W150	0.236 (6)	0.244 (6.2)	0.059	0.071	0.591	0.114	0.004	0.232	0.157	0.720	1.654
MGSR662L15-W157	0.236 (6)	0.244 (6.2)	0.062	0.071	0.591	0.117	0.004	0.235	0.157	0.720	1.654
MGSR662L15-W198	0.236 (6)	0.244 (6.2)	0.078	0.071	0.591	0.117	0.004	0.235	0.157	0.720	1.654
MGSR/L662L15-W200	0.236 (6)	0.244 (6.2)	0.079	0.071	0.591	0.114	0.004	0.232	0.157	0.720	1.654
MGSR/L662L20-W100	0.236 (6)	0.244 (6.2)	0.039	0.071	0.787	0.114	0.004	0.232	0.157	0.917	1.850
MGSR/L662L20-W150	0.236 (6)	0.244 (6.2)	0.059	0.071	0.787	0.114	0.004	0.232	0.157	0.917	1.850
MGSR/L662L20-W200	0.236 (6)	0.244 (6.2)	0.079	0.071	0.787	0.114	0.004	0.232	0.157	0.917	1.850
MGSR662L25-W079	0.236 (6)	0.244 (6.2)	0.031	0.071	0.984	0.117	0.004	0.235	0.157	1.114	2.047
MGSR662L25-W100	0.236 (6)	0.244 (6.2)	0.039	0.071	0.984	0.114	0.004	0.232	0.122	1.114	2.205
MGSR662L25-W117	0.236 (6)	0.244 (6.2)	0.046	0.071	0.984	0.117	0.004	0.235	0.157	1.114	2.047
MGSR662L25-W157	0.236 (6)	0.244 (6.2)	0.062	0.071	0.984	0.117	0.004	0.235	0.157	1.114	2.047
MGSR662L25-W198	0.236 (6)	0.244 (6.2)	0.078	0.071	0.984	0.117	0.004	0.235	0.157	1.114	2.047
MGSR662L25-W200	0.236 (6)	0.244 (6.2)	0.079	0.071	0.984	0.114	0.004	0.232	0.126	1.114	2.205
MGSR662L25-W350	0.236 (6)	0.244 (6.2)	0.138	0.071	0.984	0.117	0.004	0.235	0.157	1.114	2.047
MGSR/L662L30-W100	0.236 (6)	0.244 (6.2)	0.039	0.071	1.181	0.114	0.004	0.232	0.157	1.272	2.205
MGSR/L662L30-W150	0.236 (6)	0.244 (6.2)	0.059	0.071	1.181	0.114	0.004	0.232	0.157	1.272	2.205
MGSR/L662L30-W200	0.236 (6)	0.244 (6.2)	0.079	0.071	1.181	0.114	0.004	0.232	0.157	1.272	2.205
MGSR662L35-W079	0.236 (6)	0.244 (6.2)	0.031	0.071	1.378	0.117	0.004	0.235	0.157	1.469	2.402
MGSR662L35-W117	0.236 (6)	0.244 (6.2)	0.046	0.071	1.378	0.117	0.004	0.235	0.157	1.469	2.402
MGSR662L35-W150	0.236 (6)	0.244 (6.2)	0.059	0.071	1.378	0.117	0.004	0.232	0.156	1.469	2.356
MGSR662L35-W157	0.236 (6)	0.244 (6.2)	0.062	0.071	1.378	0.117	0.004	0.235	0.157	1.469	2.402
MGSR772L15-W250	0.276 (7)	0.283 (7.2)	0.098	0.098	0.591	0.134	0.004	0.272	0.161	0.720	1.654
MGSR772L10-W079	0.276 (7)	0.283 (7.2)	0.031	0.098	0.394	0.136	0.004	0.274	0.161	0.449	1.417
MGSR/L772L10-W100	0.276 (7)	0.283 (7.2)	0.039	0.098	0.394	0.134	0.004	0.272	0.161	0.449	1.417
MGSR/L772L10-W150	0.276 (7)	0.283 (7.2)	0.059	0.098	0.394	0.134	0.004	0.272	0.161	0.449	1.417
MGSR/L772L10-W200	0.276 (7)	0.283 (7.2)	0.079	0.098	0.394	0.134	0.004	0.272	0.161	0.449	1.417
MGSR772L10-W600	0.276 (7)	0.283 (7.2)	0.236	0.098	0.394	0.126	0.004	0.272	0.161	0.449	1.417
MGSR772L15-W079	0.276 (7)	0.283 (7.2)	0.031	0.098	0.591	0.136	0.004	0.274	0.161	0.646	1.614
MGSR772L15-W100	0.276 (7)	0.283 (7.2)	0.039	0.098	0.591	0.134	0.004	0.272	0.161	0.646	1.614
MGSR772L15-W117	0.276 (7)	0.283 (7.2)	0.046	0.098	0.591	0.136	0.004	0.274	0.161	0.646	1.614
MGSR/L772L15-W150	0.276 (7)	0.283 (7.2)	0.059	0.098	0.591	0.134	0.004	0.272	0.161	0.646	1.614
MGSR772L15-W157	0.276 (7)	0.283 (7.2)	0.062	0.098	0.591	0.136	0.004	0.274	0.161	0.646	1.614
MGSR772L15-W198	0.276 (7)	0.283 (7.2)	0.078	0.098	0.591	0.136	0.004	0.272	0.161	0.646	1.614
MGSR/L772L15-W200	0.276 (7)	0.283 (7.2)	0.079	0.098	0.591	0.134	0.004	0.272	0.161	0.646	1.614
MGSR772L16-W150	0.276 (7)	0.283 (7.2)	0.059	0.098	0.630	0.134	0.004	0.272	0.161	0.685	1.654
MGSR772L20-W079	0.276 (7)	0.283 (7.2)	0.031	0.098	0.787	0.136	0.004	0.274	0.161	1.039	2.008
MGSR772L20-W117	0.276 (7)	0.283 (7.2)	0.046	0.098	0.787	0.136	0.004	0.274	0.161	1.039	2.008
MGSR772L20-W157	0.276 (7)	0.283 (7.2)	0.062	0.098	0.787	0.136	0.004	0.274	0.161	1.039	2.008
MGSR772L20-W198	0.276 (7)	0.283 (7.2)	0.078	0.098	0.787	0.136	0.004	0.274	0.161	1.039	2.008
MGSR772L20-W150	0.276 (7)	0.283 (7.2)	0.059	0.098	0.787	0.134	0.004	0.272	0.161	1.039	1.811
MGSR772L25-W100	0.276 (7)	0.283 (7.2)	0.039	0.098	0.984	0.134	0.004	0.272	0.161	1.039	2.008
MGSR/L772L25-W150	0.276 (7)	0.283 (7.2)	0.059	0.098	0.984	0.134	0.004	0.272	0.161	1.039	2.008
MGSR/L772L25-W200	0.276 (7)	0.283 (7.2)	0.079	0.098	0.984	0.134	0.004	0.272	0.161	1.039	2.008
MGSR772L35-W100	0.276 (7)	0.283 (7.2)	0.039	0.098	1.378	0.134	0.004	0.272	0.161	1.433	2.402
MGSR/L772L35-W150	0.276 (7)	0.283 (7.2)	0.059	0.098	1.378	0.134	0.004	0.272	0.161	1.433	2.402
MGSR/L772L35-W200	0.276 (7)	0.283 (7.2)	0.079	0.098	1.378	0.134	0.004	0.272	0.161	1.433	2.402

Preparatory Cutting







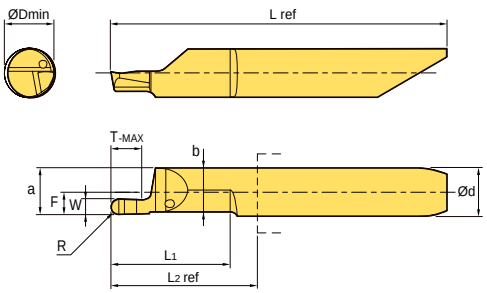
For internal cutting

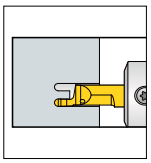
(inch)

Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
MPPR/L552L15-W100	0.197 (5)	0.205 (5.2)	0.039	0.028	0.591	0.096	0.012	0.194	0.153	0.715	1.614
MPPR/L552L20-W100	0.197 (5)	0.205 (5.2)	0.039	0.028	0.787	0.096	0.012	0.194	0.153	0.911	1.811
MPPR552L20C-W100	0.197 (5)	0.205 (5.2)	0.039	0.028	0.787	0.096	0.012	0.194	0.153	0.911	1.811
MPPR/L552L25-W100	0.197 (5)	0.205 (5.2)	0.039	0.028	0.984	0.096	0.012	0.194	0.153	1.108	2.008
MPPR552L30-W100	0.197 (5)	0.205 (5.2)	0.039	0.028	1.181	0.096	0.012	0.194	0.153	1.266	2.165

Cross Section Round Grooving HPC







For internal cutting

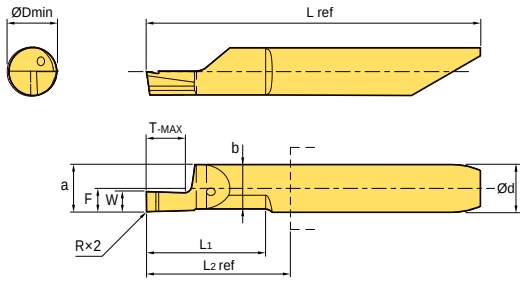
(inch)

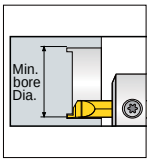
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
MFGRR/L662L15C-R050	0.236 (6)	0.244 (6.2)	0.039	0.079	0.591	0.110	0.020	0.228	0.219	0.720	1.654
MFGRR/L662L15C-R080	0.236 (6)	0.244 (6.2)	0.063	0.118	0.591	0.110	0.031	0.228	0.215	0.720	1.654
MFGRR/L662L15C-R100	0.236 (6)	0.244 (6.2)	0.079	0.157	0.591	0.110	0.039	0.228	0.215	0.720	1.654
MFGRR/L662L15C-R125	0.236 (6)	0.244 (6.2)	0.098	0.197	0.591	0.110	0.049	0.228	0.215	0.720	1.654
MFGRR/L662L15C-R150	0.236 (6)	0.244 (6.2)	0.118	0.236	0.591	0.110	0.059	0.228	0.215	0.720	1.654

※ HPC: High pressure coolant

Cross Section Quadrilateral Grooving







For internal cutting

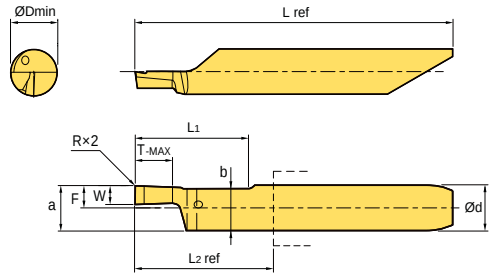
(inch)

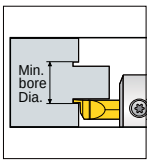
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
MFGR/L680L15C-W100	0.236 (6)	0.315 (8)	0.039	0.079	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFGR/L680L15C-W117	0.236 (6)	0.315 (8)	0.046	0.079	0.591	0.110	0.006	0.228	0.219	0.720	1.654
MFGR/L680L15C-W150	0.236 (6)	0.315 (8)	0.059	0.118	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFGR/L680L15C-W157	0.236 (6)	0.315 (8)	0.062	0.118	0.591	0.110	0.006	0.228	0.219	0.720	1.654
MFGR/L680L15C-W198	0.236 (6)	0.315 (8)	0.078	0.157	0.591	0.110	0.006	0.228	0.219	0.720	1.654
MFGR/L680L15C-W200	0.236 (6)	0.315 (8)	0.079	0.157	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFGR/L680L15C-W239	0.236 (6)	0.315 (8)	0.094	0.197	0.591	0.110	0.006	0.228	0.219	0.720	1.654
MFGR/L680L15C-W250	0.236 (6)	0.315 (8)	0.098	0.197	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFGR/L680L15C-W300	0.236 (6)	0.315 (8)	0.118	0.236	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFGR/L680L15C-W318	0.236 (6)	0.315 (8)	0.125	0.236	0.591	0.110	0.006	0.228	0.219	0.720	1.654

※ HPC: High pressure coolant

Cross Section Quadrilateral Grooving







For external cutting

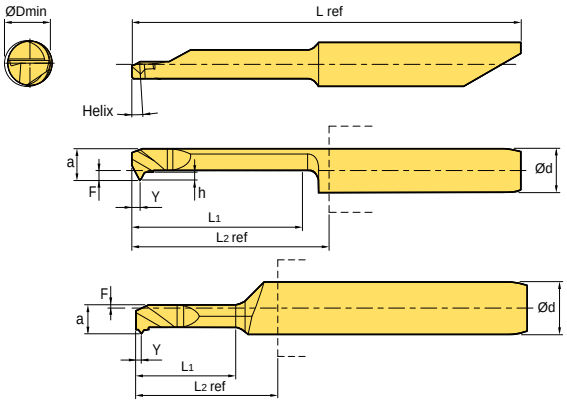
(inch)

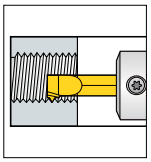
Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Dimensions								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
MFPR/L680L15C-W100	0.236 (6)	0.315 (8)	0.039	0.079	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFPR/L680L15C-W117	0.236 (6)	0.315 (8)	0.046	0.079	0.591	0.110	0.006	0.228	0.219	0.720	1.654
MFPR/L680L15C-W150	0.236 (6)	0.315 (8)	0.059	0.118	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFPR/L680L15C-W157	0.236 (6)	0.315 (8)	0.062	0.118	0.591	0.110	0.006	0.228	0.219	0.720	1.654
MFPR/L680L15C-W198	0.236 (6)	0.315 (8)	0.078	0.157	0.591	0.110	0.006	0.228	0.219	0.720	1.654
MFPR/L680L15C-W200	0.236 (6)	0.315 (8)	0.079	0.157	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFPR/L680L15C-W239	0.236 (6)	0.315 (8)	0.094	0.197	0.591	0.110	0.006	0.228	0.219	0.720	1.654
MFPR/L680L15C-W250	0.236 (6)	0.315 (8)	0.098	0.197	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFPR/L680L15C-W300	0.236 (6)	0.315 (8)	0.118	0.236	0.591	0.110	0.004	0.228	0.219	0.720	1.654
MFPR/L680L15C-W318	0.236 (6)	0.315 (8)	0.125	0.236	0.591	0.110	0.006	0.228	0.219	0.720	1.654

※ HPC: High pressure coolant

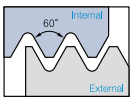
Threading







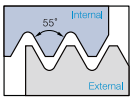
For internal cutting



Partial profile 60°

(inch)

Designation	Thread	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Pitch		Dimensions							
				(mm)	(tpi)	L1	a	F	Y	h	L2 ref	L ref	Helix
MTHR407L02P60-0.25	M1 - M2 x 0.25	0.157 (4)	0.029 (0.73)	0.25	-	0.098	0.026	0.077	0.006	0.011	0.512	1.173	4.9
MTHR412L04P60-0.35	M1.6 - M3 x 0.35	0.157 (4)	0.048 (1.22)	0.35	-	0.157	0.043	0.077	0.007	0.011	0.512	1.173	3.8
MTHR416L05P60-0.4	M2 x 0.4	0.157 (4)	0.062 (1.57)	0.40	-	0.197	0.057	0.077	0.008	0.016	0.512	1.173	4.2
MTHR417L06P60-0.45	M2.2 - M2.5 x 0.45	0.157 (4)	0.067 (1.71)	0.45	-	0.236	0.061	0.077	0.009	0.018	0.512	1.173	4.0
MTHR/L429L16F60		0.157 (4)	0.126 (3.20)	0.5~1.0	48~24	0.630	0.114	0.035	0.035	-	0.724	1.394	3.5
MTHR/L439L16F60		0.157 (4)	0.165 (4.20)	0.5~1.0	48~24	0.630	0.153	0.075	0.035	-	0.724	1.394	3.5
MTHR659L06A60		0.236 (6)	0.244 (6.20)	0.5~1.5	48~16	0.236	0.232	0.114	0.035	-	0.335	1.425	3.5
MTHR/L659L16A60		0.236 (6)	0.244 (6.20)	0.5~1.5	48~16	0.630	0.232	0.114	0.035	-	0.728	1.661	3.5



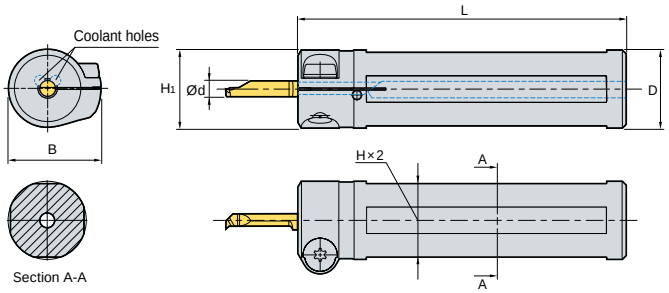
Partial profile 55°

(inch)

Designation	Shank Dia. Ød inch (mm)	Min. machining Dia. ØDmin inch (mm)	Pitch		Dimensions						
			(mm)	(tpi)	L1	a	F	Y	L2 ref	L ref	Helix
MTHR/L429L16F55	0.157 (4)	0.126 (3.2)	0.5~1.0	48~24	0.630	0.114	0.035	0.030	0.724	1.394	3.5
MTHR/L439L16F55	0.157 (4)	0.165 (4.2)	0.5~1.0	48~24	0.630	0.114	0.075	0.030	0.724	1.394	3.5
MTHR/L659L16A55	0.236 (6)	0.244 (6.2)	0.5~1.5	48~16	0.630	0.232	0.114	0.035	0.728	1.661	3.5

MHRSC (Shrink Tool Holder)



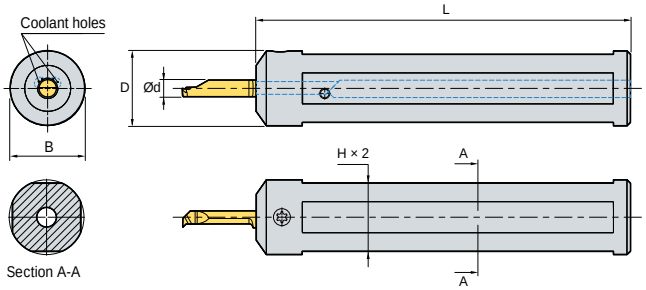


(inch)

Designation	Insert Dia. Ød inch (mm)	D	B	H_1	H	L	Screw	Wrench
MHRSC4-10-4F	0.157 (4)	0.394	0.776	0.524	0.346	2.559	MTS10-15X2	MTL15/MTLX15
MHRSC4-12-4F	0.157 (4)	0.472	0.776	0.543	0.425	2.756	MTS10-15X2	MTL15/MTLX15
MHRSC4-16-4F	0.157 (4)	0.630	0.854	0.630	0.583	2.953	MTS10-15X2	MTL15/MTLX15
MHRSC4-20-4F	0.157 (4)	0.787	0.933	0.787	0.740	3.307	MTS10-15X2	MTL15/MTLX15
MHRSC4-22-4F	0.157 (4)	0.866	0.972	0.866	0.787	4.331	MTS10-15X2	MTL15/MTLX15
MHRSC5-16-4F	0.197 (5)	0.630	0.854	0.630	0.583	2.953	MTS10-15X2	MTL15/MTLX15
MHRSC5-20-4F	0.197 (5)	0.787	0.933	0.787	0.740	3.307	MTS10-15X2	MTL15/MTLX15
MHRSC6-12-4F	0.236 (6)	0.472	0.776	0.543	0.425	2.756	MTS10-15X2	MTL15/MTLX15
MHRSC6-16-4F	0.236 (6)	0.630	0.854	0.630	0.583	2.953	MTS10-15X2	MTL15/MTLX15
MHRSC6-20-4F	0.236 (6)	0.787	0.933	0.787	0.740	3.307	MTS10-15X2	MTL15/MTLX15
MHRSC6-22-4F	0.236 (6)	0.866	0.972	0.866	0.787	4.331	MTS10-15X2	MTL15/MTLX15
MHRSC7-16-4F	0.276 (7)	0.630	0.854	0.630	0.583	2.953	MTS10-15X2	MTL15/MTLX15
MHRSC7-20-4F	0.276 (7)	0.787	0.933	0.787	0.740	3.307	MTS10-15X2	MTL15/MTLX15

MHRRC (Round Holder)



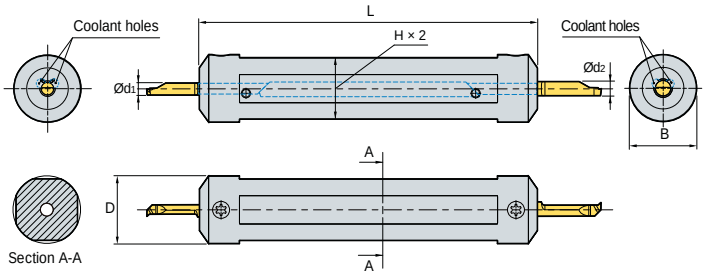


(inch)

Designation	Insert Dia. Ød inch (mm)	D	B	H	L	Screw	Wrench
MHRRC4-20-4F	0.157 (4)	0.787	0.787	0.740	3.287	MTDBT15	MTF15
MHRRC4-22-4F	0.157 (4)	0.866	0.866	0.787	4.331	MTDBT15	MTF15
MHRRC5-20-4F	0.197 (5)	0.787	0.787	0.740	3.287	MTDBT15	MTF15
MHRRC5-22-4F	0.197 (5)	0.866	0.866	0.787	4.331	MTDBT15	MTF15
MHRRC6-20-4F	0.236 (6)	0.787	0.787	0.740	3.287	MTDBT15	MTF15
MHRRC6-22-4F	0.236 (6)	0.866	0.866	0.787	4.331	MTDBT15	MTF15
MHRRC7-25-4F	0.276 (7)	0.984	0.984	0.787	4.331	MTDBT15	MTF15

MHRRC (double-sided round holder)



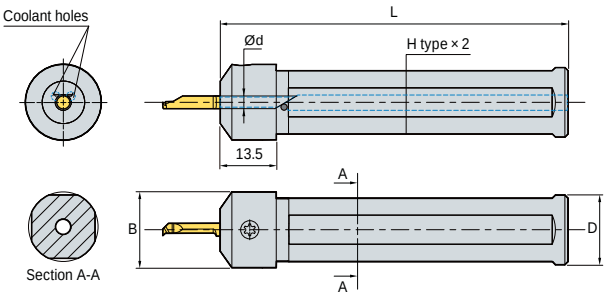


(inch)

Designation	Insert Dia. Ød inch (mm)	D	B	H	L	Screw	Wrench
MHRRC4-075-5-4F	0.157~0.197 (4~5)	0.750	0.750	0.701	3.287	MTDBT15	MTF15
MHRRC4-20-5-4F	0.157~0.197 (4~5)	0.787	0.787	0.740	3.287	MTDBT15	MTF15
MHRRC4-22-5-4F	0.157~0.197 (4~5)	0.866	0.866	0.787	4.331	MTDBT15	MTF15
MHRRC4-25-5-4F	0.157~0.197 (4~5)	0.984	0.984	0.906	4.331	MTDBT15	MTF15
MHRRC6-20-7-4F	0.236~0.276 (6~7)	0.787	0.787	0.740	3.287	MTDBT15	MTF15
MHRRC6-25-7-4F	0.236~0.276 (6~7)	0.984	0.984	0.906	4.331	MTDBT15	MTF15

MHRNC-4F (round shank holder)



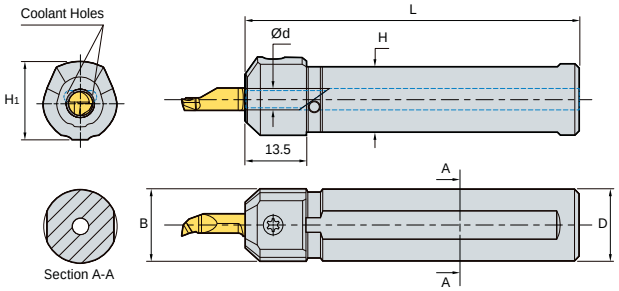


(inch)

Designation	Insert Dia. Ød inch (mm)	D	B	H	L	Screw	Wrench
MHRNC4-20-4F	0.157 (4)	0.787	0.866	0.740	3.287	MTD(B)T15	MTKT15, MTF15
MHRNC4-22-4F	0.157 (4)	0.866	0.945	0.787	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC4-23-4F	0.157 (4)	0.906	0.984	0.827	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC4-25-4F	0.157 (4)	0.984	1.063	0.906	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC4-28-4F	0.157 (4)	1.102	1.181	1.024	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC5-20-4F	0.197 (5)	0.787	0.866	0.740	3.287	MTD(B)T15	MTKT15, MTF15
MHRNC5-22-4F	0.197 (5)	0.866	0.945	0.787	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC5-23-4F	0.197 (5)	0.906	0.984	0.827	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC5-25-4F	0.197 (5)	0.984	1.063	0.906	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC5-28-4F	0.197 (5)	1.102	1.181	1.024	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC6-20-4F	0.236 (6)	0.787	0.866	0.740	3.287	MTD(B)T15	MTKT15, MTF15
MHRNC6-22-4F	0.236 (6)	0.866	0.945	0.787	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC6-23-4F	0.236 (6)	0.906	0.984	0.827	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC6-25-4F	0.236 (6)	0.984	1.063	0.906	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC6-28-4F	0.236 (6)	1.102	1.181	1.024	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC7-22-4F	0.276 (7)	0.866	0.945	0.787	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC7-23-4F	0.276 (7)	0.906	0.984	0.827	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC7-25-4F	0.276 (7)	0.984	1.063	0.906	4.331	MTD(B)T15	MTKT15, MTF15
MHRNC7-28-4F	0.276 (7)	1.102	1.181	1.024	4.331	MTD(B)T15	MTKT15, MTF15

MHRNC-2F (round shank holder)





(inch)

Designation	Insert Dia. Ød inch (mm)	D	B	H	L	Screw	Wrench
MHRNC4-10-2F	0.157 (4)	0.394	0.551	0.346	2.559	MTD(B)T15	MTKT15, MTF15
MHRNC4-12-2F	0.157 (4)	0.472	0.630	0.425	2.756	MTD(B)T15	MTKT15, MTF15
MHRNC4-16-2F	0.157 (4)	0.630	0.693	0.583	2.953	MTD(B)T15	MTKT15, MTF15
MHRNC4-20-2F	0.157 (4)	0.787	0.866	0.740	3.307	MTD(B)T15	MTKT15, MTF15
MHRNC5-10-2F	0.197 (5)	0.394	0.551	0.346	2.559	MTD(B)T15	MTKT15, MTF15
MHRNC5-12-2F	0.197 (5)	0.472	0.630	0.425	2.756	MTD(B)T15	MTKT15, MTF15
MHRNC5-16-2F	0.197 (5)	0.630	0.732	0.583	2.953	MTD(B)T15	MTKT15, MTF15
MHRNC5-20-2F	0.197 (5)	0.787	0.866	0.740	3.307	MTD(B)T15	MTKT15, MTF15
MHRNC6-12-2F	0.236 (6)	0.472	0.630	0.425	2.756	MTD(B)T15	MTKT15, MTF15
MHRNC6-16-2F	0.236 (6)	0.630	0.732	0.583	2.953	MTD(B)T15	MTKT15, MTF15
MHRNC6-20-2F	0.236 (6)	0.787	0.866	0.740	3.307	MTD(B)T15	MTKT15, MTF15
MHRNC7-16-2F	0.276 (7)	0.630	0.732	0.583	2.953	MTD(B)T15	MTKT15, MTF15
MHRNC7-20-2F	0.276 (7)	0.787	0.866	0.740	3.307	MTD(B)T15	MTKT15, MTF15

Sleeve

SL (Sleeve)

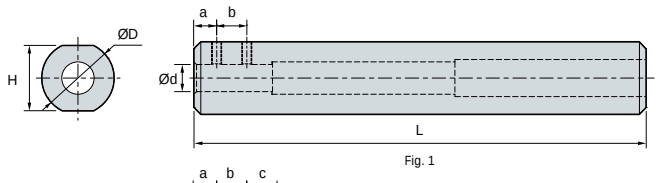


Fig. 1

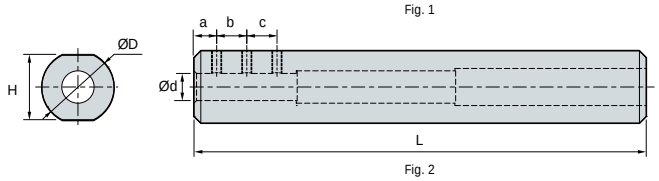


Fig. 2

(inch)

Designation	Ød	a	b	c	ØD	H	L	Screw	Wrench	Fig.
SL1603	3	5	-	-	16	14	100	M3	HW15L	1
SL1604	4	5	6	-	16	14	100	M4	HW20L	
SL1605	5	5	8	-	16	14	100	M4	HW20L	
SL1606	6	5	6	6	16	14	100	M4	HW20L	2
SL1607	7	5	6	8	16	14	100	M4	HW20L	
SL2008	8	5	10	10	20	18	100	M4	HW20L	2
SL2010	10	5	10	10	20	18	100	M5	HW20L	

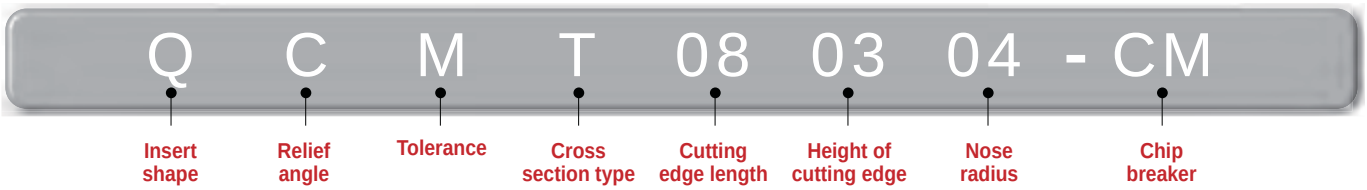
M This is metric size. We can also provide in inch type

※ Fine tolerance and surface roughness

Multi Turn

Code system

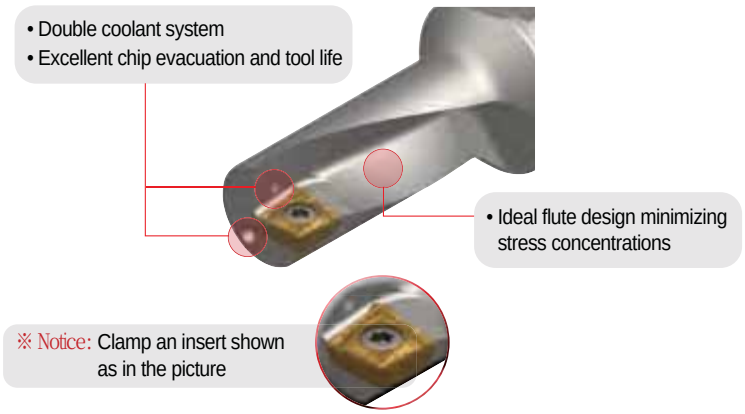
- **Insert**

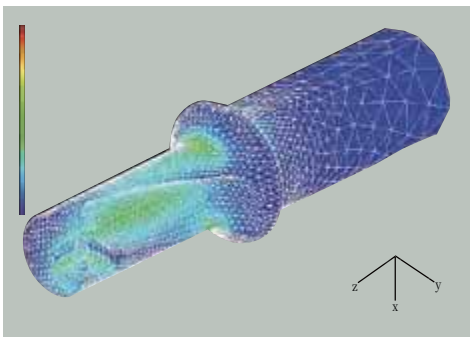


- **Holder**



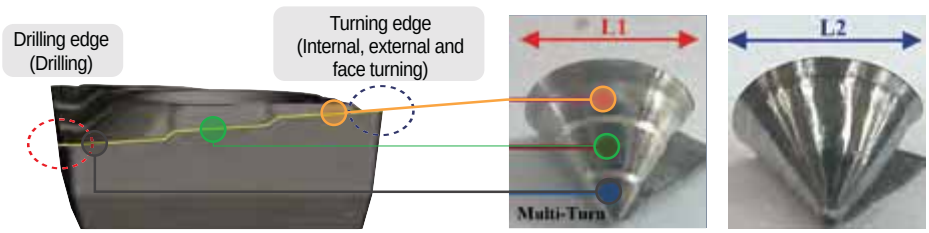
Tool design by FEM analysis



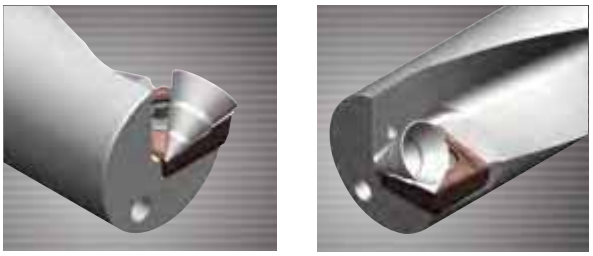


• Minimized stress during cutting, prevented damage from vibration and longer tool life
Optimized design

Creative stepping cutting edge



- Special chip formed by edge geometry better chip
- Evacuation due to small radius width of chip curl

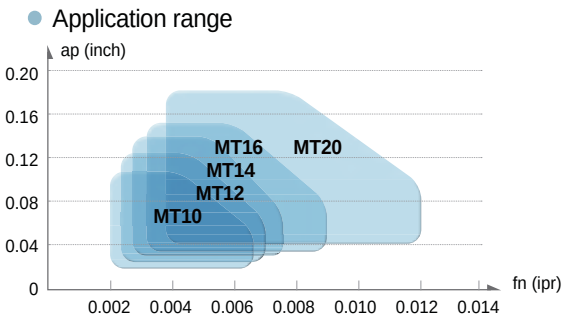


Comparison	Multi turn	Competitor A	Competitor B
Feed fn (ipr) = 0.003			
Feed fn (ipr) = 0.004			
Chip width (rate)	80%	100%	120%

User's guide

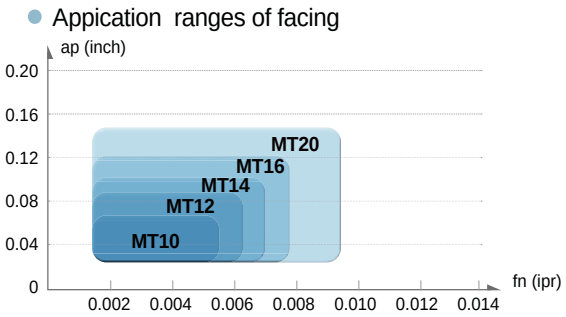
External / Internal turning





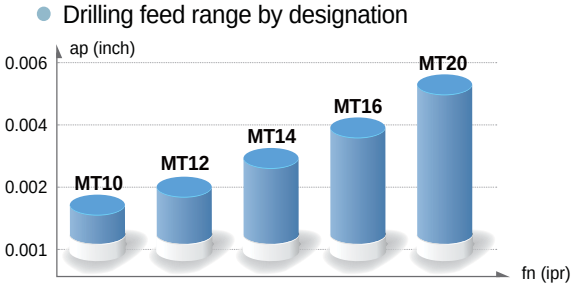
Facing





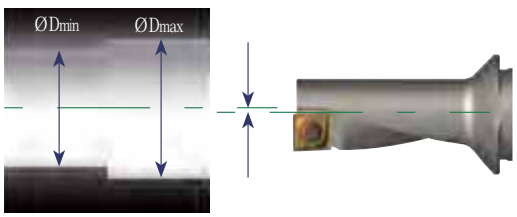
Drilling





Offset (Diameter compensation)

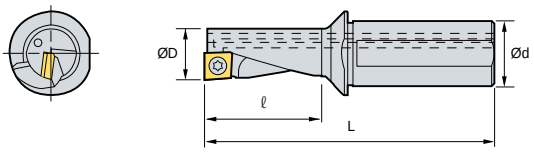
Disignation	Machined diameter (inch)	ØDmin (inch)	ØDmax (inch)
MT10R/L-2.25D	0.394	0.388	0.407
MT12R/L-2.25D	0.472	0.467	0.486
MT14R/L-2.25D	0.551	0.545	0.565
MT16R/L-2.25D	0.630	0.624	0.644
MT20R/L-2.25D	0.787	0.781	0.801
MT25R/L-2.25D	0.984	0.978	0.998
MT32R/L-2.25D	1.260	1.254	1.274



Drill diameter is adjustable by the offset compensation

MT (multi-turn)

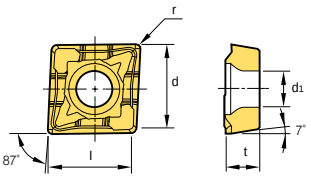
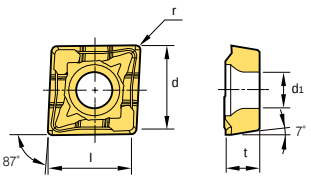




(inch)

Designation		ØD	Ød	ℓ	L	Insert	Screw	Wrench
MT	10R/L-2.25D	0.394	0.472	0.886	2.736	QC□T050204	FTNA0204S	TW06P
	12R/L-2.25D	0.472	0.630	1.063	3.071	QC□T060204	FTNA02205S	TW06P
	14R/L-2.25D	0.551	0.630	1.240	3.287	QC□T070304	FTKA02555	TW07P
	16R/L-2.25D	0.630	0.787	1.417	3.701	QC□T080304	FTNA0306	TW09P
	20R/L-2.25D	0.787	0.984	1.772	4.370	QC□T10T304	FTNA03508	TW15P
	25R/L-2.25D	0.984	1.260	2.224	5.118	QC□T130408	FTNC04509	TW20S
	32R/L-2.25D	1.260	1.575	2.835	6.229	QC□T170508	FTNC04511	TW20S

Insert

Picture	Designation		Coated				Uncoated		Dimensions (inch)					Configuration
			NC3120	NC3225	NC6315	PC5300	H01	H05	l	d	t	r	Ød1	
	QCMT	050204-CM		●	●	●			0.197	0.213	0.038	0.016	0.091	
		060204-CM		●	●	●			0.236	0.252	0.094	0.016	0.098	
		070304-CM		●	●	●			0.276	0.291	0.125	0.016	0.110	
		080304-CM		●	●	●			0.315	0.331	0.125	0.016	0.134	
		10T304-CM		●		●			0.394	0.409	0.156	0.016	0.157	
		130408-CM		●		●			0.500	0.531	0.187	0.031	0.217	
		170508-CM		●	●	●			0.657	0.689	0.219	0.031	0.217	
	QCGT	050204-CA					●		0.197	0.213	0.038	0.016	0.091	
		060204-CA					●		0.236	0.252	0.094	0.016	0.098	
		070304-CA					●		0.276	0.291	0.125	0.016	0.110	
		080304-CA					●		0.315	0.331	0.125	0.016	0.134	
		10T304-CA					●		0.394	0.409	0.156	0.016	0.157	
		130408-CA					●		0.500	0.531	0.187	0.031	0.217	
		170508-CA					●		0.657	0.689	0.219	0.031	0.217	

●: Korea Stock

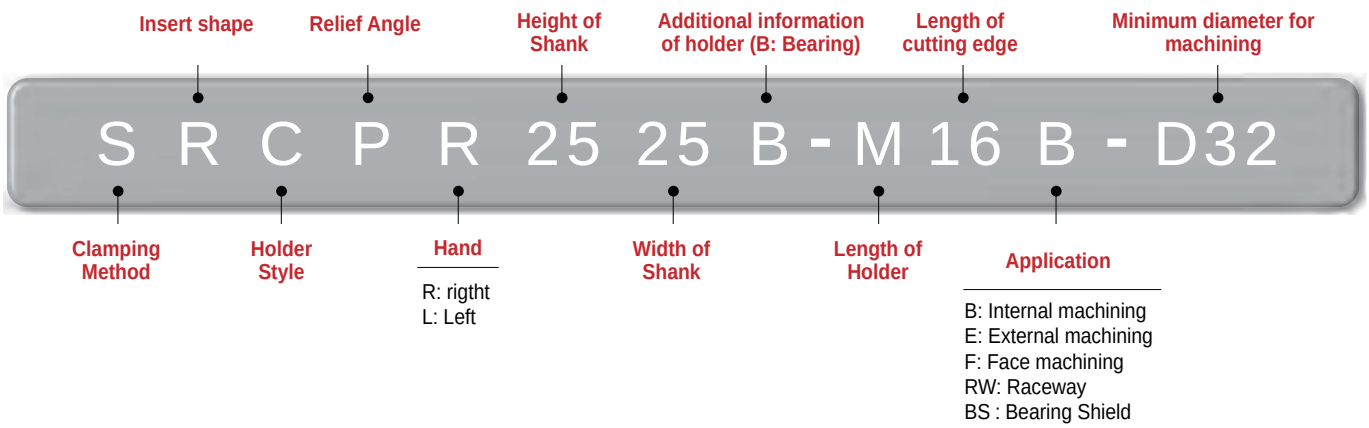
Bearing Solutions

Code system

- **Insert**



- **Holder**

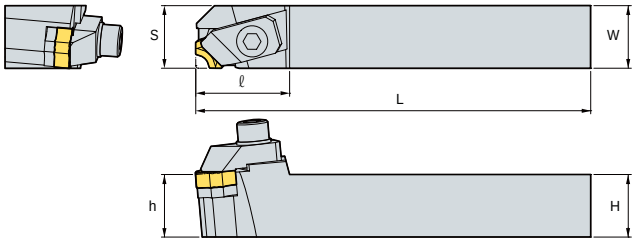


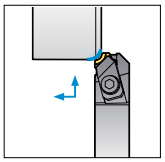


CMSN...F Type



MC12□□ MC12□□-BR
MC15□□





• R type insert
(inch)

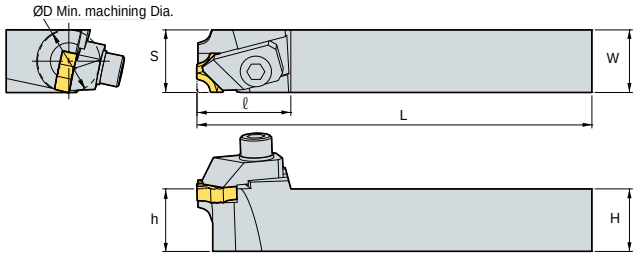
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CMSNR/L	2020B-L12F	20	20	140	21	20	33	MC12□□ MC12□□-BR	CH6R/L1B	BHA0620	SX42CB	SS0308	HW50L
	2023B-L12F	20	23	140	24	20	33						
	2525B-L15F	25	25	140	26	25	35	MC15□□	CH6R/L1B	BHA0620	SX52CB	SS0408	HW50L

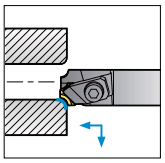
M This is metric size. We can also provide in inch type

CMSN...B Type



MC12□□ MC12□□-BR



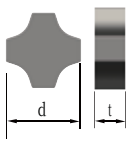
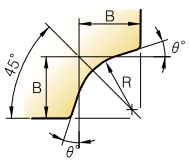
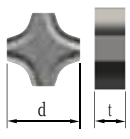


• R type insert
(inch)

Designation		ØD	H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CMSNR/L	2020B-L12B-D28	28	20	20	140	21	20	33	MC12□□ MC12□□-BR	CH6R/L1B	BHA0620	SX42CB	SS0308	HW50L
	2525B-L12B-D28	28	25	25	140	26	25	33		CH6R/L1B	BHA0620	SX42CB	SS0308	HW50L
	1620B-L12B-D20	20	16	20	140	18	16	32		CH6R/L1B	BHA0620	-	-	HW50L
	2023B-L12B-D28	28	20	23	140	24	20	33		CH6R/L1B	BHA0620	SX42CB	SS0308	HW50L

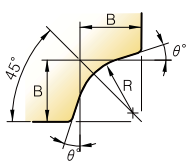
M This is metric size. We can also provide in inch type

Insert

Application	Picture	Designation	Cermet	Dimensions (inch)					Configuration
			CN2500	R	θ°	B	d	t	
R-Chamfering		MC0906		0.6	12	1.8	9.525	3.18	
		MC0910		1.0	12	2.4	9.525	3.18	
		MC1206		0.6	18	1.8	12.7	4.76	
		MC1210		1.0	18	2.4	12.7	4.76	
		MC1212		1.2	18	2.2	12.7	4.76	
		MC1215		1.5	18	3.0	12.7	4.76	
		MC1220		2.0	18	3.8	12.7	4.76	
		MC1225		2.5	18	2.8	12.7	4.76	
		MC1525		2.5	18	4.0	15.875	5.56	
		MC1530		3.0	18	4.7	15.875	5.56	
		MC1540		4.0	20	4.7	15.875	5.56	
		MC1206-BR		0.6	18	1.8	12.7	4.76	
		MC1210-BR		1.0	18	2.4	12.7	4.76	
		MC1212-BR		1.2	18	2.2	12.7	4.76	
		MC1215-BR		1.5	18	3.0	12.7	4.76	
		MC1220-BR		2.0	18	3.2	12.7	4.76	
		MC1230-BR		3.0	18	3.7	12.7	4.76	
		MC1235-BR		3.5	18	3.9	12.7	4.76	

● : Korea Stock

Special order-form

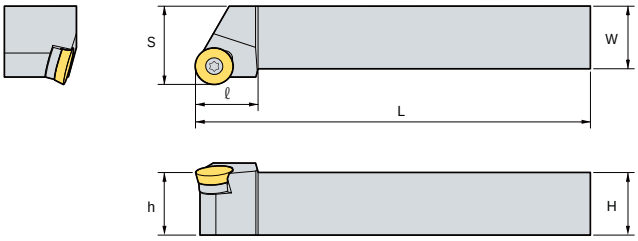


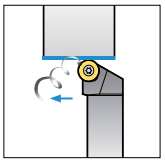
Designation	CN2500	R	θ°	B	d	t	Configuration
MC...							

SRGP...E Type



RPGT1203M0
RPGT1604M0
RPGT2004M0





• R type insert

(inch)

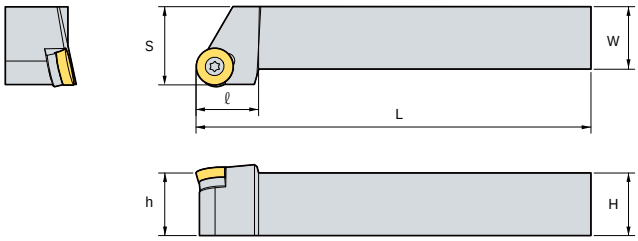
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
SRGPR/L	2020B-L12E	20	20	140	25	20	20	RPGT1203M0	FTKA0410	SR1203S	SHXN0609F	TW15P
	2020B-L16E	20	20	140	25	20	20	RPGT1604M0	FTNA0513	SR16T3S	SHXN0712F	TW20P
	2525B-L20E	25	25	140	32	25	30	RPGT2004M0	FTNA0513	SR20T3S	SHXN0712F	TW20P

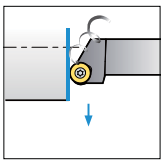
M This is metric size. We can also provide in inch type

SRGP...F Type



RPGT1203M0
RPGT1604M0
RPGT2004M0





• R type insert

(inch)

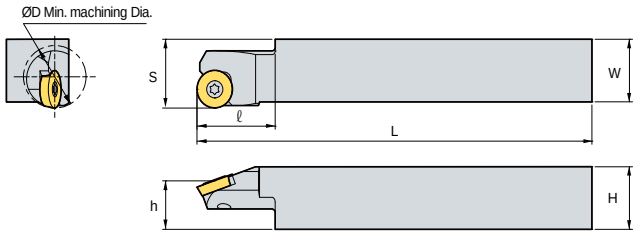
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
SRGPR/L	2020B-L12F	20	20	140	25	20	20	RPGT1203M0	FTKA0410	SR1203S	SHXN0609F	TW15P
	2020B-L16F	20	20	140	25	20	20	RPGT1604M0	FTNA0513	SR16T3S	SHXN0712F	TW20P
	2525B-L20F	25	25	140	32	25	30	RPGT2004M0	FTNA0513	SR20T3S	SHXN0712F	TW20P

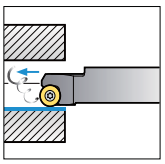
M This is metric size. We can also provide in inch type

SRCP...B Type



RPGT0802M0
RPGT1203M0
RPGT1604M0





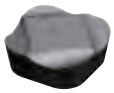
• R type insert

(inch)

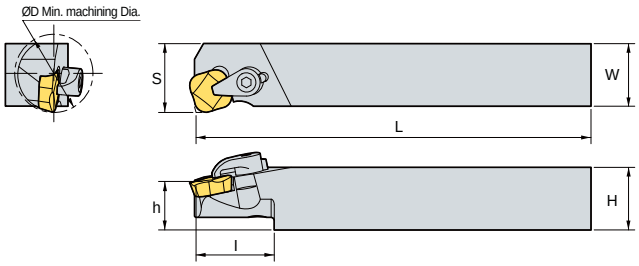
Designation		ØD	H	W	L	S	h	ℓ	Insert	Screw	Wrench
SRCPR/L	2020B-L08B-D12	12	20	20	140	21.5	15.5	25	RPGT0802M0	FTKA0305	TW09P
	1919B-L12B-D15	15	19	19	140	21	16	25	RPGT1203M0	FTNA0408	TW15P
	2020B-L12B-D20	20	20	20	140	22	15.5	25	RPGT1203M0	FTNA0408	TW15P
	2525B-L16B-D32	32	25	25	140	27	20	30	RPGT1604M0	FTKA0510	TW20P

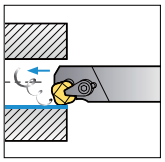
M This is metric size. We can also provide in inch type

CSKP...B Type



SPGR120440L





• R type insert

(inch)

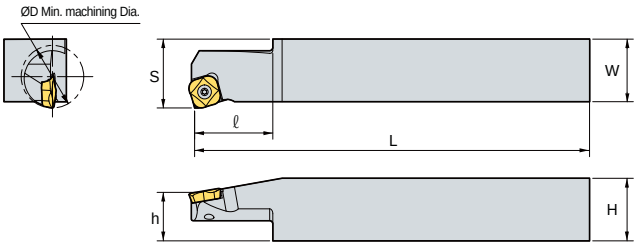
Designation		ØD	H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Wrench
CSKPR/L	**2022B-L12B-D30**	30	20	22	140	27	20	37	SPGR120440R/L	CH5R1	CHX0510	HW30L

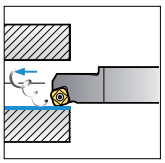
M This is metric size. We can also provide in inch type

SSKP...B Type



SPGH090330L





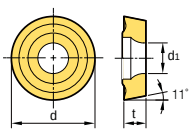
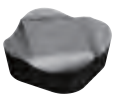
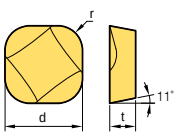
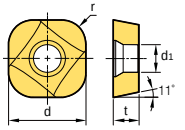
• R type insert

(inch)

Designation		ØD	H	W	L	S	h	ℓ	Insert	Screw	Wrench
SSKPR/L	**2020B-L09B-D12**	12	20	20	140	21.7	19	20	SPGH090330R/L	FTNA0307	TW09P
	2020B-L09B-D13	13	20	20	140	21.7	19	20			
	2020B-L09B-D20	20	20	20	140	21.7	19	20			

M This is metric size. We can also provide in inch type

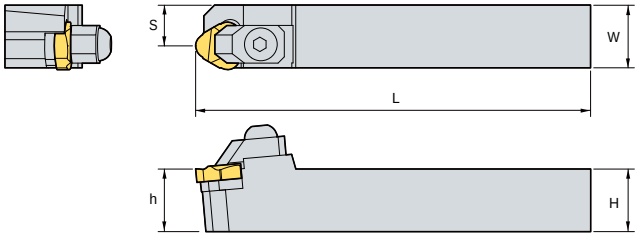
Insert

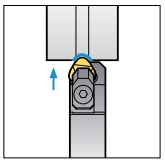
Application	Picture	Designation	Cermet	Dimensions (inch)				Configuration
			CN2500	r	d	d_1	t	
Internal turning		**RPGT0802M0**		-	8	3.4	2.38	
		RPGT1203M0		-	12	4.4	3.18	
		RPGT1604M0		-	16	5.5	4.76	
		RPGT2004M0		-	20	5.5	4.76	
		**SPGR120440L**		4.0	12..7	-	4.76	
		**SPGH090330L**		3.0	9.525	3.4	3.18	

CKFN...RW Type



KORIC





• R type insert

(inch)

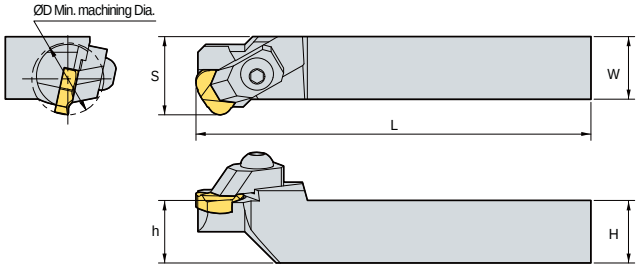
Designation		H	W	L	S	h	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CKFNR/L	2020B-L22RW	20	20	140	12.5	20	KORIC2204R/L	CH6N1B	BHA0620	ST42CB	SS0408	HW50L
	2022B-L27RW	20	22	140	13	20	KORIC2704R/L	CH8R/L1B	BHA0820	ST52CB	SS0408	HW60L
	2025B-L33RW	20	25	140	16	20	KORIC3306R/L	CH8R/L1B	BHA0820	ST62CB	SS0408	HW60L
	2533B-L44RW	25	33	140	21	25	KORIC4408R/L	CH8R/L1B	BHA0820	ST82CB	SS0408	HW60L

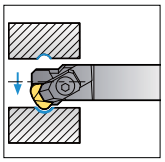
M This is metric size. We can also provide in inch type

CKGN...RW Type



KORIC





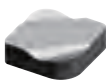
• R type insert

(inch)

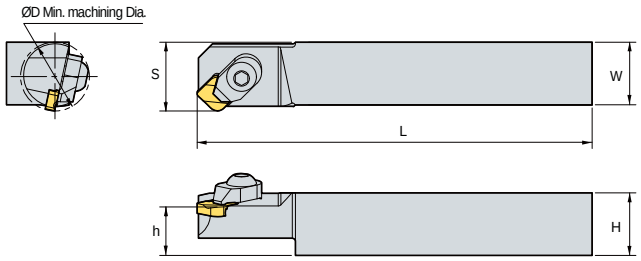
Designation		ØD	H	W	L	S	h	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CKGNR/L	2022B-L22RW-D23	23	20	22	140	30	20	KORIC2204R/L	CH6R/L3B	BHA0620	ST42CB	SS0408	HW50L
	2022B-L27RW-D29	29	20	22	140	34	20	KORIC2704R/L	CH6R/L7B	BHA0620	ST52CB	SS0408	HW50L
	2025B-L33RW-D38	38	20	25	140	33	20	KORIC3306R/L	CH6R/L5B	BHA0620	ST62CB	SS0408	HW50L
	2528B-L38RW-D50	50	25	28	140	46	25	KORIC3806R/L	CH8R/L2B	BHA0820	ST72CB	SS0408	HW60L
	2528B-L44RW-D52	52	25	28	140	50	25	KORIC4408R/L	CH8R/L2B	BHA0820	ST82CB	SS0408	HW60L

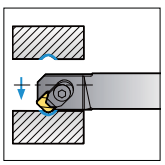
M This is metric size. We can also provide in inch type

CSGN...RW Type



SNGN





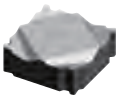
• R type insert

(inch)

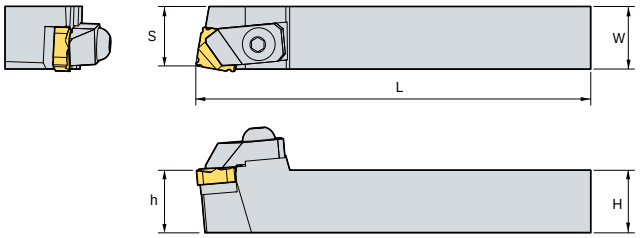
Designation		ØD	H	W	L	S	h	Insert	Clamp	Clamp Screw	Wrench
CSGNR/L	2020B-L09RW-D17	17	20	20	140	22	20	SNGN0903WR/L	CH5R1	CHX0510	HW30L
	2020B-L09RW-D22	22	20	20	140	22	20	SNGN0903WR/L	CH5R1	CHX0510	HW30L

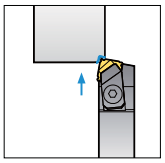
M This is metric size. We can also provide in inch type

CSBN...BS Type



SNGN



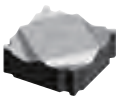


• R type insert
(inch)

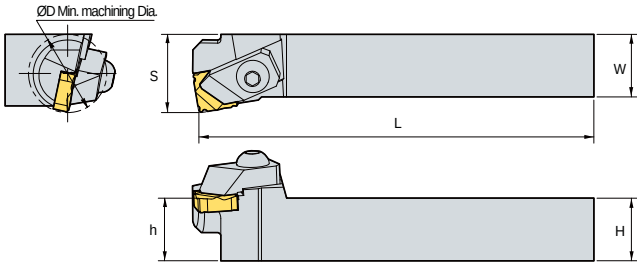
Designation		H	W	L	S	h	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CSBNR/L	2023B-L12BS	20	23	140	21	20	SNGN1204SR/L	CH6N1B	BHA0620	SS42CB	SS0308	HW50L
	2525B-L15BS	25	25	140	23	25	SNGN1504SR/L	CH6N1B	BHA0620	SS52CB	SS0408	HW50L

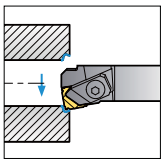
M This is metric size. We can also provide in inch type

CSKN...BS Type



SNGN



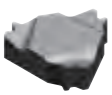


• R type insert
(inch)

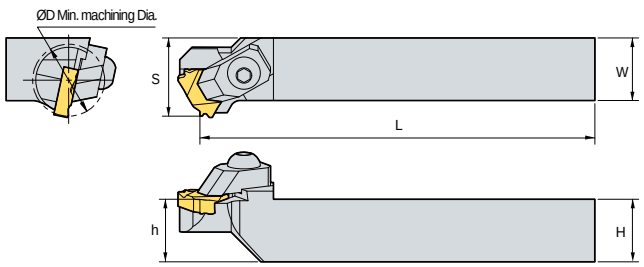
Designation		ØD	H	W	L	S	h	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CSKNR/L	1622B-L09BS-D14	14	16	22	140	16	16	SNGN0903SR/L	CH6R/L2B	BHA0620	-	-	HW50L
	2022B-L12BS-D26	26	20	22	140	27	20	SNGN1204SR/L	CH6R/L1B	BHA0620	SS42CB	SS0308	HW50L
	2525B-L15BS-D35	35	25	25	140	31	25	SNGN1504SR/L	CH6R/L3B	BHA0620	SS52CB	SS0408	HW50L

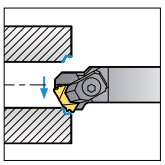
M This is metric size. We can also provide in inch type

CTGN...BS Type



TNGN





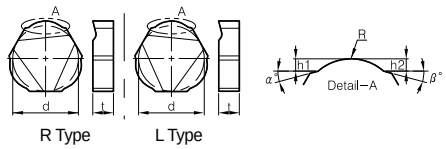
• R type insert
(inch)

Designation		ØD	H	W	L	S	h	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CTGNR/L	2021B-K22BS-D25	25	20	21	140	30	20	TNGN2204SR/L	CH6R/L7B	BHA0620	ST42CB	SS0408	HW50L

M This is metric size. We can also provide in inch type

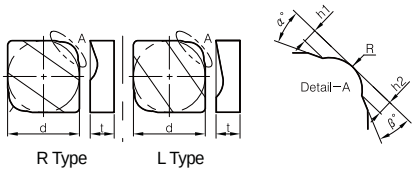
Machining Race-Way

KORIC... R/L Type



		d	t	R	h1	h2	α°	β°
KORIC	2204R/L	12.7	4.76					
	2704R/L	15.875	4.76					
	3306R/L	19.05	6.0					
	3806R/L	22.225	6.0					
	4408R/L	25.4	8.0					

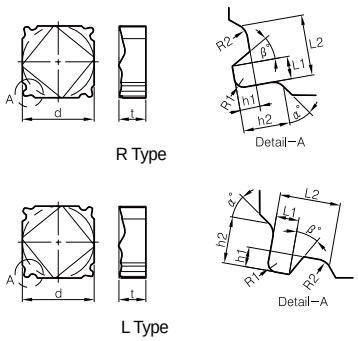
SNGN... WR/L Type



		d	t	R	h1	h2	α°	β°
SNGN	0903WR/L	9.525	3.18					
	1504WR/L	15.875	4.76					
	1905WR/L	19.05	5.56					

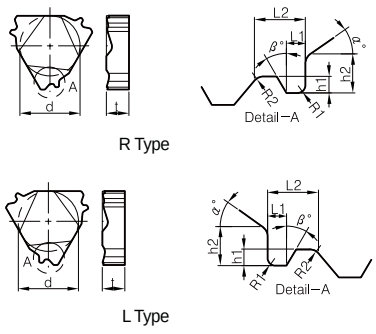
Machining for Bearing Shield

KORIC... R/L Type



		d	t	L1	L2	h1	h2	R1	R2	α°	β°
SNGN	0903SR/L	9.525	3.18								
	1204SR/L	12.7	4.76								
	1504SR/L	15.875	4.76								

TNGN...SR/L Type



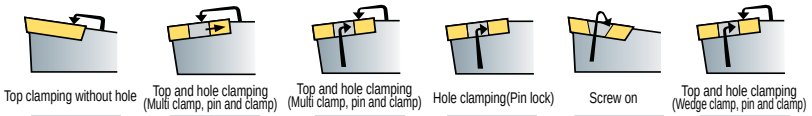
		d	t	L1	L2	h1	h2	R1	R2	α°	β°
TNGN	02204SR/L	12.7	4.76								

P S K N R 16 - 4 D

1	2	3	4	5	6	7	8
Clamping Method of Insert	Insert Shape	Holder Style	Clearance Angle of Insert	Hand	Height of Shank	Length of Insert Cutting Edge	Length of Holder

1 Clamping Method of Insert

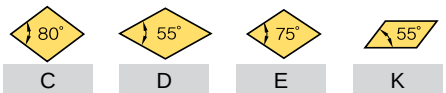
P S K N R 16 - 4 D



Top clamping without hole	Top and hole clamping (Multi clamp, pin and clamp)	Top and hole clamping (Multi clamp, pin and clamp)	Hole clamping(Pin lock)	Screw on	Top and hole clamping (Wedge clamp, pin and clamp)
C	D	M	P	S	W

2 Insert Shape

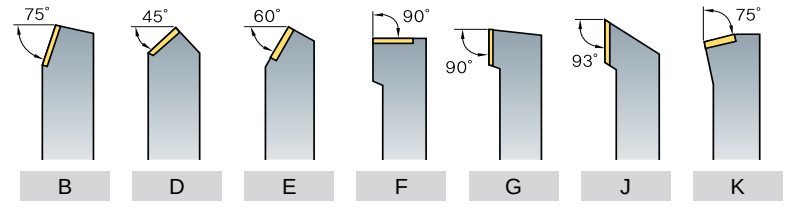
P S K N R 16 - 4 D



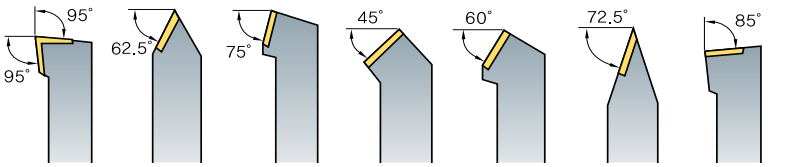
C	D	E	K	L	R	S	T	V	W
80°	55°	75°	55°					35°	80°

3 Holder Style

P S K N R 16 - 4 D



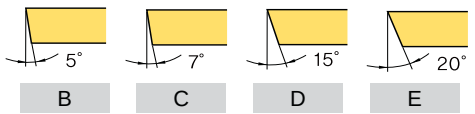
B	D	E	F	G	J	K
75°	45°	60°	90°	90°	93°	75°



L	N	R	S	T	V	Y
95° 95°	62.5°	75°	45°	60°	72.5°	85°

4 Clearance Angle of Insert

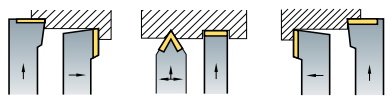
P S K N R 16 - 4 D



B	C	D	E	F	N	P
5°	7°	15°	20°	25°	0°	11°

5 Hand

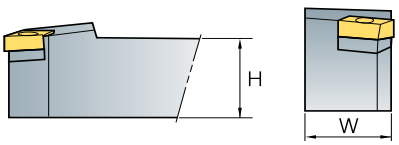
P S K N R 16 - 4 D



L	N	R

6 Height of Shank

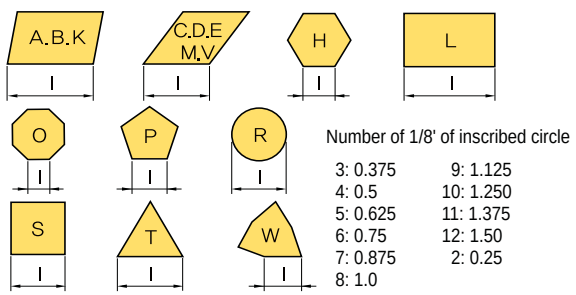
P S K N R 16 - 4 D



No.	width	Height	No.	width	Height
10	0.625	0.625	06	0.375	0.375
12	0.75	0.75	05	0.3125	0.3125
16	1.00	1.00	64	0.75	1.00
20	1.25	1.25	66	1.75	1.50
24	1.50	1.50	85	1.00	1.25
32	2.00	2.00	86	1.00	1.50
08	0.50	0.50	91	1.25	1.50

7 Length of Insert Cutting Edge

P S K N R 16 - 4 D

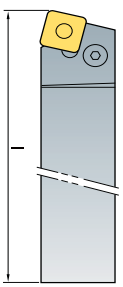


Number of 1/8' of inscribed circle

3: 0.375	9: 1.125
4: 0.5	10: 1.250
5: 0.625	11: 1.375
6: 0.75	12: 1.50
7: 0.875	2: 0.25
8: 1.0	

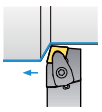
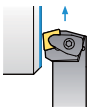
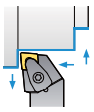
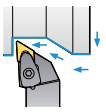
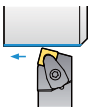
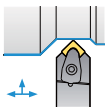
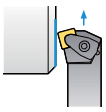
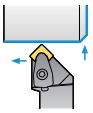
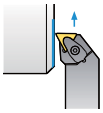
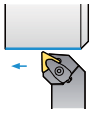
8 Length of Holder

P S K N R 16 - 4 D



A: Qualified back and end 4' long	R: Qualified back and end 6' long
B: Qualified back and end 4.5' long	S: Qualified back and end 7' long
C: Qualified back and end 5' long	T: Qualified back and end 8' long
D: Qualified back and end 6' long	G: Qualified back and end 10' long
E: Qualified back and end 7' long	H: Qualified back and end 12' long
F: Qualified back and end 8' long	I: Qualified back and end 2.5' long
M: Qualified back and end 4' long	J: Qualified back and end 2.75' long
N: Qualified back and end 4.5' long	K: Qualified back and end 3.15' long
P: Qualified back and end 5' long	x: Special

Double Clamp System

Cutting Shape										
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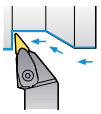
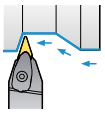
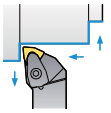
Facing		●	●				●	●	●	
Chamfering						●				
Back turning			●	●						

Cutting Shape			
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Facing			●
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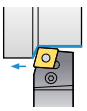
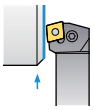
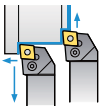
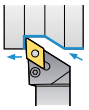
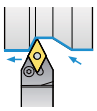
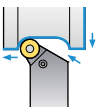
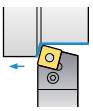
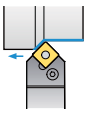
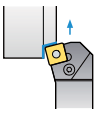
Lever Lock System

Cutting Shape										
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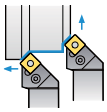
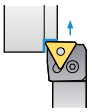
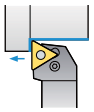
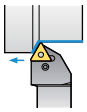
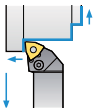
Copying				●	●	●	●			
Facing			●							●
Chamfering										
Back turning			●	●						

Cutting Shape					
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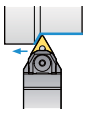
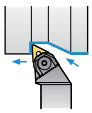
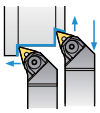
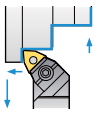
Copying					
Facing	●	●			●
Chamfering				●	
Back turning					●

Wedge Clamp System

Cutting Shape										
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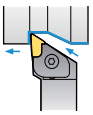
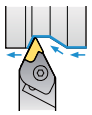
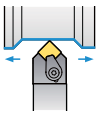
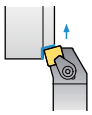
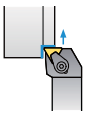
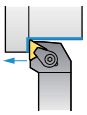
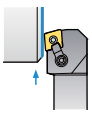
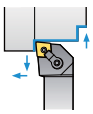
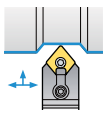
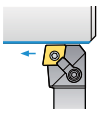
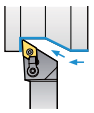
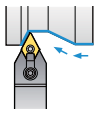
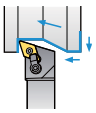
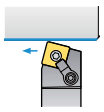
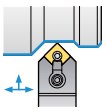
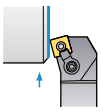
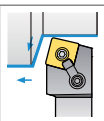
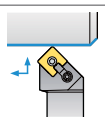
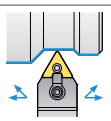
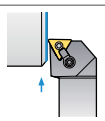
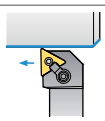
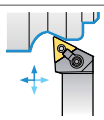
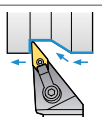
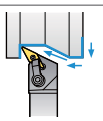
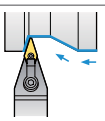
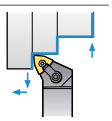
Approach angle	60°	93°	105°	95°						
Page	B191	B191	B191	B192						
Turning	●	●	●	●						
Copying	●	●	●							
Facing				●						
Chamfering										
Back turning		●	●	●						

Clamp On System

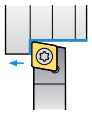
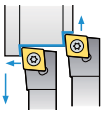
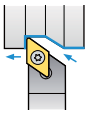
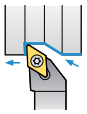
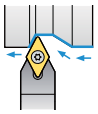
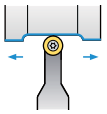
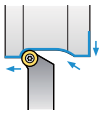
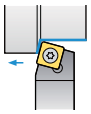
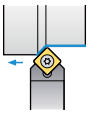
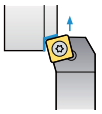
Cutting Shape										
Designation	CKJNR/L	CKNNR/L	CSDPN	CSKPR/L	CTFPR/L	CTGPR/L				
Approach angle	93°	62.5°	45°	75°	90°	90°				
Page	B193	B193	B193	B194	B194	B194				
Turning	●	●	●			●				
Copying	●	●								
Facing				●	●					
Chamfering										
Back turning	●									

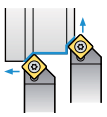
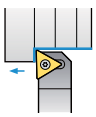
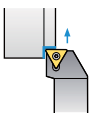
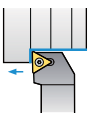
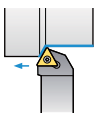
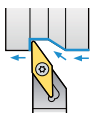
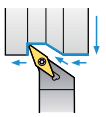
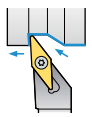
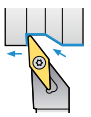
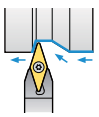
Multi Lock System

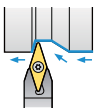
Cutting Shape										
Designation	MCKNR/L	MCLNR/L	MCMNN	MCRNR/L	MDJNR/L	MDNNN	MDQNR/L	MSBNR/L	MSDNN	MSKNR/L
Approach angle	75°	95°	50°	75°	93°	62.5°	107.5°	75°	45°	75°
Page	B195	B195	B195	B196	B196	B196	B197	B197	B197	B198
Turning		●	●	●	●	●	●	●	●	
Copying					●	●	●			
Facing	●	●								●
Chamfering										
Back turning		●			●		●			

Cutting Shape										
Designation	MSRNR/L	MSSNR/L	MTENN	MTFNR/L	MTGNR/L	MTJNR/L	MVJNR/L	MVQNR/L	MVVNN	MWLNR/L
Approach angle	75°	45°	60°	90°	90°	93°	93°	117.5°	72.5°	95°
Page	B198	B199	B199	B199	B200	B200	B200	B201	B201	B201
Turning	●	●	●		●	●	●	●	●	●
Copying			●			●	●	●	●	
Facing		●		●		●				●
Chamfering										
Back turning						●	●	●		●

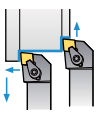
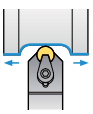
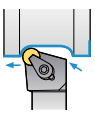
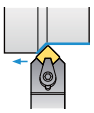
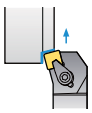
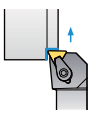
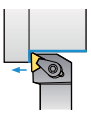
Screw On System

Cutting Shape										
Designation	SCACR/L	SCLCR/L	SDACR/L	SDJCR/L	SDNCN	SRDCN	SRGCR/L	SSBCR/L	SSDCN	SSKCR/L
Approach angle	90°	95°	90°	93°	62.5°	-	-	75°	45°	75°
Page	B202	B202	B202	B203	B203	B203	B204	B204	B204	B205
Turning	●	●	●	●	●	●	●	●	●	
Copying			●	●	●	●	●			
Facing		●								●
Chamfering										
Back turning		●		●						

Cutting Shape										
Designation	SSSCR/L	STACR/L	STFCR/L	STGCR/L	STTCR/L	SVABR/L	SVHBR/L	SVJBR/L	SVJCR/L	SVVBN
Approach angle	45°	90°	90°	90°	60°	90°	107.5°	93°	93°	72.5°
Page	B205	B205	B206	B206	B206	B207	B207	B207	B208	B208
Turning	●	●		●	●	●	●	●	●	●
Copying						●	●	●	●	●
Facing	●		●							
Chamfering										
Back turning						●	●	●	●	

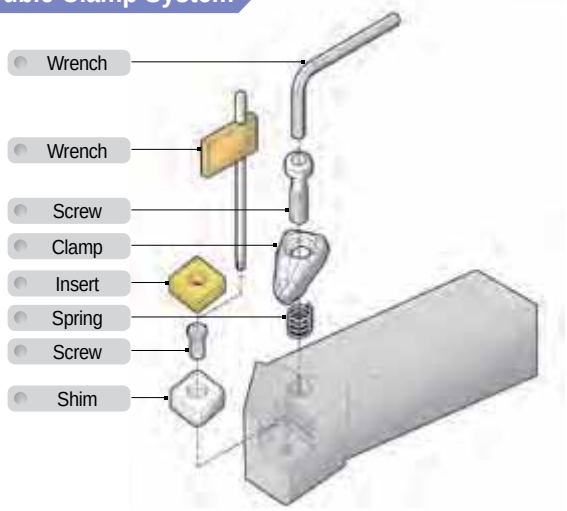
Cutting Shape										
Designation	SVVCN									
Approach angle	72.5°									
Page	B208									
Turning	●									
Copying	●									
Facing										
Chamfering										
Back turning										

Ceramic Holders

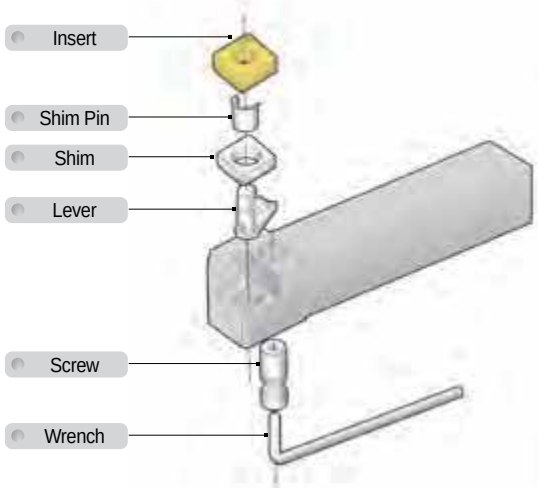
Cutting Shape										
Designation	CCNLR/L	CRDNN	CRGNR/L	CSDNN	CSKNR/L	CTFNR/L	CTGNR/L			
Approach angle	95°	-	-	45°	75°	90°	90°			
Page	B209	B209	B209	B209	B210	B210	B210			
Turning	●	●	●	●			●			
Copying			●							
Facing	●				●	●				
Chamfering										
Back turning	●									

Instructions of External Holder Assembly

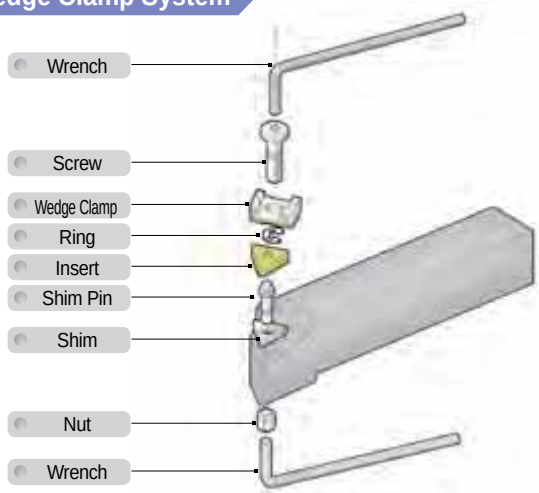
Double Clamp System



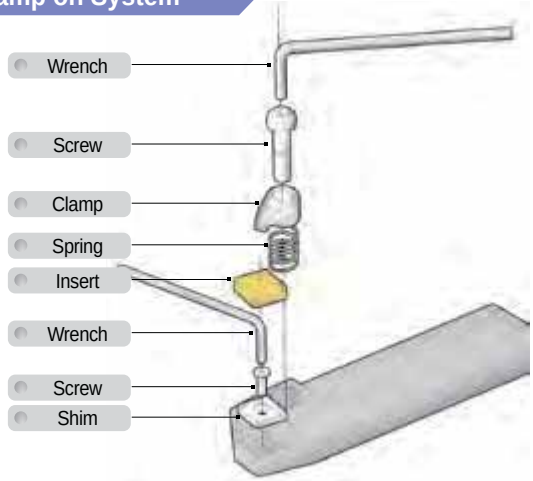
Lever Lock System



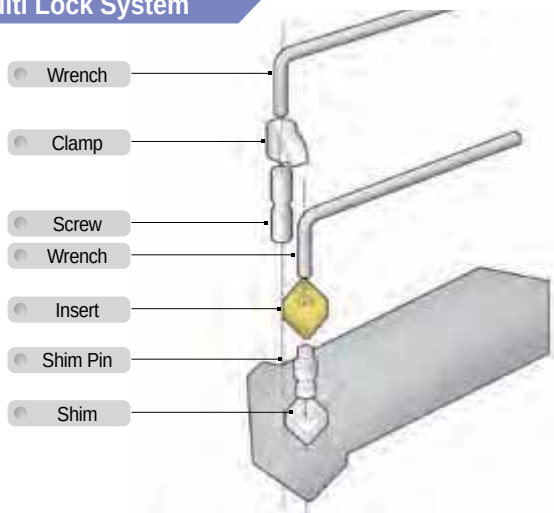
Wedge Clamp System



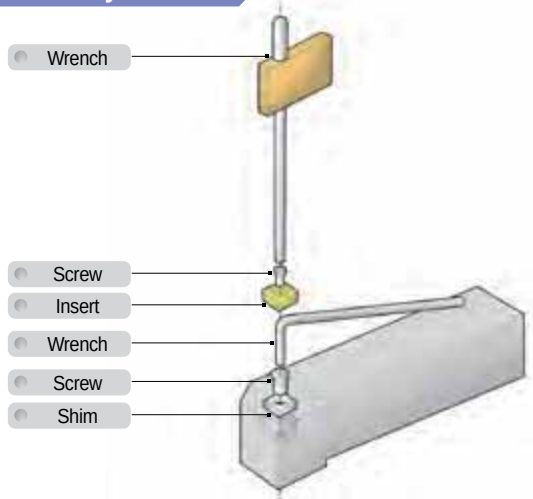
Clamp on System



Multi Lock System



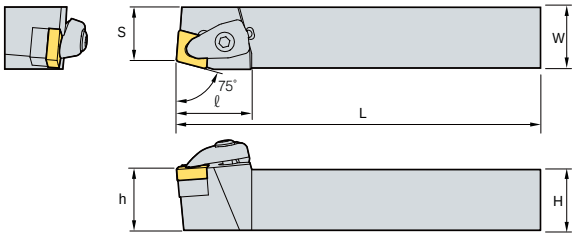
Screw on System

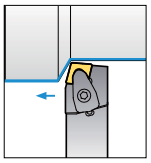


DCBNR/L



CN□□





75°

• R type insert
(inch)

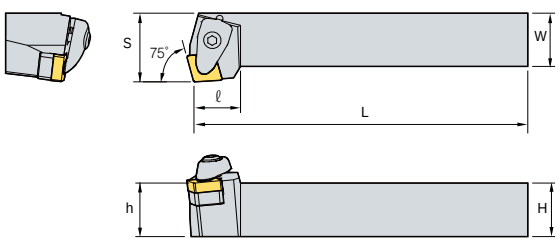
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DCBNR/L	12-4B	3/4	3/4	4 1/2	0.600	0.750	1.220	CN□□43□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	HW30P
	16-4D	1	1	6	0.790	0.790	1.220							
	85-4D	1 1/4	1	6	1.250	1.063	1.220							
	16-5D	1	1	6	0.790	1.000	1.417	CN□□54□	CVH5	CHX0622	SC54V	FTNA0511	SPR0811	HW40L
	20-5D	1 1/4	1 1/4	6	0.990	1.250	1.417							
	20-6D	1 1/4	1 1/4	6	0.990	1.250	1.574	CN□□64□	CVH6	CHX0622	SC63V	FTNA0511	SPR0811	HW40L
	24-6E	1 1/2	1 1/2	7	1.186	1.500	1.574							

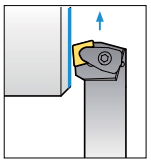
Applicable inserts **B36~B42**

DCKNR/L



CN□□





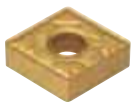
75°

• R type insert
(inch)

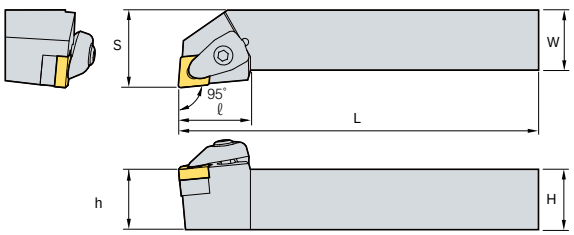
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DCKNR/L	12-4B	3/4	3/4	4 1/2	0.790	0.750	0.827	CN□□43□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	HW30P
	16-4D	1	1	6	1.063	0.790	0.827							
	85-4D	1 1/4	1	6	1.063	1.063	0.827							
	20-5D	1 1/4	1 1/4	6	1.500	1.063	1.024	CN□□54□	CVH5	CHX0622	SC54V	FTNA0511	SPR0811	HW40L
	24-5D	1 1/2	1 1/2	6	2.000	1.500	1.024							

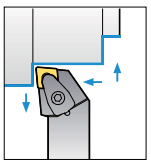
Applicable inserts **B36~B42**

DCLNR/L



CN□□





95°

• R type insert
(inch)

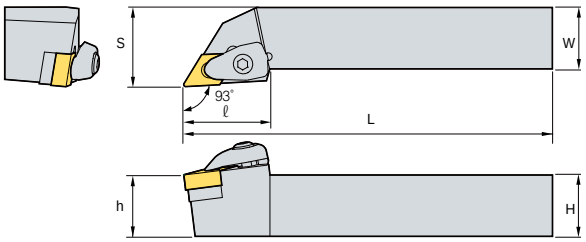
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DCLNR/L	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.964	CN□□32□	CVH3	CHX0415	SC32V	FTKA0307	SPR0510	HW25P
	16-3D	1	1	6	1.250	1.000	0.964							
	12-4B	3/4	3/4	4 1/2	1.250	1.000	1.181	CN□□43□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	HW30P
	16-4D	1	1	6	1.250	1.250	1.181							
	85-4D	1 1/4	1	6	1.500	1.250	1.181							
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.181							
	16-5D	1	1	6	1.250	1.000	1.417	CN□□54□	CVH5	CHX0622	SC54V	FTNA0511	SPR0811	HW40L
	85-5D	1 1/4	1	6	1.250	1.250	1.417							
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.417							
	16-6D	1	1	6	1.250	1.000	1.575	CN□□64□	CVH6	CHX0622	SC63V	FTNA0511	SPR0811	HW40L
	85-6D	1 1/4	1	6	1.250	1.250	1.575							
	20-6D	1 1/4	1 1/4	6	1.500	1.250	1.575							
	24-6D	1 1/2	1 1/2	6	2.000	1.250	1.575							

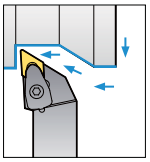
Applicable inserts **B36~B42**

DDJNR/L



DN□□





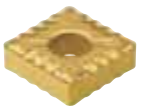
93°

• R type insert
(inch)

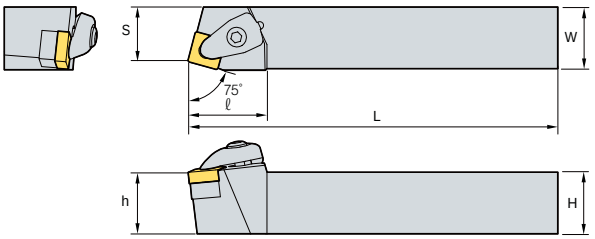
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DDJNR/L	**12-3B**	3/4	3/4	4 1/2	1.000	0.750	1.181	DN□□33□	CVH3	CHX0415	SD32V	FTKA0307	SPR0510	HW25P
	16-3D	1	1	6	1.250	1.000	1.181							
	85-3D	1 1/4	1	6	1.250	1.250	1.181							
	20-3D	1 1/4	1 1/4	6	1.500	1.250	1.181							
	12-4B	3/4	3/4	4 1/2	1.000	0.750	1.378	DN□□44□	CVH4	CHX0518	SD43V	FTKA0410	SPR0714	HW30P
	16-4D-4	1	1	6	1.250	1.000	1.378							
	85-4D-4	1 1/4	1	6	1.250	1.250	1.378							
	20-4D-4	1 1/4	1 1/4	6	1.500	1.250	1.378							
	12-4B-3	3/4	3/4	4 1/2	1.000	0.750	1.378	DN□□43□	CVH4	CHX0518	SD44V	FTKA0410	SPR0714	HW30P
	16-4D-3	1	1	6	1.250	1.000	1.378							
	20-4D-3	1 1/4	1 1/4	6	1.500	1.250	1.378							

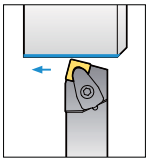
Applicable inserts **B43~B48**

DSBNR/L



SN□□





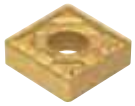
75°

• R type insert
(inch)

Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DSBNR/L	**12-3B**	3/4	3/4	4 1/2	0.600	0.750	0.984	SN□□32□	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	HW25P
	16-3B	1	1	4 1/2	0.790	1.000	0.984							
	12-4B	3/4	3/4	4 1/2	0.600	0.750	1.260	SN□□43□	CVH4	CHX0518	SS44V	FTKA0410	SPR0714	HW30P
	16-4D	1	1	6	0.790	1.000	1.260							
	85-4D	1 1/4	1	6	0.790	1.250	1.260							
	20-4D	1 1/4	1 1/4	6	0.990	1.250	1.260							
	16-5D	1	1	6	0.790	1.000	1.496	SN□□54□	CVH5	CHX0622	SS54V	FTNA0511	SPR0811	HW40L
	85-5D	1 1/4	1	6	0.790	1.250	1.496							
	20-5D	1 1/4	1 1/4	6	0.990	1.250	1.496							
	20-6D	1 1/4	1 1/4	6	0.990	1.250	1.693	SN□□64□	CVH6	CHX0622	SS64V	FTNA0511	SPR0811	HW40L
	24-6E	1 1/2	1 1/2	7	1.186	1.500	1.693							

Applicable inserts **B50~B57**

DSDNN



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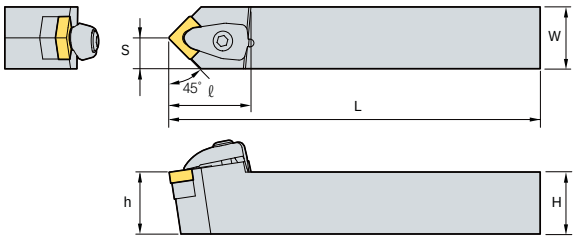
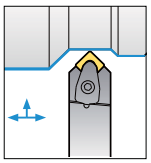




45°

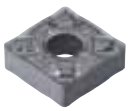
• R type insert

(inch)

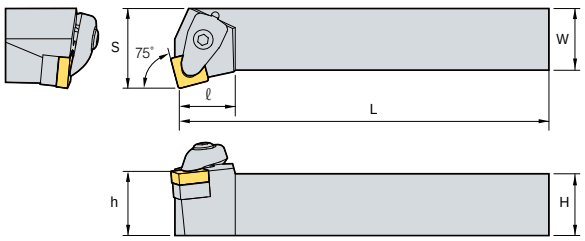
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DSDNN	12-3B	3/4	3/4	4 1/2	0.375	0.750	1.043	SN□□32□	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	HW25P
	12-4B	3/4	3/4	4 1/2	0.375	0.750	1.299	SN□□43□	CVH4	CHX0518	SS44V	FTKA0410	SPR0714	HW30P
	16-4D	1	1	6	0.500	1.000	1.299							
	85-4D	1 1/4	1	6	0.500	1.000	1.299							
	20-4D	1 1/4	1 1/4	6	0.625	1.250	1.299							
	16-5D	1	1	6	0.500	1.000	1.551	SN□□54□	CVH5	CHX0622	SS54V	FTNA0511	SPR0811	HW25P
	20-5D	1 1/4	1 1/4	6	0.625	1.250	1.496							
	20-6D	1 1/4	1 1/4	6	0.625	1.250	1.693	SN□□64□	CVH6	CHX0622	SS64V	FTNA0511	SPR0811	HW40L
	24-6E	1 1/2	1 1/2	7	0.750	1.500	1.771							

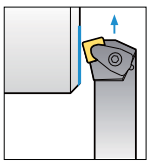
Applicable inserts **B50~B57**

DSKNR/L



SN□□





75°

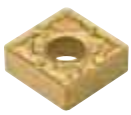
• R type insert

(inch)

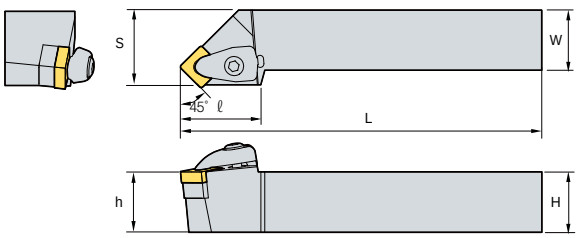
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DSKNR/L	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.787	SN□□32□	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	HW25P
	12-4B	3/4	3/4	4 1/2	1.000	0.750	0.906	SN□□43□	CVH4	CHX0518	SS44V	FTKA0410	SPR0714	HW30P
	16-4D	1	1	6	1.250	1.000	0.906							
	20-4D	1 1/4	1 1/4	6	1.500	1.250	0.906							
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.102	SN□□54□	CVH5	CHX0622	SS54V	FTNA0511	SPR0811	HW40L
	20-6D	1 1/4	1 1/4	6	1.500	1.250	1.378	SN□□64□	CVH6	CHX0622	SC64V	FTNA0511	SPR0811	HW40L
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.693							

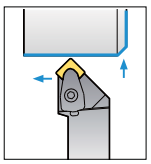
Applicable inserts **B50~B57**

DSSNR/L



SN□□





45°

• R type insert

(inch)

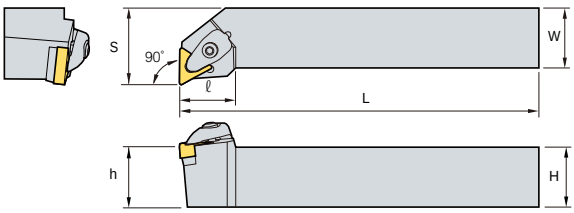
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DSSNR/L	12-3B	3/4	3/4	4 1/2	0.600	0.750	1.220	SN□□32□	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	HW25P
	12-4B	3/4	3/4	4 1/2	0.600	0.750	1.378	SN□□43□	CVH4	CHX0518	SS44V	FTKA0410	SPR0714	HW30P
	16-4D	1	1	6	0.790	1.000	1.378							
	85-4D	1 1/4	1	6	0.790	1.250	1.378							
	20-4D	1 1/4	1 1/4	6	0.990	1.250	1.378							
	16-5D	1	1	6	0.790	1.000	1.516	SN□□54□	CVH5	CHX0622	SS54V	FTNA0511	SPR0811	HW40L
	20-5D	1 1/4	1 1/4	6	0.990	1.250	1.516							
	20-6D	1 1/4	1 1/4	6	0.990	1.250	1.811	SN□□64□	CVH6	CHX0622	SS64V	FTNA0511	SPR0811	HW40L
	24-6E	1 1/2	1 1/2	7	1.186	1.500	1.811							

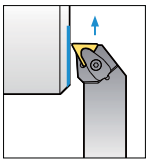
Applicable inserts **B50~B57**

DTFNR/L



TN□□





90°

• R type insert

(inch)

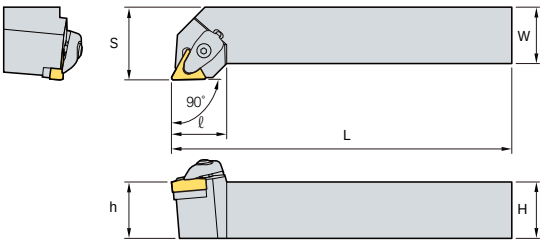
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DTFNR/L	12-3B	3/4	3/4	4 1/2	0.600	0.750	0.965	TN□□33□	CVH3	CHX0415	ST32V	FTKA0307	SPR0510	HW25P
	16-3D	1	1	6	0.790	1.000	0.965							
	20-3D	1 1/4	1 1/4	6	0.990	1.250	0.965							
	16-4D	1	1	6	0.790	1.000	1.299	TN□□43□	CVH4	CHX0518	ST44V	FTKA0410	SPR0714	HW30P
	85-4D	1 1/4	1	6	0.790	1.250	1.299							
	20-4D	1 1/4	1 1/4	6	0.990	1.250	1.299							

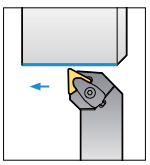
Applicable inserts **B58~B65**

DTGNR/L



TN□□





90°

• R type insert

(inch)

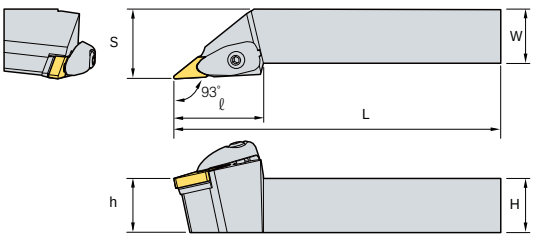
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DTGNR/L	12-3B	3/4	3/4	4 1/2	0.600	0.750	0.965	TN□□33□	CVH3	CHX0415	ST32V	FTKA0307	SPR0510	HW25P
	16-3D	1	1	6	0.790	1.000	0.965							
	20-3D	1 1/4	1 1/4	6	0.990	1.250	0.965							
	16-4D	1	1	6	0.790	1.000	1.283	TN□□43□	CVH4	CHX0518	ST44V	FTKA0410	SPR0714	HW30P
	85-4D	1 1/4	1	6	0.790	1.250	1.283							
	20-4D	1 1/4	1 1/4	6	0.990	1.250	1.283							

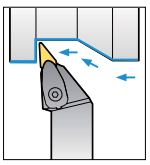
Applicable inserts **B58~B65**

DVJNR/L



VN□□





93°

• R type insert

(inch)

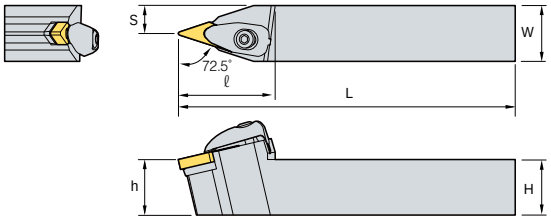
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DVJNR/L	12-3B	3/4	3/4	4 1/2	0.600	0.750	1.634	VN□□33□	CVH3V	CHX0518	SV32V	FTNA03508	SPR0714	HW30P
	16-3D	1	1	6	0.790	1.000	1.634							
	20-3D	1 1/4	1 1/4	6	0.990	1.250	1.634							

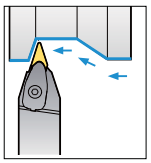
Applicable inserts **B66~B67**

DVVNN



VN□□





72.5°

• R type insert
(inch)

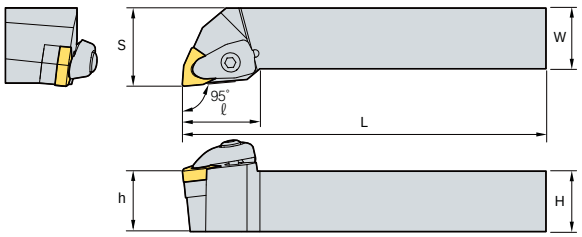
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DVVNN	12-3B	3/4	3/4	4 1/2	0.375	0.750	1.575	VN□□33□	CVH3V	CHX0518	SV32V	FTNA03508	SPR0714	HW30P
	16-3D	1	1	6	0.500	1.000	1.575							
	20-3D	1 1/4	1 1/4	6	0.625	1.250	1.575							

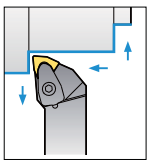
Applicable inserts **B66~B67**

DWLNR/L



WN□□





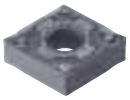
95°

• R type insert
(inch)

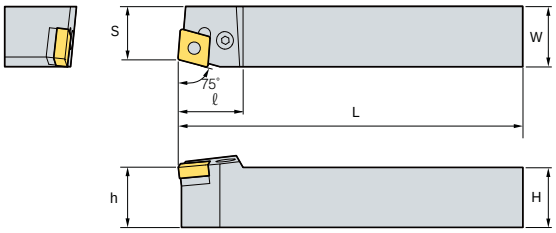
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DWLNR/L	12-3B	3/4	3/4	4 1/2	0.600	0.750	1.024	WN□□33□	CVH3	CHX0415	SW32V	FTKA0307	SPR0510	HW25P
	16-3D	1	1	6	0.790	1.000	1.024							
	12-4B	3/4	3/4	4 1/2	0.600	0.750	1.260	WN□□43□	CVH4	CHX0518	SW44V	FTKA0410	SPR0714	HW30P
	16-4D	1	1	6	0.790	1.000	1.260							

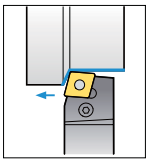
Applicable inserts **B68~B72**

PCBNR/L



CN□□





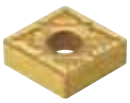
75°

• R type insert
(inch)

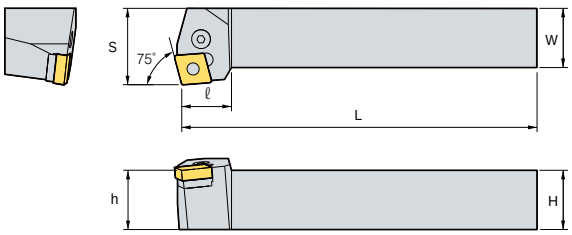
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PCBNR/L	12-4B	3/4	3/4	4 1/2	0.600	0.750	1.063	CN□□ 43□	LV4	VHX0821	SC42	SP4	HW30L	LSPS4
	16-4D	1	1	6	0.790	0.790	1.000							
	85-4D	1 1/4	1	6	1.250	1.063	1.063							
	16-5D	1	1	6	0.790	1.000	1.299	CN□□ 54□	LV5	VHX0825	SC53	SP5	HW30L	LSPS6
	20-5D	1 1/4	1 1/4	6	0.990	1.250	1.299							
	20-6D	1 1/4	1 1/4	6	0.990	1.250	1.496	CN□□ 64□	LV6N	VHX1027N	SC63N	SP6N	HW40L	LSPS6
	24-6E	1 1/2	1 1/2	7	1.186	1.500	1.496							
	24-8E	1 1/2	1 1/2	7	1.186	1.500	1.772	CN□□ 86□	LV8N	VHX1236N	SC84N	SP8N	HW50L	LSPS8
	24-8E-5	1 1/2	1 1/2	7	1.186	1.500	1.772	CN□□ 85□						
	32-8G	2	2	10	1.693	2.000	1.772	CN□□ 86□	LV8N	VHX1236N	SC84N	SP8N	HW50L	LSPS8

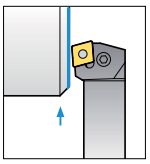
Applicable inserts **B36~B42**

PCKNR/L



CN□□





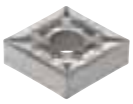
95°

• R type insert
(inch)

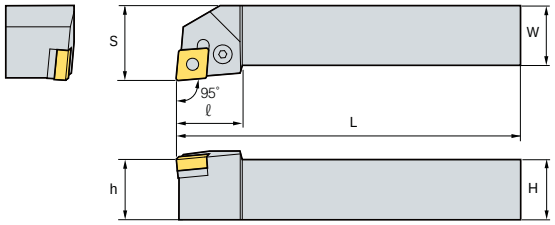
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PCKNR/L	12-4B	3/4	3/4	4 1/2	0.984	0.787	1.063	CN□□ 43□	LV4	VHX0821	SC42	SP4	HW30L	LSPS4
	16-4D	1	1	6	1.260	0.984	1.063							
	85-4D	1 1/4	1	6	1.500	1.260	1.181							
	20-5D	1 1/4	1 1/4	6	1.500	1.260	1.023	CN□□ 54□	LV5	VHX0825	SC53	SP5	HW30L	HW30L
	24-5E	1 1/2	1 1/2	7	2.000	1.500	0.984							

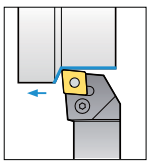
Applicable inserts **B36~B42**

PCLNR/L



CN□□





95°

• R type insert

(inch)

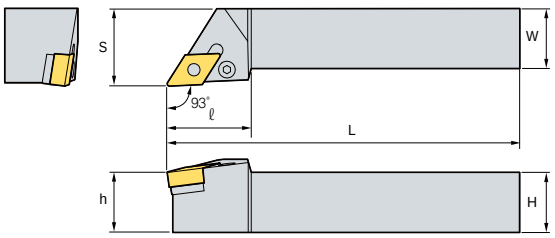
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PCLNR/L	**10-3A**	5/8	5/8	4	1.000	0.625	0.787	CN□□ 32□	LV3	VHX0617	SC32	SP3	HW25L	LSPS3
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.866							
	16-3D	1	1	6	1.250	1.000	0.866							
	10-4A	5/8	5/8	4	1.000	0.625	1.102	CN□□ 43□	LV4	VHX0821	SC42	SP4	HW30L	LSPS4
	12-4B	3/4	3/4	4 1/2	1.000	0.750	1.102							
	16-4D	1	1	6	1.250	1.000	1.102							
	85-4D	1 1/4	1	6	1.250	1.250	1.102							
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.102							
	16-5D	1	1	6	1.250	1.000	1.299	CN□□ 54□	LV5	VHX0825	SC53	SP5	HW30L	LSPS5
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.299							
	16-6D	1	1	6	1.250	1.000	1.496	CN□□ 64□	LV6N	VHX1027N	SC63N	SP6N	HW40L	LSPS6
	85-6D	1 1/4	1	6	1.250	1.250	1.496							
	20-6D	1 1/4	1 1/4	6	1.500	1.250	1.496							
	24-6D	1 1/2	1 1/2	6	2.000	1.500	1.496							
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.496							
	24-8E	1 1/2	1 1/2	7	2.000	1.500	1.772	CN□□ 86□	LV8N	VHX1236N	SC84N	SP8N	HW50L	LSPS8
	32-8G	2	2	10	2.500	2.000	1.772							
	24-8E-5	1 1/2	1 1/2	7	2.000	1.500	1.772	CN□□ 85□	LV8N	VHX1236N	SC84N	SP8N	HW50L	LSPS8
	32-8G-5	2	2	10	2.500	2.000	1.772							

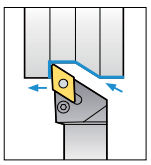
Applicable inserts **B36~B42**

PDJNR/L



DN□□





93°

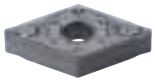
• R type insert

(inch)

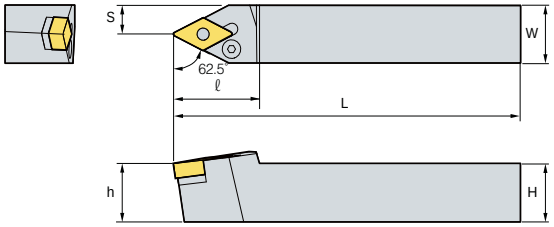
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PDJNR/L	**10-3A**	5/8	5/8	4	0.875	0.625	0.984	DN□□ 33□	LV3	VHX0617	SD317	SP3	HW25L	LSPS3
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.984							
	16-3D	1	1	6	1.250	1.000	1.181							
	12-4B-4	3/4	3/4	4 1/2	1.000	0.750	1.378	DN□□ 44□	LV4B	VHX0821	SD42	SP4	HW30L	LSPS4
	16-4D-4	1	1	6	1.250	1.000	0.984							
	85-4D-4	1 1/4	1	6	1.250	1.250	1.378							
	20-4D-4	1 1/4	1 1/4	6	1.500	1.250	1.378							
	12-4B-3	3/4	3/4	4 1/2	1.000	0.750	1.378	DN□□ 43□	LV4	VHX0821	SD42	SP4	HW30L	LSPS4
	16-4D-3	1	1	6	1.250	1.000	1.378							
	20-4D-3	1 1/4	1 1/4	6	1.500	1.250	1.378							

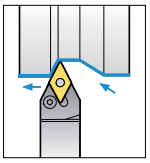
Applicable inserts **B43~B48**

PDNNR/L



DN□□





62.5°

• R type insert

(inch)

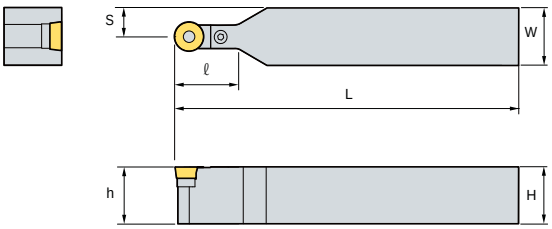
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PDNNR/L	**12-4B-4**	3/4	3/4	4 1/2	0.320	0.750	1.457	DN□□ 44□	LV4B	VHX0821	SD42	SP4	HW30L	LSPS4
	16-4D-4	1	1	6	0.500	1.000	1.457							
	86-4D-4	1 1/2	1	6	0.500	1.500	1.457							
	20-4D-4	1 1/4	1 1/4	6	0.625	1.250	1.457							
	16-4D-3	1	1	6	0.500	1.000	1.457	DN□□ 43□	LV4	VHX0821	SD42	SP4	HW30L	LSPS4
	86-4D-3	1 1/2	1	6	0.500	1.500	1.457							

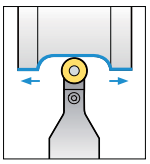
Applicable inserts **B43~B48**

PRDCN



RCMX





(inch)

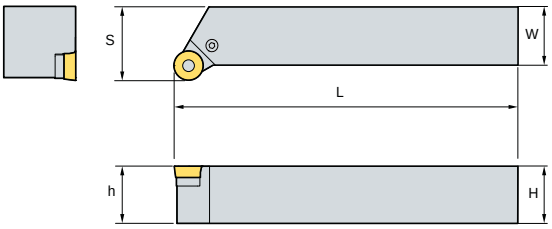
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PRDCN	**12-10D**	3/4	3/4	6	0.375	0.750	0.866	RCMX1003M0	LR10	VHX0514	SR10	SP3	HW20L	LSPS3
	16-10D	1	1	6	0.689	1.000	0.945							
	16-12D	1	1	6	0.500	1.000	0.945	RCMX1204M0	LR12	VHX0617	SR12	SP3	HW25L	LSPS3
	12-12C	3/4	3/4	5	0.630	0.750	0.945							
	85-12E	1 1/4	1	7	0.728	1.250	0.945							
	16-16E	1	1	7	0.807	1.000	1.181	RCMX1606M0	LR16	VHX0621	SR16	SP4	HW25L	LSPS4
	85-16E	1 1/4	1	7	0.708	1.250	1.181							
	20-16E	1 1/4	1 1/4	7	0.945	1.250	1.378							
	20-20E	1 1/4	1 1/4	7	1.024	1.250	1.500	RCMX2006M0	LR20	VHX0823	SR20	SP20	HW30L	LSPS5
	24-25E	1 1/2	1 1/2	7	1.250	1.500	1.653	RCMX2507M0	LR25	VHX1030	SR25	SP6N	HW40L	LSPS6
	24-25H	1 1/2	1 1/2	12	1.250	1.500	1.653							
	32-32H	2	2	12	1.500	2.000	2.047	RCMX3209M0	LR32	VHX1236	SR32	SP8N	HW50L	LSPS8

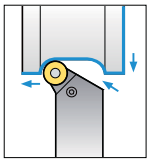
Applicable inserts **B83, B105**

PRGCR/L



RCMX





• R type insert

(inch)

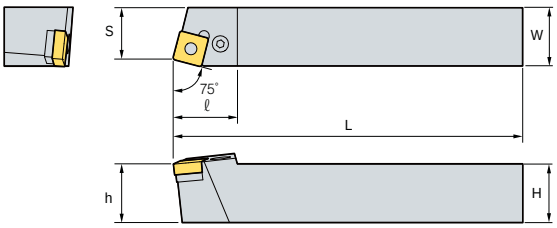
Designation		H	W	L	S	h	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PRGCR/L	12-10B	3/4	3/4	4 1/2	1.000	0.750	RCMX1003M0	LR10	VHX0514	SR10	SP3	HW20L	LSPS3
	16-10D	1	1	6	1.250	1.000							
	12-12B	3/4	3/4	4 1/2	1.000	0.750	RCMX1204M0	LR12	VHX0617	SR12	SP3	HW25L	LSPS3
	16-12D	1	1	6	1.250	1.000							
	85-12D	1 1/4	1	6	1.250	1.250							
	16-16D	1	1	6	1.250	1.000	RCMX1606M0	LR16	VHX0621	SR16	SP4	HW25L	LSPS4
	85-16D	1 1/4	1	6	1.250	1.250							
	20-20D	1 1/4	1 1/4	6	1.500	1.250	RCMX2006M0	LR20	VHX0823	SR20	SP5-1	HW30L	LSPS5
	24-25D	1 1/2	1 1/2	6	2.000	1.500	RCMX2507M0	LR25	VHX1030	SR25	SP6N	HW40L	LSPS6

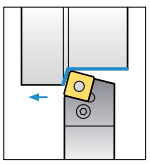
Applicable inserts **B83, B105**

PSBNR/L



SN□□





75°

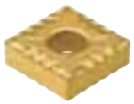
• R type insert

(inch)

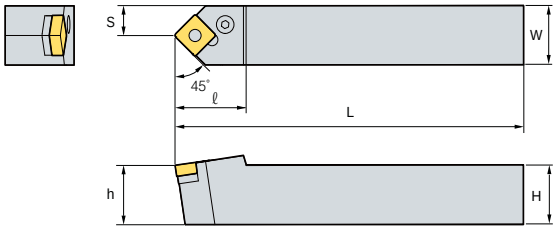
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PSBNR/L	10-3A	5/8	5/8	4	0.500	0.625	0.827	SN□□54□	LV3	VHX0617	SS32	SP3	HW25L	LSPS3
	12-3B	3/4	3/4	4 1/2	0.600	0.750	0.906							
	12-4B	3/4	3/4	4 1/2	0.600	0.750	1.102	SN□□54□	LV4	VHX0821	SS42	SP4	HW30L	LSPS4
	16-4D	1	1	6	0.790	1.000	1.102							
	85-4D	1 1/4	1	6	0.790	1.250	1.102							
	20-4D	1 1/4	1 1/4	6	0.990	1.250	1.102							
	16-5D	1	1	6	0.790	1.000	1.378	SN□□64□	LV5	VHX0825	SS53	SP5	HW30L	LSPS5
	20-5D	1 1/4	1 1/4	6	0.990	1.250	1.378							
	20-6D	1 1/4	1 1/4	6	0.990	1.250	1.575	SN□□64□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	24-6E	1 1/2	1 1/2	7	1.186	1.500	1.575							
	24-8E	1 1/2	1 1/2	7	1.186	1.500	2.000	SN□□85□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	24-8E-6	1 1/2	1 1/2	7	1.186	1.500	2.000	SN□□86□						
	32-8E	2	2	7	1.382	2.000	2.000	SN□□85□						
	32-8E-6	2	2	7	1.382	2.000	2.000	SN□□86□						

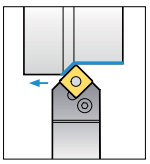
Applicable inserts **B50~B57**

PSDNN



SN□□





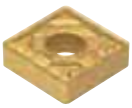
45°

(inch)

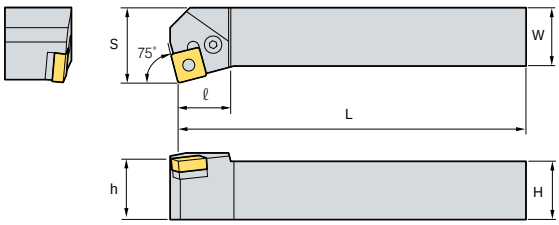
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PSDNN	10-3A	5/8	5/8	4	0.313	0.625	0.906	SN□□32□	LV3	VHX0617	SS32	SP3	HW25L	LSPS3
	12-4B	3/4	3/4	4 1/2	0.375	0.750	1.181	SN□□43□	LV4	VHX0821	SS42	SP4	HW30L	LSPS4
	16-4D	1	1	6	0.500	1.000	1.181							
	85-4D	1 1/4	1	6	0.500	1.250	1.181							
	20-4D	1 1/4	1 1/4	6	0.625	1.250	1.575							
	16-5D	1	1	6	0.500	1.000	1.575	SN□□54□	LV5	VHX0825	SS53	SP5	HW30L	LSPS5
	20-5D	1 1/4	1 1/4	6	0..625	1.250	1.575							
	85-6D	1 1/4	1	6	0.500	1.250	1.575	SN□□64□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	20-6D	1 1/4	1 1/4	6	0.625	1.250	1.575							
	24-6E	1 1/2	1 1/2	7	0.750	1.500	1.575							
	24-8E	1 1/2	1 1/2	7	0.750	1.500	1.969	SN□□85□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	32-8E	2	2	7	1.000	2.000	1.969							
	24-8E-6	1 1/2	1 1/2	7	0.750	1.500	1.969	SN□□86□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	32-8E-6	2	2	7	1.000	2.000	1.969							

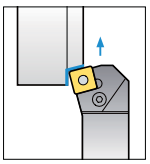
Applicable inserts **B50~B57**

PSKNR/L



SN□□





75°

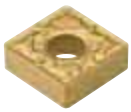
• R type insert

(inch)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PSKNR/L	10-3A	5/8	5/8	4	0.750	0.625	0.669	SN□□32□	LV3	VHX0617	SS32	SP3	HW25L	LSPS3
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.787							
	12-4B	3/4	3/4	4 1/2	1.000	0.750	1.024	SN□□43□	LV4	VHX0821	SS42	SP4	HW30L	LSPS4
	16-4D	1	1	6	1.250	1.000	1.024							
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.024							
	16-5D	1	1	6	1.250	1.000	1.260	SN□□54□	LV5	VHX0825	SS53	SP5	HW30L	LSPS5
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.260							
	20-6D	1 1/4	1 1/4	6	1.500	1.250	1.417	SN□□64□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.575							
	24-8E	1 1/2	1 1/2	7	2.000	1.500	1.732	SN□□85□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	24-8E-6	1 1/2	1 1/2	7	2.000	1.500	1.732	SN□□86□						
	32-8E-6	2	2	7	2.500	2.000	1.476	SN□□86□						

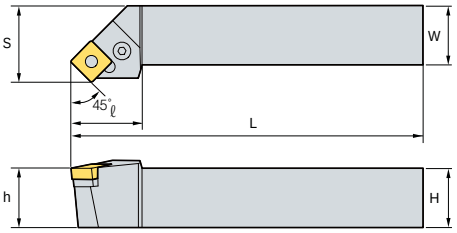
Applicable inserts **B50~B57**

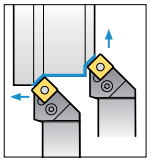
PSSNR/L



SN□□







45°

• R type insert
(inch)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PSSNR/L	**10-3A**	5/8	5/8	4	0.750	0.625	0.984	SN□□32□	LV3	VHX0617	SS32	SP3	HW25L	LSPS3
	12-4B	3/4	3/4	4 1/2	1.000	0.750	1.181	SN□□43□	LV4	VHX0821	SS42	SP4	HW30L	LSPS4
	16-4D	1	1	6	1.250	1.000	1.417							
	85-4D	1 1/4	1	6	1.250	1.250	1.417							
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.575							
	16-5D	1	1	6	1.250	1.000	1.417	SN□□54□	LV5	VHX0825	SS53	SP5	HW30L	LSPS5
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.772							
	20-6D	1 1/4	1 1/4	6	1.500	1.250	1.772	SN□□64□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	24-6F	1 1/2	1 1/2	8	2.000	1.500	1.772							
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.772							
	24-8E	1 1/2	1 1/2	7	2.000	1.500	1.969	SN□□85□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	24-8E-6	1 1/2	1 1/2	7	2.000	1.500	1.969	SN□□86□						

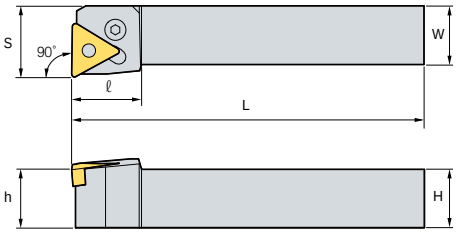
Applicable inserts **B50~B57**

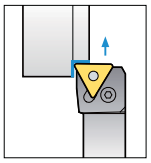
PTFNR/L



TN□□







90°

• R type insert
(inch)

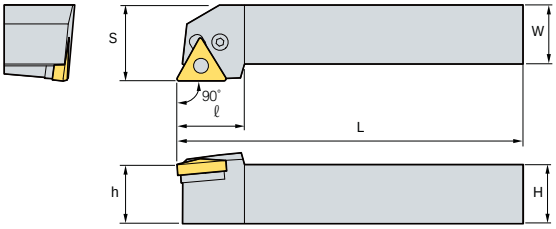
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PTFNR/L	**10-3A**	5/8	5/8	4	0.750	0.625	0.787	TN□□33□	LV3	VHX0617	ST317	SP3	HW25L	LSPS3
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.787							
	16-3D	1	1	6	1.250	1.000	0.787							
	16-4D	1	1	6	1.250	1.000	0.984	TN□□43□	LV4	VHX0821	ST42	SP4	HW30L	LSPS4
	20-4D	1 1/4	1 1/4	6	1.500	1.250	0.984							
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.339	TN□□54□	LV5	VHX0825	ST53	SP5	HW30L	LSPS5
	24-5E	1 1/2	1 1/2	7	2.000	1.500	1.339							

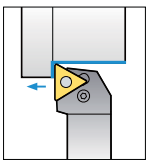
Applicable inserts **B58~B65**

PTGNR/L



TN□□





90°

• R type insert

(inch)

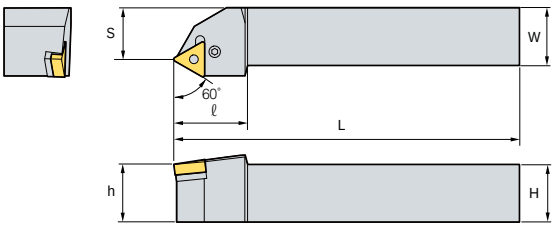
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PTGNR/L	08-2K	1/2	1/2	3 3/20	0.625	0.500	0.630	TN□□21.5□	LV2	VHX0509B	-	-	HW20L	-
	10-2A	5/8	5/8	4	0.750	0.625	0.709							
	12-2B	3/4	3/4	4 1/2	0.100	0.750	0.748							
	16-2D	1	1	6	1.250	1.000	0.787							
	10-3A	5/8	5/8	4	0.750	0.625	0.787	TN□□33□	LV3	VHX0617	ST317	SP3	HW25L	LSPS3
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.787							
	16-3D	1	1	6	1.250	1.000	0.787							
	20-3D	1 1/4	1 1/4	6	1.500	1.250	0.787							
	16-4D	1	1	6	1.250	1.000	1.102	TN□□43□	LV4	VHX0821	ST42	SP4	HW30L	LSPS4
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.102							
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.299	TN□□54□	LV5	VHX0825	ST53	SP5	HW30L	LSPS5
	24-5E	1 1/2	1 1/2	7	2.000	1.500	1.299							

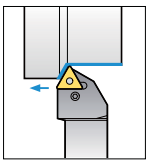
Applicable inserts **B58~B65**

PTTNR/L



TN□□





60°

• R type insert

(inch)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PTTNR/L	10-3A	5/8	5/8	4	0.511	0.625	0.984	TN□□33□	LV3	VHX0617	ST317	SP3	HW25L	LSPS3
	12-3B	3/4	3/4	4 1/2	0.669	0.750	0.984							
	16-3D	1	1	6	0.866	1.000	1.260							
	16-4D	1	1	6	0.866	1.000	1.260	TN□□43□	LV4	VHX0821	ST42	SP4	HW30L	LSPS4

Applicable inserts **B58~B65**

PWLNR/L



WN□□

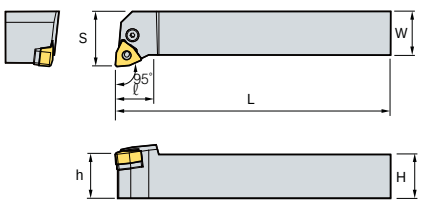


Fig. 1

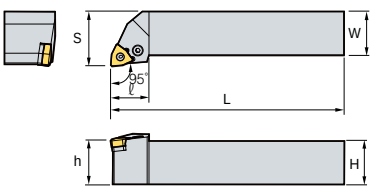
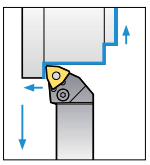


Fig. 2



95°

• R type insert

(inch)

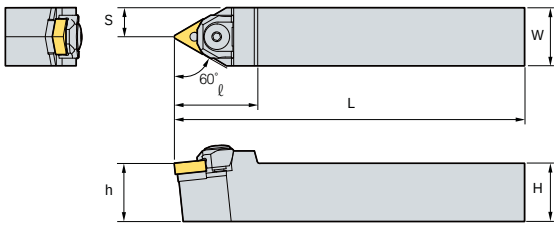
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch	Fig.
PWLNR/L	10-3A	5/8	5/8	4	0.750	0.625	0.787	WN□□33□	LV3	VHX0617	SW317	SP3	HW25L	LSPS3	1
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.787								
	16-3D	1	1	6	1.250	1.000	0.787								
	12-4B	3/4	3/4	4 1/2	1.000	0.750	1.024	WN□□43□	LV4	VHX0821	SW42	SP4	HW30L	LSPS4	2
	16-4D	1	1	6	1.250	1.000	1.024								

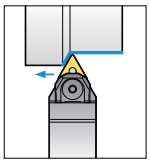
Applicable inserts **B68~B72**

WTENN



TN□□





60°

• R type insert
(inch)

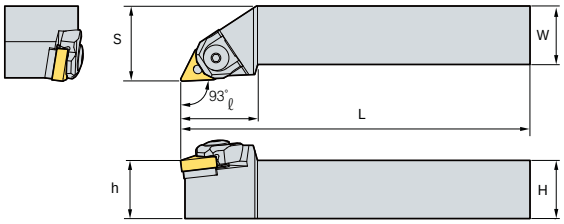
Designation		H	W	L	S	h	ℓ	Insert	Wedge Clamp	Screw	Stopper Ring	Shim	Shim Pin	Nut	Wrench
WTENN	**12-3C**	3/4	3/4	5	0.375	0.750	1.417	TN□□33□	CMH6R6	MHX0626	ER04	ST32M	SP3M-1 / SP3M	N0407	HW30L
	16-3D	1	1	6	0.500	1.000	1.417								
	16-4D	1	1	6	0.500	1.000	1.654	TN□□43□	CMH6R1	MHX0626	ER04	ST43M	SP4M	N0508	HW30L
	20-4E	1 1/4	1 1/4	7	0.625	1.250	1.654								

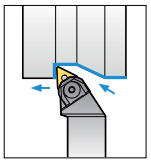
Applicable inserts **B58~B65**

WTJNR/L



TN□□





93°

• R type insert
(inch)

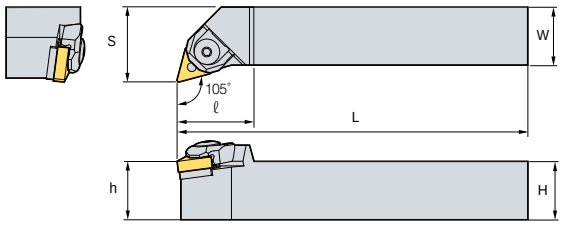
Designation		H	W	L	S	h	ℓ	Insert	Wedge Clamp	Screw	Stopper Ring	Shim	Shim Pin	Nut	Wrench
WTJNR/L	**12-3B**	3/4	3/4	4 1/2	1.000	0.750	1.299	TN□□33□	CMH6R6	MHX0626	ER04	ST32M	SP3M-1 / SP3M	N0407	HW30L
	16-3D	1	1	6	1.250	1.000	1.299								
	20-3D	1 1/4	1 1/4	6	1.500	1.250	1.299								
	16-4D	1	1	6	1.250	1.000	1.387	TN□□43□	CMH6R1	MHX0626	ER04	ST43M	SP4M	N0508	HW30L
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.387								

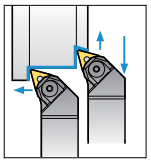
Applicable inserts **B58~B65**

WTXNR/L



TN□□





105°

• R type insert
(inch)

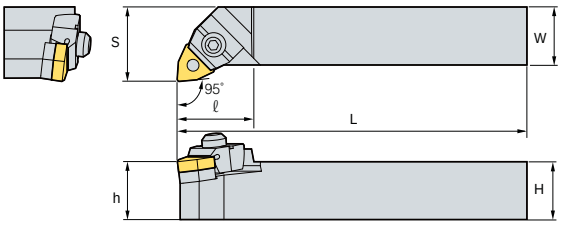
Designation		H	W	L	S	h	ℓ	Insert	Wedge Clamp	Screw	Stopper Ring	Shim	Shim Pin	Nut	Wrench
WTXNR/L	**12-3B**	3/4	3/4	4 1/2	1.000	0.750	1.181	TN□□33□	CMH6R6	MHX0626	ER04	ST32M	SP3M-1 / SP3M	N0407	HW30L
	16-3D	1	1	6	1.250	1.000	1.299								
	20-3D	1 1/4	1 1/4	6	1,500	1,250	1,299								

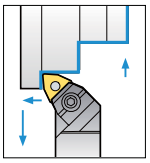
Applicable inserts **B58~B65**

WWLNR/L



WN□□





95°

• R type insert

(inch)

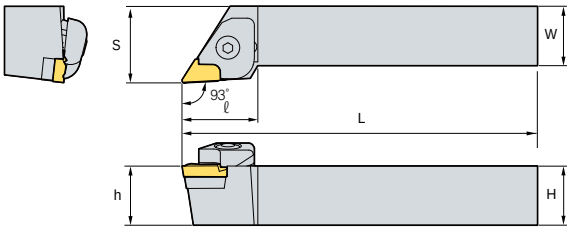
Designation		H	W	L	S	h	ℓ	Insert	Wedge Clamp	Screw	Stopper Ring	Shim	Shim Pin	Nut	Wrench
WWLNR/L	**12-4B**	3/4	3/4	4 1/2	1.000	0.750	1.260	WN□□43□	CMH6R/L3	MHX0630	CR05	SW43M	SP2M	N0508	HW30L
	16-4D	1	1	6	1.250	1.000	1.299		CMH6R2				SP4M		HW40L
	20-4F	1 1/4	1 1/4	8	1.500	1.250	1.299		CMH6R2						

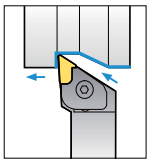
Applicable inserts **B68~B72**

CKJNR/L



KN□□





93°

• R type insert
(inch)

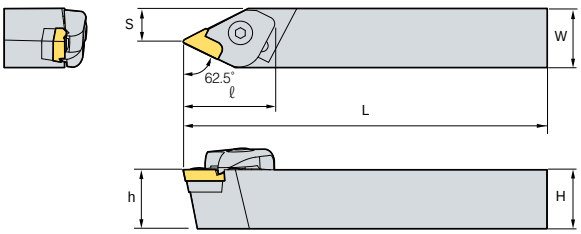
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Spring	Shim	Pin + Spring	Shim Screw	Wrench
CKJNR	**12-3B**	3/4	3/4	4 1/2	1.120	0.750	1.260	KN□□1604□□R	CTH6R1	CHX0625	SR3	SK33C	PN0515 +SR4	SHX0310	HW20L HW40L
	16-3D	1	1	6	1.250	1.000	1.260								
	85-3D	1 1/4	1	6	1.250	1.250	1.260								
	85-3E	1 1/4	1	7	1.250	1.250	1.260								
	20-3D	1 1/4	1 1/4	6	1.500	1.250	1.260								
	24-3E	1 1/2	1 1/2	7	2.000	1.500	1.260								
CKJNL	**12-3B**	3/4	3/4	4 1/2	1.000	0.750	1.260	KN□□1604□□L	CTH6L1	CHX0625	SR3	SK33CL	PN0515 +SR4	SHX0310	HW20L HW40L
	16-3D	1	1	6	1.250	1.000	1.260								
	20-3D	1 1/4	1 1/4	6	1.500	1.250	1.260								
	24-3E	1 1/2	1 1/2	7	2.000	1.500	1.260								

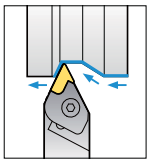
Applicable inserts **B49**

CKNNR/L



KN□□





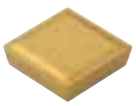
62.5°

• R type insert
(inch)

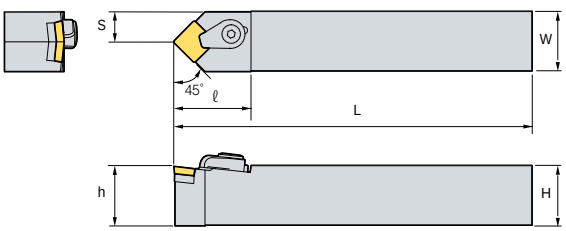
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Spring	Shim	Pin + Spring	Shim Screw	Wrench
CKNNR	**16-3D**	1	1	6	0.570	1.000	1.457	KN□□1604□□R	CTH6R1	CHX0625	SR3	SK33C	PN0515 +SR4	SHX0310	HW20L HW40L
	20-3D	1 1/4	1 1/4	6	0.660	1.250	1.457								
CKNNL	**16-3D**	1	1	6	0.570	1.000	1.457	KN□□1604□□L	CTH6L1	CHX0625	SR3	SK33CL	PN0515 +SR4	SHX0310	HW20L HW40L
	20-3D	1 1/4	1 1/4	6	0.660	1.250	1.457								

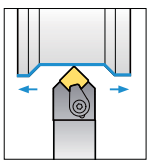
Applicable inserts **B49**

CSDPN



SP□R





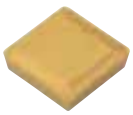
45°

• R type insert
(inch)

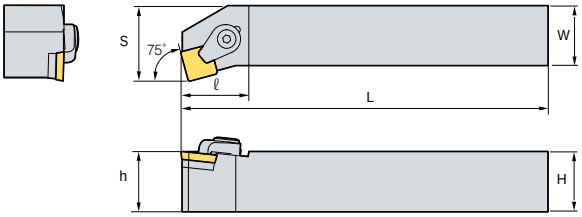
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	C-Ring	Wrench
CSDPN	**10-3A**	5/8	5/8	4	0.313	0.625	1.181	SP□R32□	CH53R1	CH0515C	SS32C	SP3C	CR03C	HW25L
	16-4D	1	1	6	0.500	1.000	1.378	SP□R42□	CH6R5	CHX0622C	SS42C	SP3C	CR04C	HW30L

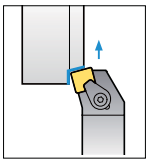
Applicable inserts **B85~B86**

CSKPR/L



SP□R





75°

• R type insert
(inch)

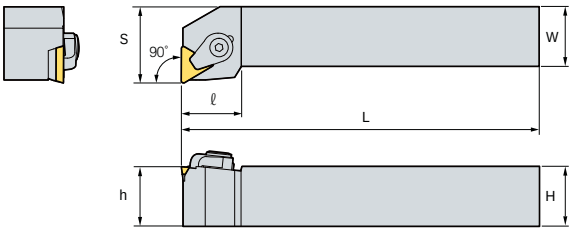
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	C-Ring	Wrench
CSKPR/L	**16-4D**	1	1	6	1.250	0.750	1.260	SP□R42□	CH6R5	CHX0414C	SS42C	SP3C	CR04C	HW30L

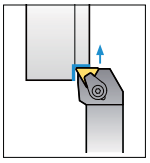
Applicable inserts **B85~B86**

CTFPR/L



TP□R





90°

• R type insert
(inch)

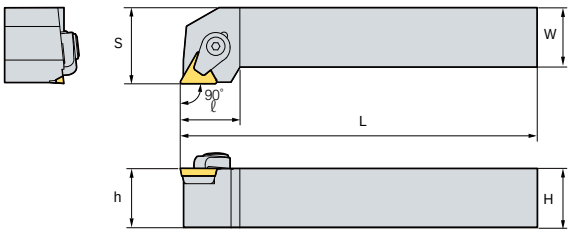
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	C-Ring	Wrench
CTFPR/L	**12-4B**	3/4	3/4	4 1/2	1.000	0.750	1.260	TP□R32□	CH6R5	CHX0622C	ST32C	SP3C	CR04C	HW30L
	16-4D	1	1	6	1.250	1.000	1.260							

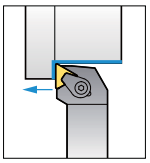
Applicable inserts **B90~B93**

CTGPR/L



TP□R





90°

• R type insert
(inch)

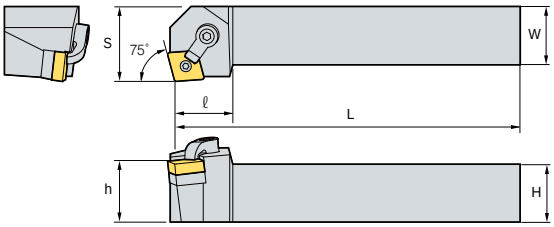
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	C-Ring	Wrench
CTGPR/L	**08-2K**	1/2	1/2	3 3/20	0.625	0.500	0.787	TP□R22□	CH53R1	CHX0515C	-	-	CR03C	HW25L
	10-2K	5/8	5/8	3 1/8	0.750	0.625	0.787							
	12-2B	3/4	3/4	4 1/2	0.750	0.625	0.787							
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.984	TP□R32□	CH6R5	CHX0622C	ST32C	SP3C	CR04C	HW30L
	16-3D	1	1	6	1.250	1.000	0.984							
	16-4D	1	1	6	1.250	1.000	1.260	TP□R43□	CH83R1	CHX0823C	ST43C	SP4C	CR05C	HW40L
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.260							

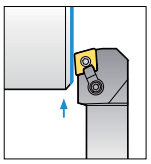
Applicable inserts **B90~B93**

MCKNR/L



CN□□





75°

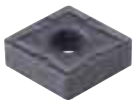
• R type insert

(inch)

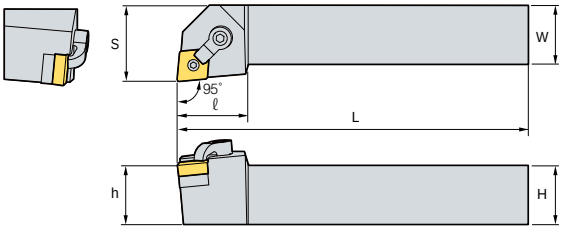
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCKNR/L	12-4B	3/4	3/4	4 1/2	1.000	0.750	1.250	CN□□R42□	CDH6N	DHA1/4-25	SC43D	SP4D	HW31.8L HW23.8L
	16-4D	1	1	6	1.250	1.000	1.250						
	20-4D	1 1/4	1 1/4	6	1.400	1.250	1.250						

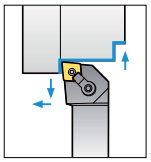
Applicable inserts **B36~B42**

MCLNR/L



CN□□





95°

• R type insert

(inch)

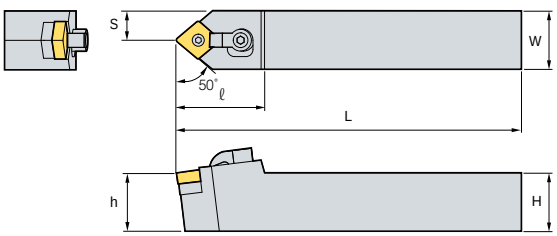
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCLNR/L	10-3A	5/8	5/8	4	0.875	0.625	1.000	CN□□32□	CDH7N	DHA10-32-19	SC32D	SP3DS	HW23.8L HW19.8L
	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.000						
	16-3C	1	1	5	1.250	1.000	1.000						
	12-4B	3/4	3/4	4 1/2	1.000	0.750	1.250	CN□□43□	CDH6N	DHA1/4-25	SC43D	SP4D	HW31.8L HW23.8L
	16-4D	1	1	6	1.250	1.000	1.250						
	85-4D	1 1/2	1	6	1.250	1.250	1.250						
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.250						
	16-5D	1	1	6	1.250	1.000	1.299	CN□□54□	CDH8N	DHA5/16-32	SC53D	SP5D	HW39.7L HW31.8L
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.299						
	24-5E	1 1/2	1 1/2	7	2.000	1.500	1.299						
	16-6D	1	1	6	1.250	1.000	1.102	CN□□64□	CDH8N	DHA5/16-32	SC63D	SP6D	HW39.7L HW35.7L
	20-6D	1 1/4	1 1/4	6	1.500	1.250	1.102						
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.102						
	26-8E	1 1/2	1 1/2	7	2.000	1.500	1.102	CN□□85□	CDH8N3	DHA3/8-35	SC84D	SP8D	HW39.7L HW47.6L

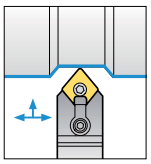
Applicable inserts **B36~B42**

MCMNN



CN□□





50°

• R type insert

(inch)

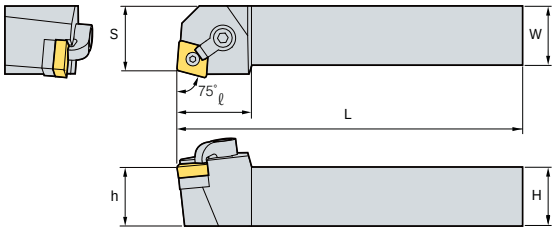
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCMNN	12-4B	3/4	3/4	4 1/2	0.375	0.750	1.250	CN□□43□	CDH6N	DHA1/4-25	SC43D	SP4D	HW31.8L HW23.8L
	16-4D	1	1	6	0.500	1.000	1.250						
	20-4D	1 1/4	1 1/4	6	0.625	1.250	1.250						
	16-5D	1	1	6	0.500	1.000	1.500	CN□□54□	CDH8N	DHA5/16-32	SC53D	SP5D	HW39.7L HW31.8L
	20-5D	1 1/4	1 1/4	6	0.625	1.250	1.500						
	20-6D	1 1/4	1 1/4	6	0.625	1.250	1.500	CN□□64□	CDH8N	DHA5/16-32	SD63D	SP6D	HW39.7L HW35.7L
	24-6E	1 1/2	1 1/2	7	0.750	1.500	1.728						

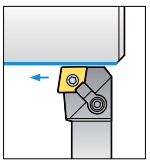
Applicable inserts **B36~B42**

MCRNR/L



CN□□





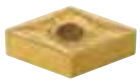
75°

• R type insert
(inch)

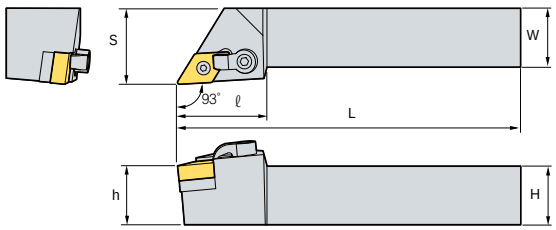
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCRNR/L	12-4B	3/4	3/4	4 1/2	0.751	0.750	1.250	CN□□43□	CDH8N1	DHA5/16-32	SC43D	SP4D	HW39.7L HW23.8L
	16-4D	1	1	6	1.251	1.000	1.250						
	16-5D	1	1	6	1.251	1.000	1.299	CN□□54□	CDH8N1	DHA5/16-32	SC53D	SP5D	HW39.7L HW31.8L
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.299						
	20-6D	1 1/4	1 1/4	6	1.501	1.250	1.514	CN□□64□	CDH8N1	DHA5/16-32	SC63D	SP6D	HW39.7L HW35.7L
	24-6E	1 1/2	1 1/2	7	2.001	1.500	1.514						

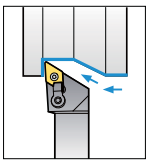
Applicable inserts **B36~B42**

MDJNR/L



DN□□





93°

• R type insert
(inch)

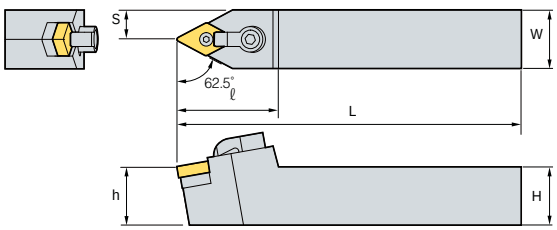
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MDJNR/L	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.250	DN□□33□	CDH6N	DHA1/4-19	SD32D	SP3D	HW31.8L HW19.8L
	16-3D	1	1	6	1.250	1.000	1.250						
	12-4B-3	3/4	3/4	4 1/2	1.000	0.750	1.420	DN□□43□	CDH6N	DHA1/4-25	SD43D	SP4D	HW31.8L HW23.8L
	16-4D-3	1	1	6	1.250	1.000	1.420						
	20-4D-3	1 1/4	1 1/4	6	1.500	1.250	1.420						
	12-4B-4	3/4	3/4	4 1/2	1.000	0.750	1.420	DN□□44□	CDH6N	DHA1/4-25	SD43D	SP4DL	HW31.8L HW23.8L
	16-4D-4	1	1	6	1.250	1.000	1.420						
	20-4D-4	1 1/4	1 1/4	6	1.500	1.250	1.420						

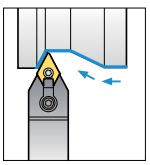
Applicable inserts **B43~B48**

MDNNN



DN□□





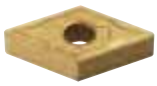
62.5°

(inch)

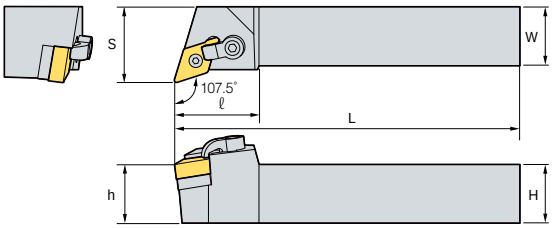
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MDNNN	16-4D-3	1	1	6	0.500	1.000	1.614	DN□□43□	CDH8N	DHA5/16-32	SD43D	SP4D	HW39.7L HW23.8L
	16-4D-4	1	1	6	0.500	1.000	1.614	DN□□44□	CDH8N	DHA5/16-32	SD43D	SP4DL	HW39.7L HW23.8L

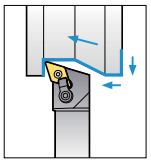
Applicable inserts **B43~B48**

MDQNR/L



DN□□





107.5°

• R type insert
(inch)

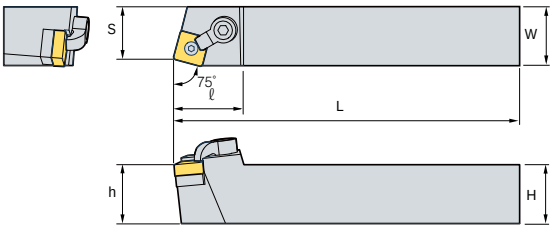
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MDQNR/L	16-4D-4	1	1	6	1.250	0.750	1.614	DN□□44□	CDH6N	DHA1/4-25	SD43D	SP4D	HW31.8L HW23.8L
	20-4D-4	1 1/4	1 1/4	6	1.500	1.000	1.614						
	16-4D-3	1	1	6	1.250	0.750	1.614	DN□□43□	CDH6N	DHA1/4-25	SD43D	SP4DL	HW31.8L HW23.8L
	20-4D-3	1 1/4	1 1/4	6	1.500	1.000	1.614						

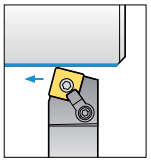
Applicable inserts **B43~B48**

MSBNR/L



SN□□





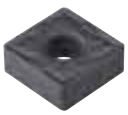
75°

• R type insert
(inch)

Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSBNR/L	12-4B	3/4	3/4	4 1/2	0.669	0.750	1.250	SN□□43□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L HW23.8L
	16-4D	1	1	6	0.866	1.000	1.250						
	16-5D	1	1	6	0.866	1.000	1.378	SN□□54□	CDH8N	DHA5/16-32	SS53D	SP5D	HW39.7L HW31.8L
	20-5D	1 1/4	1 1/4	6	0.866	1.250	1.378						
	20-6D	1 1/4	1 1/4	6	1.063	1.250	1.500	SN□□64□	CDH8N	DHA5/16-32	SS63D	SP6D	HW39.7L HW35.7L
	24-6E	1 1/2	1 1/2	7	1.378	1.500	1.500						

Applicable inserts **B50~B57**

MSDNN



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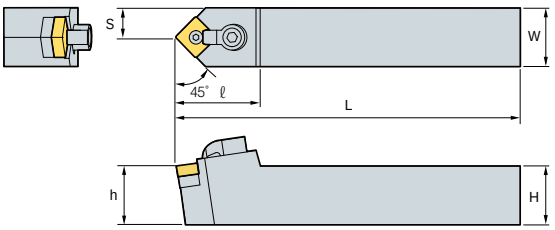
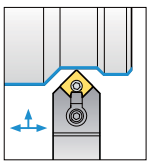




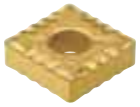
45°

(inch)

Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSDNN	10-3A	5/8	5/8	4	0.313	0.625	1.102	SN□□32□	CDH7N	DHA10-32-19	SS32D	SP3DS	HW19.8L HW23.8L
	12-3B	3/4	3/4	4 1/2	0.375	0.750	1.102						
	12-4B	3/4	3/4	4 1/2	0.375	0.750	1.250	SN□□43□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L HW23.8L
	16-4D	1	1	6	0.500	1.000	1.250						
	85-4D	1 1/4	1	6	0.500	1.250	1.250						
	16-5D	1	1	6	0.500	1.000	1.378	SN□□54□	CDH8N	DHA5/16-32	SS53D	SP5D	HW39.7L HW31.8L
	85-5D	1 1/4	1	6	0.500	1.250	1.378						
	20-5D	1 1/4	1 1/4	6	0.625	1.250	1.378						
	24-5E	1 1/2	1 1/2	7	0.750	1.500	1.378						
	20-6D	1 1/4	1 1/4	6	0.625	1.250	1.728	SN□□64□	CDH8N	DHA5/16-32	SS63D	SP6D	HW39.7L HW35.7L
	24-6E	1 1/2	1 1/2	7	0.750	1.500	1.728						

Applicable inserts **B50~B57**

MSKNR/L



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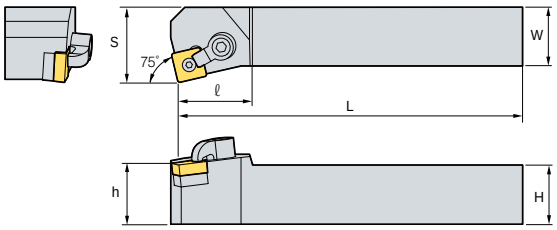
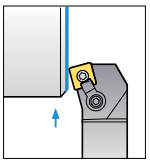




75°

• R type insert
(inch)

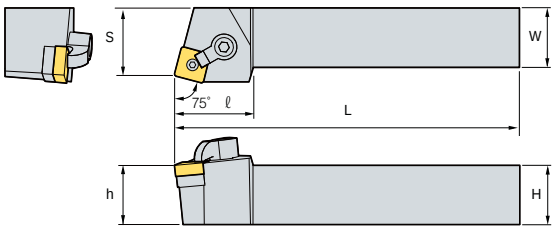
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSKNR/L	10-3A	5/8	5/8	4	0.875	0.625	1.102	SN□□32□	CDH7N	DHA10-32-19	SS32D	SP3DS	HW19.8L HW23.8L
	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.102						
	12-4D	3/4	3/4	6	1.000	0.750	1.250	SN□□43□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L HW23.8L
	16-4D	1	1	6	1.250	1.000	1.250						
	85-4D	1 1/4	1	6	1.250	1.250	1.250						
	16-5D	1	1	6	1.250	1.000	1.378	SN□□54□	CDH8N	DHA5/16-32	SS53D	SP5D	HW39.7L HW31.8L
	20-5D	1 1/4	1 1/4	6	1.250	1.250	1.378						
	20-6D	1 1/4	1 1/4	6	1.250	1.250	1.500	SN□□64□	CDH8N	DHA5/16-32	SS63D	SP6D	HW39.7L HW35.7L
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.500						
	24-8E	1 1/2	1 1/2	7	2.000	1.500	1.500	SN□□85□	CDH8N3	DHA3/8-35	SS84D	SP8D	HW47.6L HW39.7L

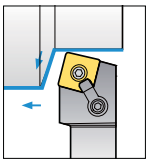
Applicable inserts **B50~B57**

MSRNR/L



SN□□





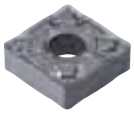
75°

• R type insert
(inch)

Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSRNR/L	10-3A	5/8	5/8	4	0.738	0.625	1.102	SN□□32□	CDH7N	DHA10-32-19	SS32D	SP3DS	HW19.8L HW23.8L
	12-3B	3/4	3/4	4 1/2	0.878	0.750	1.102						
	12-4B	3/4	3/4	4 1/2	0.878	0.750	1.250	SN□□43□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L HW23.8L
	16-4D	1	1	6	1.128	1.000	1.250						
	16-5D	1	1	6	1.100	1.000	1.378	SN□□54□	CDH8N	DHA5/16-32	SS53D	SP5D	HW39.7L HW31.8L
	20-5D	1 1/4	1 1/4	6	1.350	1.250	1.378						
	85-6D	1 1/4	1	6	1.068	1.250	1.500	SN□□64□	CDH8N	DHA5/16-32	SS63D	SP6D	HW39.7L HW35.7L
	20-6D	1 1/4	1 1/4	6	1.318	1.250	1.500						
	24-6E	1 1/2	1 1/2	7	1.818	1.500	1.500						
	24-8E	1 1/2	1 1/2	7	1.762	1.500	1.500	SN□□85□	CDH8N3	DHA3/8-35	SS84D	SP8D	HW47.6L HW39.7L

Applicable inserts **B50~B57**

MSSNR/L



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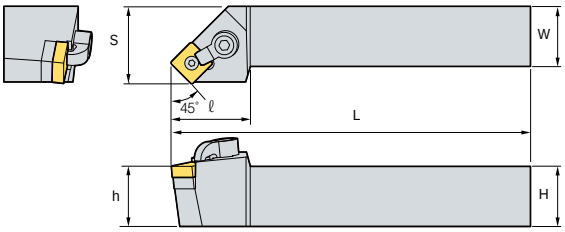
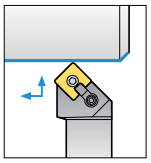




45°

• R type insert
(inch)

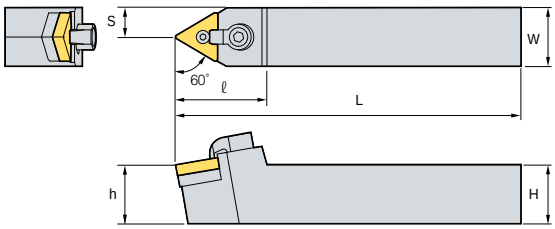
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSSNR/L	10-3A	5/8	5/8	4	0.516	0.625	1.102	SN□□32□	CDH7N	DHA10-32-19	SS32D	SP3DS	HW19.8L HW23.8L
	12-3B	3/4	3/4	4 1/2	0.641	0.750	1.102						
	12-4B	3/4	3/4	4 1/2	0.662	0.750	1.250	SN□□43□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L HW23.8L
	16-4D	1	1	6	0.912	1.000	1.250						
	16-5D	1	1	6	0.828	1.000	1.378	SN□□54□	CDH8N1	DHA5/16-32	SS53D	SP5D	HW39.7L HW31.8L
	20-5D	1 1/4	1 1/4	6	1.078	1.250	1.378						
	20-6D	1 1/4	1 1/4	6	0.992	1.250	1.500	SN□□64□	CDH8N1	DHA5/16-32	SS63D	SP6D	HW39.7L HW35.7L
	24.6E	1 1/2	1 1/2	7	1.492	1.500	1.500						

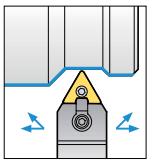
Applicable inserts **B50~B57**

MTENN



TN□□





60°

(inch)

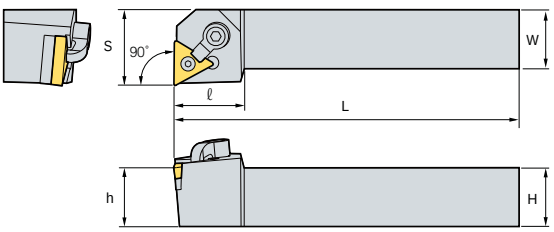
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTENN	12-3B	3/4	3/4	4 1/2	0.375	0.750	1.250	TN□□33□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L HW19.8L
	16-3D	1	1	6	0.500	1.000	1.250						
	16-4D	1	1	6	0.500	1.000	1.378	TN□□43□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L HW23.8L
	20-5D	1 1/4	1 1/4	6	0.625	1.250	1.378	TN□□54□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L HW31.8L
	24-6E	1 1/2	1 1/2	7	0.750	1.500	1.500	TN□□65□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

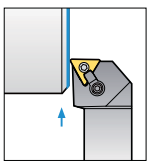
Applicable inserts **B58~B65**

MTFNR/L



TN□□





90°

• R type insert
(inch)

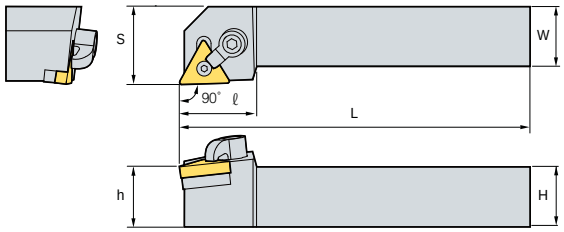
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTFNR/L	10-3A	5/8	5/8	4	0.875	0.625	1.250	TN□□33□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L HW19.8L
	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.250						
	16-3D	1	1	6	1.250	1.000	1.250						
	16-4D	1	1	6	1.250	1.000	1.250	TN□□43□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L HW23.8L
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.250						
	24-4E	1 1/2	1 1/2	7	2.000	1.500	1.250						
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.378	TN□□54□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L HW31.8L
	24-5E	1 1/2	1 1/2	7	2.000	1.500	1.378						
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.500	TN□□65□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

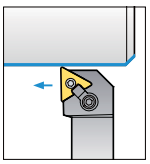
Applicable inserts **B58~B65**

MTGNR/L



TN□□





90°

• R type insert
(inch)

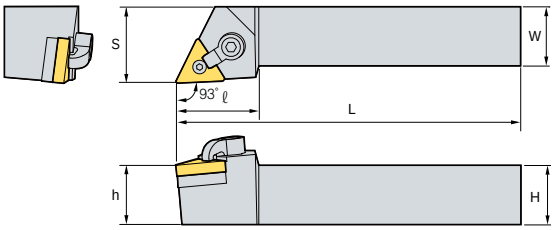
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTGNR/L	10-3A	5/8	5/8	4	0.875	0.625	1.250	TN□□33□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L HW19.8L
	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.250						
	16-3D	1	1	6	1.250	1.000	1.250						
	16-4D	1	1	6	1.250	1.000	1.250	TN□□43□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L HW23.8L
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.250						
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.378	TN□□54□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L HW31.8L
	24-5E	1 1/2	1 1/2	7	2.000	1.500	1.378						
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.500	TN□□65□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

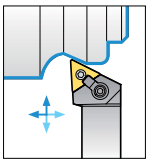
Applicable inserts **B58~B65**

MTJNR/L



TN□□





93°

• R type insert
(inch)

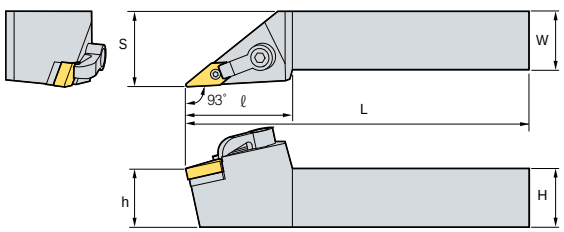
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTJNR/L	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.250	TN□□33□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L HW19.8L
	16-3D	1	1	6	1.250	1.000	1.250						
	16-4D	1	1	6	1.250	1.000	1.250	TN□□43□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L HW23.8L
	20-4D	1 1/4	1 1/4	6	1.500	1.250	1.250						
	20-5D	1 1/4	1 1/4	6	1.500	1.250	1.378	TN□□54□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L HW31.8L
	24-5E	1 1/2	1 1/2	7	2.000	1.250	1.378						
	24-6E	1 1/2	1 1/2	7	2.000	1.500	1.500	TN□□65□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

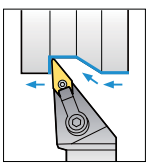
Applicable inserts **B58~B65**

MVJNR/L



VN□□





93°

• R type insert
(inch)

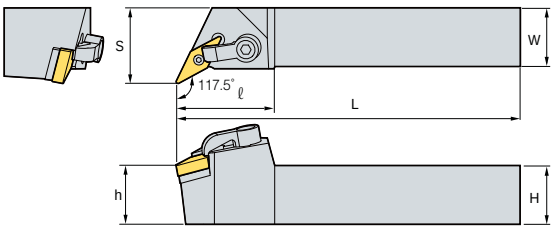
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MVJNR/L	12-3B	3/4	3/4	4 1/2	1.000	0.750	44	VN□□33□□	CDH8N2	DHA5/16-32	SV32D	SP3D	HW39.7L HW19.8L
	16-3D	1	1	6	1.250	1.000	45.5						
	20-3D	1 1/4	1 1/4	6	1.500	1.250	55.5						
	16-4D	1	1	6	1.250	1.000	56	VN□□43□□	CDH8N2	DHA5/16-32	SV43D	SP4D	HW39.7L HW23.8L
	20-4D	1 1/4	1 1/4	6	1.500	1.250	55						
	24-4E	1 1/2	1 1/2	7	2.000	1.500	65						

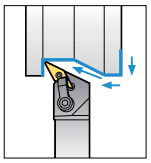
Applicable inserts **B66~B67**

MVQNR/L



VN□□





117.5°

• R type insert

(inch)

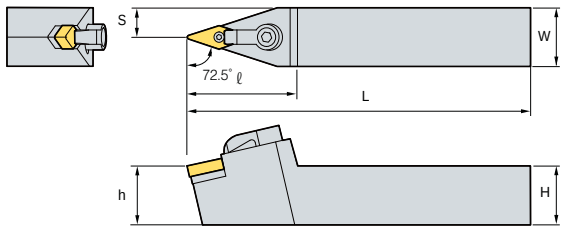
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MVQNR/L	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.467	VN□□33□	CDH8N2	DHA5/16-32	SV32D	SP3D	HW39.7L HW19.8L
	16-3D	1	1	6	1.250	1.000	1.467						
	20-3D	1 1/4	1 1/4	6	1.500	1.500	1.467						

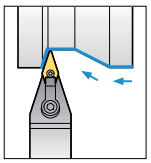
Applicable inserts **B66~B67**

MVVNN



VN□□





72.5°

(inch)

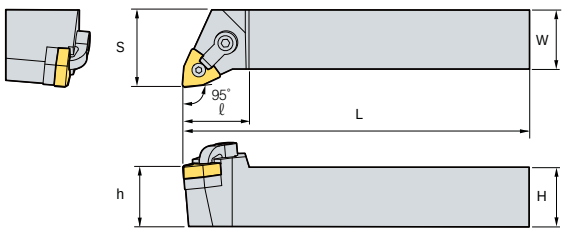
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MVVNN	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.728	VN□□33□	CDH8N2	DHA5/16-32	SV32D	SP3D	HW39.7L HW19.8L
	16-3D	1	1	6	1.250	1.000	1.728						

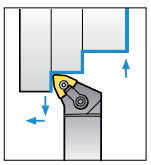
Applicable inserts **B66~B67**

MWLNR/L



WN□□





95°

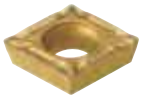
• R type insert

(inch)

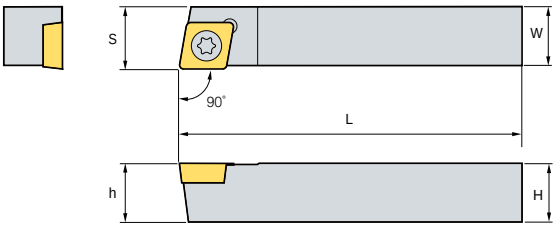
Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MWLNR/L	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.250	WN□□33□	CDH7N	DHA10-32-19	SW32D	SP3D	HW19.8L HW23.8L
	16-3D	1	1	6	1.250	1.000	1.250						
	20-3D	1 1/4	11/4	6	1.500	1.250	1.250						
	12-4B	3/4	3/4	4 1/2	1.000	1.750	1.250	WN□□43□	CDH6N	DHA1/4-21	SW43D	SP4D	HW31.8L HW23.8L
	16-4D	1	1	6	1.250	1.000	1.250						
	20-4D	1 1/4	11/4	6	1.500	1.250	1.250						

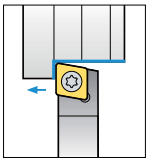
Applicable inserts **B68~B72**

SCACR/L



CC□T





90°

• R type insert
(inch)

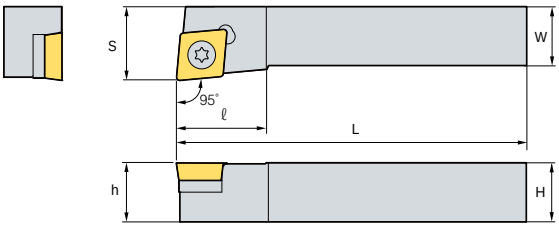
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SCACR/L	06-2J	3/8	3/8	1 1/2	0.375	0.375	CC□T21.5□	FTKA02565	-	-	TW07P
	08-3K	1/2	1/2	3 3/20	0.520	0.500	CC□T32.5□	FTGA03508	-	-	TW15P

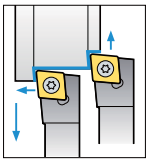
Applicable inserts **B73~B77, B103**

SCLCR/L



CC□T





95°

• R type insert
(inch)

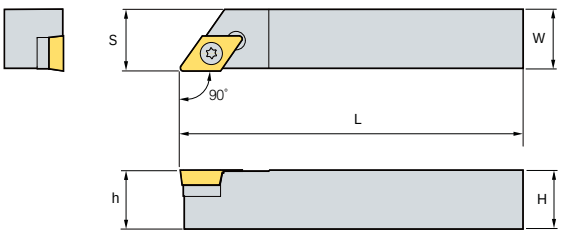
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
SCLCR/L	05-2I	5/16	5/16	2 1/2	0.375	0.313	0.394	CC□T21.5□□	FTKA02565	-	-	TW07P
	06-2J	3/8	3/8	2 3/4	0.500	0.375	0.394					
	08-3K	1/2	1/2	3 3/20	0.625	0.500	0.630	CC□T32.5□□	FTGA03508	-	-	TW15P
	10-3A	5/8	5/8	4	0.875	0.625	0.630					
	12-3C	3/4	3/4	5	1.000	0.750	0.630					
	16-3D	1	1	6	1.250	1.000	0.787	CC□T32.5□□	FTGA03508	-	-	TW15P
	12-4B	3/4	3/4	4 1/2	1.000	0.750	0.984	CC□T43□□	FTGA0411F	SC42S	SHXN0610F	TW15P, HW40L
	16-4D	1	1	6	1.250	1.000	1.024	CC□T43□□	FTGA0411F	SC42S	SHXN0610F	TW15P, HW40L

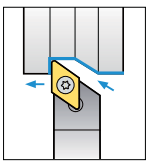
Applicable inserts **B73~B77, B103**

SDACR/L



DC□T





90°

• R type insert
(inch)

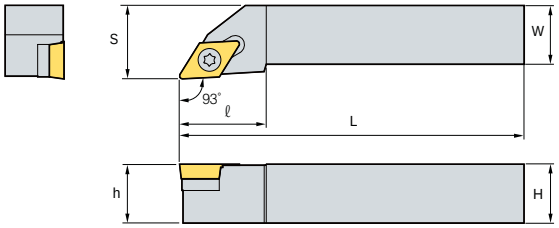
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SDACR/L	06-2J	3/8	3/8	2 3/4	0.375	0.375	DC□T21.5□□	FTKA02565	-	-	TW07P
	08-3K	1/2	1/2	3 3/20	0.520	0.500	DC□T32.5□□	FTGA03508	-	-	TW15P
	10-3A	5/8	5/8	4	0.645	0.625		FTGA03512	SD32S	SHXN0509F	TW15P, HW35L

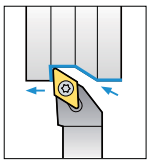
Applicable inserts **B79~B82, B104**

SDJCR/L



DC□T





93°

• R type insert

(inch)

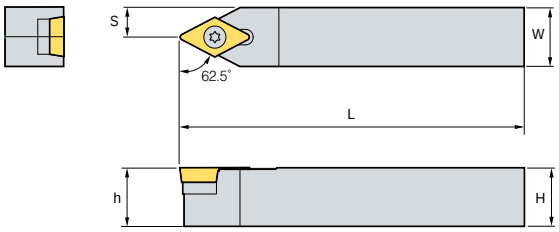
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
SDJCR/L	06-2J	3/8	3/8	2 3/4	0.500	0.375	0.591	DC□T21.5□	FTKA02565	-	-	TW07P
	08-2K	1/2	1/2	3 3/20	0.625	0.500	0.591					
	10-2A	5/8	5/8	4	0.750	0.625	0.709					
	12-2B	3/4	3/4	4 1/2	1.000	0.750	0.787					
	08-3K	1/2	1/2	3 3/20	0.625	0.500	0.591	DC□T32.5□	FTGA03512	SD32S	SHXN0509F	TW15P, HW35L
	10-3A	5/8	5/8	4	0.750	0.625	0.945					
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.945					
	16-3D	1	1	6	1.250	1.000	1.142					

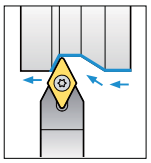
Applicable inserts **B79~B82, B104**

SDNCN



DC□T





62.5°

(inch)

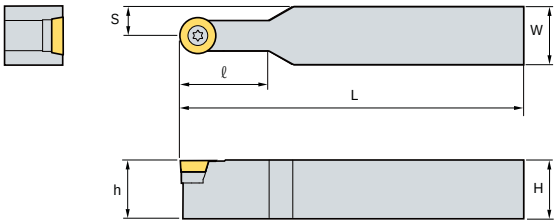
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SDNCN	06-2J	3/8	3/8	2 3/4	0.185	0.375	DC□T21.5□	FTKA02565	-	-	TW07P
	08-2K	1/2	1/2	3 1/8	0.250	0.500					
	08-3A	1/2	1/2	4	0.250	0.500	DC□T32.5□	FTGA03508	-	-	TW15P
	10-3A	5/8	5/8	4	0.313	0.625	DC□T32.5□	FTGA03512	SD32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	0.375	0.750					
	12-3D	3/4	3/4	6	0.492	0.984	DC□T32.5□	FTGA03512	SD32S	SHXN0509F	TW25P, HW35L

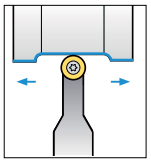
Applicable inserts **B79~B82, B104**

SRDCN



RC□T





(inch)

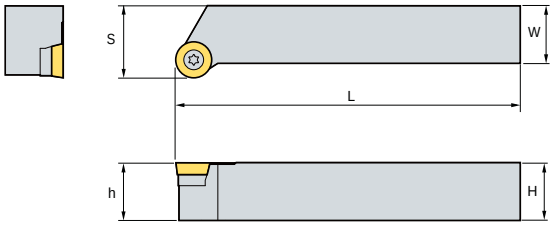
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
SRDCN	06-06J	3/8	3/8	2 3/4	0.200	0.375	0.394	RC□T0602M0	FTKA02565	-	-	TW07P
	08-06K	1/2	1/2	3 1/8	0.236	0.500	0.472					
	10-06A	5/8	5/8	4	0.315	0.625	0.472					
	16-06D	1	1	6	0.500	0.984	0.787					
	10-08A	5/8	5/8	4	0.315	0.630	0.630	RC□T0803M0	FTNA0307	-	-	TW09P
	12-08B	3/4	3/4	4 1/2	0.375	0.787	0.787					
	16-08D	1	1	6	0.500	0.984	0.787					
	10-10A	5/8	5/8	4	0.315	0.630	0.984	RC□T1003M0	FTKA03511A	SR10S	SHXN0509F	TW15P HW35L
	12-10B	3/4	3/4	4 1/2	0.375	0.787	0.984					
	16-10D	1	1	6	0.500	0.984	0.984					
	12-12B	3/4	3/4	4 1/2	0.375	0.787	1.102	RC□T1204M0	FTGA03512	SR12S	SHXN0509F	TW15P HW35L
	16-12D	1	1	6	0.500	0.984	1.102					

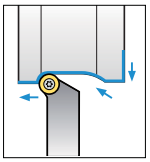
Applicable inserts **B83, B105**

SRGCR/L



RC□T





• R type insert

(inch)

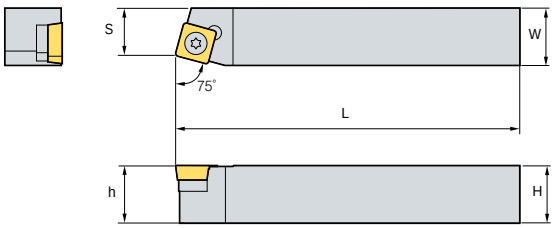
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SRGCR/L	06-06J	3/8	3/8	2 3/4	0.500	0.375	RC□T0602M0	FTKA02565	-	-	TW07P
	08-06K	1/2	1/2	3 7/8	0.625	0.500					
	10-06A	5/8	5/8	4	0.750	0.625					
	10-08A	5/8	5/8	4	0.750	0.630	RC□T0803M0	FTNA0307	-	-	TW09P
	12-08B	3/4	3/4	4 1/2	1.000	0.787					
	16-08D	1	1	6	1.250	0.984					
	10-10A	5/8	5/8	4	0.750	0.630	RC□T1003M0	FTKA03511A	SR10S	SHXN0509F	TW15P HW35L
	12-10B	3/4	3/4	4 1/2	1.000	0.787					
	16-10D	1	1	6	1.250	0.984					
	12-12B	3/4	3/4	4 1/2	1.000	0.787	RC□T1204M0	FTGA03512	SR12S	SHXN0509F	TW15P HW35L
	16-12D	1	1	6	1.250	0.984					

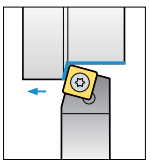
Applicable inserts **B83, B105**

SSBCR/L



SC□T





75°

• R type insert

(inch)

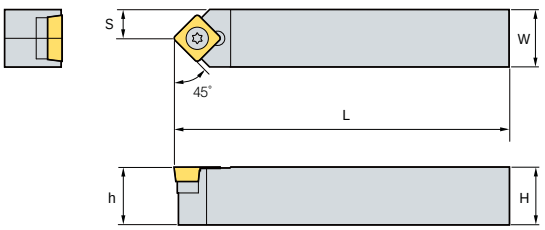
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SSBCR/L	08-3K	1/2	1/2	3 7/8	0.450	0.500	SC□T32.5□	FTGA03508	-	-	TW15P
	10-3A	5/8	5/8	4	0.500	0.625		FTGA03512	SS32S	SHXN0509F	TW15P, HW35L
	12-4B	3/4	3/4	4 1/2	0.600	0.750	SC□T43□	FTGA0411F	SS42S	SHXN0610F	TW15P, HW40L

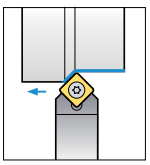
Applicable inserts **B84, B106**

SSDCN



SC□T





45°

(inch)

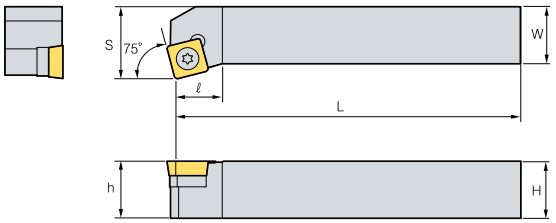
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SSDCN	08-3K	1/2	1/2	3 3/20	0.250	0.500	SC□T32.5□	FTGA03508	-	-	TW15P
	10-3A	5/8	5/8	4	0.313	0.625		FTGA03512	SS32S	SHXN0509F	TW15P, HW35L

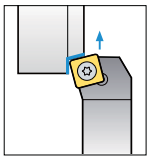
Applicable inserts **B84, B106**

SSKCR/L



SC□T





75°

• R type insert
(inch)

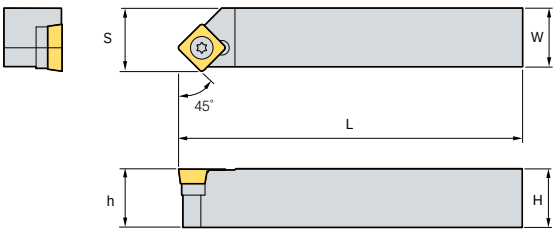
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
SSKCR/L	**10-3A**	5/8	5/8	4	0.750	0.625	0.512	SC□T32.5□	FTGA03512	SS32S	SHXN0509F	TW15P, HW35L

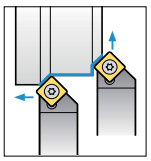
Applicable inserts **B84, B106**

SSSCR/L



SC□T





45°

• R type insert
(inch)

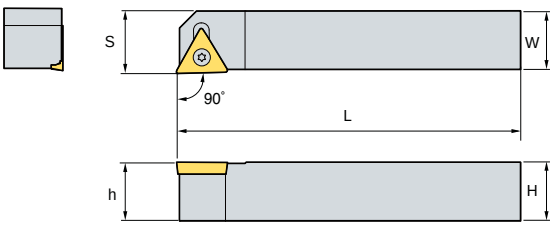
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SSSCR/L	**10-3A**	5/8	5/8	4	0.670	0.625	SC□T32.5□	FTGA03512	SS32S	SHXN0509F	TW15P, HW35L
	12-4B	3/4	3/4	4 1/2	0.827	0.750	SC□T43□	FTGA0411F	SS42S	SHXN0610F	TW15P, HW40L
	16-4D	1	1	6	1.024	0.984	SC□T43□	FTGA0411F	SS42S	SHXN0610F	TW15P, HW40L

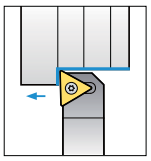
Applicable inserts **B84, B106**

STACR/L



TC□T





90°

• R type insert
(inch)

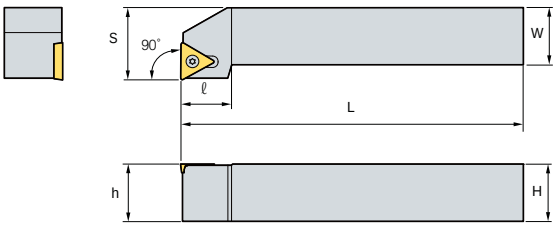
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
STACR/L	**06-1.8J**	3/8	3/8	2 3/4	0.375	0.375	TC□T1.81.5□	FTKA02206	-	-	TW06P
	08-2K	1/2	1/2	3 3/20	0.500	0.500	TC□T21.5□	FTKA02565	-	-	TW07P

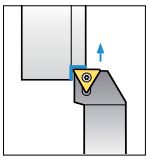
Applicable inserts **B88~B89, B107**

STFCR/L



TC□T





90°

• R type insert
(inch)

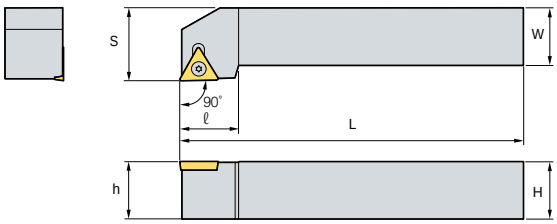
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
STFCR/L	06-1.8J	3/8	3/8	2 3/4	0.500	0.375	0.394	TC□T1.81.5□	FTKA02206	-	-	TW06P
	08-2K	1/2	1/2	3 3/20	0.625	0.500	0.551	TC□T21.5□	FTKA02565	-	-	TW07P
	10-2A	5/8	5/8	4	0.750	0.625	0.551					
	10-3A	5/8	5/8	4	0.750	0.625	0.748	TC□T32.5□	FTGA03512	ST32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.748					
	16-3D	1	1	6	1.250	1.000	0.992	TC□T32.5□	FTGA03512	ST32S	SHXN0509F	TW15P, HW35L

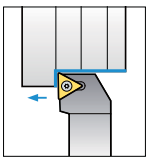
Applicable inserts **B88~B89, B107**

STGCR/L



TC□T





90°

• R type insert
(inch)

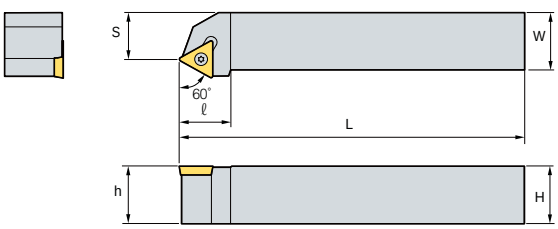
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
STGCR/L	05-1.8I	5/16	5/16	2 1/2	0.370	0.313	0.433	TC□T1.81.5□	FTKA02206	-	-	TW06P
	06-1.8J	3/8	3/8	2 3/4	0.500	0.375	0.433					
	08-2K	1/2	1/2	3 3/20	0.625	0.500	0.551	TC□T21.5□	FTKA02565	-	-	TW07P
	10-2A	5/8	5/8	4	0.750	0.625	0.630					
	10-3A	5/8	5/8	4	0.750	0.625	0.827	TC□T32.5□	FTGA03512	ST32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	1.000	0.750	0.827					
	16-3D	1	1	6	1.250	1.000	0.827					

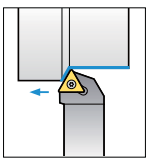
Applicable inserts **B88~B89, B107**

STTCR/L



TC□T





60°

• R type insert
(inch)

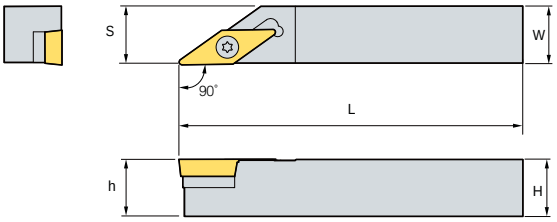
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
STTCR/L	10-2A	5/8	5/8	4	0.500	0.625	0.551	TC□T21.5□	FTKA02565	-	-	TW07P
	10-3A	5/8	5/8	4	0.500	0.625	0.748	TC□T32.5□	FTGA03512	ST32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	0.670	0.750	0.748					

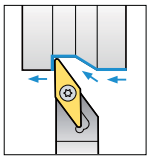
Applicable inserts **B88~B89, B107**

SVABR/L



VB□T





90°

• R type insert
(inch)

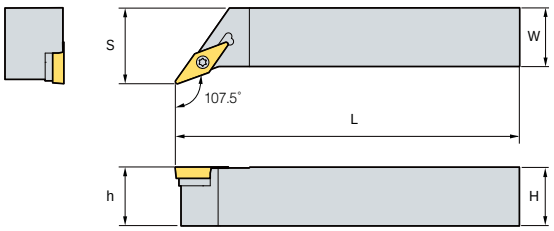
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SVABR/L	10-3A	5/8	5/8	4	0.630	0.625	VB□T33□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	0.755	0.750					

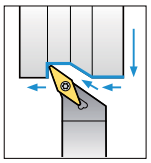
Applicable inserts **B94~B96, B108**

SVHBR/L



VB□T





107.5°

• R type insert
(inch)

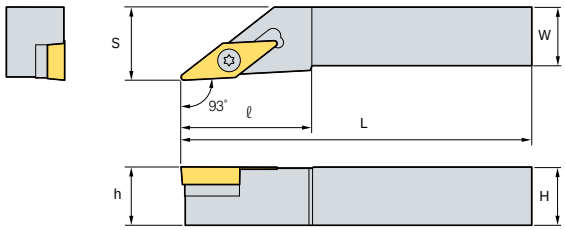
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SVHBR/L	16-3D	1	1	6	1.250	1.000	VB□T33□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	20-3D	1 1/4	1 1/4	6	1.250	1.250					

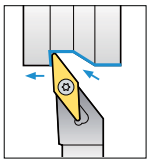
Applicable inserts **B94~B96, B108**

SVJBR/L



VB□T





93°

• R type insert
(inch)

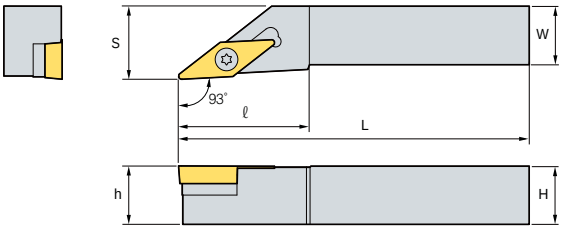
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
SVJBR/L	08-2K	1/2	1/2	3 3/20	0.625	0.500	1.063	VB□T21.5□	FTKA02565	-	-	TW07P
	10-2A	5/8	5/8	4	0.750	0.625	1.063					
	12-2B	3/4	3/4	4 1/2	1.000	0.750	1.063					
	10-3A	5/8	5/8	4	0.750	0.625	1.417	VB□T33□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.614					
	16-3D	1	1	6	1.250	1.000	1.614	VB□T33□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	20-3D	1 1/4	1 1/4	6	1.250	1.250	2.165					
	85-3D	1 1/4	1	6	1.575	1.299	2.165					

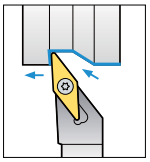
Applicable inserts **B94~B96, B108**

SVJCR/L



VC□T





93°

• R type insert

(inch)

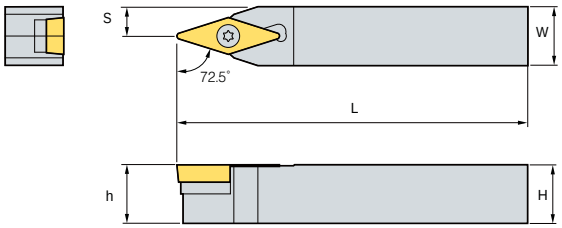
Designation		H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
SVJCR/L	08-2K	1/2	1/2	3 3/20	0.625	0.500	0.984	VC□T22□□	FTKA02565	-	-	TW07P
	10-2A	5.8	5/8	4	0.750	0.625	0.984					
	12-2B	3/4	3/4	4 1/2	1.000	0.750	0.984					
	08-2.5K	1/2	1/2	3 3/20	0.625	0.500	1.260	VC□T2.52□□	FTKA0307	-	-	TW09P
	10-2.5A	5/8	5/8	4	0.750	0.625	1.260					
	12-2.5B	3/4	3/4	4 1/2	1.000	0.750	1.260					
	10-3A	5/8	5/8	4	0.750	0.625	1.575	VC□T33□□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	1.000	0.750	1.575					
	16-3D	1	1	6	1.250	1.000	1.575					

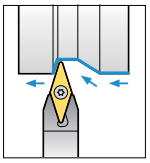
Applicable inserts **B97~B99, B109**

SVVBN



VB□T





72.5°

(inch)

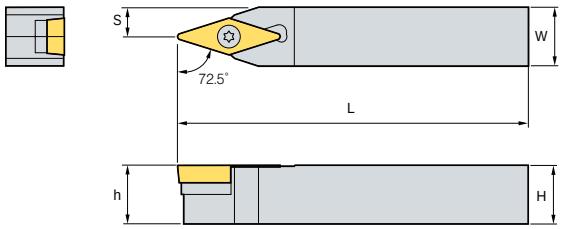
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SVVBN	08-2K	1/2	1/2	3 3/20	0.250	0.500	VB□T21.5□	FTKA02565	-	-	TW07P
	10-2A	5/8	5/8	4	0.313	0.625					
	12-2B	3/4	3/4	4 1/2	0.375	0.750					
	10-3A	5/8	5/8	4	0.313	0.625	VB□T33□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	0.375	0.750					
	16-3D	1	1	6	0.500	1.000					
	85-3D	1 1/4	1	6	0.500	1.250					

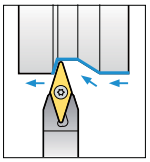
Applicable inserts **B94~B96, B108**

SVVCN



VC□T





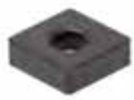
72.5°

(inch)

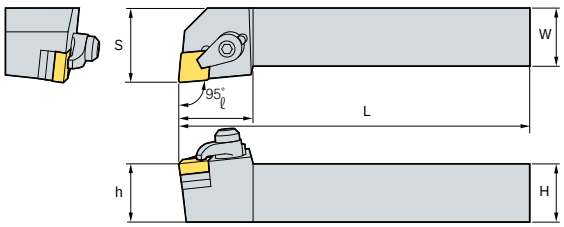
Designation		H	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SVVCN	08-2K	1/2	1/2	3 3/20	0.250	0.500	VC□T21.5□	FTKA02565	-	-	TW07P
	10-2A	5/8	5/8	4	0.313	0.625					
	12-2B	3/4	3/4	4 1/2	0.375	0.750					
	08-2.5K	1/2	1/2	3 3/20	0.250	0.500	VC□T2.51.5□	FTNA0307	-	-	TW09P
	10-2.5A	5/8	5/8	4	0.313	0.625					
	12-2.5B	3/4	3/4	4 1/2	0.375	0.750					
	10-3A	5/8	5/8	4	0.313	0.625	VC□T33□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	12-3B	3/4	3/4	4 1/2	0.375	0.750					
	16-3D	1	1	6	0.500	1.000					

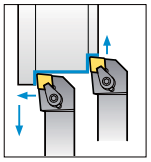
Applicable inserts **B97~B99, B109**

CCLNR/L



CN□N





95°

• R type insert

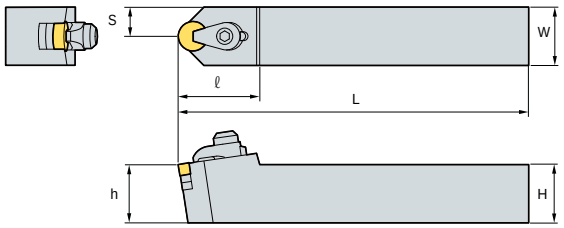
(inch)

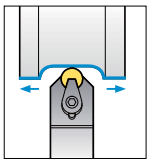
Designation	H	W	L	S	h	ℓ	Insert	Clamp	Screw	Shim	Spring	Wrench
CCLNR/L 16-4D	1	1	6	1.250	1.000	1.260	CN□N43□ CN□N45□	CH6R3	MHX0630 SHX0310	SC42CC	SR3	HW40L HW20L

CRDNN



RN□N





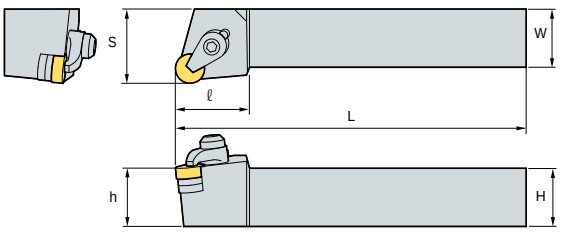
(inch)

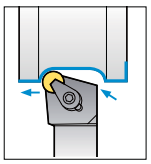
Designation	H	W	L	S	h	ℓ	Insert	Clamp	Screw	Shim	Spring	Wrench
CRDNN 16-4D	1	1	6	0.500	1.000	1.378	RN□N43□ RN□N45□	CH6R3	MHX0630 SHX0310	SC42CC	SR3	HW40L HW20L

CRGNR/L



RN□N





• R type insert

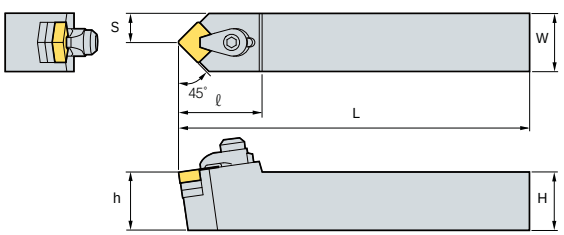
(inch)

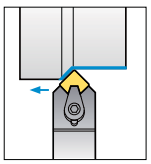
Designation	H	W	L	S	h	ℓ	Insert	Clamp	Screw	Shim	Spring	Wrench
CRGNR/L 16-4D	1	1	6	1.250	1.000	1.260	RN□N43□ RN□N45□	CH6R3	MHX0630 SHX0310	SC42CC	SR3	HW40L HW20L

CSDNN



SN□N





45°

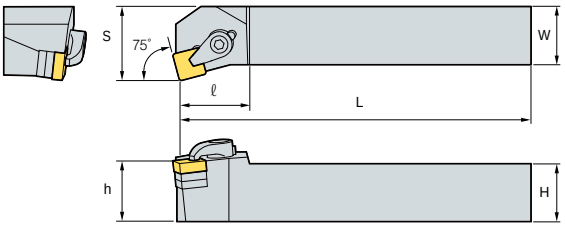
(inch)

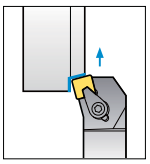
Designation	H	W	L	S	h	ℓ	Insert	Clamp	Screw	Shim	Spring	Wrench
CSDNN 16-4D	1	1	6	0.500	1.000	1.378	SN□N43□ RN□N45□	CH6R3	MHX0630 SHX0310	SS42CC	SR3	HW40L HW20L

CSKNR/L



SN□N





75°

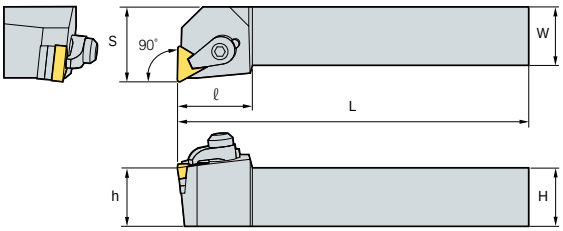
• R type insert
(inch)

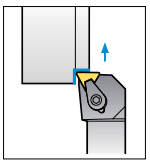
Designation	H	W	L	S	h	ℓ	Insert	Clamp	Screw	Shim	Spring	Wrench
CSKNR/L 16-4D	1	1	6	1.250	1.000	1.102	SN□N43□ SN□N45□	CH6R3	MHX0630 SHX0310	SS42CC	SR3	HW40L HW20L

CTFNR/L



TN□N





90°

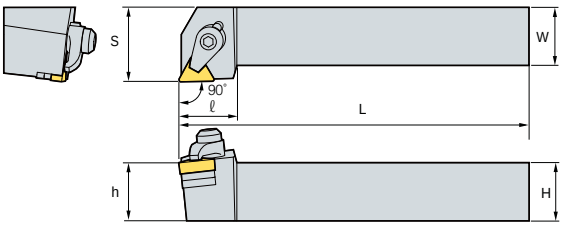
• R type insert
(inch)

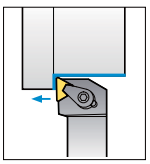
Designation	H	W	L	S	h	ℓ	Insert	Clamp	Screw	Shim	Spring	Wrench
CTFNR/L 16-4D	1	1	6	1.250	1.000	1.260	TN□N33□ TN□N35□	CH6R3	MHX0630 SHX0310	ST32CC	SR3	HW40L HW20L

CTGNR/L



TN□N





90°

• R type insert
(inch)

Designation	H	W	L	S	h	ℓ	Insert	Clamp	Screw	Shim	Spring	Wrench
CTGNR/L 16-4D	1	1	6	1.250	1.000	0984	TN□N32□ TN□N35□	CH6R3	MHX0630 SHX0310	ST32CC	SR3	HW40L HW20L

Note) Generally, two shims are clamped to a Ceramic Holder.
However, only one shim is used in clamping 45□□ and 35□□ sized inserts.

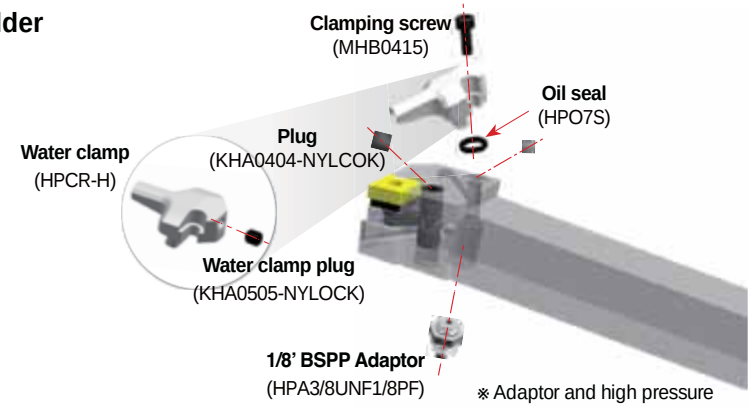
KORLOY High Pressure Coolant

KHP Coolant new

ISO turning holder

- 300% increased productivity on Inconel machining vs. low pressure coolant system
- Cooling, tool life, and chip control are improved by the high volume coolant multi-directional injection system

Structure of Holder



※ Adaptor and high pressure hose are sold separately.

Features

- The optimal distance between the insert and the jet orifice and the ideal place of the jet orifice
- Maximized loss pressure of coolant pressure due to streamlined design of internal path
- Easy to clamp an insert for sliding clamp system

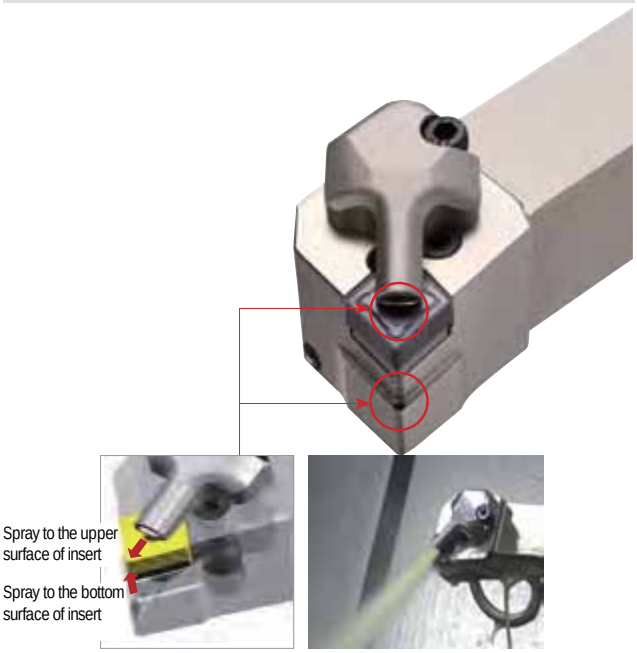


The original position of water clamp | The position of placing insert | Optimal position and distance of spraying | Oval direct spray

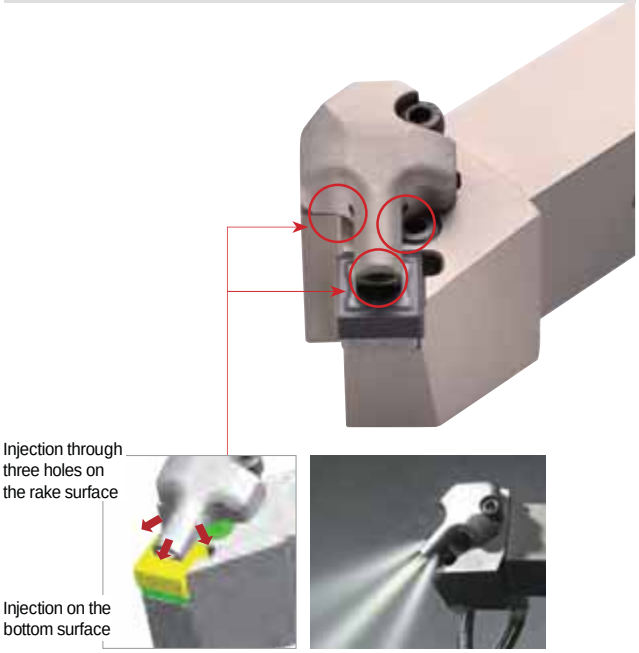
MAX 300 bar

Workpiece	The minimum pressure	The maximum pressure
P	50	300
M	70	
K	60	
N	50	
S	70	

Water clamp with a hole



Water clamp with three holes



※ Clamp is sold seperately

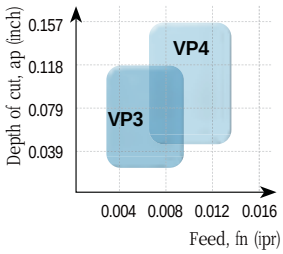
How to use the water clamp



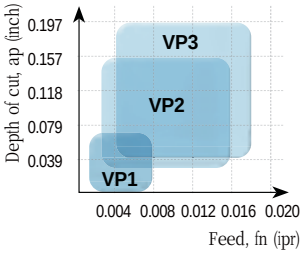
Unscrew the clamping screw | Move the water clamp to the edge of the holderscrew | Put an insert to the tip seatthe clamping screw | Move the water clamp back to its original position | Screw the clamping screwclamping screw

Application range

HRSA (inconel)

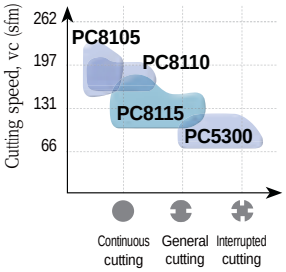


HRSA (titanium)

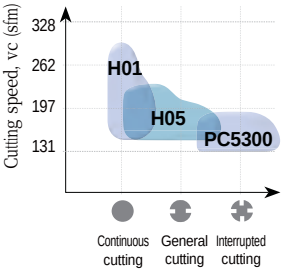


Grade Line-up

HRSA (inconel)



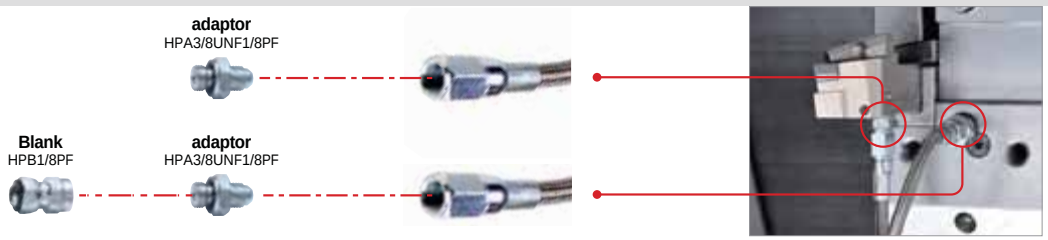
HRSA (titanium)



How to clamp the KHP Coolant

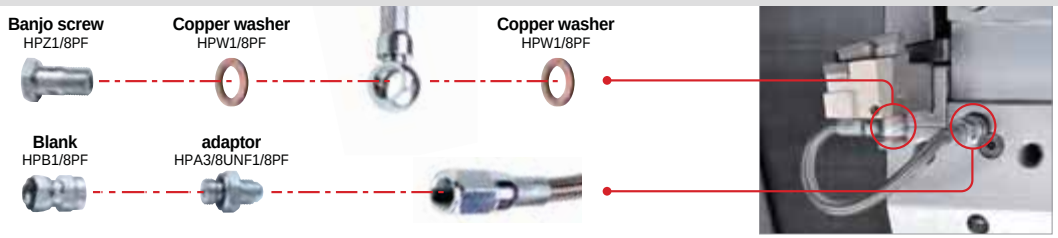
- 3 types of installation systems makes clamping easy
- The banjo type hose provides wider area for machining than other types

Straight to straight (S-S)



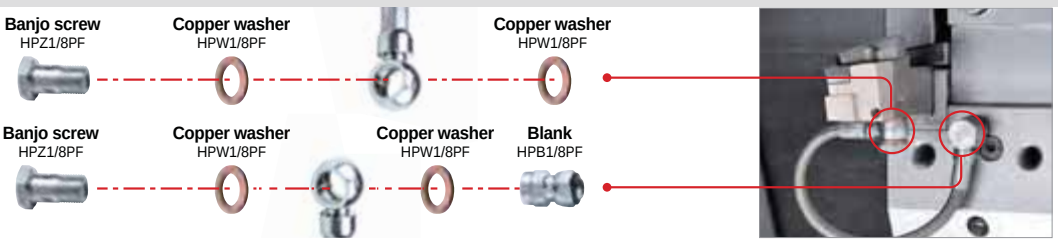
[Pic. 1]

Straight to banjo (S-S)



[Pic. 2]

Banjo to banjo (B-B)



[Pic. 3]

※ Blank including a fixed oil seal provides easy clamping

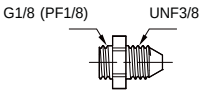
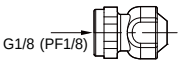
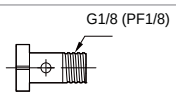
※ Banjo screws provide easy clamping and clamping a holder to the turning machine with various types of blanks

Components of KHP Coolant

• The components of high pressure coolant are sold separately
• Various components are available according to different machining sites and uses machining with high pressure coolant

Designation	Shape	Hose length	High pressure hose	Blank	Adaptor	Banjo screw	Copper washer	Pic.
HPH3/8UNF-200-SET		7.87 inch	1 EA	1 EA	2 EA	-	-	1
HPH3/8UNF-250-SET		9.84 inch						
HPH3/8UNF1/8PF-200-SET		7.87 inch			1 EA	1 EA	3 EA	2
HPH3/8UNF1/8PF-250-SET		9.84 inch						
HPH1/8PF-200-SET		7.87 inch			-	2 EA	5 EA	3
HPH1/8PF-250-SET		9.84 inch						

KHP Coolant Parts

Division	Designation	Shape	
adaptor	HPA3/8UNF1/8PF		
Blank	HPB1/8PF		
Banjo screw	HPZ1/8PF		
Copper washer	HPW1/8PF		

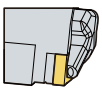
KHP Coolant High pressure hose

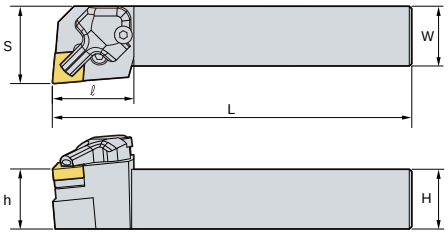
High pressure hose shape		Length	S	B
Straight to straight (HPH3/8UNF)		7.87 inch	UNF3/8	-
		9.84 inch		
Straight to banjo (HPH3/8UNF1/8PF)		7.87 inch	UNF3/8	Internal Ø0.394
		9.84 inch		
Banjo to banjo (HPH1/8PF)		7.87 inch	-	Internall Ø0.394
		9.84 inch		

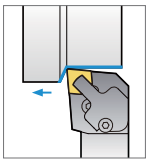
PCLNR/L



CN□□







95°

• R type insert

(inch)

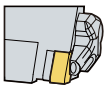
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Ship pin	Shim Pin Punch	Clamp	Clamping screw	Oil seal	Plug	Wrench
PCLNR/L	16-4D-KHP	1	1	5	1.26	1	1.34	CN□□43□	LV4N	VHX0820N	SC42N	SP4N	LSPS4	HPCR/L-H	MHB0415	HPO7S	KHA0404-NYLOCK	HW20L HW30L
	20-4E-KHP	1.25	1.25	5	1.57	1.25	1.34											

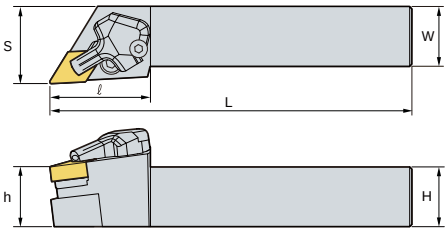
Applicable inserts **B36~B42**

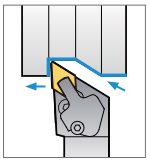
PDJNR/L



DN□□







93°

• R type insert

(inch)

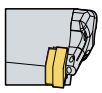
Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Ship pin	Shim Pin Punch	Clamp	Clamping screw	Oil seal	Plug	Wrench
PDJNR/L	16-3D-KHP	1	1	5	1.27	1	1.65	DN□□33□	LV3AN	VHX0617N	SD32N	SP3	LSPS3	HPCR/L-H	MHB0415	HPO7S	KHA0404-NYLOCK	HW20L HW25L HW30L
	16-4D-3-KHP	1	1	5	1.27	1	1.65	DN□□43□	LV4BN	VHX0821N	SD43N	SP4N	LSPS4	HPCR/L-H	MHB0415	HPO7S	KHA0404-NYLOCK	HW20L HW30L
	16-4D-4-KHP	1	1	5	1.27	1	1.65	DN□□44□	LV4BN	VHX0821N	SD42N	SP4N	LSPS4	HPCR/L-H	MHB0415	HPO7S	KHA0404-NYLOCK	HW20L HW30L

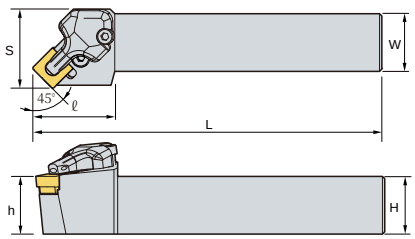
Applicable inserts **B43~B48**

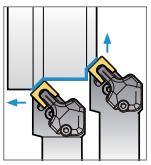
PSSNR/L



SN□□







45°

• R type insert

(inch)

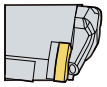
Designation	H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Ship pin	Shim Pin Punch	Clamp	Clamping screw	Oil seal	Plug	Wrench
PSSNR/L 16-4D-KHP	1	1	5	1.35	1	1.4	SN□□43□	LV4N	VHX0821	SS42N	SP4N	LSPS4	HPCR/L-3H	MHB0415	HPO7S	KHA0404-NYLOCK	HW20L HW30L

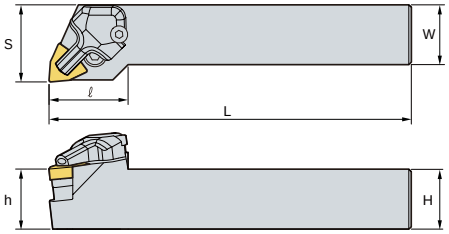
Applicable inserts **B50~B57**

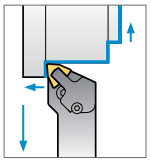
PWLNR/L



WN□□







95°

• R type insert

(inch)

Designation	H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Shim Pin Punch	Clamp	Clamping screw	Oil seal	Plug	Wrench
PWLNR/L 16-4D-KHP	1	1	5	1.27	1	1.3	WN□□43□	LV4N	VHX0820N	SW42N	SP4N	LSPS4	HPCR/L-H	MHB0415	HPO7S	KHA0404-NYLOCK	HW20L HW30L
20-4E-KHP	1.25	1.25	5	1.55	1.25	1.3											

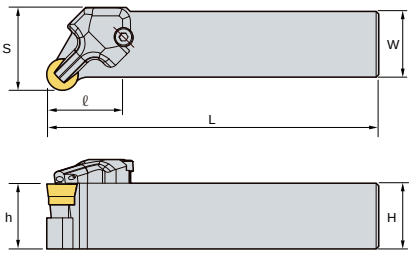
Applicable inserts **B68~B72**

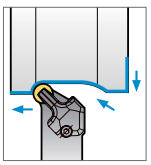
SRGCR/L



RCGT







• R type insert

(inch)

Designation	H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Clamp	Clamping screw	Oil seal	Wrench
SRGCR/L 16-4D-KHP	1	1	5	1.24	1	-	RCGT1204M0	FTGA03512	SR12S	SHXN0509F	HPCR/L-3H	MHB0415	HPO7S	HW15P HW30L HW35L

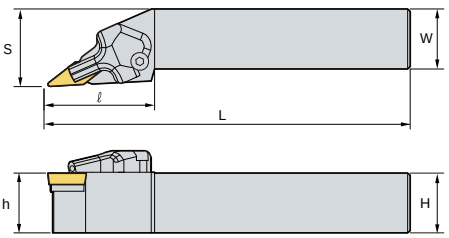
Applicable inserts **B83, B105**

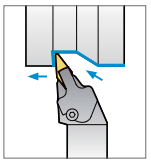
SVJBR/L



VB□□







93°

• R type insert

(inch)

Designation	H	W	L	S	h	ℓ	Insert	Screw	Shim	Shim Screw	Clamp	Clamping screw	Oil seal	Wrench
SVJBR/L 16-3D-KHP	1	1	5	1.28	1	1.83	VB□□33□	FTGA03512	SV32S	SHXN0509F	HPCR/L-H	MHB0415	HPO7S	TW15P HW30L HW35L

Applicable inserts **B94~B96, B108**

S 24 U - M C L N R 4 □

1	2	3	4	5	6	7	8	9	10
Type of Bar	Bar Diameter	Bar Length	Method of Mounting Insert	Insert Shape	Lead Angle of Boring Bar	Relief Angle of Insert	Hand of Bar	Length of Cutting Edge	Manufacturing option

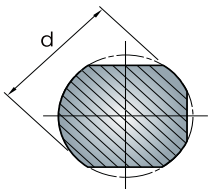
1 Type of Bar

S 24 U - M C L N R 4 □

A: Soild Steel with coolant hole
B: Soild Steel with anti-vibration
C: Carbide bar with fixed steel head
D: Soild Steel bar with anti-vibration device and coolant hole
E: Carbide bar with fixed steel head and coolant hole
G: Carbide bar with fixed steel head and anti-vibration device and coolant hole
H: Solid heavy metal with coolant
J : Solid heavy metal with coolant
S: Soild Steel bar
X: Special bar

2 Bar Diameter

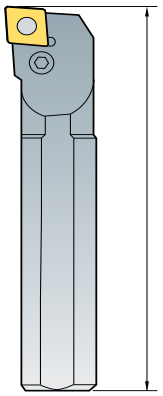
S 24 U - M C L N R 4 □



03: 0.1875	16: 1.000
04: 0.2500	20: 1.250
05: 0.3125	24: 1.500
06: 0.3700	28: 1.750
08: 0.5000	32: 2.000
10: 0.6250	36: 2.250
12: 0.7500	40: 2.500

3 Bar Length

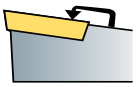
S 24 U - M C L N R 4 □

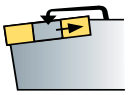


length(L)	(inch)
F	3
G	3.5
H	4
J	4.5
K	5.0
L	5.5
M	6
N	6.5
P	6.75
Q	7.0
R	8.0
S	10.0
T	12.0
U	14.0
V	16.0
W	18.0
Y	20.0
X	Special length

4 Method of Mounting Insert

S 24 U - M C L N R 4 □


Top clamping
C


Top and hole clamping
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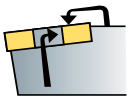
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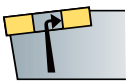
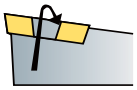
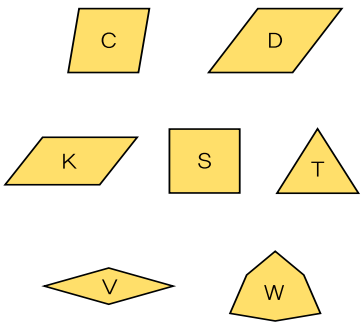

Hole clamping
P


Screw on
S

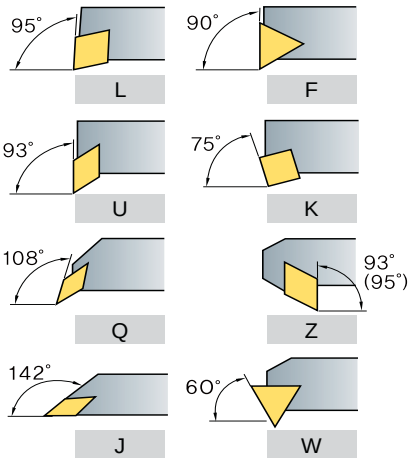
5 Insert Shape

S 24 U - M C L N R 4 □



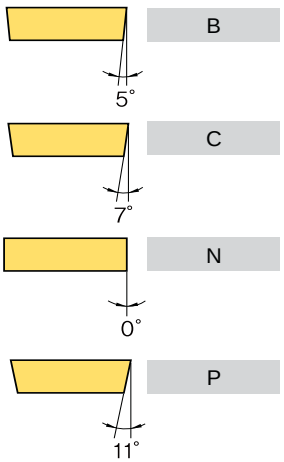
6 Lead Angle of Boring Bar

S 24 U - M C L N R 4 □



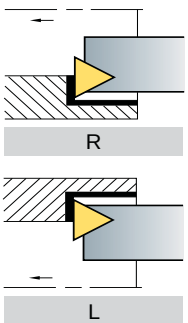
7 Relief Angle of Insert

S 24 U - M C L N R 4 □



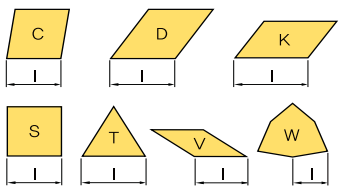
8 Hand of Bar

S 24 U - M C L N R 4 □



9 Length of Cutting Edge

S 24 U - M C L N R 4 □

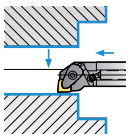
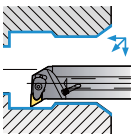
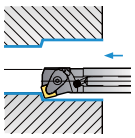
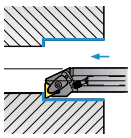
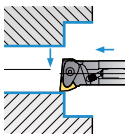


10 Manufacturing option

S 24 U - M C L N R 4 □

Manufacturing option

Double Clamp System

Cutting Shape								
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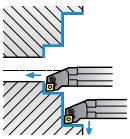
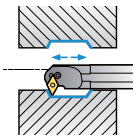
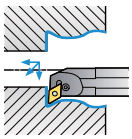
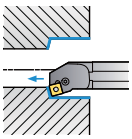
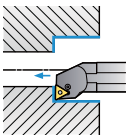
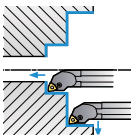
Facing	●				●			
Back turning		●						
Turning	●	●	●	●	●			

Lever Lock System

Cutting Shape								
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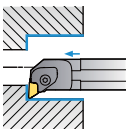
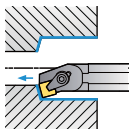
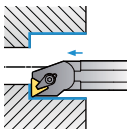
Clamp On System

Cutting Shape								
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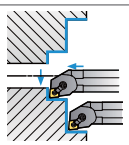
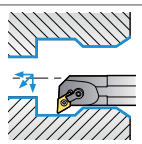
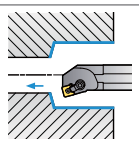
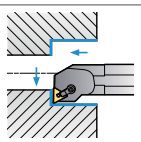
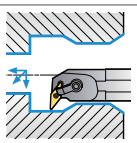
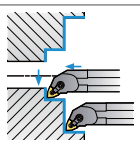
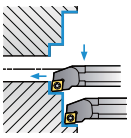
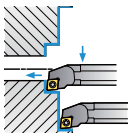
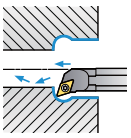
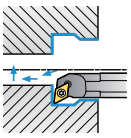
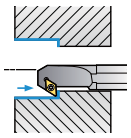
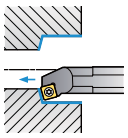
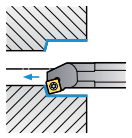
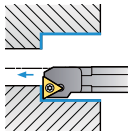
Page	B224	B224	B224					
Copying								
Facing								
Back turning	●							
Turning	●	●	●					

Multi Lock System

Cutting Shape								
Designation	**MCLNR/L**	**MDUNR/L**	**MSKNR/L**	**MTFNR/L**	**MVUNR/L**	**MWLNR/L**		
Approach angle	95°	93°	75°	90°	93°	95°		
Page	B225	B225	B225	B226	B226	B226		
Copying		●			●			
Facing	●					●		
Back turning		●			●			
Turning	●	●	●	●	●	●		

Screw On System

Cutting Shape								
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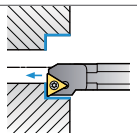
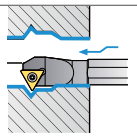
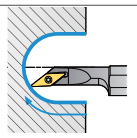
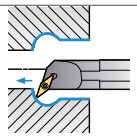
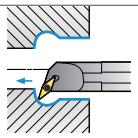
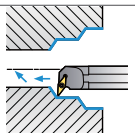
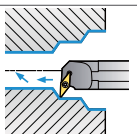
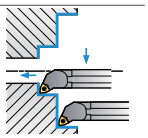
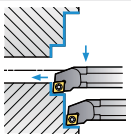
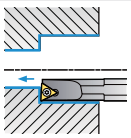
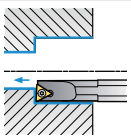
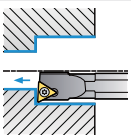
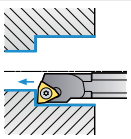
Approach angle	95°	95°	107.5°	93°	93°	75°	75°	90°
Page	B227	B228	B229	B230	B231	B231	B231	B232
Copying			●	●				
Facing	●	●						
Back turning			●	●	●			
Turning	●	●	●	●	●	●	●	●

Cutting Shape								
Designation	**STFPR/L**	**STWPR/L**	**SVJCR/L**	**SVQBR/L**	**SVQCR/L**	**SVUBR/L**	**SVUCR/L**	**SWLCR/L**
Approach angle	90°	60°	142°	108°	108°	93°	93°	95°
Page	B233	B234	B234	B234	B235	B235	B235	B236
Copying			●	●	●	●	●	●
Facing								
Back turning				●	●	●	●	●
Turning	●	●	●	●	●	●	●	●

Compact Mini

Cutting Shape								
Designation	**SCLCR/L**	**STUBR/L**	**STLBR/L**	**STUPR/L**	**SWUBR/L**			
Approach angle	95°	93°	95°	93°	93°			
Page	B237	B237	B237	B238	B239			
Copying								
Facing	●	●	●					
Back turning				●				
Turning	●	●	●	●	●			

Carbide Shank Boring Bar

Designation	SCLCR/L	SCLPR/L	SDQCR/L	SDUCR/L	STFCR/L
Approach angle	95°	95°	107.5°	93°	90°
Page	B227	B228	B229	B230	B232

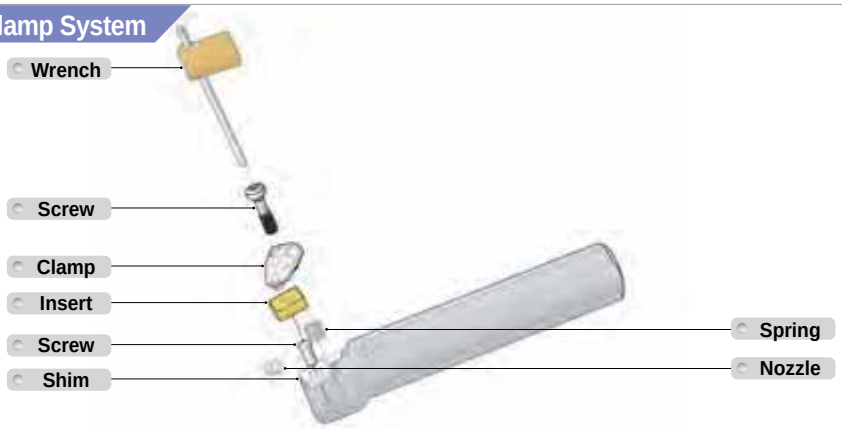
Designation	STFPR/L	STUBR/L	STUPR/L	SWUBR/L	-
Approach angle	90°	93°	93°	93°	-
Page	B233	B237	B238	B239	-

Sleeve

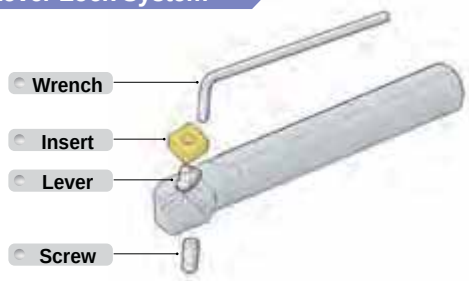
Shape	
Designation	**SL**
Page	B163

Instructions of Boring Bar Assembly

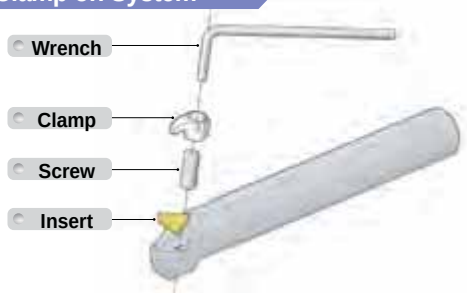
Double Clamp System



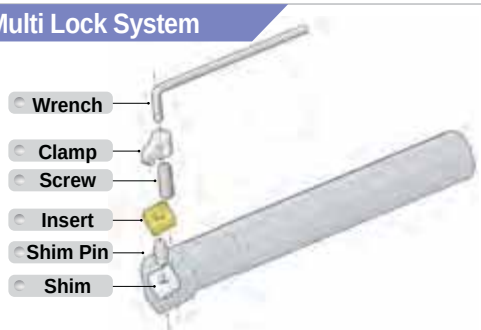
Lever Lock System



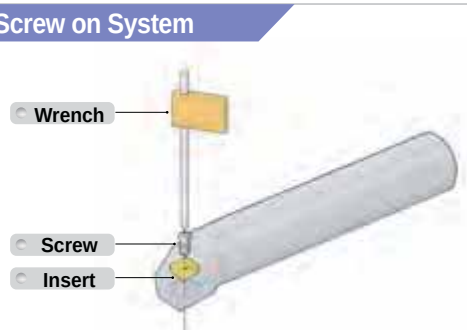
Clamp on System



Multi Lock System



Screw on System



Carbide Shank Boring Bar

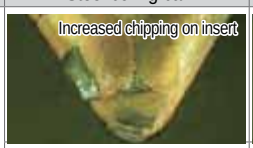
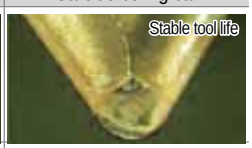
- Excellent cutting performance even in internal machining with chattering
- Available for various workpieces such as steel, stainless steel, cast iron, etc.
- Improved tool life and surface roughness

Features

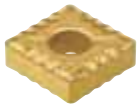


Higher strength and durability than steel shank, special surface treatment applied

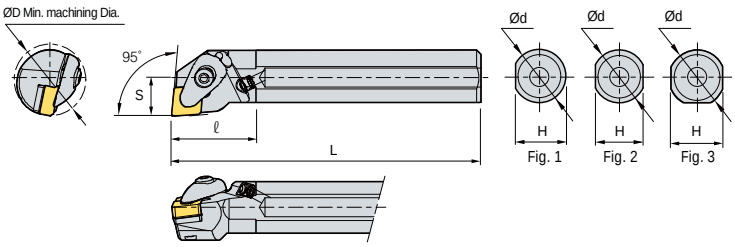
Comparison of chipping

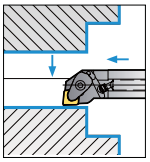
Specifications	Steel boring bar			Carbide boring bar		
• AISI 4140 • vc (sfm) = 656 • ap (inch) = 0.016 • fn (ipr) = 0.006 • Cutting depth: 5D						
						
	Rmax	Rz	Ra	Rmax	Rz	Ra
	4.67	3.68	0.62	3.07	2.76	0.53

DCLNR/L



CN□□





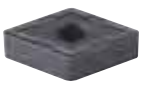
95°

• R type insert
(inch)

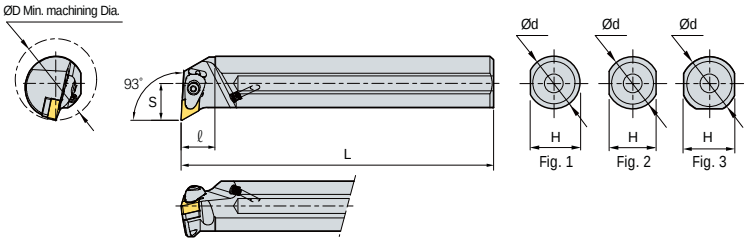
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A16R-DCLNR/L-3	1.2	1	0.921	8	0.640	1.063	CN□□33□	CVH3	CHX0415	SC32V	FTKA0307	SPR0510	CN0605	HW25P	1
A16R-DCLNR/L-4	1.2	1	0.921	8	0.640	1.102	CN□□43□	CVH4	CHX0518	SC42V	FTKA0410	SPR0714	CN0605	HW30P	1
A20S-DCLNR/L-4	1.47	1 1/4	1.171	10	0.765	1.063									3
A24T-DCLNR/L-4	1.76	1 1/2	1.382	12	0.890	1.181									
A32U-DCLNR/L-5	2.4	2	1.882	14	1.281	1.575	CN□□54□	CVH5	CHX0622	SC54V	FTNA0511	SPR0811	CN0605	HW40L	3

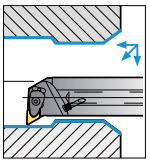
Applicable inserts **B36~B42**

DDUNR/L



DN□□





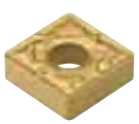
93°

• R type insert
(inch)

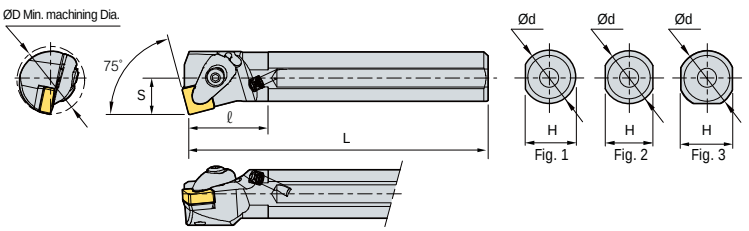
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A24T-DDUNR/L-4-4	2	1 1/2	1.382	12	1.125	0.984	DN□□44□	CVH4	CHX0518	SD43V	FTKA0410	SPR0714	CN0605	HW30P	3
A32U-DDUNR/L-4-4	2.4	2	1.882	14	1.281	1.181									
A24T-DDUNR/L-4-3	2	1 1/2	1.382	12	1.125	0.984	DN□□43□	CVH4	CHX0518	SD44V	FTKA0410	SPR0714	CN0605	HW30P	3
A32U-DDUNR/L-4-3	2.4	2	1.882	14	1.281	1.181									

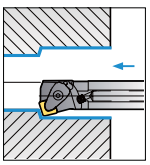
Applicable inserts **B43~B48**

DSKNR/L



SN□□





75°

• R type insert
(inch)

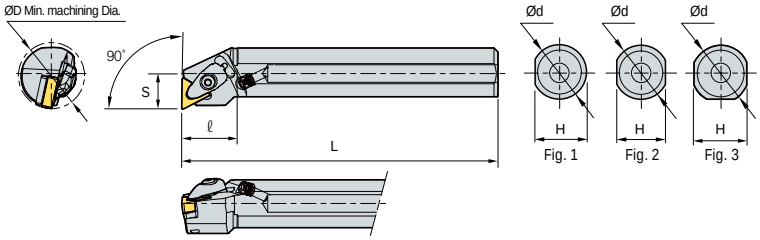
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A16R-DSKNR/L-3	1.2	1	0.921	8	0.640	1.063	SN□□32□	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	CN0605	HW25P	1
A16R-DSKNR/L-4	1.2	1	0.921	8	0.640	1.102	SN□□43□	CVH4	CHX0518	SS42V	FTKA0410	SPR0714	CN0605	HW30P	1
A20S-DSKNR/L-4	1.47	1 1/4	1.171	10	0.765	1.102									3
A24T-DSKNR/L-4	1.76	1 1/2	1.382	12	0.890	1.102									

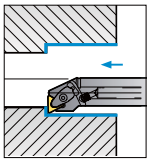
Applicable inserts **B50~B57**

DTFNR/L



TN□□





90°

• R type insert
(inch)

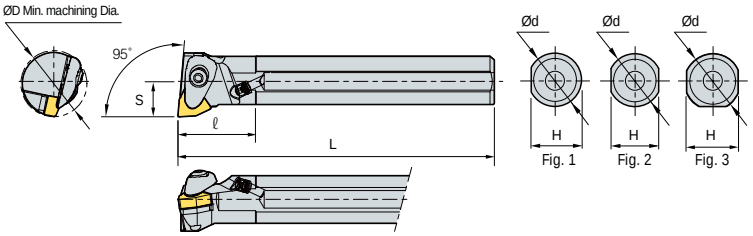
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A16R-DTFNR/L-3	1.2	1	0.961	8	0.640	1.063	TN□□33□	CVH3	CHX0415	ST32V	FTKA0307	SPR0510	CN0605	HW25P	1
A20S-DTFNR/L-3	1.47	1 1/4	1.211	10	0.765	1.063									3
A24T-DTFNR/L-4	1.76	1 1/2	1.382	12	0.890	1.299	TN□□43□	CVH4	CHX0518	ST44V	FTKA0410	SPR0714	CN0605	HW30P	3
A32U-DTFNR/L-4	2.4	2	1.882	14	1.281	1.299									

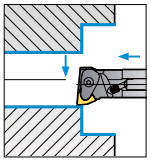
Applicable inserts **B58~B65**

DWLNR/L



WN□□





95°

• R type insert
(inch)

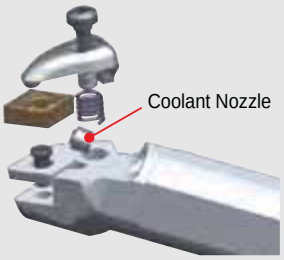
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A16R-DWLNR/L-3	1.2	1	0.921	8	0.640	0.748	WN□□33□	CVH3	CHX0415	SW32V	FTKA0307	SPR0510	CN0605	HW25P	1
A20S-DWLNR/L-3	1.47	1 1/4	1.171	10	0.765	0.787									3
A24T-DWLNR/L-3	1.76	1 1/2	1.382	12	0.890	0.984									
A16R-DWLNR/L-4	1.2	1	0.921	8	0.640	0.787	WN□□43□	CVH4	CHX0518	SW42V	FTKA0410	SPR0714	CN0605	HW30P	1
A20S-DWLNR/L-4	1.47	1 1/4	1.171	10	0.765	0.945									3
A24T-DWLNR/L-4	1.76	1 1/2	1.382	12	0.890	0.984									
A32U-DWLNR/L-4	2.4	2	1.882	14	1.281	1.260									

Applicable inserts **B68~B72**



Features of Double Clamp (boring bar)

Longer tool life and excellent surface finish can be achieved with the adjustable coolant nozzle

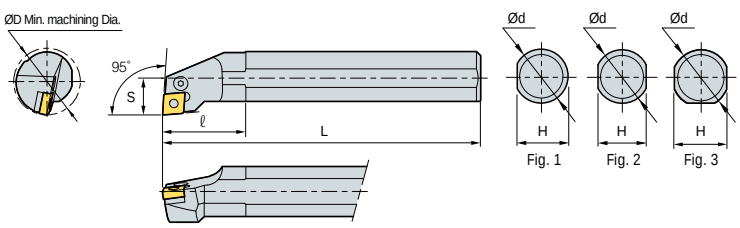


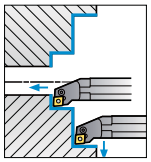


PCLNR/L



CN□□





95°

• R type insert

(inch)

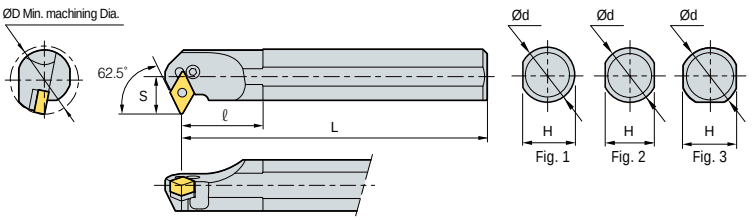
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim pin	Shim pin Punch	Wrench	Fig.
S10R-PCLNR/L-3	0.770	5/8	0.586	8	0.406	1.102	CN□□32□	LV3C	VHX0509B	-	-	-	HW20L	2
S12S-PCLNR/L-3	0.930	3/4	0.671	10	0.500	1.260								
S16R-PCLNR/L-3	1.200	1	0.921	8	0.640	1.417								3
S16R-PCLNR/L-4	1.200	1	0.921	8	0.640	1.575	CN□□43□	LV4A	VHX0613A	-	-	-	HW25L	3
S25R-PCLNR/L-4	1.200	1	0.921	8	0.640	1.575								
S20S-PCLNR/L-4	1.470	1 1/4	0.171	10	0.765	1.969		LV4	VHX0821	SC42B	SP4	LSPS4	HW30L	
S32R-PCLNR/L-4	2.400	2	1.382	8	1.281	2.205		LV4	VHX0821	SC43B	SP4	-	HW30L	
S24T-PCLNR/L-4	1.760	1 1/2	1.382	12	0.890	2.165		LV4	VHX0821	SC42B	SP4	LSPS4	HW30L	
S32U-PCLNR/L-4	2.400	2	1.882	14	1.281	2.205								
S32U-PCLNR/L-6	2.400	2	1.882	14	1.281	2.480	CN□□64□	LV6	VHX1027	SC63	SP6	LSPS6	HW40L	3
A16R-PCLNR/L-4	1.200	1	0.961	8	0.640	1.575	CN□□43□	LV4A	VHX0613A	-	-	-	HW25L	1
A20S-PCLNR/L-4	1.470	1 1/4	1.211	10	0.765	1.969		LV4	VHX0821	SC42B	SP4	LSPS4	HW30L	3
A24T-PCLNR/L-4	1.760	1 1/2	1.882	12	0.890	2.362								

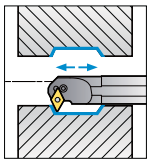
Applicable inserts **B36~B42**

PDSNR/L



DN□□





62.5°

• R type insert

(inch)

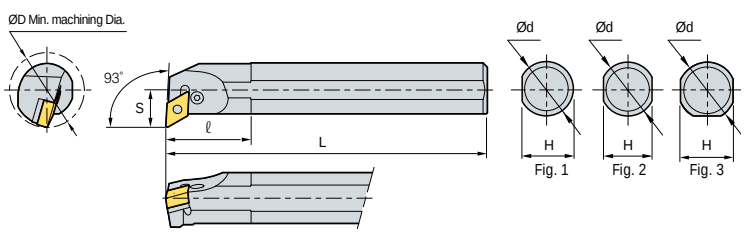
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim pin	Shim pin Punch	Wrench	Fig.
S20S-PDSNR/L-4-4	1.705	1 1/4	1.171	10	1.000	1.772	DN□□44□	LV4B	VHX0821	SD42	SP4	LSPS4	HW30L	3
S24T-PDSNR/L-4-4	2.000	1 1/2	1.382	12	1.125	1.693								
S20S-PDSNR/L-4-3	1.705	1 1/4	1.171	10	1.000	1.772	DN□□43□	LV4	VHX0821	SD42	SP4	LSPS4	HW30L	
S24T-PDSNR/L-4-3	2.000	1 1/2	1.382	12	1.125	1.693								
A20S-PDSNR/L-4-4	1.705	1 1/4	1.211	10	1.000	1.772	DN□□44□	LV4B	VHX0821	SD42	SP4	LSPS4	HW30L	
A20S-PDSNR/L-4-3	1.705	1 1/4	1.211	10	1.000	1.772	DN□□43□	LV4	VHX0821	SD42	SP4	LSPS4	HW30L	

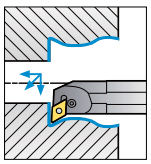
Applicable inserts **B43~B48**

PDUNR/L



DN□□





93°

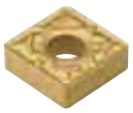
• R type insert

(inch)

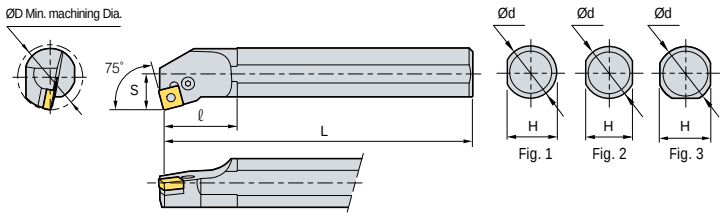
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim pin	Shim pin Punch	Wrench	Fig.
S12S-PDUNR/L3	0.930	3/4	0.671	10	0.562	1.181	DN□□33□	LV3DN	VHX0512B	-	-	-	HW20L	2
S16R-PDUNR/L3	1.200	1	0.921	8	0.750	1.378		LV3DN	VHX0512B	-	-	-	HW20L	3
S20S-PDUNR/L3	1.470	1 1/4	1.171	10	1.000	1.575		LV3	VHX0617	SD317	SP3	LSPS3	HW25L	3
S20S-PDUNR/L4-4	1.705	1 1/4	1.171	10	1.000	1.969	DN□□44□	LV4B	VHX0821	SD42	SP4	LSPS4	HW30L	3
S24T-PDUNR/L4-4	2.000	1 1/2	1.382	12	1.125	1.969								
S32U-PDUNR/L4-4	2.400	2	1.882	14	1.325	2.480								
S20S-PDUNR/L4-3	1.705	1 1/4	1.171	10	1.000	1.969	DN□□43□	LV4	VHX0821	SD42	SP4	LSPS4	HW30L	3
S24T-PDUNR/L4-3	2.000	1 1/2	1.382	12	1.125	1.969								
A20S-PDUNR/L4-4	1.705	1 1/4	1.211	10	1.000	1.969	DN□□44□	LV4B	VHX0821	SD42	SP4	LSPS4	HW30L	3
A20S-PDUNR/L4-3	1.705	1 1/4	1.211	10	1.000	1.969	DN□□43□	LV4	VHX0821	SD42	SP4	LSPS4	HW30L	3

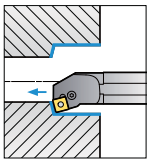
Applicable inserts **B43~B48**

PSKNR/L



SN□□





75°

• R type insert
(inch)

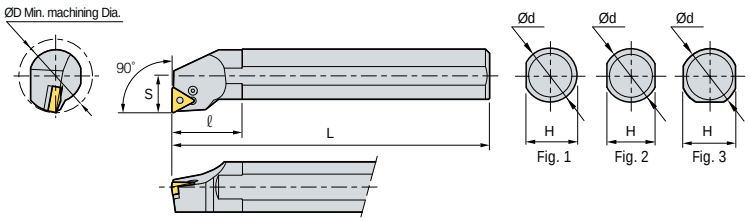
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S16T-PSKNR/L4	1.200	1	0.921	12	0.640	1.654	SN□□43□	LV4A	VHX0613A	-	-	-	HW30L	3
S20U-PSKNR/L4	1.470	1 1/4	1.171	14	0.765	1.772		LV4	VHX0821	SS42B	SP4	LSPS4	HW30L	
S24V-PSKNR/L4	1.760	1 1/2	1.382	16	0.890	1.969								
A16T-PSKNR/L4	1.200	1	0.961	12	0.640	1.654	SN□□43□	LV4A	VHX0613A	-	SP4	-	HW25L	1
A20U-PSKNR/L4	1.470	1 1/4	1.211	14	0.765	1.969		LV4	VHX0821	SS42B	SP4	LSPS4	HW30L	3

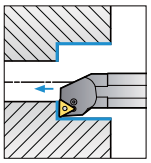
Applicable inserts **B50~B57**

PTFNR/L



TN□□





90°

• R type insert
(inch)

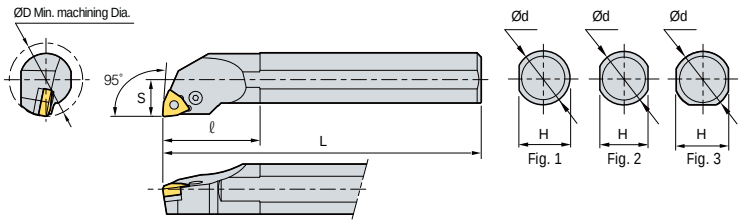
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S10R-PTFNR/L2	0.770	5/8	0.586	8	0.406	1.102	TN□□32□	LV2	VHX0509B	-	-	-	HW25L	2
S12S-PTFNR/L2	0.930	3/4	0.671	10	0.500	1.299								
S16T-PTFNR/L2	1.200	1	0.921	12	0.640	1.417								3
S16T-PTFNR/L3N	1.200	1	0.921	12	0.640	1.654	TN□□33□	LV3B	VHX0512B	-	-	-	HW20L	3
S20R-PTFNR/L3N	1.470	1 1/4	1.171	14	0.765	1.969		LV3	VHX0617	ST317B	SP3	LSPS3	HW25L	
S24S-PTNFR/L3N	1.760	1 1/2	1.382	16	0.890	2.165								
A16T-PTFNR/L3N	1.200	1	0.961	12	0.640	1.575		LV3	VHX0617	-	-	-	HW25L	1
A20R-PTFNR/L3N	1.470	1 1/4	1.211	14	0.765	1.969		LV3	VHX0617	ST317B	SP3	LSPS3	HW25L	3
S16S-PTFNR/L3N	1.200	1	0.921	16	0.640	1.575	TN□□33□	LV3B	VHX0512B	-	-	-	HW20L	3
S20R-PTFNR/L3N	1.470	1 1/4	1.171	14	0.765	1.969		LV3N	VHX0617N	ST317N	SP3N	LSPS3	HW25L	3
S24S-PTNFR/L3N	1.760	1 1/2	1.382	16	0.890	2.165								

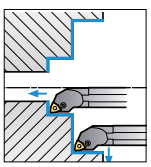
Applicable inserts **B58~B65**

PWLNR/L



WN□□





95°

• R type insert
(inch)

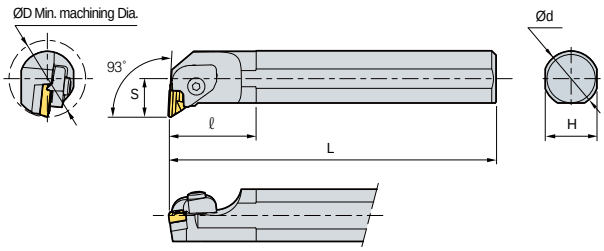
Designation	ØD	Ød	H	L	S	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S16R-PWLNR/L3	0.787	1	0.551	12	0.433	0.984	WN□□33□	LV3B	VHX0512B	-	-	-	HW20L	2
S12S-PWLNR/L3	0.930	3/4	0.671	10	0.500	1.574	WN□□33□	LV3B	VHX0512B	-	-	-	HW20L	2
S16T-PWLNR/L3	1.200	1	0.921	12	0.640	1.575								3
S20U-PWLNR/L3	1.470	1 1/4	1.171	14	0.765	1.772		LV3	VHX0617	SW317	SP3	LSPS3	HW25L	
S16T-PWLNR/L4	1.200	1	0.921	12	0.640	1.772	WN□□43□	LV4A	VHX0613A	-	-	-	HW25L	3
S20U-PWLNR/L4	1.470	1 1/4	1.171	14	0.765	1.969		LV4	VHX0821	SW42	SP4	LSPS3	HW30L	

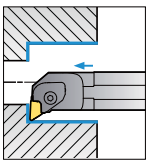
Applicable inserts **B68~B72**

CKUNR/L



KN□□





93°

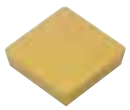
• R type insert
(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Spring	Shim	Pin+Spring	Shim Screw	Wrench
S20S-CKUNR3	1.705	1 1/4	1.171	10	1.000	2.756	KN□□33□L	CTH6LI	CHX0625	SR3	SK33CL	PN0515 / SR4	SHX0310	HW40L HW20L
S24T-CKUNR3	2.000	1 1/2	1.382	12	1.125	2.362								
S32U-CKUNR3	2.500	2	1.693	14	1.377	2.165								
S20S-CKUNL3	1.705	1 1/4	1.171	10	1.000	2.756	KN□□33□R	CTH6RI	CHX0625	SR3	SK33C	PN0515 / SR4	SHX0310	HW40L HW20L
S24T-CKUNL3	2.000	1 1/2	1.382	12	1.125	2.362								
S32U-CKUNL3	2.500	2	1.693	14	1.377	2.165								

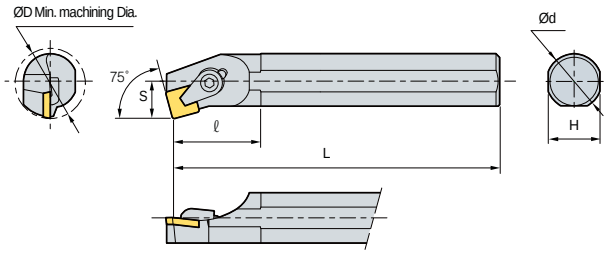
Applicable inserts **B49**

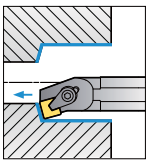
• Use left handed insert for right handed holder

CSKPR/L



SP□□





75°

• R type insert
(inch)

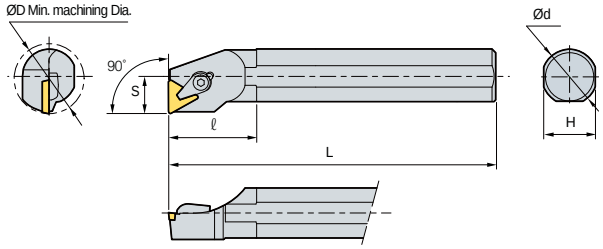
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	C-ring	Wrench
S10R-CSKPR3	0.770	5/8	0.586	8	0.406	1.181	SP□□R32□	CH4R1C	CHX0414C	CR02C	HW25L
S12S-CSKPR3	0.930	3/4	0.671	10	0.500	1.417		CH5R5C	CHX0519C	CR03C	HW30L
S12S-CSKPR4	0.930	3/4	0.671	10	0.500	1.102	SP□□R42□	CH6R5	CH0616	CR04C	HW30L
S16R-CSKPR4	1.260	1	0.905	12	0.670	1.575					

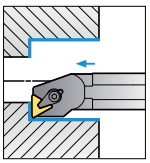
Applicable inserts **B85~B86**

CTFPR/L



TP□□





90°

• R type insert
(inch)

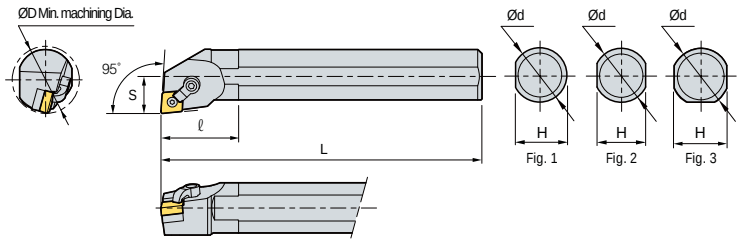
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	C-ring	Shim	Shim Pin	Wrench
S08M-CTFPR/L2	0.600	1/2	0.461	6	0.312	1.024	TP□□22□	CH4R1C	CHX0414C	CR02C	-	-	HW25L
S10R-CTFPR/L2	0.770	5/8	0.586	8	0.406	1.575							
S12S-CTFPR/L2	0.930	3/4	0.671	10	0.500	1.575							
S10R-CTFPR/L3	0.770	5/8	0.586	8	0.406	1.575	TP□□32□	CH5R5C	CHX0519C	CR03C	-	-	HW30L
S12S-CTFPR/L3	0.930	3/4	0.671	10	0.500	1.575							
S16R-CTFPR/L3	1.200	1	0.921	8	0.640	1.575		CH6R5	CHX0622C	CR04C	ST32C	SP3C	
S20S-CTFPR/L3	1.470	1 1/4	1.171	10	0.765	1.772							
S24T-CTFPR/L3	1.760	1 1/2	1.382	12	0.890	2.362							
S24T-CTFPR/L4	1.760	1 1/2	1.382	12	0.890	2.362	TP□□43□	CH83R1	CH0823C	CR05C	ST43C	SP4C	HW40L

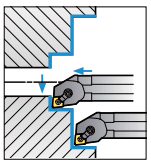
Applicable inserts **B90~B93**

MCLNR/L



CN□□





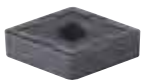
95°

• R type insert
(inch)

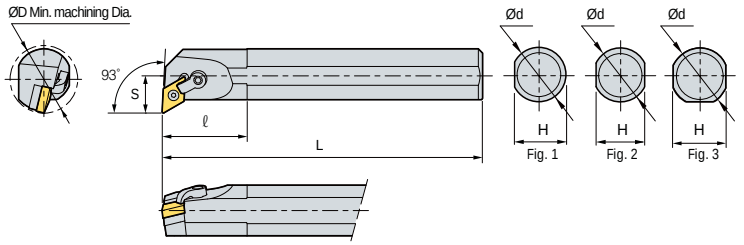
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S12S-MCLNR/L3	0.930	3/4	0.671	10	0.500	1.417	CN□□32□	CDH7N	DHA10/32-19	-	SP3D3	HW19.8L HW23.8L	2 3
S16R-MCLNR/L3	1.200	1	0.921	8	0.640	1.417							
S16R-MCLNR/L4	1.200	1	0.921	8	0.640	1.417	CN□□43□	CDH6N	DHA1/4-21	-	SP4DS	HW31.8L HW23.8L	3
S20S-MCLNR/L4	1.705	1 1/4	1.171	10	0.765	1.969				SC43D	SP4D		
S24T-MCLNR/L4	2.000	1 1/2	1.382	12	0.890	2.362							
A16R-MCLNR/L4	1.200	1	0.921	8	0.640	1.575	CN□□43□	CDH6N	DHA1/4-21	-	SP4DS	HW31.8L HW23.8L	1 3
A20S-MCLNR/L4	1.705	1 1/4	1.171	10	0.765	1.969				SC43D	SP4D		

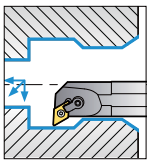
Applicable inserts **B36~B42**

MDUNR/L



DN□□





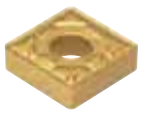
93°

• R type insert
(inch)

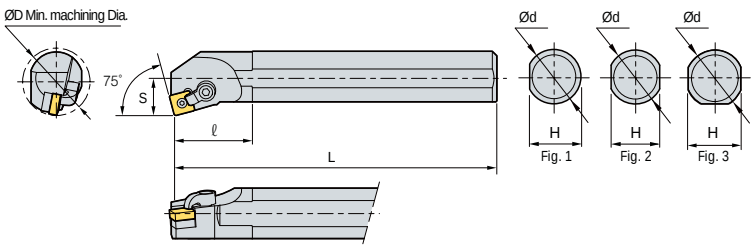
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S20S-MDUNR/L4-3	1.705	1 1/4	1.171	10	0.765	1.969	DN□□43□	CDH6N	DHA1/4-21	SD43D	SP4D	HW31.8L HW23.8L	3
S24T-MDUNR/L4-3	2.000	1 1/2	1.382	12	0.890	2.362							
A20S-MDUNR/L4-3	1.705	1 1/4	1.171	10	0.765	1.969							

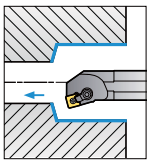
Applicable inserts **B43~B48**

MSKNR/L



SN□□





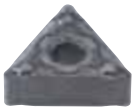
75°

• R type insert
(inch)

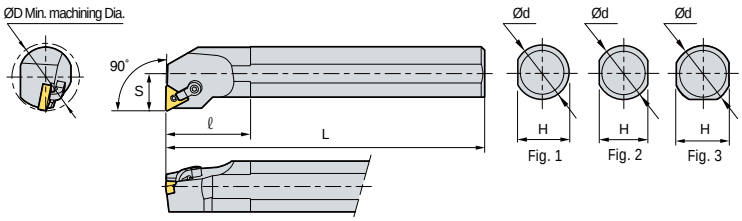
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S16R-MSKNR/L4	1.200	1	0.921	12	0.640	1.417	SN□□43□	CDH8N1	DHA5/16-28	-	SP4DS	HW39.7L HW23.8L	3
S20S-MSKNR/L4	1.705	1 1/4	1.171	14	0.765	1.969				SS43D	SP4D		
S24T-MSKNR/L4	2.000	1 1/2	1.382	16	0.890	2.362							
A16R-MSKNR/L4	1.200	1	0.921	8	0.640	1.575	SN□□43□	CDH8N1	DHA5/16-28	-	SP4DS	HW39.7L HW23.8L	1 3
A20S-MSKNR/L4	1.705	1 1/4	1.171	10	0.765	1.969				SS43D	SP4D		
A24T-MSKNR/L4	2.000	1 1/2	1.382	12	0.890	2.362							

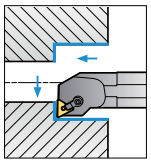
Applicable inserts **B50~B57**

MTFNR/L



TN□□





90°

• R type insert
(inch)

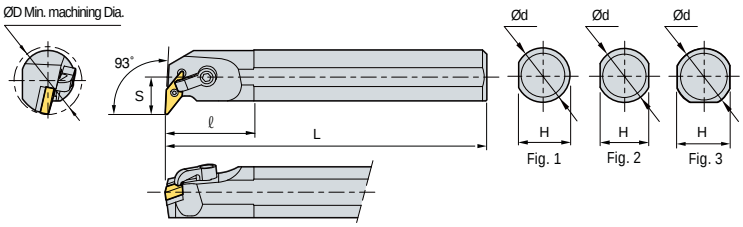
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S16R-MTFNR/L3	1.200	1	0.921	12	0.640	1.417	TN□□33□	CDH7N1	DHA10-32-19	-	SP3D3	HW23.8L	3
S20S-MTFNR/L3	1.705	1 1/4	1.171	14	0.765	1.969		CDH7N1	DHA10-32-19	ST32D	SP3D	HW19.8L	
S24T-MTFNR/L3	2.000	1 1/2	1.382	14	0.890	2.362							
A16R-MTFNR/L3	1.200	1	0.921	8	0.640	1.575	TN□□33□	CDH7N1	DHA10-32-19	-	SP3D3	HW23.8L	1
A20S-MTFNR/L3	1.705	1 1/4	1.171	10	0.765	1.969		CDH7N1	DHA10-32-19	ST32D	SP3D	HW19.8L	3

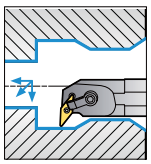
Applicable inserts **B58~B65**

MVUNR/L



VN□□





93°

• R type insert
(inch)

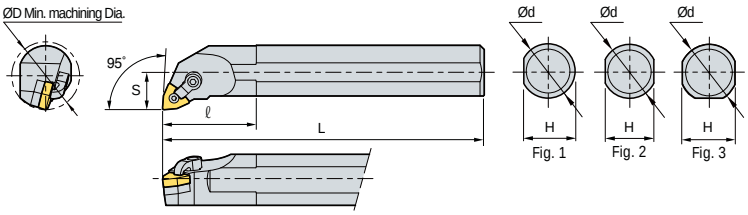
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S20S-MVUNR/L3	1.705	1 1/4	1.171	10	0.765	1.969	VN□□33□	CDH8N2	DHA5/16-28	SV32D	SP3D	HW39.7L HW19.8L	3
S24T-MVUNR/L3	2.000	1 1/2	1.382	12	0.890	2.362							
A20S-MVUNR/L3	1.705	1 1/4	1.171	10	0.765	1.969	VN□□33□	CDH8N2	DHA5/16-28	SV32D	SP3D	HW39.7L HW19.8L	3
A24T-MVUNR/L3	2.000	1 1/2	1.382	12	0.890	2.362							

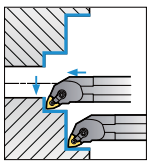
Applicable inserts **B66~B67**

MWLNR/L



WN□□





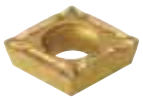
95°

• R type insert
(inch)

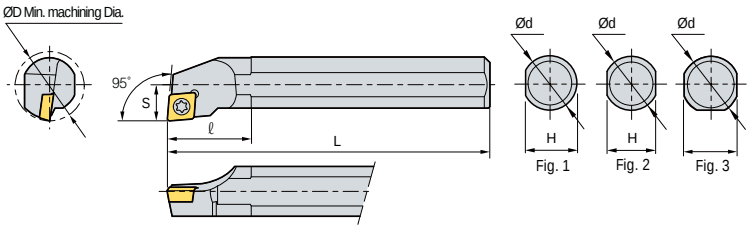
Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S16R-MWLNR/L3	1.200	1	0.921	8	0.640	1.417	WN□□33□	CDH7N	DHA10/32-19	-	SP3D3	HW23.8L HW19.8L	3
S20S-MWLNR/L3	1.705	1 1/4	1.171	10	0.765	1.969				SW32D	SP3D		
S24T-MWLNR/L3	2.000	1 1/2	1.382	12	0.890	2.362							
S16R-MWLNR/L4	1.200	1	0.921	8	0.640	1.417	WN□□43□	CDH6N	DHA1/4-21	-	SP4DS	HW31.8L HW23.8L	3
S20S-MWLNR/L4	1.705	1 1/4	1.171	10	0.765	1.969				SW43D	SP4D		
S24T-MWLNR/L4	2.000	1 1/2	1.382	12	0.890	2.362							
A16R-MWLNR/L3	1.200	1	0.921	8	0.640	1.575	WN□□33□	CDH7N	DHA10/32-19	-	SP3D3	HW31.8L HW19.8L	1
A20S-MWLNR/L3	1.705	1 1/4	1.171	10	0.765	1.969				SW32D	SP3D		3
A16R-MWLNR/L4	1.200	1	0.921	8	0.640	1.575	WN□□43□	CDH6N	DHA1/4-21	-	SP4DS	HW31.8L HW23.8L	1
A20S-MWLNR/L4	1.705	1 1/4	1.171	10	0.765	1.969				SW43D	SP4D		3

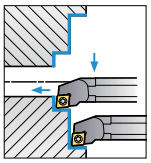
Applicable inserts **B68~B72**

SCLCR/L



CC□T





95°

Steel shank type

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S05K-SCLCR/L2	0.415	5/16	0.273	5	0.219	0.551	CC□T21.5□	FTKA02555			TW07	2
S06K-SCLCR/L2	0.480	3/8	0.336	5	0.250	0.551		FTKA02565	-	-	TW07P	
S06M-SCLCR/L2	0.480	3/8	0.336	6	0.250	0.551						
S08M-SCLCR/L2	0.600	1/2	0.461	6	0.312	0.984						
S10R-SCLCR/L2	0.770	5/8	0.586	8	0.406	1.260						
S08M-SCLCR/L3	0.600	1/2	0.461	6	0.312	0.984	CC□T32.5□	FTGA03508	-	-	TW15P	2
S10R-SCLCR/L3	0.770	5/8	0.586	8	0.406	1.280						
S12S-SCLCR/L3	0.930	3/4	0.671	10	0.500	1.496						
S16R-SCLCR/L3	1.200	1	0.921	8	0.640	1.772		FTGA03510			TW15P	3
S16R-SCLCR/L4	1.200	1	0.921	8	0.640	1.772	CC□T43□	FTGA0411F	-	-	TW15P	3
S20S-SCLCR/L4	1.470	1 1/4	1.171	10	0.765	1.969		FTGA0411F	SC42S	SHXN0610F	HW40L TW15P	
S24T-SCLCR/L4	1.760	1 1/2	1.382	12	0.890	2.362						
A05F-SCLCR/L2	0.415	5/16	0.293	3	0.219	0.551	CC□T21.5□	FTKA02555	-	-	TW07P	1
A06H-SCLCR/L2	0.480	3/8	0.355	4	0.250	0.551		FTKA02565	-	-	TW07P	
A08K-SCLCR/L2	0.600	1/2	0.480	5	0.312	0.984						
A08K-SCLCR/L3	0.600	1/2	0.480	5	0.312	0.984	CC□T32.5□	FTGA03508	-	-	TW15P	1
A10M-SCLCR/L3	0.770	5/8	0.605	6	0.406	1.280						
A12Q-SCLCR/L3	0.930	3/4	0.711	7	0.500	1.496						
A16R-SCLCR/L3	1.200	1	0.961	8	0.640	1.772		FTGA03510	-	-	TW15P	
A16R-SCLCR/L4	1.200	1	0.961	8	0.640	1.772	CC□T43□	FTGA0411F	-	-	TW15P	1
A20S-SCLCR/L4	1.470	1 1/4	1.211	10	0.765	1.969		FTGA0411F	SC42S	SHXN0610F	HW40L,TW15P	3

Carbide shank type

(inch)

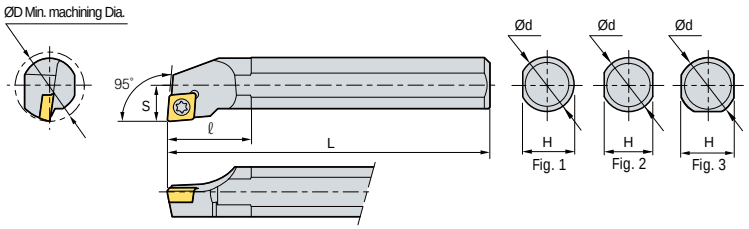
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
C025G-SCLCR/L1.2	0.197	5/32	0.150	3.5	0.098	-	CC□T1.21□	FTNA01633	TW06P	1
C03H-SCLCR/L1.2	0.260	3/16	0.168	4	0.126	-				
C04H-SCLCR/L1.5	0.293	1/4	0.230	4	0.156	-	CC□T1.51□	FTNA0238	TW06P	
C045H-SCLCR/L1.5	0.313	9/32	0.252	5	0.158	-				
C05K-SCLCR/L2	0.415	5/16	0.273	5	0.219	-	CC□T2.15□	FTKA02555	TW07P	2
C06K-SCLCR/L2	0.480	3/8	0.336	5	0.250	-				
C06M-SCLCR/L2	0.480	3/8	0.336	6	0.250	-				
C08M-SCLCR/L-2	0.551	1/2	0.461	6	0.312	-		FTKA02565	TW07P	
C08Q-SCLCR/L2	0.551	1/2	0.461	7	0.312	-				
C08M-SCLCR/L3	0.590	1/2	0.461	6	0.312	-	CC□T32.5□	FTGA03508	TW15P	
C08Q-SCLCR/L3	0.590	1/2	0.461	7	0.312	-				
C10R-SCLCR/L3	0.770	5/8	0.586	8	0.406	-				
C10S-SCLCR/L3	0.770	5/8	0.586	10	0.406	-				
C12R-SCLCR/L3	0.930	3/4	0.671	8	0.500	-				
C12S-SCLCR/L3	0.930	3/4	0.671	10	0.500	-				
C16T-SCLCR/L4	1.200	1	0.921	12	0.640	-	CC□T43□	FTGA0411F	TW15P	
E04H-SCLCR/L1.5	0.321	1/4	0.230	4	0.156	-	CC□T1.51□	FTNA0238	TW06P	1
E045K-SCLCR/L1.5	0.315	9/32	0.252	5	0.158	-				
E05K-SCLCR/L2	0.415	5/16	0.273	5	0.219	-	CC□T2.15□	FTKA02555	TW07P	2
E06K-SCLCR/L2	0.480	3/8	0.336	5	0.250	-				
E06M-SCLCR/L2	0.480	3/8	0.336	6	0.250	-				
E08M-SCLCR/L2	0.551	1/2	0.461	6	0.312	-		FTKA02565	TW07P	
E08Q-SCLCR/L2	0.551	1/2	0.461	7	0.312	-				
E08M-SCLCR/L3	0.590	1/2	0.461	6	0.312	-	CC□T32.5□	FTGA03508	TW15P	
E08Q-SCLCR/L3	0.590	1/2	0.461	7	0.312	-				
E10R-SCLCR/L3	0.770	5/8	0.586	8	0.406	-				
E10S-SCLCR/L3	0.770	5/8	0.586	10	0.406	-				
E12R-SCLCR/L3	0.930	3/4	0.671	8	0.500	-				
E12S-SCLCR/L3	0.930	3/4	0.671	10	0.500	-				
E16T-SCLCR/L4	1.200	1	0.921	12	0.640	-	CC□□T43□	FTGA0411F	TW15P	

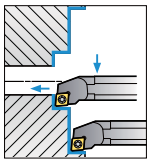
Applicable inserts **B73~B77, B103**

SCLPR/L



CP□T





95°

Steel shank type

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S06M-SCLPR/L2.5	0.480	3/8	0.336	6	0.250	-	CP□T2.51.5□	FTNA0305	TW09P	2
S08M-SCLPR/L2.5	0.600	1/2	0.461	6	0.312	0.591		FTNA0307	TW09P	
S10N-SCLPR/L3	0.770	5/8	0.586	7	0.406	0.591	CP□T32□	FTNA0408	TW15P	2
S10R-SCLPR/L3	0.770	5/8	0.586	8	0.406	0.591				
S12N-SCLPR/L3	0.930	3/4	0.671	7	0.500	0.787				
S12S-SCLPR/L3	0.930	3/4	0.671	10	0.500	0.787				3
A06H-SCLPR/L2.5	0.480	3/8	0.355	4	0.250	-	CP□R2.51.5□	FTNA0305	TW09P	1
A08K-SCLPR/L2.5	0.600	1/2	0.480	5	0.312	0.787		FTNA0307	TW09P	
A10M-SCLPR/L3	0.770	5/8	0.605	6	0.406	0.591	CP□T32□	FTNA0408	TW15P	1
A12Q-SCLPR/L3	0.930	3/4	0.711	7	0.500	0.787				3

Carbide shank type

(inch)

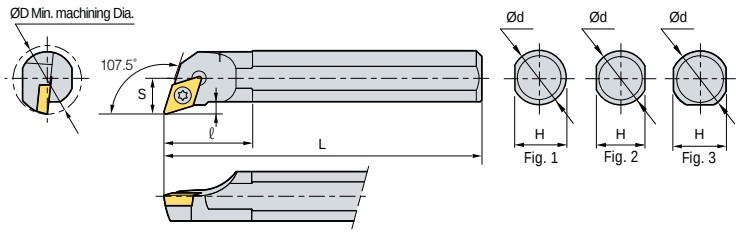
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
C60K-SCLPR/L2.5	0.480	3/8	0.336	5	0.250	14.5	CP□T2.51.5□	FTNA0305	TW09P	2
C06M-SCLPR/L2.5	0.480	3/8	0.336	6	0.250	14.5				
C08M-SCLPR/L2.5	0.590	1/2	0.461	6	0.312	14.7		FTNA0306	TW09P	
C08Q-SCLPR/L2.5	0.590	1/2	0.461	7	0.312	14.7				
C08M-SCLPR/L3	0.590	1/2	0.461	6	0.312	14.4	CP□T32□	FTNA0407	TW15P	
C08Q-SCLPR/L3	0.590	1/2	0.461	7	0.312	14.4				
C10R-SCLPR/L3	0.770	5/8	0.586	8	0.406	22.4				
C10S-SCLPR/L3	0.770	5/8	0.586	10	0.406	22.4				
C12R-SCLPR/L3	0.930	3/4	0.471	8	0.500	22.5		FTNA0408	TW15P	
C12S-SCLPR/L3	0.930	3/4	0.471	10	0.500	22.5				
E06K-SCLPR/L2.5	0.480	3/8	0.336	5	0.250	14.5	CP□T2.51.5□	FTNA0305	TW09P	2
E06M-SCLPR/L2.5	0.480	3/8	0.336	6	0.250	14.5				
E08M-SCLPR/L2.5	0.590	1/2	0.461	6	0.312	14.7		FTNA0306	TW09P	
E08Q-SCLPR/L2.5	0.590	1/2	0.461	7	0.312	14.7				
E08M-SCLPR/L3	0.590	1/2	0.461	6	0.312	14.4		FTNA0407	TW15P	
E08Q-SCLPR/L3	0.590	1/2	0.461	7	0.312	14.4				
E10R-SCLPR/L3	0.770	5/8	0.586	8	0.406	22.4	CP□T32□	FTNA0407	TW15P	
E10S-SCLPR/L3	0.770	5/8	0.586	10	0.406	22.4				
E12R-SCLPR/L3	0.930	3/4	0.471	8	0.500	22.5		FTNA0408	TW15P	
E12S-SCLPR/L3	0.930	3/4	0.471	10	0.500	22.5				

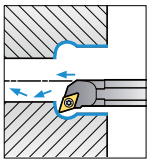
Applicable inserts **B78**

SDQCR/L



DC□T





107.5°

Steel shank type

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S06M-SDQCR/L2	0.600	3/8	0.336	6	0.375	0.787	DC□T21.5□	FTKA02555	TW07P	2
S08M-SDQCR/L2	0.730	1/2	0.461	6	0.437	0.866		FTKA02565	TW07P	
S10R-SDQCR/L2	0.850	5/8	0.586	8	0.500	1.063				
S10R-SDQCR/L3	0.850	5/8	0.586	8	0.500	1.260	DC□T32.5□	FTGA03508	TW15P	2
S12S-SDQCR/L3	0.980	3/4	0.671	10	0.562	1.260				
S16R-SDQCR/L3	1.300	1	0.921	8	0.640	1.260		FTGA03510	TW15P	3
A06H-SDQCR/L2	0.600	3/8	0.355	6	0.375	0.787	DC□T21.5□	FTKA02555	TW07P	1
A08K-SDQCR/L2	0.730	1/2	0.480	6	0.437	0.866		FTKA02565	TW07P	1
A10M-SDQCR/L3	0.850	5/8	0.605	8	0.500	1.063	DC□T32.5□	FTGA03508	TW15P	1
A12Q-SDQCR/L3	0.980	3/4	0.711	10	0.562	1.260				
A16R-SDQCR/L3	1.300	1	0.961	12	0.640	1.260		FTGA03510	TW15P	1

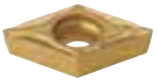
Carbide shank type

(inch)

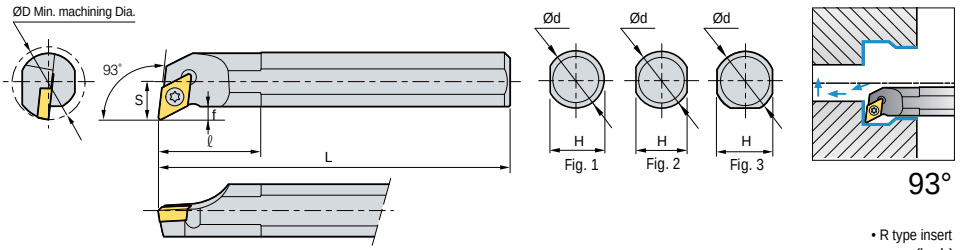
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
C05K-SDQCR/L2	0.393	5/16	0.273	5	0.219	-	DC□T2.15□□	FTKA02555	TW07P	2
C06K-SDQCR/L2	0.600	3/8	0.336	5	0.375	14		FTKA02565	TW07P	
C08M-SDQCR/L2	0.730	1/2	0.461	6	0.437	14				
C10R-SDQCR/L2	0.850	5/8	0.586	8	0.500	-				
C10R-SDQCR/L3	0.850	5/8	0.586	8	0.500	21.3	DC□T32.5□□	FTGA03508	TW15P	
C12R-SDQCR/L3	0.980	3/4	0.671	8	0.562	24				
C12S-SDQCR/L3	0.980	3/4	0.671	10	0.562	24				
E05K-SDQCR/L2	0.393	5/16	0.273	5	0.219	-	DC□T2.15□□	FTKA02555	TW07P	2
E06K-SDQCR/L2	0.600	3/8	0.336	5	0.375	14		FTKA02565	TW07P	
E08M-SDQCR/L2	0.730	1/2	0.461	6	0.437	14				
E10R-SDQCR/L2	0.850	5/8	0.586	8	0.500	-				
E10R-SDQCR/L3	0.850	5/8	0.586	8	0.500	21.3	DC□T32.5□□	FTGA03508	TW15P	
E12R-SDQCR/L3	0.980	3/4	0.671	8	0.562	24				
E12S-SDQCR/L3	0.980	3/4	0.671	10	0.562	24				

Applicable inserts **B79~B82, B103**

SDUCR/L



DC□T



Steel shank type

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S06M-SDUCR/L2	0.600	3/8	0.336	6	0.375	-	DC□T21.5□	FTKA02555	TW07P	2
S08M-SDUCR/L2	0.730	1/2	0.461	6	0.437	0.866		FTKA02565	TW07P	2
S10R-SDUCR/L2	0.850	5/8	0.586	8	0.500	1.063				
S10R-SDUCR/L3	0.850	5/8	0.586	8	0.500	1.063	DC□T32.5□	FTGA03508	TW15P	2
S12S-SDUCR/L3	0.980	3/4	0.671	10	0.562	1.575				
S16R-SDUCR/L3	1.300	1	0.921	8	0.640	1.811		FTGA03510	TW15P	3
S20S-SDUCR/L3	1.470	1 1/4	1.171	10	0.765	1.969				
A06H-SDUCR/L2	0.600	3/8	0.355	6	0.375	-	DC□T21.5□	FTKA02555	TW07P	1
A08K-SDUCR/L2	0.730	1/2	0.480	6	0.437	0.866		FTKA02565	TW07P	1
A10M-SDUCR/L2	0.850	5/8	0.605	8	0.500	1.063				
A12Q-SDUCR/L3	0.980	3/4	0.711	10	0.562	1.378	DC□T32.5□	FTGA03508	TW15P	1
A16R-SDUCR/L3	1.300	1	0.961	12	0.640	1.811		FTGA03510	TW15P	

Carbide shank type

(inch)

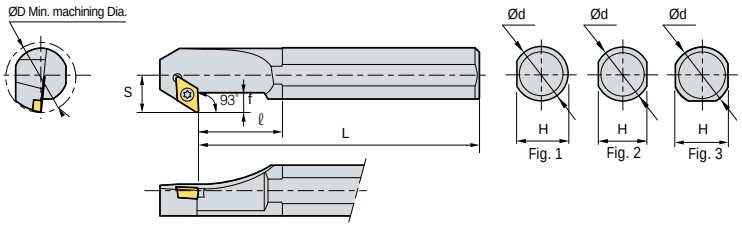
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
C06K-SDUCR/L2	0.600	3/8	0.336	5	0.375	9.8	DC□T21.5□□	FTKA02555	TW07P	2
C06M-SDUCR/L2	0.600	3/8	0.336	6	0.375	9.8		FTKA02565	TW07P	
C08M-SDUCR/L2	0.730	1/2	0.461	6	0.437	11				
C08Q-SDUCR/L2	0.730	1/2	0.461	7	0.437	11				
C10R-SDUCR/L2	0.850	5/8	0.586	8	0.500	-				
C10S-SDUCR/L2	0.850	5/8	0.586	10	0.500	-				
C10R-SDUCR/L3	0.850	5/8	0.586	8	0.500	-	DC□T32.5□	FTGA03508	TW15P	
C10S-SDUCR/L3	0.850	5/8	0.586	10	0.500	-				
C12R-SDUCR/L3	0.980	3/4	0.671	8	0.562	-				
C12S-SDUCR/L3	0.980	3/4	0.671	10	0.562	-				
C16T-SDUCR/L3	1.300	1	0.921	12	0.640	-		FTGA03510	TW15P	
E06K-SDUCR/L2	0.600	3/8	0.336	5	0.375	9.8	DC□T21.5□□	FTKA02555	TW07P	2
E06M-SDUCR/L2	0.600	3/8	0.336	6	0.375	9.8		FTKA02565	TW07P	
E08M-SDUCR/L2	0.730	1/2	0.461	6	0.437	11				
E08Q-SDUCR/L2	0.730	1/2	0.461	7	0.437	11				
E10R-SDUCR/L2	0.850	5/8	0.586	8	0.500	-				
E10S-SDUCR/L2	0.850	5/8	0.586	10	0.500	-				
E10R-SDUCR/L3	0.850	5/8	0.586	8	0.500	-	DC□T32.5□	FTGA03508	TW15P	
E10S-SDUCR/L3	0.850	5/8	0.586	10	0.500	-				
E12R-SDUCR/L3	0.980	3/4	0.671	8	0.562	-				
E12S-SDUCR/L3	0.980	3/4	0.671	10	0.562	-				
E16T-SDUCR/L3	1.300	1	0.921	12	0.640	-		FTGA03510	TW15P	

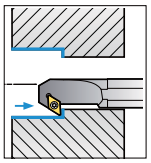
Applicable inserts **B79~B82, B104**

SDZCR/L



DC□T





• R type insert
(inch)

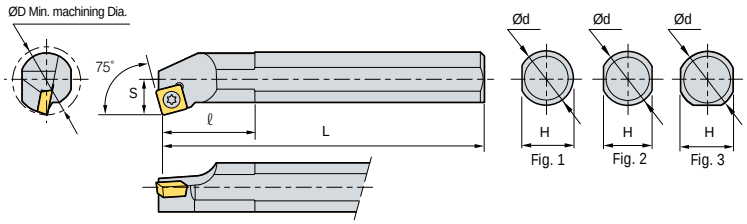
Designation	ØD	Ød	H	L	S	ℓ	f	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S10R-SDZCR/L2	0.850	5/8	0.586	8	0.500	0.787	0.157	DC□T21.5□	FTKA02565	-	-	TW07P	2
S12S-SDZCR/L2	0.980	3/4	0.671	10	0.562	0.984	0.177						
S16R-SDZCR/L3	1.200	1	0.921	8	0.640	1.181	0.272	DC□T32.5□	FTGA03510	-	-	TW15P	3
S20S-SDZCR/L3	1.470	1 1/4	1.171	10	0.765	1.535	0.331		FTGA03512	SD32S	SHXN0509F	TW15P, HW35L	
S24T-SDZCR/L3	1.760	1 1/2	1.382	12	0.890	1.850	0.370						
A16R-SDZCR/L3	1.200	1	0.961	8	0.640	1.181	0.177		FTGA03510	-	-	TW15P	1
A20S-SDZCR/L3	1.470	1 1/4	1.211	10	0.765	1.535	0.236		FTGA03512	SD32S	SHXN0509F	TW15P, HW35L	3

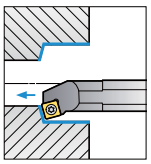
Applicable inserts **B79~B82, B104**

SSKCR/L



SC□T



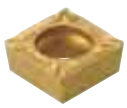


• R type insert
(inch)

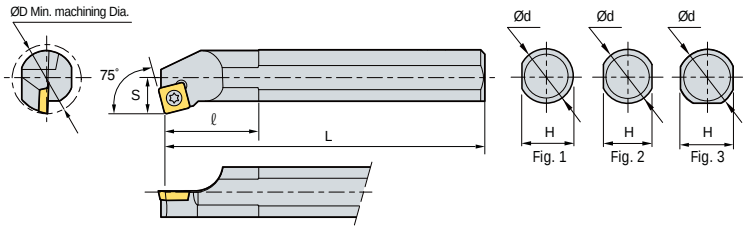
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S08M-SSKCR/L3	0.600	1/2	0.461	6	0.312	1.024	SC□T32.5□	FTGA03507	-	-	TW15P	2
S10R-SSKCR/L3	0.770	5/8	5.860	8	0.406	1.260		FTGA03508	-	-	TW15P	
S12S-SSKCR/L3	0.930	3/4	0.671	10	0.500	1.339						
S16R-SSKCR/L4	1.200	1	0.921	8	0.640	1.417	SC□T43□□	FTGA0411F	-	-	TW15P	3
S20S-SSKCR/L4	1.470	1 1/4	1.171	10	0.765	1.693		FTGA0411F	SS42S	SHXN0610F	TW15P, HW40L	
A08K-SSKCR/L3	0.600	1/2	0.480	5	0.312	1.024	SC□T32.5□	FTGA03507	-	-	TW15P	1
A10M-SSKCR/L3	0.770	5/8	0.605	6	0.406	1.260		FTGA03508	-	-	TW15P	
A12Q-SSKCR/L3	0.930	3/4	0.711	7	0.500	1.339						
A16R-SSKCR/L4	1.200	1	0.961	8	0.640	1.417	SC□T43□	FTGA0411F	-	-	TW15P	
A20S-SSKCR/L4	1.470	1 1/4	1.211	10	0.765	1.693		FTGA0411F	SS42S	SFXN0610F	TW15P, HW40L	3

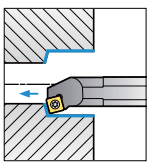
Applicable inserts **B84, B106**

SSKPR/L



SP□T





• R type insert
(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S08M-SSKPR/L3	0.600	1/2	0.461	6	0.312	0.709	SP□T32□	FTNA0307	TW09P	2
S10N-SSKPR/L3	0.770	5/8	0.586	7	0.406	1.181				
S10R-SSKPR/L3	0.770	5/8	0.586	8	0.406	1.260				
S12N-SSKPR/L3	0.930	3/4	0.671	7	0.500	1.280				
S12S-SSKPR/L3	0.930	3/4	0.671	10	0.500	1.378				
A08K-SSKPR/L3	0.600	1/2	0.480	5	0.312	0.827	SP□T32□	FTNA0307	TW09P	1
A10M-SSKPR/L3	0.770	5/8	0.605	6	0.408	1.181				
A12Q-SSKPR/L3	0.930	3/4	0.711	7	0.500	1.260				

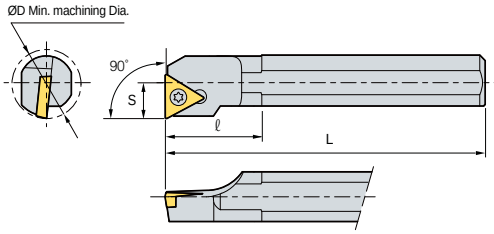
Applicable inserts **B85~B86**

• Use left handed insert for right handed holder

STFCR/L



TC□T



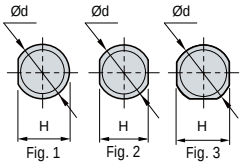
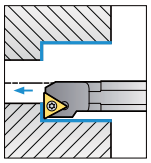


Fig. 1 Fig. 2 Fig. 3



90°

Steel shank type

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S06M-STFCR/L1.8	0.480	3/8	0.336	6	0.250	0.906	TC□T81.5□	FTKA02206	-	-	TW06P	2
S08M-STFCR/L1.8	0.600	1/2	0.461	6	0.312	1.102						
S08M-STFCR/L2	0.600	1/2	0.461	6	0.312	1.181	TC□T21.5□	FTKA02565	-	-	TW07P	2
S10R-STFCR/L2	0.770	5/8	0.586	8	0.406	1.378						
S12S-STFCR/L2	0.930	3/4	0.671	10	0.500	1.417						
S12S-STFCR/L3	0.930	3/4	0.671	10	0.500	1.575	TC□T32.5□	FTGA03510	-	-	TW15P	2
S16R-STFCR/L3	1.200	1	0.921	8	0.640	1.929						3
S20S-STFCR/L3	1.470	1 1/4	1.171	10	0.765	1.969	TC□T32.5□	FTGA03512	ST32S	SHXN0509F	TW15P, HW35L	3
S24T-STFCR/L3	1.760	1 1/2	1.382	12	0.890	2.362						
A06H-STFCR/L1.8	0.480	3/8	0.355	4	0.250	0.906	TC□T1.81.5□	FTKA02206	-	-	TW06P	1
A08K-STFCR/L1.8	0.600	1/2	0.480	5	0.312	1.102						
A08K-STFCR/L2	0.600	1/2	0.480	5	0.312	1.181						
A10M-STFCR/L2	0.770	5/8	0.605	6	0.406	1.378	TC□T21.5□	FTKA02565	-	-	TW07P	1
A12Q-STFCR/L2	0.930	3/4	0.711	7	0.500	1.417						
A16R-STFCR/L3	1.200	1	0.961	8	0.640	1.929	TC□T32.5□	FTKA03510	-	-	TW15P	1
A20S-STFCR/L3	1.470	1 1/4	1.211	10	0.765	1.969		FTGA03512	ST32S	SHXN0509F	TW15P, HW35L	3

Carbide shank type

(inch)

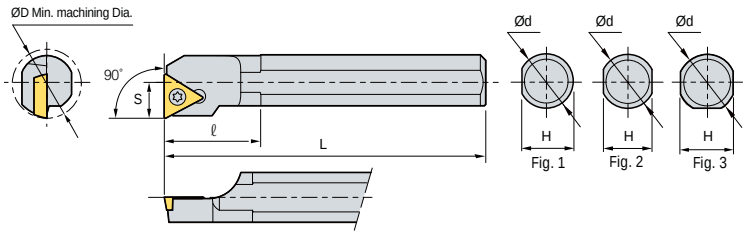
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
C05K-STFCR/L1.8	0.415	5/16	0.273	5	0.219	-	TC□T1.81.5□□	FTKA02206	TW06P	2
C06K-STFCR/L1.8	0.480	3/8	0.336	5	0.250	14				
C06K-STFCR/L2	0.480	3/8	0.336	5	0.250	12.5	TC□T21.5□□	FTKA02555	TW07P	
C08M-STFCR/L2	0.600	1/2	0.461	6	0.312	-				
C10R-STFCR/L2	0.770	5/8	0.586	8	0.406	-		FTKA02565	TW07P	
C12R-STFCR/L2	0.930	3/4	0.671	8	0.500	23				
C12S-STFCR/L2	0.930	3/4	0.671	10	0.500	23				
C12R-STFCR/L3	0.930	3/4	0.671	8	0.500	-	TC□T32.5□□	FTGA03510	TW15P	
C12S-STFCR/L3	0.930	3/4	0.671	10	0.500	-				
E05K-STFCR/L1.8	0.415	5/16	0.273	5	0.219	-	TC□T1.81.5□□	FTKA02206	TW06P	
E06K-STFCR/L1.8	0.480	3/8	0.336	5	0.250	14				
E06K-STFCR/L2	0.480	3/8	0.336	5	0.250	12.5	TC□T21.5□□	FTKA02555	TW07P	2
E08M-STFCR/L2	0.600	1/2	0.461	6	0.312	-				
E10R-STFCR/L2	0.770	5/8	0.586	8	0.406	-		FTKA02565	TW07P	
E12R-STFCR/L2	0.930	3/4	0.671	8	0.500	23				
E12S-STFCR/L2	0.930	3/4	0.671	10	0.500	23				
E12R-STFCR/L3	0.930	3/4	0.671	8	0.500	-	TC□T32.5□□	FTGA03510	TW15P	
E12S-STFCR/L3	0.930	3/4	0.671	10	0.500	-				

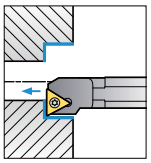
Applicable inserts **B88~B89, B107**

STFPR/L



TP□T





90°

Steel shank type

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S06M-STFPR/L2	0.480	3/8	0.336	6	0.250	-	TP□T22□	FTNA0306	TW09P	2
S08M-STFPR/L2	0.600	1/2	0.461	6	0.312	0.394		FTNA0307	TW09P	
S10N-STFPR/L2	0.770	5/8	0.586	7	0.406	0.474				
S10R-STFPR/L2	0.770	5/8	0.586	8	0.406	0.474				
S12N-STFPR/L3	0.930	3/4	0.671	7	0.500	0.551	TP□T33□	FTNA0408	TW15P	2
S12S-STFPR/L3	0.930	1/4	0.671	10	0.500	0.551				
A06H-STFPR/L2	0.480	3/8	0.355	4	0.250	-	TP□T22□	FTNA0306	TW09P	1
A08K-STFPR/L2	0.600	1/2	0.480	5	0.312	0.394		FTNA0307	TW09P	1
A10M-STFPR/L2	0.770	5/8	0.605	6	0.406	0.474				
A12Q-STFPR/L3	0.930	3/4	0.711	7	0.500	0.551	TP□T33□	FTNA0408	TW15P	1

Carbide shank type

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
C05K-STFPR/L1.5	0.393	5/16	0.273	5	0.219	13.7	TP□T1.51.5□□	FTNA02205	TW06P	2
C06K-STFPR/L2	0.480	3/8	0.336	5	0.250	14	TP□T22□□	FTNA0306	TW09P	
C06M-STFPR/L2	0.480	3/8	0.336	6	0.250	14				
C08M-STFPR/L2	0.590	1/2	0.461	6	0.312	-		FTNA0307	TW09P	
C08Q-STFPR/L2	0.590	1/2	0.461	7	0.312	-				
C10R-STFPR/L2	0.850	5/8	0.586	8	0.500	-				
C10S-STFPR/L2	0.850	5/8	0.586	10	0.500	-				
C12R-STFPR/L2	0.930	3/4	0.671	8	0.500	-				
C12S-STFPR/L2	0.930	3/4	0.671	10	0.500	-				
C12R-STFPR/L3	0.930	3/4	0.671	8	0.500	-	TP□T33□□	FTNA0408	TW15P	
C12S-STFPR/L3	0.930	3/4	0.671	10	0.500	-				
C16T-STFPR/L3	1.300	1	0.921	12	0.640	23.5				
E05K-STFPR/L1.5	0.393	5/16	0.273	5	0.219	13.7	TP□T1.51.5□□	FTNA02205	TW06P	2
E06K-STFPR/L2	0.480	3/8	0.336	5	0.250	14	TP□T22□□	FTNA0306	TW09P	
E06M-STFPR/L2	0.480	3/8	0.336	6	0.250	14				
E08M-STFPR/L2	0.590	1/2	0.461	6	0.312	-		FTNA0307	TW09P	
E08Q-STFPR/L2	0.590	1/2	0.461	7	0.312	-				
E10R-STFPR/L2	0.850	5/8	0.586	8	0.500	-				
E10S-STFPR/L2	0.850	5/8	0.586	10	0.500	-				
E12R-STFPR/L2	0.930	3/4	0.671	8	0.500	-				
E12S-STFPR/L2	0.930	3/4	0.671	10	0.500	-				
E12R-STFPR/L3	0.930	3/4	0.671	8	0.500	-	TP□T33□□	FTNA0408	TW15P	
E12S-STFPR/L3	0.930	3/4	0.671	10	0.500	-				
E16T-STFPR/L3	1.300	1	0.921	12	0.640	23.5				

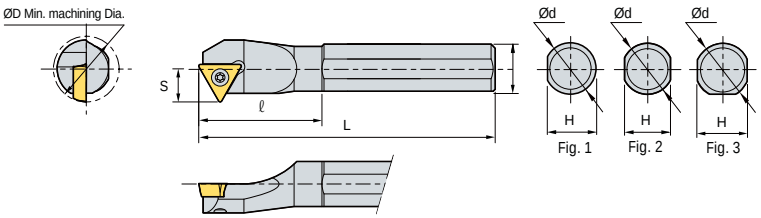
Applicable inserts **B90~B93**

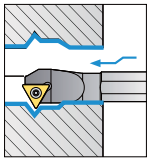
• Use left handed insert for right handed holder

STWPR/L



TP□□





60°

• R type insert
(inch)

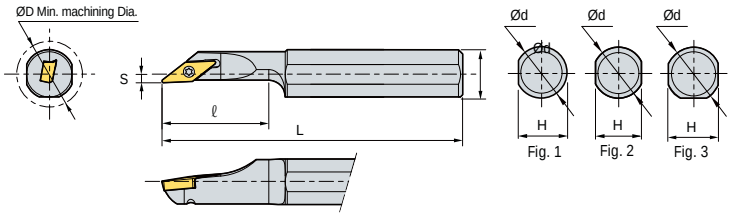
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S06M-STWPR/L2	0.480	3/8	0.336	6	0.250	0.905	TPGH21.5□	FTNA0305	TW09P	2
S08M-STWPR/L2	0.600	1/2	0.461	6	0.312	1.181	TPGH22□ TPMT22□	FTNA0306	TW09P	
S10R-STWPR/L2	0.770	5/8	0.586	7	0.406	1.378				
S12R-STWPR/L2	0.930	3/4	0.748	8	0.492	1.575				

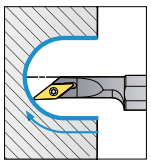
Applicable inserts **B90~B93**

SVJCR/L



VC□□





142°

• R type insert
(inch)

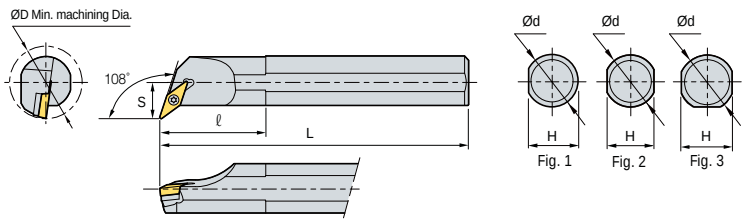
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S8M-SVJCR/L1.5	0.600	1/2	0.461	6	0.079	1.024	VCMT1.5□□	FTNA0204	TW06P	2
S10Q-SVJCR/L1.5	0.770	5/8	0.586	7	0.079	1.417				

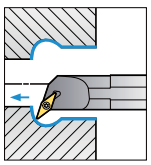
Applicable inserts **B97~B99, B109**

SVQBR/L



VB□T





108°

• R type insert
(inch)

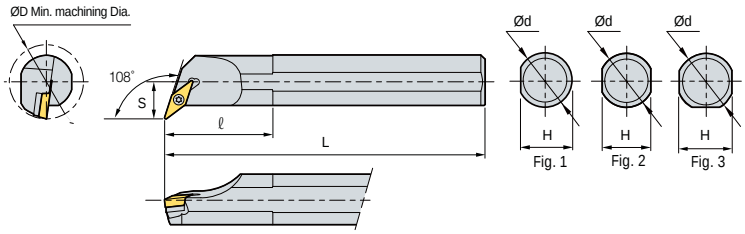
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S20S-SVQBR/L3	1.705	1 1/4	1.171	10	1.000	0.331	VB□T33□	FTGA03512	SV32S	SHXN0509F	TW15P HW35L	3
S24T-SVQBR/L3	2.000	1 1/2	1.382	12	1.125	0.370						
A20S-SVQBR/L3	1.705	1 1/4	1.211	10	1.000	0.331						

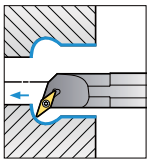
Applicable inserts **B94~B96, B108**

SVQCR/L



VC□T





108°

• R type insert
(inch)

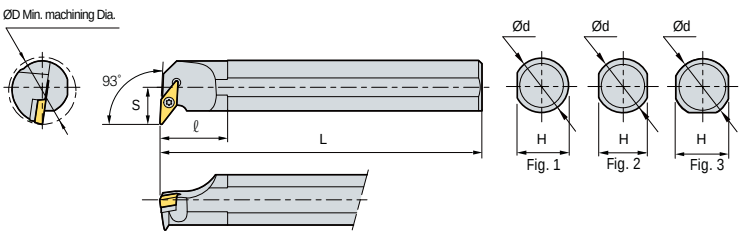
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S10R-SVQCR/L2	0.850	5/8	0.586	8	0.500	1.378	VC□T22□	FTKA02565	-	-	TW07P	2
S12S-SVQCR/L2	0.980	3/4	0.671	10	0.562	1.496						
S16R-SVQCR/L2	1.300	1	0.921	8	0.640	1.654						3
S12S-SVQCR/L2.5	0.980	3/4	0.671	10	0.562	1.654	VC□T2.52□	FTKA0307	-	-	TW07P	2
S16R-SVQCR/L2.5	1.300	1	0.921	8	0.640	1.772						3
S16R-SVQCR/L3	1.300	1	0.921	8	0.640	1.969	VC□T33□	FTGA03510	-	-	TW15P	3
S20S-SVQCR/L3	1.705	1 1/4	1.171	10	1.000	2.205		FTGA03512	SV32S	SHXN0509F	TW15P HW35L	
S24T-SVQCR/L3	2.000	1 1/2	1.382	12	1.125	2.520						

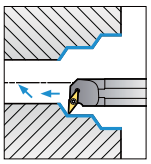
Applicable inserts **B97~B99, B109**

SVUBR/L



VB□T





93°

• R type insert
(inch)

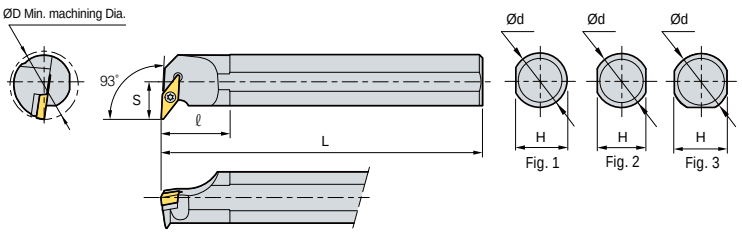
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S20S-SVUBR/L3	1.705	1 1/4	1.171	10	1.000	1.929	VB□T33□	FTGA03512	SV32S	SHXN0509F	TW15P HW35L	3
S24T-SVUBR/L3	2.000	1 1/2	1.382	12	1.125	2.205						
A20S-SVUBR/L3	1.705	1 1/4	1.211	10	1.000	1.929						

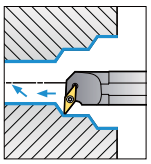
Applicable inserts **B94~B96, B108**

SVUCR/L



VC□T





93°

• R type insert
(inch)

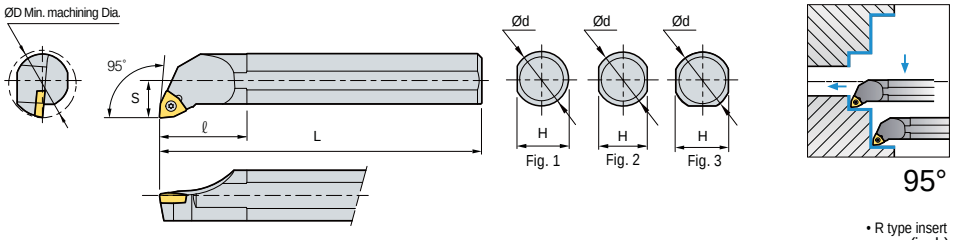
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S10R-SVUCR/L2	0.850	5/8	0.586	8	0.500	1.181	VC□T22□	FTKA02565	-	-	TW07P	2
S12S-SVUCR/L2	0.980	3/5	0.671	10	0.562	1.299						
S16T-SVUCR/L2	1.300	1	0.921	12	0.640	1.496						3
S12S-SVUCR/L2.5	0.980	3/4	0.671	10	0.562	1.378	VC□T2.52□	FTKA0307	-	-	TW09P	2
S16R-SVUCR/L2.5	1.300	1	0.921	8	0.640	1.575						3
S16R-SVUCR/L3	1.300	1	0.921	8	0.640	1.969	VC□T33□	FTGA03510	-	-	TW15P	3
S20S-SVUCR/L3	1.705	1 1/4	1.171	10	1.000	2.205		FTGA03512	SV32S	SHXN0509F	TW15P HW35L	
S24T-SVUCR/L3	2.000	1 1/2	1.382	12	1.125	2.520						

Applicable inserts **B97~B99, B109**

SWLCR/L



WC□T

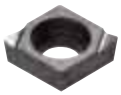


• R type insert

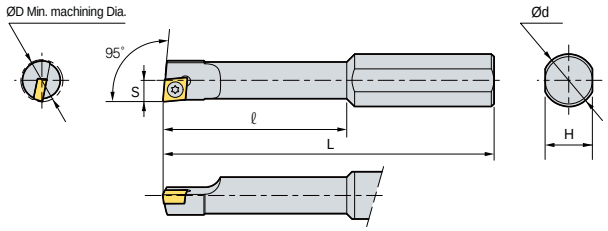
(inch)

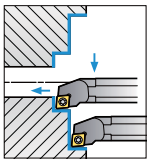
Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S16R-SWLCR/L4	1.200	1	0.921	8	0.640	1.811	WC□T43□	FTGA0411F	TW15P	3
S20S-SWLCR/L4	1.470	1 1/4	1.171	10	0.765	2.008				
A16R-SWLCR/L4	1.200	1	0.961	8	0.640	1.811	WC□T43□	FTGA0411F	TW15P	1
A20S-SWLCR/L4	1.470	1 1/4	1.211	10	0.765	2.008				3

SCLCR/L



CCET





95°

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench
S06H-SCLCR/L1202	0.219	3/8	0.336	4	0.098	0.984	CCET1.21□□	FTNA01633	TW06P
S06H-SCLCR/L1203	0.250	3/8	0.336	4	0.118	0.984			
S06J-SCLCR/L1504	0.293	3/8	0.336	4	0.138	1.181	CCET1.51□□	FTNA0238	TW06P
S06J-SCLCR/L1505	0.313	3/8	0.336	4	0.157	1.181			

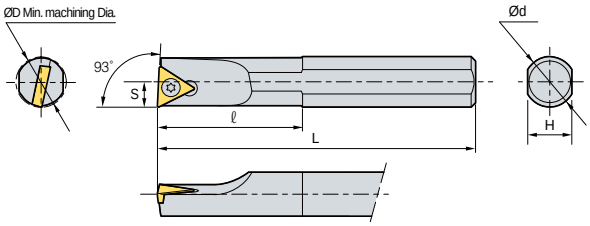
Applicable inserts **B73 ~B77, B103**

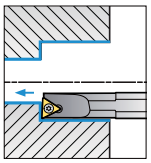
• Use left handed insert for right handed holder

STUBR/L



TB□□





93°

• R type insert

(inch)

Steel shank type

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench
S05K-STUBR/L1.2	0.415	5/16	0.273	5	0.219	1.181	TB□□1.21□R/L	FTNA0204	TW06P
A05F-STUBR/L1.2	0.415	5/16	0.293	3	0.219	1.181			

Carbide shank type

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench
C05K-STUBR/L1.2	0.393	5/16	0.273	5	0.219	-	TB□T1.21□	FTNA0204	TW06P
C06K-STUBR/L1.2	0.480	3/8	0.336	5	0.250	-			
E05K-STUBR/L1.2	0.393	5/19	0.273	5	0.219	-	TB□T1.21□	FTNA0204	TW06P
E06K-STUBR/L1.2	0.480	3/8	0.336	5	0.250	-			

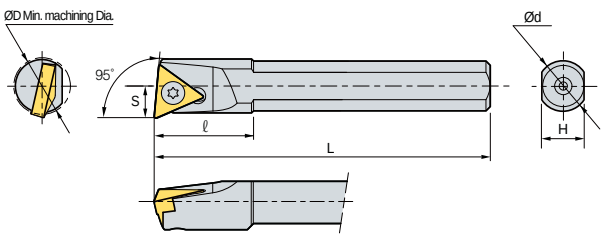
Applicable inserts **B87**

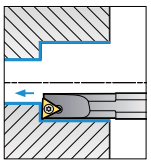
• Use left handed insert for right handed holder

STLBR/L



TB□□





95°

• R type insert

(inch)

Steel shank type

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench
S06H-STLBR/L1.2	0.315	3/8	0.197	4	0.150	0.472	TB□□1.21	FTNA0204	TW06P

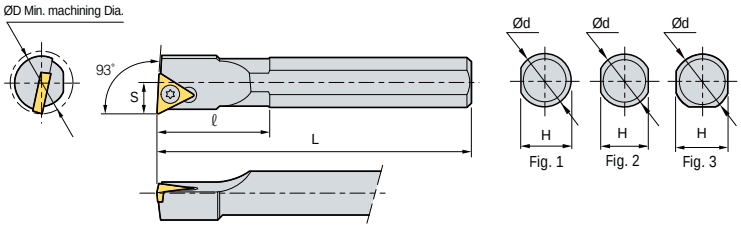
Applicable inserts **B87**

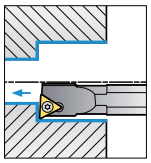
• Use left handed insert for right handed holder

STUPR/L



TP□□





93°

Steel shank type

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
S05K-STUPR/L1.5	0.415	5/16	0.273	5	0.219	0.709	TP□□1.51.5□R/L	FTNA02205	TW06P	2
A05F-STUPR/L1.5	0.415	5/16	0.293	3	0.219	0.709				

Carbide shank type

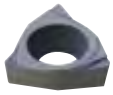
(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig.
C05K-STUPR/L1.5	0.415	5/16	0.273	5	0.219	-	TP□T1.51.5□	FTNA02205	TW06P	2
C06K-STUPR/L2	0.480	3/8	0.336	5	0.250	-	TP□T22□	FTNA0306	TW09P	
C06M-STUPR/L2	0.480	3/8	0.336	6	0.250	-		FTNA0305	TW09P	
C08M-STUPR/L2	0.600	1/2	0.461	6	0.312	-		FTNA0307	TW09P	
C08Q-STUPR/L2	0.600	1/2	0.461	7	0.312	-				
C10R-STUPR/L2	0.850	5/8	0.586	8	0.500	-				
C10S-STUPR/L2	0.850	5/8	0.586	10	0.500	-				
C12R-STUPR/L2	0.930	3/4	0.671	8	0.500	-				
C12S-STUPR/L2	0.930	3/4	0.671	10	0.500	-				
C12R-STUPR/L3	0.930	3/4	0.671	8	0.500	-	TP□T33□	FTNA0408	TW15P	
C12S-STUPR/L3	0.930	3/4	0.671	10	0.500	-				
C16T-STUPR/L3	1.300	1	0.921	12	0.640	-				
E05K-STUPR/L1.5	0.415	5/16	0.273	5	0.219	-	TP□T1.51.5□	FTNA02205	TW06P	2
E06K-STUPR/L2	0.480	3/8	0.336	5	0.250	-	TP□T22□	FTNA0306	TW09P	
E06M-STUPR/L2	0.480	3/8	0.336	6	0.250	-		FTNA0305	TW09P	
E08M-STUPR/L2	0.600	1/2	0.461	6	0.312	-		FTNA0307	TW09P	
E08Q-STUPR/L2	0.600	1/2	0.461	7	0.312	-				
E10R-STUPR/L2	0.850	5/8	0.586	8	0.500	-				
E10S-STUPR/L2	0.850	5/8	0.586	10	0.500	-				
E12R-STUPR/L2	0.930	3/4	0.671	8	0.500	-				
E12S-STUPR/L2	0.930	3/4	0.671	10	0.500	-				
E12R-STUPR/L3	0.930	3/4	0.671	8	0.500	-	TP□T33□	FTNA0408	TW15P	
E12S-STUPR/L3	0.930	3/4	0.671	10	0.500	-				
E16T-STUPR/L3	1.300	1	0.921	12	0.640	-				

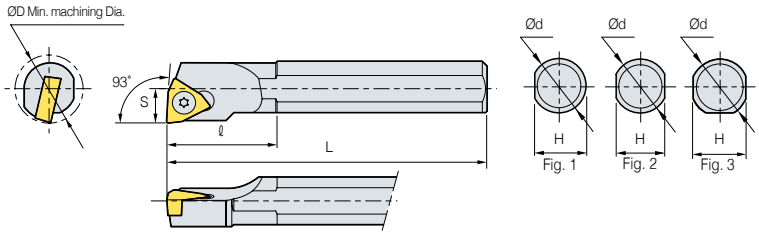
Applicable inserts **B90~B93**

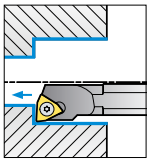
• Use left handed insert for right handed holder

SWUBR/L



WB□T





93°

Steel shank type

• R type insert

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig
S03H-SWUBR/L1.2	0.260	3/16	0.177	4	0.126	-	WBGT1.21□R/L	FTNA0203	TW06P	2
S05K-SWUBR/L1.2	0.415	5/16	0.273	5	0.219	1.181		FTNA02033		
S05K-SWUBR/L1.5	0.415	5/16	0.273	5	0.219	0.709	WBGT1.51.5□R/L	FTNA02205	TW06P	
A05F-SWUBR/L1.2	0.415	5/16	0.273	3	0.219	1.181	WBGT1.21□R/L	FTNA0203	TW06P	
A05F-SWUBR/L1.5	0.415	5/16	0.273	3	0.219	0.630	WBGT1.51.5□R/L	FTNA02205	TW06P	

Carbide shank type

(inch)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench	Fig
C03H-SWUBR/L1.2	0.260	3/16	0.173	4	0.126	-	WB□T1.21□	FTNA0203	TW06P	1
C04H-SWUBR/L1.2	0.321	1/4	0.213	4	0.156	-				
C05K-SWUBR/L1.2	0.415	5/16	0.273	5	0.219	-		FTNA02033	TW06P	2
C05K-SWUBR/L1.5	0.415	5/16	0.273	5	0.219	-	WB□T1.51.5□	FTNA02205	TW06P	
E04H-SWUBR/L1.2	0.321	1/4	0.213	4	0.156	-	WB□T1.21□	FTNA0203	TW06P	1
E05K-SWUBR/L1.2	0.415	5/16	0.273	5	0.219	-		FTNA02033	TW06P	2
E05K-SWUBR/L1.5	0.415	5/16	0.273	5	0.219	-	WB□T1.51.5□	FTNA02205	TW06P	

Applicable inserts **B101**

• Use left handed insert for right handed holder

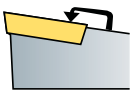
※ **See page B163 for applicable sleeves**

S T F C R 12 C A - 16

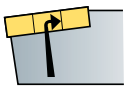
1	2	3	4	5	6	7	8	9
Method of Mounting Insert	Insert Shape	Holder Style	Relief Angle of Insert	Hand	Height of Cutting Edge	Cartridge Code	Type of Cartridge	Length of Cutting Edge

1 Method of Mounting Insert

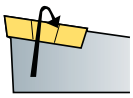
S T F C R 12 C A - 16



Top Clamping — C



Hole clamping — P



Screw on — S

2 Insert Shape

S T F C R 12 C A - 16



C



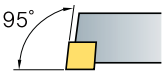
S



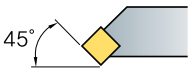
T

3 Holder Style

S T F C R 12 C A - 16



L



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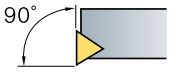

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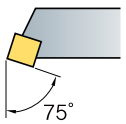

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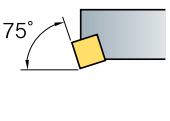

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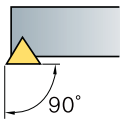

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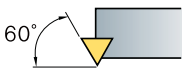

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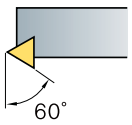
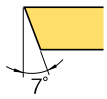


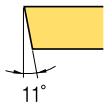
T

4 Relief Angle of Insert

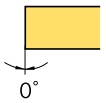
S T F C R 12 C A - 16



C



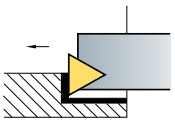
P

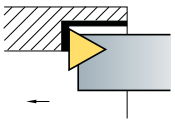


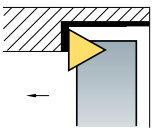
N

5 Hand

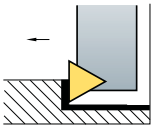
S T F C R 12 C A - 16







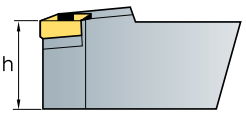
R



L

6 Height of Cutting Edge

S T F C R 12 C A - 16



7 Cartrige Code

S T F C R 12 C A - 16

C (Cartridge)

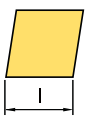
8 Type of Cartridge

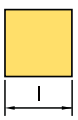
S T F C R 12 C A - 16

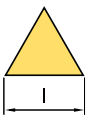
A (ISO5611)

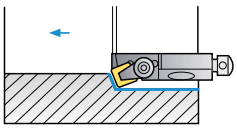
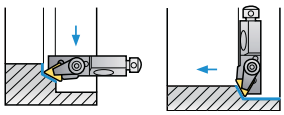
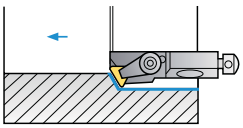
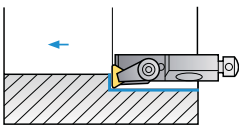
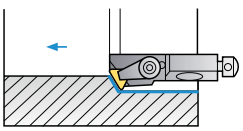
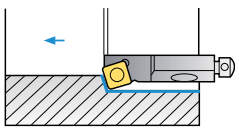
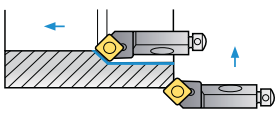
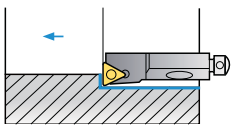
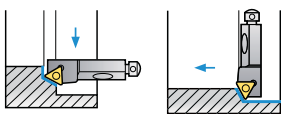
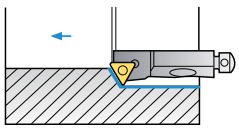
9 Length of Cutting Edge

S T F C R 12 C A - 16

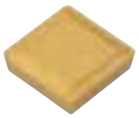




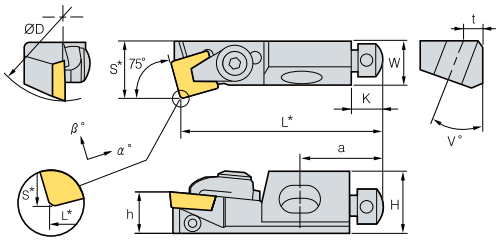


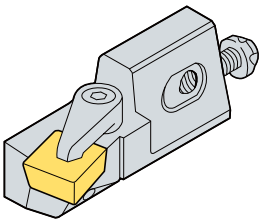
	Cutting Shape		Turning	Copying	Facing	Chamfering	Applicable inserts	Page
Clamp on System	CSKPR/L	 10CA-09 12CA-12	●				SP□R0903□□ SP□R1203□□	B242
	CTTPR/L	 10CA-11 12CA-16	●				TP□R1103□□ TP□R1603□□	B243
	CTWPR/L	 10CA-11 12CA-16	●				TP□R1103□□ TP□R1603□□	B244
	CTFPR/L	 10CA-11 12CA-16	●		●		TP□R1103□□ TP□R1603□□	B242
	CTSPR/L	 10CA-11 12CA-16	●				TP□R1103□□ TP□R1603□□	B243
Screw on System	SSKCR/L	 10CA-09 12CA-12	●				SC□T09T3□□ SC□T1204□□	B244
	SSSCR/L	 10CA-09 12CA-12	●			●	SC□T09T3□□ SC□T1204□□	B244
	STFCR/L	 10CA-11 12CA-16	●		●		TC□T1102□□ TC□T16T3□□	B245
	STTCR/L	 10CA-11 12CA-16	●		●		TC□T1102□□ TC□T16T3□□	B245
	STWCR/L	 10CA-11 12CA-16	●				TC□T1102□□ TC□T16T3□□	B245

CSKPR/L



SP□R





• R type insert

(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
CSKPR/L	10CA-09	40	15	11	50	14	10	8	6	0	20	5	20	SP□R0903□□
	12CA-12	50	20	15	55	20	12	8	6	0	20	6	20	SP□R1203□□

Applicable inserts **B76~B77**

· a base Insert: r = 0.8 D = ØD Min. machining Dia.

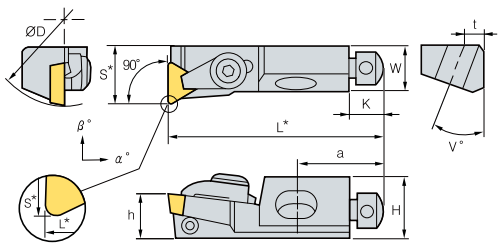
Parts		Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CSKPR/L	10CA-09	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-12	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

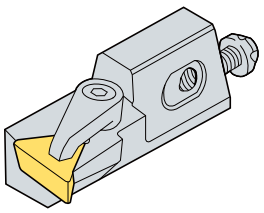
M This is metric size. We can also provide in inch type

CTFPR/L



TP□R





• R type insert

(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
CTFPR/L	10CA-11	40	15	11	50	14	10	8	6	0	20	5	20	TP□R1103□□
	12CA-16	50	20	15	55	20	12	8	6	0	20	6	20	TP□R1603□□

Applicable inserts **B81~B83**

· a base Insert: r = 0.4 (l =11) r = 0.8 (l = 16) D = ØD Min. machining Dia.

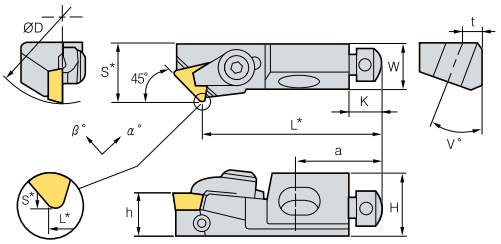
Parts		Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CTFPR/L	10CA-11	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW25L	HW20L
	12CA-16	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW30L	HW20L

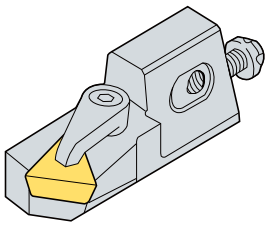
M This is metric size. We can also provide in inch type

CTSPR/L



TP□R





• R type insert
(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
CTSPR/L	10CA-11	40	15	11	44	14	10	8	4	0	20	5	20	TP□R1103□□
	12CA-16	50	20	15	47	20	12	8	5	0	20	6	20	TP□R1603□□

Applicable inserts **B81~B83**

· a base Insert: r = 0.4 (l =11) r = 0.8 (l = 16) D = ØD Min. machining Dia.

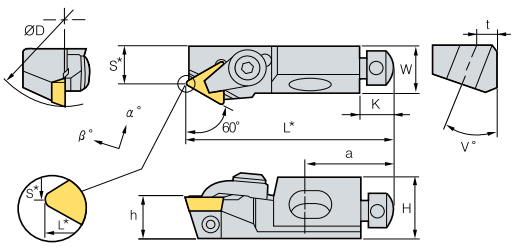
Parts		Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CTSPR/L	10CA-11	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW25L	HW20L
	12CA-16	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW30L	HW20L

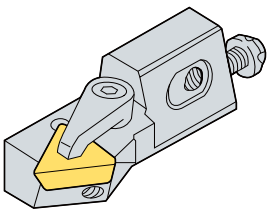
M This is metric size. We can also provide in inch type

CTTPR/L



TP□R





• R type insert
(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
CTTPR/L	10CA-11	40	15	11	50	9	10	8	5	0	20	5	20	TP□R1103□□
	12CA-16	50	20	15	55	20	12	8	5	0	20	6	20	TP□R1603□□

Applicable inserts **B81~B83**

· a base Insert: r = 0.8 D = ØD Min. machining Dia.

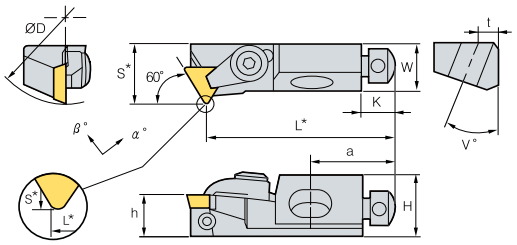
Parts		Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CTTPR/L	10CA-11	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW25L	HW20L
	12CA-16	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW30L	HW20L

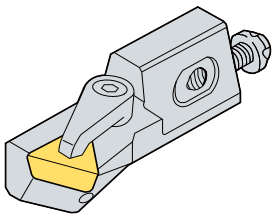
M This is metric size. We can also provide in inch type

CTWPR/L



TP□R





• R type insert

(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
CTWPR/L	10CA-11	40	15	11	44	14	10	8	5	0	20	5	20	TP□R1103□□
	12CA-16	50	20	15	47	20	12	8	5	0	20	6	20	TP□R1603□□

Applicable inserts **B81~B83** · a base Insert: r = 0.8 D = ØD Min. machining Dia.

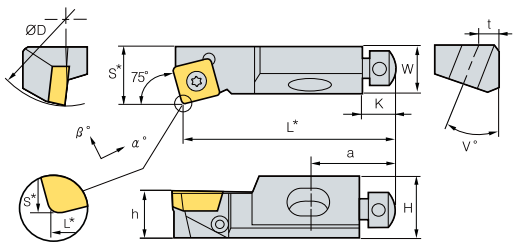
Parts		Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CTWPR/L	10CA-11	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW25L	HW20L
	12CA-16	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW30L	HW20L

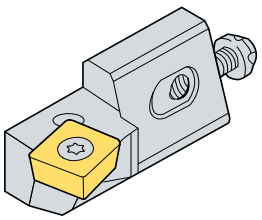
M This is metric size. We can also provide in inch type

SSKCR/L



SC□□





• R type insert

(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
SSKCR/L	10CA-09	40	15	11	50	14	10	8	0	-4	20	5	20	SC□□09T3□□
	12CA-12	50	20	15	55	20	12	8	0	-4	20	6	20	SC□□1204□□

Applicable inserts **B74~B75, B94** · a base Insert: r = 0.8 D = ØD Min. machining Dia.

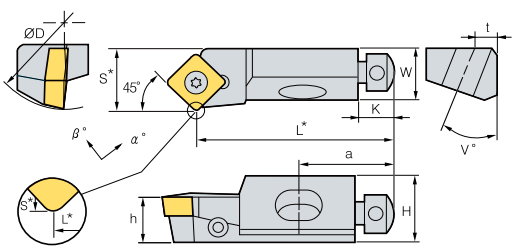
Parts		Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
SSKCR/L	10CA-09	FTGA03508	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-12	FTGA0411F	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

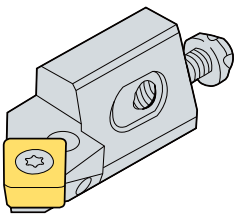
M This is metric size. We can also provide in inch type

SSSCR/L



SC□□





• R type insert

(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
SSSCR/L	10CA-09	40	15	11	44	14	10	8	-5	0	20	5	20	SC□□09T3□□
	12CA-12	50	20	15	47	20	12	8	-5	0	20	6	20	SC□□1204□□

Applicable inserts **B74~B75, B94** · a base Insert: r = 0.8 D = ØD Min. machining Dia.

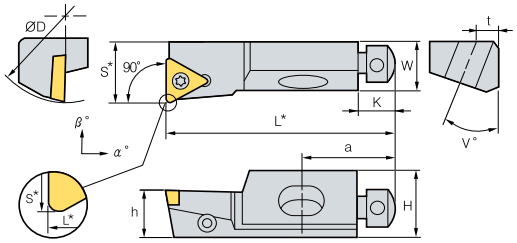
Parts		Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
SSSCR/L	10CA-09	FTGA03508	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-12	FTGA0411F	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

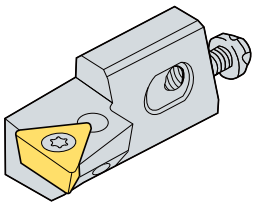
M This is metric size. We can also provide in inch type

STFCR/L



TC□□





• R type insert

(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
STFCR/L	10CA-11	40	15	11	50	14	10	8	0	-3	20	5	20	TC□□1102□□
	12CA-16	50	20	15	55	20	12	8	0	-3	20	6	20	TC□□16T3□□

Applicable inserts **B79~B80, B95** · a base Insert: r = 0.4 (l =11) r = 0.8 (l = 16) D = Min. machining Dia.

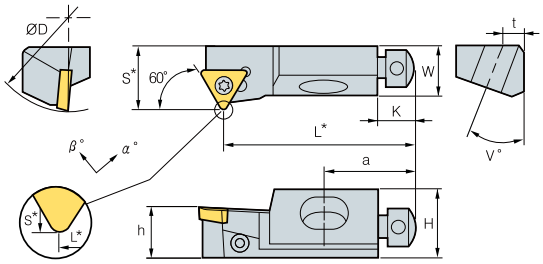
Parts		Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
STFCR/L	10CA-11	FTKA02565	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-16	FTKA03508	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

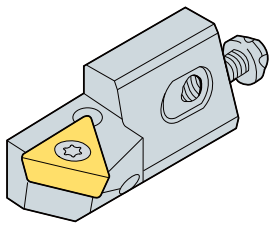
M This is metric size. We can also provide in inch type

STTCR/L



TC□□





• R type insert

(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
STTCR/L	10CA-11	40	15	11	50	9	10	8	-5	0	20	5	20	TC□□1102□□
	12CA-16	50	20	15	47	20	12	8	-3	0	20	6	20	TC□□16T3□□

Applicable inserts **B79~B80, B95** · a base Insert: r = 0.4 (l =11) r = 0.8 (l = 16) D = Min. machining Dia.

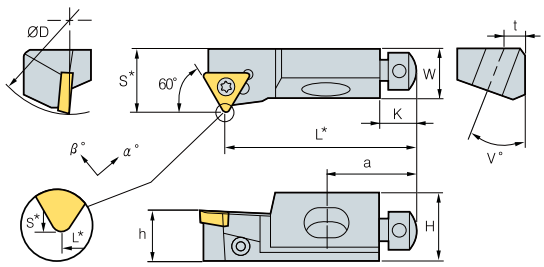
Parts		Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
STTCR/L	10CA-11	FTKA02565	AZ0508F	KHA0408	RHA0620	WA0602	TW 07P	HW20L
	12CA-16	FTKA03508	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

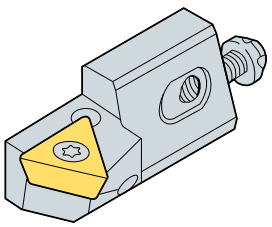
M This is metric size. We can also provide in inch type

STWCR/L



TC□□





• R type insert

(inch)

Designation		ØD	H	W	L*	S*	h	K	α°	β°	a	t	v°	Insert
STWCR/L	10CA-11	40	15	11	44	14	10	8	0	-4	20	5	20	TC□□1102□□
	12CA-16	50	20	15	47	20	12	8	-5	0	20	6	20	TC□□16T3□□

Applicable inserts **B79~B80, B95** · a base Insert: r = 0.4 (l =11) r = 0.8 (l = 16) D = Min. machining Dia.

Parts		Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
STWCR/L	10CA-11	FTKA02565	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-16	FTKA03508	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

M This is metric size. We can also provide in inch type

MULTI FUNCTIONAL TOOLS

Korloy Multi-functional tools can be used for machining
in grooving, parting-off, facing and forming applications.
Its design ensures superior machinability and productivity.



C

Application Examples

C02 Application Examples
C04 Technical Information for Multi Functional Tools

KGT

C07 Technical Information for MGT
C12 MGT
C25 MGT (Face Grooving)

MGT

C26 Technical Information for MGT
C28 MGT
C36 MGT (Face grooving)

KGT/MGT Cartridges

C39 Technical Information for KGT/MGT Cartridges
C40 KGT/MGT Cartridge Holders
C41 KGT Cartridges
C42 MGT Cartridges

MGT Aluminum Wheel

C43 Technical Information for MGT Aluminum Wheel
C44 MGT for Aluminum Wheel

TB/TB-M

C47 Technical Information for TB/TB-M
C51 TB/TB-M

K-Notch

C55 Technical Information for K-Notch
C57 K-Notch

Saw Man

C60 Technical Information for Saw Man
C61 Saw Man

Saw Man-X

C63 Technical Information for Saw Man-X
C65 Saw Man-X

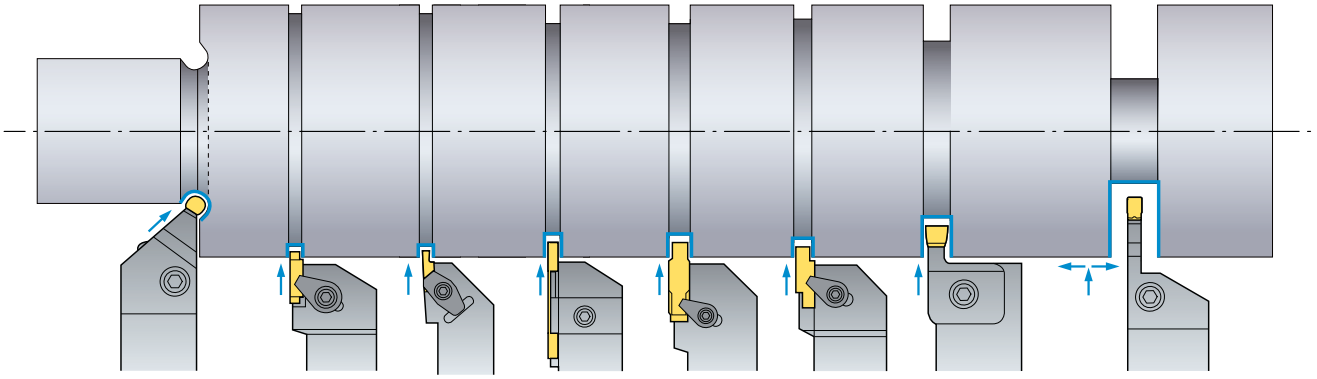
Fine Tools

C67 Technical Information for Fine Tools
C68 Fine Tools

Special Order Form

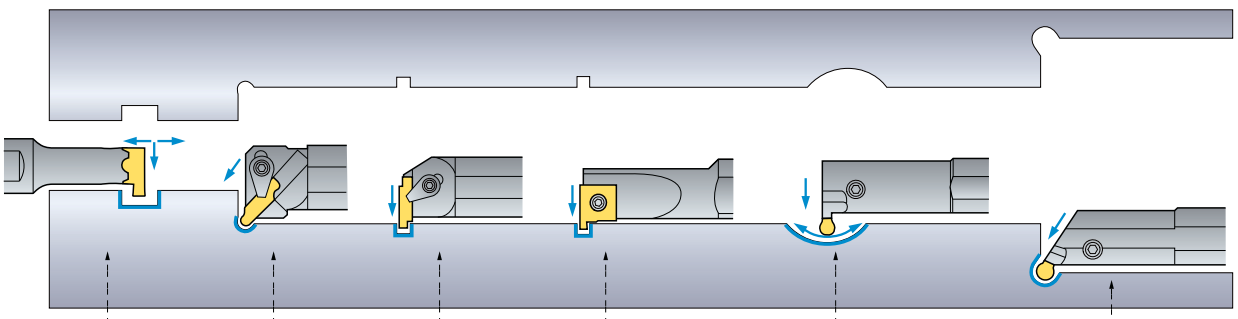
C70 Special Order Form for MGT
C71 Special Order Form for V-Pulley Inserts

For external machining



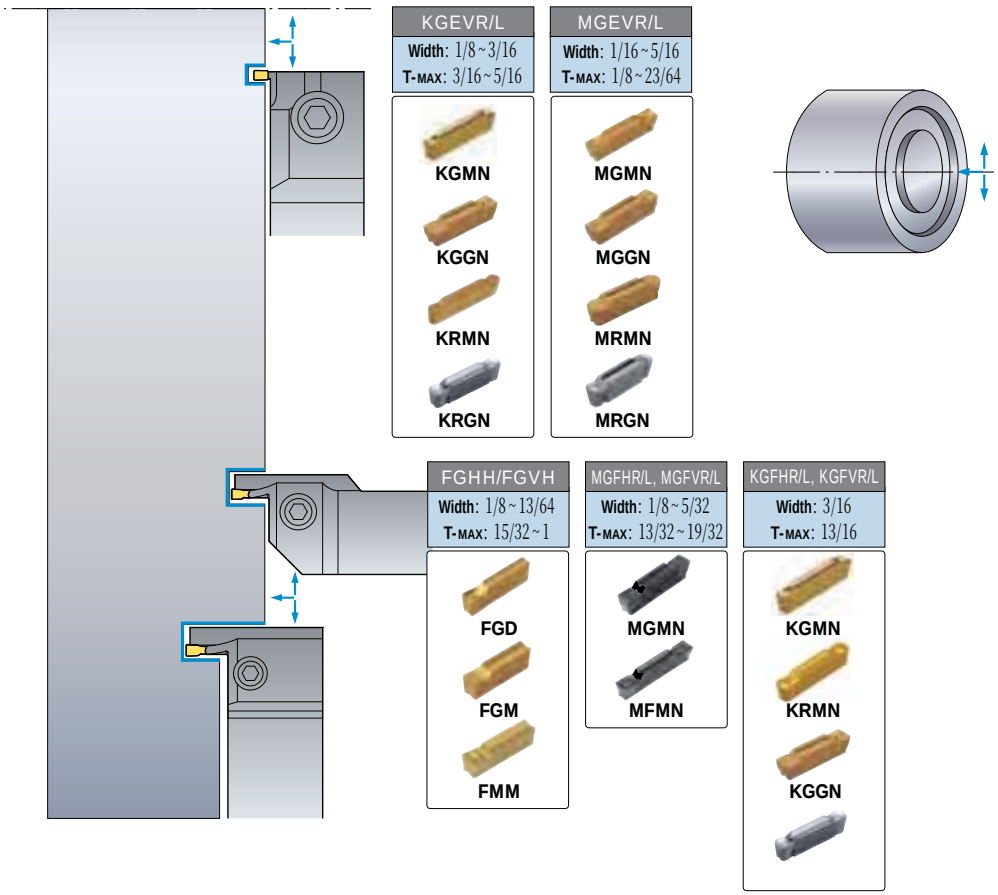
KGEUR/L	MGEUR/L	TBH	K-Notch	PH	GH	GFT	DBH	KGEHR/L	MGEHR/L
Width: 1/16~5/16 T-MAX: 1/8	Width: 5/64~5/16 T-MAX: 1/8~13/64	Width: 3/64~11/64 T-MAX: 1/16~13/64	Width: 1/32~15/64 T-MAX: 0~1/4	Width: 1/8~13/64 ØD-MAX: 13/16~2	Width: 3/64~11/64 T-MAX: 1/16~5/32	Width: 3/64~5/16 T-MAX: 5/64~23/64	Width: 1/8~5/16 T-MAX: 35/64	Width: 1/16~5/16 T-MAX: 11/16~1 7/16	Width: 1/16~5/16 T-MAX: 13/32~13/32
KRMN KRGN	MRMN MRGN	TB TB-M	KNG KNGP KNR KNRP KNB	POB	GO GS	GW BF	DC DB	KGGN KGMN KGMR/L KRGN KRMN	MGGN MGMN MGMR MRGN MRMN

For internal machining

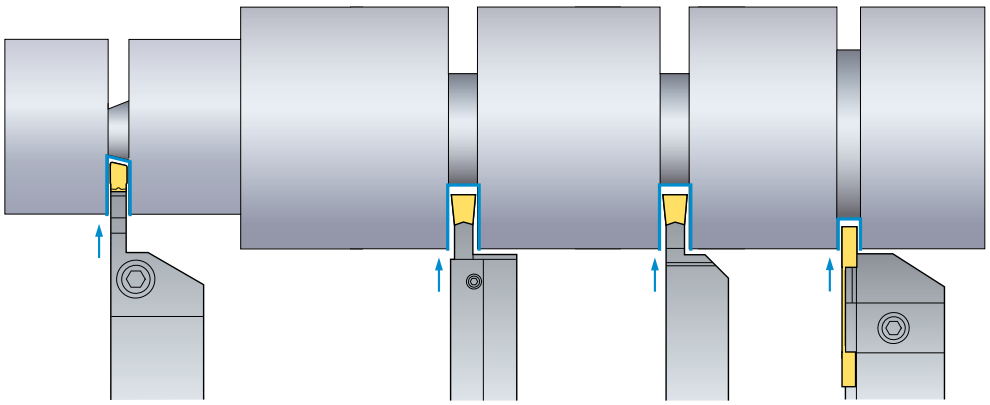


NFTIH	GFIK	GFIP	IGH	KGIVR/L	MGIVR/L	KGIUR/L	MGIUR/L
Width: 1/32~5/32 T-MAX: 3/16~13/32	Width: 5/64~5/16 T-MAX: 5/64~5/16	Width: 3/64~5/16 T-MAX: 5/64~23/64	Width: 3/64~7/64 T-MAX: 1/16~3/32	Width: 1/16~3/16 T-MAX: 1/4~5/16	Width: 1/16~5/16 T-MAX: 5/32~13/32	Width: 1/8 T-MAX: 1/8	Width: 1/8~5/16 T-MAX: 9/64~1/4
NFTG NFTF NFTT	GR	GW BF	IG	KGMI KGMN KRMN KGGN	MRMN MGGN MRGN	KRMN KRGN	MRMN

For face grooving

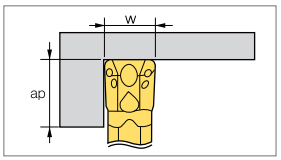


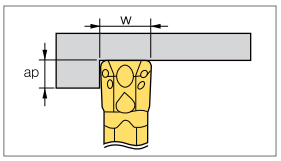
For parting off



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 work piece and clearance angle can be changed

Notice for turning

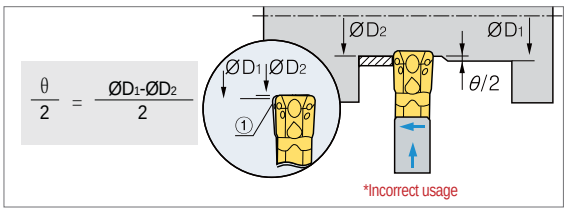
● KGT/MGT tools are designed to incur side cutting force from its clearance angle; this feature gives you advantage over a standard ISO insert

● The standard MGT insert also provides a "wiper" effect to improve surface roughness

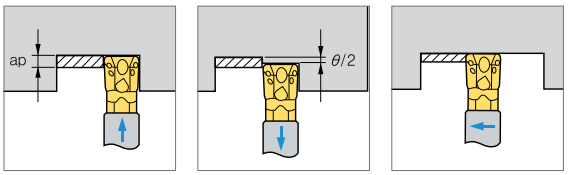
Notice for finishing (offset need final quality)

• 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

$$\frac{\theta}{2} = \frac{ØD_1 - ØD_2}{2}$$

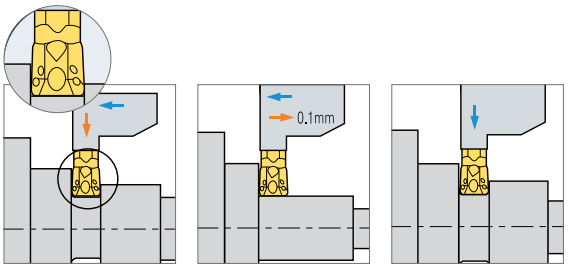


• To eliminate the difference in the machined diameter by utilizing the clearance angle (which is commonly generated during the final turning operation) follow the directions above when machining
To obtain a good surface roughness without offsetting in an application follows the directions below
1) Groove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

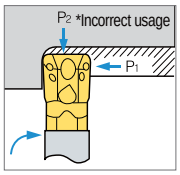


Notice for MGT turning applications

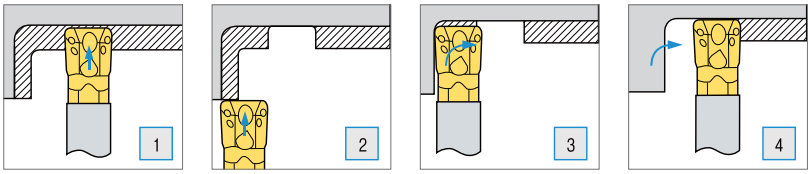
• KGT/MGT tools are available for grooving and turning as a multifunctional tool. When using a M.G.T tool keep in mind that the tool imitates a standard ISO turning application. The application uses a positive clearance angle where a tool's cutting force and depth of cut are all applied in an application.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



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

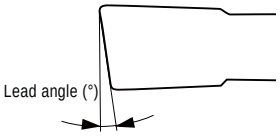
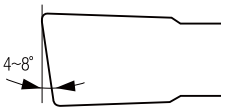
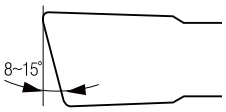


Stabilize your tool pressure. KGT/MGT tools create a cutting load when machining a workpiece with a radius larger than the corner radius of insert (shown in the picture). The unequal cutting force might initially break the insert or holder



Parting off & Grooving

Insert

Lead angle applications	Lead angle 0° (neutral)	Lead angle 4°~ 8°	Lead angle 8°~15°
			
• 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 • Prevent to be deflected workpiece by cutting direction during parting off • Available for use deep parting depth	• Reduce the center stub when parting off on solid bar type • Reduce the burr when parting off on tubing or hollow bar type	• Parting off on small diameter and hollow bar type • Reduce the burr and center stub when parting off on small diameter solid bar type

※ Available Inserts: MGMR/L□□□ - □□ - LP/RP, (Lead angle) KGMR/L□□□ - □□ - PS/PT (Lead angle)

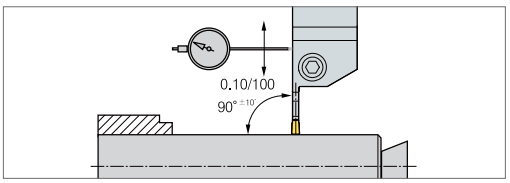
Selection of Insert



- To properly match the insert and cutting condition, the following factors 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 an 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.
  - Insert that have larger lead angles reduce burrs but will also decreases tool life
  - In the case where burrs are acceptable, we recommend using a neutral type insert

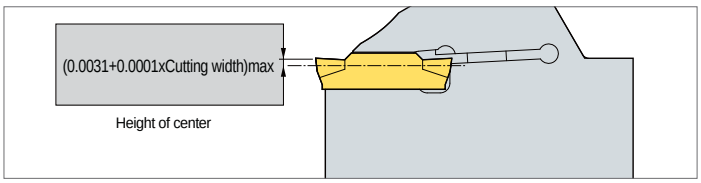
Setting of holders

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



Setting of parting off

- The edge height of an insert should be set within ±0.039 inch 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 the insert pocket before mounting insert

Usage

- If 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
- Decreases 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

Face Grooving Tools

For shallow grooving

- 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 provide various holder line-ups to give you more options and benefits

MFMN300	MGMN400
	
Cutting Width 0.118 inch	Cutting Width 0.158 inch

Horizontal MGFHR	Vertical MGFVR
	
Machining Dia. Ø0.945~7.874 inch	Machining Dia. Ø0.945~2.362 inch

KGMN300~600

Cutting Width 0.118~0.236 inch

Horizontal KGFHR	Vertical KGFVR
	
Machining Dia. Ø1.339~8.661 inch	Machining Dia. Ø1.732~7.874 inch

For deep grooving

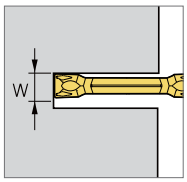
- These tools are suitable for deep grooving with a single cutting edge (Tmax 0.984 inch)
- A variety of chip breakers enable a machinist to apply a wide range of functions in machining
- A variety of holders ensures multiple application ranges

FGD	FGM	FMM
		
Deep face grooving (G class)	Wide face grooving turning (G class)	Wide face grooving turning (M class)

Horizontal FGHH	Vertical FGVH
	
Machining Dia. Ø0.984~5.512 inch	Machining Dia. Ø0.984~5.512 inch

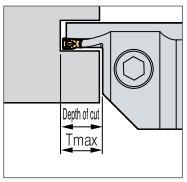
Selection system of holder

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



Insert and holder

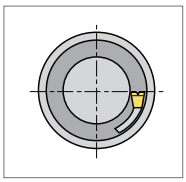
Choose an insert and holder that best applies to your application according to the cutting width and part of workpiece to be machined.



Holder Tmax

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

Notice: To minimize chattering, use the shortest holder according to Tmax.

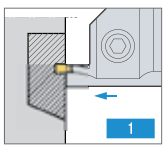


Machining Dia.

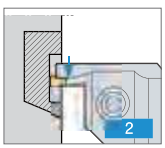
Choose the largest size of shank depending on the initial grooving diameter required in the application

Optimization of face grooving

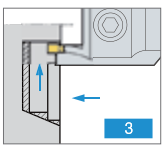
Roughing: When face grooving decreases the cutting speed 40% below a normal face turning operation



- Grooving at the initial diameter

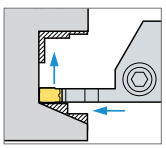


- Face turning away from center

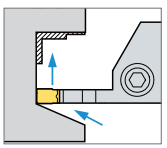


- Face turning to center

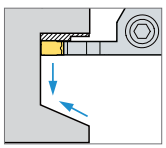
Finishing: When face grooving decreases the cutting speed 40% below a normal face turning operation



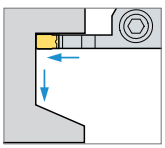
- Grooving at the initial diameter to the final cutting depth and face turning away from center



- Radius operation toward final dimension at the bottom



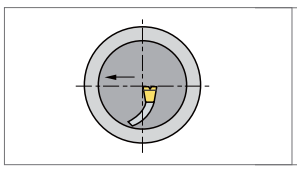
- Face turning to center



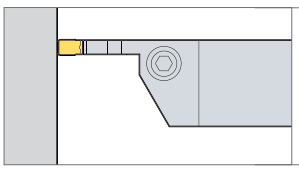
- Grooving for the right dimension you want

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

Multi-functional machining with strong clamping system and new technology

KGT

- Double-sided inserts of KGT reduces machining cost
- Strong clamping system ensures stable and accurate machining
- New grade and new technology provide superior tool life
- Various tooling solutions of the KGT improve productivity
- The foreside and clearance face of the KGT insert having cutting edges are optimal for grooving, parting-off, turning and facing with reducing processing time
- Three-dimensional chip breaker ensures excellent chip control in various applications
- The KGT inserts with various chip breakers are available for wide application range
- Special cutting edges are available for quotation

Code system

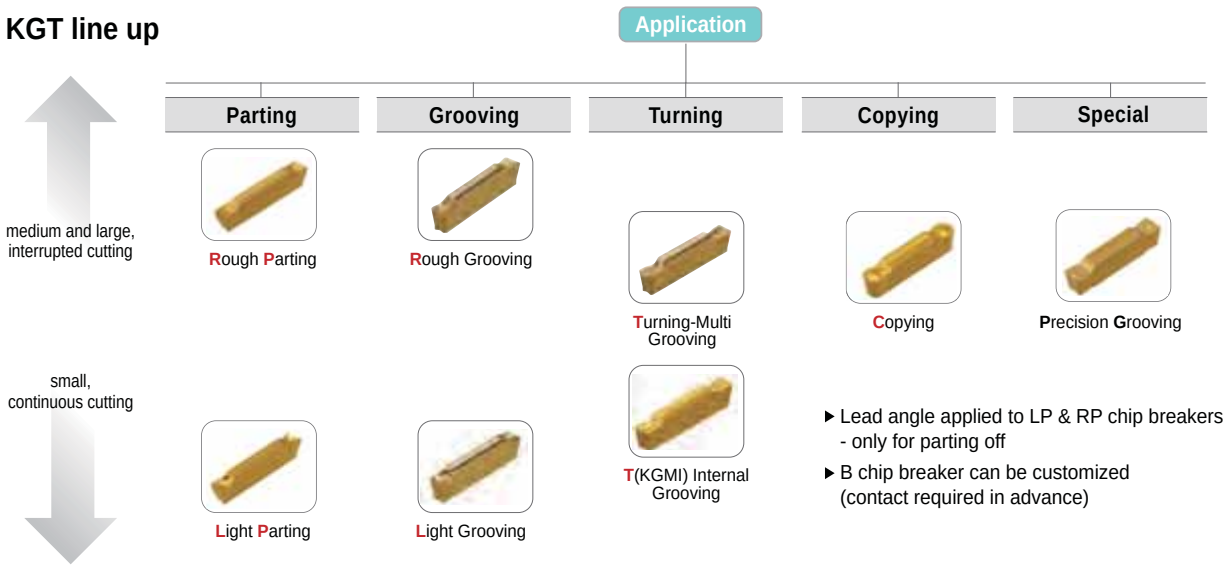
• **Insert**

KG	M	N	300	(s)	- 04	- T
System Code	Tolerance	Hand	Width of cutting edge	1 corner	Nose Radius	Chip Breaker
KG : KORLOY Grooving KR : KORLOY Grooving Round	M: Pressed G: Ground	N: Neutral R: Right L: Left I: Internal	0.079~0.315 inch		1/128 inch 3/256 inch 1/64 inch 1/32 inch	L / R / T / C / LP / RP / B / A

• **Holder**

KG	E	H	R/L	2525	- 3	T15
System Code	Working Style	Holder Style	Hand	Shank standard	Cutting Width	Maximum Depth
KG SYSTEM (KORLOY Grooving)	E: External Process I: Internal Process F: Facing Process	H: Horizontal V: Vertical U: Undercut	R: Right L: Left	Height 25 mm Width 25 mm (For Internal machining : Minimum diameter for machining)	0.079~0.315 inch	0.315~1.417 inch

KGT line up



- ▸ Lead angle applied to LP & RP chip breakers - only for parting off
- ▸ B chip breaker can be customized (contact required in advance)

Recommended insert

Designation	Geometry	Picture	Application									
			For external machining			For face grooving		For Internal machining		Copying	For relief	Special machining
			Parting	Grooving	Turning	Grooving	Turning	Grooving	Turning	Copying	Reliefing	Special
KGMN	L Light Grooving		○	◎		○						
	R Rough Grooving		○	◎		○						
	T Turning-Multi Grooving		○	◎	◎	◎	◎					
KGMI	T Internal Grooving							◎	◎			
KRMN	C Copying									◎	◎	
KGMR/L	LP Light Parting		◎									
	RP Rough Parting		◎									
KGGN	B Precision Grooving			○								◎
	A Aluminum Grooving		○	◎	○							
KRGN	A Aluminum Profiling									◎	◎	
KRMI	C Copying								◎	◎		

◎ First choice, ○ Second choice

Features

Front View

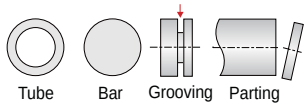


- Strong clamping ➜ Higher machining reliability
- Self-centering ➜ Higher accuracy
- Anti-chattering design ➜ Fine surface finish

C/B guide

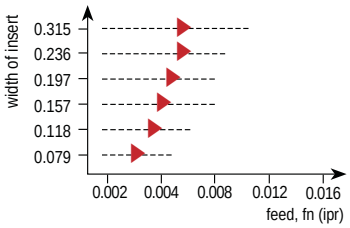
L For Light Grooving



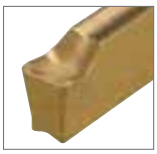


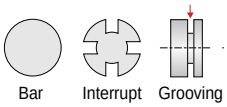
- Sharp cutting edge
- Low feed machining
- Small diameter component

- Low carbon steel
- Alloy steel
- Stainless



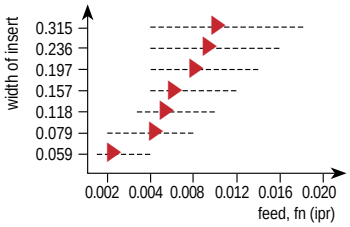
R For Rough Grooving





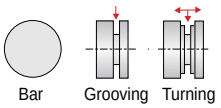
- Strong cutting edge
- High feed machining
- Interrupted cutting

- Carbon steel
- Alloy steel
- Stainless
- Cast iron



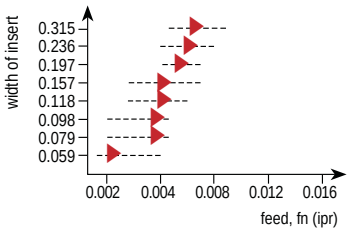
T For Turning and Multi Grooving





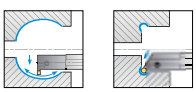
- Sharp cutting edge
- Improved chip control
- Turning & grooving machining

- Carbon steel
- Alloy steel
- Stainless
- Cast iron



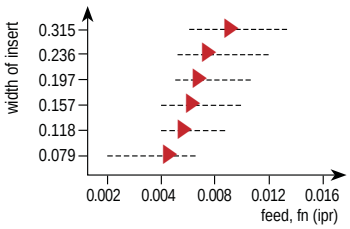
C For Copying and Relief



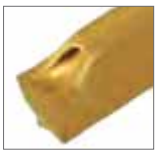


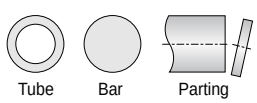
- Improved chip control
- Copying
- Relief

- Carbon steel
- Alloy steel
- Stainless
- Cast iron



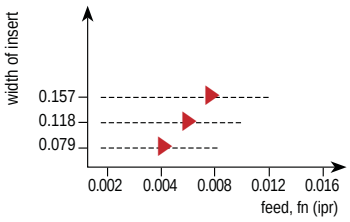
LP For Light Parting





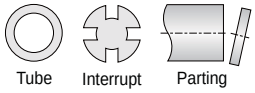
- Sharp cutting edge
- Low feed machining
- Small diameter component
- Right/left handed

- Low carbon steel
- Carbon steel
- Alloy steel
- Stainless



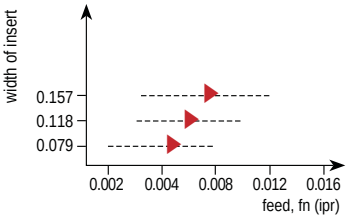
RP For Rought Parting





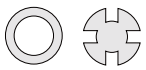
- Strong cutting edge
- High feed machining
- Interrupted cutting
- Right/left handed

- Carbon steel
- Alloy steel
- Cast iron



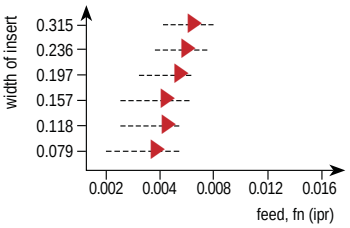
B For Precision Grooving



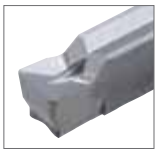


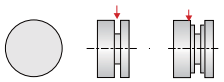
- Ground insert
- Precise tolerance
- Various cutting edge length, Nose R

- Carbon steel
- Alloy steel
- Stainless
- Cast iron



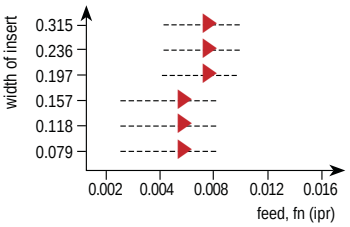
A For Aluminium Grooving





- Sharp cutting edge
- Precise tolerance

- Aluminum alloy
- Copper alloy



Grades for recommended application range

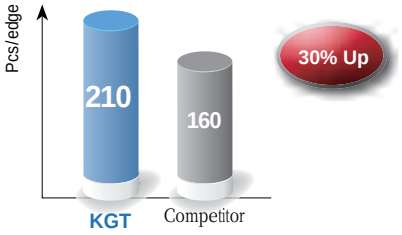
Workpiece		Grade	Order of recommended grade	Recommended cutting speed (sfm) 160 – 320 – 480 – 640 – 2560
P	Steel	PC5300	1	230 – 395
		PC3035	2	230 – 430
		NC3225	3	430 – 725
		NC5330	4	395 – 660
	Alloy Steel	PC5300	1	200 – 345
		PC3035	2	200 – 360
		NC3225	3	430 – 725
		NC5330	4	295 – 590
M	Stainless steel	PC5300	1	230 – 395
		PC9030	2	230 – 380
		NC5330	3	250 – 410
K	Cast iron	PC5300	1	180 – 295
		NC5330	2	315 – 525
N	Non-ferrous metal	H01	1	650 – 2600
S	HRSA	PC5300	1	65 – 115

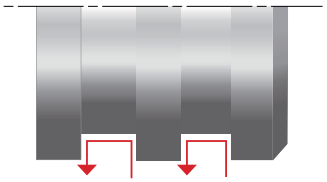
Performance evaluation

Multi-function machining — Turning + Grooving repetition

Optimized geometry for turning + grooving - High efficiency.

- **Workpiece** AISI1045
- **Cutting condition** vc = 560 (sfm)
  fn = 0.006 (ipr)
  ap = 0.079 inch
  W = 0.118 inch
  wet
- **Designation** KGMN300-04-T (PC5300)

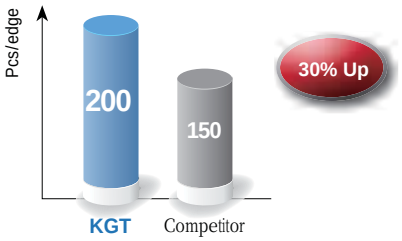


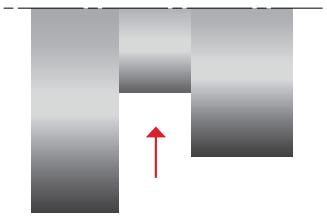


Grooving — Shoulder Grooving

Tough geometry for interrupted and deep grooving.

- **Workpiece** AISI304
- **Cutting condition** vc = 390 (sfm)
  fn = 0.005 (ipr)
  ap = 0.197 inch
  W = 0.157 inch
  wet
- **Designation** KGMN400-03-R (PC5300)

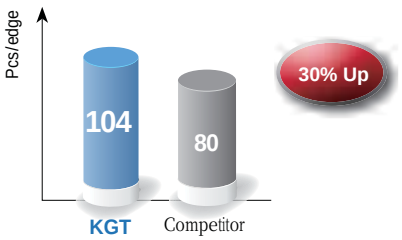


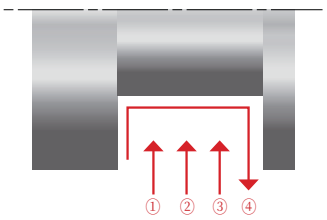


Shaft machining — Grooving (Roughing) & Turning (Finishing)

Excellent chip control for higher efficiency.

- **Workpiece** AISI4140
- **Cutting condition** vc = 490 (sfm)
  fn = 0.006 (ipr)
  ap = 0.197 inch
  W = 0.118 inch x 3
  wet
- **Designation** KGMN300-04-T (PC5300)

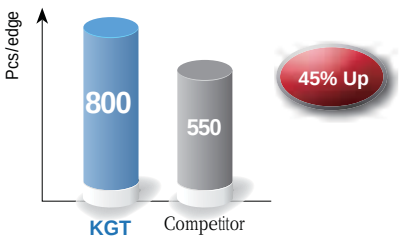


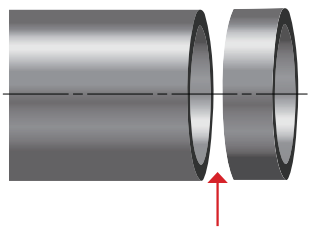


Parting off — Pipe Parting-off

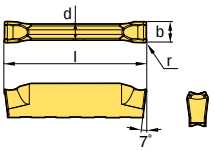
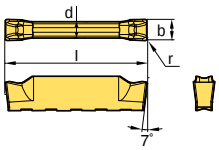
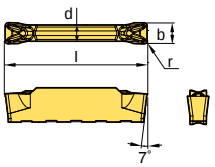
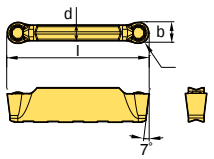
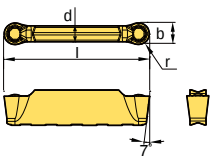
Exclusive parting-off chip breaker for longer tool life. / Sharp geometry for less burr.

- **Workpiece** AISI304
- **Cutting condition** vc = 460 (sfm)
  fn = 0.006 (ipr)
  ap = 0.079 inch
  W = 0.118 inch
  wet
- **Designation** KGMR300-6D-LP (PC5300)





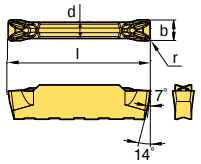
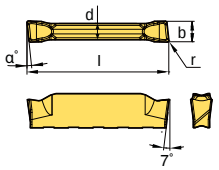
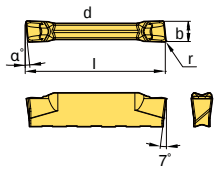
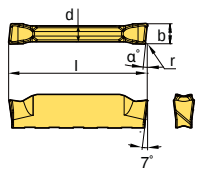
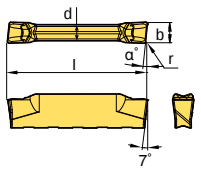
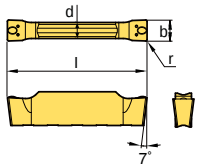
Insert

Application	Picture	Designation		Coated						Dimensions (mm)					Configuration	Page
				NC3225	NC5330	NC6315	PC3035	PC5300	PC9030	b	r	l	d	α°		
Grooving	KGMN-L	KGMN	200-02-L	●	●		●	●	●	0.079	1/128	0.787	0.067	-		C14~21 C23
			300-02-L	●	●		●	●	●	0.118	1/128	0.787	0.091	-		
			400-02-L	●	●		●	●	●	0.157	1/128	0.787	0.130	-		
			500-03-L	●	●		●	●		0.197	3/256	0.984	0.161	-		
			600-03-L	●	●			●		0.236	3/256	0.984	0.200	-		
Grooving · Parting off	KGMN-R	KGMN	150-015-R	●	●			●		0.059	3/512	0.630	0.047	-		C14~21 C23
			200-02-R	●	●		●	●	●	0.079	1/128	0.787	0.067	-		
			300-02-R	●	●		●	●	●	0.118	1/128	0.787	0.091	-		
			400-03-R	●	●		●	●	●	0.157	3/256	0.787	0.130	-		
			500-03-R		●			●		0.197	3/256	0.984	0.161	-		
			600-03-R		●			●		0.236	3/256	0.984	0.200	-		
			800-04-R		●			●		0.315	1/64	1.181	0.240	-		
Grooving · Turning	KGMN-T	KGMN	150-015-T	●	●	●		●		0.059	3/512	0.630	0.047			C14~21 C23
			200-02-T	●	●	●	●	●	●	0.079	1/128	0.787	0.067	-		
			250-02-T	●	●			●		0.098	1/128	0.787	0.079			
			300-02-T	●	●	●	●	●	●	0.118	1/128	0.787	0.091	-		
			04-T	●	●	●	●	●	●	0.118	1/64	0.787	0.091	-		
			400-04-T	●	●	●	●	●	●	0.157	1/64	0.787	0.130	-		
			08-T	●	●	●	●	●	●	0.157	1/32	0.787	0.130	-		
			500-04-T	●	●	●	●	●	●	0.197	1/64	0.984	0.161	-		
			08-T	●	●	●	●	●	●	0.197	1/32	0.984	0.161	-		
			600-04-T	●	●	●	●	●	●	0.236	1/64	0.984	0.200	-		
			08-T	●	●	●	●	●		0.236	1/32	0.984	0.200	-		
			800-08-T	●		●	●	●		0.315	1/32	1.181	0.240	-		
Relief Profiling	KRMN-C	KRMN	200-C	●	●	●	●	●		0.079	3/64	0.787	0.067	-		C14~22
			300-C	●	●		●	●		0.118	1/14	0.787	0.087	-		
			400-C	●	●	●	●	●		0.157	5/64	0.787	0.126	-		
			500-C	●	●	●	●	●		0.197	3/32	0.984	0.157	-		
			600-C	●	●	●	●	●		0.236	1/8	0.984	0.197	-		
			800-C	●	●	●		●		0.315	5/32	1.181	0.236	-		
Profiling	KRMI-C	KRMI	200-C							0.079	3/64	0.787	0.067	-		C23
			300-C							0.118	1/14	0.787	0.087	-		
			400-C							0.157	5/64	0.787	0.126	-		

• You can grind the chip breaker, 'B' as any shape you want. If you want any special shape of chip breaker, please contact your distributor.

●: Korea Stock

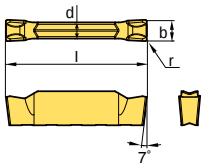
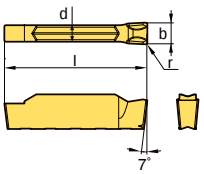
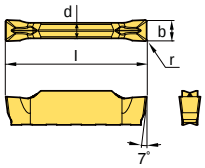
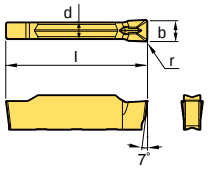
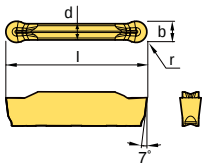
Insert

Application	Picture	Designation		Coated						Uncoated		Dimensions (mm)					Configuration	Page
				NC3215	NC3225	NC5330	NC6315	PC5300	PC9030	H01	H05	b	r	l	d	α°		
Grooving · Internal	KGMI-T	KGMI	200-02-T					●				0.079	1/128	0.787	0.067	-		C23
			300-04-T					●				0.118	1/64	0.787	0.091	-		
			400-04-T					●				0.157	1/64	0.787	0.130	-		
Parting off (Right handed)	KGMR-LP	KGMR	200-6D-LP			●		●				0.079	1/128	0.787	0.067	6		C14 C16
			8D-LP									0.079	1/128	0.787	0.067	8		
			15D-LP			●		●				0.079	1/128	0.787	0.067	15		
			300-6D-LP			●		●				0.118	1/128	0.787	0.091	6		
			15D-LP			●		●				0.118	1/128	0.787	0.091	15		
			400-4D-LP			●		●				0.157	3/256	0.787	0.130	4		
			15D-LP			●		●				0.157	3/256	0.787	0.130	15		
			500-4D-LP									0.197	3/256	0.984	0.161	4		
Parting off (Right handed)	KGMR-RP	KGMR	200-6D-RP			●		●				0.079	1/128	0.787	0.067	6		C14 C16
			8D-RP									0.079	1/128	0.787	0.067	8		
			15D-RP			●		●				0.079	1/128	0.787	0.067	15		
			300-6D-RP			●		●				0.118	1/128	0.787	0.091	6		
			15D-RP			●		●				0.118	1/128	0.787	0.091	15		
			400-4D-RP			●		●				0.157	3/256	0.787	0.130	4		
			15D-RP			●		●				0.157	3/256	0.787	0.130	15		
			500-4D-RP									0.197	3/256	0.984	0.161	4		
Parting off (Left handed)	KGML-LP	KGML	200-6D-LP									0.079	1/128	0.787	0.067	6		C14 C16
			15D-LP									0.079	1/128	0.787	0.067	15		
			300-6D-LP									0.118	1/128	0.787	0.091	5		
			15D-LP									0.118	1/128	0.787	0.091	16		
			400-4D-LP									0.157	1/128	0.787	0.130	4		
			15D-LP									0.157	1/128	0.787	0.130	15		
Parting off (Left handed)	KGML-RP	KGML	200-6D-RP									0.079	1/128	0.787	0.067	6		C14 C16
			15D-RP									0.079	1/128	0.787	0.067	15		
			300-6D-RP									0.118	1/128	0.787	0.091	6		
			15D-RP									0.118	1/128	0.787	0.091	15		
			400-4D-RP									0.157	1/128	0.787	0.130	4		
			15D-RP									0.157	1/128	0.787	0.130	15		
Grooving(Ground insert)	KGGN-B	KGGN	265-015-B									0.104	3/512	0.787	0.091	-		C14
			300-020-B									0.118	1/128	0.787	0.091	-		
			040-B									0.118	1/64	0.787	0.091	-		
			315-015-B									0.124	3/512	0.787	0.091	-		
			400-040-B									0.157	1/64	0.787	0.130	-		
			080-B									0.157	1/32	0.787	0.130	-		
			415-015-B									0.163	3/512	0.787	0.130	-		
			478-055-B									0.188	11/512	0.984	0.161	-		
			500-080-B									0.197	1/32	0.984	0.161	-		
			515-015-B									0.203	3/512	0.984	0.161	-		
			600-080-B									0.236	1/32	0.984	0.200	-		
			120-B									0.236	3/64	0.984	0.200	-		
			800-080-B									0.315	1/32	1.181	0.240	-		
			120-B									0.315	3/64	1.181	0.240	-		

• You can grind the chip breaker, 'B' as any shape you want. If you want any special shape of chip breaker, please contact your distributor.

●: Korea Stock

Insert

Application	Picture	Designation		Coated						Uncoated		Dimensions (mm)					Configuration	Page
				NC3215	NC3225	NC5330	NC6315	PC5300	PC9030	H01	H05	b	r	l	d	α°		
Grooving · Parting off (Ground insert)	 KGGN-R new	KGGN	200-02-R									0.079	1/128	0.787	0.067	-		C14~21
			300-02-R									0.118	1/128	0.787	0.091	-		
			400-03-R									0.157	3/256	0.787	0.130	-		
			500-03-R									0.197	3/256	0.984	0.161	-		
			600-03-R									0.236	3/256	0.984	0.200	-		
			800-04-R									0.315	1/64	1.181	0.240	-		
Grooving · Parting off (Single insert)	 KGGN-R new	KGGN	200S-02-R									0.079	1/128	0.760	0.067	-		C24
			300S-02-R					●				0.118	1/128	0.785	0.091	-		
			400S-03-R					●				0.157	3/256	0.785	0.130	-		
			500S-03-R					●				0.197	3/256	0.982	0.161	-		
			600S-03-R					●				0.236	3/256	0.982	0.200	-		
			800S-04-R					●				0.315	1/64	1.178	0.240	-		
Aluminum Grooving	 KGGN-A new	KGGN	200-02-A							●		0.079	1/128	0.787	0.067	-		C24
			300-02-A							●		0.118	1/128	0.787	0.091	-		
			400-04-A							●		0.157	1/64	0.787	0.130	-		
			500-04-A							●		0.197	1/64	0.984	0.161	-		
			600-04-A							●		0.236	1/64	0.984	0.200	-		
Aluminum Grooving (Single insert)	 KGGN-A new	KGGN	200S-02-A									0.079	1/128	0.787	0.067	-		C24
			300S-02-A									0.118	1/128	0.787	0.091	-		
			400S-04-A									0.157	1/64	0.787	0.130	-		
			500S-04-A									0.197	1/64	0.984	0.161	-		
			600S-04-A									0.236	1/64	0.984	0.200	-		
Aluminum Grooving	 KRGN-A new	KRGN	300-A							●		0.118	1/16	0.787	0.091	-		C14~21
			400-A							●		0.157	5/64	0.787	0.130	-		
			500-A							●		0.197	3/32	0.984	0.161	-		
			600-A							●		0.236	1/8	0.984	0.200	-		
			800-A							●		0.315	5/32	1.181	0.240	-		

• You can grind the chip breaker, 'B' as any shape you want. If you want any special shape of chip breaker, please contact your distributor.

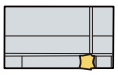
●: Korea Stock

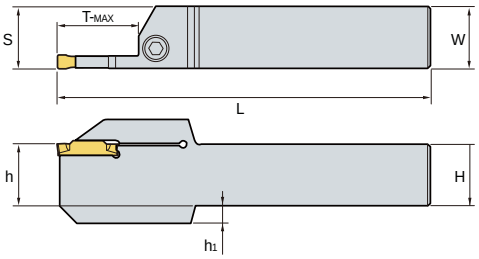
KGEHR/L

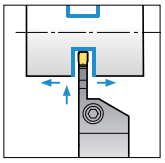
For grooving, turning, parting off, and relief machining



KGGN KGMN
KGMR/L KRMN
KRGN







• R type insert
(inch)

Designation		H = (h)	W	L	S	h1	T-MAX	Inserts	Screw	Wrench
KGEHR/L	10-1.5-T14	5/8	5/8	4	0.638	-	0.551	KGMN150-□-□	MHA0512	HW40L
	12-1.5-T14	3/4	3/4	5	0.795	-	0.551			
	16-1.5-T14	1	1	6	0.795	-	0.551			
	08-2-T08	1/2	1/2	4	0.48	-	0.315	KGMN200-□-□ KGMR/L200-□-□ KRMN200-C KGGN200-□-□	MHA0512	HW40L
	10-2-T08	5/8	5/8	4	0.633	-	0.315			
	12-2-T08	3/4	3/4	5	0.758	-	0.315			
	16-2-T08	1	1	6	1.008	-	0.315			
	10-2-T12	5/8	5/8	4	0.633	-	0.472			
	12-2-T12	3/4	3/4	5	0.758	-	0.472			
	16-2-T12	1	1	6	1.008	-	0.472			
	10-2-T17	5/8	5/8	4	0.633	-	0.669			
	12-2-T17	3/4	3/4	5	0.758	-	0.669			
	16-2-T17	1	1	6	1.008	-	0.669			
	10-2.5-T17	5/8	5/8	4	0.642	-	0.669	KGMN250-□-□	MHA0512	HW40L
	12-2.5-T17	3/4	3/4	5	0.642	-	0.669			
	16-2.5-T17	1	1	6	0.642	-	0.669			
	10-3-T10	5/8	5/8	4	0.641	-	0.394	KGMN300-□-□ KGMR/L300-□-□ KRMN300-C KGGN300-□-□ KRGN300-□	MHA0512	HW40L
	12-3-T10	3/4	3/4	5	0.766	-	0.394			
	16-3-T10	1	1	6	1.016	-	0.394			
	20-3-T10	1 1/4	1 1/4	6 3/4	1.276	-	0.394			
	10-3-T13	5/8	5/8	4	0.641	-	0.512			
	12-3-T13	3/4	3/4	5	0.766	-	0.512			
	16-3-T13	1	1	6	1.016	-	0.512			
	10-3-T20	5/8	5/8	4	0.641	-	0.787			
	12-3-T20	3/4	3/4	5	0.766	-	0.787			
	16-3-T20	1	1	6	1.016	-	0.787			
	20-3-T20	1 1/4	1 1/4	6 3/4	1.266	-	0.787			
	16-3-T25	1	1	6	1.016	-	0.984			
	10-4-T10	5/8	5/8	4	0.641	-	0.394	KGMN400-□-□ KGMR/L400-□-□ KRMN400-C KGGN400-□-□ KRGN400-□	BHA0616	HW50L
	12-4-T10	3/4	3/4	5	0.766	-	0.394			
	16-4-T10	1	1	6	1.016	-	0.394			
	20-4-T10	1 1/4	1 1/4	6 3/4	1.276	-	0.394			
	10-4-T15	5/8	5/8	4	0.641	-	0.591			
	12-4-T15	3/4	3/4	5	0.766	-	0.591			
	16-4-T15	1	1	6	1.016	-	0.591			
	10-4-T20	5/8	5/8	4	0.641	-	0.787			
	12-4-T20	3/4	3/4	5	0.766	-	0.787			
	16-4-T20	1	1	6	1.016	-	0.787			
	20-4-T20	1 1/4	1 1/4	6 3/4	1.266	-	0.787			
	10-4-T25	5/8	5/8	4	0.641	-	0.984			
	12-4-T25	3/4	3/4	5	0.766	-	0.984			
	16-4-T25	1	1	6	1.016	-	0.984			

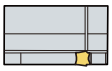
Applicable inserts **C12~C14**

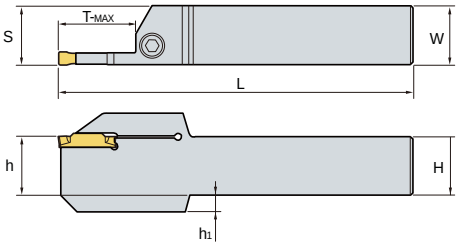
KGEHR/L

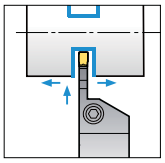
For grooving, turning, parting off, and relief machining



KGGN KGMN
KGMR/L KRMN
KRGN







• R type insert

(inch)

Designation		H = (h)	W	L	S	h1	T-MAX	Inserts	Screw	Wrench
KGEHR/L	12-5-T12	3/4	3/4	5	0.770	-	0.472	KGMN500-□-□ KRMN500-C KGGN500-□-□ KRGN500-□	BHA0616	HW50L
	16-5-T12	1	1	6	1.020	-	0.472			
	12-5-T15	3/4	3/4	5	0.807	-	0.591			
	16-5-T15	1	1	6	1.004	-	0.591			
	20-5-T15	1 1/4	1 1/4	6 3/4	1.280	-	0.591			
	12-5-T20	3/4	3/4	5	0.770	-	0.787			
	16-5-T20	1	1	6	1.020	-	0.787			
	20-5-T20	1 1/4	1 1/4	6 3/4	1.270	-	0.787		BHA0620	HW50L
	16-5-T32	1	1	6	1.020	0.276	1.260			
	12-6-T12	3/4	3/4	5	0.770	-	0.472	KGMN600-□-□ KRMN600-C KGGN600-□-□ KRGN600-□	BHA0616	HW50L
	16-6-T12	1	1	6	1.020	-	0.472			
	16-6-T15	1	1	6	1.004	-	0.591			
	20-6-T15	1 1/4	1 1/4	6 3/4	1.280	-	0.591			
	12-6-T20	3/4	3/4	5	0.770	-	0.787			
	16-6-T20	1	1	6	1.020	-	0.787			
	20-6-T20	1 1/4	1 1/4	6 3/4	1.270	-	0.787		BHA0620	HW50L
	16-6-T32	1	1	6	1.020	0.276	1.260			
	16-8-T16	1	1	6	1.020	-	0.630	KGMN800-□-□ KRMN800-C KGGN800-□-□ KRGN800-□	BHA0616	HW50L
	20-8-T16	1 1/4	1 1/4	6 3/4	1.299	-	0.630			
	16-8-T25	1	1	6	1.039	-	0.984			
	20-8-T25	1 1/4	1 1/4	6 3/4	1.289	-	0.984		BHA0620	HW50L
	16-8-T36	1	1	6	1.039	0.276	1.417			
	20-8-T36	1 1/4	1 1/4	6 3/4	1.289	-	1.417			

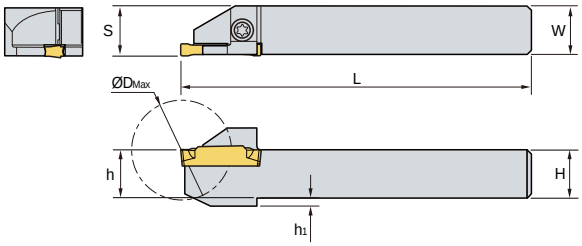
Applicable inserts **C12~C14**

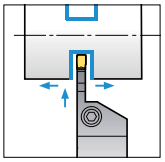
KGEHR/L-D00A (Auto Tool)

For grooving, turning, parting off machining



KGGN KGMN
KGMR/L KRMN





• R type insert

(inch)

Designation		H = (h)	W	L	S	h1	ØD Max	Inserts	Screw	Wrench
KGEHR/L	06-2-D20A	3/8	3/8	5	0.383	0.079	0.787	KGMN200-□-□ KGMR/L200-□-□ KRMN200-C KGGN200-□-□	ETNA0412	TW15L
	08-2-D25A	1/2	1/2	5	0.508	0.079	0.984			
	09-2-D25A	5/9	5/9	5	0.559	-	0.984			
	10-2-D32A	5/8	5/8	5	0.633	-	1.260			
	08-3-D25A	1/2	1/2	5	0.508	0.079	0.984	KGMN300-□-□ KGMR/L300-□-□ KRMN300-C KGGN300-□-□		
	10-3-D32A	5/8	5/8	5	0.633	-	1.260			

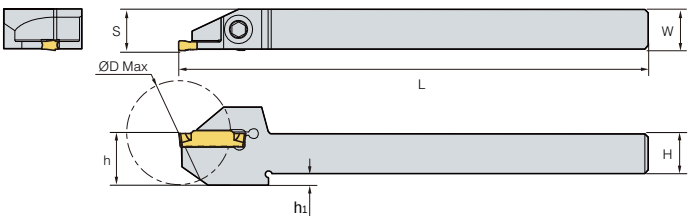
Applicable inserts **C12~C14**

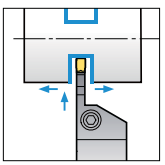
KGEHR/L-D00B (Auto Tool)

For grooving, turning, parting off machining



KGGN KGMN
KRMN KGMR/L





• R type insert

(inch)

Designation		H = (h)	W	L	S	h1	ØD Max	Inserts	Screw	Wrench
KGEHR/L	06-2-D30B	3/8	3/8	5.510	0.401	0.260	1.181	KGMN200-□-□ KGMR/L200-□-□ KRMN200-C KGGN200-□-□	MHA0512	HW40L
	08-2-D25B	1/2	1/2	5.510	0.492	0.138	0.984			
	08-2-D30B	1/2	1/2	5.510	0.480	0.138	1.181			
	10-2-D25B	5/8	5/8	5.510	0.638	-	0.984			
	10-2-D32B	5/8	5/8	5.510	0.638	-	1.181			
	08-3-D25B	1/2	1/2	5.510	0.488	0.138	0.984	KGMN300-□-□ KGMR/L300-□-□ KRMN300-C KGGN300-□-□		
	08-3-D32B	1/2	1/2	5.510	0.488	0.138	1.181			
	10-3-D25B	5/8	5/8	5.510	0.646	-	0.984			
	10-3-D32B	5/8	5/8	5.510	0.646	-	1.181			

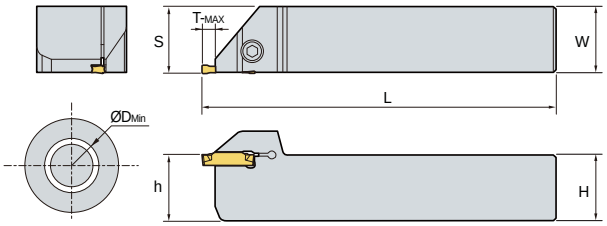
Applicable inserts **C12~C14**

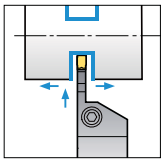
KGEHR/L-T00

For grooving, turning, face grooving machining



KGMN KRMN
KGGN KRGN





• R type insert

(inch)

Designation		H = (h)	W	L	S	ØD Min	T-MAX	Inserts	Screw	Wrench
KGEHR/L	10-3-T00	5/8	5/8	4	0.646	3.150	0.189	KGMN300-□-□ KRMN300-C KGGN300-□-□ KRGN300-□	MHA0512	HW40L
	12-3-T00	3/4	3/4	5	0.803	3.150	0.189			
	16-3-T00	1	1	6	1.016	3.150	0.189			
	10-4-T00	5/8	5/8	4	0.641	3.150	0.189	KGMN400-□-□ KRMN400-C KGGN400-□-□ KRGN400-□	BHA0616	HW50L
	12-4-T00	3/4	3/4	5	0.766	3.150	0.189			
	16-4-T00	1	1	6	1.016	3.150	0.189			
	12-6-T00	3/4	3/4	5	0.770	3.150	0.236	KGMN600-□-□ KRMN600-C KGGN600-□-□ KRGN600-□	BHA0616	HW50L
	16-6-T00	1	1	6	1.020	3.150	0.236			

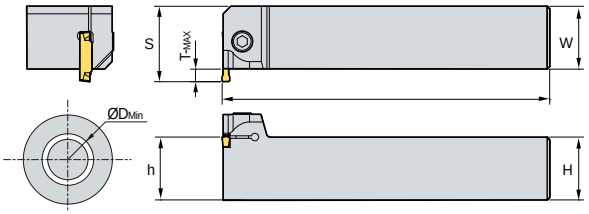
Applicable inserts **C12~C14**

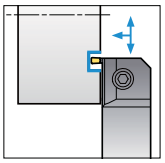
KGEVR/L-T00

For grooving, turning, face grooving machining



KGMN KRMN
KRGN KGGN





• R type insert

(inch)

Designation		H = (h)	W	L	S	ØD Min	T-MAX	Inserts	Screw	Wrench
KGEVR/L	12-1.5-T00	3/4	3/4	5	0.925	4.724	0.118	KGMN150-□-□	MHA0512	HW40L
	16-1.5-T00	1	1	6	1.122	4.724	0.118			
	20-1.5-T00	1 1/4	1 1/4	6 3/4	1.398	4.724	0.118			
	12-2-T00	3/4	3/4	5	0.925	4.724	0.118	KGMN200-□-□ KRMN200-C KGGN200-□-□-□	MHA0512	HW40L
	16-2-T00	1	1	6	1.122	4.724	0.118			
	20-2-T00	1 1/4	1 1/4	6 3/4	1.398	4.724	0.118			
	12-2.5-T00	3/4	3/4	5	0.965	3.150	0.157	KGMN250-□□	MHA0512	HW40L
	16-2.5-T00	1	1	6	1.161	3.150	0.157			
	20-2.5-T00	1 1/4	1 1/4	6 3/4	1.437	3.150	0.157			
	12-3-T00	3/4	3/4	5	0.947	3.150	0.189	KGMN300-□-□ KRMN300-C KGGN300-□-□ KRGN300-□	MHA0512	HW40L
	16-3-T00	1	1	6	1.197	3.150	0.189			
	20-3-T00	1 1/4	1 1/4	6 3/4	1.457	3.150	0.189			
	12-4-T00	3/4	3/4	5	0.947	3.150	0.189	KGMN400-□-□ KRMN400-C KGGN400-□-□ KRGN400-□	BHA0616	HW50L
	16-4-T00	1	1	6	1.197	3.150	0.189			
	20-4-T00	1 1/4	1 1/4	6 3/4	1.457	3.150	0.189			
	12-5-T00	3/4	3/4	5	1.161	2.362	0.236	KGMN500-□-□ KRMN500-C KGGN500-□-□ KRGN500-□	BHA0616	HW50L
	16-5-T00	1	1	6	1.240	2.362	0.236			
	20-5-T00	1 1/4	1 1/4	6 3/4	1.516	2.362	0.236			
	12-6-T00	3/4	3/4	5	1.043	2.362	0.236	KGMN600-□-□ KRMN600-C KGGN600-□-□ KRGN600-□	BHA0616	HW50L
	16-6-T00	1	1	6	1.256	3.150	0.236			
	20-6-T00	1 1/4	1 1/4	6 3/4	1.516	2.362	0.236			
	16-8-T00	1	1	6	1.319	1.969	0.315	KGMN800-□-□ KRMN800-C KGGN800-□-□ KRGN800-□	BHA0616	HW50L
	20-8-T00	1 1/4	1 1/4	6 3/4	1.516	1.969	0.315			

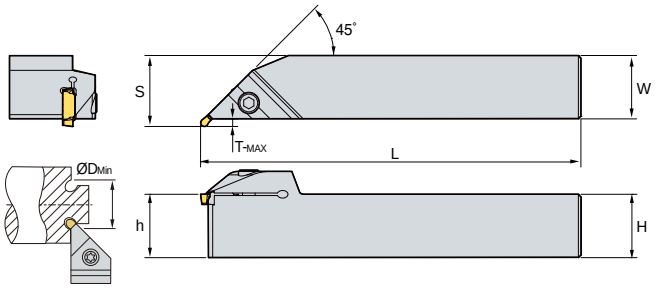
Applicable inserts **C12~C14**

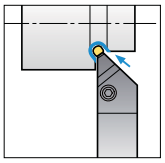
KGEUR/L

For relief machining



KRMN
KRGN





• R type insert

(inch)

Designation		H = (h)	W	L	S	ØD Min	T-MAX	Inserts	Screw	Wrench
KGEUR/L	10-3	5/8	5/8	4	0.748	1.575	0.110	KRMN300-C KRGN300-□	MHA0512	HW40L
	12-3	3/4	3/4	5	0.906	1.575	0.110			
	16-3	1	1	6	1.102	1.575	0.110			
	20-3	1 1/4	1 1/4	6 3/4	1.378	1.575	0.110			
	10-4	5/8	5/8	4	0.748	1.575	0.110	KRMN400-C KRGN400-□	BHA0616	HW50L
	12-4	3/4	3/4	5	0.906	1.575	0.110			
	16-4	1	1	6	1.102	1.575	0.110			
	20-4	1 1/4	1 1/4	6 3/4	1.378	1.575	0.110			
	12-5	3/4	3/4	5	0.925	1.969	0.130	KRMN500-C KRGN500-□	BHA0616	HW50L
	16-5	1	1	6	1.122	1.969	0.130			
	20-5	1 1/4	1 1/4	6 3/4	1.398	1.969	0.130			
	12-6	3/4	3/4	5	0.925	1.969	0.130	KRMN600-C KRGN600-□	BHA0616	HW50L
	16-6	1	1	6	1.122	1.969	0.130			
	20-6	1 1/4	1 1/4	6 3/4	1.398	1.969	0.130			
	16-8	1	1	6	1.122	2.559	0.130	KRMN800-C KRGN800-□	BHA0616	HW50L
	20-8	1 1/4	1 1/4	6 3/4	1.398	2.559	0.130			

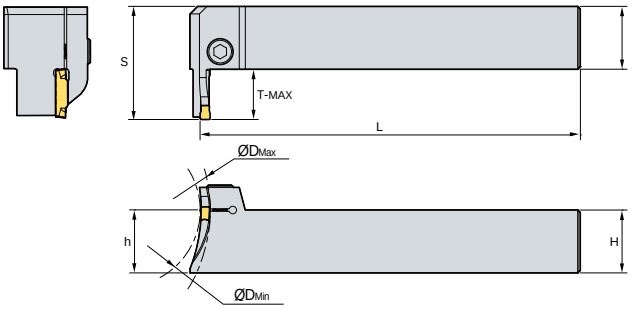
Applicable inserts **C12~C14**

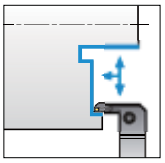
KGFVR/L

For face grooving machining



KGMN KRMN
KGGN KRGN





• R type insert

(inch)

Designation		H = (h)	W	L	S	T-MAX	ØD Min	ØD Max	Inserts	Screw	Wrench
KGFVR/L	16-3-13/19-T10	1	1	6	1.417	0.394	1.338	1.968	KGMN300-□-□ KRMN300-C KGGN300-□-□ KRGN300-□	MHA0512	HW40L
	17/23-T15	1	1	6	1.614	0.590	1.732	2.362			
	21/33-T15	1	1	6	1.614	0.590	2.126	3.346			
	16-4-12/19-T15	1	1	6	1.614	0.590	1.260	1.968	KGMN400-□-□ KRMN400-C KGGN400-□-□ KRGN400-□	BHA0616	HW50L
	16/23-T15	1	1	6	1.614	0.590	1.653	2.362			
	20/33-T15	1	1	6	1.614	0.590	2.047	3.346			
	17/27-T20	1	1	6	1.807	0.787	1.732	2.756			
	23/47-T20	1	1	6	1.807	0.787	2.362	4.724			
	44/78-T20	1	1	6	1.807	0.787	4.409	7.874			
	16-5-19/31-T20	1	1	6	1.811	0.787	1.968	3.149	KGMN500-□-□ KRMN500-C KGGN500-□-□ KRGN500-□	BHA0616	HW50L
	27/43-T20	1	1	6	1.811	0.787	2.756	4.331			
	39/59-T20	1	1	6	1.811	0.787	3.937	5.905			
	55/78-T20	1	1	6	1.811	0.787	5.512	7.874			
	78-T20	1	1	6	1.811	0.787	7.874	∞			
	16-6-18/33-T20	1	1	6	1.811	0.787	1.889	3.346	KGMN600-□-□ KRMN600-C KGGN600-□-□ KRGN600-□	BHA0616	HW50L
	28/59-T20	1	1	6	1.811	0.787	2.874	5.905			
	54/98-T20	1	1	6	1.811	0.787	5.433	9.842			
	98-T20	1	1	6	1.811	0.787	9.842	∞			

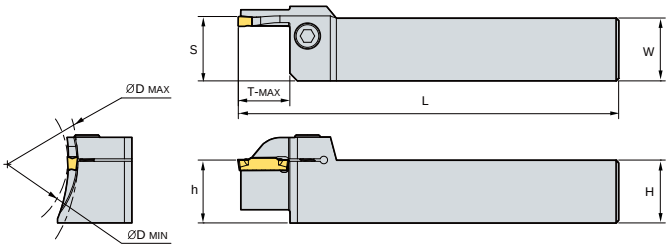
Applicable inserts **C12~C14**

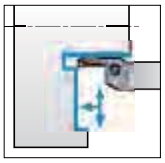
KGFHR/L

For face grooving machining



KGMN KRMN
KGGN KRGN





• R type insert

(inch)

Designation		H = (h)	W	L	S	T-MAX	ØD		Inserts	Screw	Wrench
							Min	Max			
KGFHR/L	12-3-13/19-T10	3/4	3/4	6	0.807	0.394	1.338	1.968	KGMN300-□-□ KRMN300-C KGGN300-□-□ KRGN300-□	MHA0512	HW40L
	17/27-T15	3/4	3/4	6	0.807	0.590	1.732	2.756			
	25/39-T15	3/4	3/4	6	0.807	0.590	2.520	3.937			
	16-3-13/19-T10	1	1	6	1.004	0.394	1.339	1.969			
	17/27 T15	1	1	6	1.004	0.591	1.732	2.756			
	25/39-T15	1	1	6	1.004	0.591	2.520	3.937			
	12-4-13/19-T16	3/4	3/4	6	0.807	0.630	1.338	1.968	KGMN400-□-□ KRMN400-C KGGN400-□-□ KRGN400-□	BHA0616	HW50L
	16/27-T16	3/4	3/4	6	0.807	0.630	1.653	2.756			
	24/47-T16	3/4	3/4	6	0.807	0.630	2.441	4.724			
	44/78-T16	3/4	3/4	6	0.807	0.630	4.409	7.874			
	16-4-13/19-T20	1	1	6	1.008	0.787	1.338	1.968			
	15/23-T10	1	1	6	1.008	0.394	1.575	2.362			
	17/27-T20	1	1	6	1.016	0.787	1.732	2.756			
	23/47-T20	1	1	6	1.016	0.787	2.362	4.724			
	33/36-T20	1	1	6	1.008	0.787	3.307	3.622			
	44/78-T20	1	1	6	1.016	0.787	4.409	7.874			
	78-T20	1	1	6	1.008	0.787	7.874	∞			
	16-5-19/31-T15	1	1	6	1.008	0.591	1.968	3.149	KGMN500-□-□ KRMN500-C KGGN500-□-□ KRGN500-□	BHA0616	HW50L
	19/31-T25	1	1	6	1.008	0.984	1.968	3.149			
	27/43-T15	1	1	6	1.008	0.591	2.756	4.331			
	27/43-T25	1	1	6	1.008	0.984	2.756	4.331			
	39/59-T25	1	1	6	1.008	0.984	3.937	5.905			
	55/78-T25	1	1	6	1.008	0.984	5.512	7.874			
	74/86-T10	1	1	6	1.008	0.394	7.480	8.661			
	78-T25	1	1	6	1.008	0.984	7.874	∞			
	16-6-66/74-T10	1	1	6	1.008	0.394	6.693	7.480	KGMN600-□-□ KRMN600-C KGGN600-□-□ KRGN600-□	BHA0616	HW50L
	74/86-T10	1	1	6	1.008	0.394	7.480	8.661			

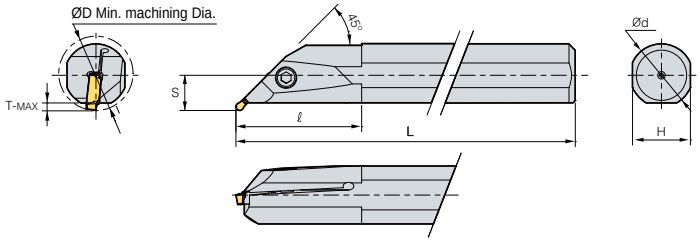
Applicable inserts **C12~C14**

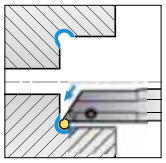
KGIUR/L

For relief machining



KRMN
KRGN





• R type insert

(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Inserts	Screw	Wrench
KGIUR/L	13-12-3	1.378	3/4	6	1.772	0.138	0.709	0.512	KRMN300-C KRGN300-□	MHA0512	HW40L
	13-12-4	1.378	3/4	6	1.772	0.138	0.709	0.512			
	15-16-3	1.575	1	8	1.969	0.138	0.906	0.610			
	19-20-3	1.969	1 1/4	10	2.559	0.138	1.181	0.748	KRMN400-C KRGN400-□	MHA0512	HW40L
	15-16-4	1.575	1	8	1.969	0.138	0.906	0.610			
	19-20-4	1.969	1 1/4	10	2.559	0.138	1.181	0.748			
	15-16-5	1.575	1	8	1.969	0.138	0.906	0.610	KRMN500-C KRGN500-□	MHA0512	HW40L
	19-20-5	1.969	1 1/4	10	2.559	0.138	1.181	0.748			
	15-16-6	1.575	1	8	1.969	0.138	0.906	0.610	KRMN600-C KRGN600-□	MHA0512	HW40L
	19-20-6	1.969	1 1/4	10	2.559	0.138	1.181	0.748			
	15-16-8	1.575	1	8	1.969	0.138	0.906	0.610	KRMN800-C KRGN800-□	MHA0512	HW40L
	19-20-8	1.969	1 1/4	10	2.559	0.138	1.181	0.748			

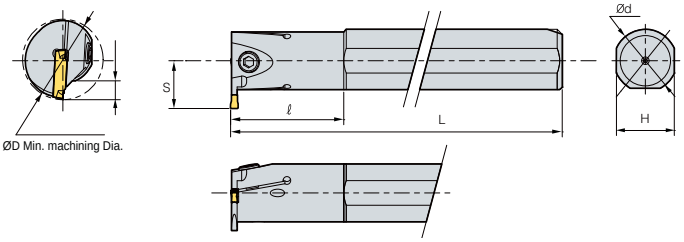
Applicable inserts **C12~C14**

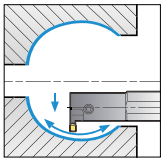
KGIVR/L

For grooving, turning and profile machining



KGMI KGMN
KGGN KRMI
KRMN





• R type insert

(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Insert	Screw	Wrench
KGIVR/L	07-10-1.5	0.787	5/8	5	1.378	0.157	0.591	0.472	KGMN150-□-□	MHB0410	HW30L
	09-12-1.5	0.984	3/4	6	1.772	0.236	0.709	0.610		MHB0410	
	12-16-1.5	1.260	1	8	1.772	0.276	0.906	0.748		MHA0512	HW40L
	09-10-2	0.984	5/8	5	1.378	0.256	0.591	0.551	KGMI200-□-T KRMI200-C	MHB0410	HW30L
	09-12-2	0.984	3/4	6	1.772	0.256	0.709	0.610			
	12-16-2	1.260	1	8	1.772	0.276	0.906	0.748		MHB0512	HW40L
	09-10-2.5	0.984	5/8	5	1.378	0.256	0.591	0.551	KGMN250-□-□	MHB0410	HW30L
	09-12-2.5	0.984	3/4	6	1.772	0.256	0.709	0.610			
	12-16-2.5	1.260	1	8	1.772	0.276	0.906	0.748		MHA0512	HW40L
	09-12-3	0.984	3/4	6	1.772	0.256	0.709	0.610	KGMI300-□-T KRMI300-C	MHB0410	HW30L
	12-16-3	1.260	1	8	1.772	0.276	0.906	0.748		MHA0512	HW40L
	15-20-3	1.575	1 1/4	10	2.165	0.295	1.181	0.886		BHA0616	HW50L
	09-12-4	0.984	3/4	6	1.772	0.256	0.709	0.610	KGMI400-□-T KRMI400-C	MHB0410	HW30L
	12-16-4	1.260	1	8	1.772	0.276	0.906	0.748		MHA0512	HW40L
	15-20-4	1.575	1 1/4	10	2.165	0.295	1.181	0.886		BHA0616	HW50L
	12-16-5	1.260	1	8	1.772	0.295	0.906	0.768	KGMN500-□-□ KRMN500-C KGGN500-□-R KGGN500-□-A	MHA0512	HW40L
	15-20-5	1.575	1 1/4	10	2.165	0.335	1.181	0.925		BHA0616	HW50L
	12-16-6	1.260	1	8	1.772	0.295	0.906	0.768	KGMN600-□-□ KRMN600-C KGGN600-□-R KGGN600-□-A	MHA0512	HW40L
	15-20-6	1.575	1 1/4	10	2.165	0.335	1.181	0.925		BHA0616	HW50L
	15-20-8	1.575	1 1/4	10	2.165	0.335	1.181	0.925	KGMN800-□-□ KRMN800-C KGGN800-□-R	BHA0616	HW50L
	17-24-8	1.772	1 1/2	12	2.756	0.335	1.457	1.043		BHA0616	HW50L

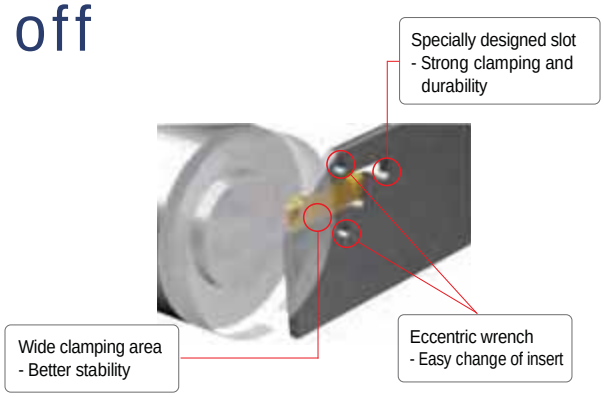
Applicable inserts **C12~C14**

• 200, 300, 400 inserts : Internal inserts, KGMI or KRMI

KGT Blades for Parting off

Features

- Parting application with the use of existing KGT inserts
- Economical machining with a double sided insert
- Specially designed slot for strong and stable clamping
- Easy change of insert with the use of exclusive wrench



Code system

KGTBA 125 8 (S)

- KGTBA: KGTB system
- 125: Height of shank
- 8: Cutting width
- (S): S: Single pocket

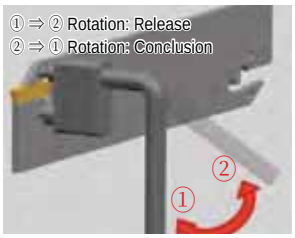
How to clamp insert



① Insert the pin of wrench into the hole of blade.



② Clamp the insert on its seat after turning the handle to 45˚~160˚ for loosening the seat.



③ Finish clamp by removing the wrench after moving it back to its original state.

KGTB



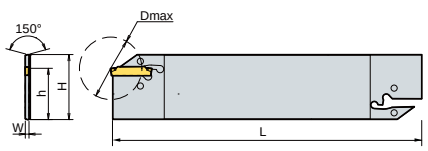


Fig. 1

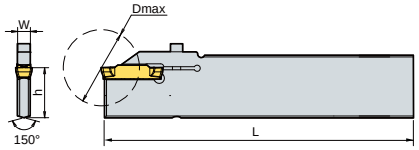


Fig. 3

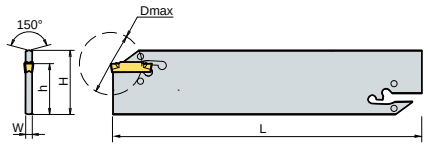


Fig. 2

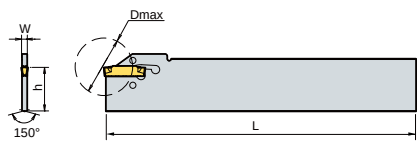


Fig. 4

(inch)

Designation		H	W	W'	L	h	ØD Max(2)	ØD Max(3)	Insert	Screw	Wrench	Fig.
KGTBA	100-1.5-S	1	3/32	0.039	6	0.827	-	1.024	KG□□150-□-□			4
	125-1.5	1 1/4	3/32	0.039	6	0.984	-	1.024	KG□□150-□-□			1
	100-2-S	1	3/32	0.071	6	0.827	1.968	1.535	KG□□200-□-□ KG□□200S-□-R(4)			4
	125-2	1 1/4	3/32	0.071	6	0.984	1.968	1.535	KG□□200-□-□ KG□□200S-□-R(4)			1
	100-3-S	1	3/32	-	6	0.827	3.937	1.535	KG□□300-□-□ KG□□300S-□-R(4)			4
	125-3	1 1/4	3/32	-	6	0.984	3.937	1.535	KG□□300-□-□ KG□□300S-□-R(4)	-	EW1203 (Separately ordered)	2
	100-4-S	1	1/8	-	6	0.827	3.937	1.535	KG□□400-□-□ KG□□400S-□-R(4)			4
	125-4	1 1/4	1/8	-	6	0.984	3.937	1.535	KG□□400-□-□ KG□□400S-□-R(4)			2
	125-5	1 1/4	5/32	-	6	0.984	4.724	1.929	KG□□500-□-□ KG□□500S-□-R(4)			2
	125-6	1 1/4	13/64	-	6	0.984	4.724	1.929	KG□□600-□-□ KG□□600S-□-R(4)			2
	125-8-S(1)	1 1/4	1/4	-	6	0.984	3.149	2.323	KG□□800-□-□ KG□□800S-□-R(4)	HW30L	-	3

Applicable inserts **C12~C14**

(1) Screw clamping (2) 1 corner use (3) 2 corner use (4) 1 corner insert

Inserts are offered with two edges, for better economical machining

MGT

- 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 finishes. Even in high Feed applications by using a wiper function, Korloy ensures excellent surface finishes in roughing operations

Code system

· Insert

MG	M	N	300	-	04	-	T
System Code	**Tolerance**	**Hand**	**Cutting Edge Width**		**Nose Radius (Nose R)**		**Chip Breaker**
MG : Multi Grooving MR : Multi Grooving Round	M: Pressed G: Ground	N: Neutral R: Right L: Left I: Internal	0.059~0.315 inch		1/128 inch 3/256 inch 1/64 inch 1/32 inch		L / R / T / M / PS / PT / A

· Holder

MG	E	H	R/L	16N	-	3	T15
System Code	**Application**	**Holder Type**	**Hand**	**Shank Size**		**Cutting Width**	**Maximum Depth of Cut**
MG: Multi Grooving	E: External machining I: Internal machining	H: Horizontal V: Vertical U: Undercut	R: Right L: Left	Height: 1 inch Width: 1 inch (For internal machining: Minimum diameter)		0.059~0.315 inch	0.590~0.984 inch

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 assists 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

MFMN300



- Specially designed chip breaker allows narrower chips to promote better chip flow
- Chip breaker specially designed for face-grooving

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 narrows chips for better flow

MGGN-A



- Smooth chip flow
- Reduced build up on cutting edge

MGMN-L



- Sharp cutting edge
- Low cutting resistance
- For auto CNC machine
- 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

Parting off (MGMN / MGMR/L)

Workpiece	Cutting Speed (vc = sfm)								Feed (fn = ipr)				
	CVD				PVD			Uncoated	Cutting width (inch)				
	NC3120	NC3030	NCM325	NC5330	PC8110	PC5300	PC6510	ST30A	0.079	0.118	0.157	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			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

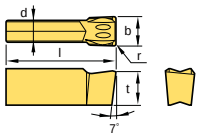
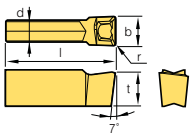
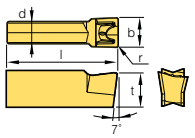
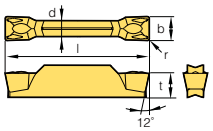
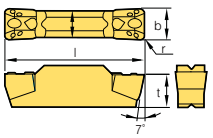
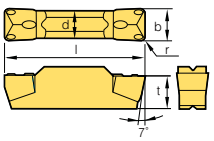
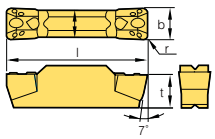
Facing (FGD / FGM / FMM / MFMN / MGMN)

Workpiece	Cutting Speed (vc = sfm)							Feed (fn = ipr)		
	CVD				PVD		Uncoated	Cutting width (inch)		
	NC6110	NC3030	NC5330	NC3120	PC215K	PC8110 / PC5300	H01	0.118	0.157	0.197
SM□□C			330~530	330~530				0.002~0.004	0.002~0.005	0.002~0.006
SCM		160~430	160~430	160~430			656~2625	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)								0.002~0.006	0.003~0.006	0.003~0.006

Grooving, Turning (MGMN / MRMN)

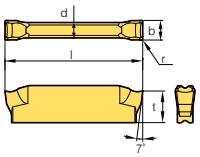
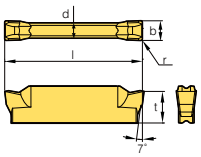
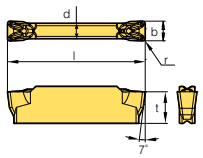
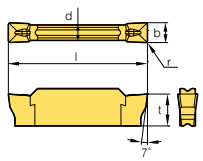
Workpiece	Cutting Speed (vc = sfm)								Feed (fn = ipr)					
	CVD			PVD		Cermet	Uncoated		Cutting width (inch)					
	NC3120	NC3030	NC5330	PC215K	PC5300	CN20	ST30A	ST20	0.020~0.039	0.039~0.079	0.079~0.118	0.118~0.157	0.157~0.197	0.236~0.315
SM□□C	260~660		260~660		260~590	260~390		260~390	0.001~0.003	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		260~530	260~390	260~390	260~390	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)				490~980			490~1310		0.002~0.005	0.002~0.006	0.002~0.006	0.003~0.006	0.003~0.006	0.004~0.008

Insert

Application	Picture	Designation		Coated							Uncoated	Dimensions (inch)					Configuration	Page
				NC3120	NC3225	NC3030	NC5330	NC6315	PC5300	PC8110	PC9030	H01	b	r	l	d	t		
Face Grooving	FGD	FGD	300R-03										0.118	3/256	0.590	0.079	0.157		C36 C37
			400R-04										0.157	1/64	0.590	0.118	0.177		
			500R-04										0.197	1/64	0.590	0.157	0.197		
	FGM	FGM	300R-03										0.118	3/256	0.590	0.079	0.157		C36 C37
			400R-04										0.157	1/64	0.590	0.118	0.177		
			500R-04										0.197	1/64	0.590	0.157	0.197		
	FMM	FMM	300R-03							●			0.118	3/256	0.590	0.079	0.154		C36 C37
			400R-04										0.157	1/64	0.590	0.118	0.156		
			500R-04										0.197	1/64	0.590	0.157	0.174		
Face Grooving	MFMN	MFMN	300				●						0.118	1/128	0.709	0.079	0.118		C35 C41
Grooving · Turning	MGGN-M		300-02-M										0.118	1/128	0.827	0.093	0.191		C30 C32 C34 C41
			04-M										0.118	1/64	0.827	0.093	0.191		
			08-M										0.118	1/32	0.827	0.093	0.191		
			400-02-M										0.157	1/128	0.827	0.130	0.191		
			04-M										0.157	1/26	0.827	0.130	0.191		
			08-M										0.157	1/32	0.827	0.130	0.191		
			500-02-M										0.197	1/128	1.024	0.161	0.230		
			04-M										0.197	1/64	1.024	0.161	0.230		
			08-M										0.197	1/32	1.024	0.161	0.230		
			600-02-M										0.236	1/128	1.024	0.197	0.229		
			04-M										0.236	1/64	1.024	0.197	0.229		
			08-M										0.236	1/32	1.024	0.197	0.229		
Grooving	MGMN-G	MGMN	150-G		●	●			●		●	●	0.059	0.006	0.630	0.047	0.138		C30 C32 C34 C41
			200-G	●	●	●					●	●	0.079	1/128	0.630	0.063	0.138		
			250-G		●	●			●		●		0.098	1/128	0.728	0.079	0.152		
			300-G	●	●	●	●		●		●		0.118	1/64	0.827	0.093	0.191		
			400-G	●					●		●		0.157	1/64	0.827	0.13	0.191		
			500-G										0.197	1/32	1.024	0.161	0.230		
			600-G										0.236	1/32	1.024	0.197	0.229		
Grooving · Turning	MGMN-M	MGMN	200-M	●	●	●	●		●		●	●	0.079	1/128	0.630	0.047	0.138		C30 C32 C34 C41
			250-M	●	●	●			●		●		0.098	1/128	0.728	0.079	0.152		
			300-02-M				●						0.118	1/128	0.827	0.093	0.191		
			300-M	●	●	●	●	●	●	●	●	●	0.118	1/64	0.827	0.093	0.191		
			350-03-M										0.138	3/256	0.827	0.130	0.191		
			400-02-M										0.157	1/128	0.827	0.130	0.191		
			400-M	●	●	●	●	●	●	●	●	●	0.157	1/64	0.827	0.130	0.191		
			500-04-M										0.197	1/64	1.024	0.161	0.230		
			500-M	●	●	●	●	●			●		0.197	1/32	1.024	0.161	0.230		
			600-M	●	●	●	●	●					0.236	1/32	1.024	0.197	0.229		
			800-M				●						0.315	1/32	1.220	0.236	0.257		

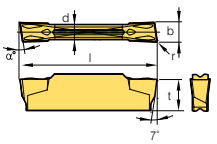
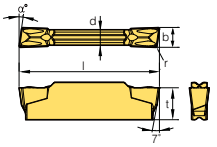
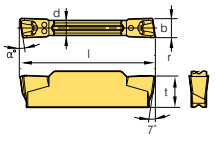
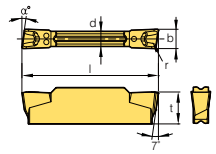
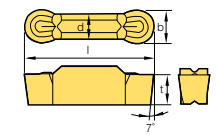
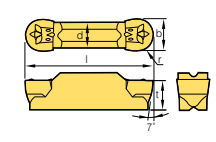
● : Korea Stock

Insert

Application	Picture	Designation		Coated								Uncoated		Dimensions (inch)						Configuration	Page
				NC3120	NC3225	NC3030	NC5330	NC6315	PC5300	PC8100	PC9030	H01	H05	b	r	l	d	t	α°		
Grooving	MGMN-L	MGMN	200-02-L											0.079	1/128	0.630	0.063	0.138	-		C30 C32 C34 C35
			04-L											0.079	1/64	0.787	0.067	0.138	-		
			250-02-L											0.099	1/128	0.729	0.789	0.152	-		
			300-02-L						●					0.118	1/128	0.827	0.093	0.191	-		
			04-L											0.118	1/64	0.787	0.091	0.191	-		
			400-02-L						●					0.157	1/128	0.827	0.130	0.191	-		
			04-L											0.157	1/64	0.787	0.130	0.191	-		
			500-03-L											0.197	3/256	1.024	0.161	0.230	-		
			04-L						●					0.197	1/64	1.024	0.161	0.230	-		
Grooving · Parting off	MGMN-R	MGMN	150-015-R											0.059	3/512	0.630	0.048	0.138	-		C30 C32 C34 C35
			200-02-R											0.079	1/128	0.630	0.063	0.138	-		
			04-R											0.079	1/64	0.787	0.067	0.138	-		
			250-02-R											0.099	1/128	0.729	0.789	0.152	-		
			300-02-R			●			●					0.118	1/128	0.827	0.093	0.191	-		
			04-R											0.118	1/64	0.787	0.091	0.191	-		
			400-02-R			●			●					0.157	1/128	0.827	0.130	0.191	-		
			04-R											0.157	1/64	0.787	0.130	0.191	-		
			500-04-R			●			●					0.197	1/64	1.024	0.161	0.230	-		
			08-R											0.197	1/64	1.024	0.161	0.230	-		
			600-04-R											0.237	1/64	1.024	0.197	0.229	-		
			08-R											0.237	1/32	1.024	0.197	0.229	-		
Grooving · Turning	MGMN-T	MGMN	150-015-T											0.059	3/512	0.630	0.048	0.138	-		C30 C32 C34 C35
			200-T											0.079	1/128	0.630	0.063	0.138	-		
			300-T			●			●					0.118	1/64	0.827	0.093	0.191	-		
			400-T			●			●					0.157	1/64	0.827	0.130	0.191	-		
			500-04-T											0.197	1/64	1.024	0.161	0.230	-		
			500-T						●					0.197	1/32	1.024	0.161	0.230	-		
			600-08-T											0.237	1/32	1.024	0.197	0.229	-		
Grooving	MGGN-A	MGGN	300-02-A											0.118	1/128	0.827	0.093	0.191	-		C28 C30 C32 C41
			04-A											0.118	1/64	0.827	0.093	0.191	-		
			08-A											0.118	1/32	0.827	0.093	0.191	-		
			400-02-A											0.157	1/128	0.827	0.130	0.191	-		
			04-A											0.157	1/64	0.827	0.130	0.191	-		
			08-A											0.157	1/32	0.827	0.130	0.191	-		
			500-02-A											0.197	1/128	1.024	0.161	0.230	-		
			04-A											0.197	1/64	1.024	0.161	0.230	-		
			08-A											0.197	1/32	1.024	0.161	0.230	-		

●: Korea Stock

Insert

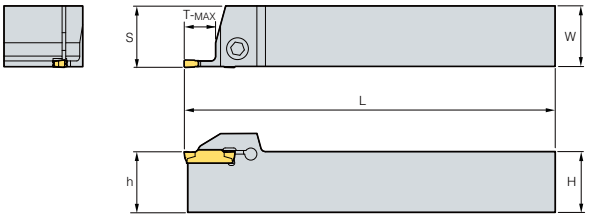
Application	Picture	Designation		Coated								Uncoated		Dimensions (inch)						Configuration	Page
				NC3120	NC3225	NC3030	NC5330	NC6315	PC5300	PC8100	PC9030	H01	H05	b	r	l	d	t	α°		
Parting off	MGMR-PS	MGMR	300-6D-PS											0.118	1/128	0.827	0.098	0.191	6		C30 C32
			8D-PS											0.118	1/128	0.827	0.098	0.191	5		
			15D-PS											0.118	1/128	0.827	0.098	0.191	15		
			400-4D-PS											0.157	3/256	0.827	0.130	0.191	4		
			500-4D-PS											0.197	3/256	1.024	0.161	0.230	4		
	MGML-PS	MGML	300-6D-PS											0.118	1/128	0.827	0.098	0.191	6		
			8D-PS											0.118	1/128	0.827	0.098	0.191	5		
			15D-PS											0.118	1/128	0.827	0.098	0.191	15		
			400-4D-PS											0.157	3/256	0.827	0.130	0.191	4		
			500-4D-PS											0.197	3/256	1.024	0.161	0.230	4		
Parting off	MGMR-PT	MGMR	200-6D-PT						●					0.079	1/128	0.630	0.063	0.138	6		C30 C32
			300-6D-PT											0.118	1/128	0.827	0.093	0.191	6		
			8D-PT		●									0.118	1/128	0.827	0.093	0.191	8		
			15D-PT											0.118	1/128	0.827	0.093	0.191	15		
			400-4D-PT											0.157	3/256	0.827	0.130	0.191	4		
			500-4D-PT											0.197	3/256	1.024	0.161	0.230	4		
	MGML-PT	MGML	200-6D-PT											0.079	1/128	0.630	0.063	0.138	6		
			300-6D-PT				●							0.118	1/128	0.827	0.093	0.191	6		
			8D-PT											0.118	1/128	0.827	0.093	0.191	8		
			15D-PT											0.118	1/128	0.827	0.093	0.191	15		
			400-4D-PT											0.157	3/256	0.827	0.130	0.191	4		
			500-4D-PT											0.197	3/256	1.024	0.161	0.230	4		
Aluminum	MRGN-A	MRGN	300-A											0.118	1/16	0.827	0.093	0.191	-		C30 C31 C33 C34
			400-A									●		0.157	5/64	0.827	0.130	0.191	-		
			500-A											0.197	3/32	1.024	0.161	0.230	-		
			600-A									●		0.236	1/8	1.024	0.197	0.229	-		
			800-A									●		0.315	5/32	1.220	0.236	0.257	-		
Relieving Profiling	MRMN-M	MRMN	200-M	●	●	●					●			0.079	3/64	0.630	0.059	0.138	-		C30 ~34 C41
			300-M	●	●	●	●		●		●			0.118	1/16	0.827	0.093	0.191	-		
			400-M	●	●	●	●				●			0.157	5/64	0.827	0.130	0.191	-		
			500-M	●					●					0.197	3/32	1.024	0.161	0.230	-		
			600-M	●		●	●							0.236	1/8	1.024	0.197	0.229	-		
			800-M	●			●							0.315	5/32	1.220	0.236	0.257	-		

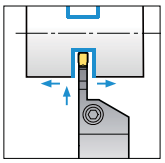
● : Stock item

MGEHR/L

For grooving, turning, parting off, relief, profil machining







MGMN MGMR
MGGN MRMN
MRGN

• R type insert

(inch)

Designation		H = (h)	W	L	S	T-MAX	Insert	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	0.510	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			
	16-6A	1	1	6	1.043	1.10	MRGN800-A		
	16-6A-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			

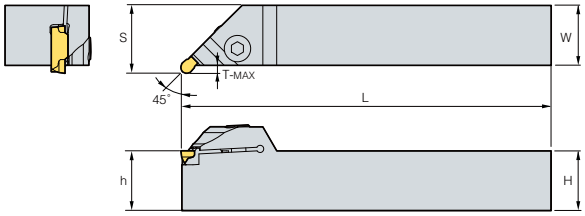
Applicable inserts **C28~C30**

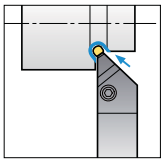
MGEUR/L

For relief, profil machining



MRMN
MRGN





• R type insert

(inch)

Designation		H = (h)	W	L	S	T-MAX	Insert	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			

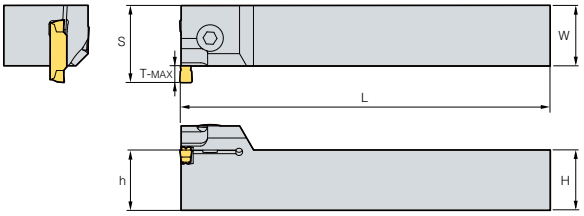
Applicable inserts **C28~C30**

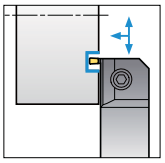
MGEVR/L

For grooving, turning, profil machining



MGMN MGGN
MRMN MRGN





• R type insert

(inch)

Designation		H = (h)	W	L	S	T-MAX	Min. machining Dia. (ØD)	Insert	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 MGMN200-G	BHA0616	HW50L
	16-2	1	1	6	1.138	0.13	5 1/8			
	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 MGMN250-G		
	16-2.5	1	1	6	1.157	0.15	4			
	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 MGMN300-□□-L/R		
	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			
	12-4	3/4	3/4	5	0.967	0.21	4	MGMN400-M/T MGGN400-□□-M MRMN400-M MGMN400-□□-L/R		
	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			
	12-5	3/4	3/4	5	1.026	0.27	4	MGMN500-M/T MGGN500-□□-M MRMN500-M MGMN500-□□-L/R		
	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			
	12-6	3/4	3/4	5	1.222	0.27	3 1/2	MGMN600-M MGGN600-□□-M MRMN600-M		
	16-6	1	1	6	1.276	0.27	3 1/2			
	20-6	1 1/4	1 1/4	6 3/4	1.526	0.27	3 1/2			
	16-8	1	1	6	1.354	0.35	2	MRMN800-M MGMN800-M		
	20-8	1 1/4	1 1/4	6 3/4	1.604	0.35	2			
	16-6A	1	1	6	1.276	0.27	3 1/2	MRGN600-A		
	20-6A	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			

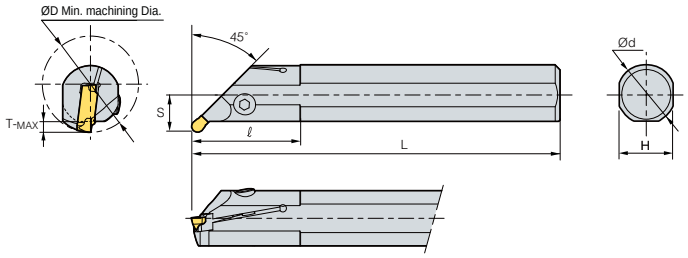
Applicable inserts **C28~C30**

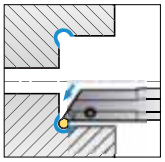
MGIUR/L

For relief, profil machining



MRMN
MRGN





• R type insert

(inch)

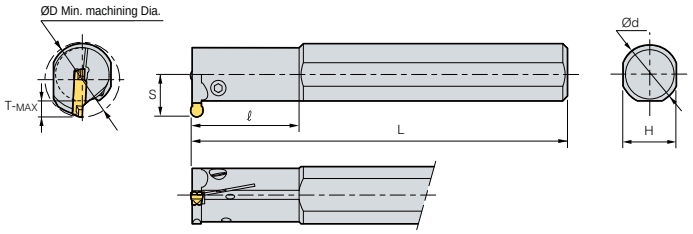
Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Insert	Screw	Wrench
MGIUR/L	**23-12-3**	1 7/16	3/4	6	1.772	0.13	0.670	0.512	MRMN300-M	MHA0512	HW40L
	26-16-3	1 5/8	1	8	1.772	0.13	0.920	0.610			
	32-20-3	2	1 1/4	10	2.559	0.13	1.170	0.748			
	23-12-4	1 7/16	3/4	6	1.772	0.13	0.670	0.512	MRMN400-M		
	26-16-4	1 5/8	1	8	1.772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

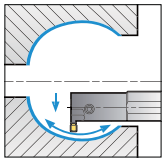
Applicable inserts **C28~C30**

MGIVR/L

For grooving, turning, profil machining







MGMN MRMN
MGGN MRGN

• R type insert

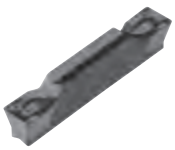
(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Insert	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	4.920	1.378	0.19	0.590	0.470	MGMN200-G	MHB0310	HW25L
	16-12-2	1	3/4	6	1.772	0.19	0.708	0.550	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	MHA0512	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	0.708	0.614	MGMN300-M/G/T MGGN300-□□-M MRMN300-M MGMN300-□□-L/R	MHA0512	HW40L
	20-16-3	1 1/4	1	8	1.772	0.25	0.920	0.744			
	24-20-3	1 1/2	1 1/4	9.842	2.559	0.25	1.170	0.846			
	16-12-4	1	3/4	6	1.772	0.25	0.670	0.614	MGMN400-M/G/T MGGN400-□□-M MRMN400-M MGMN400-□□-L/R		
	20-16-4	1 1/4	1	8	1.772	0.25	0.920	0.744			
	24-20-4	1 1/2	1 1/4	9.842	2.559	0.25	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 MGMN500-□□-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-MG MGGN600-□□-M MRMN600-M	BHA0616	
	24-20-6	1 1/2	1 1/4	10	2.559	0.31	1.170	0.846		BHA0620	
	29-24-8	1 1/2	1 1/4	10	2.559	0.39	1.170	0.921	MRMN800-M		
	29-24-8	1 13/16	1 1/2	12	2.756	0.39	1.380	1.071	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			

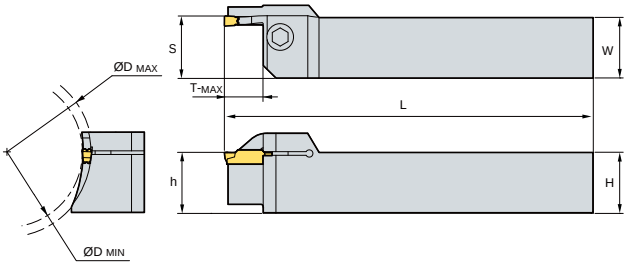
Applicable inserts **C28~C30**

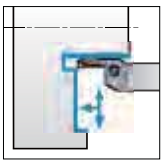
MGFHR/L

For face grooving machining



MFMN
MGMN





• R type insert

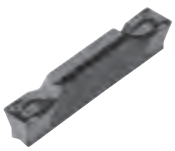
(inch)

Designation		H = (h)	W	L	S	T-MAX	ØD Min	ØD Max	Insert	Screw	Wrench
MGFHR/L	16-3-09/13-T03	1	1	6	1.008	0.393	0.945	1.378	MFMN300	BHA0616	HW50L
	11/15-T03	1	1	6	1.008	0.393	1.142	1.575			
	13/19-T03	1	1	6	1.008	0.393	1.339	1.969			
	17/27-T03	1	1	6	1.008	0.393	1.732	2.756			
	25/38-T03	1	1	6	1.008	0.393	2.520	3.898			
	16-4-16/24-T15	1	1	6	1.008	0.591	1.653	2.480			
	24/47-T05	1	1	6	1.008	0.393	2.441	4.724	MGMN400-M/T MGMN400-□□-L/R		
	44/78-T05	1	1	6	1.008	0.393	4.409	7.874			

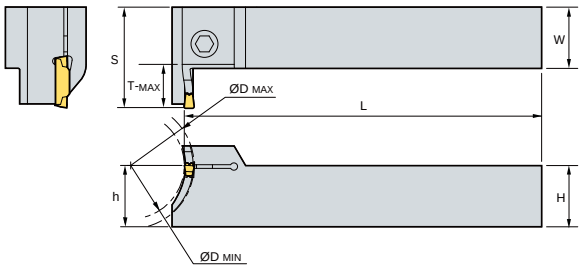
Applicable inserts **C28~C30**

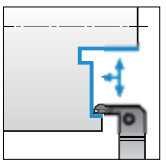
MGFVR/L

For face grooving machining



MFMN
MGMN





• R type insert

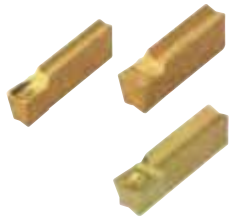
(inch)

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

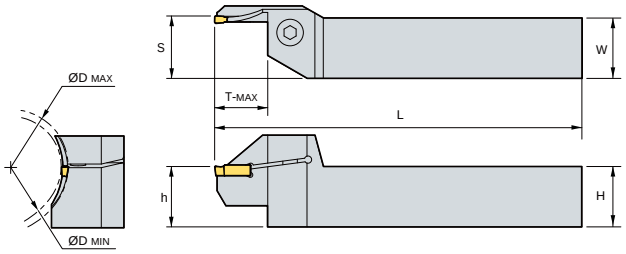
Applicable inserts **C28~C30**

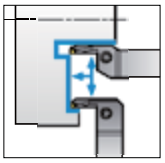
FGHH

For face grooving, turning machining



FGD FGM FMM





• R type insert

(inch)

Designation		H = (h)	W	L	S	T-MAX	ØD		Insert	Screw	Wrench
							Min	Max			
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			

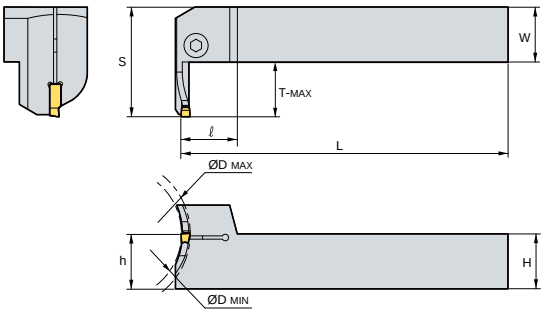
Applicable inserts **C28~C30**

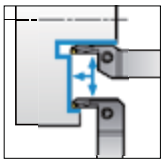
FGVH

For face grooving, turning machining



FGD FGM FMM





• R type insert

(inch)

Designation		H = (h)	W	L	S	T-MAX	ØD Min	ØD Max	Insert	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			

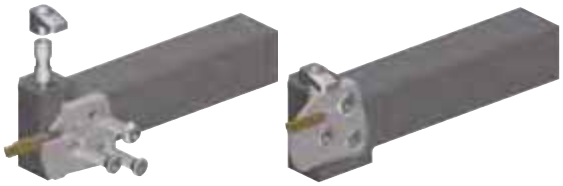
Applicable inserts **C28~C30**

KGT/MGT Cartridges

Features

- Compatible and Economical due to divided cartridge & exclusive holder system from existing single body system
- Interchangeable cartridge
  - Various assembly depends on working style
  - Reduce cutting tool costs by over 30%
  - Setting with upper clamp & side screw
- Strong & Stable setting force
  - Simultaneous assembly of insert & cartridge
  - Easy assembly & tool exchange
- Stable assembly system
  - Simple & Superior setting force

Stable Assembly thanks to double screw & clamp



Simple & Strong Setting

Code system

• Holder

KC	H	R/L	25	25
System Code	Holder Style	Hand	Height	Width

System Code
KC: KGT-Cartridge System
MC: MGT-Cartridge System

Holder Style
H: Horizontal
V: Vertical

	Horizontal type		Vertical type	
				
	MCHR	MCHL	MCVR	MCVL
Available cartridge	External process: KCER/MCER Facing process: KCFL/MCFL	External process: KCEL/MCEL Facing process: KCFR/MCFR	External process: KCEL/MCEL Facing process: KCFR/MCFR	External process: KCER/MCER Facing process: KCFL/MCFL

• Cartridge

KC	F	R/L	3	24/35	T16
System Code	Working Style	Hand	Cutting Width	Facing Dia (min/max)	Maximum Depth

System Code
KC: KGT-Cartridge System
MC: MGT-Cartridge System

Working Style
E: External Process
F: Facing Process

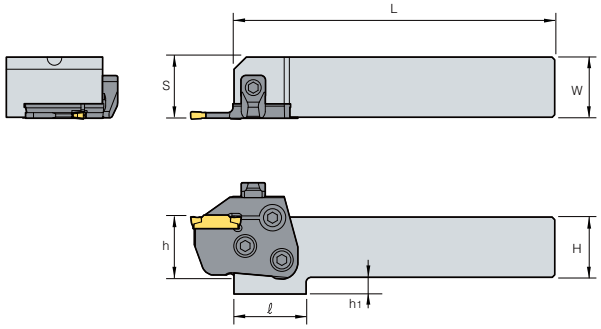
External Process		Facing Process	
			
KCER / MCER	KCEL / MCEL	KCFR / MCFR	KCFL / MCFL

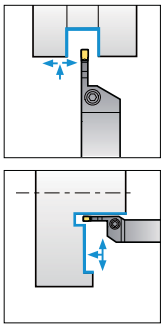
MCHR/L (Holder)

For grooving, turning, parting off, relief, profil machining



MCER/L
MCFR/L





• R type insert

(inch)

Designation		H = (h)	W	L	S	ℓ	h1	Cartridge	Clamp	Clamp Screw	Hinge Screw	Clamping Screw	Wrench
MCHR/L	2020	0.787	0.787	5.236	0.815	1.181	0.472	KCER/L, KCFR/L 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	-	-						

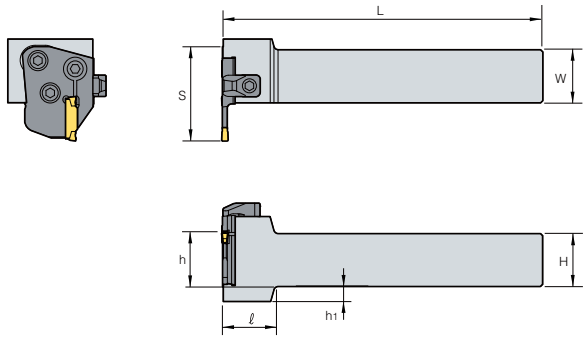
Applicable cartridge **C41~C42**

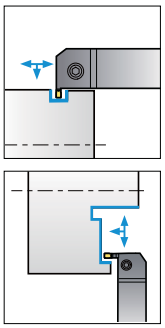
MCVR/L (Holder)

For face grooving, turning machining



MCER/L
MCFR/L





• R type insert

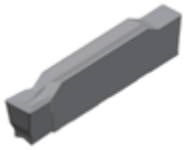
(inch)

Designation		H = (h)	W	L	S	ℓ	h1	Cartridge	Clamp	Clamp Screw	Hinge Screw	Clamping Screw	Wrench
MCVR/L	2020	0.787	0.787	5.906	1.469	1.181	0.472	KCER/L, KCFR/L 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	-	-						

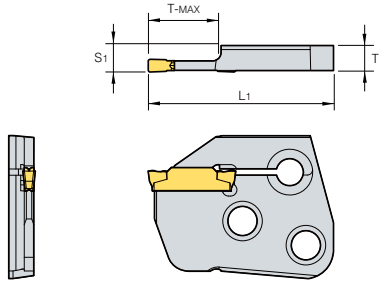
Applicable cartridge **C41~C42**

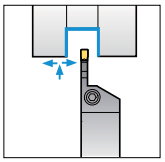
KCER/L (Cartridge)

For grooving, turning, parting off, relief, profil machining



KGMN KGMR/L
KGGN KRMN





• R type insert

(inch)

Designation		T	L_1	S_1	T-MAX	Insert		Holder
						Width	Designation	
KCER/L	3-T16	0.235	1.752	0.250	0.630	0.118	KGMN	MCVR/L MCHR/L
	4-T16	0.235	1.752	0.250	0.630	0.157	KGMR/L	
	5-T20	0.231	1.909	0.250	0.787	0.197	KGGN	
	6-T20	0.229	1.909	0.250	0.787	0.236	KRMN	

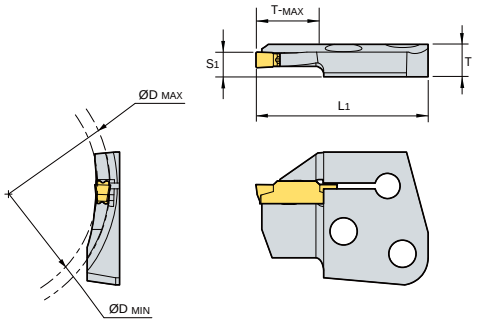
Applicable inserts **C28~C30**

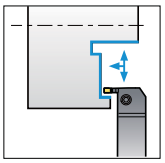
KCFR/L (Cartridge)

For face grooving, turning machining



KGMN
KGMI





• R type insert

(inch)

Designation		T	L_1	S_1	T-MAX	ØD		Insert		Holder
						Min	Max	Width	Designation	
KCFR/L	3-34/50-T16	0.315	1.752	0.250	0.630	1.339	1.969	0.118	KGMN KRMN KGGN	MCVR/L MCHR/L
	44/70-T16	0.315	1.752	0.250	0.630	1.732	2.756	0.118		
	64/99-T16	0.315	1.752	0.250	0.630	2.519	3.898	0.118		
	4-44/60-T16	0.314	1.752	0.250	0.630	1.339	2.362	0.157		
	60/120-T16	0.314	1.752	0.250	0.630	2.362	4.724	0.157		
	112/200-T16	0.314	1.752	0.250	0.630	4.409	7.874	0.157		

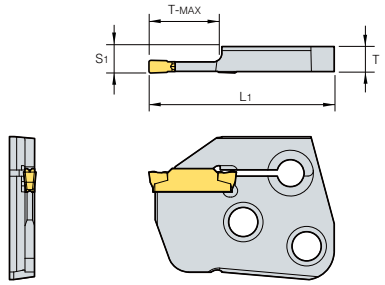
Applicable inserts **C28~C30**

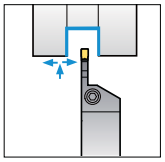
MCER/L (Cartridge)

For grooving, turning, parting off, relief, profil machining



MGMN MGMR
MGGN MRMN





• R type insert

(inch)

Designation		T	L1	S1	T-MAX	Insert		Holder
						Width	Designation	
MCER/L	3-T16	0.236	1.752	0.250	0.630	0.118	MGMN	MCVR/L MCHR/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	

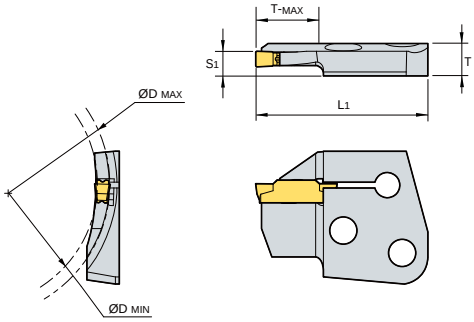
Applicable inserts **C28~C30**

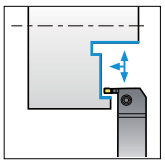
MCFR/L (Cartridge)

For face grooving, turning machining



MFNM
MGMN





• R type insert

(inch)

Designation		T	L1	S1	T-MAX	ØD		Insert		Holder
						Min	Max	Width	Designation	
MCFR/L	3-24/35-T16	0.315	1.752	0.250	0.630	0.944	1.378	0.118	MFMN300	MCVR/L MCHR/L
	29/40-T16	0.315	1.752	0.250	0.630	1.142	1.575	0.118		
	34/50-T16	0.315	1.752	0.250	0.630	1.339	1.969	0.118		
	44/70-T16	0.315	1.752	0.250	0.630	1.732	2.756	0.118		
	64/99-T16	0.315	1.752	0.250	0.630	2.519	3.898	0.118		
	4-44/60-T16	0.314	1.752	0.250	0.630	1.339	2.362	0.157	MGMN400	
	60/120-T16	0.314	1.752	0.250	0.630	2.362	4.724	0.157		
	112/200-T16	0.314	1.752	0.250	0.630	4.409	7.874	0.157		

Applicable inserts **C28~C30**

MGT - MGT for Aluminum Wheel

Features

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

Code system

• **Insert**

MR	G	N	6	-	A
System Code	**Tolerance**	**Hand**	**Cutting Edge Width**		**Chip Breaker**
MR: Multi Grooving Round shape MV: Multi Grooving V shape	G: Ground	N: Neutral	0.236 inch 0.315 inch		A/AM/AP/A5

• **Holder**

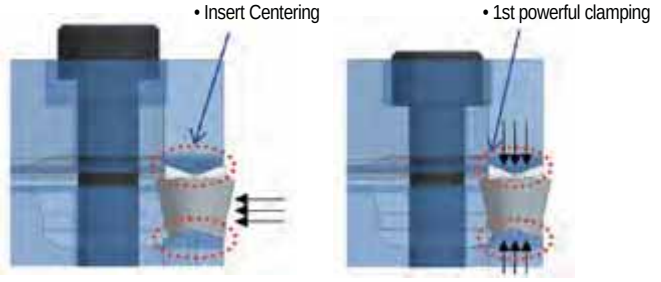
MG	E	H	R/L	25N	-	8	A	-	MR
System Code	**Application**	**Holder Type**	**Hand**	**Shank Size**		**Cutting Width**	**Chip Breaker**		**Insert Type**
MG: Multi Grooving	E: External machining I: Internal machining	H: Horizontal V: Vertical U: Undercut X: Special	R: Right L: Left	Height: 1 inch Width: 1 inch (For internal machining: Minimum diameter)		0.236 inch 0.315 inch	A/AM/AP/A5		MR: ROUND shape MV: V shape

Various insert types

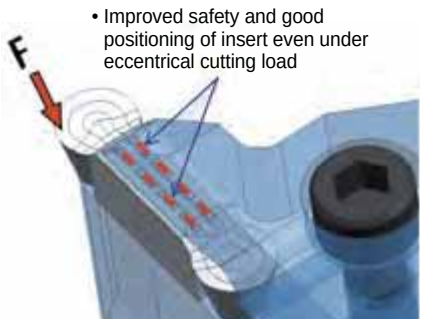
MRGN type : Full "Round" geometry

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



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



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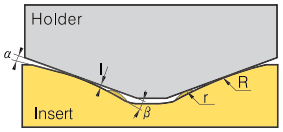
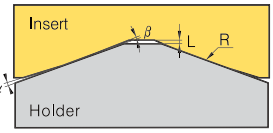
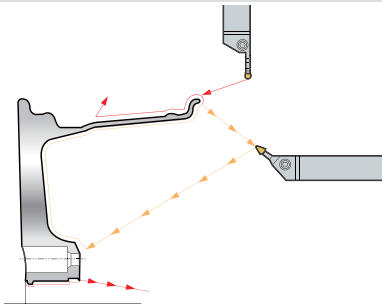
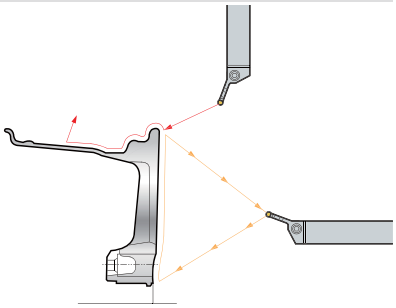
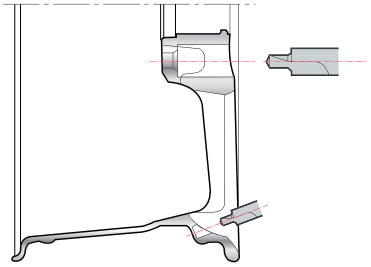




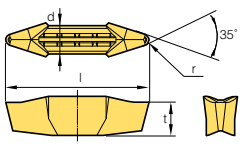
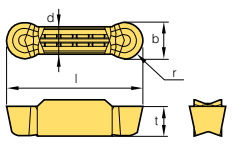
Application of aluminum wheels

Machining A	Machining B	Machining C
		

Recommended cutting condition

Workpiece		Hardness Brinell (HB)	kc (MPa)	vc (sfm)	fn (ipr)
Aluminum alloy (Forged)	Unhardened	50~70	500~600	3,300~8,300	0.004~0.024
	Hardened	90~110	700~900	1,000~3,300	0.004~0.020
Aluminum alloy (Cast)	Unhardened	70~80	700~800	1,000~3,300	0.004~0.020
	Hardened	80~110	800~950	650~2,000	0.004~0.016
Copper alloy		90~110	700~900	1,000~2,600	0.004~0.020
Magnesium alloy		70~80	700~800	1,000~3,300	0.004~0.020

Insert

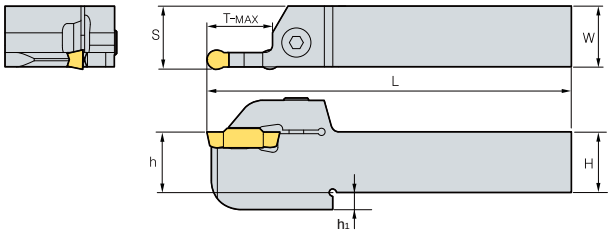
Application	Picture	Designation		Coated	Uncoated	Dimensions (inch)					Configuration	Page
				DP150	G10	b	r	l	d	t		
For Aluminum Wheel	MVGN 	MVGN	8N-A-R1.2			-	3/64	1.181	0.315	0.272		C46
			8N-A-R1.6			-	1/16	1.181	0.315	0.272		
	MRGN-A 	MRGN	6N-A		●	0.236	1/8	1.024	0.283	0.232		C45 C46
			6N-AM			0.236	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		

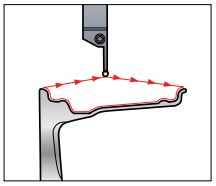
● : Korea Stock

MGEHR/L



MRGN





• R type insert

(inch)

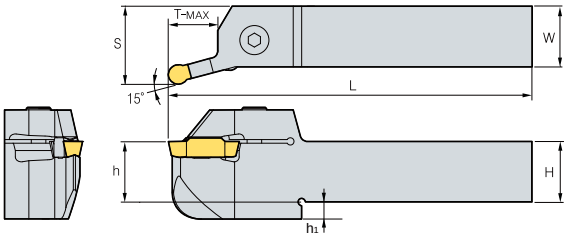
Designation		H = (h)	h1	W	L	S	T-MAX	Insert	Screw	Wrench
MGEHR/L	16N-6A	1	1	1	6	1.006	0.93	MRGN6N-A/AP/AM	BHA0620	HW50L
	20N-6A	1 1/4	1 1/4	1 1/4	6	1.281	1.06			
	16N-8A	1	1	1	6	1.006	0.93	MRGN8N-A/AP/AM		
	20N-8A	1 1/4	1 1/4	1 1/4	6	1.281	1.06			
	16N-6A5	1	1	1	6	1.006	0.93	MRGN6N-A5		
	20N-6A5	1 1/4	1 1/4	1 1/4	6	1.281	1.06			
	16N-8A5	1	1	1	6	1.006	0.93	MRGN8N-A5		
	20N-8A5	1 1/4	1 1/4	1 1/4	6	1.281	1.06			

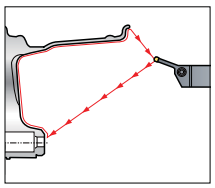
Applicable inserts **C44**

MGEHR/L-15



MRGN





• R type insert

(inch)

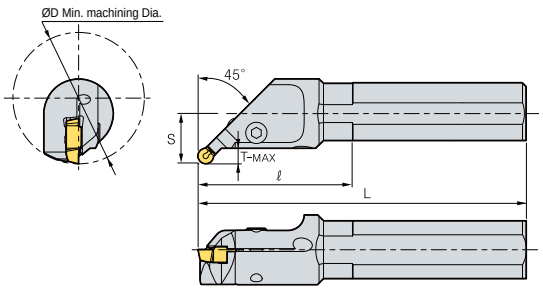
Designation		H = (h)	h1	W	L	S	T-MAX	Insert	Screw	Wrench
MGEHR/L	16N-6A-15	1	0.276	1	6	1.268	0.79	MRGN6N-A/AP/AM	BHA0620	HW50L
	20N-6A-15	1 1/4	0.315	1 1/4	6	1.543	0.98			
	16N-8A-15	1	0.276	1	6	1.268	0.79	MRGN8N-A/AP/AM		
	20N-8A-15	1 1/4	0.315	1 1/4	6	1.543	0.98			
	16N-6A5-15	1	0.276	1	6	1.268	0.79	MRGN6N-A5		
	20N-6A5-15	1 1/4	0.315	1 1/4	6	1.543	0.98			
	16N-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			

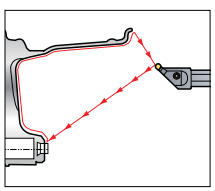
Applicable inserts **C44**

MGIUR/L-MR



MRGN





• R type insert

(inch)

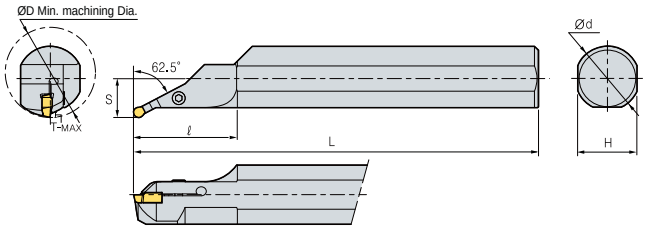
Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Insert	Screw	Wrench
MGIUR/L	4420-8A-MR	2 43/64	1 1/4	7	2.560	0.315	1.181	1.023	MRGN8N-A/AM/AP	BHA0620	HW50L
	4420-8A5-MR	2 43/64	1 1/4	7	2.560	0.315	1.181	1.023	MRGN8N-A5		

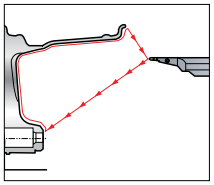
Applicable inserts **C44**

MGIXR/L-MR



MRGN





• R type insert

(inch)

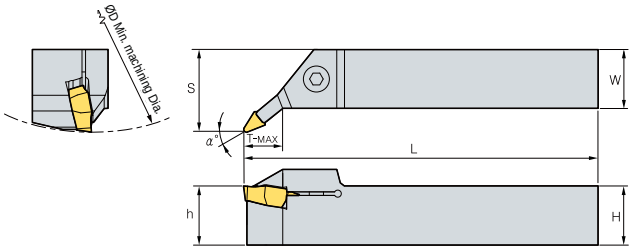
Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Insert	Screw	Wrench
MGIXR/L	4632-8A-MR	2 3/4	2	14	3.150	0.303	1.811	1.188	MRGN8N-A/AM/AP	BHA0620	HW50L
	4632-8A5-MR	2 3/4	2	14	3.150	0.303	1.811	1.188	MRGN8N-A5		

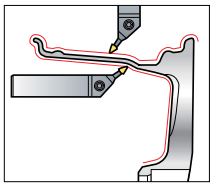
Applicable inserts **C44**

MGEXR/L



MVGN





• R type insert

(inch)

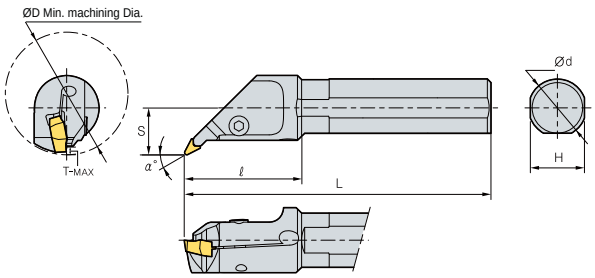
Designation		H = (h)	W	L	S	T-MAX	α°	Insert	Screw	Wrench
MGEXR/L	16N-8A-5V	1	1	6	1.142	0.98	51	MVGN8N-A-R1.2	BHA0620	HW50L
	16N-8A-22.5V	1	1	6	1.378	1.06	22.5	MVGN8N-A-R1.6		

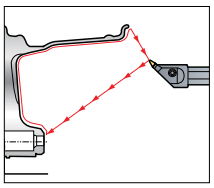
Applicable inserts **C44**

MGIUR/L-MV



MVGN





• R type insert

(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	α°	Insert	Screw	Wrench
MGIUR/L	4420-8A-MV	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	BHA0620	HW50L

Applicable inserts **C44**

Economical 3-corner insert for high precision grooving

TB/TB-M



- Economical 3-corner insert for grooving
- Various cutting edge size ranging from 0.02~0.177 inch
- High accuracy ground insert ensures high precision machining
- Stable chip control optimized for automated grooving process

Code system

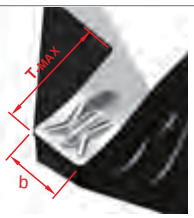
• **Insert**

TB	5	150	N	-	010	M
Triangle Blade	Inscribed circle	Cutting edge width	Hand		Nose R	Chip breaker
	3: 3/8 inch 4: 1/2 inch 5: 5/8 inch	0.02~0.177 inch	N: Neutral R: Right L: Left		0.000~0.016 inch	None M

• **Holder**

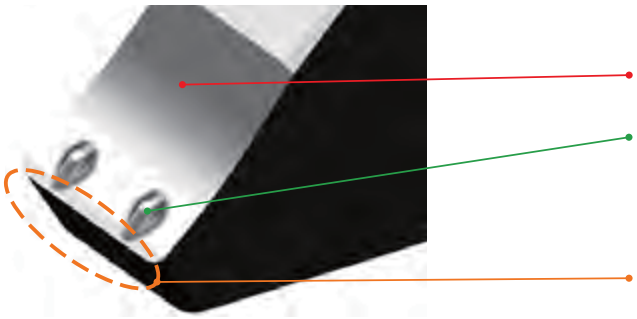
TBH	16	R	5
Triangle Blade Holder	Shank size	Hand	Inscribed circle
	06~16	R: Right L: Left	3: 3/8 inch 4: 1/2 inch 5: 5/8 inch

TB/TB-M

Specification		TB3000R/L, TB4000R/L	TB4000R-M	TB5000N-000-M
Designation		TB3125R/L~TB3430R/L (Inscribed circle of 0.375 inch) TB4125R/L~TB4430R/L (Inscribed circle of 0.5 inch)	TB4150R-M ~TB4450R-M (Inscribed circle of 0.5 inch)	TB5050N-000-M ~TB5318-020-M (Inscribed circle of 0.625 inch)
Insert shape				
Features	Chip breaker	Ground chip breaker	Pressed chip breaker	Pressed chip breaker
	Hand	Right/Left-handed	Right-handed	Neutral
	Cutting edge width (b)	TB3000: 0.049~0.169 inch TB4000: 0.049~1.177 inch	0.059~0.177 inch	0.02~0.125 inch
	Depth of cut (T-MAX)	TB3000: ~0.138 inch TB4000: ~0.197 inch	~0.197 inch	~0.256 inch
	Shape	○	X	X
	Cutting edge width	○	○	○
Chip breaker shape				
Application range		P	P, M, K	P, M, K
Grade		CN2500, PC5300	CN2500, PC5300	PC5300

TB-M chip breaker

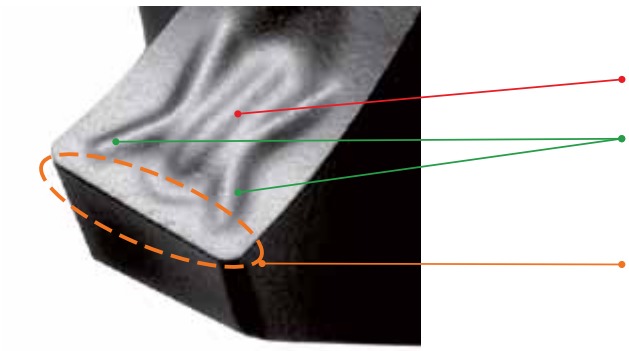
- Minimized cutting force at high speed and high feed → Smooth chip evacuation outside each groove
- High precision cutting performance → Exceptional surface finish and accurate dimensions
- Excellent chip flow and cutting results → Ideal for automated and unmanned productionw



TB5-M Chip breaker

- **Lowered back area**: reduced load of chip evacuation due to minimizing chip friction
- **Beveled protruding dot**: made regular sized chip curls good chip flow out of the groove by reducing the chip width minimized load for chip evacuation in high depth of cut
- **Land**: prevented chipping and increased stability in interrupted machining
- **Use**: for grooving with T-MAX 0.256 inch below, parting and interrupted machining

Designation	TB5050N-M ~TB5120N-M	TB5140N-M ~TB5178N-M	TB5196N-M ~TB5239N-M	TB5247N-M ~TB5287N-M	TB5300N-M ~TB5318N-M
Shape					
Cutting edge width (b)	0.02~0.047 inch	0.055~0.07 inch	0.077~0.094 inch	0.097~0.113 inch	0.118~0.125 inch



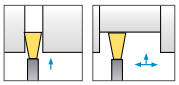
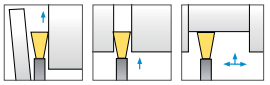
TB4-M Chip breaker

- **Second protruding dot**: stable chip curl control
- **Main protruding dot**: making regular sized chip curl good chip flow out of the groove by reducing the chip width good chip control in turning and chamfering
- **Sharp cutting edge**: increased machinability
- **Use**: for grooving with T-MAX 0.177 inch below and turning

Designation	TB4150R-M~TB4185R-M	TB4200R-M~TB4228R-M	TB4300R-M~TB4350R-M	TB4400R-M~TB4450R-M
Shape				
Cutting edge width (b)	0.059~0.73 inch	0.079~0.11 inch	0.118~0.138 inch	0.157~0.177 inch

Guide for TB

(inch)

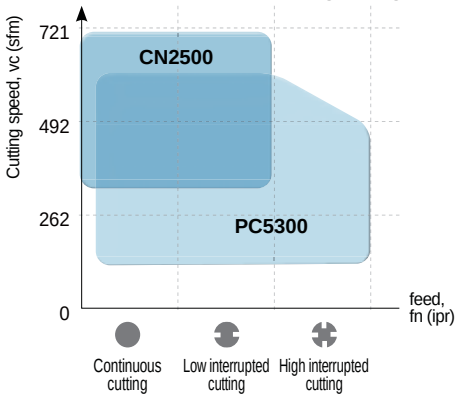
TB				TB3 / TB4	TB4-M	TB5-M
Recommended machining method						
Cutting edge width W	Depth of cut T-MAX			Recommended feed rate (ipr)			
	TB3/TB4	TB4-M	TB5-M				
0.020	-	-	0.098	0.002 (0.001~0.004)	-	-	●
0.031	-	-	0.063		-	-	●
0.039	-	-	0.138		-	-	●
0.041	-	-	0.079		-	-	●
0.047	-	-	0.079		-	-	●
0.049	0.079	-	0.079		●	-	-
0.055	0.079	-	0.256	0.004 (0.001~0.006)	●	-	●
0.057	0.079	-	-		●	-	-
0.058	-	-	0.256		-	-	●
0.059	0.138	0.138	0.256		●	●	●
0.062	-	-	0.256		-	-	●
0.067	-	-	0.256		-	-	●
0.069	0.138	0.138	-		●	●	-
0.070	-	-	0.256		-	-	●
0.073	0.138	0.138	-		●	●	-
0.077	-	-	0.256		-	-	●
0.079	0.138	0.138	0.256		●	●	●
0.085	0.138	0.138	-	0.005 (0.001~0.008)	●	●	-
0.087	0.256	-	0.256		-	-	●
0.091	0.138	0.138	0.256		●	●	●
0.094	-	-	0.256		-	-	●
0.097	-	-	0.256		-	-	●
0.098	0.157	0.157	0.256		●	●	●
0.104	0.157	0.157	0.256		●	●	-
0.106	-	-	0.256		-	-	●
0.110	0.157	0.157	-		●	●	-
0.113	-	-	0.256		-	-	●
0.118	0.157	0.157	0.256		●	●	●
0.124	-	-	0.256	0.006 (0.002~0.008)	-	-	●
0.125	-	-	0.256		-	-	●
0.130	0.157	-	-		●	-	-
0.138	0.197	0.197	-		●	●	-
0.157	0.197	0.197	-		●	●	-
0.169	0.197	0.197	-		●	●	-
0.177	0.197	0.197	-		●	●	-

Recommended cutting conditions

Workpiece	Grade	CN2500 (Cermet)			PC5300 (Coated)		
		Min	Recommended	Max.	Min	Recommended	Max.
P	SM鼾鼾C type	328	**524**	721	262	**459**	656
	SCM type	328	**492**	656	262	**426**	590
M	STS type	-	-	-	131	**262**	492
K	GC, GCD type	-	-	-	262	**426**	590

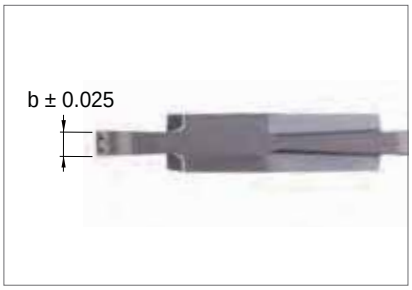
Recommended cutting speed, vc (sfm)

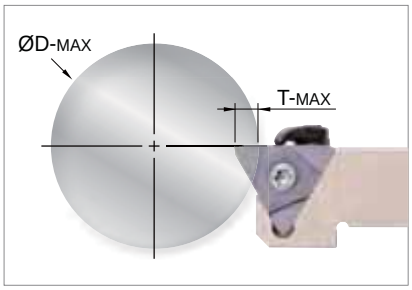
Recommended cutting range

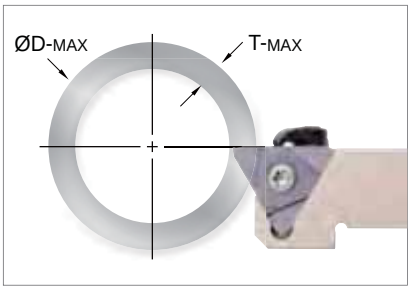


TB5-M machining range

- There is a limit to cutting diameters of TB5-M when depth of cuts are over 0.197 inch
  (e.g. When cutting with a TB5200N-020-M insert at the depth of 0.244 inch, Ø2.362 D-MAX is available)
- N.L = No limit



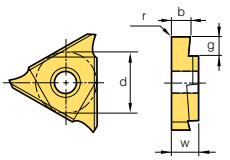
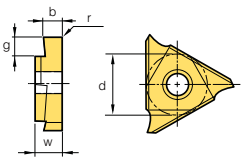




(inch)

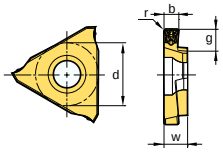
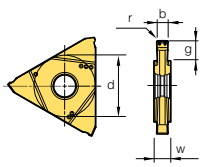
Designation		b	r	g (T-MAX)	ØD-MAX								
					T ≤ 0.118	T ≤ 0.138	T ≤ 0.157	T ≤ 0.177	T ≤ 0.197	T ≤ 0.217	T ≤ 0.236	T ≤ 0.252	T ≤ 0.256
TB	5050N- 000-M	0.020	0.000	0.039	-	-	-	-	-	-	-	-	-
	004-M	0.020	0.002	0.098	-	-	-	-	-	-	-	-	-
	5080N- 000-M	0.031	0.000	0.063	-	-	-	-	-	-	-	-	-
	5100N- 006-M	0.039	0.002	0.138	-	-	-	-	-	-	-	-	-
	5104N- 000-M	0.041	0.000	0.079	-	-	-	-	-	-	-	-	-
	5120N- 000-M	0.047	0.000	0.079	-	-	-	-	-	-	-	-	-
	5140N- 000-M	0.055	0.000	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5147N- 000-M	0.058	0.000	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5150N- 010-M	0.059	0.004	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	015-M	0.059	0.006	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5157N- 015-M	0.062	0.006	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5170N- 010-M	0.067	0.004	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5178N- 018-M	0.070	0.007	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5196N- 015-M	0.077	0.006	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5200N- 020-M	0.079	1/128	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5222N- 015-M	0.087	0.006	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5230N- 020-M	0.091	1/128	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5239N- 015-M	0.094	0.006	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5247N- 020-M	0.097	1/128	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5250N- 020-M	0.098	1/128	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5270N- 010-M	0.106	0.004	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5287N- 020-M	0.113	1/128	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5300N- 000-M	0.118	0.000	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	020-M	0.118	1/128	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	040-M	0.118	1/64	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5315N- 015-M	0.124	0.006	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575
	5318N- 020-M	0.125	1/128	0.256	N.L	N.L	N.L	N.L	N.L	Ø11.811	Ø6.693	Ø2.362	Ø1.575

Insert

Picture	Designation		Cermet		Coated	Dimensions (inch)					Configuration
			CN2000	CN2500	PC5300	b	g (T-MAX)	r	w	d	
	TB (Right-handed)	3125R				0.049	0.059	1/128	3/16	3/8	
		3145R				0.057	0.059	1/128	3/16	3/8	
		3175R				0.069	0.098	1/128	3/16	3/8	
		3185R				0.073	0.098	1/128	3/16	3/8	
		3200R				0.079	0.098	1/128	3/16	3/8	
		3230R				0.091	0.138	0.012	3/16	3/8	
		3280R				0.110	0.138	0.012	3/16	3/8	
		3330R				0.130	0.138	0.012	3/16	3/8	
		3430R				0.169	0.138	1/64	3/16	3/8	
		4125R	●		●	0.049	0.079	1/128	3/16	1/2	
		4145R	●		●	0.057	0.079	1/128	3/16	1/2	
		4150R	●		●	0.059	0.138	1/128	3/16	1/2	
		4175R	●		●	0.069	0.138	1/128	3/16	1/2	
		4185R	●		●	0.073	0.138	1/128	3/16	1/2	
		4200R	●		●	0.079	0.138	1/128	3/16	1/2	
		4215R	●		●	0.085	0.138	1/128	3/16	1/2	
		4230R	●		●	0.091	0.138	1/128	3/16	1/2	
		4250R	●		●	0.098	0.157	0.012	3/16	1/2	
		4265R	●		●	0.104	0.157	0.012	3/16	1/2	
		4280R	●		●	0.110	0.157	0.012	3/16	1/2	
		4300R	●		●	0.118	0.157	0.012	3/16	1/2	
		4330R	●		●	0.130	0.157	0.012	3/16	1/2	
		4350R	●		●	0.138	0.197	0.012	3/16	1/2	
		4400R	●		●	0.157	0.197	1/64	3/16	1/2	
		4430R	●		●	0.169	0.197	1/64	3/16	1/2	
		4450R	●		●	0.177	0.197	1/64	3/16	1/2	
	TB (Left-handed)	3125L				0.049	0.059	1/128	3/16	3/8	
		3145L				0.057	0.059	1/128	3/16	3/8	
		3175L				0.069	0.098	1/128	3/16	3/8	
		3185L				0.073	0.098	1/128	3/16	3/8	
		3200L				0.079	0.098	1/128	3/16	3/8	
		3230L				0.091	0.138	0.012	3/16	3/8	
		3280L				0.110	0.138	0.012	3/16	3/8	
		3330L				0.130	0.138	0.012	3/16	3/8	
		3430L				0.169	0.138	1/64	3/16	3/8	
		4125L				0.049	0.079	1/128	3/16	1/2	
		4145L				0.057	0.079	1/128	3/16	1/2	
		4150L				0.059	0.138	1/128	3/16	1/2	
		4175L				0.069	0.138	1/128	3/16	1/2	
		4185L				0.073	0.138	1/128	3/16	1/2	
		4200L				0.079	0.138	1/128	3/16	1/2	
		4215L				0.085	0.138	1/128	3/16	1/2	
		4230L				0.091	0.138	1/128	3/16	1/2	
		4250L				0.098	0.157	0.012	3/16	1/2	
		4265L				0.104	0.157	0.012	3/16	1/2	
		4280L				0.110	0.157	0.012	3/16	1/2	
		4300L				0.118	0.157	0.012	3/16	1/2	
		4330L				0.130	0.157	0.012	3/16	1/2	
		4350L				0.138	0.197	0.012	3/16	1/2	
		4400L				0.157	0.197	1/64	3/16	1/2	
		4430L				0.169	0.197	1/64	3/16	1/2	
		4450L				0.177	0.197	1/64	3/16	1/2	

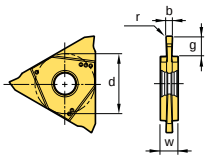
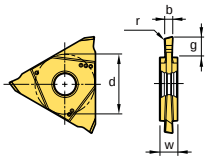
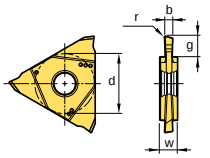
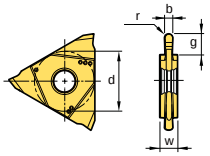
●: Korea Stock

Insert

Picture	Designation		Cermet		Coated	Dimensions (inch)					Configuration
			CN2000	CN2500	PC5300	b	g (T-MAX)	r	w	d	
	TB (Right-handed)	4150R-M	●		●	0.059	0.138	1/128	3/16	1/2	
		4175R-M	●		●	0.069	0.138	1/128	3/16	1/2	
		4185R-M	●		●	0.073	0.138	1/128	3/16	1/2	
		4200R-M	●		●	0.079	0.138	1/128	3/16	1/2	
		4215R-M	●		●	0.085	0.138	1/128	3/16	1/2	
		4230R-M	●		●	0.091	0.138	1/128	3/16	1/2	
		4250R-M	●		●	0.098	0.157	0.012	3/16	1/2	
		4265R-M	●		●	0.104	0.157	0.012	3/16	1/2	
		4280R-M	●		●	0.110	0.157	0.012	3/16	1/2	
		4300R-M	●		●	0.118	0.157	0.012	3/16	1/2	
		4330R-M	●		●	0.130	0.157	0.012	3/16	1/2	
		4350R-M	●		●	0.138	0.197	0.012	3/16	1/2	
		4400R-M	●		●	0.157	0.197	1/64	3/16	1/2	
		4430R-M	●		●	0.169	0.197	1/64	3/16	1/2	
		4450R-M	●		●	0.177	0.197	1/64	3/16	1/2	
	TB (Neutral)	5050N-000-M			●	0.020	0.039	0.000	0.177	5/8	
		5050N-004-M			●	0.020	0.098	0.002	0.177	5/8	
		5080N-000-M			●	0.031	0.063	0.000	0.177	5/8	
		5100N-006-M			●	0.039	0.138	0.002	0.177	5/8	
		5104N-000-M			●	0.041	0.079	0.000	0.177	5/8	
		5120N-000-M			●	0.047	0.079	0.000	0.177	5/8	
		5140N-000-M			●	0.055	0.256	0.000	0.177	5/8	
		5147N-000-M			●	0.058	0.256	0.000	0.177	5/8	
		5150N-010-M			●	0.059	0.256	0.004	0.177	5/8	
		5150N-015-M			●	0.059	0.256	0.006	0.177	5/8	
		5157N-015-M			●	0.062	0.256	0.006	0.177	5/8	
		5170N-010-M			●	0.067	0.256	0.004	0.177	5/8	
		5178N-018-M			●	0.070	0.256	0.007	0.177	5/8	
		5196N-015-M			●	0.077	0.256	0.006	0.177	5/8	
		5200N-020-M			●	0.079	0.256	1/128	0.177	5/8	
		5222N-015-M			●	0.087	0.256	0.006	0.177	5/8	
		5230N-020-M			●	0.091	0.256	1/128	0.177	5/8	
		5239N-015-M			●	0.094	0.256	0.006	0.177	5/8	
		5247N-020-M			●	0.097	0.256	1/128	0.177	5/8	
		5250N-020-M			●	0.098	0.256	1/128	0.177	5/8	
		5270N-010-M			●	0.106	0.256	0.004	0.177	5/8	
		5287N-020-M			●	0.113	0.256	1/128	0.177	5/8	
		5300N-000-M			●	0.118	0.256	0.000	0.177	5/8	
		5300N-020-M			●	0.118	0.256	1/128	0.177	5/8	
		5300N-040-M			●	0.118	0.256	1/64	0.177	5/8	
		5315N-015-M			●	0.124	0.256	0.006	0.177	5/8	
		5318N-020-M			●	0.125	0.256	1/128	0.177	5/8	

●: Korea Stock

Insert

Picture	Designation		Cermet		Coated	Dimensions (inch)						Configuration
			CN2000	CN2500	PC5300	b	g (T-MAX)	r	a°	w	d	
	TB (Neutral)	5050N-004-P				0.020	0.039	0.002	-	0.177	5/8	
		5100N-010-P				0.039	0.138	0.004	-	0.177	5/8	
		5150N-010-P				0.059	0.256	0.004	-	0.177	5/8	
		020-P				0.059	0.256	1/128	-	0.177	5/8	
		5200N-010-P				0.079	0.256	0.004	-	0.177	5/8	
		020-P				0.079	0.256	1/128	-	0.177	5/8	
		5239N-015-P				0.094	0.256	0.006	-	0.177	5/8	
		5250N-020-P				0.098	0.256	1/128	-	0.177	5/8	
		5300N-020-P				0.091	0.256	1/128	-	0.177	5/8	
	TB (Neutral, Right cutting)	5100N-6DR-P				0.039	0.138	0.002	6	0.177	5/8	
		15DR-P				0.039	0.138	0.002	15	0.177	5/8	
		5150N-6DR-P				0.059	0.256	0.002	6	0.177	5/8	
		15DR-P				0.059	0.256	0.002	15	0.177	5/8	
		5200N-6DR-P				0.079	0.256	0.004	6	0.177	5/8	
		15DR-P				0.079	0.256	0.004	15	0.177	5/8	
	TB (Neutral, Left cutting)	5100N-6DL-P				0.039	0.138	0.002	6	0.177	5/8	
		15DL-P				0.039	0.138	0.002	15	0.177	5/8	
		5150N-6DL-P				0.059	0.256	0.002	6	0.177	5/8	
		15DL-P				0.059	0.256	0.002	15	0.177	5/8	
		5200N-6DL-P				0.079	0.256	0.004	6	0.177	5/8	
		15DL-P				0.079	0.256	0.004	15	0.177	5/8	
	TB (Neutral, Round shape)	5157N-079-P				0.062	0.256	0.031	-	0.177	5/8	
		5200N-100-P				0.079	0.256	0.039	-	0.177	5/8	
		5239N-120-P				0.094	0.256	0.047	-	0.177	5/8	
		5300N-150-P				0.118	0.256	0.059	-	0.177	5/8	

●: Korea Stock

TBH



TB3000R/L
TB4000R-M

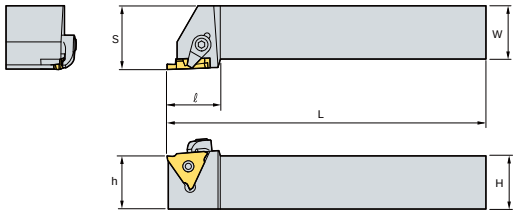
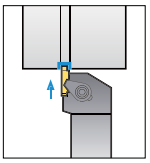


Fig. 1



• R type insert



TB5000N-□□□-M

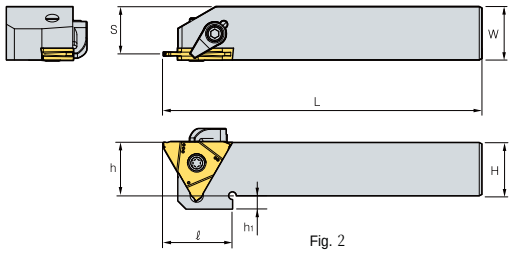


Fig. 2

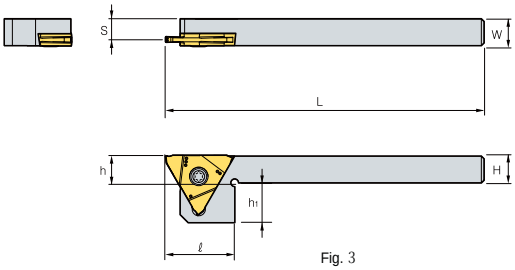


Fig. 3

(inch)

Designation		Dimensions						Insert	Clamp	Clamp Screw	Screw	Wrench	Fig.
		H = (h)	W	L	ℓ	h_1	S						
TBH	12R/L-3-23	3/4	3/4	5	1.004	-	0.947	TB3125~3230R/L	CS6R1	DHA0617	-	HW30L	1
	12R/L-3-33	3/4	3/4	5	1.004	-	0.947	TB3280~3330R/L					
	12R/L-3-43	3/4	3/4	5	1.004	-	0.947	TB3430R/L					
	16R/L-3-23	1	1	6	1.004	-	1.197	TB3125~3230R/L					
	16R/L-3-33	1	1	6	1.004	-	1.197	TB3280~3330R/L					
	16R/L-3-43	1	1	6	1.004	-	1.197	TB3430R/L					
	12R/L-4-23	3/4	3/4	5	1.004	-	0.947	TB4125~4230R/L					
	12R/L-4-33	3/4	3/4	5	1.004	-	0.947	TB4250~4330R/L					
	12R/L-4-45	3/4	3/4	5	1.004	-	0.947	TB4350~4450R/L					
	16R/L-4-23	1	1	6	1.004	-	1.197	TB4125~4230R/L					
	16R/L-4-33	1	1	6	1.004	-	1.197	TB4250~4330R/L					
	16R/L-4-45	1	1	6	1.004	-	1.197	TB4350~4450R/L					
TBH	06R/L-5	3/8	3/8	5	0.984	0.591	0.307	TB5050~5318N	-	-	FTNA0512	TW20L	3
	08R/L-5	1/2	1/2	5	0.984	0.512	0.386						
	10R/L-5	5/8	5/8	5	1.024	0.354	0.543		CS6R1	DHA0617	FTNA0516	HW30L, TW20L	2
	12R/L-5	3/4	3/4	5	1.024	0.197	0.701						
	16R/L-5	1	1	6	-	-	0.898						

The Solution for High-Precision Grooving

K-Notch

KORLOY Grooving Tool

- KORLOY clamping system offers high rigidity for high precision machining
- High-quality cutting edge ensuring long tool life and excellent machinability
- Provides various cutting edge widths for a wide range of selection

Code system

• **Insert**

KN	G	P	3	M	125	R
K-Notch	Insert type	Additional information	Insert size	Unit	Insert Width	Hand
	B: Blank G: Grooving R: Full Radius T: Threading	P: Positive None: Flat	2, 3, 4	M: Metric None: Inch	125: 0.125 inch	L: Left R: Right

• **Holder**

KN	S	R	16	3	C
K-Notch	Clamping position	Hand	Shank size	Insert size	Holder length
	S: Side	L: Left R: Right	(Height x Width) 06: 0.375 inch 12: 0.75 inch 08 : 0.5 inch 16: 1 inch 10: 0.625 inch 20: 1.25 inch	2, 3, 4	B: 4.5 inch C: 5.0 inch D: 6.0 inch V: 3.5 inch None: 2.5 inch

Features of holder

Clamp

- Rigid binding force relative to the clamping force
- User-oriented convenient shape

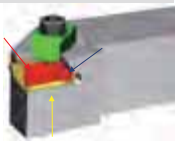
Clamped view



Insert clamping

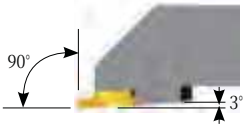
- Provides excellent clamping stability due to the 3-face (bottom, side, and rear face) binding

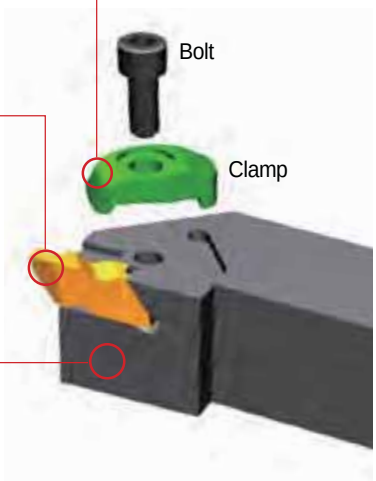
3-face clamping



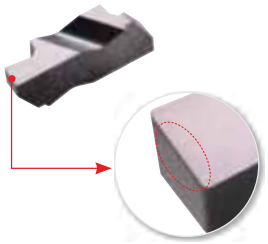
Relief angle

- The relief angle of a flank surface when clamping an insert: 3°





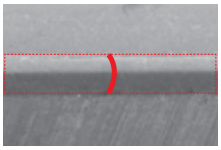
Features of insert



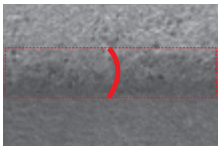
[Edge preparation]

High-quality edge preparation

- Cutting edges in uniform quality
- Long tool life



[K-Notch]



[Competitor]

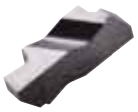
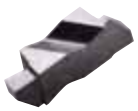
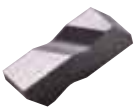
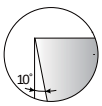
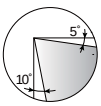
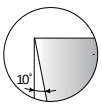
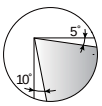
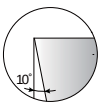
Mirror-like rake surface

- Improved resistance to welding and chipping
- Improved surface finish of workpieces



[K-Notch]

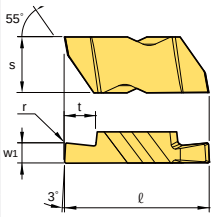
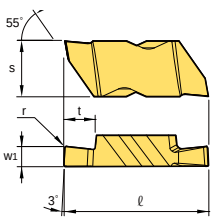
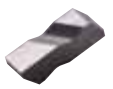
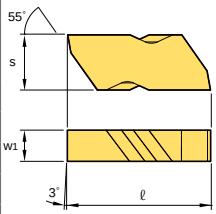
Recommended feed per insert type

Type		KNG	KNGP	KNR	KNRP	KNB
Insert shape						
Cutting-edge						
Application		General grooving	General grooving	Turning profiling	Turning profiling	Blank
Recommended workpiece	1st	P, K	M, N, S	P, K	M, N, S	-
	2nd	M, N, S	P, K	M, N, S	P, K	-
Recommended feed, fn (mm/rev)	P	0.004 - 0.011	0.003 - 0.010	0.004 - 0.011	0.003 - 0.010	-
	M	0.004 - 0.010	0.003 - 0.010	0.004 - 0.010	0.003 - 0.010	-
	K	0.004 - 0.011	0.003 - 0.010	0.004 - 0.011	0.003 - 0.010	-
	N	0.001 - 0.012	0.001 - 0.012	0.001 - 0.012	0.001 - 0.012	-
	S	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	0.002 - 0.006	-

Recommended cutting speed per grade

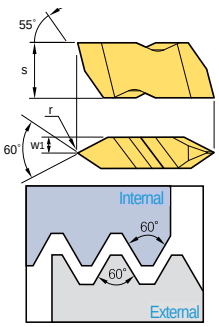
Workpiece		Grade	Recommended cutting speed, vc (sfm)
			164 328 656 984 1969
P	Steel	PC5300	262 – 656
	Alloy steel	PC5300	197 – 525
M	Stainless steel	PC5300	262 – 427
		PC8110	262 – 525
K	Cast iron	PC5300	295 – 656
N	Non-ferrous metal	PC5300	525 – 1969
S	Heat-resistant alloy	PC8110	114 – 213

Insert (Metric)

Application	Picture	Designation			Coated PC5300	Coated PC8110	Uncoated H05	Dimensions inch s	w1	r	t	ℓ	mm s	w1	r	t	ℓ	Configuration
Flat Top		KNG	2M	150R				0.219	0.059	0.0075	0.11	0.513	5.56	1.50	0.19	2.79	13.030	
				200R				0.219	0.079	0.0075	0.11	0.513	5.56	2.00	0.19	2.79	13.030	
				250R				0.219	0.098	0.0075	0.11	0.513	5.56	2.50	0.19	2.79	13.030	
				300R				0.219	0.118	0.0075	0.11	0.513	5.56	3.00	0.19	2.79	13.030	
			3M	150R	●	●		0.344	0.059	0.0075	0.11	0.894	8.74	1.50	0.19	1.91	22.709	
				200R	●	●		0.344	0.079	0.0075	0.11	0.894	8.74	2.00	0.19	2.79	22.709	
				250R	●	●		0.344	0.098	0.0075	0.15	0.894	8.74	2.50	0.19	3.81	22.709	
				300R	●	●		0.344	0.118	0.0075	0.15	0.894	8.74	3.00	0.19	3.81	22.709	
				400R	●	●		0.344	0.157	0.0075	0.15	0.894	8.74	4.00	0.19	3.81	22.709	
			4M	500R				0.453	0.197	0.0079	0.25	1.128	11.51	5.00	0.20	6.35	28.663	
				600R				0.453	0.236	0.0079	0.25	1.128	11.51	6.00	0.20	6.35	28.663	
C/B Ground		KNGP	2M	150R				0.219	0.059	0.0075	0.11	0.513	5.56	1.50	0.19	2.79	13.030	
				200R				0.219	0.079	0.0075	0.11	0.513	5.56	2.00	0.19	2.79	13.030	
				250R				0.219	0.098	0.0075	0.11	0.513	5.56	2.50	0.19	2.79	13.030	
				300R				0.219	0.118	0.0075	0.11	0.513	5.56	3.00	0.19	2.79	13.030	
			3M	150R	●	●		0.344	0.059	0.0075	0.11	0.894	8.74	1.50	0.19	1.91	22.709	
				200R	●	●		0.344	0.079	0.0075	0.11	0.894	8.74	2.00	0.19	2.79	22.709	
				250R	●	●		0.344	0.098	0.0075	0.15	0.894	8.74	2.50	0.19	3.81	22.709	
				300R	●	●		0.344	0.118	0.0075	0.15	0.894	8.74	3.00	0.19	3.81	22.709	
				400R	●	●		0.344	0.157	0.0075	0.15	0.894	8.74	4.00	0.19	3.81	22.709	
			4M	500R				0.453	0.197	0.0079	0.25	1.128	11.51	5.00	0.20	6.35	28.663	
				600R				0.453	0.236	0.0079	0.25	1.128	11.51	6.00	0.20	6.35	28.663	
Blank		KNB	2R					0.219	0.150	-	-	0.513	5.56	3.81	-	-	13.030	
			3R					0.344	0.195	-	-	0.894	8.74	4.95	-	-	22.709	
			4R					0.453	0.255	-	-	1.128	11.51	6.48	-	-	28.663	

●: Korea Stock

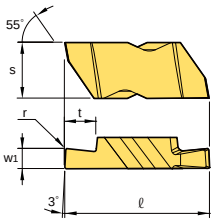
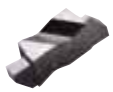
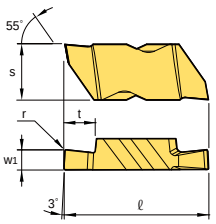
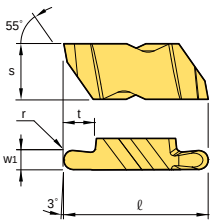
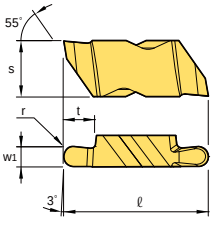
Insert (Threading)

Application	Picture	Designation		Coated PC5300	Coated PC8110	Dimensions inch s	w1	r	mm s	w1	r	Pitch (External) tpi	mm	Configuration
Partial Protiling 60°		KNT	2R			0.219	0.150	0.004	5.56	3.81	0.10	8-36	0.70-3.00	
			3R			0.344	0.195	0.007	8.74	4.95	0.17	6-20	1.25-4.00	
			4R			0.453	0.255	0.007	11.51	6.48	0.17	4-20	1.25-6.25	

Partial Profiling 60°

●: Korea Stock

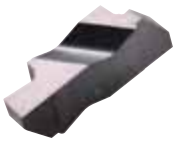
Insert (Inch)

Application	Picture	Designation		Coated PC5300	Coated PC8110	Dimensions inch s	w1	r	t	ℓ	Dimensions mm s	w1	r	t	ℓ	Configuration
Flat Top		KNG	2031R			0.219	0.031	0.0035	0.05	0.513	5.56	0.79	0.09	1.27	13.030	
			2041R			0.219	0.041	0.0035	0.05	0.513	5.56	1.04	0.09	1.27	13.030	
			2047R			0.219	0.047	0.0035	0.05	0.513	5.56	1.19	0.09	1.27	13.030	
			2058R			0.219	0.058	0.0075	0.05	0.513	5.56	1.47	0.19	1.27	13.030	
			2062R			0.219	0.062	0.0075	0.11	0.513	5.56	1.57	0.19	2.79	13.030	
			2094R			0.219	0.094	0.0075	0.11	0.513	5.56	2.39	0.19	2.79	13.030	
			2125R			0.219	0.125	0.0075	0.11	0.513	5.56	3.18	0.19	2.79	13.030	
			3047R			0.344	0.047	0.0075	0.075	0.894	8.74	1.19	0.19	1.91	22.709	
			3062R	●	●	0.344	0.062	0.0075	0.094	0.894	8.74	1.57	0.19	2.39	22.709	
			3072R			0.344	0.072	0.0075	0.094	0.894	8.74	1.83	0.19	2.39	22.709	
			3078R	●	●	0.344	0.078	0.0075	0.094	0.894	8.74	1.98	0.19	2.39	22.709	
			3088R			0.344	0.088	0.0075	0.094	0.894	8.74	2.24	0.19	2.39	22.709	
			3094R			0.344	0.094	0.0075	0.15	0.894	8.74	2.39	0.19	3.81	22.709	
			3097R	●	●	0.344	0.097	0.0125	0.15	0.894	8.74	2.46	0.32	3.81	22.709	
			3105R			0.344	0.105	0.0075	0.15	0.894	8.74	2.67	0.19	3.81	22.709	
			3110R			0.344	0.110	0.0125	0.15	0.894	8.74	2.79	0.32	3.81	22.709	
			3122R			0.344	0.122	0.0075	0.15	0.894	8.74	3.10	0.19	3.81	22.709	
			3125R	●	●	0.344	0.125	0.0075	0.15	0.894	8.74	3.18	0.19	3.81	22.709	
			3142R			0.344	0.142	0.0125	0.15	0.894	8.74	3.61	0.32	3.81	22.709	
			3156R	●	●	0.344	0.156	0.0075	0.15	0.894	8.74	3.96	0.19	3.81	22.709	
			3178R			0.344	0.178	0.0075	0.15	0.894	8.74	4.52	0.19	3.81	22.709	
			3185R			0.344	0.185	0.0225	0.15	0.894	8.74	4.70	0.57	3.81	22.709	
			3189R	●	●	0.344	0.189	0.0225	0.15	0.894	8.74	4.80	0.57	3.81	22.709	
			4125R	●	●	0.453	0.125	0.0075	0.15	1.128	11.51	3.18	0.19	3.81	28.663	
			4189R			0.453	0.189	0.0225	0.25	1.128	11.51	4.80	0.57	6.35	28.663	
			4213R			0.453	0.213	0.0075	0.25	1.128	11.51	5.41	0.19	6.35	28.663	
			4219R			0.453	0.219	0.0225	0.25	1.128	11.51	5.56	0.57	6.35	28.663	
			4250R			0.453	0.250	0.0225	0.25	1.128	11.51	6.35	0.57	6.35	28.663	
C/B Ground		KNGP	2031R			0.219	0.031	0.0035	0.05	0.513	5.56	0.79	0.09	1.27	13.030	
			2062R			0.219	0.062	0.0075	0.11	0.513	5.56	1.57	0.19	2.79	13.030	
			2125R			0.219	0.125	0.0075	0.11	0.513	5.56	3.18	0.19	2.79	13.030	
			3088R			0.344	0.088	0.0075	0.094	0.894	8.74	2.24	0.19	2.39	22.709	
			3125R	●	●	0.344	0.125	0.0075	0.15	0.894	8.74	3.18	0.19	3.81	22.709	
			3156R	●	●	0.344	0.156	0.0075	0.15	0.894	8.74	3.96	0.19	3.81	22.709	
			3189R			0.344	0.189	0.0225	0.15	0.894	8.74	4.80	0.57	3.81	22.709	
			4189R			0.453	0.189	0.0225	0.25	1.128	11.51	4.80	0.57	6.35	28.663	
			4250R			0.453	0.250	0.0225	0.25	1.128	11.51	6.35	0.57	6.35	28.663	
Round Flat Top		KNR	2031R			0.219	0.062	0.031	0.11	0.513	5.56	1.57	0.79	2.79	13.030	
			2047R			0.219	0.094	0.047	0.11	0.513	5.56	2.39	1.19	2.79	13.030	
			3031R	●	●	0.344	0.062	0.031	0.094	0.894	8.74	1.57	0.79	2.39	22.709	
			3047R	●	●	0.344	0.094	0.047	0.15	0.894	8.74	2.39	1.19	3.81	22.709	
			3062R	●	●	0.344	0.125	0.0625	0.15	0.894	8.74	3.18	1.59	3.81	22.709	
			3078R	●	●	0.344	0.156	0.078	0.15	0.894	8.74	3.96	1.98	3.81	22.709	
			3094R	●	●	0.344	0.188	0.094	0.15	0.894	8.74	4.78	2.39	3.81	22.709	
			4125R			0.453	0.250	0.125	0.25	1.128	11.51	6.35	3.18	6.35	28.663	
Round C/B Ground		KNRP	2031R			0.219	0.062	0.031	0.11	0.513	5.56	1.57	0.79	2.79	13.030	
			2047R			0.219	0.094	0.047	0.11	0.513	5.56	2.39	1.19	2.79	13.030	
			3031R	●	●	0.344	0.062	0.031	0.094	0.894	8.74	1.57	0.79	2.39	22.709	
			3047R	●	●	0.344	0.094	0.047	0.15	0.894	8.74	2.39	1.19	3.81	22.709	
			3062R	●	●	0.344	0.125	0.0625	0.15	0.894	8.74	3.18	1.59	3.81	22.709	
			3078R	●	●	0.344	0.156	0.078	0.15	0.894	8.74	3.96	1.98	3.81	22.709	
			3094R	●	●	0.344	0.188	0.094	0.15	0.894	8.74	4.78	2.39	3.81	22.709	
			4125R			0.453	0.250	0.125	0.25	1.128	11.51	6.35	3.18	6.35	28.663	

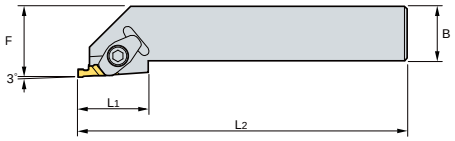
●: Korea Stock

KNSR

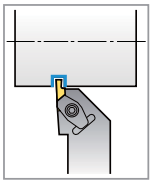
For grooving, profil machining











• R type insert

KNG KNGP KNT
KNR KNRP KNB

(inch)

Designation		inch					mm					Insert	Clamp	Screw	Wrench
		H	B	F	L_1	L_2	H	B	F	L_1	L_2				
KNSR	**062**	0.375	0.375	0.562	0.75	2.5	9.525	9.525	14.275	19.05	63.5	KNG2□ KNGP2□ KNR2□ KNB2R KNT2R	CM74	MHB3010	HW25L
	082V	0.5	0.5	0.75	0.75	3.5	12.7	12.7	19.05	19.05	88.9				
	103B	0.625	0.625	0.875	0.75	4.5	15.875	15.875	22.225	19.05	114.3				
	122B	0.75	0.75	1	0.75	4.5	19.05	19.05	25.4	19.05	114.3				
	162C	1	1	1.25	0.75	5	25.4	25.4	31.75	19.05	127				
	123B	0.75	0.75	1	1.25	4.5	19.05	19.05	25.4	31.75	114.3	KNG3□ KNGP3□ KNR3□ KNRP3□ KNB3R KNT3R	CM72LP	MHA0512	HW40L
	163C	1	1	1.25	1.25	5	25.4	25.4	31.75	31.75	127				
	163D	1	1	1.25	1.25	6	25.4	25.4	31.75	31.75	152.4				
	203D	1.25	1.25	1.5	1.25	6	31.75	31.75	38.1	31.75	152.4				
	164D	1	1	1.25	1.38	6	25.4	25.4	31.75	35.052	152.4	KNG4□ KNGP4□ KNR4□ KNB4R KNT4R	CM72LP	MHA0512	HW40L
	204D	1.25	1.25	1.5	1.38	5	31.75	31.75	38.1	35.052	127				

For deep hole grooving/parting off

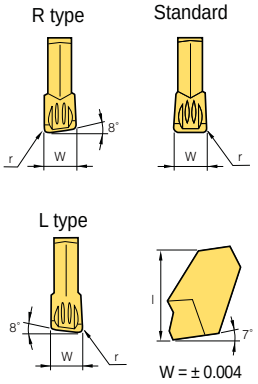
Saw Man

Features of parting insert

- Possible to machine a wide range of workpieces such as steel, cast iron, stainless steel, etc.
- Extended tool life due to low resistance rake angle
- Minimized burr due to minimal Nose R
- Various lead angle available
- Narrow chip curl due to dots on rake surface of insert

Workpiece	Cutting Speed (vc = sfm)								Feed (fn = ipr)				
	CVD				PVD			Uncoated	Cutting width (inch)				
	NC3120	NC3030	NCM325	NC5330	PC8110	PC5300	PC6510	ST30A	2	3	4	5	6
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			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

Insert

Application	Picture	Designation		Coated									Uncoated	Dimensions (inch)			Configuration
				NC3120	NC3225	NC3030	NCM325	NC5330	PC3035	PC8105	PC8110	PC5300	PC9030	ST30A	W	l	r	
Parting tools		SP	160												0.063	0.307	0.006	
			180												0.071	0.366	0.006	
			200		●	●	●	●			●	●	●		0.087	0.366	0.008	
			200R			●							●		0.087	0.366	0.008	
			200L										●		0.087	0.366	0.008	
			300	●	●	●	●	●			●	●	●	●	0.122	0.445	0.008	
			300R		●	●	●				●				0.122	0.445	0.008	
			300L			●									0.122	0.445	0.008	
			400	●	●	●	●	●			●	●	●		0.161	0.445	0.010	
			400R			●					●				0.161	0.445	0.010	
			400L			●									0.161	0.445	0.010	
			500			●	●	●			●	●			0.201	0.449	0.012	
			500R												0.201	0.449	0.012	
			500L												0.201	0.449	0.012	
			600			●		●				●			0.252	0.449	0.014	
			600R												0.252	0.449	0.014	
			600L												0.252	0.449	0.014	
			800												0.315	0.554	0.016	
			900												0.378	0.554	0.018	

●: Korea Stock

SPBA/SPBA-S (Blades)



SP

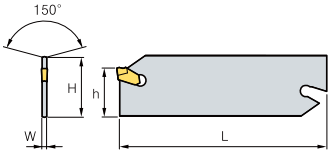


Fig. 1

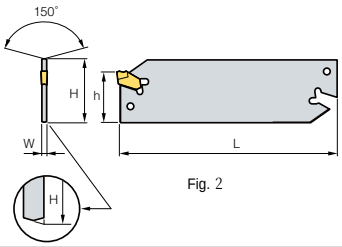
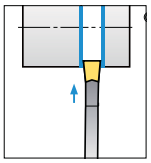


Fig. 2



(inch)

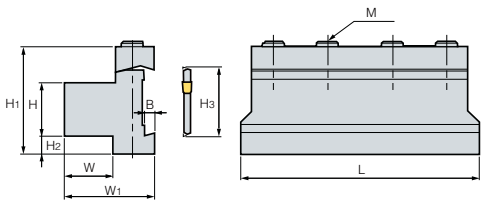
Designation		H	W	L	h	Insert	Wrench		Fig.
SPBA	**100-2**	1	1/16	4 3/8	0.827	SP200, 200R/L	SW50L	-	1
	125-2	1 1/4	1/16	6	0.984	SP200, 200R/L			
	100-3	1	3/32	4 3/8	0.827	SP300, 300R/L			
	125-3	1 1/4	3/32	6	0.984	SP300, 300R/L			
	100-4	1	1/8	4 3/8	0.827	SP400, 400R/L			
	125-4	1 1/4	1/8	6	0.984	SP400, 400R/L			
	100-5	1	5/32	4 3/8	0.827	SP500, 500R/L			
	125-5	1 1/4	5/32	6	0.984	SP500, 500R/L			
	100-6	1	13/64	4 3/8	0.827	SP600, 600R/L			
	125-6	1 1/4	13/64	6	0.984	SP600, 600R/L			
SPBA-S	**100-S-2**	1	1/16	4 3/8	0.827	SP200, 200R/L	-	SW15S (Separately ordered)	2
	125-S-2	1 1/4	1/16	6	0.984	SP200, 200R/L			
	100-S-3	1	3/32	4 3/8	0.827	SP300, 300R/L			
	125-S-3	1 1/4	3/32	6	0.984	SP300, 300R/L			
	100-S-4	1	1/8	4 3/8	0.827	SP400, 400R/L			
	125-S-4	1 1/4	1/8	6	0.984	SP400, 400R/L			
	100-S-5	1	5/32	4 3/8	0.827	SP500, 500R/L			
	125-S-5	1 1/4	5/32	6	0.984	SP500, 500R/L			
	100-S-6	1	13/64	4 3/8	0.827	SP600, 600R/L			
	125-S-6	1 1/4	13/64	6	0.984	SP600, 600R/L			
	125-S-8	1.25	0.268	6	0.984	SP800			
	207-S-8	2.07	0.268	7.48	1.772	SP900			
	125-S-9	1.25	0.315	6	0.984	SP800			
	207-S-9	2.07	0.315	7.48	1.772	SP900			

Applicable inserts **C60**

SMBBA (Block)



SPB□□□(-S)
KGTB□□32



(inch)

Designation		H	W	H3	L	H1	H2	W1	B	M	Blade	Wrench
SMBBA	**0610**	5/8	5/8	1.024	3	1.496	0.472	0.181	0.157	3-M6	SPB□26(-S)	HW50L
	0710	3/4	3/4	1.024	3 3/8	1.693	0.354	1.496	0.209	3-M6		
	0712	3/4	3/4	1.260	4	1.969	0.512	1.496	0.209	4-M6	SPB□32(-S) KGTB□□32	
	1010	1	29/32	1.024	4 3/8	1.693	0.157	1.654	0.209	4-M6	SPB□26(-S)	
	1012	1	29/32	1.260	4 3/8	1.969	0.315	1.654	0.209	4-M6	SPB□32(-S) KGTB□□32	
	1212	1 1/4	1 3/16	1.260	4 3/8	2.126	0.197	1.890	0.209	4-M6		
	40207	1.575	1.614	2.07	5.118	3.189	0.866	2.6	0.315	4-M8	SPB□526(-S)	HW60L

Applicable inserts **C60**

SPHA/SPHA-S (Holder)



SP

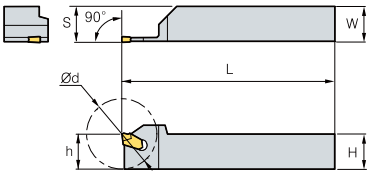


Fig. 1

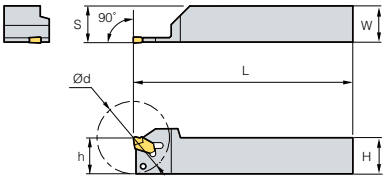
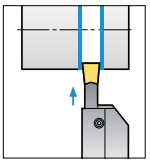


Fig. 2



• R type insert

(inch)

Designation		H = (h)	W	L	Ød	S	Insert	Wrench		Fig.
SPHA	**062R/L-3**	5/8	5/8	4	1.260	0.637	SP300, 300R/L	SW50L	-	1
	075R/L-3	3/4	3/4	4 3/4	1.575	0.762	SP300, 300R/L			
	100R/L-3	1	1	6	1.969	1.012	SP300, 300R/L			
	075R/L-4	3/4	3/4	4 3/4	1.969	0.766	SP400, 400R/L			
	100R/L-4	1	1	6	2.362	1.016	SP400, 400R/L			
	075R/L-5	3/4	3/4	4 3/4	2.362	0.770	SP500, 500R/L			
	100R/L-5	1	1	6	2.756	1.020	SP500, 500R/L			
SPHA-S	**062R/L-S-3**	5/8	5/8	4	1.260	0.637	SP300, 300R/L	-	SW15S (separately ordered)	2
	075R/L-S-3	3/4	3/4	4 3/4	1.575	0.726	SP300, 300R/L			
	100R/L-S-3	1	1	6	1.969	1.012	SP300, 300R/L			
	075R/L-S-4	3/4	3/4	4 3/4	1.969	0.766	SP400, 400R/L			
	100R/L-S-4	1	1	6	2.362	1.016	SP400, 400R/L			
	075R/L-S-5	3/4	3/4	4 3/4	2.326	0.770	SP500, 500R/L			
	100R/L-S-5	1	1	6	2.756	1.020	SP500, 500R/L			

Applicable inserts **C60**

A solution for parting and deep grooving

Saw Man-X new

- Stable machining in deep grooving applying clamping system with strong three-way V-Rail
- Improved clamping precision and convenient replacing of inserts with using the exclusive wrench

Code system

- **Insert**

KSP	300	-	020	-	N
KORLOY Saw Man-X Parting	Cutting edge width 200: 0.079 inch 300: 0.118 inch 400: 0.157 inch		Nose r 020: 1/128 inch 030: 3/256 inch		Chip breaker N: Negaland

- **Shank**

KSPHA	100	R	-	2
KORLOY Saw Man-X Parting Holder	Shank size 0.62 : 5/8 inch 0.75 : 3/4 inch 100 : 1 inch	Hand of insert R: Right L: Left		Cutting edge width 2: 0.079 inch 3: 0.118 inch 4: 0.157 inch

- **Blade**

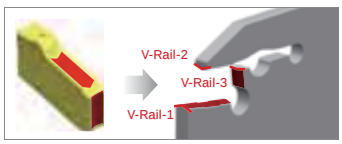
KSPBA	125	-	3
KORLOY Saw Man-X Parting Blade	Blade height 100: 1 inch 125: 1 1/4 inch		Cutting edge width 2: 0.079 inch 3: 0.118 inch 4: 0.157 inch

Features

- Three-way V-Rail – More stable clamping system
- New treatment on cutting edge – Better quality of machining and longer tool life
- Superior chip breaker – Better chip control
- Exclusive wrench – More convenient clamping system

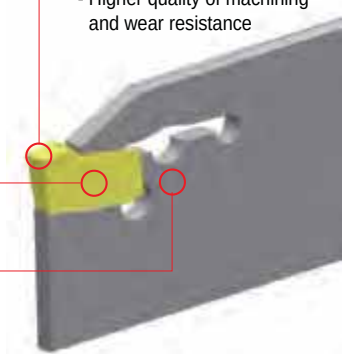
Three-way V-RAIL

- An insert is tightly clamped in the tip seat.
- Minimized vibration during the machining increases stability.
- Stable high speed, high feed and high depth of cut machining is available.



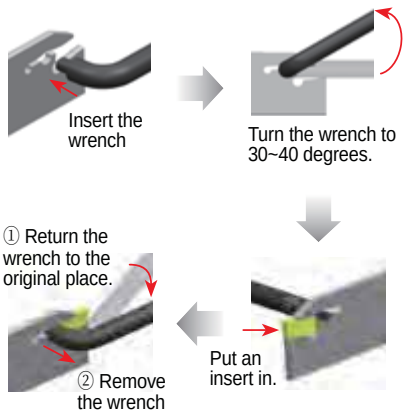
Special cutting edge

- Even cutting edge improves machinability
- Higher quality of machining and wear resistance



Exclusive wrench

- The exclusive wrench having the principle of CAM for the Saw Man-X
- More convenient clamping system

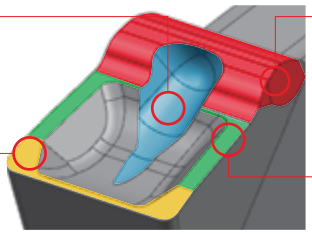


Features of chip breaker

- The design of chip breaker and its bump in the back area realize better chip evacuation
- The chip breaker with negaland is used universally.

Coolant path and guide for chip evacuation
- Inner coolant holder is available
- Guide for chip evacuation

Negaland
- Applying for various workpieces
- Stable in interrupted cutting and machining with high depth of cut



The second chip breaker in the back area
- Better chip control in machining of workpiece with a bigger diameter
- Preventing damage to holder from chip evacuation

Strong land on flank
- Smaller diameter of chip curl makes better chip control
- Higher rigidity of insert

Recommended cutting conditions

Workpiece					Grade	Cutting conditions	
ISO	Workpiece	KS	AISI	ISO (DIN)*		vc (sfm)	fn (ipr)
P	Carbon steel	SM45C	1045	C45	PC5300	262-656	0.003-0.011
					PC3035	262-722	0.003-0.011
	Alloy steel	SCM440	4140	42CrMo4 (42CrMo4)	PC5300	262-525	0.003-0.010
					PC3035	262-590	0.003-0.010
M	Stainless steel	STS304	304	X5CrNi18-9 (X2CrNi19-11)	PC5300	262-623	0.002-0.008
		STS316	316	X5CrNiMo17-12-2	PC5300	262-623	0.002-0.008
K	Gray cast iron	GC250	No35B	250 (GG25)	PC8110	328-722	0.004-0.011
					PC5300	328-656	0.004-0.011
	Nodular graphite cast iron	GCD500	80-55-06	450-10	PC8110	262-656	0.004-0.010
					PC5300	262-590	0.004-0.010
S	HRSA	Inconel 718	7718	15156-3	PC8110	115-213	0.002-0.006
					PC5300	82-180	0.002-0.006

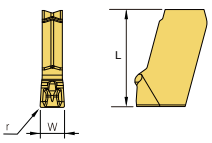
Cutting edge width and T-MAX by items

◎: First recommendation ○: Second recommendation

Shape	Cutting edge width (inch) / T-MAX (inch)	No. of corner	Machining: External diameter	Machining: Internal diameter	Machining: Cross section	Machining: Parting	Features
Saw Man-X new	0.079 – 0.236 / 0.197 – 4.9	1	○			◎	• Self clamping • Deep grooving
MGT, KGT	0.059 – 0.315 / 1.102	2	◎	○	○	○	• Various machining • Wide range of machining
TB	0.049 – 0.236 / 0.256	3	◎			○	• Precise ground class • Optimally automatic machining
Auto tools – Blade type	0.028 – 2.0 / 0.327	2	◎			○	• For swiss-type lathe (blade) • Small deliberate component machining
Auto tools – Multi-functional type	0.039 – 0.157 / 0.335	2	◎			○	• For swiss-type lathe (multifunctional) • Small deliberate component machining
K-Notch	0.03 – 0.248 / 0.256	2	◎				• Strong clamping system • Highly qualified cutting edge

Insert

(inch)

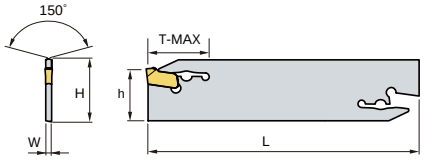
Application	Picture	Designation	Coated PC3035	Coated PC5300	Coated PC8110	W	r	L	Configuration
Parting		KSP 200-020-N				0.079	1/128	0.433	
		300-020-N				0.118	1/128	0.472	
		400-025-N				0.157	5/512	0.492	
		500-025-N				0.197	5/512	0.531	
		600-035-N				0.236	7/512	0.571	

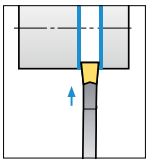
●: Korea Stock

KSPBA (Blade) new



KSP





(inch)

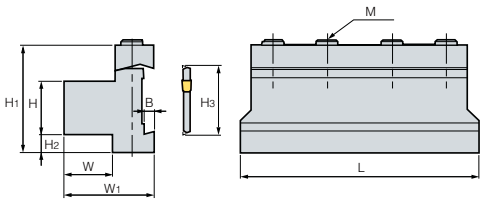
Designation		Cutting edge width	H	W	L	h	T-MAX	Wrench
KSPBA	100-2	0.079	1	1/16	4.331	0.827	0.984	CW08
	125-2	0.079	1 1/4	1/16	5.906	0.984	1.024	
	100-3	0.118	1	3/32	4.331	0.827	1.417	
	125-3	0.118	1 1/4	3/32	5.906	0.984	2.362	
	100-4	0.157	1	1/8	4.331	0.827	1.417	
	125-4	0.157	1 1/4	1/8	5.906	0.984	2.362	
	100-5	0.197	1	5/32	4.331	0.827	1.575	CW10
	125-5	0.197	1 1/4	5/32	5.906	0.984	2.362	
	100-6	0.236	1	13/64	4.331	0.827	2.362	
	125-6	0.236	1 1/4	13/64	5.906	0.984	2.362	

Applicable inserts **C64**

SMBBA (Block)



KSPB□□□□
SPB□□□(-S)
KGTB□□□□



(inch)

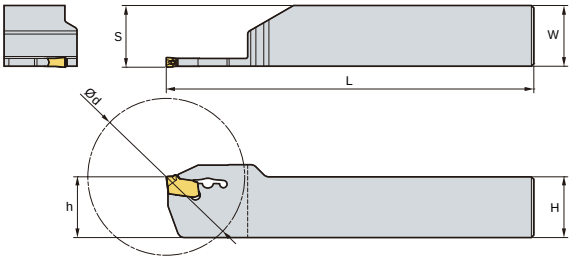
Designation		H	W	H3	L	H1	H2	W1	B	M	Wrench
SMBBA	0610	5/8	5/8	1.024	3	1.496	0.472	0.181	0.157	3-M6	HW50L
	0710	3/4	3/4	1.024	3 3/8	1.693	0.354	1.496	0.209	3-M6	
	0712	3/4	3/4	1.260	4	1.969	0.512	1.496	0.209	4-M6	
	1010	1	29/32	1.024	4 3/8	1.693	0.157	1.654	0.209	4-M6	
	1012	1	29/32	1.260	4 3/8	1.969	0.315	1.654	0.209	4-M6	
	1212	1 1/4	1 3/16	1.260	4 3/8	2.126	0.197	1.890	0.209	4-M6	

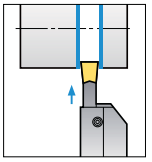
Applicable inserts **C64**

KSPHA (Shank)



KSP





• R type insert

(inch)

Designation		Cutting edge width	H	W	L	Ød	S	Wrench
KSPHA	062R/L-2	2	5/8	5/8	4	1.811	0.637	CW08
	075R/L-2	2	3/4	3/4	4 3/4	1.889	0.795	
	100R/L-2	2	1	1	6	1.968	1.012	
	062R/L-3	3	5/8	5/8	4	2.047	0.637	
	075R/L-3	3	3/4	3/4	4 3/4	2.126	0.795	
	100R/L-3	3	1	1	6	2.205	1.012	
	075R/L-4	4	3/4	3/4	4 3/4	2.519	0.798	
	100R/L-4	4	1	1	6	2.598	1.016	
	075R/L-5	5	3/4	3/4	4 3/4	2.913	0.798	CW10
	100R/L-5	5	1	1	6	2.992	1.016	
	100R/L-6	6	1	1	6	2.991	1.016	

Applicable inserts **C64**

Six kinds of inserts can be used in one holder for various operations

Fine Tools

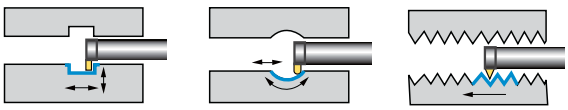


- Strong clamping system and specially designed insert are suitable for small diameter machining
- Six kinds of inserts can be clamped in one holder for various operations
- Guaranteed long tool life due to good toughness substrate with new TiAlN
- High accuracy ground insert ensures high precision machining

Application range

• Internal grooving, Profiling, Threading and Boring at Ø0.315 inch~Ø0.630 inch

Features



(grooving, Turning) (forming) (threading)

Code system

NFTIH 31 50 C - 2

- 31: Minimum Diameter
- 50: Overhang (ℓ/ØD)
- C: Shank Type — S: Steel, C: Carbide
- 2: Shank Dia.

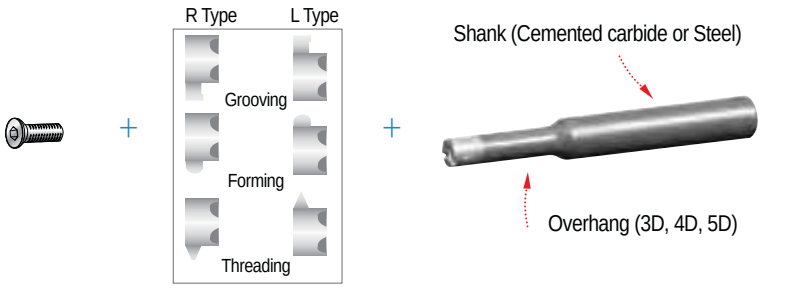
Recommended cutting condition

Workpiece	Grade (PC130)	Cutting Condition	Min. machining Dia. (ØDmin)			
			Ø5/16	Ø7/16	Ø35/64	Ø5/8
Carbon steel	◎	vc (sfm)	230~390	230~390	230~390	230~390
		fn (ipr)	0.0004~0.0016	0.0004~0.0020	0.0008~0.0020	0.0008~0.0024
Alloy steel	◎	vc (sfm)	230~390	230~390	230~390	230~390
		fn (ipr)	0.0004~0.0008	0.0004~0.0016	0.0008~0.0016	0.0008~0.0020
Cast iron	○	vc (sfm)	200~330	200~330	200~330	200~330
		fn (ipr)	0.0004~0.0020	0.0004~0.0020	0.0008~0.0020	0.0008~0.0020
Non-ferrous alloy	○	vc (sfm)	330~590	330~590	330~590	330~590
		fn (ipr)	0.0008~0.0024	0.0008~0.0024	0.0008~0.0024	0.0008~0.0024

Note
- In case of chattering, reduce the cutting speed and feed
- To find the optimal cutting conditions, advise to gradually increase from the lowest cutting condition of the above recommendation
- In case of the unilateral grooving depth over 0.004 inch, work to the step feed rate

Clamping system

Screw	Insert	Holder

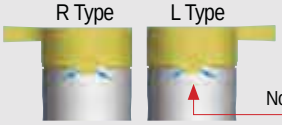


• Available R/L type insert with one holder



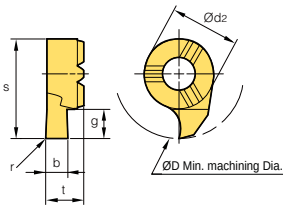
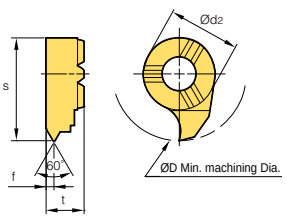


Stable clamping according to the tripod structure



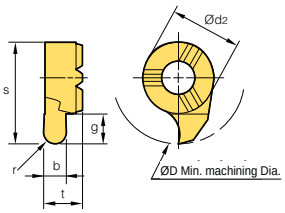
No-Spin-System design for strong clamping

Insert

Application	Picture	Designation		Coated PC5300 R	Coated PC5300 L	ØD	b	r	S	g	Ød2	t	Pitch	f	Configuration
Internal grooving		NFTG	08075R/L			5/16	0.030	-	0.305	0.051	0.232	0.152	-	-	
			08085R/L			5/16	0.033	-	0.305	0.051	0.232	0.152	-	-	
			08095R/L			5/16	0.037	-	0.305	0.051	0.232	0.152	-	-	
			08121R/L			5/16	0.048	-	0.305	0.051	0.232	0.152	-	-	
			08141R/L			5/16	0.056	-	0.305	0.051	0.232	0.152	-	-	
			08152R/L			5/16	0.060	-	0.305	0.051	0.232	0.152	-	-	
			08171R/L			5/16	0.067	-	0.305	0.051	0.232	0.152	-	-	
			08202R/L			5/16	0.080	-	0.305	0.051	0.232	0.152	-	-	
			11075R/L			7/16	0.030	1/128	0.421	0.071	0.315	0.193	-	-	
			11085R/L			7/16	0.033	1/128	0.421	0.071	0.315	0.193	-	-	
			11095R/L			7/16	0.037	1/128	0.421	0.071	0.315	0.193	-	-	
			11121R/L			7/16	0.048	1/128	0.421	0.102	0.315	0.193	-	-	
			11141R/L			7/16	0.056	1/128	0.421	0.102	0.315	0.193	-	-	
			11152 R/L			7/16	0.060	1/128	0.421	0.102	0.315	0.193	-	-	
			11171R/L			7/16	0.067	1/128	0.421	0.102	0.315	0.193	-	-	
			11202R/L			7/16	0.080	1/128	0.421	0.102	0.315	0.193	-	-	
			11202R/L-02			7/16	0.080	1/128	0.421	0.102	0.315	0.193	-	-	
			11252R/L			7/16	0.099	1/128	0.421	0.102	0.315	0.193	-	-	
			11302R/L			7/16	0.119	1/128	0.421	0.102	0.315	0.193	-	-	
			14075R/L			35/64	0.030	-	0.531	0.071	0.354	0.230	-	-	
			14085R/L			35/64	0.033	-	0.531	0.071	0.354	0.230	-	-	
			14095R/L			35/64	0.037	-	0.531	0.071	0.354	0.230	-	-	
			14121R/L			35/64	0.048	-	0.531	0.169	0.354	0.230	-	-	
			14141R/L			35/64	0.056	-	0.531	0.169	0.354	0.230	-	-	
			14152R/L			35/64	0.060	-	0.531	0.169	0.354	0.230	-	-	
			14171R/L			35/64	0.067	-	0.531	0.169	0.354	0.230	-	-	
			14202R/L			35/64	0.080	-	0.531	0.169	0.354	0.230	-	-	
			14252R/L			35/64	0.099	-	0.531	0.169	0.354	0.230	-	-	
			14302R/L			35/64	0.119	-	0.531	0.169	0.354	0.230	-	-	
			16075R/L			5/8	0.030	-	0.618	0.071	0.433	0.228	-	-	
			16085R/L			5/8	0.033		0.618	0.071	0.433	0.228	-	-	
			16095R/L			5/8	0.037	-	0.618	0.071	0.433	0.228	-	-	
			16121R/L			5/8	0.048	-	0.618	0.181	0.433	0.228	-	-	
			16141R/L			5/8	0.056	-	0.618	0.181	0.433	0.228	-	-	
			16171R/L			5/8	0.067	-	0.618	0.181	0.433	0.228	-	-	
			16202R/L			5/8	0.080	-	0.618	0.181	0.433	0.228	-	-	
			16252R/L			5/8	0.099	-	0.618	0.181	0.433	0.228	-	-	
			16302R/L			5/8	0.119	-	0.618	0.181	0.433	0.228	-	-	
			16352R/L			5/8	0.139	-	0.618	0.181	0.433	0.228	-	-	
			16402R/L			5/8	0.158	-	0.618	0.181	0.433	0.228	-	-	
Threading		NFTT	0805MR/L			5/16	-	-	0.305	-	0.236	0.152	0.5	0.039	
			0810MR/L			5/16	-	-	0.305	-	0.236	0.152	1.0	0.039	
			0815MR/L			5/16	-	-	0.305	-	0.236	0.152	1.5	0.047	
			1110MR/L			7/16	-	-	0.421	-	0.315	0.193	1.0	0.047	
			1115MR/L			7/16	-	-	0.421	-	0.315	0.193	1.5	0.047	
			1120MR/L			7/16	-	-	0.421	-	0.315	0.193	2.0	0.047	
			1125MR/L			7/16	-	-	0.421	-	0.315	0.193	2.5	0.047	
			1410MR/L			35/64	-	-	0.531	-	0.354	0.230	1.0	0.047	
			1415MR/L			35/64	-	-	0.531	-	0.354	0.230	1.5	0.047	
			1420MR/L			35/64	-	-	0.531	-	0.354	0.230	2.0	0.047	
			1425MR/L			35/64	-	-	0.531	-	0.354	0.230	2.5	0.047	
			1610MR/L			5/8	-	-	0.618	-	0.433	0.228	1.0	0.047	
			1615MR/L			5/8	-	-	0.618	-	0.433	0.228	1.5	0.047	
			1620MR/L			5/8	-	-	0.618	-	0.433	0.228	2.0	0.047	
			1625MR/L			5/8	-	-	0.618	-	0.433	0.228	2.5	0.047	
			1630MR/L			5/8	-	-	0.618	-	0.433	0.228	3.0	0.059	
			1635MR/L			5/8	-	-	0.618	-	0.433	0.228	3.5	0.063	
			1640MR/L			5/8	-	-	0.618	-	0.433	0.228	4.0	0.071	

●: Korea Stock

Insert

Application	Picture	Designation		Coated PC5300 R	Coated PC5300 L	Dimensions (inch) D	b	r	S	g	Ød2	t	Configuration
Profiling		NFTF	08082R/L			5/16	0.032	0.016	0.031	0.051	0.236	0.152	
			08122R/L			5/16	0.048	0.024	0.031	0.051	0.236	0.152	
			08182R/L			5/16	0.072	0.036	0.031	0.051	0.236	0.152	
			11082R/L			7/16	0.032	0.016	0.421	0.102	0.315	0.193	
			11122R/L			7/16	0.048	0.024	0.421	0.102	0.315	0.193	
			11182R/L			7/16	0.072	0.036	0.421	0.102	0.315	0.193	
			11202R/L			7/16	0.080	0.040	0.421	0.102	0.315	0.193	
			11302R/L			7/16	0.119	0.059	0.421	0.102	0.315	0.193	
			14122R/L			35/64	0.048	0.024	0.531	0.169	0.354	0.230	
			14182R/L			35/64	0.072	0.036	0.531	0.169	0.354	0.230	
			14202R/L			35/64	0.080	0.040	0.531	0.169	0.354	0.230	
			14222R/L			35/64	0.087	0.044	0.531	0.169	0.354	0.230	
			14302R/L			35/64	0.119	0.059	0.531	0.169	0.354	0.230	
			16182R/L			5/8	0.072	0.036	0.618	0.181	0.433	0.228	
			16222R/L			5/8	0.087	0.044	0.618	0.181	0.433	0.228	
			16302R/L			5/8	0.119	0.059	0.618	0.181	0.433	0.228	
			16402R/L			5/8	0.158	0.079	0.618	0.181	0.433	0.228	

●: Korea Stock

NFTIH



NFTF
NFTT
NFTG

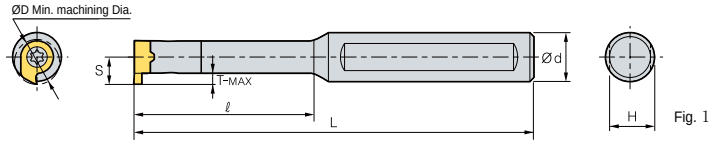


Fig. 1

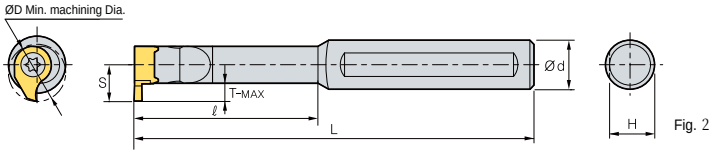


Fig. 2

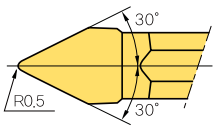
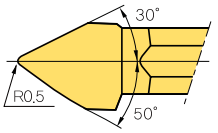
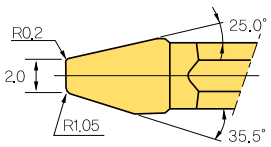
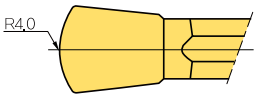
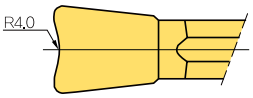
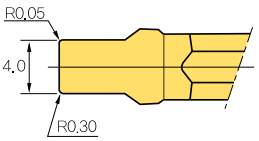
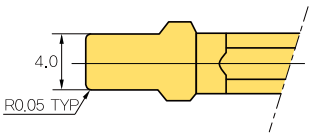
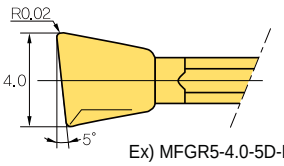
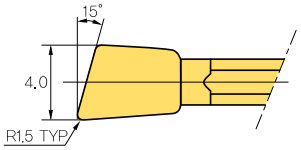
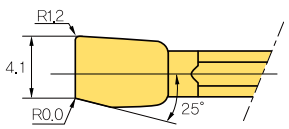
• For NFTIH14 type

• R type insert

(inch)

Designation		ØD	Ød	L	ℓ	T-MAX	H	S	Insert NFTG: Grooving NFTT: Threading NFTF: Forming	Screw	Wrench	Fig.
NFTIHA	3125C-2	5/16	1/4	2.559	-	0.0394	0.171	0.189	NFTG08□□□R/L NFTT08□□□R/L NFTF08□□□R/L	PTKA02508	TW08P	1
	3150C-2	5/16	1/2	2.756	0.610	0.0394	0.394	0.189				
	3150C-3	5/16	1/2	3.150	0.945	0.0394	0.394	0.189				
	3150S-3	5/16	1/2	3.150	0.945	0.0394	0.394	0.189				
	3150C-4	5/16	1/2	3.453	1.260	0.0394	0.421	0.189				
	3150C-5	5/16	1/2	3.947	1.575	0.0394	0.394	0.189				
	4330C-2	7/16	5/16	3.150	-	0.0906	0.276	0.264	NFTG11□□□R/L NFTT11□□□R/L NFTF11□□□R/L	PTKA03510	TW15P	2
	4350C-2	7/16	1/2	2.953	0.787	0.0906	0.433	0.264				
	4350C-3	7/16	1/2	3.740	1.299	0.0906	0.433	0.264				
	4350S-3	7/16	1/2	3.740	1.299	0.0906	0.433	0.264				
	4350C-4	7/16	1/2	4.331	1.732	0.0906	0.461	0.264				
	4350C-5	7/16	1/2	4.724	2.165	0.0906	0.433	0.264				
	5550C-0	35/64	1/2	2.953	0.787	0.1575	0.433	0.354	NFTG14□□□R/L NFTT14□□□R/L NFTF14□□□R/L	PTKA0412	TW15P	2
	5562C-0	35/64	5/8	2.953	0.787	0.1575	0.591	0.354				
	5550C-1	35/64	1/2	3.937	1.339	0.1575	0.433	0.354				
	5562C-1	35/64	5/8	3.937	1.339	0.1575	0.591	0.354				
	5550C-2	35/64	1/2	4.331	1.772	0.1575	0.433	0.354				
	5562C-2	35/64	5/8	4.331	1.772	0.1575	0.591	0.354				
	5550C-3	35/64	1/2	5.118	2.520	0.1575	0.433	0.354				
	5562C-3	35/64	0.472	5.118	2.520	0.1575	0.591	0.354				
	6350C-3	5/8	1/2	5.118	1.890	0.1693	0.461	0.402	NFTG16□□□R/L NFTT16□□□R/L NFTF16□□□R/L	PTKA0512	TW20P	2
	6350S-3	5/8	1/2	5.118	1.890	0.1693	0.433	0.402				
	6350C-4	5/8	1/2	5.118	2.520	0.1693	0.461	0.402				
	6350C-5	5/8	1/2	5.906	3.150	0.1693	0.433	0.402				
	6362C-3	5/8	5/8	5.118	1.890	0.1693	0.591	0.402				
	6362C-4	5/8	5/8	5.118	2.520	0.1693	0.591	0.402				
	6362C-5	5/8	5/8	5.906	3.150	0.1693	0.591	0.402				

Applicable inserts **C68~C69**

Code system	Configuration
M F G N 4 - 0.5R - 30D ① ② ③ ④ ⑤ ⑥ ⑦ ① Multi ② Forming ③ Grinding ④ Feed Direction ⑤ Clamp part: 4 mm ⑥ Nose Radius: 0.5 ⑦ Degree: 30°	 Ex) MFGN4-0.5R-30D
MFGN4 - 0.5R - L 50 D - R 30D ① ② ③ ④ ⑤ ⑥ ① Refer to No. 1 ② Nose Radius: 0.5 ③ Left ④ Degree: 50° ⑤ Right ⑥ Degree > 30°	 Ex) MFGN4-0.5R-L50D-R30D
MFGN4 - 2.0 - R 020 250 - L 105 335 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ① Refer to No. 1 ② Width of cutting edge: 2.0 mm ③ Right ④ Nose Radius: 0.20 ⑤ Degree: 25.0° ⑥ Left ⑦ Nose Radius: 1.05 ⑧ Degree: 35.5°	 Ex) MFGN4-2.0-R020250-L105335
MFGN5 - 4.0R F ① ② ③ ① Refer to No. 1 ② Radius: 4.0 ③ Front(Concave)	 Ex) MFGN5-4.0RF
MFGN5 - 4.0R B ① ② ③ ① Refer to No. 1 ② Radius: 4.0 ③ Back(Concave)	 Ex) MFGN5-4.0RB
MFGN5 - 4.0 - R 005 - L 030 ① ② ③ ④ ⑤ ⑥ ① Refer to No. 1 ② Width of cutting edge: 4.0 mm ③ Right ④ Nose Radius: 0.05 ⑤ Left ⑥ Nose Radius : 0.30	 Ex) MFGN5-4.0-R005-L030
MFGN5 - 4.0 - 0.05 R ① ② ③ ① Refer to No. 1 ② Width of cutting edge: 4.0 mm ③ Nose Radius: 0.05	 Ex) MFGN5-4.0-0.05R
MFG R 5 - 4.0 - 5D - R 002 - L 115 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ① Refer to No. 1 ② Right ③ Clamp part: 5 mm ④ Width of cutting edge: 4.0 mm ⑤ Lead angle: 5° ⑥ Right ⑦ Nose Radius: 0.02 ⑧ Left ⑨ Nose Radius: 1.15	 Ex) MFGR5-4.0-5D-R002-L115
MFG L 5 - 4.0 - 15D - 1.5R ① ② ③ ④ ⑤ ⑥ ① Refer to No. 1 ② Left ③ Clamp part: 5 mm ④ Width of cutting edge: 4.0 mm ⑤ Lead angle: 15° ⑥ Right Nose Radius: 1.5	 Ex) MFGL5-4.0-15D-1.5R
MFG R 5 - 4.10 - 25D - R012 - L000 ① ② ③ ④ ⑤ ⑥ ⑦ ① Refer to No. 1 ② Right ③ Clamp part: 5mm ④ Width of cutting edge: 4.1mm ⑤ Degree: 25° ⑥ Right Nose Radius: 1.2 ⑦ Left Nose Radius: 0.0	 Ex) MFGR5-4.10-25D-R012-L000

M This is metric size. We can also provide in inch type

Code system

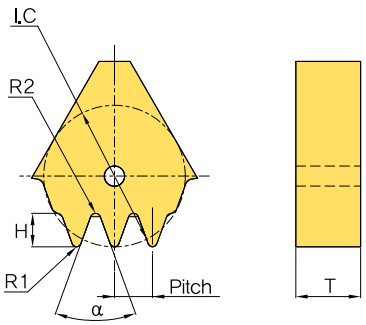
KP	27	064	-	R0.425	N3
KORLOY PULLEY	ØD	W		R1	No. of flutes

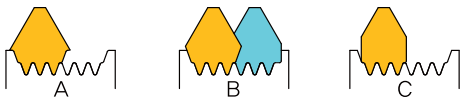
■Ex)

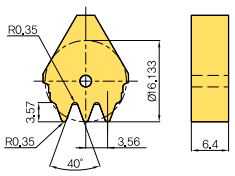
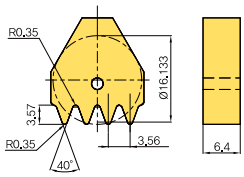
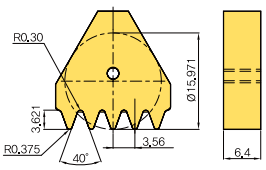
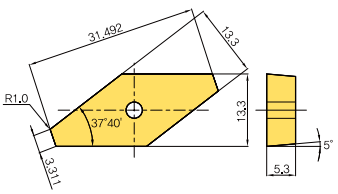
I.C	T	R	Z
Ø 15.875	6.4	0.425	3

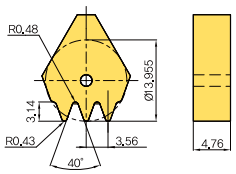
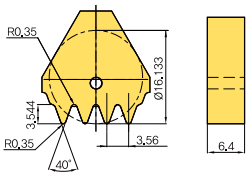
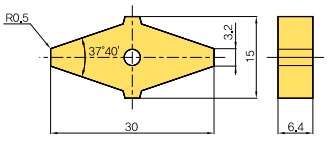
▶ Special types are available for quotation

Insert for machining of pulley





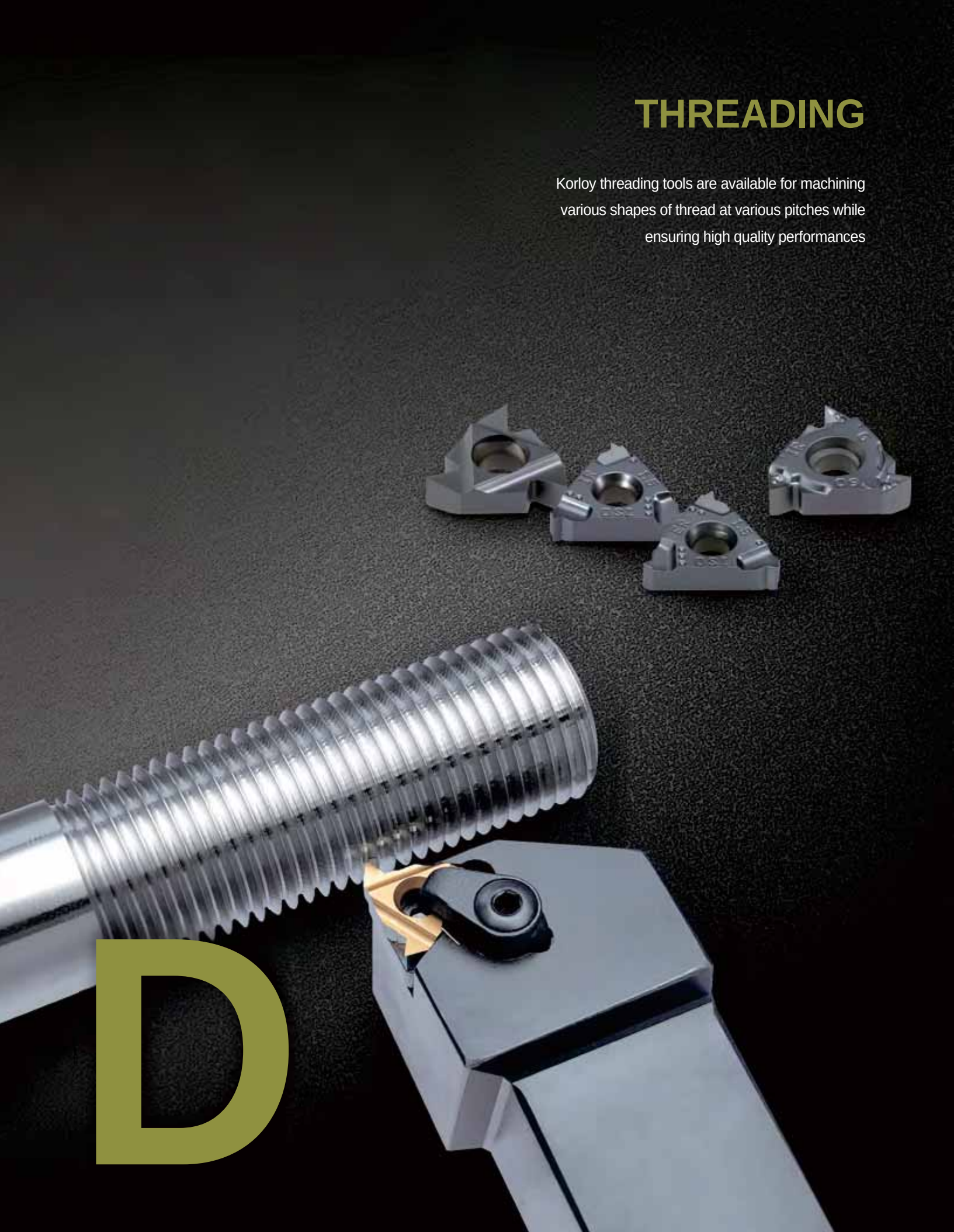
Specifications	Standard designation
	KP27064-R0.35-N3 (Former: DF356-3B)
	KP27064-R0.35-N4 (Former: DF356-4B)
	KP27064-R0.375-N5 (Former: DF356-5B)
	VF13M522

Specifications	Standard designation
	KP27064-R0.43-N3 (Former:DF356-3SR)
	KP27064-R0.35-N4-A (Former: DF356-4X)
	UF320

M This is metric size. We can also provide in inch type

THREADING

Korloy threading tools are available for machining various shapes of thread at various pitches while ensuring high quality performances



D

Threading Code System

D02 Threading Holder Code System
D02 Threading Insert Code System

Technical Information for Threading

D03 Technical Information for Threading
D09 Threading Inserts with Chip Breaker

Thread Inserts

D10 Partial Profile 60˚
D11 Partial Profile 55˚
D12 IISO Metric
D16 American UN (UN, UNC, UNF, UNEF, UNS)
D18 Whitworth (BSW, BSF, BSP, BSB)
D22 British Standard Pipe Thread (BSPT)
D22 National Pipe Thread (NPT)
D23 National Pipe Threads-Dryseal (NPTF)
D23 Round DIN405 (RD)

Thread Inserts

D24 Trapez DIN103 (TR)
D24 American ACME (ACME)
D25 Stub ACME (STACME)
D26 UNJ (Unified Constant Thread)
D28 American Buttress (ABUT)
D28 British Buttress (BBUT)
D29 Metric Buttress (SAGE)/API
D30 API Buttress Casing (BUT)
D30 API Round Casing & Tubing (APIRD)
D30 Extreme Line Casing (EL)

Thread Holders

D31 External Holders
D32 Internal Holders
D33 Vertical Type Holders

Thread Milling

D34 Technical Information for Thread Milling
D44 Thread Milling Inserts
D49 Thread Milling Holders

Threading Holder Code System

E R H 031 (N) - 11 (C)

1 Holder type | 2 Hand of insert | 3 Name | 4 Height of shank | 5 Shim | 6 Insert size (inch) | 7 clamping system

1 Holder type
E R H 031 (N) - 11 (C)

E: For External I: For Internal

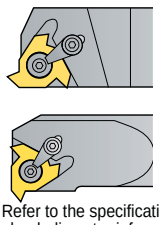
2 Hand of insert
E R H 031 (N) - 11 (C)

R: Right handed L: Left handed

3 Name
E R H 031 (N) - 11 (C)

H: Holder

4 Height of shank
E R H 031 (N) - 11 (C)



*Refer to the specification for shank diameter information

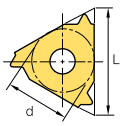
031: 0.31
0375: 0.375
050: 0.50
0625: 0.625
075: 0.75
100: 1.00
125: 1.25
150: 1.50
200: 2.00
250: 2.50

5 Shim
E R H 031 (N) - 11 (C)

No code: Shim required
N: No shim required

6 Insert size (inch)
E R H 031 (N) - 11 (C)

11: d = 1/4
16: d = 3/8
22: d = 1/2
27: d = 5/8



7 Clmaping system
E R H 031 (N) - 11 (C)

No code: Screw on system
C: Clamp on system

Threading insert code system

E R M 16 - 1.5 ISO

1 Insert type | 2 Hand of insert | 3 Chip breaker | 4 Insert size (inch) | 5 Pitch | 6 Type

1 Insert type
E R M 16 - 1.5 ISO

E: External thread I: Internal thread

2 Hand of insert
E R M 16 - 1.5 ISO

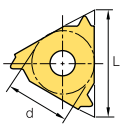
R: Right handed L: Left handed

3 Chip breaker
E R M 16 - 1.5 ISO

M: With Chip Breaker

4 Insert size (inch)
E R M 16 - 1.5 ISO

11: d = 1/4
16: d = 3/8
22: d = 1/2
27: d = 5/8



Insert Shape


< ER/IR >


< ERM/IRM >

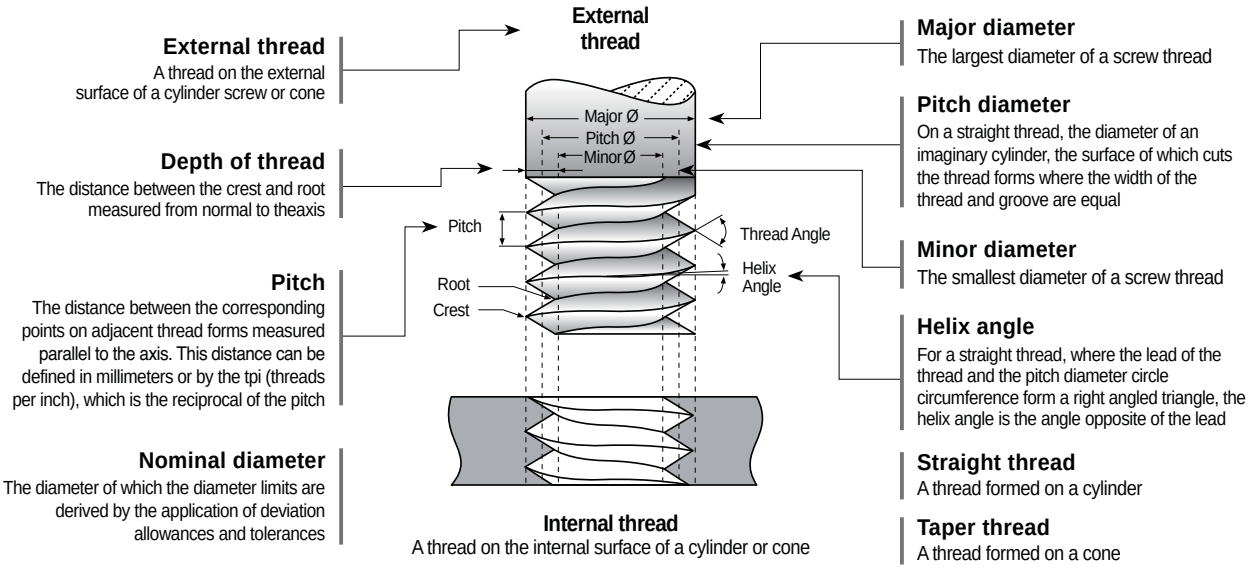
5 Pitch
E R M 16 - 1.5 ISO

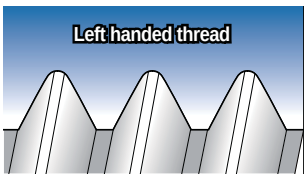
Full profile		Partial profile	
mm	tpi	mm	tpi
0.35~6.0	72~3	A 0.5~1.5	48~16
		AG 0.5~3.0	48~8
		G 1.75~3.0	14~8
		N 3.5~5.0	7~5
		Q 5.5~6.0	4.5~4

6 Type
E R M 16 - 1.5 ISO

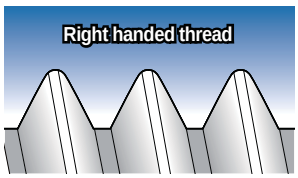
Partial profile 60°
Partial Profile 55°
ISO Metric (Full Profile)
American UN (Full Profile) UN, UNC, UNF, UNEF
Whitworth (Full Profile) BSW, BSF, BSP
British Standard Pipe thread (Full Profile) BSPT
National Pipe Thread (Full Profile) NPT
National Pipe Threads-Dryseal (Full Profile) NPTF
Round DIN 405
Trapez DIN 103
American ACME
Stub ACME
UNJ
American Buttress
British Buttress
Metric Buttress-Sagengewinde
API
API Buttress Casing
API Round Casing & Tubing
EL-Extreme Line Casing

Special features

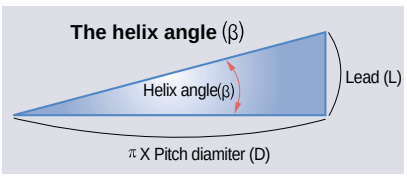




A thread which, when viewed axially, winds in a counter clockwise and receding direction. All left handed threads are designated LH



A thread which, when viewed axially, winds in a clockwise and receding direction. Threads are always right handed unless they are specified

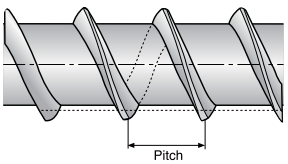


For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite of the lead

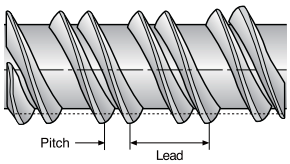
Machining a multi-start thread

- A thread in which the lead is an integral multiple, greater than one, of the pitch. A multi-start thread permits a more rapid advance without a coarser (larger) thread form

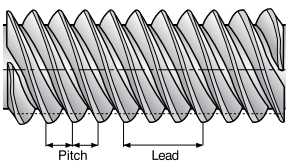
First start machined



Second start machined

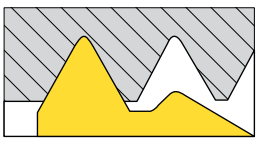


Third start machined (Final, 3 starts thread)



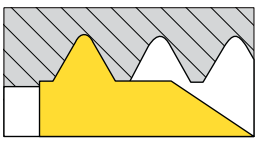
Insert profile style

Partial profile



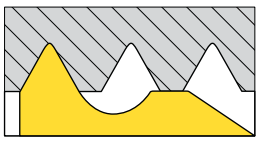
The V partial profile insert cuts without topping the outer diameter of the thread. The same insert can be used for a range of different thread pitches which have a common thread angle

Full profile



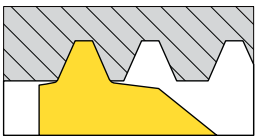
The full profile insert will form a complete thread profile including the crest. For every thread pitch and standard, a separate insert is required

Full Profile for fine pitches



The full profile for Fine Pitches will form a complete thread
The topping of the outer diameter is generated by second tooth

Semi full

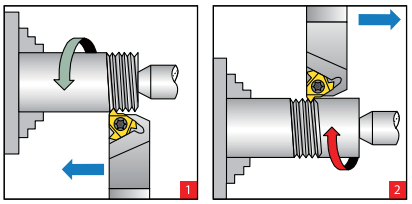


The Semi profile insert will form a complete thread including crest radius but without topping the outer diameter Mainly used for trapezoidal profiles

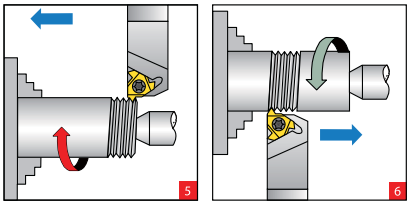
Thread turning method

Thread	Insert & Tool holder	Rotation	Feed direction	Helix method	Drawing no.
Right Hand Externa	EX RH	Counter clockwise	Towards chuck	Regular	1
	EX LH	Clockwise	From chuck	Reversed	2
Right Hand Internal	IN RH	Counter clockwise	Towards chuck	Regular	3
	IN LH	Clockwise	From chuck	Reversed	4
Left Hand External	EX LH	Clockwise	Towards chuck	Regular	5
	EX RH	Counter clockwise	From chuck	Reversed	6
Left Hand Internal	IN LH	Clockwise	Towards chuck	Regular	7
	IN RH	Counter clockwise	From chuck	Reversed	8

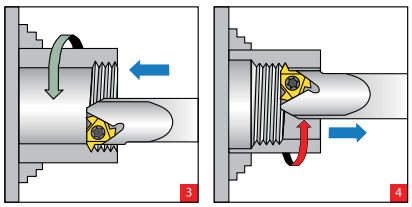
External RH thread



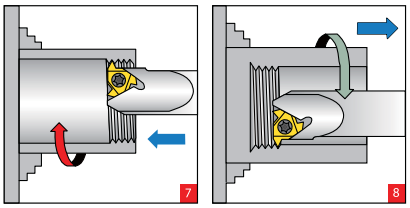
External LH thread



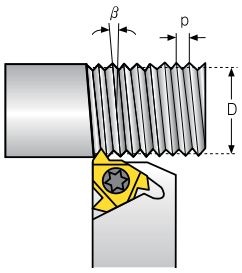
Internal RH thread



Internal LH thread



Calculating the helix angle (β)



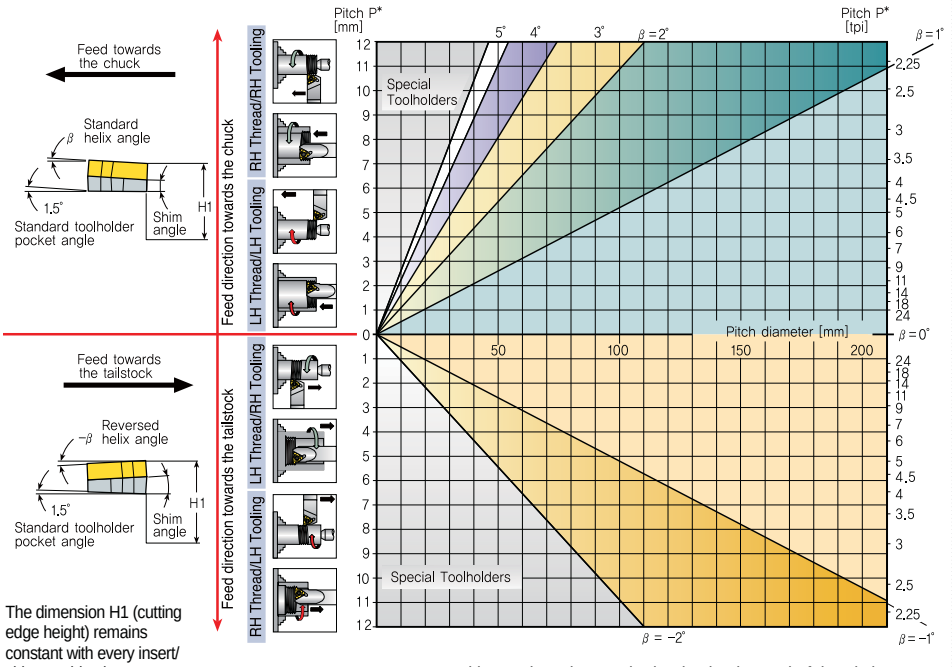
• The helix angle is calculated by the following formula:

$$\beta = \tan^{-1} \frac{P \times N}{\pi \times D}$$

β: Helix angle (°)
P: Pitch (inch)
N: No. of starts
D: Pitch diameter (inch)
Lead = P x N

• The helix angle can also be found from the diagram below

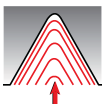
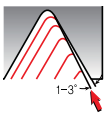
Helix angle diagram



The dimension H1 (cutting edge height) remains constant with every insert/ shim combination

* For Multi-start threads, use the lead value instead of the pitch

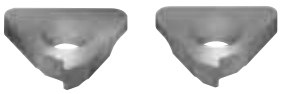
Thread infeed method

Infeed		Application		
	**Radial Infeed**	• When the pitch is smaller than 16 tpi • For material with short chips • For work with hardened material	→	Radial infeed is the simplest and quickest method The feed is perpendicular to the turning axis, and both flanks of the insert perform the cutting operation. Radial infeed is recommended in 3 cases
	**Flank Infeed (modified)**	• When the thread pitch is greater than 16 tpi. Using the radial method,the effective cutting edge length is too large, resulting in chatter. for TRAPEZ and ACME. The radial method results in three cutting edges, making chip flow very difficult	→	Flank infeed is recommended in the following cases
	**Alternate Flank Infeed**	• This method divides the load equally on both flanks, resulting in equal wear along the cutting edges. Alternate flank infeed requires more complicated programming, and is not available on all lathes	→	Use of the alternate flank method is recommended especially in large pitches and for materials with long chips

Shim

Standard shim

ATE (External) ATI (Through)



Helix angle 1.5°

Insert size	**d**	9.525 (3/8)		12.7 (1/2)		15.875 (5/8)	
	L	16		22		27	
Holder		ER(L)H	IR(L)H	ER(L)H	IR(L)H	ER(L)H	IR(L)H
Ordering code		ATE16	ATI16	ATE22	ATI22	ATE27	ATI27

※ Standard shim has lead angle 1.5°

Application grade

Grade	Features		Available insert type
PC5300	Universal grade	• For chip breaker type only • Stable machining on a wide application due to fine-grained carbide substrate with balanced heat resistance and toughness • Excellent wear resistance and oxidation resistance due to AiTN coating film Outstanding performance on high speed machining	ERM/IRM (Insert with Chip breaker)
PC3030T	Specialized grade for threading inserts	• A tough sub-micron substrate with TiAlN coating provides good fracture toughness and excellent wear resistance • Outstanding performance on STS and hard to cut materials	ER/IR (Ground insert)
PC9070T	Specialized grade for threading inserts	• Strong wear resistance in stainless machining thanks to multilayer PVD coatings	E/IR (Ground insert)

Application range

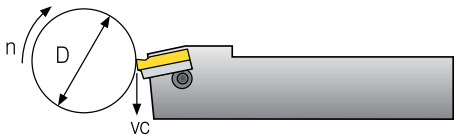
Workpiece		● ◄·····► ✱
P	Carbon steel, Alloy steel, Cast Steel	PC5300 PC3030T
M	Stainless steel	PC5300 PC3030T PC9070T
K	Cast Steel	PC5300 PC3030T
N	Aluminum, Copper	PC5300 PC3030T

Recommended cutting speed as per workpiece (vc)

Workpiece			Hardness brinell (HB)	vc (sfm)		
				PC3030T	PC9070T	PC5300
P	Carbon steel	Low carbon (C=0.1-0.25 %)	125	380~630		360~620
		Medium carbon (C=0.25-0.55 %)	150	330~580		330~540
		High carbon (C=0.55-0.85 %)	170	300~510		290~510
	Low alloy steel	Non-hardened	180	330~600		330~590
		Hardened	275	250~460		250~460
		Hardened	350	230~450		230~440
	High alloy steel	Annealed	200	260~400		260~390
		Hardened	325	170~330		160~330
	Cast steel	Low alloy	200	230~430		230~430
		High alloy	225	200~400		200~390
M	Stainless steel ferritic	Non-hardened	200	230~430	230~490	230~430
		Hardened	330	170~310	200~410	160~310
	Stainless steel austenitic	Austenitic	180	260~400	290~520	260~390
		Super austenitic	200	100~330	130~390	100~330
	Stainless steel cast ferritic	Non-hardened	200	300~400	290~490	290~390
		Hardened	330	220~360	210~390	210~360
	Stainless steel cast austenitic	Austenitic	200	280~360	280~390	280~360
		Hardened	330	200~330	190~360	200~330
	High temperature alloy	Annealed (Iron based)	200	150~200		150~190
		Aged (Iron based)	280	100~170		100~160
		Annealed (Nickel or Cobalt based)	250	70~100		65~160
		Aged (Nickel or Cobalt based)	350	50~80		50~80
	Titanium alloy	99.5% pure Titanium	400Rm	460~560		460~560
		Titanium alloy	1050Rm	170~230		160~230
K	Extra hard steel	Hardened & tempered	55HRC	150~200		150~190
	Malleable cast iron	Ferritic (short chips)	130	230~400		190~390
		Pearlitic (long chips)	230	230~400		190~390
	Gray cast iron	Low tensile strength	180	230~430		190~430
		High tensile strength	260	200~330		200~330
	Nodular SG iron	Ferritic	160	410~530		410~520
		Pearlitic	260	300~400		290~390
N	Aluminum alloy wrought	Non-aging	60	330~830		330~820
		Aged	100	260~600		260~590
	Aluminum alloy	Cast	75	660~1300		660~1310
		Cast & aged	90	660~920		660~920
		Cast Si 13-22%	130	200~500		200~590
	Copper and copper alloy	Brass	90	260~400		260~690
		Bronze and non-leaded copper	100	260~400		260~690

Calculation of n [RPM]

$$n = \frac{vc \times 12}{\pi \times D} \qquad vc = \frac{\pi \times D \times n}{12}$$



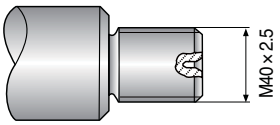
n: Revolution Per Minute [min^{-1}]
vc: Cutting Speed [m/min]
D: Workpiece Diameter [mm]

Number of passes

Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
	tpi	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
No. of passes		4~6	4~7	4~8	5~9	6~10	7~12	7~12	8~14	9~16	10~18	11~18	11~19	12~20	12~20	12~20	15~24

※ One cutting depth is calculated by total cutting depth divided into machining times
ex) ER16-1.5ISO, hmin 0.92: If 10 times machining, one cutting depth is 0.092 (0.92/10)

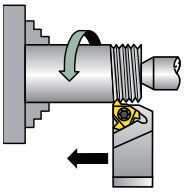
Step by step thread turning



Application

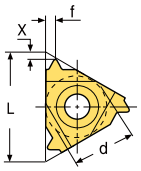
- Thread: External right hand ISO metric M40x2.5
- Material: 4140 (25 HRC)

1 Choose the thread turning method



Feed direction towards the chuck was chosen
Therefore an external right hand insert and an external right hand holder will be used

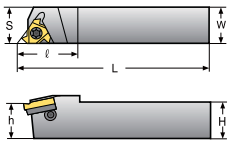
2 Choose the insert size



Chosen insert: ER16-2.5 ISO

Insert size	Pitch	Ordering code	Shim	Tool holder
d	**mm**	**RH** (Right Hand)	**RH** (Right Hand)	
3/8	2.5	ER16-2.5ISO	ATE16	ERH□□-16

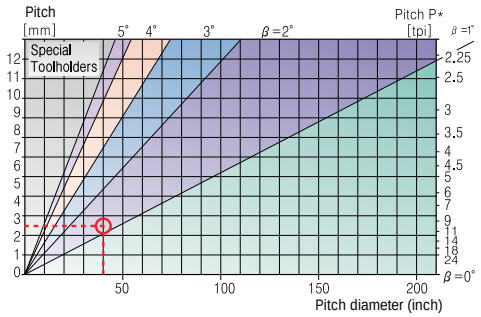
3 Choose the tool holder



Chosen tool holder: ERH 25-16

Insert size	Ordering code	Dimensions (inch)				
d	**RH** (Right Hand)	**H=h**	**W**	**S**	**L**	**ℓ**
3/8	ERH25-16	0.625	0.625	0.625	5.0	1.02

4 Determine the helix angle



From the table, using a pitch of 2.5 mm (10 tpi) and a workpiece diameter of 40 mm (1.57"), we find the helix angle to be 1.5°

5 Choose the correct shim

Resultant helix angle		1.5°
Insert size	**d**	3/8
	L	16
Ordering Code		ATE16

6 Choose the carbide grade and cutting speed

Workpiece			HB	vc (sfm)
				PC3030T
P	**Low alloy steel** (alloying elements ≤ 5%)	Non-hardened	180	330~600
		Hardened	275	250~460
		Hardened	350	230~450

- Carbide grade chosen: PC3030T
- Cutting speed: 460 sfm

7 Determine the number of passes

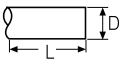
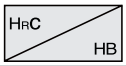
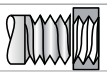
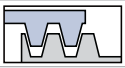
Pitch	mm	1.50	1.75	2.00	2.50	3.00	3.50	4.00
	tpi	16	14	12	10	8	7	6
No.of passes		6~10	7~12	7~12	8~14	9~16	10~18	11~18

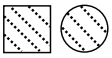
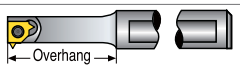
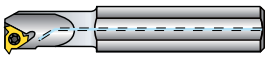
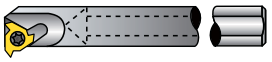
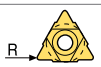
- Carbide grade chosen: PC3030T
- Cutting speed: 460 sfm

8 Summary

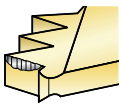
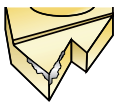
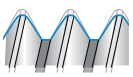
Thread type	ISO M40 x 2.5 External right hand
1. Feed Direction	Towards the chuck
2. Insert and Grade	ER16-2.5ISO, PC3030T
3. Tool holder	ERH25-16
4. Helix Angle	1.5°
5. Shim	ATE16
6. Cutting Speed	460 sfm
7. Number of Passes	10

Cutting condition depending on

Workpiece	Material type	
	Material dimension	
	Diameter and length chipflow character	
	Material hardness	
Thread application	External or internal	
	Profile shape	
	Surface finish	
Machine	Machine stability	
	Max. RPM	
	Clamping system stability	

Coolant	Coolant type	
Holders	Holder cross section area	
	Holder overhang	
	Through coolant option	
	Shank type: Carbide, Alloy,	
Insert	Carbide implant grade	P M K
	Profile Shape: pitch and depth	
	Nose radius	
	Chipbreaker style	

Trouble shooting

Problem	Possible cause	Solution
 **Increased flank wear**	Cutting speed too high	Reduce cutting speed/ use coated insert
	Depth of cut too low/too many passes	Increase the depth of cut per pass
	Unsuitable carbide grade	Use a coated carbide grade
	Insufficient cooling	Increase coolant flow rate
 **Uneven cutting edge wear**	Incorrect helix angle	Choose the correct shim
	Wrong infeed method	Use the Alternating Flank Infeed method
 **Extreme plastic deformation**	Depth of cut too large	Decrease depth of cut/ increase number of passes
	Insufficient cooling	Increase coolant flow rate
	Cutting speed too high	Reduce cutting speed
	Unsuitable carbide grade	Use a tougher carbide
	Nose radius too small	Use an insert with a larger radius, if possible
 **Cutting edge breakage**	Depth of cut too large	Decrease depth of cut/ increase number of passes.
	Extreme plastic deformation	Use a tougher carbide
	Insufficient cooling	Increase flow rate and/ or correct flow direction
	Unsuitable ca rbide grade	Use a tougher carbide
	Instability	Check stability of the system
 **Built-up edge**	Incorrect cutting speed	Change the cutting speed
	Unsuitable carbide grade	Use a coated carbide
 **Thread profile is too shallow**	The tool is not at the workpiece axis height	Change tool height
	Insert is not machining the thread crest	Measure the workpiece diameter
	Worn insert	Change the cutting edge sooner
 **Poor surface quality**	Too low cutting speed	Increase cutting speed
	Wrong shim	Choose correct shim
	Flank infeed method is not appropriate	Use the alternate flank or radial infeed method

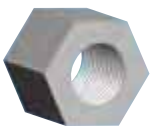
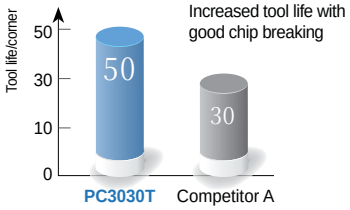
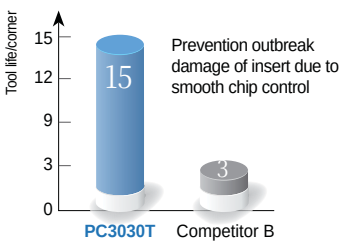
Threading Inserts with Chip Breaker

Features

- Economical insert
- Good toughness and high accuracy as ground type inserts
- Exclusive insert design improves chip control
- New grade for general application of various kinds of workpieces

Type	Ground insert		Insert with a chip breaker			
C/B Code	None		None		U	
Designation	ER16·1.5ISO		ERM16-1.5ISO		ERM16·1.5ISO·U	
Machining	External	Internal	External	Internal	External	Internal
Insert shape						
Chip shape						
Class	P, M, K, N, S		P, M, K		P, M, K	
Application	G-Class		M-Class		M-Class	
Features	• Groove-shaped chip breaker with superior chip evacuation lowers cutting load • Enables high precision machining • Applicable for machining of various shapes of threads • Applicable for machining of various workpieces		• Unique 3 dimensional chip breaker improves machinability with good chip control • Excellent cutting edge treatment technology ensures high precision sharp cutting edge		• Groove-shaped chip breaker with superior chip evacuation lowers cutting load • Reduces machining pass by 10~30% • Excellent cutting edge treatment achieves high precision sharp cutting edge	

Application examples

KORLOY		ERM16-1.5ISO [PC3030T]	IRM16-2.0ISO [PC3030T]
Competitor tools		ER16-1.5ISO [A-Maker]	IR16-2.0ISO [B-Maker]
Workpiece	Material	1040	304
	Figure		
Cutting condition	Cutting speed (sfm)	200	400
	Pass	8	9
	Machining	Radial infeed	Radial infeed
	Pitch	1.5	2.0
Coolant		Wet	Wet
Result			

Partial profile 60°

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (mm)	Pitch (tpi)	d	L	r	x	f	Picture
External	ER 11-A60	●	●	EL 11-A60	●		0.5~1.5	48~16	1/4	0.433	0.002	0.03	0.04	
	16-A60	●	●	16-A60	●		0.5~1.5	48~16	3/8	0.630	0.011	0.05	0.07	
	16-G60	●		16-G60	●		1.75~3.0	14~8	3/8	0.630	0.011	0.05	0.07	
	16-AG60	●	●	16-AG60	●		0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
	22-N60	●	●	22-N60	●		3.5~5.0	7~5	1/2	0.866	0.021	0.07	0.10	
	27-Q60	●	●	27-Q60	●		5.5~6.0	4.5~4	5/8	1.063	0.021	0.07	0.10	
Internal	IR 11-A60	●	●	IL 11-A60	●	●	0.5~1.5	48~16	1/4	0.433	0.002	0.03	0.04	
	16-A60	●		16-A60	●		0.5~1.5	48~16	3/8	0.630	0.002	0.03	0.04	
	16-G60	●		16-G60	●		1.75~3.0	14~8	3/8	0.630	0.006	0.05	0.07	
	16-AG60	●	●	16-AG60	●		0.5~3.0	48~8	3/8	0.630	0.002	0.05	0.07	
	22-N60	●	●	22-N60	●		3.5~5.0	7~5	1/2	0.866	0.012	0.08	0.10	
	27-Q60	●	●	27-Q60			5.5~6.0	4.5~4	5/8	1.063	0.012	0.07	0.11	

Applicable holders **D31, D32**

●: Korea Stock

Partial profile 60° (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Pitch (tpi)	d	L	r	x	f	Picture
External	ERM 16-A60	●				0.5~1.5	48~16	3/8	0.630	0.002	0.05	0.07	
	16-G60	●				1.75~3.0	14~8	3/8	0.630	0.011	0.05	0.07	
	16-AG60	●				0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
	22-N60	●				3.5~5.0	7~5	1/2	0.866	0.021	0.07	0.10	
Internal	IRM 11-A60	●				0.5~1.5	48~16	1/4	0.433	0.003	0.03	0.04	
	16-A60	●				0.5~1.5	48~16	3/8	0.630	0.003	0.03	0.04	
	16-G60	●				1.75~3.0	14~8	3/8	0.630	0.005	0.05	0.07	
	16-AG60	●				0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
	22-N60	●				3.5~5.0	7~5	1/2	0.866	0.012	0.07	0.10	

Applicable holders **D31, D32**

●: Korea Stock

Partial profile 60° (U chip breaker)

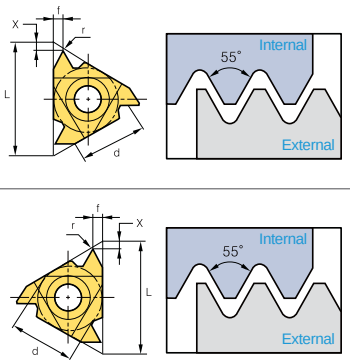
Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Pitch (tpi)	d	L	r	x	f	Picture
External	ERM 16-AG60-U					0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
Internal	IRM 16-AG60-U					0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	

Applicable holders **D31, D32**

●: Korea Stock

Partial profile 55°

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (mm)	Pitch (tpi)	d	L	r	x	f	Picture
External	ER 11-A55	●		EL 11-A55			0.5~1.5	48~16	1/4	0.433	0.002	0.03	0.04	
	16-A55	●		16-A55	●		0.5~1.5	48~16	3/8	0.630	0.002	0.03	0.04	
	16-G55	●		16-G55			1.75~3.0	14~8	3/8	0.630	0.008	0.05	0.07	
	16-AG55	●		16-AG55	●		0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
	22-N55	●		22-N55			3.5~5.0	7~5	1/2	0.866	0.017	0.07	0.10	
	27-Q55			27-Q55			5.5~6.0	4.5~4	5/8	1.063	0.024	0.08	0.11	
Internal	IR 11-A55	●		IL 11-A55	●		0.5~1.5	48~16	1/4	0.433	0.002	0.03	0.04	
	16-A55	●		16-A55			0.5~1.5	48~16	3/8	0.630	0.020	0.02	0.04	
	16-G55	●		16-G55			1.75~3.0	14~8	3/8	0.630	0.008	0.05	0.07	
	16-AG55	●		16-AG55	●		0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
	22-N55	●		22-N55			3.5~5.0	7~5	1/2	0.866	0.017	0.67	0.10	
	27-Q55			27-Q55			5.5~6.0	4.5~4	5/8	1.063	0.024	0.08	0.10	

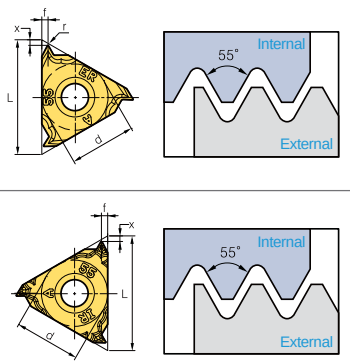


Applicable holders **D31, D32**

●: Korea Stock

Partial profile 55° (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Pitch (tpi)	d	L	r	x	f	Picture
External	ERM 16-A55	●				0.5~1.5	48~16	3/8	0.630	0.003	0.03	0.04	
	16-G55	●				1.75~3.0	14~8	3/8	0.630	0.008	0.05	0.07	
	16-AG55	●				0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
	22-N55	●				3.5~5.0	7~5	1/2	0.866	0.017	0.07	0.10	
Internal	IRM 11-A55	●				0.5~1.5	48~16	1/4	0.433	0.003	0.03	0.04	
	16-A55	●				0.5~1.5	48~16	3/8	0.630	0.002	0.03	0.04	
	16-G55					1.75~3.0	14~8	3/8	0.630	0.003	0.05	0.07	
	16-AG55	●				0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
	22-N55	●				3.5~5.0	7~5	1/2	0.866	0.017	0.07	0.10	

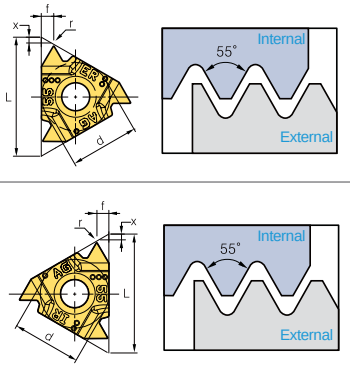


Applicable holders **D31, D32**

●: Korea Stock

Partial profile 55° (U chip breaker)

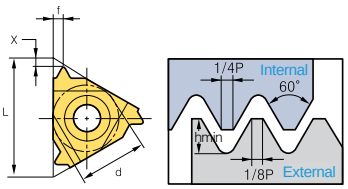
Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Pitch (tpi)	d	L	r	x	f	Picture
External	ERM 16-AG55-U					0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	
Internal	IRM 16-AG55-U					0.5~3.0	48~8	3/8	0.630	0.003	0.05	0.07	



Applicable holders **D31, D32**

●: Korea Stock

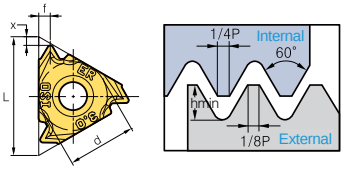
ISO Metric

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (mm)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-0.35ISO	●		EL 11-0.35ISO			0.35	1/4	0.433	0.008	0.03	0.02	
	11-0.4ISO	●		11-0.4ISO			0.4	1/4	0.433	0.011	0.03	0.02	
	11-0.45ISO	●		11-0.45ISO			0.45	1/4	0.433	0.011	0.03	0.02	
	11-0.5ISO	●		11-0.5ISO			0.5	1/4	0.433	0.012	0.02	0.02	
	11-0.6ISO	●		11-0.6ISO			0.6	1/4	0.433	0.015	0.02	0.02	
	11-0.7ISO	●		11-0.7ISO			0.7	1/4	0.433	0.017	0.02	0.02	
	11-0.75ISO			11-0.75ISO			0.75	1/4	0.433	0.017	0.02	0.02	
	11-0.8ISO	●		11-0.8ISO			0.8	1/4	0.433	0.019	0.02	0.02	
	11-1.0ISO	●		11-1.0ISO			1.0	1/4	0.433	0.024	0.02	0.03	
	11-1.25ISO	●	●	11-1.25ISO			1.25	1/4	0.433	0.030	0.03	0.04	
	11-1.5ISO	●		11-1.5ISO	●		1.5	1/4	0.433	0.036	0.03	0.04	
	11-1.75ISO	●		11-1.75ISO			1.75	1/4	0.433	0.042	0.03	0.04	
	16-0.35ISO			16-0.35ISO			0.35	3/8	0.630	0.008	0.03	0.02	
	16-0.4ISO			16-0.4ISO			0.4	3/8	0.630	0.010	0.03	0.02	
	16-0.45ISO	●		16-0.45ISO			0.45	3/8	0.630	0.011	0.03	0.02	
	16-0.5ISO	●		16-0.5ISO	●		0.5	3/8	0.630	0.012	0.03	0.02	
	16-0.6ISO	●		16-0.6ISO			0.6	3/8	0.630	0.015	0.02	0.02	
	16-0.7ISO	●		16-0.7ISO			0.7	3/8	0.630	0.017	0.02	0.02	
	16-0.75ISO	●		16-0.75ISO			0.75	3/8	0.630	0.018	0.02	0.02	
	16-0.8ISO	●	●	16-0.8ISO			0.8	3/8	0.630	0.019	0.02	0.03	
	16-1.0ISO	●	●	16-1.0ISO	●		1.0	3/8	0.630	0.024	0.02	0.03	
	16-1.25ISO	●	●	16-1.25ISO	●		1.25	3/8	0.630	0.030	0.03	0.04	
	16-1.5ISO	●	●	16-1.5ISO	●		1.5	3/8	0.630	0.036	0.03	0.04	
	16-1.75ISO	●	●	16-1.75ISO			1.75	3/8	0.630	0.042	0.04	0.05	
	16-2.0ISO	●	●	16-2.0ISO	●		2.0	3/8	0.630	0.048	0.04	0.05	
	16-2.5ISO	●	●	16-2.5ISO	●		2.5	3/8	0.630	0.060	0.04	0.07	
	16-3.0ISO	●	●	16-3.0ISO	●		3.0	3/8	0.060	0.067	0.05	0.07	
	22-3.5ISO	●	●	22-3.5ISO	●		3.5	1/2	0.866	0.085	0.06	0.09	
	22-4.0ISO	●	●	22-4.0ISO	●		4.0	1/2	0.866	0.096	0.06	0.09	
	22-4.5ISO	●	●	22-4.5ISO			4.5	1/2	0.866	0.109	0.06	0.09	
	22-5.0ISO	●	●	22-5.0ISO	●		5.0	1/2	0.866	0.121	0.06	0.10	
	27-5.5ISO			27-5.5ISO			5.5	5/8	1.063	0.133	0.06	0.11	
	27-6.0ISO		●	27-6.0ISO			6.0	5/8	1.063	0.145	0.08	0.11	

Applicable holders D31

●: Korea Stock

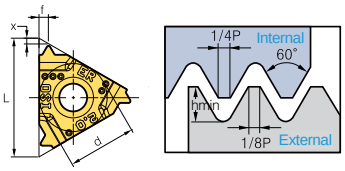
ISO Metric (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ERM 16-1.0ISO	●				1.0	3/8	0.630	0.024	0.02	0.03	
	16-1.25ISO					1.25	3/8	0.630	0.030	0.03	0.04	
	16-1.5ISO	●				1.5	3/8	0.630	0.036	0.03	0.04	
	16-1.75ISO	●				1.75	3/8	0.630	0.042	0.04	0.05	
	16-2.0ISO	●				2.0	3/8	0.630	0.049	0.04	0.05	
	16-2.5ISO	●				2.5	3/8	0.630	0.060	0.04	0.05	
	16-3.0ISO	●				3.0	3/8	0.630	0.073	0.05	0.06	

Applicable holders **D31**

●: Korea Stock

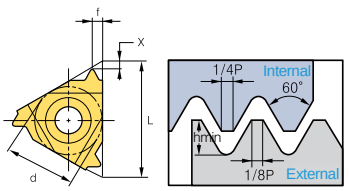
ISO Metric (U chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ERM 16-1.5ISO-U					1.5	3/8	0.630	0.036	0.03	0.04	
	16-2.0ISO-U					2.0	3/8	0.630	0.049	0.04	0.05	

Applicable holders **D31**

●: Korea Stock

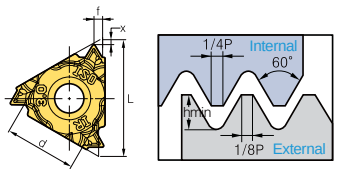
ISO Metric

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (mm)	Dimensions (inch) d	L	hmin	X	f	Picture
Internal	IR 11-0.35ISO	●		IL 11-0.35ISO			0.35	1/4	0.433	0.008	0.03	0.01	
	11-0.4ISO	●		11-0.4ISO			0.4	1/4	0.433	0.009	0.03	0.02	
	11-0.45ISO	●		11-0.45ISO			0.45	1/4	0.433	0.010	0.03	0.02	
	11-0.5ISO	●		11-0.5ISO	●		0.5	1/4	0.433	0.001	0.02	0.02	
	11-0.6ISO	●		11-0.6ISO			0.6	1/4	0.433	0.014	0.02	0.02	
	11-0.7ISO	●		11-0.7ISO			0.7	1/4	0.433	0.016	0.02	0.02	
	11-0.75ISO	●		11-0.75ISO	●		0.75	1/4	0.433	0.017	0.02	0.02	
	11-0.8ISO			11-0.8ISO			0.8	1/4	0.433	0.018	0.02	0.03	
	11-1.0ISO	●	●	11-1.0ISO			1.0	1/4	0.433	0.023	0.02	0.03	
	11-1.25ISO	●	●	11-1.25ISO	●		1.25	1/4	0.433	0.028	0.03	0.04	
	11-1.5ISO	●	●	11-1.5ISO	●	●	1.5	1/4	0.433	0.034	0.03	0.04	
	11-1.75ISO	●	●	11-1.75ISO			1.75	1/4	0.433	0.040	0.04	0.04	
	11-2.0ISO	●	●	11-2.0ISO	●		2.0	1/4	0.433	0.045	0.03	0.04	
	11-2.5ISO	●		11-2.5ISO	●		2.5	1/4	0.433	0.057	0.03	0.04	
	16-0.35ISO	●		16-0.35ISO			0.35	3/8	0.630	0.008	0.03	0.01	
	16-0.4ISO	●		16-0.4ISO			0.4	3/8	0.630	0.009	0.03	0.02	
	16-0.45ISO	●		16-0.45ISO			0.45	3/8	0.630	0.010	0.03	0.02	
	16-0.5ISO	●		16-0.5ISO			0.5	3/8	0.630	0.011	0.03	0.02	
	16-0.6ISO			16-0.6ISO			0.6	3/8	0.630	0.014	0.02	0.02	
	16-0.7ISO	●		16-0.7ISO			0.7	3/8	0.630	0.016	0.02	0.02	
	16-0.75ISO	●		16-0.75ISO			0.75	3/8	0.630	0.017	0.02	0.02	
	16-0.8ISO	●		16-0.8ISO			0.8	3/8	0.630	0.018	0.02	0.02	
	16-1.0ISO	●	●	16-1.0ISO			1.0	3/8	0.630	0.023	0.02	0.03	
	16-1.25ISO	●	●	16-1.25ISO			1.25	3/8	0.630	0.028	0.03	0.04	
	16-1.5ISO	●	●	16-1.5ISO	●		1.5	3/8	0.630	0.034	0.03	0.04	
	16-1.75ISO	●	●	16-1.75ISO			1.75	3/8	0.630	0.040	0.04	0.05	
	16-2.0ISO	●	●	16-2.0ISO	●		2.0	3/8	0.630	0.045	0.04	0.05	
	16-2.5ISO	●	●	16-2.5ISO	●		2.5	3/8	0.630	0.057	0.04	0.07	
	16-3.0ISO	●	●	16-3.0ISO	●		3.0	3/8	0.630	0.068	0.04	0.06	
	22-3.5ISO	●	●	22-3.5ISO			3.5	1/2	0.866	0.08	0.06	0.09	
	22-4.0ISO	●	●	22-4.0ISO	●		4.0	1/2	0.866	0.091	0.06	0.09	
	22-4.5ISO	●	●	22-4.5ISO			4.5	1/2	0.866	0.102	0.06	0.09	
	22-5.0ISO	●	●	22-5.0ISO			5.0	1/2	0.866	0.114	0.06	0.09	
	27-5.5ISO	●		27-5.5ISO			5.5	5/8	1.063	0.125	0.06	0.09	
	27-6.0ISO	●		27-6.0ISO			6.0	5/8	1.063	0.136	0.07	0.10	

Applicable holders **D32**

●: Korea Stock

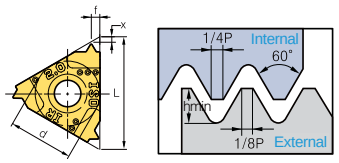
ISO Metric (M chip breaker)

Type	Designation (Right)		PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Dimensions (inch) d	L	hmin	X	f	Picture
Internal	IRM	11-1.5ISO	●				1.5	1/4	0.433	0.034	0.03	0.04	
		16-1.0ISO	●				1.0	3/8	0.630	0.023	0.02	0.03	
		16-1.25ISO					1.25	3/8	0.630	0.034	0.03	0.04	
		16-1.5ISO	●				1.5	3/8	0.630	0.028	0.03	0.04	
		16-1.75ISO					1.75	3/8	0.630	0.034	0.04	0.05	
		16-2.0ISO	●				2.0	3/8	0.630	0.045	0.04	0.05	
		16-2.5ISO	●				2.5	3/8	0.630	0.057	0.04	0.06	
		16-3.0ISO	●				3.0	3/8	0.630	0.068	0.04	0.06	

Applicable holders **D32**

●: Korea Stock

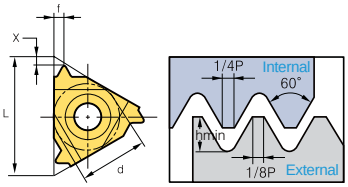
ISO Metric (U chip breaker)

Type	Designation (Right)		PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Dimensions (inch) d	L	hmin	X	f	Picture
Internal	IRM	16-1.5ISO-U					1.5	3/8	0.630	0.034	0.03	0.04	
		16-2.0ISO-U					2.0	3/8	0.630	0.045	0.04	0.05	

Applicable holders **D32**

●: Korea Stock

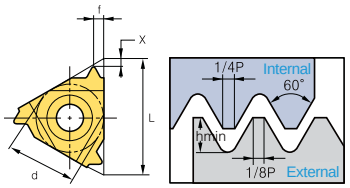
American UN (UN, UNC, UNF, UNEF, UNS)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (inch)					Picture
							(tpi)	d	L	hmin	X	f	
External	ER 11-72UN	●		EL 11-72UN			72	1/4	0.433	0.009	1/32	0.016	
	11-64UN	●		11-64UN			64	1/4	0.433	0.009	1/32	0.016	
	11-56UN	●		11-56UN			56	1/4	0.433	0.011	0.028	0.016	
	11-48UN	●		11-48UN			48	1/4	0.433	0.013	0.024	0.024	
	11-44UN	●		11-44UN			44	1/4	0.433	0.014	0.024	0.024	
	11-40UN	●		11-40UN			40	1/4	0.433	0.015	0.024	0.024	
	11-36UN	●		11-36UN			36	1/4	0.433	0.017	0.024	0.024	
	11-32UN	●		11-32UN			32	1/4	0.433	0.019	0.024	0.024	
	11-28UN	●		11-28UN			28	1/4	0.433	0.022	0.024	0.028	
	11-27UN	●		11-27UN			27	1/4	0.433	0.023	0.028	0.031	
	11-24UN	●		11-24UN			24	1/4	0.433	0.026	0.028	0.031	
	11-20UN	●		11-20UN			20	1/4	0.433	0.031	1/32	0.035	
	11-18UN	●		11-18UN			18	1/4	0.433	0.034	1/32	0.039	
	11-16UN	●		11-16UN			16	1/4	0.433	0.038	0.035	0.043	
	11-14UN	●		11-14UN			14	1/4	0.433	0.044	0.035	0.043	
	16-72UN			16-72UN			72	3/8	0.630	0.009	1/32	0.016	
	16-64UN			16-64UN			64	3/8	0.630	0.009	1/32	0.016	
	16-56UN			16-56UN			56	3/8	0.630	0.011	0.028	0.016	
	16-48UN			16-48UN			48	3/8	0.630	0.013	0.024	0.024	
	16-44UN			16-44UN			44	3/8	0.630	0.014	0.024	0.024	
	16-40UN			16-40UN			40	3/8	0.630	0.015	0.024	0.024	
	16-36UN			16-36UN			36	3/8	0.630	0.017	0.024	0.024	
	16-32UN	●		16-32UN			32	3/8	0.630	0.008	0.024	0.024	
	16-28UN			16-28UN			28	3/8	0.630	0.022	0.024	0.028	
	16-27UN	●		16-27UN			27	3/8	0.630	0.023	0.028	0.031	
	16-24UN	●	●	16-24UN			24	3/8	0.630	0.026	0.028	0.031	
	16-20UN	●	●	16-20UN			20	3/8	0.630	0.031	1/32	0.035	
	16-18UN	●	●	16-18UN	●		18	3/8	0.630	0.034	1/32	0.039	
	16-16UN	●	●	16-16UN	●		16	3/8	0.630	0.038	0.035	0.043	
	16-14UN	●	●	16-14UN			14	3/8	0.630	0.004	0.039	0.047	
	16-13UN			16-13UN			13	3/8	0.630	0.047	0.039	0.051	
	16-12UN	●	●	16-12UN			12	3/8	0.630	0.051	0.043	0.055	
	16-11.5UN	●		16-11.5UN			11.5	3/8	0.630	0.053	0.043	0.059	
	16-11UN	●	●	16-11UN			11	3/8	0.630	0.056	0.043	0.059	
	16-10UN	●	●	16-10UN			10	3/8	0.630	0.061	0.043	0.059	
	16-9UN	●		16-9UN			9	3/8	0.630	0.068	0.047	0.067	
	16-8UN	●	●	16-8UN			8	3/8	0.630	0.077	0.047	0.063	
	22-7UN			22-7UN			7	1/2	0.866	0.087	0.063	0.091	
	22-6UN	●		22-6UN			6	1/2	0.866	0.102	0.063	0.091	
	22-5UN	●		22-5UN			5	1/2	0.866	0.123	0.067	0.098	
	27-4.5UN			27-4.5UN			4.5	5/8	1.063	0.136	0.075	0.106	
	27-4UN			27-4UN			4	5/8	1.063	0.153	0.083	0.118	

Applicable holders D31

●: Korea Stock

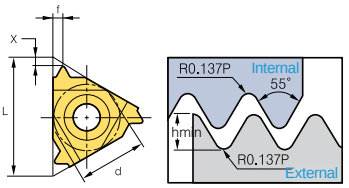
American UN (UN, UNC, UNF, UNEF, UNS)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
Internal	IR 11-72UN			IL 11-72UN			72	1/4	0.433	0.008	1/32	0.012	
	11-64UN			11-64UN			64	1/4	0.433	0.009	1/32	0.016	
	11-56UN			11-56UN			56	1/4	0.433	0.010	0.028	0.016	
	11-48UN			11-48UN			48	1/4	0.433	0.012	0.024	0.024	
	11-44UN			11-44UN			44	1/4	0.433	0.013	0.024	0.024	
	11-40UN			11-40UN			40	1/4	0.433	0.015	0.024	0.024	
	11-36UN			11-36UN			36	1/4	0.433	0.016	0.024	0.024	
	11-32UN			11-32UN			32	1/4	0.433	0.018	0.024	0.024	
	11-28UN			11-28UN			28	1/4	0.433	0.020	0.024	0.028	
	11-27UN			11-27UN			27	1/4	0.433	0.021	0.028	0.031	
	11-24UN			11-24UN			24	1/4	0.433	0.024	0.028	0.031	
	11-20UN		●	11-20UN			20	1/4	0.433	0.029	1/32	0.035	
	11-18UN	●		11-18UN			18	1/4	0.433	0.032	1/32	0.039	
	11-16UN		●	11-16UN			16	1/4	0.433	0.036	0.035	0.043	
	11-14UN			11-14UN			14	1/4	0.433	0.041	0.035	0.043	
	11-12UN		●	11-12UN			12	1/4	0.433	0.048	1/32	0.043	
	11-11UN	●		11-11UN	●		11	1/4	0.433	0.052	1/32	0.043	
	16-72UN			16-72UN			72	3/8	0.630	0.008	1/32	0.012	
	16-64UN			16-64UN			64	3/8	0.630	0.009	1/32	0.016	
	16-56UN			16-56UN			56	3/8	0.630	0.010	0.028	0.016	
	16-48UN			16-48UN			48	3/8	0.630	0.012	0.024	0.024	
	16-44UN			16-44UN			44	3/8	0.630	0.013	0.024	0.024	
	16-40UN			16-40UN			40	3/8	0.630	0.015	0.024	0.024	
	16-36UN			16-36UN			36	3/8	0.630	0.016	0.024	0.024	
	16-32UN			16-32UN			32	3/8	0.630	0.020	0.024	0.024	
	16-28UN	●		16-28UN			28	3/8	0.630	0.020	0.024	0.028	
	16-27UN			16-27UN			27	3/8	0.630	0.021	0.028	0.031	
	16-24UN			16-24UN			24	3/8	0.630	0.024	0.028	0.031	
	16-20UN	●		16-20UN			20	3/8	0.630	0.029	1/32	0.035	
	16-18UN		●	16-18UN			18	3/8	0.630	0.032	1/32	0.039	
	16-16UN	●	●	16-16UN			16	3/8	0.630	0.036	0.035	0.043	
	16-14UN	●		16-14UN			14	3/8	0.630	0.041	0.035	0.047	
	16-13UN			16-13UN			13	3/8	0.630	0.044	0.039	0.051	
	16-12UN	●	●	16-12UN			12	3/8	0.630	0.048	0.043	0.055	
	16-11.5UN	●		16-11.5UN			11.5	3/8	0.630	0.050	0.043	0.059	
	16-11UN	●	●	16-11UN			11	3/8	0.630	0.052	0.043	0.059	
	16-10UN	●		16-10UN	●		10	3/8	0.630	0.058	0.043	0.059	
	16-9UN	●	●	16-9UN			9	3/8	0.630	0.064	0.047	0.067	
	16-8UN	●	●	16-8UN	●		8	3/8	0.630	0.072	0.043	0.059	
	22-7UN			22-7UN			7	1/2	0.866	0.082	0.063	0.091	
	22-6UN			22-6UN			6	1/2	0.866	0.096	0.063	0.091	
	22-5UN			22-5UN			5	1/2	0.866	0.115	0.063	0.091	
	27-4.5UN			27-4.5UN			4.5	5/8	1.063	0.128	0.067	0.094	
	27-4UN			27-4UN			4	5/8	1.063	0.144	0.071	0.106	

Applicable holders D32

●: Korea Stock

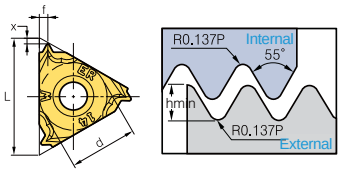
Whitworth (BSW, BSF, BSP, BSB)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-72W	●		EL 11-72W			72	1/4	0.433	0.009	0.028	0.016	
	11-60W	●		11-60W			60	1/4	0.433	0.011	0.028	0.016	
	11-56W	●		11-56W			56	1/4	0.433	0.011	0.028	0.016	
	11-48W	●		11-48W			48	1/4	0.433	0.013	0.024	0.024	
	11-40W	●		11-40W			40	1/4	0.433	0.016	0.024	0.024	
	11-36W	●		11-36W			36	1/4	0.433	0.018	0.024	0.024	
	11-32W	●		11-32W			32	1/4	0.433	0.020	0.024	0.024	
	11-28W	●		11-28W			28	1/4	0.433	0.023	0.024	0.028	
	11-26W	●		11-26W			26	1/4	0.433	0.025	0.028	0.031	
	11-24W	●		11-24W			24	1/4	0.433	0.027	0.028	0.031	
	11-22W	●		11-22W			22	1/4	0.433	0.029	1/32	0.035	
	11-20W	●		11-20W			20	1/4	0.433	0.032	1/32	0.035	
	11-19W			11-19W			19	1/4	0.433	0.034	1/32	0.039	
	11-18W	●		11-18W			18	1/4	0.433	0.035	1/32	0.039	
	11-16W	●		11-16W			16	1/4	0.433	0.040	0.035	0.043	
	11-14W			11-14W			14	1/4	0.433	0.046	0.039	0.047	
	16-72W	●		16-72W			72	3/8	0.630	0.009	0.028	0.016	
	16-60W	●		16-60W			60	3/8	0.630	0.011	0.028	0.016	
	16-56W	●		16-56W			56	3/8	0.630	0.011	0.028	0.016	
	16-48W	●		16-48W			48	3/8	0.630	0.013	0.024	0.024	
	16-40W	●		16-40W			40	3/8	0.630	0.016	0.024	0.024	
	16-36W	●		16-36W			36	3/8	0.630	0.018	0.024	0.024	
	16-32W	●		16-32W			32	3/8	0.630	0.020	0.024	0.024	
	16-30W	●		16-30W			30	3/8	0.630	0.022	0.024	0.028	
	16-28W	●	●	16-28W			28	3/8	0.630	0.023	0.024	0.028	
	16-26W	●		16-26W			26	3/8	0.630	0.025	0.028	0.031	
	16-24W	●		16-24W			24	3/8	0.630	0.027	0.028	0.031	
	16-22W	●		16-22W			22	3/8	0.630	0.029	1/32	0.035	
	16-20W	●		16-20W			20	3/8	0.630	0.032	1/32	0.035	
	16-19W	●	●	16-19W			19	3/8	0.630	0.034	1/32	0.039	
	16-18W	●		16-18W			18	3/8	0.630	0.035	1/32	0.039	
	16-16W	●		16-16W			16	3/8	0.630	0.040	0.035	0.043	
	16-14W	●	●	16-14W			14	3/8	0.630	0.046	0.039	0.047	
	16-12W	●		16-12W			12	3/8	0.630	0.054	0.043	0.055	
	16-11W	●	●	16-11W			11	3/8	0.630	0.058	0.043	0.059	
	16-10W	●		16-10W			10	3/8	0.630	0.064	0.043	0.059	
	16-9W	●		16-9W			9	3/8	0.630	0.071	0.047	0.067	
	16-8W	●		16-8W			8	3/8	0.630	0.080	0.047	0.059	
	22-7W	●		22-7W			7	1/2	0.866	0.131	0.063	0.091	
	22-6W	●		22-6W	●		6	1/2	0.866	0.107	0.063	0.091	
	22-5W	●		22-5W			5	1/2	0.866	0.128	0.067	0.094	
	27-4.5W	●		27-4.5W			4.5	5/8	1.063	0.142	0.071	0.102	
	27-4W			27-4W			4	5/8	1.063	0.160	0.079	0.114	

Applicable holders D31

●: Korea Stock

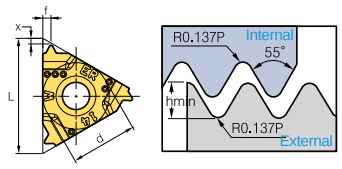
Whitworth (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ERM 16-11W	●				14	3/8	0.630	0.046	0.039	0.047	
	16-14W	●				11	3/8	0.630	0.058	0.043	0.059	
	16-19W	●				19	3/8	0.630	0.034	1/32	0.039	

Applicable holders D31

●: Korea Stock

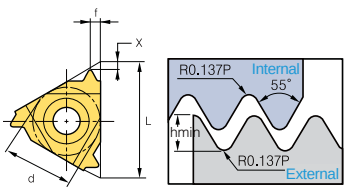
Whitworth (U chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ERM 16-14W-U					14	3/8	0.630	0.046	0.039	0.047	
	16-11W-U					11	3/8	0.630	0.058	0.043	0.059	

Applicable holders D31

●: Korea Stock

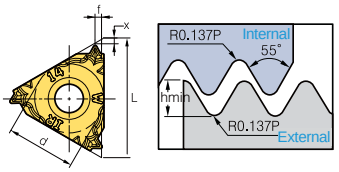
Whitworth (BSW, BSF, BSP, BSB)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
Internal	IR 11-72W	●		IL 11-72W			72	1/4	0.433	0.009	0.028	0.016	
	11-60W	●		11-60W			60	1/4	0.433	0.011	0.028	0.016	
	11-56W	●		11-56W			56	1/4	0.433	0.011	0.028	0.016	
	11-48W	●		11-48W			48	1/4	0.433	0.013	0.024	0.024	
	11-40W	●		11-40W			40	1/4	0.433	0.016	0.024	0.024	
	11-36W	●		11-36W			36	1/4	0.433	0.018	0.024	0.024	
	11-32W	●		11-32W			32	1/4	0.433	0.020	0.024	0.024	
	11-28W	●		11-28W			28	1/4	0.433	0.023	0.024	0.028	
	11-26W	●		11-26W			26	1/4	0.433	0.025	0.028	0.031	
	11-24W	●		11-24W			24	1/4	0.433	0.027	0.028	0.031	
	11-22W	●		11-22W			22	1/4	0.433	0.029	1/32	0.035	
	11-20W			11-20W			20	1/4	0.433	0.032	1/32	0.035	
	11-19W	●	●	11-19W	●		19	1/4	0.433	0.034	1/32	0.039	
	11-18W	●		11-18W	●		18	1/4	0.433	0.035	1/32	0.039	
	11-16W	●		11-16W	●		16	1/4	0.433	0.040	0.035	0.043	
	11-14W	●		11-14W	●		14	1/4	0.433	0.046	0.035	0.043	
	11-12W	●		11-12W	●		12	1/4	0.433	0.052	0.035	0.047	
	16-72W	●		16-72W			72	3/8	0.63	0.009	0.028	0.016	
	16-60W	●		16-60W			60	3/8	0.63	0.011	0.028	0.016	
	16-56W	●		16-56W			56	3/8	0.63	0.011	0.028	0.016	
	16-48W	●		16-48W			48	3/8	0.63	0.013	0.024	0.024	
	16-40W	●		16-40W			40	3/8	0.63	0.016	0.024	0.024	
	16-36W	●		16-36W			36	3/8	0.63	0.018	0.024	0.024	
	16-32W	●		16-32W			32	3/8	0.63	0.020	0.024	0.024	
	16-30W	●		16-30W			30	3/8	0.63	0.022	0.024	0.028	
	16-28W	●		16-28W			28	3/8	0.63	0.023	0.024	0.028	
	16-26W	●		16-26W			26	3/8	0.63	0.025	0.028	0.031	
	16-24W	●		16-24W			24	3/8	0.63	0.027	0.028	0.031	
	16-22W	●		16-22W			22	3/8	0.63	0.029	1/32	0.035	
	16-20W	●		16-20W			20	3/8	0.63	0.032	1/32	0.035	
	16-19W	●		16-19W			19	3/8	0.63	0.034	1/32	0.039	
	16-18W	●		16-18W			18	3/8	0.63	0.035	1/32	0.039	
	16-16W			16-16W			16	3/8	0.63	0.040	0.035	0.043	
	16-14W	●	●	16-14W			14	3/8	0.63	0.046	0.039	0.047	
	16-12W	●		16-12W			12	3/8	0.63	0.054	0.043	0.055	
	16-11W	●	●	16-11W			11	3/8	0.63	0.058	0.043	0.059	
	16-10W	●		16-10W			10	3/8	0.63	0.064	0.043	0.059	
	16-9W	●		16-9W			9	3/8	0.63	0.071	0.047	0.067	
	16-8W	●		16-8W			8	3/8	0.63	0.080	0.047	0.056	
	22-7W			22-7W			7	1/2	0.866	0.131	0.063	0.097	
	22-6W	●		22-6W			6	1/2	0.866	0.107	0.063	0.097	
	22-5W	●		22-5W			5	1/2	0.866	0.128	0.067	0.094	
	27-4.5W	●		27-4.5W			4.5	5/8	1.063	0.142	0.071	0.102	
	27-4W	●		27-4W			4	5/8	1.063	0.160	0.079	0.114	

Applicable holders **D32**

●: Korea Stock

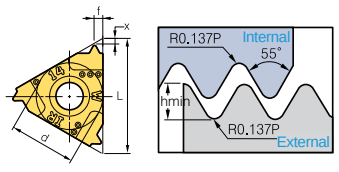
Whitworth (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
Internal	IRM 16-14W					14	3/8	0.630	0.046	0.039	0.047	
	16-11W	●				11	3/8	0.630	0.058	0.043	0.059	

Applicable holders **D32**

●: Korea Stock

Whitworth (U chip breaker)

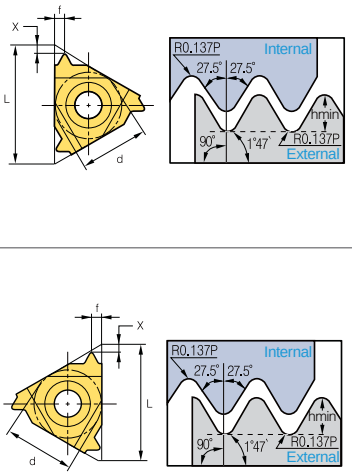
Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
Internal	IRM 16-14W-U					14	3/8	0.630	0.046	0.039	0.047	
	16-11W-U					11	3/8	0.630	0.058	0.043	0.059	

Applicable holders **D32**

●: Korea Stock

British Standard Pipe Thread (BSPT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-28BSPT			EL 11-28BSPT			28	1/4	0.43	0.023	0.02	0.02	
	11-19BSPT			11-19BSPT			19	1/4	0.43	0.034	0.04	0.04	
	11-14BSPT			11-14BSPT			14	1/4	0.43	0.046	0.04	0.04	
	16-28BSPT			16-28BSPT			28	3/8	0.63	0.023	0.02	0.02	
	16-19BSPT	●	●	16-19BSPT			19	3/8	0.63	0.034	0.04	0.04	
	16-14BSPT		●	16-14BSPT			14	3/8	0.63	0.046	0.05	0.05	
	16-11BSPT	●	●	16-11BSPT			11	3/8	0.63	0.056	0.06	0.06	
Internal	IR 11-28BSPT			IL 11-28BSPT			28	1/4	0.43	0.023	0.02	0.02	
	11-19BSPT		●	11-19BSPT			19	1/4	0.43	0.034	0.03	0.04	
	11-14BSPT		●	11-14BSPT			14	1/4	0.43	0.046	0.04	0.04	
	16-28BSPT			16-28BSPT			28	3/8	0.63	0.023	0.02	0.02	
	16-19BSPT	●	●	16-19BSPT			19	3/8	0.63	0.034	0.03	0.04	
	16-14BSPT	●	●	16-14BSPT			14	3/8	0.63	0.046	0.04	0.05	
	16-11BSPT		●	16-11BSPT			11	3/8	0.63	0.058	0.04	0.06	

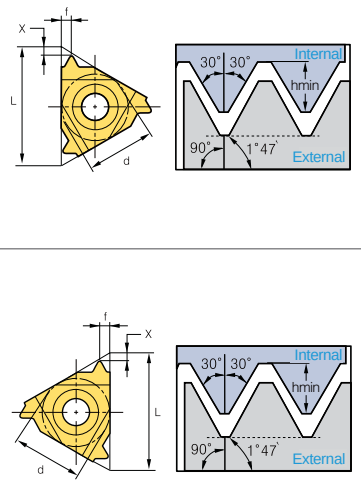


Applicable holders **D31, D32**

●: Korea Stock

National Pipe Thread (NPT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-27NPT	●		EL 11-27NPT			27	1/4	0.43	0.026	0.03	0.03	
	11-18NPT	●		11-18NPT			18	1/4	0.43	0.040	0.03	0.04	
	11-14NPT	●		11-14NPT			14	1/4	0.43	0.052	0.03	0.04	
	16-27NPT	●		16-27NPT			27	3/8	0.63	0.026	0.03	0.03	
	16-18NPT	●	●	16-18NPT			18	3/8	0.63	0.040	0.03	0.04	
	16-14NPT	●	●	16-14NPT			14	3/8	0.63	0.052	0.04	0.05	
	16-11.5NPT	●		16-11.5NPT			11.5	3/8	0.63	0.065	0.04	0.06	
	16-8NPT	●		16-8NPT			8	3/8	0.63	0.095	0.05	0.07	
Internal	IR 11-27NPT	●		IL 11-27NPT			27	1/4	0.43	0.026	0.03	0.03	
	11-18NPT	●		11-18NPT			18	1/4	0.43	0.040	0.03	0.04	
	11-14NPT	●	●	11-14NPT	●		14	1/4	0.43	0.052	0.03	0.04	
	16-27NPT	●		16-27NPT			27	3/8	0.63	0.026	0.03	0.03	
	16-18NPT	●		16-18NPT			18	3/8	0.63	0.040	0.03	0.04	
	16-14NPT	●	●	16-14NPT			14	3/8	0.63	0.052	0.04	0.05	
	16-11.5NPT	●	●	16-11.5NPT	●		11.5	3/8	0.63	0.065	0.04	0.06	
	16-8NPT			16-8NPT	●		8	3/8	0.63	0.095	0.05	0.06	

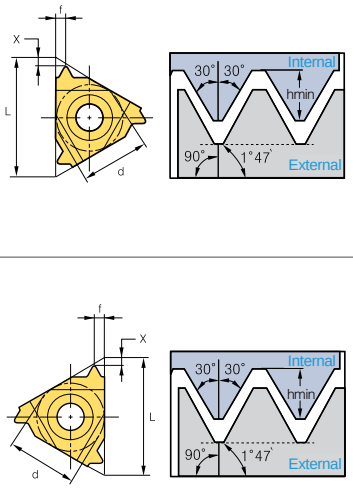


Applicable holders **D31, D32**

●: Korea Stock

National Pipe Threads-Dryseal (NPTF)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-27NPTF			EL 11-27NPTF			27	1/4	0.43	0.025	0.03	0.03	
	11-18NPTF			11-18NPTF			18	1/4	0.43	0.039	0.03	0.04	
	11-14NPTF			11-14NPTF			14	1/4	0.43	0.053	0.03	0.04	
	16-27NPTF			16-27NPTF			27	3/8	0.63	0.025	0.03	0.03	
	16-18NPTF	●		16-18NPTF			18	3/8	0.63	0.039	0.03	0.04	
	16-14NPTF			16-14NPTF			14	3/8	0.63	0.053	0.04	0.05	
	16-11.5NPTF			16-11.5NPTF			11.5	3/8	0.63	0.064	0.04	0.06	
	16-8NPTF			16-8NPTF	●		8	3/8	0.63	0.094	0.05	0.07	
Internal	IR 11-27NPTF			IL 11-27NPTF			27	1/4	0.43	0.025	0.03	0.03	
	11-18NPTF			11-18NPTF			18	1/4	0.43	0.039	0.03	0.04	
	11-14NPTF			11-14NPTF			14	1/4	0.43	0.053	0.03	0.04	
	16-27NPTF			16-27NPTF			27	3/8	0.63	0.025	0.03	0.03	
	16-18NPTF			16-18NPTF			18	3/8	0.63	0.039	0.03	0.04	
	16-14NPTF			16-14NPTF			14	3/8	0.63	0.053	0.04	0.05	
	16-11.5NPTF			16-11.5NPTF			11.5	3/8	0.63	0.064	0.04	0.06	
	16-8NPTF			16-8NPTF			8	3/8	0.63	0.094	0.05	0.07	

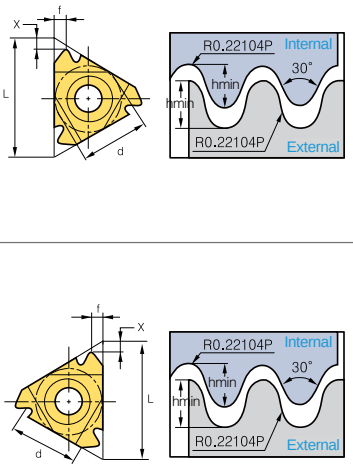


Applicable holders **D31, D32**

●: Korea Stock

Round DIN 405

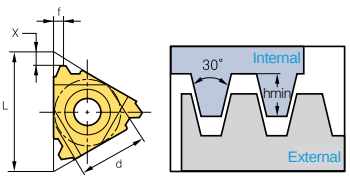
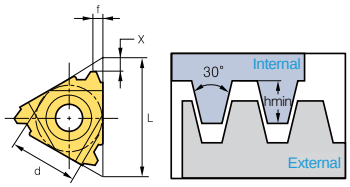
Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 16-10RD			EL 16-10RD			10	3/8	0.63	0.050	0.04	0.05	
	16-8RD	●		16-8RD			8	3/8	0.63	0.063	0.06	0.05	
	16-6RD	●		16-6RD			6	3/8	0.63	0.083	0.06	0.07	
	22-6RD			22-6RD			6	1/2	0.87	0.083	0.06	0.07	
	22-4RD	●		22-4RD			4	1/2	0.87	0.125	0.09	0.09	
	27-4RD			27-4RD			4	5/8	1.06	0.125	0.09	0.09	
Internal	IR 16-10RD			IL 16-10RD			10	3/8	0.63	0.050	0.04	0.05	
	16-8RD			16-8RD			8	3/8	0.63	0.063	0.06	0.05	
	16-6RD	●		16-6RD			6	3/8	0.63	0.083	0.06	0.07	
	22-6RD			22-6RD			6	1/2	0.87	0.083	0.06	0.07	
	22-4RD	●		22-4RD			4	1/2	0.87	0.125	0.09	0.09	
	27-4RD			27-4RD			4	5/8	1.06	0.125	0.09	0.09	



Applicable holders **D31, D32**

●: Korea Stock

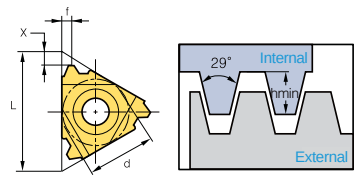
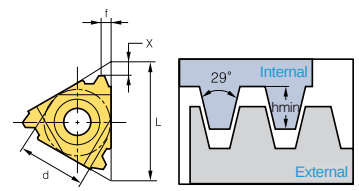
Trapez DIN 103 (TR)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (mm)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-1.5TR	●		EL 11-1.5TR	●		1.5	1/4	0.43	0.035	0.03	0.04	
	16-1.5TR			16-1.5TR			1.5	3/8	0.63	0.035	0.04	0.04	
	16-2.0TR	●		16-2.0TR	●		2.0	3/8	0.63	0.049	0.04	0.05	
	16-3.0TR	●	●	16-3.0TR	●		3.0	3/8	0.63	0.069	0.05	0.06	
	22-4.0TR	●	●	22-4.0TR	●		4.0	1/2	0.87	0.089	0.07	0.07	
	22-5.0TR	●	●	22-5.0TR	●		5.0	1/2	0.87	0.108	0.08	0.10	
	27-6.0TR	●	●	27-6.0TR	●		6.0	5/8	1.06	0.138	0.09	0.11	
Internal	IR 11-1.5TR			IL 11-1.5TR	●		1.5	1/4	0.43	0.035	0.03	0.04	
	16-1.5TR	●		16-1.5TR	●		1.5	3/8	0.63	0.035	0.04	0.04	
	16-2.0TR	●		16-2.0TR	●		2.0	3/8	0.63	0.049	0.04	0.05	
	16-2.5TR	●		16-2.5TR	●		2.5	3/8	0.63	0.060	0.05	0.06	
	16-3.0TR	●		16-3.0TR	●		3.0	3/8	0.63	0.069	0.05	0.06	
	22-4.0TR	●	●	22-4.0TR	●		4.0	1/2	0.87	0.089	0.07	0.07	
	22-5.0TR	●	●	22-5.0TR			5.0	1/2	0.87	0.108	0.08	0.10	
	27-6.0TR	●	●	27-6.0TR	●		6.0	5/8	1.06	0.138	0.09	0.11	

Applicable holders **D31, D32**

●: Korea Stock

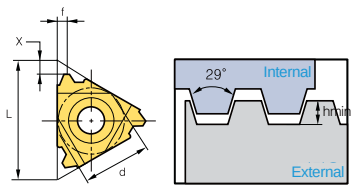
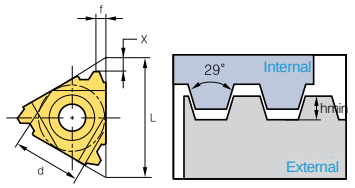
American ACME (ACME)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-16ACME			EL 11-16ACME			16	1/4	0.43	0.036	0.04	0.04	
	16-16ACME			16-16ACME			16	3/8	0.63	0.036	0.04	0.04	
	16-14ACME			16-14ACME			14	3/8	0.63	0.041	0.04	0.05	
	16-12ACME			16-12ACME			12	3/8	0.63	0.047	0.04	0.05	
	16-10ACME			16-10ACME			10	3/8	0.63	0.060	0.05	0.06	
	16-8ACME			16-8ACME			8	3/8	0.63	0.072	0.06	0.06	
	16-6ACME			16-6ACME			6	3/8	0.63	0.093	0.07	0.07	
	22-6ACME	●		22-6ACME	●		6	1/2	0.87	0.093	0.07	0.08	
	22-5ACME	●		22-5ACME	●		5	1/2	0.87	0.110	0.08	0.09	
	27-4ACME			27-4ACME			4	5/8	1.06	0.135	0.09	0.11	
Internal	IR 11-16ACME			IL 11-16ACME			16	1/4	0.43	0.036	0.04	0.04	
	16-16ACME			16-16ACME			16	3/8	0.63	0.036	0.04	0.04	
	16-14ACME			16-14ACME			14	3/8	0.63	0.041	0.04	0.05	
	16-12ACME			16-12ACME			12	3/8	0.63	0.047	0.05	0.05	
	16-10ACME	●		16-10ACME			10	3/8	0.63	0.060	0.05	0.05	
	16-8ACME	●		16-8ACME			8	3/8	0.63	0.072	0.06	0.06	
	16-6ACME			16-6ACME			6	3/8	0.63	0.093	0.07	0.07	
	22-6ACME	●		22-6ACME			6	1/2	0.87	0.093	0.07	0.08	
	22-5ACME	●		22-5ACME			5	1/2	0.87	0.110	0.08	0.09	
	27-4ACME	●		27-4ACME			4	5/8	1.06	0.135	0.09	0.10	

Applicable holders **D31, D32**

●: Korea Stock

Stub ACME (STACME)

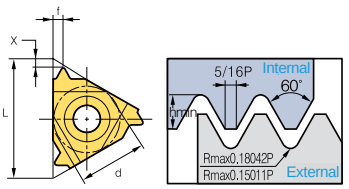
Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-16STACME			EL 11-16STACME			16	1/4	0.43	0.024	0.04	0.04	
	16-16STACME			16-16STACME			16	3/8	0.63	0.024	0.04	0.04	
	16-14STACME			16-14STACME			14	3/8	0.63	0.026	0.04	0.04	
	16-12STACME			16-12STACME			12	3/8	0.63	0.030	0.05	0.05	
	16-10STACME			16-10STACME			10	3/8	0.63	0.040	0.05	0.05	
	16-8STACME			16-8STACME			8	3/8	0.63	0.048	0.06	0.06	
	16-6STACME			16-6STACME			6	3/8	0.63	0.060	0.07	0.07	
	22-6STACME			22-6STACME			6	1/2	0.78	0.060	0.07	0.07	
	22-5STACME			22-5STACME			5	1/2	0.78	0.070	0.08	0.08	
	27-4STACME			27-4STACME			4	5/8	1.06	0.085	0.09	0.09	
	27-3STACME			27-3STACME			3	5/8	1.06	0.110	0.11	0.11	
Internal	IR 11-16STACME			IL 11-16STACME			16	1/4	0.63	0.024	0.04	0.04	
	16-16STACME			16-16STACME			16	3/8	0.63	0.024	0.04	0.04	
	16-14STACME			16-14STACME			14	3/8	0.63	0.026	0.04	0.04	
	16-12STACME			16-12STACME			12	3/8	0.63	0.030	0.04	0.05	
	16-10STACME			16-10STACME			10	3/8	0.63	0.040	0.05	0.05	
	16-8STACME			16-8STACME			8	3/8	0.63	0.048	0.06	0.06	
	16-6STACME			16-6STACME			6	3/8	0.87	0.060	0.07	0.07	
	22-6STACME			22-6STACME			6	1/2	0.87	0.060	0.07	0.07	
	22-5STACME			22-5STACME			5	1/2	0.87	0.070	0.08	0.09	
	27-4STACME			27-4STACME			4	5/8	1.06	0.085	0.09	0.09	
	27-3STACME			27-3STACME			3	5/8	1.06	0.110	0.11	0.11	

Applicable holders **D31, D32**

●: Korea Stock

UNJ (Unified Constant Thread)

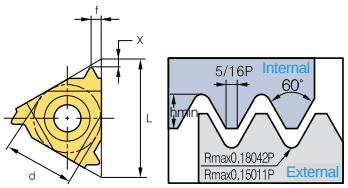
Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-48UNJ			EL 11-48UNJ			48	1/4	0.43	0.012	0.02	0.02	
	11-44UNJ			11-44UNJ			44	1/4	0.43	0.013	0.02	0.02	
	11-40UNJ			11-40UNJ			40	1/4	0.43	0.015	0.02	0.02	
	11-36UNJ			11-36UNJ			36	1/4	0.43	0.016	0.02	0.02	
	11-32UNJ			11-32UNJ			32	1/4	0.43	0.018	0.02	0.03	
	11-28UNJ			11-28UNJ			28	1/4	0.43	0.020	0.03	0.03	
	11-24UNJ	●		11-24UNJ			24	1/4	0.43	0.024	0.03	0.03	
	11-20UNJ			11-20UNJ			20	1/4	0.43	0.029	0.03	0.04	
	11-18UNJ			11-18UNJ			18	1/4	0.43	0.032	0.03	0.04	
	11-16UNJ			11-16UNJ			16	1/4	0.43	0.036	0.04	0.04	
	11-14UNJ			11-14UNJ			14	1/4	0.43	0.041	0.04	0.05	
	16-48UNJ			16-48UNJ			48	3/8	0.63	0.012	0.02	0.02	
	16-44UNJ			16-44UNJ			44	3/8	0.63	0.013	0.02	0.02	
	16-40UNJ			16-40UNJ			40	3/8	0.63	0.015	0.02	0.02	
	16-36UNJ			16-36UNJ			36	3/8	0.63	0.016	0.02	0.02	
	16-32UNJ	●		16-32UNJ			32	3/8	0.63	0.018	0.02	0.03	
	16-28UNJ	●		16-28UNJ			28	3/8	0.63	0.020	0.03	0.03	
	16-24UNJ	●		16-24UNJ			24	3/8	0.63	0.024	0.03	0.03	
	16-20UNJ	●		16-20UNJ			20	3/8	0.63	0.029	0.03	0.04	
	16-18UNJ			16-18UNJ			18	3/8	0.63	0.032	0.03	0.04	
	16-16UNJ	●		16-16UNJ			16	3/8	0.63	0.036	0.04	0.04	
	16-14UNJ			16-14UNJ			14	3/8	0.63	0.041	0.04	0.05	
	16-13UNJ			16-13UNJ			13	3/8	0.63	0.044	0.04	0.05	
	16-12UNJ	●		16-12UNJ			12	3/8	0.63	0.048	0.04	0.05	
	16-11UNJ			16-11UNJ			11	3/8	0.63	0.052	0.05	0.06	
	16-10UNJ			16-10UNJ	●		10	3/8	0.63	0.058	0.05	0.06	
	16-9UNJ			16-9UNJ			9	3/8	0.63	0.064	0.05	0.07	
	16-8UNJ			16-8UNJ			8	3/8	0.63	0.072	0.05	0.06	
	22-7UNJ			22-7UNJ			7	1/2	0.87	0.082	0.07	0.09	
	22-6UNJ			22-6UNJ			6	1/2	0.87	0.096	0.07	0.09	
	22-5UNJ			22-5UNJ			5	1/2	0.87	0.115	0.07	0.10	
	27-4.5UNJ			27-4.5UNJ			4.5	5/8	1.06	0.128	0.08	0.11	
	27-4UNJ			27-4UNJ			4	5/8	1.06	0.144	0.09	0.12	



Applicable holders **D31**

●: Korea Stock

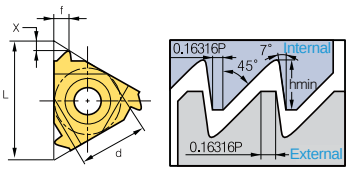
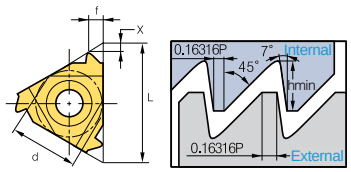
UNJ (Unified Constant Threading)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
Internal	IR 11-48UNJ			IL 11-48UNJ			48	1/4	0.43	0.012	0.02	0.02	
	11-44UNJ			11-44UNJ			44	1/4	0.43	0.013	0.02	0.02	
	11-40UNJ			11-40UNJ			40	1/4	0.43	0.015	0.02	0.02	
	11-36UNJ			11-36UNJ			36	1/4	0.43	0.016	0.02	0.02	
	11-32UNJ			11-32UNJ			32	1/4	0.43	0.018	0.02	0.03	
	11-28UNJ			11-28UNJ			28	1/4	0.43	0.020	0.03	0.03	
	11-24UNJ			11-24UNJ			24	1/4	0.43	0.024	0.03	0.03	
	11-20UNJ			11-20UNJ			20	1/4	0.43	0.029	0.03	0.04	
	11-18UNJ			11-18UNJ			18	1/4	0.43	0.032	0.03	0.04	
	11-16UNJ			11-16UNJ			16	1/4	0.43	0.036	0.04	0.04	
	11-14UNJ			11-14UNJ			14	1/4	0.43	0.041	0.04	0.05	
	16-48UNJ			16-48UNJ			48	3/8	0.63	0.012	0.02	0.02	
	16-44UNJ			16-44UNJ			44	3/8	0.63	0.013	0.02	0.02	
	16-40UNJ			16-40UNJ			40	3/8	0.63	0.015	0.02	0.02	
	16-36UNJ			16-36UNJ			36	3/8	0.63	0.016	0.02	0.02	
	16-32UNJ			16-32UNJ			32	3/8	0.63	0.018	0.02	0.03	
	16-28UNJ			16-28UNJ			28	3/8	0.63	0.020	0.03	0.03	
	16-24UNJ			16-24UNJ			24	3/8	0.63	0.024	0.03	0.03	
	16-20UNJ			16-20UNJ			20	3/8	0.63	0.029	0.03	0.04	
	16-18UNJ			16-18UNJ			18	3/8	0.63	0.032	0.03	0.04	
	16-16UNJ			16-16UNJ			16	3/8	0.63	0.036	0.04	0.04	
	16-14UNJ			16-14UNJ			14	3/8	0.63	0.041	0.04	0.05	
	16-13UNJ			16-13UNJ			13	3/8	0.63	0.044	0.04	0.05	
	16-12UNJ			16-12UNJ	●		12	3/8	0.63	0.048	0.04	0.05	
	16-11UNJ			16-11UNJ			11	3/8	0.63	0.052	0.05	0.06	
	16-10UNJ			16-10UNJ			10	3/8	0.63	0.058	0.05	0.06	
	16-9UNJ			16-9UNJ			9	3/8	0.63	0.064	0.05	0.07	
	16-8UNJ			16-8UNJ			8	3/8	0.63	0.072	0.05	0.06	
	22-7UNJ			22-7UNJ			7	1/2	0.87	0.082	0.07	0.09	
	22-6UNJ			22-6UNJ			6	1/2	0.87	0.096	0.07	0.09	
	22-5UNJ			22-5UNJ			5	1/2	0.87	0.115	0.07	0.10	
	27-4.5UNJ			27-4.5UNJ			4.5	5/8	1.06	0.128	0.08	0.11	
	27-4UNJ			27-4UNJ			4	5/8	1.06	0.144	0.09	0.12	

Applicable holders D32

●: Korea Stock

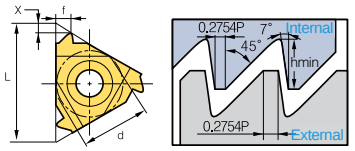
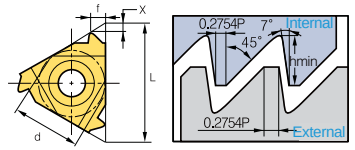
American Buttress (ABUT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 11-20ABUT			EL 11-20ABUT			20	1/4	0.43	0.033	0.04	0.06	
	11-16ABUT			11-16ABUT			16	1/4	0.43	0.041	0.05	0.07	
	16-20ABUT	●		16-20ABUT			20	3/8	0.63	0.033	0.04	0.06	
	16-16ABUT			16-16ABUT			16	3/8	0.63	0.041	0.05	0.07	
	16-12ABUT			16-12ABUT			12	3/8	0.63	0.055	0.06	0.08	
	16-10ABUT			16-10ABUT			10	3/8	0.63	0.066	0.06	0.09	
	22-8ABUT			22-8ABUT			8	1/2	0.87	0.083	0.08	0.13	
	22-6ABUT			22-6ABUT			6	1/2	0.87	0.110	0.09	0.14	
Internal	IR 11-20ABUT	●		IL 11-20ABUT			20	1/4	0.43	0.033	0.04	0.06	
	11-16ABUT			11-16ABUT			16	1/4	0.43	0.041	0.05	0.07	
	16-20ABUT	●		16-20ABUT			20	3/8	0.63	0.033	0.04	0.06	
	16-16ABUT			16-16ABUT			16	3/8	0.63	0.041	0.05	0.07	
	16-12ABUT	●		16-12ABUT			12	3/8	0.63	0.055	0.06	0.08	
	16-10ABUT	●		16-10ABUT			10	3/8	0.63	0.066	0.06	0.09	
	22-8ABUT			22-8ABUT			8	1/2	0.87	0.083	0.08	0.13	
	22-6ABUT			22-6ABUT			6	1/2	0.87	0.110	0.09	0.14	

Applicable holders **D31, D32**

●: Korea Stock

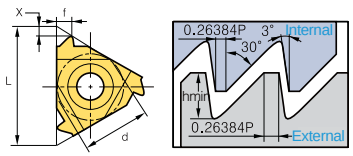
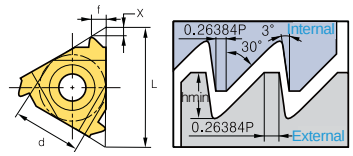
British Buttress (BBUT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 16-16BBUT	●		EL 16-16BBUT			16	3/8	0.63	0.032	0.04	0.06	
	16-12BBUT			16-12BBUT			12	3/8	0.63	0.042	0.06	0.08	
	16-10BBUT			16-10BBUT			10	3/8	0.63	0.050	0.06	0.09	
	16-8BBUT	●		16-8BBUT			8	3/8	0.63	0.063	0.06	0.10	
	22-8BBUT			22-8BBUT			8	1/2	0.87	0.063	0.06	0.10	
Internal	IR 16-16BBUT	●		IL 16-16BBUT			16	3/8	0.63	0.032	0.04	0.06	
	16-12BBUT			16-12BBUT			12	3/8	0.63	0.042	0.06	0.08	
	16-10BBUT			16-10BBUT			10	3/8	0.63	0.050	0.06	0.09	
	16-8BBUT			16-8BBUT			8	3/8	0.63	0.063	0.06	0.10	
	22-8BBUT			22-8BBUT			8	1/2	0.87	0.063	0.06	0.10	

Applicable holders **D31, D32**

●: Korea Stock

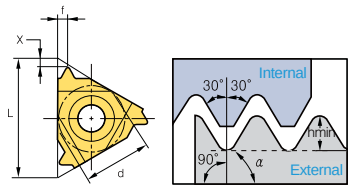
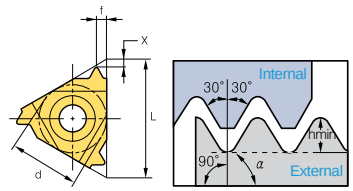
Metric Buttress (SAGE)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (mm)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 16-2.0SAGE			EL 16-2.0SAGE			2.0	3/8	0.63	0.069	0.06	0.08	
	22-2.0SAGE			22-2.0SAGE			2.0	1/2	0.87	0.069	0.06	0.08	
	22-3.0SAGE	●		22-3.0SAGE			3.0	1/2	0.87	0.102	0.07	0.10	
	27-4.0SAGE	●		27-4.0SAGE			4.0	5/8	1.06	0.140	0.08	0.13	
Internal	IR 16-2.0SAGE	●		IL 16-2.0SAGE			2.0	3/8	0.63	0.059	0.06	0.09	
	22-3.0SAGE			22-3.0SAGE			3.0	1/2	0.87	0.089	0.07	0.11	
	27-4.0SAGE	●		27-4.0SAGE			4.0	5/8	1.06	0.122	0.08	0.13	

Applicable holders **D31, D32**

●: Korea Stock

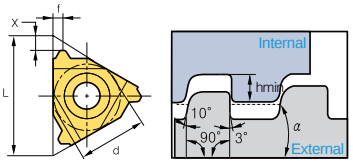
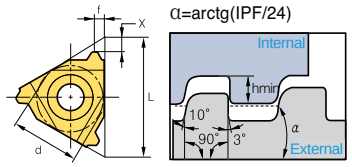
API

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (inch) d	L	hmin	X	f	Picture
External	ER 22-4API382	●		EL 22-4API382			4	1/2	0.87	0.122	0.08	0.11	
	22-4API383			22-4API383			4	1/2	0.87	0.122	0.08	0.11	
	22-4API502	●		22-4API502			4	1/2	0.87	0.148	0.08	0.11	
	22-4API503	●		22-4API503			4	1/2	0.87	0.148	0.08	0.11	
	22-5API403			22-5API403			5	1/2	0.87	0.118	0.07	0.10	
	22-6API551			22-6API551			6	1/2	0.87	0.056	0.10	0.09	
	27-4API382	●		27-4API382			4	5/8	0.63	0.122	0.08	0.11	
	27-4API383			27-4API383			4	5/8	0.63	0.122	0.08	0.11	
	27-4API502			27-4API502			4	5/8	0.63	0.148	0.08	0.12	
	27-4API503	●		27-4API503			4	5/8	0.63	0.148	0.08	0.12	
	27-5API403	●		27-5API403			5	5/8	0.63	0.056	0.07	0.11	
Internal	IR 22-4API382			IL 22-4API382			4	1/2	0.87	0.122	0.08	0.11	
	22-4API383			22-4API383			4	1/2	0.87	0.122	0.08	0.11	
	22-4API502	●		22-4API502			4	1/2	0.87	0.148	0.08	0.12	
	22-4API503			22-4API503			4	1/2	0.87	0.148	0.08	0.11	
	22-5API403	●		22-5API403			5	1/2	0.87	0.118	0.07	0.10	
	22-6API551	●		22-6API551			6	1/2	0.87	0.056	0.10	0.09	
	27-4API382			27-4API382			4	5/8	0.63	0.122	0.08	0.11	
	27-4API383	●		27-4API383			4	5/8	0.63	0.122	0.08	0.11	
	27-4API502	●		27-4API502			4	5/8	0.63	0.148	0.08	0.12	
	27-4API503	●		27-4API503			4	5/8	0.63	0.148	0.08	0.12	
	27-5API403	●		27-5API403			5	5/8	0.63	0.056	0.07	0.11	

Applicable holders **D31, D32**

●: Korea Stock

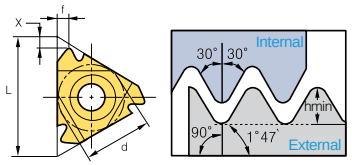
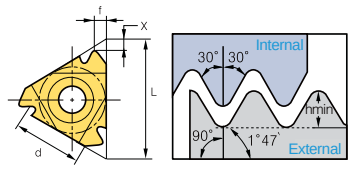
API Buttress Casing (BUT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (inch)						Picture
							(tpi)	IPF	d	L	hmin	X	f	
External	ER 22-5BUT75			EL 22-5BUT75			5	0.75	1/2	0.87	0.061	0.12	0.12	
	22-5BUT1			22-5BUT1			5	1	1/2	0.87	0.061	0.12	0.12	
Internal	IR 22-5BUT75			IL 22-5BUT75			5	0.75	1/2	0.87	0.061	0.12	0.12	
	22-5BUT1	●		22-5BUT1			5	1	1/2	0.87	0.061	0.12	0.12	

Applicable holders **D31, D32**

●: Korea Stock

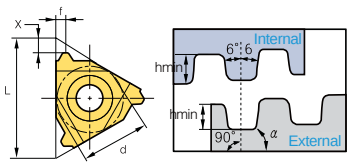
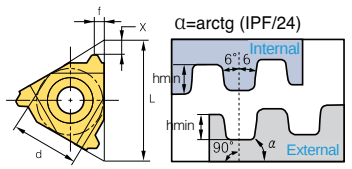
API Round Casing & Tubing (APIRD)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (inch)					Picture
							(tpi)	d	L	hmin	X	f	
External	ER 16-10APIRD	●		EL 16-10APIRD			10	3/8	0.63	0.056	0.05	0.06	
	16-8APIRD	●		16-8APIRD			8	3/8	0.63	0.071	0.05	0.06	
Internal	IR 16-10APIRD	●		IL 16-10APIRD			10	3/8	0.63	0.056	0.05	0.06	
	16-8APIRD	●		16-8APIRD			8	3/8	0.63	0.071	0.05	0.06	

Applicable holders **D31, D32**

●: Korea Stock

Extreme Line Casing (EL)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (inch)						Picture
							(tpi)	IPF	d	L	hmin	X	f	
External	ER 22-6EL15			EL 22-6EL15			6	1.5	1/2	0.087	0.048	0.07	0.07	
	22-5EL125			22-5EL125			5	1.25	1/2	0.087	0.067	0.09	0.09	
Internal	IR 22-6EL15			IL 22-6EL15			6	1.5	1/2	0.087	0.055	0.07	0.07	
	22-5EL125			22-5EL125			5	1.25	1/2	0.087	0.075	0.09	0.09	

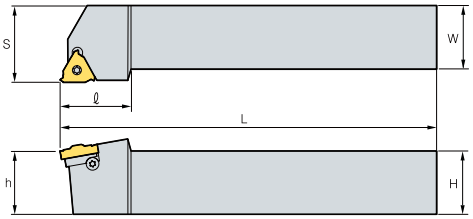
Applicable holders **D31, D32**

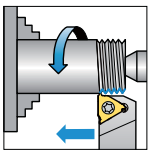
●: Korea Stock

ER(L)H
(Screw on system)









Righthand drawing

(inch)

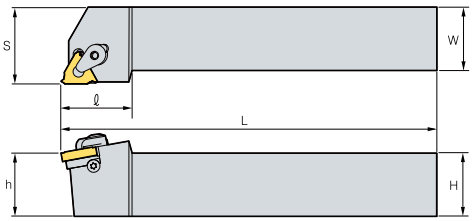
Designation		Inscribed circle	H	W	L	S	h	ℓ	Insert screw	Shim screw	Shim RH	Shim LH	Wrench
ER(L)H	031N-11	1/4	0.31	0.31	5.37	0.425	0.31	0.69	ST11N	-	-	-	TW08P
	039N-11	1/4	0.39	0.39	2.75	0.43	0.39	0.68					
	050N-11	1/4	0.50	0.50	3.14	0.47	0.50	0.68					
	050N-16	3/8	0.50	0.50	3.27	0.625	0.50	0.87	ST16N	-	-	-	TW10P
	3/8-16	3/8	0.375	0.375	2.45	0.625	0.375	0.76	ST16	STA16	ATE16	ATI22	TW10P
	050-16	3/8	0.50	0.50	3.27	0.625	0.50	0.87					
	0625-16	3/8	0.625	0.625	5.00	0.625	0.625	1.02					
	075-16	3/8	0.75	0.75	5.00	0.75	0.75	1.02					
	100-16	3/8	1.00	1.00	6.00	1.00	1.00	1.20					
	125-16	3/8	1.25	1.25	7.00	1.25	1.25	1.18					
	100-22	1/2	1.00	1.00	6.00	1.00	1.00	1.42	ST22	STA22	ATE22	ATI22	TW20P
	125-22	1/2	1.25	1.25	7.00	1.25	1.25	1.42					
	150-22	1/2	1.50	1.50	8.00	1.50	1.50	1.42					
	100-27	5/8	1.00	1.00	6.00	1.25	1.00	1.57	ST27	STA27	ATE27	ATI27	TW25L
	125-27	5/8	1.25	1.25	7.00	1.25	1.25	1.57					
	150-27	5/8	1.50	1.50	8.00	1.50	1.50	1.57					
	200-27	5/8	2.00	2.00	10.00	2.00	2.00	1.57					

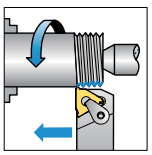
Applicable inserts **D10~D13, D16, D18, D19, D22, D23~D26** • Helix angle is 1.5° for all holders • No shim needed for N type holder

ER(L)H-C
(Clamp on system)









Righthand drawing

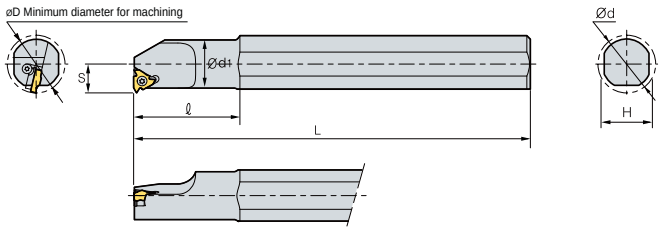
(inch)

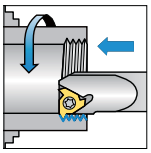
Designation		Inscribed circle	H	W	L	S	h	ℓ	Shim screw	Clamp	Shim RH	Shim LH	Wrench
ER(L)H	075-16C	3/8	0.75	0.75	5.00	0.75	0.75	1.02	STA16	CTH16	ATE16	ATI16	TW10P TW15P
	100-16C	3/8	1.00	1.00	6.00	1.00	1.00	1.20					
	125-16C	3/8	1.25	1.25	7.00	1.25	1.25	1.18					
	100-22C	1/2	1.00	1.00	6.00	1.00	1.00	1.42	STA22	CTH22	ATE22	ATI22	TW20P
	125-22C	1/2	1.25	1.25	7.00	1.25	1.25	1.42					
	150-22C	1/2	1.50	1.50	8.00	1.50	1.50	1.42					
	100-27C	5/8	1.00	1.00	6.00	1.00	1.00	1.57	STA27	CTH27	ATE27	ATI27	TW25L
	125-27C	5/8	1.25	1.25	7.00	1.25	1.25	1.57					
	150-27C	5/8	1.50	1.50	8.00	1.50	1.50	1.57					
	200-27C	5/8	2.00	2.00	10.00	2.00	2.00	1.57					

Applicable inserts **D10~D13, D16, D18, D19, D22, D23~D26** • Helix angle is 1.5° for all holders

IR(L)H
(Screw on system)







Righthand drawing

(inch)

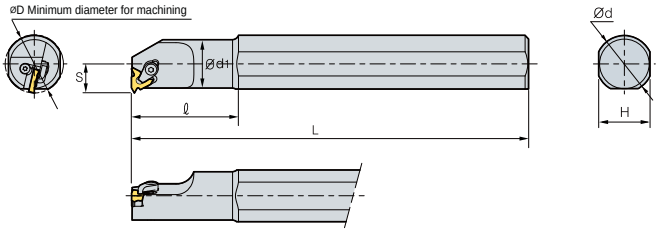
Designation		Inscribed circle	ØD	Ød	Ød1	H	L	S	ℓ	Insert screw	Shim screw	Shim RH	Shim LH	Wrench
IR(L)H	0375DN-11	1/4	0.50	0.40	0.375	0.37	3.9	0.28	-					
	0375N-11	1/4	0.50	0.75	0.375	0.67	7.0	0.28	1.00	ST11N	-	-	-	TW08P
	050N-11	1/4	0.65	0.75	0.50	0.67	7.0	0.37	1.25					
	050N-16	3/8	0.67	0.75	0.50	0.67	7.0	0.40	1.25					
	0625N-16	3/8	0.80	0.75	0.625	0.67	7.0	0.46	1.50	ST16N	-	-	-	TW10P
	0625DN-16	3/8	0.80	0.625	0.625	0.58	6.0	0.46	1.25					
	075-16	3/8	0.90	0.75	0.75	0.67	7.0	0.51	1.50					
	100-16	3/8	1.20	1.25	1.00	1.12	10.0	0.65	2.50					
	100D-16	3/8	1.20	1.00	1.00	0.90	8.0	0.65	1.75	ST16	STA16	ATI16	ATE16	TW10P
	125-16	3/8	1.45	1.25	1.25	1.12	10.0	0.77	2.50					
	150-16	3/8	1.65	1.50	1.50	1.34	12.0	0.90	2.50					
	075N-22	1/2	1.00	0.75	0.75	0.67	7.0	0.59	2.00	ST22N	-	-	-	TW20P
	100-22	1/2	1.25	1.25	1.00	1.12	10.0	0.71	2.50					
	100D-22	1/2	1.25	1.00	1.00	0.88	8.0	0.71	1.75	ST22	STA22	ATI22	ATE22	TW20P
	125-22	1/2	1.50	1.25	1.25	1.12	10.0	0.85	2.50					
	150-22	1/2	1.75	1.50	1.50	1.34	12.0	0.98	2.50					
	125-27	5/8	1.55	1.25	1.25	1.12	10.0	0.88	2.50					
	150-27	5/8	1.80	1.50	1.50	1.34	12.0	1.00	2.50	ST27	STA27	ATI27	ATE27	TW25L
	200-27	5/8	2.30	2.00	2.00	1.80	14.0	1.25	3.00					
	250-27	5/8	2.80	2.50	2.50	2.26	16.0	1.50	3.00					

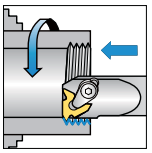
Applicable inserts **D10, D11, D14, D15, D17, D20~D25, D27~D30**

• Helix angle is 1.5° for all holders • No shim needed for N type holder

IR(L)H-C
(Clamp on system)







Righthand drawing

(inch)

Designation		Inscribed circle	ØD	Ød	Ød1	H	L	S	ℓ	Shim screw	Clamp	Shim RH	Shim LH	Wrench
IR(L)H	075-16C	3/8	0.90	0.75	0.75	0.67	7.0	0.51	1.50					
	100-16C	3/8	1.20	1.25	1.00	1.12	10.0	0.65	2.50					TW10P
	100D-16C	3/8	1.20	1.00	1.00	0.90	8.0	0.65	1.75	STA16	CTH16	ATI16	ATE16	TW15P
	125-16C	3/8	1.45	1.25	1.25	1.12	10.0	0.77	2.50					
	150-16C	3/8	1.65	1.50	1.50	1.34	12.0	0.90	2.50					
	100-22C	1/2	1.25	1.25	1.00	1.12	10.0	0.71	2.50					
	100D-22C	1/2	1.25	1.00	1.00	0.88	8.0	0.71	1.75	STA22	CTH22	ATI22	ATE22	TW20P
	125-22C	1/2	1.50	1.25	1.25	1.12	10.0	0.85	2.50					
	150-22C	1/2	1.75	1.50	1.50	1.34	12.0	0.98	2.50					
	125-27C	5/8	1.55	1.25	1.25	1.12	10.0	0.88	2.50					
	150-27C	5/8	1.80	1.50	1.50	1.34	12.0	1.00	2.50	STA27	CTH27	ATI27	ATE27	TW25L
	200-27C	5/8	2.30	2.00	2.00	1.80	14.0	1.25	3.00					
	250-27C	5/8	2.80	2.50	2.50	2.26	16.0	1.50	3.00					

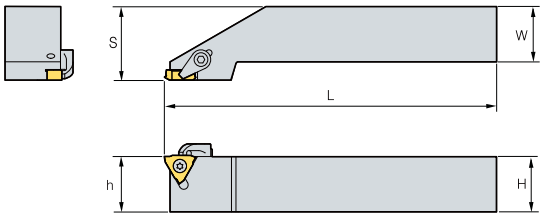
Applicable inserts **D10, D11, D14, D15, D17, D20~D25, D27~D30**

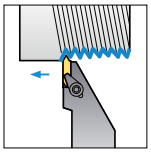
• Helix angle is 1.5° for all holders

VTH



VETR



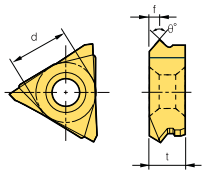


Righthand drawing

(inch)

Designation		H = (h)	W	L	S	Insert	Clamp	Clamp screw	Screw	Wrench
VTH	12R	0.787	0.787	4.921	1.039	VETR	CS6R1	DHA0617	FTKA03510	TW15P HW30L
	16R	0.984	0.984	5.906	1.315					
	85R	1.260	0.984	6.693	1.315					

Vertical type thread insert

Picture	Designation		Uncoated	Insert			Configuration
			ST10	Pitch (mm)	θ	f	
	VETR	080		0.8	60°	0.055	 d : 9.525 t : 4.76
		100	●	1.0	60°	0.055	
		125		1.25	60°	0.055	
		150	●	1.5	60°	0.047	
		175		1.75	60°	0.047	
		200	●	2.0	60°	0.047	
		250		2.5	60°	0.055	
		300	●	3.0	60°	0.063	
		150F	●	0.8~1.5	60°	0.055	
		300F	●	1.5~3.0	60°	0.063	

●: Korea Stock

Thread Milling Holders Code System

TM S R L 050 - 11

1 Insert style | 2 Holder style | 3 Hand | 4 Shank type | 5 Shank dia. | 6 Cutting edge length

1 Insert style

TM S R L 25 - 11

Thread Milling Holder

3 Hand

TM S R L 25 - 11

R: Right Hand L: Left Hand

5 Shank dia.

TM S R L 050 - 11

050: 0.50	100: 1.00
0625: 0.625	125: 1.25
075: 0.75	150: 1.50

2 Holders style

TM S R L 25 - 11

S: Shank Type

4 Shank type

TM S R L 25 - 11

None: Standard
L: Long Type
T: Taper Type

6 Cutting edge length

TM S R L 25 - 11

10: 0.41	22: 0.87
11: 0.43	27: 1.06
16: 0.63	38: 1.52

Thread Milling Inserts Code System

TM 2 I 16 - 1.5 ISO

1 Insert style | 2 Cutting edge | 3 Type of insert | 4 Cutting edge length | 5 Pitch | 6 Type

1 Insert style

TM 2 I 16 - 1.5 ISO

Thread Milling Holder

2 Cutting edge

TM 2 I 16 - 1.5 ISO

None: 1 cutting edge
2: 2 cutting edge

3 Type of insert

TM 2 I 16 - 1.5 ISO

I: Internal
E: External
EI: External & Internal

4 Cutting edge length

TM 2 I 16 - 1.5 ISO

10: 0.41
11: 0.43
16: 0.63
22: 0.87
27: 1.06
38: 1.52

5 Pitch

TM 2 I 16 - 1.5 ISO

mm: 0.5~6.0 tpi: 48~6

6 Type

TM 2 I 16 - 1.5 ISO

ISO Metric

American UN (UNC, UNF, UNEF)

UNJ

Whit Worth (BSW, BSF, BSP, BSB)

National Pipe Thread (NPT)

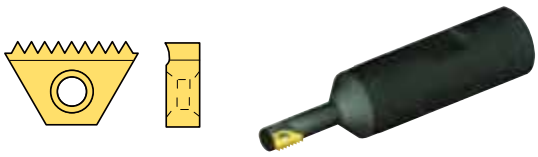
National Pipe Thread (NPTF)

British Standard Pipe Thread (BSPT)

Thread Milling Inserts

The right tool for the job

Small diameter type



Tool holder: TMSR **Insert**: TM L = 0.41 inch
For small bore diameters down to 0.371 inch

Standard type



Tool holder: TMSR **Insert**: TM2
For standard length threads

Long type



Tool holder: TMSR **Insert**: TM2
For long or remote threads

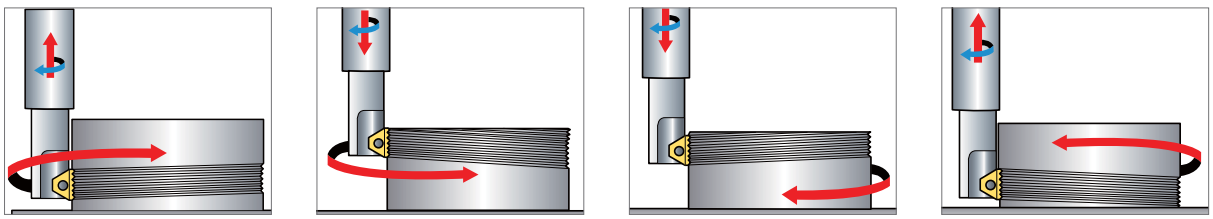
Tapered type



Tool holder: TMSR **Insert**: TM2 (BSPT, NPT, NPTF)
For standard length threads

Thread milling methods

External threading



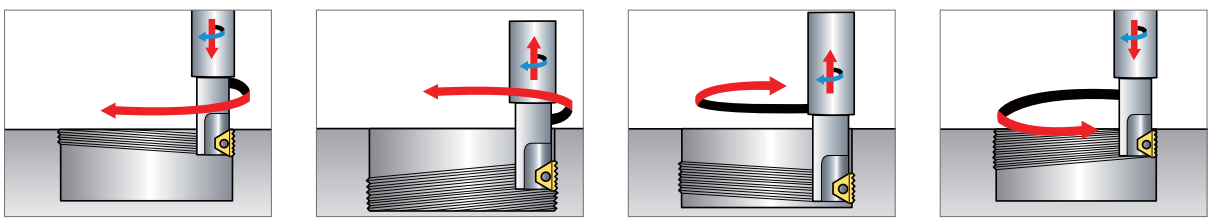
Right handed thread
conventional milling

Left handed thread
down milling

Right handed thread
down milling

Left handed thread
conventional milling

Internal threading



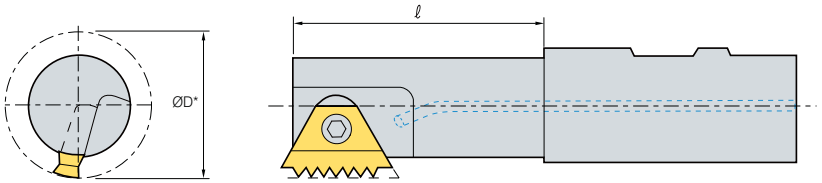
Right handed thread
down milling

Left handed thread
conventional milling

Right handed thread
conventional milling

Left handed thread
down milling

Tooling recommendation for given internal thread specification

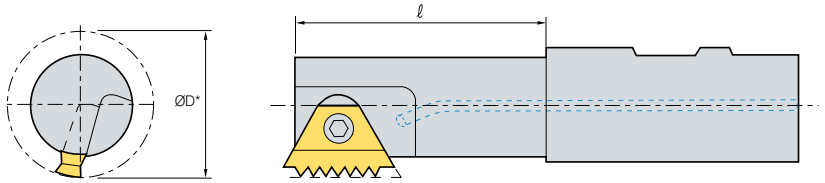


ISO

Pitch (mm)	Nominal dia. (mm)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
0.75	11	TMSR 12-10	TM2I 10-0.75ISO	0.47	0.35	0.017
1.0	12-14	TMSR 12-10	TM2I 10-1.0ISO	0.47	0.35	0.023
	15-18	TMSR 12-11	TM2I 11-1.0ISO	0.47	0.45	
	20	TMSR 16-16	TM2I 16-1.0ISO	0.87	0.67	
	22	TMSR 20-22	TM2I 22-1.0ISO	1.14	0.75	
	24	TMSR 20-16	TM2I 16-1.0ISO	1.69	0.79	
	25-28	TMSRL 25-16	TM2I 16-1.0ISO	0.98	0.87	
1.25	14	TMSR 12-10	TM2I 10-1.25ISO	0.47	0.35	0.028
1.5	14-15	TMSR 12-10	TM2I 10-1.5ISO	0.47	0.35	0.034
	16-20	TMSR 12-11	TM2I 11-1.5ISO	0.47	0.45	
	22	TMSR 16-16	TM2I 16-1.5ISO	0.87	0.67	
	24	TMSR 20-22	TM2I 22-1.5ISO	1.14	0.75	
	25-26	TMSR 20-16	TM2I 16-1.5ISO	1.69	0.79	
	27-30	TMSRL 25-16	TM2I 16-1.5ISO	0.98	0.87	
	35-42	TMSR 25-27	TM2I 27-1.5ISO	2.05	1.18	
	45	TMSR 32-27	TM2I 27-1.5ISO	2.28	1.46	
2.0	22	TMSRT 16-16	TM2I16-2.0ISO	0.87	0.61	0.045
	24	TMSR 16-16	TM2I 16-2.0ISO	0.87	0.67	
	25	TMSR 20-22	TM2I 22-2.0ISO	1.14	0.75	
	27	TMSR 20-16	TM2I 16-2.0ISO	1.69	0.79	
	28-32	TMSRL 25-16	TM2I 16-2.0ISO	0.98	0.87	
	39-42	TMSR 25-27	TM2I 27-2.0ISO	2.05	1.18	
	45-48	TMSR 32-27	TM2I 27-2.0ISO	2.28	1.46	
3.0	42-48	TMSR 25-27	TM2I 27-3.0ISO	2.05	1.18	0.068
	50-52	TMSR 32-27	TM2I 27-3.0ISO	2.28	1.46	
4.0	45-52	TMSR 25-27	TM2I 27-4.0ISO	2.05	1.18	0.091
	55	TMSR 32-38	TM2I 38-4.0ISO	2.17	1.38	
	56-58	TMSR 32-27	TM2I 27-4.0ISO	2.28	1.46	
	60-65	TMSR 40-38	TM2I 38-4.0ISO	2.56	1.81	
5.0	48-52	TMSR 32-38	TM2I 38-5.0ISO	2.05	1.18	0.114
5.5	56	TMSR 32-38	TM2I 38-5.5ISO	2.17	1.38	0.125
	60	TMSR 40-38	TM2I 38-5.5ISO	2.56	1.81	
6.0	64-68	TMSR 40-38	TM2I 38-6.0ISO	2.56	1.81	0.136

• The recommended holder is the largest for the given thread specification
* Holder with smaller or equal cutting diameters (D2) can also be used

Tooling recommendation for given internal thread specification

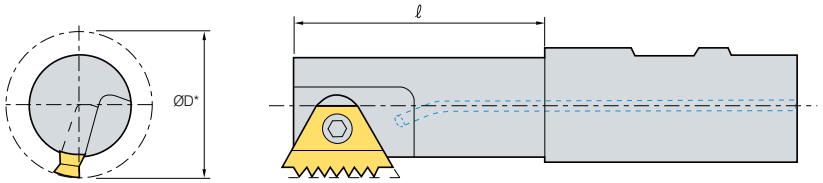


UN

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
32	7/16-1/2	TMSR 12-10	TMI 10-32UN	0.47	0.35	0.018
	9/16-11/16	TMSR 12-11	TM2I 11-32UN	0.47	0.45	
	3/4-13/16	TMSR 16-16	TM2I 16-32UN	0.87	0.67	
	7/8-15/16	TMSR 20-16	TM2I 16-32UN	1.69	0.79	
	1	TMSR 25-16	TM2I 16-32UN	0.98	0.87	
28	7/16-1/2	TMSR 12-10	TMI 10-28UN	0.47	0.35	0.020
	9/16-3/4	TMSR 12-11	TM2I 11-28UN	0.47	0.45	
	13/16-7/8	TMSR 16-16	TM2I 16-28UN	0.87	0.67	
	15/16	TMSR 20-16	TM2I 16-28UN	1.69	0.79	
	1-1 1/8	TMSRL 25-16	TM2I 16-28UN	0.98	0.87	
24	9/16-11/16	TMSR 12-11	TM2I 11-24UN	0.47	0.45	0.024
20	1/2-9/16	TMSR 12-10	TMI 10-20UN	0.47	0.35	0.029
	5/8-13/16	TMSR 12-11	TM2I 11-20UN	0.47	0.45	
	7/8	TMSR 16-16	TM2I 16-20UN	0.87	0.67	
	15/16-1	TMSR 20-16	TM2I 16-20UN	0.69	0.79	
	1 1/16-1 1/8	TMSRL 25-16	TM2I 16-20UN	0.98	0.87	
	1 3/8-1 5/8	TMSR 25-27	TM2I 27-20UN	2.05	1.18	
	1 11/16-1 13/16	TMSR 32-27	TM2I 27-20UN	2.28	1.46	
18	5/8	TMSR 12-11	TM2I 11-18UN	0.47	0.45	0.032
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-18UN	0.98	0.87	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-18UN	2.05	1.18	
	1 11/16	TMSR 32-27	TM2I 27-18UN	2.28	1.46	
16	11/16-13/16	TMSR 12-11	TM2I 11-16UN	0.47	0.45	0.036
	7/8-15/16	TMSR 16-16	TM2I 16-16UN	0.87	0.67	
	1	TMSR 20-16	TM2I 16-16UN	1.69	0.79	
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-16UN	0.98	0.87	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-16UN	2.05	1.18	
	1 11/16-1 7/8	TMSR 32-27	TM2I 27-16UN	2.28	1.46	
14	7/8	TMSR 12-11	TM2I 11-14UN	0.47	0.45	0.041
12	7/8	TMSRT 16-16	TM2I 16-12UN	0.87	0.61	0.048
	15/16	TMSR 16-16	TM2I 16-12UN	0.87	0.67	
	1	TMSR 20-22	TM2I 22-12UN	1.14	0.75	
	1 1/16	TMSR 20-16	TM2I 16-12UN	1.69	0.79	
	1 1/8-1 1/4	TMSRL 25-16	TM2I 16-12UN	0.98	0.87	
	1 1/2-1 11/16	TMSR 25-27	TM2I 27-12UN	2.05	1.18	
	1 3/4-1 15/16	TMSR 32-27	TM2I 27-12UN	2.28	1.46	
8	1 11/16-1 15/16	TMSR 25-27	TM2I 27-8UN	2.05	1.18	0.072
	2-1 1/8	TMSR 32-27	TM2I 27-8UN	2.28	1.46	
6	2-2 1/8	TMSR 25-27	TM2I 27-6UN	2.05	1.18	0.096
	2 1/4	TMSR 32-27	TM2I 27-6UN	2.28	1.46	
	2 3/8-2 1/2	TMSR 40-38	TM2I 38-6UN	2.56	1.18	
4.5	2-2 1/4	TMSR 32-38	TM2I 38-4.5UN	2.17	1.38	0.128
4	2 1/2	TMSR 40-38	TM2I 38-4UN	2.56	1.81	0.144

• The recommended holder is the largest for the given thread specification
* Holder with smaller or equal cutting diameters (D2) can also be used

Tooling recommendation for given internal thread specification



UNJ

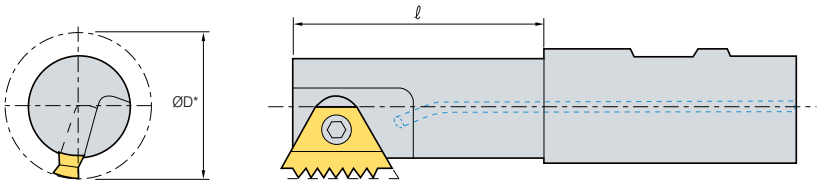
Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
24	9/16-11/16	TMSR 12-11	TM2I 11-24UNJ	0.47	0.45	0.024
20	1/2	TMSR 12-10	TMI 10-20UNJ	0.47	0.35	0.029
	3/4-13/16	TMSR 12-11	TM2I 11-20UNJ	0.47	0.45	
	7/8	TMSR 16-16	TM2I 16-20UNJ	0.87	0.67	
	15/16-1	TMSR 20-16	TM2I 16-20UNJ	1.69	0.79	
18	5/8	TMSR 12-11	TM2I 11-18UNJ	0.47	0.45	0.032
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-18UNJ	0.98	0.87	
16	11/16-13/16	TMSR 12-11	TM2I 11-16UNJ	0.47	0.45	0.036
	7/8-15/16	TMSR 16-16	TM2I 16-16UNJ	0.87	0.67	
	1	TMSR 20-16	TM2I 16-16UNJ	1.69	0.79	
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-16UNJ	0.98	0.87	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-16UNJ	2.05	1.18	
	1 11/16-1 7/8	TMSR 32-27	TM2I 27-16UNJ	2.28	1.46	
14	7/8	TMSR 12-11	TM2I 11-14UNJ	0.47	0.45	0.041
12	7/8	TMSRT 16-16	TM2I 16-12UNJ	0.87	0.61	0.048
	15/16-1	TMSR 16-16	TM2I 16-12UNJ	0.87	0.67	
	1 1/16	TMSR 20-16	TM2I 16-12UNJ	1.69	0.79	
	1 1/8-1 1/4	TMSRL 25-16	TM2I 16-12UNJ	0.98	0.87	
	1 1/2-1 11/16	TMSR 25-27	TM2I 27-12UNJ	2.05	1.18	
	1 3/4-1 15/16	TMSR 32-27	TM2I 27-12UNJ	2.28	1.46	

W

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
26	1/2-9/16	TMSR 12-10	TMEI 10-26W	0.47	0.35	0.025
	5/8-3/4	TMSR 12-11	TM2EI 11-26 W	0.47	0.45	
	13/16-7/8	TMSR 16-16	TM2EI 16-26W	0.87	0.67	
	15/16-1	TMSR 20-16	TM2EI 16-26W	1.69	0.79	
	1 1/16-1 1/8	TMSRL 25-16	TM2EI 16-26W	0.98	0.87	
20	9/16	TMSR 12-10	TM2EI 10-20W	0.47	0.35	0.032
	5/8-13/16	TMSR 12-11	TM2EI 11-20W	0.47	0.45	
	7/8-15/16	TMSR 16-16	TM2EI 16-20W	0.87	0.67	
	1	TMSR 20-16	TM2EI 16-20W	1.69	0.79	
	1 1/16-1 3/16	TMSRL 25-16	TM2EI 16-20W	0.98	0.87	
16	13/16	TMSR 16-16	TM2EI 16-16W	0.87	0.61	0.040
	7/8-15/16	TMSR 16-16	TM2EI 16-16W	0.87	0.67	
	1-1 1/16	TMSR 20-16	TM2EI 16-16W	1.69	0.79	
	1 1/8-1 1/4	TMSRL 25-16	TM2EI 16-16W	0.98	0.87	
	1.4-1 5/8	TMSR 25-27	TM2EI 27-16W	2.05	1.18	
	1 3/4-1.9	TMSR 32-27	TM2EI 27-16W	2.28	1.46	
12	1 1/2-1 3/4	TMSR 25-27	TM2EI 27-12W	2.05	1.18	0.054
	1 7/8	TMSR 32-27	TM2EI 27-12W	2.28	1.46	
8	1 7/8-1.9	TMSR 25-27	TM2EI 27-8W	2.05	1.18	0.080
	2.1-2 1/8	TMSR 32-27	TM2EI 27-8W	2.28	1.46	
7	2	TMSR 25-27	TM2EI 27-7W	2.05	1.18	0.091
6	2.1-2 1/8	TMSR 25-27	TM2EI 27-6W	2.05	1.18	0.107
	2 1/4	TMSR 32-38	TM2EI 38-6W	2.17	1.38	
	2 3/8-2.6	TMSR 32-27	TM2EI 27-6W	2.28	1.46	
	2 5/8-2 3/4	TMSR 40-38	TM2EI 38-6W	2.56	1.81	
5	3	TMSR 40-38	TM2EI 38-5W	2.56	1.81	0.128
4.5	3 1/2	TMSR 40-38	TM2EI 38-4.5W	2.56	1.81	0.142

• The recommended holder is the largest for the given thread specification
* Holder with smaller or equal cutting diameters (D2) can also be used

Tooling recommendation for given internal thread specification



BSPT

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
19	3/8	TMSR 21-11	TM2EI 11-19 BSPT	0.79	0.45	0.034
14	1/2-3/4	TMSRT 16-11	TM2EI 16-14 BSPT	0.87	0.61	0.046
11	1-1 1/4	TMSRT 20-16	TM2EI 16-11 BSPT	0.91	0.75	0.058
	1 1/2	TMSR 25-27	TM2EI 27-11 BSPT	2.05	1.18	
	2-6	TMSRT 32-27	TM2EI 27-11 BSPT	2.28	1.46	

NPT

d_1

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
14	1/2	TMSRT 16-16	TM2EI 16-14 NPT	0.87	0.61	0.052
	3/4	TMSRT 20-16	TM2EI 16-14 NPT	0.91	0.75	
11.5	1	TMSRT 20-16	TM2EI 16-11.5 NPT	0.91	0.75	0.056
	1 1/4	TMSR 25-27	TM2EI 27-11.5 NPT	2.05	1.18	
	1 1/2-2	TMSRT 32-27	TM2EI 27-11.5 NPT	2.28	1.46	
8	2 1/2	TMSRT 32-27	TM2EI 27-8 NPT	2.28	1.46	0.095
	3-24	TMSR 40-38	TM2EI 38-8 NPT	2.28	1.81	

NPTF

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
14	1/2	TMSRT 16-16	TM2EI 16-14 NPTF	0.87	0.61	0.053
	3/4	TMSRT 20-16	TM2EI 16-14 NPTF	0.91	0.75	
11.5	1	TMSRT 20-16	TM2EI 16-11.5 NPTF	0.91	0.75	0.064
	1 1/2	TMSR 25-27	TM2EI 27-11.5 NPTF	2.05	1.18	
	2	TMSRT 32-27	TM2EI 27-11.5 NPTF	2.28	1.46	
8	2 1/2	TMSRT 32-27	TM2EI 27-8 NPTF	2.28	1.46	0.095
	3	TMSR 40-38	TM2EI 38-8 NPTF	2.28	1.81	

• The recommended holder is the largest for the given thread specification
* Holder with smaller or equal cutting diameters (D2) can also be used

Minimum bore diameters for thread milling

Pitch	mm	0.5	0.6	0.7	0.75 0.80	0.9	1.0	1.25	1.5	1.75	2.0	-	2.5	3.0	3.5	4.0	4.5	5.0	5.5	-	6.0	-
	tpi	48	44	36	32	28	26 24	20 19	18 16	14	13 12	11.5 11	10	9 8	7	6	-	5	-	4.5	-	4
Holder designation	diameter	Minimum diameter for machining																				
TMSR 12-10	0.35	0.37	0.38	0.39	0.39	0.41	0.42	0.45	0.47													
TMSR 20-10	0.35	0.37	0.38	0.39	0.39	0.41	0.42	0.45	0.47													
TMSR 12-11	0.45	0.47	0.48	0.49	0.49	0.51	0.52	0.55	0.57	0.59												
TMSR 20-11	0.45	0.47	0.48	0.49	0.49	0.51	0.52	0.55	0.57	0.5												
TMSRL 25-11	0.45	0.47	0.48	0.49	0.49	0.51	0.52	0.55	0.57	0.59												
TMSRT 16-16	0.61	0.63	0.64	0.65	0.65	0.67	0.68	0.70	0.73	0.75	0.77	0.79										
TMSR 16-16	0.67	0.69	0.70	0.71	0.72	0.74	0.75	0.77	0.79	0.81	0.83	0.85										
TMSR 16-22	0.67	0.69	0.70	0.71	0.72	0.74	0.75	0.77	0.79	0.81	0.83	0.85										
TMSR 20-22	0.75	0.78	0.79	0.80	0.80	0.82	0.83	0.85	0.87	0.89	0.91	0.93										
TMSRT 20-16	0.75	0.78	0.79	0.80	0.80	0.82	0.83	0.85	0.87	0.89	0.91	0.93										
TMSR 20-16	0.79	0.81	0.83	0.83	0.84	0.86	0.87	0.89	0.91	0.93	0.94	0.96										
TMSRW 25-22	0.87	0.89	0.91	0.91	0.92	0.94	0.94	0.97	0.98	1.00	1.02	1.04										
TMSRL 25-22	0.87	0.89	0.91	0.91	0.92	0.94	0.94	0.97	0.98	1.00	1.02	1.04										
TMSRL 25-16	0.87	0.89	0.91	0.91	0.92	0.94	0.94	0.97	0.98	1.00	1.02	1.04										
TMSR 25-27	1.18	1.21	1.22	1.23	1.24	1.25	1.26	1.29	1.32	1.34	1.36	1.40	1.44	1.54	1.65	1.77	1.89					
TMSRL 25-27	1.18	1.21	1.22	1.23	1.24	1.25	1.26	1.29	1.32	1.34	1.36	1.40	1.44	1.54	1.65	1.77	1.89					
TMSR 32-38	1.38															1.97	2.10	1.67	1.97	1.76	2.26	2.23
TMSR 32-27	1.46	1.50	1.50	1.51	1.52	1.54	1.56	1.59	1.61	1.63	1.65	1.69	1.73	1.83	1.93	2.05	2.19					
TMSRL 32-27	1.46	1.50	1.50	1.51	1.52	1.54	1.56	1.59	1.61	1.63	1.65	1.69	1.73	1.83	1.93	2.05	2.19					
TMSRT 32-27	1.46	1.50	1.50	1.51	1.52	1.54	1.56	1.59	1.61	1.63	1.65	1.69	1.73	1.83	1.93	2.05	2.19					
TMSR 40-38	1.81															2.19	2.17	2.07	2.13	2.15	2.26	2.23
TMSRL 40-38	1.81															2.19	2.17	2.07	2.13	2.15	2.26	2.23

- In order to perform a thread milling operation, a milling machine with three-axis control capability of helical interpolation is required
- Helical interpolation is a CNC function producing tool movement along a helical path. This helical motion combines circular movement in one plane with a simultaneous linear motion in a plane perpendicular to the first. For example, the path from point A to point B (Fig,A) on the envelope of the cylinder combines a circular movement in the x-y plane with a linear displacement in the z direction
- On most CNC systems this function can be executed in two different ways:

- GO2: Helical interpolation in a clockwise direction
- GO3: Helical interpolation in a counter-clockwise direction

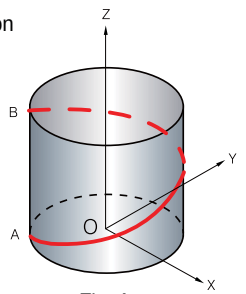


Fig. A

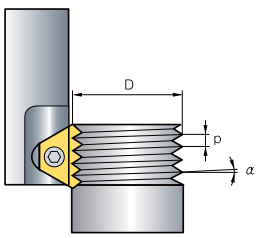


Fig. B

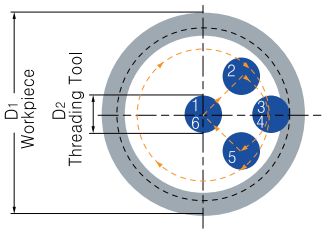
- The thread milling operation (Fig. B) consists of circular rotation of fhe tool around its own axis togerther with an orbiting motion along the bore or workpiece circumference. During one such orbit, the tool will shift vertically one pitch length. These movements combined with the insert geometry create the required thread form. There are three acceptable ways of approaching the workpiece with the tool to initiate production of the thread:

1. Tangential Arc Approach
2. Radial Approach
3. Tangential Line Approach

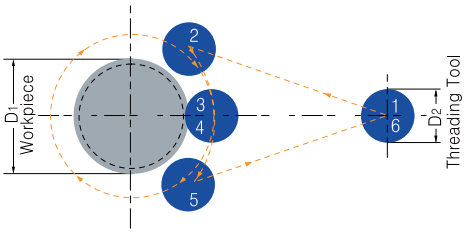
Tangential arc approach

- With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials. Although it requires slightly more complex programming than the radial approach (see below), this is the method recommended for machining the highest quality threads

Internal thread



External thread

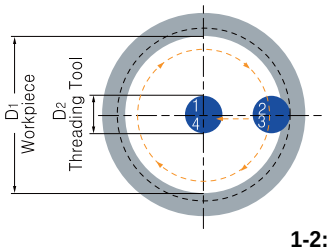


1-2: rapid approach
2-3: tool entry along tangential arc, with simultaneous feed along z-axis
3-4: helical movement during one full orbit (360°)
4-5: tool exit along tangential arc, with continuing feed along z-axis
5-6: rapid return

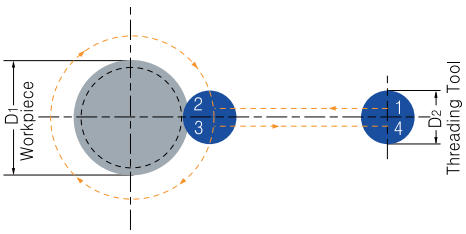
Radial approach

- This is the simplest method. There are two characteristics worth nothing about the radial approach:
  A. a small vertical mark may be lift at the entry (and exit) point. This is of no significance to the thread itself
  B. when using this method with very hard materials, there may be a tendency of the tool to vibrate as it approaches the full cutting depth
- Note: Radial feed during entry to the full profile depth should only be 1/3 of the subsequent circular feed!

Internal thread



External thread

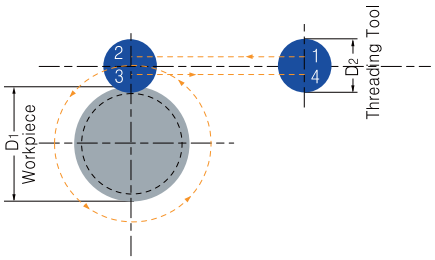


1-2: radial entry
2-3: helical movement during one full orbit (360°)
3-4: radial exit

Tangential line approach

- This method is very simple, and has all of the advantages of the tangential arc method.
  However, it is applicable only with external threads

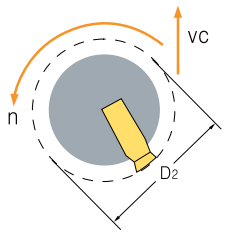
External thread



1-2: radial entry with simultaneous feed along z axis
2-3: helical movement during one full orbit (360°)
3-4: radial exit

Preparing for the Thread Milling Operation

Calculation of rotational velocity and feed at the cutting edge



$$n = \frac{vc \times 12}{\pi \times D2}$$

$$vc = \frac{n \times \pi \times D2}{12}$$

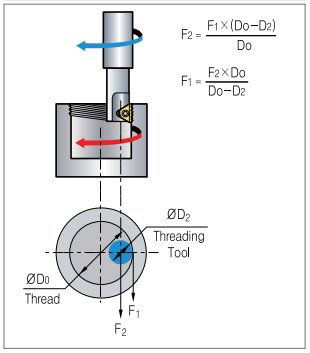
$$F1 = n \times z \times fn$$

n: Rotational Velocity (R.P.M)
vc: Cutting Speed (sfm)
D2: Tool holder Cutting Dia. (inch)
F1: Real Feed rate at the Cutting edges (ipm)
z: No. of Cutting Edges
fn: Feed per Rooth per Rotation (ipr)

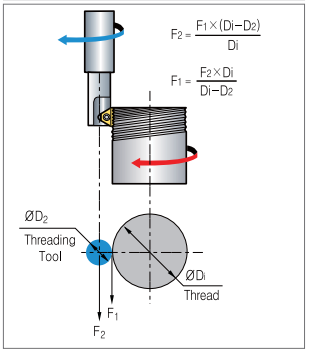
Calculation of feed rates at the tool center line

- On most CNC machines, the feed rate required for programming is that of the center-line of the tool. When dealing with linear tool movement, the feed rate at the cutting edge and the center line are identical, but with circular tool movement this is not the case The equations define the relationship between feed rates at the cutting edge and at the tool center line

Internal thread



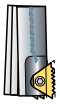
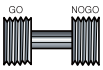
External thread



Grades and applications

- Grade: PC9570T
- Application: First Choice for steel and cast iron, A tough sub-micron substrate with TiCN coating
  Provides good fracture toughness and excellent wear resistance

Trouble shooting

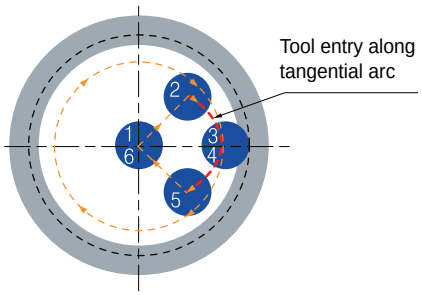
Problem		Possible	Solution
	**Increased insert flank wear**	Cutting speed too high	Reduce cutting speed/use coated insert
		Chip is too thin	Increase feed rate
		Insufficient coolant	Increase coolant flow rate
	**Chipping of cutting edge**	Chip is too thick	Reduce feed rate/Use the tangential arc method Increase RPM
		Vibration	Check stability
	**Material built-up on the cutting edge**	Incorrect cutting speed	Change cutting speed
		Unsuitable carbide grade	Use a coated carbide grade
	**Chatter/ vibration**	Feed rate is too high	Reduce the feed.
		Profile is too deep	Execute two passes, each with increased cutting depth/ Execute two passes, each cutting only half the thread length
		Thread length is too long	Execute two passes, each cutting only half the thread length
	**Insufficient thread accuracy**	Tool deflection	Reduce feed rate/Execute a “zero” cut

Recommended cutting condition

Workpiece			Hardness brinell (HB)	vc (sfm) Grade		Feed fz (ipt)	
				PC9570T	PC9070M	Indexable insert	Solid endmill
P	Unalloyed steel	Low carbon (C+0.1-0.25%)	125	330~690	260~820	0.002~0.012	0.001~0.006
		Medium carbon (C = 0.25-0.55%)	150	330~590	260~755	0.002~0.010	0.001~0.004
		High carbon (C = 0.55-0.85%)	170	330~560	260~655	0.002~0.008	0.001~0.003
	Low alloy steel	Non-hardened	180	290~520	195~590	0.002~0.010	0.001~0.004
		Hardened	275	260~490	195~560	0.002~0.008	0.001~0.003
		Hardened	350	230~460	195~525	0.002~0.006	0.0004~0.001
	High alloy steel	Annealed	200	200~430	130~330	0.002~0.008	0.001~0.002
		Hardened	325	230~360	100~260	0.002~0.004	0.000~0.001
	Cast steel	Low alloy	200	330~560	260~820	0.002~0.006	0.001~0.004
		High alloy	225	230~390	195~560	0.002~0.004	0.0004~0.001
M	Stainless steel ferritic	Non-hardened	200	330~560	195~490	0.002~0.006	0.002~0.004
		Hardened	330	330~560	195~395	0.002~0.004	0.0004~0.002
	Stainless steel Austenitic	Austenitic	180	230~460	195~460	0.002~0.006	0.002~0.004
		Super austenitic	200	230~460	195~425	0.002~0.004	0.002~0.004
	Stainless steel cast ferritic	Non-hardened	200	230~460	195~525	0.002~0.006	0.002~0.004
		Hardened	330	230~460	195~360	0.002~0.004	0.001~0.002
	Stainless steel cast austenitic	Austenitic	200	230~390	195~490	0.002~0.006	0.002~0.004
		Hardened	330	230~390	195~330	0.002~0.004	0.001~0.002
	High temperature alloys	Annealed (Iron based)	200	70~150	100~195	0.002~0.004	0.002~0.004
		Aged (Iron based)	280	70~100	65~165	0.001~0.002	0.0004~0.001
		Annealed (Nickel or Cobalt based)	250	50~70	50~115	0.001~0.002	0.0004~0.001
		Aged (Nickel or Cobalt based)	350	30~50	50~100	0.001~0.002	0.0004~0.001
	Titanium alloys	Pure 99.5 Ti	400Rm	230~460	130~260	0.001~0.002	0.001~0.002
		α+β alloys	1050Rm	70~160	65~165	0.001~0.002	0.001~0.002
K	Extra hard steel	Hardened & tempered	55HRC	70~150	50~160	0.0004~0.001	0.0002~0.0004
	Malleable cast iron	Ferritic (short chips)	130	200~430	230~525	0.0008~0.003	0.0004~0.001
		Pearlitic (long chips)	230	200~390	195~490	0.0008~0.002	0.001~0.002
	Grey cast iron	Low tensile strength	180	200~430	230~525	0.002~0.006	0.002~0.004
		High tensile strength	260	200~330	130~395	0.002~0.004	0.001~0.002
	Nodular SG iron	Ferritic	160	200~410	130~360	0.002~0.006	0.002~0.004
		Pearlitic	260	160~290	130~330	0.002~0.004	0.001~0.002
N	Aluminum alloys Wrought	Non-aging	60	330~820	655~985	0.004~0.016	0.004~0.010
		Aged	100	330~590	490~820	0.004~0.012	0.004~0.008
	Aluminum alloys	Cast	75	490~1310	330~655	0.004~0.012	0.004~0.008
		Cast & aged	90	490~920	395~720	0.002~0.010	0.004~0.006
		Cast Si 13-22%	130	260~490	655~985	0.004~0.012	0.004~0.008
	Copper and copper alloys	Brass	90	390~670	655~985	0.004~0.012	0.004~0.010
		Bronze and non-leaded copper	100	390~670	490~820	0.002~0.010	0.004~0.008

Example

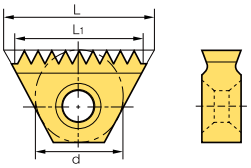
- At tool entry, set the Feed fz [mm/tooth] to 70% lower than the threading Feed
- Threading Feed: 0.012 (ipt)
- Tool entry Feed: 0.004 (ipt)

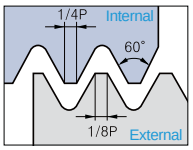


ISO Metric

External/Internal







Defined by: R262 (DIN 13)
Tolerance class: 6g/6H

(inch)

Insert size d	Insert size L	Pitch (mm)	Designation External		PC9570T	Designation Internal		PC9570T	L1	Tooth	Tool holder
0.236	0.41	0.5		-		TMI	10-0.5ISO	●	0.39	20	TMSR - 10
		0.75		-			10-0.75ISO		0.38	13	
		1.0		-			10-1.0ISO	●	0.35	9	
		1.25		-			10-1.25ISO		0.34	7	
		1.5		-			10-1.5ISO		0.35	6	
1/4	0.43	0.5		-		TM2I	11-0.5ISO		0.39	20	TMSR - 11
		0.75	TM2E	11-0.75ISO			11-0.75ISO	●	0.41	14	
		1.0		11-1.0ISO			11-1.0ISO	●	0.39	10	
		1.25		11-1.25ISO			-		0.39	8	
		1.25		-			11-1.25ISO		0.34	7	
		1.5		11-1.5ISO			-		0.35	6	
		1.5		-			11-1.5ISO	●	0.41	7	
3/8	0.63	0.5		-		TM2I	16-0.5ISO		0.59	30	TMSR - 16
		0.75	TM2E	16-0.75ISO			16-0.75ISO		0.59	20	
		0.8		-			16-0.8ISO		0.57	18	
		1.0		16-1.0ISO			-		0.55	14	
		1.0		-			16-1.0ISO	●	0.59	15	
		1.25		16-1.25ISO			16-1.25ISO		0.59	12	
		1.5		16-1.5ISO			16-1.5ISO	●	0.59	10	
		1.75		16-1.75ISO			16-1.75ISO		0.55	8	
		2.0		16-2.0ISO			16-2.0ISO	●	0.55	7	
3/8B	0.87	1.0	TM2E	22-1.0ISO		TM2I	22-1.0ISO		0.87	22	TMSR - 22
		1.25		22-1.25ISO			22-1.25ISO		0.84	17	
		1.5		22-1.5ISO			22-1.5ISO	●	0.83	14	
		1.75		22-1.75ISO			22-1.75ISO		0.83	12	
		2.0		22-2.0ISO	●		22-2.0ISO	●	0.87	11	
5/8	1.06	1.0	TM2E	27-1.0ISO		TM2I	27-1.0ISO		1.02	26	TMSR - 27
		1.25		27-1.25ISO			27-1.25ISO		0.98	20	
		1.5		27-1.5ISO			27-1.5ISO	●	1.00	17	
		1.75		27-1.75ISO			27-1.75ISO		0.96	14	
		2.0		27-2.0ISO			27-2.0ISO	●	0.94	12	
		2.5		27-2.5ISO			27-2.5ISO		0.98	10	
		3.0		27-3.0ISO			27-3.0ISO	●	0.94	8	
		3.5		27-3.5ISO			27-3.5ISO		0.96	7	
		4.0		27-4.0ISO			27-4.0ISO	●	0.94	6	
		4.5		27-4.5ISO			27-4.5ISO		0.89	5	
3/4B	1.52	1.5	TM2E	38-1.5ISO		TM2I	38-1.5ISO		1.42	24	TMSR - 38
		2.0		38-2.0ISO			38-2.0ISO		1.42	18	
		3.0		38-3.0ISO			38-3.0ISO		1.42	12	
		4.0		38-4.0ISO			38-4.0ISO		1.26	8	
		4.5		38-4.5ISO			38-4.5ISO		1.24	7	
		5.0		38-5.0ISO			38-5.0ISO		1.18	6	
		5.5		38-5.5ISO			38-5.5ISO		1.30	6	
		6.0		38-6.0ISO			38-6.0ISO		1.18	5	

Applicable holders D49

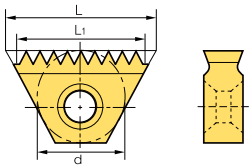
All inserts except TMI10 code have 2 cutting edges

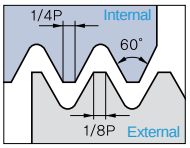
●: Korea Stock

American UNC

External/Internal







Defined by: ANSI B1.1.74
Tolerance class: Class 2A/2B

(inch)

Insert size		Pitch (tpi)	Designation						L1	Tooth	Tool holder
d	L		External		PC9570T	Internal		PC9570T			
0.236	0.41	32	-			TMI	10-32UN		0.38	12	TMSR - 10
		28	-				10-28UN		0.36	10	
		24	-				10-24UN		0.38	9	
		20	-				10-20UN	●	0.35	7	
		18	-				10-18UN		0.33	6	
		16	-				10-16UN		0.31	5	
1/4	0.43	48	-			TM2I	11-48UN		0.39	19	TMSR - 11
		40	-				11-40UN		0.40	16	
		32	-				11-32UN		0.41	13	
		28	TM2E	11-28UN			11-28UN		0.39	11	
		27		11-27UN			11-27UN		0.41	11	
		24		11-24UN			11-24UN		0.38	9	
		20		11-20UN			11-20UN		0.40	8	
		18		11-18UN			11-18UN	●	0.39	7	
		16		11-16UN			11-16UN		0.38	6	
		14		11-14UN			11-14UN		0.36	5	
3/8	0.63	40	-			TM2I	16-40UN		0.58	40	TMSR - 16
		32	-				16-32UN		0.59	32	
		28	TM2E	16-28UN			16-28UN		0.57	28	
		27		16-27UN			16-27UN		0.55	27	
		24		16-24UN			16-24UN		0.58	24	
		20		16-20UN			16-20UN		0.55	20	
		18		16-18UN			16-18UN		0.56	18	
		16		16-16UN			16-16UN	●	0.56	16	
		14		16-14UN			16-14UN		0.57	14	
		13		16-13UN			16-13UN		0.54	13	
		12		16-12UN			16-12UN	●	0.58	12	
		11.5		16-11.5UN			16-11.5UN		0.52	11.5	
3/8B	0.87	24	TM2E	22-24UN		TM2I	22-24UN		0.83	20	TMSR - 22
		20		22-20UN			22-20UN		0.85	17	
		18		22-18UN			22-18UN		0.83	15	
		16		22-16UN			22-16UN		0.81	13	
		14		22-14UN			22-14UN		0.86	12	
		13		22-13UN			22-13UN		0.85	11	
		12		22-12UN			22-12UN		0.83	10	
5/8	1.06	24	TM2E	27-24UN		TM2I	27-24UN		1.00	24	TMSR - 27
		20		27-20UN			27-20UN		1.00	20	
		18		27-18UN			27-18UN		1.00	18	
		16		27-16UN			27-16UN		1.00	16	
		14		27-14UN			27-14UN		1.00	14	
		13		27-13UN			27-13UN		1.00	13	
		12		27-12UN			27-12UN		1.00	12	
		11.5		27-11.5UN			27-11.5UN		0.96	11	
		11		27-11UN			27-11UN		1.00	11	
		10		27-10UN			-		0.90	9	
		10		-			27-10UN		1.00	10	
		9		27-9UN			27-9UN		0.89	8	
		8		27-8UN			27-8UN		0.88	7	
		7		27-7UN			-		0.86	6	
		7		-			27-7UN		1.00	7	
		6		27-6UN			-		0.83	5	
		6		-			27-6UN		1.00	6	
3/4B	1.52	6	TM2E	38-6UN		TM2I	38-6UN		1.33	8	TMSR - 38
		5		38-5UN			38-5UN		1.20	6	
		4.5		38-4.5UN			38-4.5UN		1.33	6	
		4		38-4UN			38-4UN		1.25	5	

Applicable holders D49

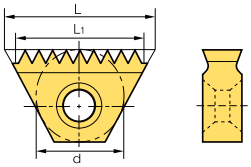
All inserts except TMI10 code have 2 cutting edges

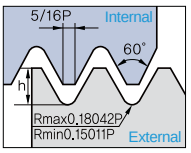
●: Korea Stock

UNJ (Unified Constant Thread)

External/Internal







Defined by: MIL-S-8879C
Tolerance class: 3A/3B

(inch)

Insert size		Pitch (tpi)	Designation						L1	Tooth	Tool holder
d	L		External		PC9570T	Internal		PC9570T			
0.236	0.41	24		-		TMI	10-24UNJ		0.38	9	TMSR - 10
		20		-			10-20UNJ		0.35	7	
		18		-			10-18UNJ		0.33	6	
		16		-			10-16UNJ		0.50	8	
1/4	0.43	24	TM2E	11-24UNJ		TM2I	11-24UNJ		0.38	9	TMSR - 11
		20		11-20UNJ			11-20UNJ		0.40	8	
		18		-			11-18UNJ		0.39	7	
		16		11-16UNJ			11-16UNJ		0.38	6	
		14		11-14UNJ			11-14UNJ		0.36	5	
3/8	0.63	24	TM2E	16-24UNJ		TM2I	16-24UNJ		0.58	14	TMSR - 16
		20		16-20UNJ			16-20UNJ		0.55	11	
		18		16-18UNJ			16-18UNJ		0.56	10	
		16		16-16UNJ			16-16UNJ		0.56	9	
		14		16-14UNJ			16-14UNJ		0.57	8	
		13		16-13UNJ			-		0.54	7	
		12		16-12UNJ			16-12UNJ		0.58	7	
5/8	1.06	16	TM2E	27-16UNJ		TM2I	27-16UNJ		1.00	16	TMSR - 27
		12		27-12UNJ			27-12UNJ		1.00	12	
		11		27-11UNJ			27-11UNJ		1.00	11	

Applicable holders D49

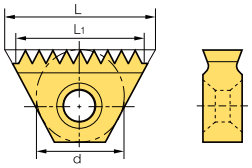
All inserts except TMI10 code have 2 cutting edges

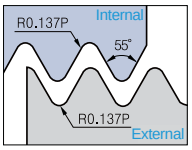
●: Korea Stock

Whitworth (BSW, BSF, BSP, BSB)

External/Internal







BSW Defined by: B.S.84:1956, DIN 259, ISO228/1:1982
BSP Defind by: B.S.2779:1956
Tolerance class: BSW-Medium class A, BSP-Medium class

(inch)

Insert size		Pitch (tpi)	Designation		PC9570T	L1	Tooth	Tool holder
d	L		External+Internal					
0.236	0.41	28	TMEI	10-28W		0.36	10	TMSR - 10
		26		10-26W		0.35	9	
		24		10-24W		0.38	9	
		20		10-20W		0.35	7	
		19		10-19W		0.37	7	
1/4	0.43	28	TM2EI	11-28W		0.39	11	TMSR - 11
		26		11-26W		0.38	10	
		24		11-24W		0.38	9	
		20		11-20W		0.40	8	
		19		11-19W		0.37	7	
		14		11-14W		0.36	5	
3/8	0.63	26	TM2EI	16-26W		0.58	15	TMSR - 16
		24		16-24W		0.58	14	
		20		16-20W		0.55	11	
		19		16-19W		0.58	11	
		18		16-18W		0.56	10	
		16		16-16W		0.56	9	
		14		16-14W		0.57	8	
		12		16-12W		0.58	7	
		11		16-11W	●	0.55	6	
3/8B	0.87	24	TM2EI	22-24W		0.83	20	TMSR - 22
		20		22-20W		0.85	17	
		19		22-19W		0.84	16	
		18		22-18W		0.83	15	
		16		22-16W		0.81	13	
		14		22-14W		0.86	12	
		12		22-12W		0.83	10	
		11		22-11W		0.82	9	
5/8	1.06	16	TM2EI	27-16W		1.00	16	TMSR - 27
		14		27-14W		1.00	14	
		12		27-12W		0.92	11	
		11		27-11W		0.91	10	
		10		27-10W		1.00	10	
		9		27-9W		0.89	8	
		8		27-8W		0.88	7	
		7		27-7W		0.66	6	
		6		27-6W		0.83	5	
3/4B	1.52	11	TM2EI	38-11W		1.38	15	TMSR - 38
		6		38-6W		1.33	8	
		5		38-5W		1.20	6	
		4.5		38-4.5W		1.33	6	
		-		38-15W		-	-	

Applicable holders D49

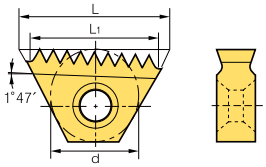
All inserts except TMI10 code have 2 cutting edges

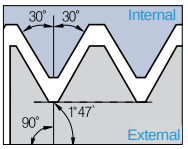
●: Korea Stock

NPT

External/Internal







Defined by: USAS B2.1:1968
Tolerance class: Standard NPT

(inch)

Insert size		Pitch (tpi)	Designation		PC9570T	L1	Tooth	Tool holder	
d	L		External+Internal					RH	LH
3/8	0.63	18	TM2E	16-18NPT *		0.56	10	TMSRT - 16	TMSLT - 16
		14	TM2EI	16-14NPT		0.57	8		
		11.5		16-11.5NPT		0.52	6		
3/8B	0.87	14	TM2EI	22-14NPT		0.86	12	TMSRT - 22	TMSLT - 22
5/8	1.06	11.5	TM2EI	27-11.5NPT	●	0.96	11	TMSR - 27	TMSL - 27
		8		27-8NPT	●	0.88	7		
3/4B	1.52	11.5	TM2EI	38-11.5NPT		1.39	16	TMSR - 38	TMSL - 38
		8		38-8NPT		1.25	10		

Applicable holders **D49**

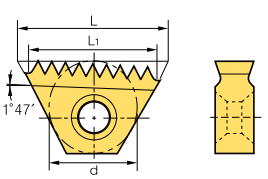
* TM2E16 - 18NPT is for external threading

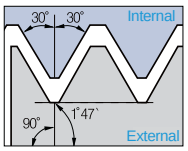
●: Korea Stock

NPTF

External/Internal







Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF

(inch)

Insert size		Pitch (tpi)	Designation		PC9570T	L1	Tooth	Tool holder	
d	L		External+Internal					RH	LH
3/8	0.63	14	TM2EI	16-14NPTF	●	0.57	8	TMSRT - 16	TMSLT - 16
		11.5		16-11.5NPTF		0.52	6		
3/8B	0.87	14	TM2EI	22-14NPTF		0.86	12	TMSRT - 22	TMSLT - 22
		11.5		22-11.5NPTF		0.78	9		
5/8	1.06	11.5	TM2EI	27-11.5NPTF		0.96	11	TMSR - 27	TMSL - 27
		8		27-8NPTF		0.88	7		
3/4B	1.52	11.5	TM2EI	38-11.5NPTF		1.39	16	TMSR - 38	TMSL - 38
		8		38-8NPTF		1.25	10		

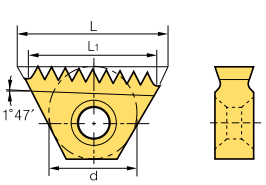
Applicable holders **D49**

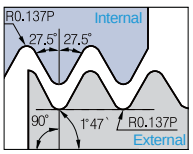
●: Korea Stock

BSPT

External/Internal







Defined by: B.S 21:1985
Tolerance class: Standard BSPT

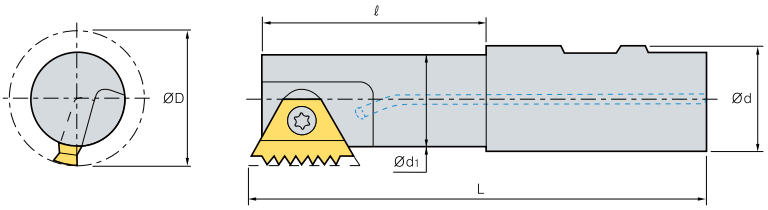
(inch)

Insert size		Pitch (tpi)	Designation		PC9570T	L1	Tooth	Tool holder	
d	L		External+Internal					RH	LH
1/4	0.43	19	TM2EI	11-19BSPT		0.37	7	TMSR - 10	TMSL - 10
3/8	0.63	14	TM2EI	16-14BSPT		0.57	8	TMSRT - 16	TMSLT - 16
		11		16-11BSPT		0.56	6		
5/8	1.06	11	TM2EI	27-11BSPT		0.91	10	TMSR - 27	TMSL - 27

Applicable holders **D49**

●: Korea Stock

Standard Type

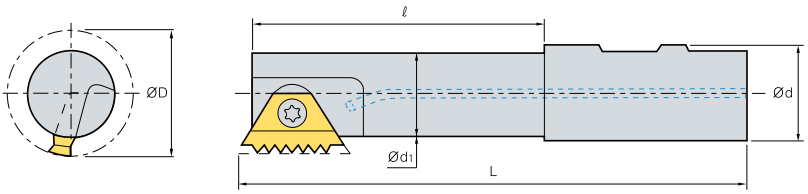


(inch)

Insert size d	Designation		ØD	Ød	Ød1	ℓ	L	Screw	Wrench
0.236	TMSR	050-10	0.35	0.50	0.27	0.47	2.72	STM10	TW07P
		075-10	0.35	0.75	0.27	0.67	3.50		
1/4	TMSR	050-11	0.45	0.50	0.35	0.47	2.75	STM11	TW08P
		075-11	0.45	0.75	0.35	0.79	3.50		
3/8	TMSR	0625-16	0.67	0.625	0.54	0.87	3.56	STM1622	TW10P
		075-16	0.79	0.75	0.65	1.69	3.75		
3/8B	TMSR	0625-22	0.67	0.625	0.53	1.14	3.15	STM1622	TW10P
		075-22	0.75	0.75	0.61	1.14	3.27		
		100-22	0.75	1.00	0.61	1.18	3.68		
	TMSRW	100-22	0.87	1.00	0.73	1.18	3.62		
5/8	TMSR	100-27	1.18	1.00	0.94	2.05	4.38	STM27	TW25L
	TMSL	100-27	1.18	1.00	0.94	2.05	4.38		
	TMSR	125-27	1.46	1.25	1.22	2.28	4.75		
3/4B	TMSR	125-38	1.38	1.25	1.06	2.16	4.45	STM38	TW30L
		150-38	1.81	1.50	1.50	2.56	5.25		

Applicable inserts **D44~48**

Long Type

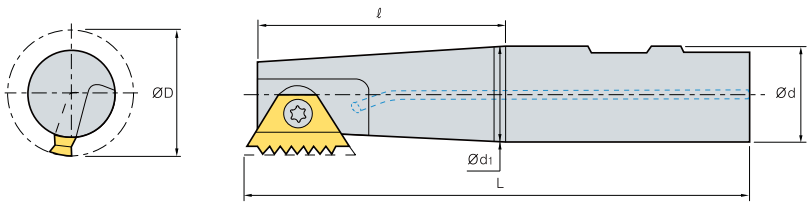


(inch)

Insert size d	Designation		ØD	Ød	Ød1	ℓ	L	Screw	Wrench
3/8	TMSRL	100-16	0.87	1.00	0.73	0.98	5.00	STM11	TW08P
3/8B	TMSRL	100-16	0.87	1.00	0.73	2.50	4.95	STM1622	TW10P
5/8	TMSRL	075-22	0.75	0.75	0.61	1.73	3.86	STM1622	TW10P
		100-22	0.87	1.00	0.73	2.50	4.95		
5/8	TMSRL	100-27	1.18	1.00	0.94	3.62	5.88	STM27	TW25L
		125-27	1.46	1.25	1.22	3.86	6.33		
3/4B	TMSRL	150-38	1.81	1.50	1.50	3.74	6.55	STM38	TW30L

Applicable inserts **D44~48**

Tapered Type



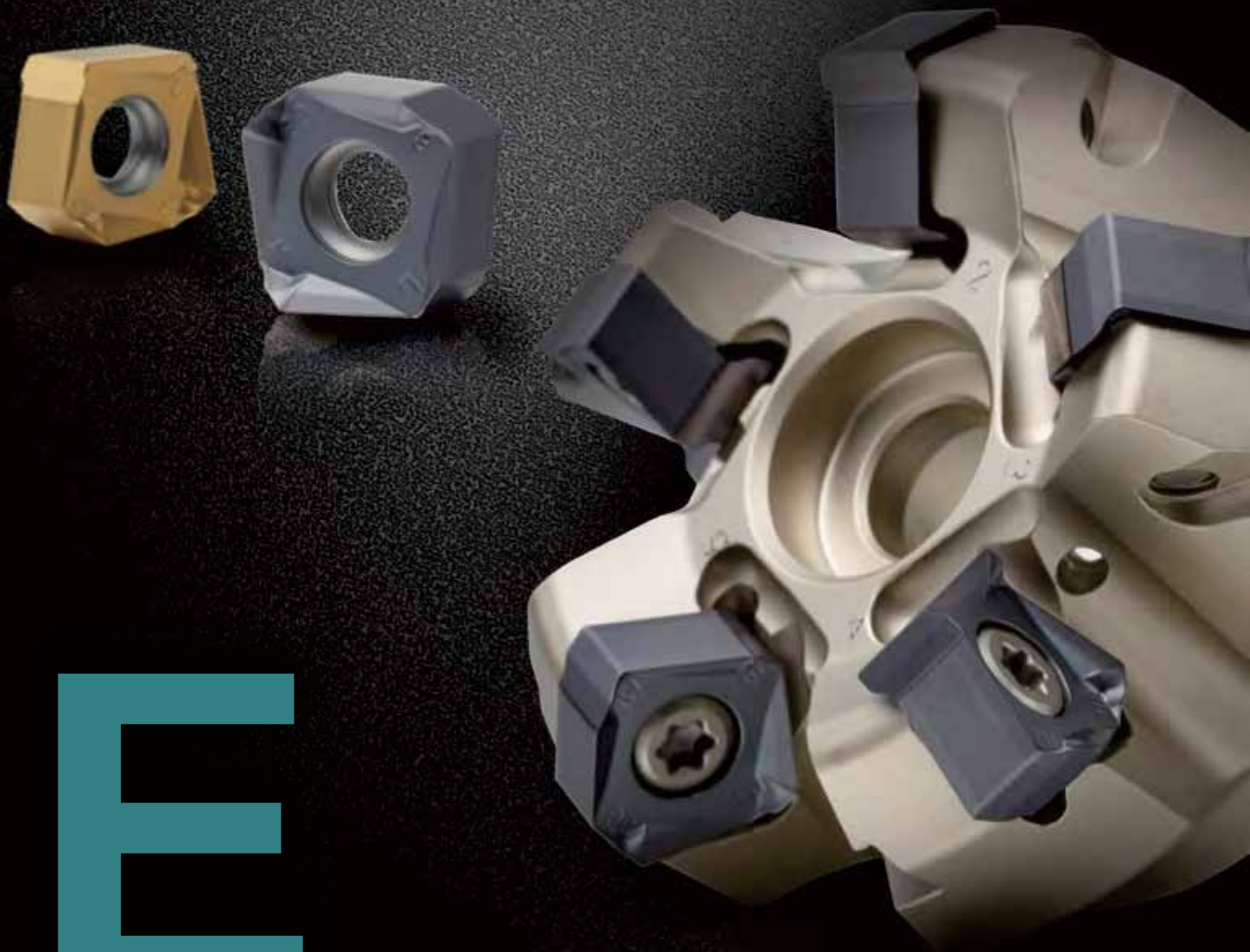
(inch)

Insert size d	Designation		ØD	Ød	Ød1	ℓ	L	Screw	Wrench
3/8	TMSRT	0625-16	0.61	0.625	0.49	0.87	3.56	STM1622	TW10P
		075-16	0.75	0.75	0.59	0.91	3.38	STMT16	
3/8B	TMSRT	0625-22	0.67	0.625	0.53	1.14	3.15	STM1622	TW10P
		075-22	0.75	0.75	0.61	1.14	3.27		
5/8	TMSRT	125-27	1.46	1.25	1.22	2.28	4.75	STM27	TW25L

Applicable inserts **D44~48**

MILLING

Milling tools that provide the best quality and improve productivity for every customer needs.



E

Inserts

E02 Milling Insert Code System (ISO)
E04 Milling Inserts
E34 KORLOY Cutters
E42 KORLOY Shanks
E45 KORLOY Modular Adaptors

Face Milling Cutters

E47 Mill Max (ISO)/Mill Max Plus (E48, E54)
E57 Turbo Mill
E60 Double Mill
E62 Technical Information for Power Buster
E66 Power Buster
E69 Technical Information for Rich Mill
E97 Rich Mill
E145 Technical Information for Aero Mill/ Aero Mill Plus/Aero Mill Mini
E149 Aero Mill
E150 Aero Mill Plus
E152 Aero Mil Mini
E154 PCD Face Cutters

Cutters for Molds

E155 Technical Information for Alpha Mill
E156 Technical Information for Alpha Mill Nick
E162 Alpha Mill
E191 Technical Information for Alpha Mill-X
E195 Alpha Mill-X
E199 Technical Information for Future Mill
E209 Technical Information for Future Mill P-Positive
E214 Future Mill

Cutters for Molds

E240 Future Mill P-Positive
E252 Technical Information for Triple Mill
E256 Triple Mill
E260 Technical Information for HFMD
E265 HFMD
E275 Technical Information for HFM
E279 HFM
E282 Technical Information for HRMD
E287 HRMD
E298 HRM
E305 Tank Mill
E306 Technical Information for TP2P
E309 TP2P
E315 Technical Information for Laser Mill/GBE/BRE
E324 Laser Mill
E329 GBEA
E332 BREA
E334 Chamfer Tool (Multi-functional, Solid)
E339 T-Cutter (TFEA)

Milling Cutters for Aluminum

E340 Technical Information for Pro-A Mill/Pro-X Mill/Pro-L Mill/ Pro-XL Mill/Pro-V Mill
E350 Pro-A Mill
E353 Pro-X Mill
E358 Pro-L Mill
E362 Pro-XL Mill
E363 Pro-V Mill
E365 Modular Adaptor (MATA)

Side Milling Cutters

E367 Technical Information for Side Milling Cutters
E369 Side Milling Cutters
E373 Side Cutters
E376 Wind Mill

Milling Cutter for Cast Iron at High Feed

E380 Technical Information for High Feed Cutters
E382 Technical Information for Cube Mill
E383 Technical Information for Couple Mill
E385 Technical Information for Shave Mill
E387 Technical Information for Shave Mill Ultra

Gear Tools

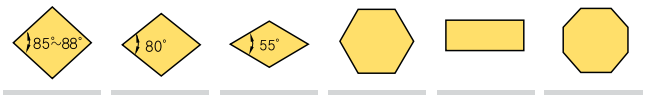
E388 Technical Information for Gear Cutters
E389 Gear Cutter Table
E390 Gear Cutters
E398 Special Order Form for Gerar Cutters
E399 Indexable HOB Cutters
E400 Special Order Form for Indexable HOB Cutters

S P K R 4

1	2	3	4	5
Insert Shape	Relief Angle	Tolerance	Cross Section Type	Cutting Edge Length, Diameter of Inscribed circle

1 Insert Shape

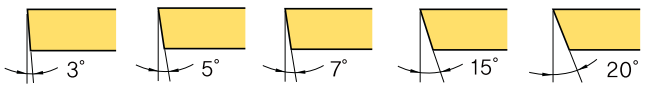
S P K R 4 3 ED2 S R - MX



A	C	D	H	L	O
R	S	T	V	W	

2 Relief Angle

S P K R 4 3 ED2 S R - MX

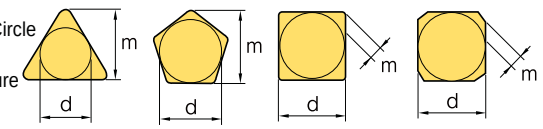


A	B	C	D	E
F	G	N	P	

3 Tolerance

S P K R 4 3 ED2 S R - MX

d : Inscribed Circle
t : Thickness
m : refer to figure



(inch)

Class	d	m	t
A	±0.0010	±0.0002	±0.0010
C	±0.0010	±0.0005	±0.0010
H	±0.0005	±0.0005	±0.0010
E	±0.0010	±0.0010	±0.0010
G	±0.0010	±0.0010	±0.0051
J	±0.0020~±0.0059	±0.0002	±0.0010
K	±0.0020~±0.0059	±0.0005	±0.0010
L	±0.0020~±0.0059	±0.0010	±0.0010
M	±0.0020~±0.0059	±0.0032~±0.0079	±0.0051
U	±0.0032~±0.01	±0.0051~±0.0150	±0.0051

■ Tolerance on C,E,H,M,O,P,R,S,T,W Insert Shape (exceptional case)

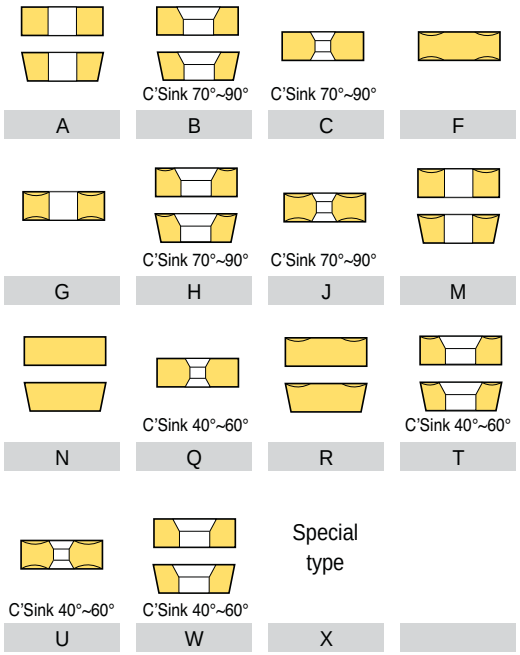
d	Tolerance on d		Tolerance on m	
	J,K,L,M,N	U	M,N	U
1/4	±0.0020	±0.0032	±0.0032	±0.0051
3/8	±0.0020	±0.0032	±0.0032	±0.0051
1/2	±0.0032	±0.0051	±0.0051	±0.0079
5/8	±0.0040	±0.0070	±0.0059	±0.0106
3/4	±0.0040	±0.0070	±0.0059	±0.0106
1	±0.0051	±0.01	±0.0070	±0.0150

Tolerance on D Insert Shape (exceptional case)

d	Tolerance on d	Tolerance on m
1/4	±0.0020	±0.0043
3/8	±0.0020	±0.0043
1/2	±0.0032	±0.0059
5/8	±0.0040	±0.0070
3/4	±0.0040	±0.0070

4 Cross Section Type

S P K R 4 3 ED2 S R - MX

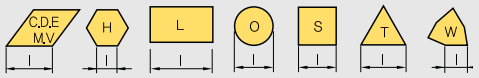


A	B	C	F
G	H	J	M
N	Q	R	T
U	W	X	

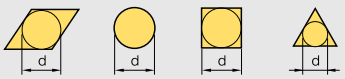
5 Cutting Edge Length, Diameter of Inscribed circle

S P K R 4 3 ED2 S R - MX

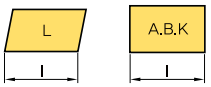
■ Metric system ※ Decimal integer constant



■ Inch system



· Use 1/32″ unit for a insert having smaller I.C under 1/4″
· Use 1/8″ unit for a insert having larger I.C over 1/4″



※ In case of rectangular and rhombic insert indicate cutting edge length instead of inscribed circle.

■ Cross over chart for "Metric" and "Inch" system

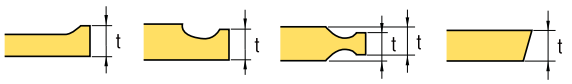
	06	09	11	16	22	27	33	44
	03	05	06	09	12	15	19	25
55°	04	06	07	11	15	19	23	31
80°	03	05	06	09	12	16	19	25
Inscribed circle	5/32″	7/32″	1/4″	3/8″	1/2″	5/8″	3/4″	1″
Inch system	5	7	2(8)	3	4	5	6	8

3 ED2 S R - MX

6	7	8	9	10
Height of Cutting Edge	Nose Radius (Nose R)	Edge Preparation	Hand	Chip Breaker for Milling

6 Height of Cutting Edge

S P K R 4 **3** ED2 S R - MX

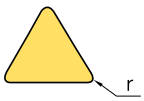


Symbol		Height of cutting edge (t)	
Metric	Inch	Metric	Inch
01	1(2)	1.59	1/16
T0	1.125	1.79	9/128
T1	1.2	1.98	5/64
02	1.5(3)	2.38	3/32
T2	1.75	2.78	7/64
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
12	8(16)	12.70	1/2

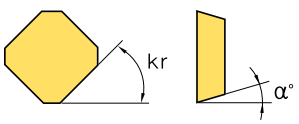
( ) Symbol for small size insert

7 Nose Radius (Nose R)

S P K R 4 3 ED2 S R - MX



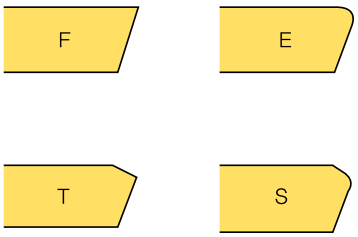
Symbol		r		Symbol		r	
Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch
00	0	0.0		12	3	1.2	3/64
02	0.5	0.2	0.008	15		1.5	
04	1	0.4	1/64	16	4	1.6	4/64
05		0.5		24	6	2.4	6/64
08	2	0.8	2/64	32	8	3.2	8/64
10		1.0		40		4.0	



Parallel Land	Relief Angle	
kr	α°	
A - 45°	A - 3°	F - 25°
D - 60°	B - 5°	G - 30°
E - 75°	C - 7°	N - 0°
F - 85°	D - 15°	P - 11°
P - 90°	E - 20°	
Z - Special		

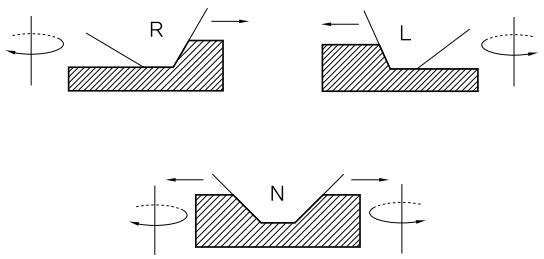
8 Edge Preparation

S P K R 4 3 ED2 **S** R - MX



9 Hand

S P K R 12 3 ED2 S **R** - MX



10 Chip Breaker for Milling

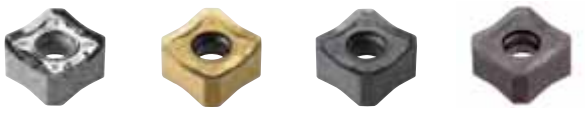
S P K R 4 3 ED2 S R - **MX**



MA MF MM MX



MF MM MR MA

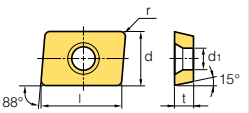
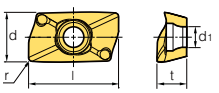
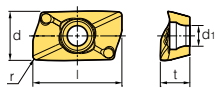
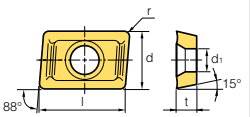
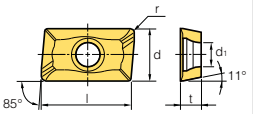
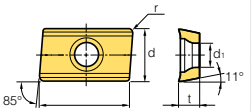
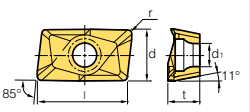
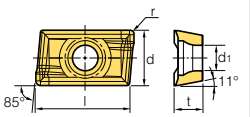
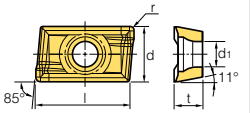
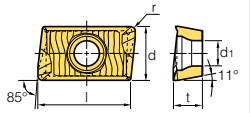


MA MF MM ML

Workpiece			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	H05
	Steel	P	●	❷	●	❷	✱	●	●	❷	❷				❷	✱		
	Stainless steel	M				❷	✱			●			❷	✱	❷	✱		
	Cast iron	K			❷			●	●	❷		●			❷	✱	●	●
	Non-ferrous metal	N															●	❷
	Heat resistant alloy, Titanium alloy	S													❷	✱		
	Hardened steel	H								❷					❷	✱		

Machining type

● Continuous cutting
❷ General cutting
✱ Interrupted cutting

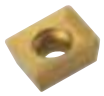
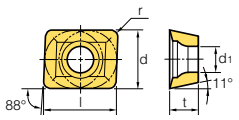
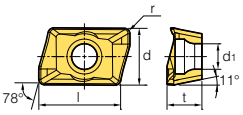
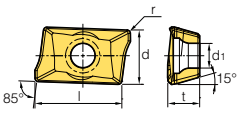
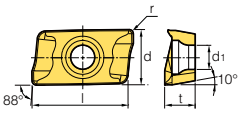
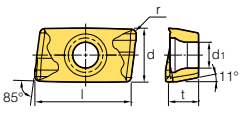
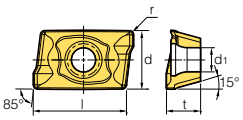
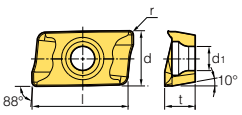
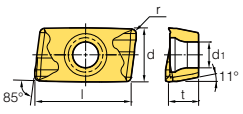
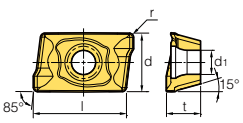
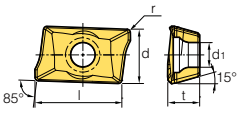
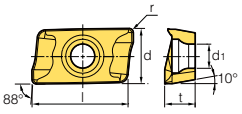
Insert	Designation	Cermet		Coated												Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	H05	l	d	t	r	d_1		
ADKA	150308R																	0.591	0.375	0.125	0.031	0.177		-
	150308SR																	0.591	0.375	0.125	0.031	0.177		
	150308TR		●															0.591	0.375	0.125	0.031	0.177		
ADKT-ML new	10T304PEER-ML						●			●	●		●	●	●			0.461	0.253	0.150	0.016	0.110		E195~ E198
	120408PESR-ML						●			●	●		●	●	●			0.571	0.308	0.190	0.031	0.134		
	170608PESR-ML						●			●	●		●	●	●			0.774	0.427	0.257	0.031	0.177		
ADKT-MM new	10T304PESR-MM						●			●	●		●	●	●			0.461	0.253	0.150	0.016	0.110		E195~ E198
	10T308PESR-MM													●	●			0.461	0.253	0.150	0.031	0.110		
	10T312PESR-MM														●			0.461	0.253	0.150	0.047	0.110		
	120408PESR-MM						●			●	●		●	●	●			0.571	0.308	0.190	0.031	0.134		
	120412PESR-MM									●	●			●	●			0.571	0.308	0.190	0.047	0.134		
	120416PESR-MM									●	●			●	●			0.571	0.308	0.190	0.063	0.134		
	170604PESR-MM									●				●				0.774	0.427	0.257	0.016	0.177		
	170608PESR-MM						●			●	●		●	●	●			0.774	0.427	0.257	0.031	0.177		
	170616PESR-MM													●	●			0.774	0.427	0.257	0.063	0.177		
	170620PESR-MM													●	●			0.774	0.427	0.257	0.079	0.177		
ADLT	150308R																	0.591	0.375	0.125	0.031	0.177		E305
	150308SR																	0.591	0.375	0.125	0.031	0.177		
	150308TR																	0.591	0.375	0.125	0.031	0.177		
APKT	1604PDSR			●						●	●							0.646	0.375	0.187	0.031	0.173		E166 E178
APKT-MA	1604PDFR-MA															●	●	0.646	0.375	0.187	1/128	0.173		E166 E178
	160416FR-MA															●		0.646	0.375	0.187	0.063	0.173		
APKT-MA2	1604PDFR-MA2															●		0.650	0.375	0.227	0.031	0.177		E156 E168
	160416FR-MA2																	0.650	0.375	0.227	0.063	0.177		
	160432FR-MA2																	0.650	0.375	0.227	0.126	0.177		
APKT-MA3	1604PDFR-MA3															●	●	0.646	0.375	0.197	0.031	0.173		E156 E168
	160420FR-MA3																	0.646	0.375	0.197	0.079	0.173		
APKT-MF	1604PDSR-MF			●										●				0.646	0.375	0.197	0.031	0.173		E156 E168
APKT-MM	1604PDSR-MM			●	●					●	●	●		●				0.646	0.375	0.205	0.031	0.173		E166 E178 E187

●: Korea Stock

Workpiece			CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01
	Steel	P	●	⧓	●	●	●	●	⧓	⧓	⧓				⧓	✱		
	Stainless steel	M								●			⧓	✱	⧓	✱		
	Cast iron	K			⧓	●	●	⧓	⧓	⧓		●			⧓	✱	⧓	●
	Non-ferrous metal	N																●
	Heat resistant alloy, Titanium alloy	S													⧓	✱		
	Hardened steel	H						●	⧓	⧓					⧓	✱		

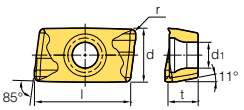
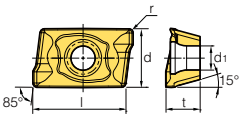
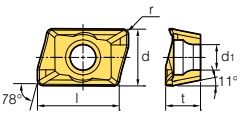
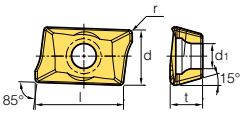
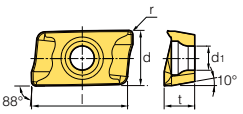
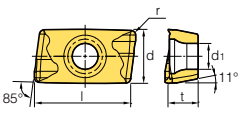
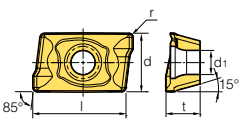
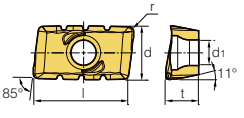
Machining type

● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated													Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400		G10	H01	l	d	t	r	d_1		
APLT 	070304R																		0.295	0.250	0.125	0.016	0.110		E303
APMT-MA 	0602PDFR-MA																	●	0.236	0.167	0.102	0.016	0.079		E162 E173 E183 E186 E188
	060208PDFR-MA																		0.236	0.167	0.102	0.031	0.079		
	0903PDFR-MA																	●	0.370	0.244	0.142	0.016	0.110		E163 E174 E175 E183 E189
	090308PDFR-MA																		0.370	0.244	0.142	0.031	0.110		
	11T3PDFR-MA																	●	0.441	0.255	0.142	0.020	0.114		E164 E170 E176 E184 E187 E190
	11T308PDFR-MA																		0.441	0.255	0.142	0.031	0.114		
	160404PDFR-MA																		0.646	0.370	0.227	0.016	0.177		E165 E171 E177
	1604PDFR-MA																	●	0.646	0.370	0.227	0.031	0.177		
	180604PDFR-MA																	●	0.685	0.432	0.250	0.016	0.177		E167 E172 E179 E180 E185
	1806PDFR-MA																	●	0.685	0.432	0.250	0.031	0.177		
	180612PDFR-MA																	●	0.685	0.432	0.250	0.047	0.177		
	180616PDFR-MA																	●	0.685	0.432	0.250	0.063	0.177		
	180620PDFR-MA																	●	0.685	0.432	0.250	0.079	0.177		
	180624PDFR-MA																	●	0.685	0.432	0.250	0.095	0.177		
	180630R-MA																	●	0.685	0.432	0.250	0.118	0.177		
APMT-MF 	11T3PDSR-MF			●						●	●			●	●				0.441	0.255	0.142	0.020	0.112		E164, 168 E170, 176 E181, 184 E187, 190
	1604PDSR-MF			●						●	●			●	●				0.646	0.370	0.227	0.031	0.177		E165 E169 E171 E177 E182 E187
	1806PDSR-MF			●							●			●	●				0.685	0.432	0.250	0.031	0.177		E167 E172 E179 E180 E185
	180612PDSR-MF																		0.685	0.432	0.250	0.047	0.177		
APMT-ML 	0903PDER-ML													●	●				0.370	0.244	0.142	0.016	0.110		E163 E174 E175 E183 E189
	090308PDER-ML													●	●				0.370	0.244	0.142	0.031	0.110		
	11T3PDER-ML													●	●				0.441	0.255	0.142	0.020	0.114		E164 E170 E176 E184 E187 E190
	11T308PDER-ML													●	●				0.441	0.255	0.142	0.031	0.114		

●: Korea Stock

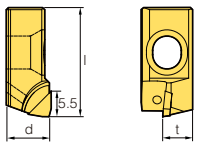
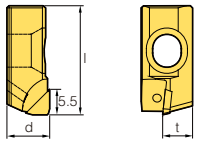
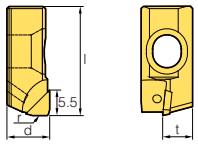
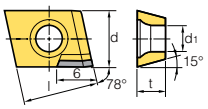
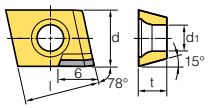
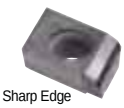
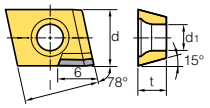
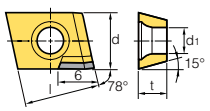
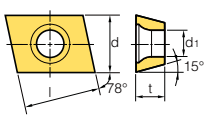
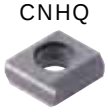
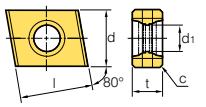
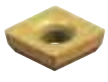
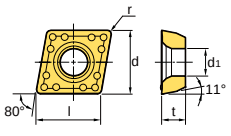
Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation	Cermet		Coated											PCD		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM325	NCM535	PC2505	PC2510	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	DP150	DP200	l	d	t	r	d_1	
APMT-ML	160404PDER-ML													●	●			0.646	0.370	0.227	0.016	0.177		E165
	1604PDER-ML													●	●			0.646	0.370	0.227	0.031	0.177		E171
																								E177
	180604PDER-ML													●	●			0.685	0.432	0.250	0.016	0.177		E167
	1806PDER-ML													●	●			0.685	0.432	0.250	0.031	0.177		E172
	180612PDER-ML													●	●			0.685	0.432	0.250	0.047	0.177		E179
	180616PDER-ML													●				0.685	0.432	0.250	0.063	0.177		E180
	180620PDER-ML													●	●			0.685	0.432	0.250	0.079	0.177		E185
	180624PDER-ML													●	●			0.685	0.432	0.250	0.095	0.177		
	180630R-ML													●	●			0.685	0.432	0.250	0.118	0.177		
APMT-MM	060202PDSR-MM			●						●				●	●			0.236	0.167	0.102	0.008	0.079		E162, 168
	0602PDSR-MM			●			●	●		●	●	●		●	●			0.236	0.167	0.102	0.016	0.079		E173, 181
	060208PDSR-MM			●						●				●	●			0.236	0.167	0.102	0.031	0.079		E183, 186
	060212R-MM			●										●	●			0.236	0.167	0.102	0.047	0.079		E188
	060216R-MM *													●	●			0.236	0.167	0.102	0.063	0.079		
	0903PDSR-MM			●			●	●		●	●			●	●			0.370	0.244	0.142	0.016	0.110		E163
	090308PDSR-MM			●						●				●	●			0.370	0.244	0.142	0.031	0.110		E174
	090312R-MM									●				●	●			0.370	0.244	0.142	0.047	0.110		E175
	090316R-MM			●						●				●	●			0.370	0.244	0.142	0.063	0.110		E183
	090320R-MM									●				●	●			0.362	0.244	0.142	0.079	0.110		E189
	090332R-MM *													●	●			0.362	0.244	0.142	0.126	0.110		
	11T3PDSR-MM			●	●	●	●	●		●	●	●		●	●			0.441	0.255	0.142	0.020	0.112		E164, 168
	11T308PDSR-MM			●						●		●	●	●	●			0.441	0.255	0.142	0.031	0.112		E170, 176
	11T312PDSR-MM			●						●		●		●	●			0.441	0.255	0.142	0.047	0.112		E181, 184
	11T316R-MM			●						●				●	●			0.433	0.255	0.142	0.063	0.112		E187, 190
	11T318R-MM																	0.433	0.255	0.142	0.071	0.112		
	11T324R-MM			●						●				●	●			0.433	0.255	0.142	0.094	0.112		
	160404PDSR-MM													●	●			0.646	0.370	0.227	0.016	0.177		E165
	1604PDSR-MM			●	●	●	●	●		●	●	●	●	●	●			0.646	0.370	0.227	0.031	0.177		E169
	160410PDSR-MM									●				●	●			0.646	0.370	0.227	0.039	0.177		E171
	160416PDSR-MM			●						●				●	●			0.646	0.370	0.227	0.063	0.177		E177
	160420R-MM													●				0.646	0.370	0.227	0.079	0.177		E182
	160424R-MM			●						●				●	●			0.630	0.370	0.227	0.094	0.177		E187
	160430R-MM									●				●	●			0.630	0.370	0.227	0.118	0.177		
	160432R-MM			●						●				●	●			0.630	0.370	0.227	0.126	0.177		
	160450R-MM *									●				●	●			0.630	0.370	0.227	0.197	0.177		
	160464R-MM *													●	●			0.630	0.370	0.227	0.252	0.177		
	1806PDSR-MM			●			●	●		●	●	●	●	●	●			0.685	0.432	0.250	0.031	0.177		E167
	180612PDSR-MM			●						●				●	●			0.685	0.432	0.250	0.047	0.177		E172
	180616PDSR-MM			●										●	●			0.685	0.432	0.250	0.063	0.177		E179
	180620PDSR-MM																	0.685	0.432	0.250	0.079	0.177		E180
	180624PDSR-MM			●										●	●			0.685	0.432	0.250	0.094	0.177		E185
	180630R-MM													●	●			0.657	0.432	0.250	0.118	0.177		
	180632R-MM			●										●	●			0.657	0.432	0.250	0.126	0.177		
	180640R-MM *													●	●			0.657	0.432	0.250	0.157	0.177		
	180648R-MM *													●	●			0.657	0.432	0.250	0.189	0.177		
	180650R-MM *													●	●			0.657	0.432	0.250	0.197	0.177		
	180660R-MM *																	0.657	0.432	0.250	0.236	0.177		
	180664R-MM *													●				0.657	0.432	0.250	0.252	0.177		
APMT-MN	11T3PDSR-MN2													●				0.441	0.255	0.142	0.020	0.112		E164, 165
	11T3PDSR-MN3													●				0.441	0.255	0.142	0.020	0.112		E170, 171
	1604PDSR-MN3													●				0.646	0.370	0.227	0.031	0.177		E172, 176
	1604PDSR-MN4													●				0.646	0.370	0.227	0.031	0.177		E177, 179
	1806PDSR-MN3													●				0.685	0.432	0.250	0.031	0.177		E180, 184
	1806PDSR-MN4													●				0.685	0.432	0.250	0.031	0.177		E185, 190

* Inserts marked with an asterisk (*) require a custom-made order for special holders.

●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⬣ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

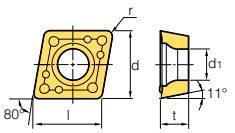
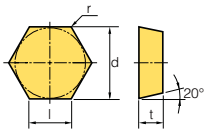
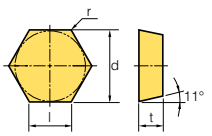
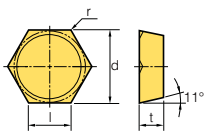
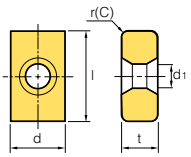
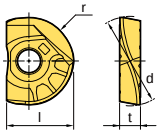
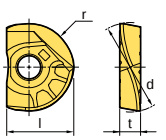
Insert	Designation	Cermet		Coated										Uncoated	PCD		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	DP150	DP200	l	d	t	r	d_1		
BAMPR-XAF 	**BAMPR-XAF**																	1.004	0.413	0.276	-	-		E150 E151
BAMPR-XAW 	**BAMPR-XAW**															●		1.004	0.394	0.276	-	-		E150 E151
BAMPR-XAWR 	**BAMPR-XAWR**															●		1.004	0.394	0.276	-	-		E150 E151
CDEW-NAF  strengthened Edge	**1204R-NAF**																	1/2	3/8	0.187	-	0.173		E149
	1204L-NAF																	1/2	3/8	0.187	-	0.173		
CDEW-NAW  Strengthened Edge Wiper Insert	**1204R-NAW**																	1/2	3/8	0.187	-	0.173		E149
	1204L-NAW																	1/2	3/8	0.187	-	0.173		
CDEW-XAW  Sharp Edge Wiper Insert	**1204R-XAW**																●	1/2	3/8	0.187	-	0.173		E149
	1204L-XAW																	1/2	3/8	0.187	-	0.173		
CDEW-XAF  Sharp Edge	**1204R-XAF**																●	1/2	3/8	0.187	-	0.173		E149
	1204L-XAF																	1/2	3/8	0.187	-	0.173		
CDEW-XCF  Sharp Edge	**1204R-XCF**														●			1/2	3/8	0.187	-	0.173		E149
	1204L-XCF																	1/2	3/8	0.187	-	0.173		
CNHQ 	**1005-C0.5**																	25/64	25/64	7/32	-	0.185		E369 E370
	1305-C0.5																	1/2	25/64	7/32	-	0.185		
	1606-C0.5																	5/8	15/32	1/4	-	0.232		
CPMH 	**432-MM**							●										0.508	1/2	0.187	1/32	0.217		E339

●: Korea Stock

Workpiece			CN2500	CN30	NCM535	NCM545	PC2505	PC2005	PC2010	PC2015	PC210F	PC3700	PC6510	PC9530	PC9540	PC5400	ST30A	H01
	Steel	P	●	⧓	●	●	●	●	⧓	✖	✖	⧓				✖	⧓	
	Stainless steel	M							●	⧓	⧓			⧓	✖	✖		
	Cast iron	K			●	●	⧓	●	⧓	✖	✖		●			✖		●
	Non-ferrous metal	N								●	●							●
	Heat resistant alloy, Titanium alloy	S								●	●					✖		
	Hardened steel	H					●	●	⧓	✖	✖					✖		

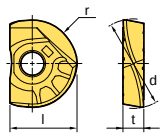
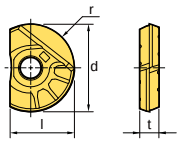
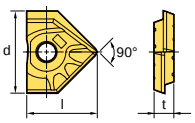
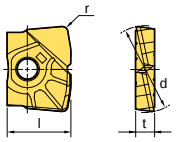
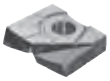
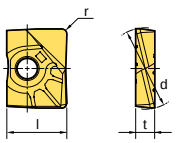
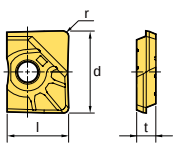
Machining type

● Continuous cutting
⧓ General cutting
✖ Interrupted cutting

Insert	Designation	Cermet		Coated												Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NCM535	NCM545	PC2505	PC2005	PC2010	PC2015	PC210F	PC3700	PC6510	PC9530	PC9540	PC5400	ST30A	H01	l	d	t	r	d_1		
CPMT 	21.51-MM										●							0.254	1/4	0.094	1/64	0.108		E339
	2.522-MM										●							0.317	5/16	0.134	1/32	0.125		
	32.52-MM										●							0.381	3/8	0.156	1/32	0.173		
HECN 	532FN																	23/64	5/8	3/16	1/32	-		E381
	532SN																	23/64	5/8	3/16	1/32	-		
	532TN																	23/64	5/8	3/16	1/32	-		
	633FN																	7/16	3/4	3/16	3/64	-		
	633TN																	7/16	3/4	3/16	3/64	-		
HPEN 	532FN																	23/64	5/8	3/16	1/32	-		E381
	532SN																	23/64	5/8	3/16	1/32	-		
	532EN																	23/64	5/8	3/16	1/32	-		
	633FN																	7/16	3/4	3/16	3/64	-		
HPEN-WC 	532-WC																	23/64	5/8	3/16	1/32	-		E381
	633-WC																	7/16	3/4	3/16	3/64	-		
KEL-MF 	150608-MF																	5/8	0.402	1/4	0.031	-		E391
	150608-ML																	5/8	0.402	1/4	0.031	-		
KEL-QNN 	1506QNN-MF																	5/8	0.402	1/4	0.031	-		-
	1506QNN-ML																	5/8	0.402	1/4	0.031	-		
KEL-ANN 	1506ANN-MF																	5/8	0.402	1/4	0.031	-		-
	1506ANN-ML																	5/8	0.402	1/4	0.031	-		
LBH 	0312									●								9/32	5/16	3/32	5/32	-		E324~ E328
	0375									●								21/64	3/8	7/64	3/16	-		
	0500									●								13/32	1/2	1/8	1/4	-		
	0625									●								15/32	5/8	5/32	5/16	-		
	0750									●								37/64	3/4	13/64	3/8	-		
	1000									●								47/64	1	15/64	1/2	-		
	1250									●								59/64	1 1/4	9/32	5/8	-		
LBH-KF 	0312-KF										●							9/32	5/16	3/32	5/32	-		E324 E325
	0375-KF										●							21/64	3/8	7/64	3/16	-		
	0500-KF										●							13/32	1/2	1/8	1/4	-		
	0625-KF										●							15/32	5/8	5/32	5/16	-		
	0750-KF										●							37/64	3/4	13/64	3/8	-		
	1000-KF										●							47/64	1	15/64	1/2	-		
	1250-KF										●							59/64	1 1/4	9/32	5/8	-		

●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	● General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

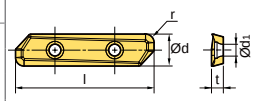
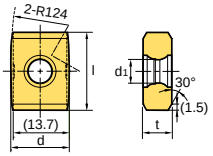
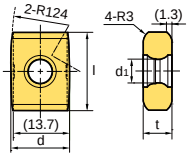
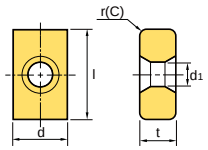
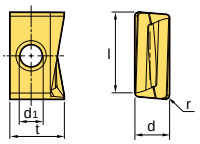
Insert	Designation	Cermet		Coated										Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC210F	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1		
LBH-KH	0312-KH							●										9/32	5/16	3/32	5/32	-		E324
	0375-KH						●	●										21/64	3/8	7/64	3/16	-		E325
	0500-KH						●	●										13/32	1/2	1/8	1/4	-		
	0625-KH						●	●										15/32	5/8	5/32	5/16	-		
	0750-KH						●	●										37/64	3/4	13/64	3/8	-		
	1000-KH						●	●										47/64	1	15/64	1/2	-		
	1250-KH						●	●										59/64	1 1/4	9/32	5/8	-		
LBS	0312																	9/32	5/16	3/32	5/32	-		E324~
	0375																	21/64	3/8	7/64	3/16	-		E328
	0500																	13/32	1/2	1/8	1/4	-		
	0625																	15/32	5/8	5/32	5/16	-		
	0750																	37/64	3/4	13/64	3/8	-		
	1000																	47/64	1	15/64	1/2	-		
	1250																	59/64	1 1/4	9/32	5/8	-		
LCF	0625-D90							●										35/64	5/8	5/32	-	-		E324~
	0750-D90							●										43/64	3/4	13/64	-	-		E328
	1000-D90																	27/32	1	15/64	-	-		
LFH	0375																	21/64	3/8	7/64	3/64	-		E324~
	0500							●										13/32	1/2	1/8	3/64	-		E328
	0625							●										15/32	5/8	5/32	1/16	-		
	0750																	37/64	3/4	13/64	1/16	-		
	1000																	47/64	1	15/64	5/64	-		
	1250																	59/64	1 1/4	9/32	5/64	-		
LRH	0375-R015							●										21/64	3/8	7/64	1/64	-		E324~
	0375-R031							●										21/64	3/8	7/64	1/32	-	LRH type	E328
	0375-R062																	21/64	3/8	7/64	1/16	-		
	0500-R015																	13/32	1/2	1/8	1/64	-		
	0500-R031							●										13/32	1/2	1/8	1/32	-		
	0500-R062							●										13/32	1/2	1/8	1/16	-		
	0625-R015																	15/32	5/8	5/32	1/64	-		
	0625-R031						●											15/32	5/8	5/32	1/32	-		
	0625-R062						●											15/32	5/8	5/32	1/16	-		
	0625-R125							●										15/32	5/8	5/32	1/8	-		
	0750-R015							●										37/64	3/4	1/4	1/64	-		
	0750-R031																	37/64	3/4	1/4	1/32	-		
	0750-R062							●										37/64	3/4	1/4	1/16	-		
	0750-R125						●											37/64	3/4	1/4	1/8	-		
LR	1000-R015						●											47/64	1	15/64	1/64	-		
	1000-R031							●										47/64	1	15/64	1/32	-	LR type	
(Special type)	1000-R062							●										47/64	1	15/64	1/16	-		
	1000-R125							●										47/64	1	15/64	1/8	-		
	1250-R031							●										59/64	1 1/4	9/32	1/32	-		
	1250-R062						●											59/64	1 1/4	9/32	1/16	-		
	1250-R125						●											59/64	1 1/4	9/32	1/8	-		

●: Korea Stock

Workpiece			CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC210F	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
	Steel	P	●	⧓	●	●	●	●	⧓	✖	⧓				⧓	✖	⧓	
	Stainless steel	M							●	⧓			⧓	✖	⧓	✖		
	Cast iron	K			⧓	●	●	⧓	⧓	✖		●			⧓	✖		●
	Non-ferrous metal	N								●								●
	Heat resistant alloy, Titanium alloy	S								●					⧓	✖		
	Hardened steel	H						●	⧓	✖					⧓	✖		

Machining type

● Continuous cutting
⧓ General cutting
✖ Interrupted cutting

Insert	Designation	Cermet		Coated													Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC210F	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400		ST30A	H01	l	d	t	r	d_1		
LDET-MA new	650540PPFR-MA																		2.559	0.591	0.221	0.157	0.219		E362
	650550PPFR-MA																		2.559	0.591	0.221	0.197	0.219		
LNCS	1907-C1.5-WC																		3/4	0.563	0.276	-	0.228		-
LNCS	1907-R3.0-WC																		3/4	0.563	0.276	-	0.228		-
LNE	324-R0.8																		5/8	3/8	1/4	1/32	0.173		E390~ E394
	324-C1.0																		5/8	3/8	1/4	3/64	0.173		
LNKT-MA new	080404PNR-MA																		0.315	0.165	0.260	0.016	0.110		E309~ E314
	080408PNR-MA																		0.315	0.165	0.260	0.031	0.110		
	080412PNR-MA																		0.315	0.165	0.260	0.047	0.110		
	080416PNR-MA																		0.315	0.165	0.260	0.063	0.110		
	140604PNR-MA																		0.500	0.262	0.394	0.016	0.157		
	140608PNR-MA																		0.500	0.262	0.394	0.031	0.157		
	140612PNR-MA																		0.500	0.262	0.394	0.047	0.157		
	140616PNR-MA																		0.500	0.262	0.394	0.063	0.157		
	170704PNR-MA																		0.650	0.276	0.433	0.016	0.177		
	170708PNR-MA																		0.650	0.276	0.433	0.031	0.177		
	170712PNR-MA																		0.650	0.276	0.433	0.047	0.177		
	170716PNR-MA																		0.650	0.276	0.433	0.063	0.177		
	170720PNR-MA																		0.650	0.276	0.433	0.079	0.177		
LNKT-ML new	080404PNR-ML																		0.315	0.165	0.260	0.016	0.110		E309~ E314
	080408PNR-ML																		0.315	0.165	0.260	0.031	0.110		
	080412PNR-ML																		0.315	0.165	0.260	0.047	0.110		
	080416PNR-ML																		0.315	0.165	0.260	0.063	0.110		
	140604PNR-ML																		0.500	0.262	0.394	0.016	0.157		
	140608PNR-ML																		0.500	0.262	0.394	0.031	0.157		
	140612PNR-ML																		0.500	0.262	0.394	0.047	0.157		
	140616PNR-ML																		0.500	0.262	0.394	0.063	0.157		
	170704PNR-ML																		0.650	0.276	0.433	0.016	0.177		
	170708PNR-ML											●		●	●				0.650	0.276	0.433	0.031	0.177		
	170712PNR-ML																		0.650	0.276	0.433	0.047	0.177		
	170716PNR-ML																		0.650	0.276	0.433	0.063	0.177		
	170720PNR-ML																		0.650	0.276	0.433	0.079	0.177		

●: Korea Stock

Workpiece			CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC210F	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
Workpiece	Steel	P	●	❖	●	●	●	●	❖	❖	❖	❖			❖	❖	❖	
	Stainless steel	M							●	❖			❖	❖	❖	❖		
	Cast iron	K			❖	●	●	❖	❖	❖		●			❖	❖		●
	Non-ferrous metal	N							●									●
	Heat resistant alloy, Titanium alloy	S							●						❖	❖		
	Hardened steel	H						●	❖	❖					❖	❖		

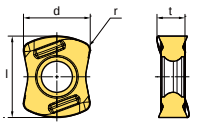
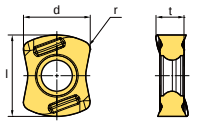
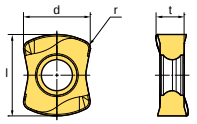
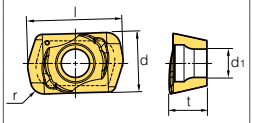
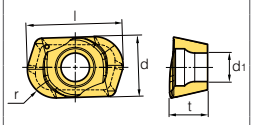
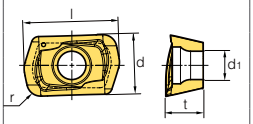
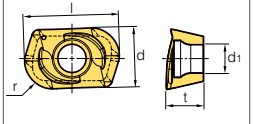
Machining type

● Continuous cutting
❖ General cutting
✱ Interrupted cutting

Insert	Designation		Cermet		Coated												Uncoated		Dimension (inch)					Geometries	Available tool
			CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC210F	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1		
LNKT-MM	080404PNR-MM																		0.315	0.165	0.260	0.016	0.110		E307~ E312
	080408PNR-MM																		0.315	0.165	0.260	0.031	0.110		
	080412PNR-MM																		0.315	0.165	0.260	0.047	0.110		
	080416PNR-MM																		0.315	0.165	0.260	0.063	0.110		
	140604PNR-MM																		0.500	0.262	0.394	0.031	0.157		
	140608PNR-MM																		0.500	0.262	0.394	0.031	0.157		
	140612PNR-MM																		0.500	0.262	0.394	0.047	0.157		
	140616PNR-MM																		0.500	0.262	0.394	0.063	0.157		
	170704PNR-MM																		0.650	0.276	0.433	0.016	0.177		
	170708PNR-MM														●	●			0.650	0.276	0.433	0.031	0.177		
	170712PNR-MM																		0.650	0.276	0.433	0.047	0.177		
	170716PNR-MM																		0.650	0.276	0.433	0.063	0.177		
	170720PNR-MM																		0.650	0.276	0.433	0.079	0.177		
LNEX-MA	100605PNR-MA																	●	25/64	33/128	33/128	3/128	0.318		E103 E104 E107 E108 E111~ E115
	151004PNR-MA																	●	19/32	25/64	25/64	1/64	0.177		
	151008PNR-MA																	●	19/32	26/64	26/64	1/32	0.177		
LNM(E)X-MF	LNMX	100605PNR-MF										●			●	●			25/64	33/128	33/128	3/128	0.318		E103 E104 E107 E108 E111~ E115
		100608PNR-MF										●			●	●			25/64	33/128	33/128	1/32	0.318		
		151004PNR-MF									●	●			●	●			19/32	25/64	25/64	1/64	0.177		
		151008PNR-MF				●					●	●			●	●			19/32	25/64	25/64	1/32	0.177		
		151016PNR-MF										●			●				19/32	25/64	25/64	1/16	0.177		
	LNEX	100605PNR-MF										●			●	●			25/64	33/128	33/128	3/128	0.318		
		100608PNR-MF									●	●			●	●			25/64	33/128	33/128	1/32	0.318		
		151004PNR-MF										●			●	●			19/32	25/64	25/64	1/64	0.177		
		151008PNR-MF										●			●	●			19/32	25/64	25/64	1/32	0.177		
		151016PNR-MF										●			●	●			19/32	25/64	25/64	1/16	0.177		
LNM(E)X-MM	LNMX	100605PNR-MM									●	●	●		●	●			25/64	33/128	33/128	3/128	0.318		E103~ E117
		100608PNR-MM									●				●	●			25/64	33/128	33/128	1/32	0.318		
		100605PNL-MM									●	●			●	●			25/64	33/128	33/128	3/128	0.318		
		151004PNR-MM										●				●			19/32	25/64	25/64	1/64	0.177		
		151008PNR-MM				●					●	●	●		●	●			19/32	25/64	25/64	1/32	0.177		
		151016PNR-MM									●	●				●			19/32	25/64	25/64	1/16	0.177		
		151008PNL-MM													●	●			19/32	25/64	25/64	1/32	0.177		
	LNEX	100605PNR-MM									●	●			●	●			25/64	33/128	33/128	3/128	0.318		
		100608PNR-MM										●			●	●			25/64	33/128	33/128	1/32	0.318		
		100605PNL-MM										●			●	●			25/64	33/128	33/128	3/128	0.318		
		151004PNR-MM										●			●	●			19/32	25/64	25/64	1/64	0.177		
		151008PNR-MM									●	●			●	●			19/32	25/64	25/64	1/32	0.177		
		151016PNR-MM										●				●			19/32	25/64	25/64	1/16	0.177		
		151008PNL-MM										●			●	●			19/32	25/64	25/64	1/32	0.177		

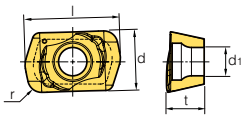
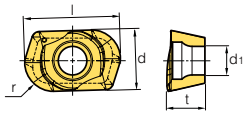
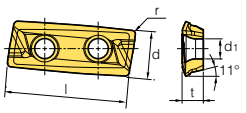
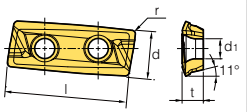
●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✖ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation	Cermet		Coated										Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1		
LNMX-MF new	060310R-MF							●		●				●	●			0.394	0.268	0.142	0.039	-		E267~ E271 E273 E274
	100412R-MF							●		●			●	●	●			0.480	0.394	0.165	0.047	-		
LNMX-ML new	040205R-ML													●	●			0.244	0.165	0.093	0.020	-		E265~ E274
	060310R-ML													●	●			0.394	0.268	0.142	0.039	-		
	100412R-ML												●	●	●			0.480	0.394	0.165	0.047	-		
LNMX-MM new	040205R-MM							●		●				●	●			0.244	0.165	0.093	0.020	-		E265~ E274
	060310R-MM							●		●				●	●			0.394	0.268	0.142	0.039	-		
	100412R-MM							●		●				●	●			0.480	0.394	0.165	0.047	-		
LPEW new	040210R						●	●						●				0.252	0.165	0.102	0.039	0.079		E279~ E281
	040220R						●	●						●				0.252	0.165	0.102	0.079	0.079		
LPMT-MF new	040210R-MF							●		●				●	●			0.252	0.165	0.102	0.039	0.079		E279~ E281
	040220R-MF							●		●				●	●			0.252	0.165	0.102	0.079	0.079		

●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

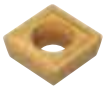
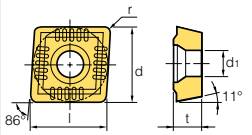
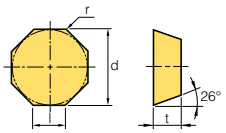
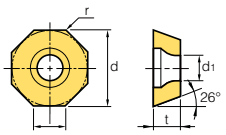
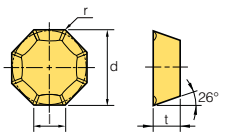
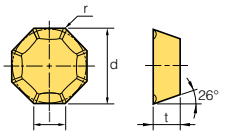
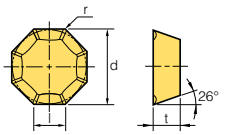
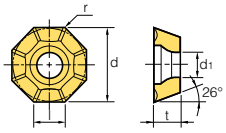
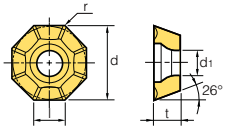
Insert	Designation	Cermet		Coated											Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1		
LPMW new	040210R						●	●						●				0.252	0.165	0.102	0.039	0.079		E279~ E281
	040220R						●	●						●				0.252	0.165	0.102	0.079	0.079		
LXET-MA new	250404PEFR-125-MA																	0.984	0.424	0.187	1/64	0.177		E358~ E361
	2504PEFR-125-MA																●	0.984	0.424	0.187	2/64	0.177		
	250412PEFR-125-MA																	0.984	0.424	0.187	3/64	0.177		
	250416PEFR-125-MA																	0.984	0.424	0.187	4/64	0.177		
	250404PEFR-150-MA																	0.984	0.418	0.187	1/64	0.177		
	2504PEFR-150-MA																	0.984	0.418	0.187	2/64	0.177		
	250412PEFR-150-MA																	0.984	0.418	0.187	3/64	0.177		
	250416PEFR-150-MA																	0.984	0.418	0.187	4/64	0.177		
	340504PEFR-200-MA																●	1.339	0.542	0.219	1/64	0.219		
	3405PEFR-200-MA																●	1.339	0.542	0.219	2/64	0.219		
	340512PEFR-200-MA																	1.339	0.542	0.219	3/64	0.219		
	340516PEFR-200-MA																	1.339	0.542	0.219	4/64	0.219		
	340504PEFR-250-MA																	1.339	0.543	0.219	1/64	0.219		
	3405PEFR-250-MA																●	1.339	0.543	0.219	2/64	0.219		
	340512PEFR-250-MA																	1.339	0.543	0.219	3/64	0.219		
	340516PEFR-250-MA																	1.339	0.543	0.219	4/64	0.219		
LXET-ML new	250404PEER-125-ML																	0.984	0.424	0.187	1/64	0.177		E358~ E361
	2504PEER-125-ML																	0.984	0.424	0.187	2/64	0.177		
	250412PEER-125-ML																	0.984	0.424	0.187	3/64	0.177		
	250416PEER-125-ML																	0.984	0.424	0.187	4/64	0.177		
	250404PEER-150-ML																	0.984	0.418	0.187	1/64	0.177		
	2504PEER-150-ML																	0.984	0.418	0.187	2/64	0.177		
	250412PEER-150-ML																	0.984	0.418	0.187	3/64	0.177		
	250416PEER-150-ML																	0.984	0.418	0.187	4/64	0.177		
	340504PEER-200-ML																	1.339	0.542	0.219	1/64	0.219		
	3405PEER-200-ML													●				1.339	0.542	0.219	2/64	0.219		
	340512PEER-200-ML																	1.339	0.542	0.219	3/64	0.219		
	340516PEER-200-ML																	1.339	0.542	0.219	4/64	0.219		
	340504PEER-250-ML																	1.339	0.543	0.219	1/64	0.219		
	3405PEER-250-ML																	1.339	0.543	0.219	2/64	0.219		
	340512PEER-250-ML																	1.339	0.543	0.219	3/64	0.219		
	340516PEER-250-ML																	1.339	0.543	0.219	4/64	0.219		

●: Korea Stock

Workpiece			CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
	Steel	P	●	⧓	⧓	✖	●	●	●	⧓	⧓				⧓	✖	⧓	
	Stainless steel	M			⧓	✖				●			⧓	✖	⧓	✖		
	Cast iron	K					●	●	⧓	⧓		●			⧓	✖		●
	Non-ferrous metal	N																●
	Heat resistant alloy, Titanium alloy	S													⧓	✖		
	Hardened steel	H							●	⧓					⧓	✖		

Machining type

● Continuous cutting
⧓ General cutting
✖ Interrupted cutting

Insert	Designation	Cermet		Coated												Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1		
MPMT 	**322**																	5/16	0.313	0.125	1/32	0.138		-
	432									●								19/64	3/8	0.156	1/32	0.177		
OFCN 	**0704SN**										●							19/64	45/64	0.187	3/128	-		E61
	0704FN																	19/64	45/64	0.187	3/128	-		
	070408SN																	19/64	45/64	0.187	1/32	-		
	070408FN																	19/64	45/64	0.187	1/32	-		
	070408TN																	19/64	45/64	0.187	1/32	-		
OFCW 	**05T3SN**																	13/64	1/2	0.156	3/128	0.173		E60
	05T3FN																	13/64	1/2	0.156	3/128	0.173		
	05T308FN																	13/64	1/2	0.156	1/32	0.173		
OFKR-MA 	**0704FN-MA**																●	19/64	45/64	3/16	3/128	-		E61
	0704EN-MA																	19/64	45/64	3/16	3/128	-		
OFKR-MF 	**0704SN-MF**			●	●													19/64	45/64	3/16	3/128	-		E61
	070408SN-MF																	19/64	45/64	3/16	1/32	-		
OFKR-MM 	**0704SN-MM**			●	●					●	●	●		●				19/64	45/64	3/16	3/128	-		E61
	070408SN-MM			●														19/64	45/64	3/16	1/32	-		
OFKT-MA 	**05T3FN-MA**																●	13/64	1/2	5/32	3/128	0.173		E60
	05T3EN-MA																	13/64	1/2	5/32	3/128	0.173		E61
	0704FN-MA																●	19/64	45/64	3/16	3/128	0.217		
	0704EN-MA																	19/64	45/64	3/16	3/128	0.217		
OFKT-MF 	**05T3SN-MF**										●							13/64	1/2	5/32	3/128	0.173		E60
	05T308SN-MF																	13/64	1/2	5/32	1/32	0.217		

●: Korea Stock

Workpiece			Cermet		Coated											Uncoated	
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
	Steel	P	● ⧓		●	⧓	●	●	●	⧓	⧓				⧓	✱	⧓	
	Stainless steel	M				⧓				●			⧓	✱	⧓	✱		
	Cast iron	K			⧓		●	●	⧓	⧓		●			⧓	✱		●
	Non-ferrous metal	N																●
	Heat resistant alloy, Titanium alloy	S													⧓	✱		
	Hardened steel	H							●	⧓					⧓	✱		

Machining type

● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert	Designation	l	d	t	r	d_1	a	W	g	Geometrie	Available tool
OFKT-MM	05T3SN-MM	13/64	1/2	5/32	3/128	0.173	-	-	-		E60
	05T308SN-MM	13/64	1/2	5/32	1/32	0.173	-	-	-		E61
	0704SN-MM	19/64	45/64	3/16	3/128	0.217	-	-	-		
ONHX-MF	060608-MF	17/64	5/8	15/64	1/32	0.220	-	-	-		E141
	080608-MF	21/64	51/64	15/64	1/32	0.220	-	-	-		E142
	0606ANN-MF	17/64	5/8	15/64	1/32	0.220	0.041	-	-		
	0806ANN-MF	21/64	51/64	15/64	1/32	0.220	0.060	-	-		
ONHX-ML	060608-ML	17/64	5/8	15/64	1/32	0.220	-	-	-		E141
	080608-ML	21/64	51/64	15/64	1/32	0.220	-	-	-		E142
ONHX-MM	060608-MM	17/64	5/8	15/64	1/32	0.220	-	-	-		E141
	080608-MM	21/64	51/64	15/64	1/32	0.220	-	-	-		E142
	0606ANN-MM	17/64	5/8	15/64	1/32	0.220	0.041	-	-		
	0806ANN-MM	21/64	51/64	15/64	1/32	0.220	0.060	-	-		
ONHX-MA	060608-MA	17/64	5/8	15/64	1/32	0.220	-	-	-		E141
	080608-MA	17/64	5/8	15/64	1/32	0.220	-	-	-		E142
ONHX-W	060608-W	17/64	5/8	15/64	1/32	0.220	-	-	-		E141
	080608-W	21/64	51/64	15/64	1/32	0.220	-	-	-		E142
ONMX-MF	060608-MF	17/64	5/8	15/64	1/32	0.220	-	-	-		E141
	080608-MF	21/64	51/64	15/64	1/32	0.220	-	-	-		E142
	0606ANN-MF	17/64	5/8	15/64	1/32	0.220	0.041	-	-		
	0806ANN-MF	21/64	51/64	15/64	1/32	0.220	0.060	-	-		
ONMX-MM	060608-MM	17/64	5/8	15/64	1/32	0.220	-	-	-		E141
	080608-MM	21/64	51/64	15/64	1/32	0.220	-	-	-		E142
	0606ANN-MM	17/64	5/8	15/64	1/32	0.220	0.041	-	-		
	0806ANN-MM	21/64	51/64	15/64	1/32	0.220	0.060	-	-		

●: Korea Stock

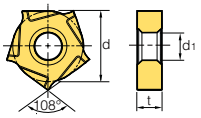
Workpiece			CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC210F	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
	Steel	P	●	❋	●	●	●	●	❋	❋	●				❋	❋	❋	
	Stainless steel	M							●	❋			❋	❋	❋	❋		
	Cast iron	K			❋	●	●	❋	❋	❋		●			❋	❋		●
	Non-ferrous metal	N								●								●
	Heat resistant alloy, Titanium alloy	S								●					❋	❋		
	Hardened steel	H						●	❋	❋					❋	❋		

Machining type

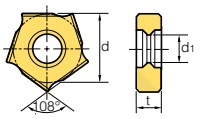
● Continuous cutting
❋ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated												Uncoated		Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC210F	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1	Cutter width		
PNEJ	1223N									●								-	1/2	0.091	-	0.197	5/32		E373
	1225N																	-	1/2	0.098	-	0.197	23/128		E374
	1230N																	-	1/2	0.118	-	0.197	13/64		
	1235N									●				●				-	1/2	0.138	-	0.197	15/64		
	1240N									●				●				-	1/2	0.157	-	0.197	9/32		
	1245N									●				●				-	1/2	0.177	-	0.197	5/16		
	1250N																	-	1/2	0.197	-	0.197	23/64		
	1255N									●								-	1/2	0.217	-	0.197	25/64		
	1260N																	-	1/2	0.236	-	0.197	7/16		
	1265N													●				-	1/2	0.256	-	0.197	15/32		
	1270N																	-	1/2	0.276	-	0.197	33/64		
	1275N													●				-	1/2	0.295	-	0.197	35/64		
	1285N																	-	1/2	0.335	-	0.197	19/32		
PNEJ-C	1223N-C03																	-	1/2	0.091	-	0.197	5/32		E373
	1230N-C03																	-	1/2	0.118	-	0.197	13/64		E374
	1235N-C03																	-	1/2	0.138	-	0.197	15/64		
	1240N-C05																	-	1/2	0.157	-	0.197	9/32		
	1245N-C05																	-	1/2	0.177	-	0.197	5/16		
	1250N-C05																	-	1/2	0.197	-	0.197	23/64		
	1255N-C05																	-	1/2	0.217	-	0.197	25/64		
	1260N-C05																	-	1/2	0.236	-	0.197	7/16		
	1265N-C05																	-	1/2	0.256	-	0.197	15/32		
	1270N-C05																	-	1/2	0.276	-	0.197	33/64		
	1275N-C05																	-	1/2	0.295	-	0.197	35/64		
RDCT-MA	10T3M0-MA															●		-	25/64	0.156	-	0.157	-		E226
	1204M0-MA															●		-	15/32	0.187	-	0.177	-		E227
																									E232
																									E233
																									E238
																									E239
RDHW	0501M0F																	-	13/64	0.063	-	0.091	-		E228~
	0501M0E											●						-	13/64	0.063	-	0.091	-		E231
	0501M0S																	-	13/64	0.063	-	0.091	-		E234~
	06T1M0F																	-	15/64	0.078	-	0.098	-		E239
	06T1M0E											●						-	15/64	0.078	-	0.098	-		
	06T1M0S																	-	15/64	0.078	-	0.098	-		
	0702M0F																	-	9/32	0.094	-	0.110	-		
	0702M0E											●						-	9/32	0.094	-	0.110	-		
	0702M0S																	-	9/32	0.094	-	0.110	-		
	0803M0F																	-	5/16	0.125	-	0.134	-		
	0803M0E											●						-	5/16	0.125	-	0.134	-		
	0803M0S																	-	5/16	0.125	-	0.134	-		
	1605M0F																	-	5/8	0.219	-	0.217	-		
	1605M0E																	-	5/8	0.219	-	0.217	-		
	1605M0S																	-	5/8	0.219	-	0.217	-		
	2006M0F																	-	25/32	1/4	-	0.217	-		
	2006M0E																	-	25/32	1/4	-	0.217	-		
	2006M0S																	-	25/32	1/4	-	0.217	-		



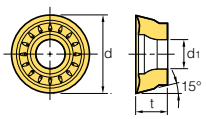




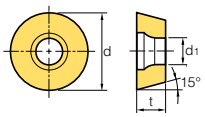


※ C03: Chamfer 0.3 mm
C05: Chamfer 0.5 mm









●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation	Cermet		Coated										Uncoated		Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1	a		
RDKT-MF	10T3M0-MF											●		●				-	25/64	0.156	-	0.152	-		E226~ E228 E232~ E234 E238 E239
	1204M0-MF									●		●		●				-	15/32	0.187	-	0.177	-		
	1605M0-MF																	-	5/8	0.219	-	0.217	-		
RDKT-ML	1605M0-ML																	-	5/8	0.219	-	0.217	-		E228 E234 E238 E239
RDKT-MM	10T3M0-MM			●						●	●	●		●				-	25/64	0.156	-	0.152	-		E226~ E229 E232~ E235 E238 E239
	1204M0-MM			●						●	●	●		●				-	15/32	0.187	-	0.177	-		
	1605M0-MM									●								-	5/8	0.219	-	0.217	-		
	2006M0-MM									●								-	25/32	0.250	-	0.217	-		
RDKW	0501M0E									●								-	13/64	1/16	-	0.091	-		E230 E231 E236 E237
	06T1M0E									●								-	15/64	0.078	-	0.098	-		
	0702M0E									●								-	9/32	3/32	-	0.110	-		
	0803M0E									●								-	5/16	1/8	-	0.134	-		
REKR-MM	170400-MM																	-	45/64	3/16	-	-	-		E61
RNMX-ML	1204M0E-ML																	-	0.472	0.187	0.236	-	0.079		E143 E144
RPCT-MA	10T3M0-MA															●		-	0.394	0.156	-	0.157	-		E240~ E243 E245~ E251
	1204M0-MA															●		-	0.472	0.187	-	0.177	-		
	1606M0-MA															●		-	0.630	0.250	-	0.217	-		
	2007M0-MA															●		-	0.787	0.276	-	0.276	-		

●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation	Cermet		Coated										Uncoated		Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1	a		
RPMT-MF new	0803M0E-MF													●	●			-	0.315	0.125	-	0.134	-		E240~ E251
	10T3M0E-MF													●	●			-	0.394	0.156	-	0.157	-		
	1204M0E-MF												●	●	●			-	0.472	0.187	-	0.177	-		
	1606M0E-MF													●	●			-	0.630	0.250	-	0.217	-		
	2007M0E-MF													●	●			-	0.787	0.276	-	0.276	-		
RPET-ML new	0803M0E-ML													●	●			-	0.315	0.125	-	0.134	-		E240~ E251
	103TM0E-ML													●	●			-	0.394	0.156	-	0.157	-		
	1204M0E-ML													●	●			-	0.472	0.187	-	0.177	-		
	1606M0E-ML													●	●			-	0.630	0.250	-	0.217	-		
	2007M0E-ML													●	●			-	0.787	0.276	-	0.276	-		
RPMT-MM new	0803M0S-MM							●	●					●	●			-	0.315	0.125	-	0.134	-		E240~ E251
	10T3M0S-MM							●	●	●				●	●			-	0.394	0.156	-	0.157	-		
	1204M0S-MM							●	●	●			●	●	●			-	0.472	0.187	-	0.177	-		
	1606M0S-MM							●	●	●				●	●			-	0.630	0.250	-	0.217	-		
	2007M0S-MM							●	●	●				●	●			-	0.787	0.276	-	0.276	-		
RPMW new	0803M0E1							●	●					●	●			-	0.315	0.125	-	0.134	-		E241~ E251
	10T3M0E1							●	●					●	●			-	0.394	0.156	-	0.157	-		
	1204M0S1							●	●	●				●	●			-	0.472	0.187	-	0.177	-		
	1204M0S2													●	●			-	0.472	0.187	-	0.177	-		
	1606M0S1							●	●					●	●			-	0.630	0.250	-	0.217	-		
	2007M0S1							●	●					●	●			-	0.787	0.276	-	0.276	-		
SAGX-ML new	140808ANER-ML													●	●			-	0.551	0.259	0.031	-	0.048		E139
SAGX-MM new	140808ANER-MM													●				-	0.551	0.259	0.031	-	0.048		E139
SNMX-MM new	140808ANER-MM									●	●			●				-	0.551	0.259	0.031	-	0.048		E139

●: Korea Stock

Workpiece			CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PD1010	PD2000	ST30A	G10	H01	H05
	Steel	P	●	⬢	⬢	✱	●	●	⬢				⬢			⬢			
	Stainless steel	M			⬢	✱					⬢	✱	⬢						
	Cast iron	K					●	●		●			⬢				⬢	●	●
	Non-ferrous metal	N												✱	●			●	⬢
	Heat resistant alloy, Titanium alloy	S											⬢						
	Hardened steel	H											⬢						

Machining type

● Continuous cutting
⬢ General cutting
✱ Interrupted cutting

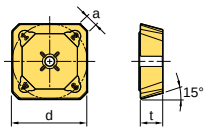
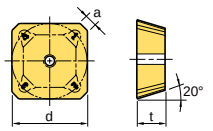
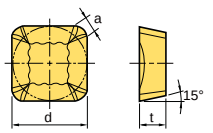
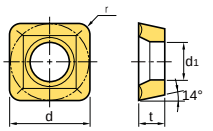
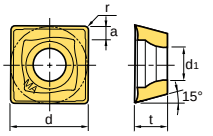
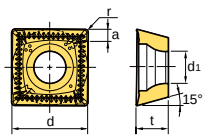
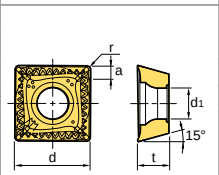
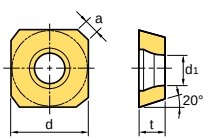
Insert	Designation	Cermet		Coated											Uncoated				Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PD1010	PD2000	ST30A	G10	H01	H05	l	d	t	r	d_1	a		
SDCN	42M															●			-	1/2	1/8	-	-	0.059	▶Cutting-edge geometry - G: Light Side, Sharpe Edge - S20: STS - RH: Strengthened edge ▶Sub-cutting-edge geometry - M: AEFN - MT: AETN	E47
	42M-G																●		-	1/2	1/8	-	-	0.059		E48
	42MT	●	●		●										●				-	1/2	1/8	-	-	0.059		E57
	42MT-RH																		-	1/2	1/8	-	-	0.059		E58
	42MT-S20									●									-	1/2	1/8	-	-	0.059		
	53M															●			-	5/8	3/16	-	-	0.059		
	53M-G																●		-	5/8	3/16	-	-	0.059		
	53MT		●	●											●				-	5/8	3/16	-	-	0.059		
	53MT-RH																		-	5/8	3/16	-	-	0.059		
	53MT-S20									●									-	5/8	3/16	-	-	0.059		
	42AEEN																		-	1/2	1/8	-	-	0.059		
	42AEEN-RH																		-	1/2	1/8	-	-	0.056		
	42AESN																		-	1/2	1/8	-	-	0.059		
	42AESN-RH																		-	1/2	1/8	-	-	0.056		
	53AEEN																		-	5/8	3/16	-	-	0.059		
	53AEEN-RH								●			●							-	5/8	3/16	-	-	0.056		
	53AESN																		-	5/8	3/16	-	-	0.059		
	53AESN-RH								●										-	5/8	3/16	-	-	0.056		
SDET-MA	09M402R-MA													●			●	●	-	3/8	0.143	1/128	0.157	0.047		E220~ E225
	09M404R-MA																		-	3/8	0.143	1/64	0.157	0.047		
	09M405R-MA																		-	3/8	0.143	3/128	0.157	0.047		
	130504R-MA												●				●	●	-	0.531	0.219	1/64	0.219	0.087		
SDET-MF	09M405R-MF																		-	3/8	5/32	3/124	0.157	0.047		E220~ E225
	130508R-MF																		-	0.531	7/32	1/32	0.219	0.087		
SDET-MM	09M405R-MM																		-	3/8	5/32	3/124	0.157	0.047		E220~ E225
	130508R-MM																		-	0.531	7/32	1/32	0.219	0.087		
SDKN-CM	42MT-CM		●																-	1/2	1/8	-	-	0.059		-

●: Korea Stock

Workpiece			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	H05
	Steel	P	●	⧓	●	⧓	✱	●	●	⧓				⧓	✱	⧓		
	Stainless steel	M				⧓	✱					⧓	✱	⧓	✱			
	Cast iron	K			⧓			●	●		●			⧓	✱		●	●
	Non-ferrous metal	N															●	⧓
	Heat resistant alloy, Titanium alloy	S												⧓	✱			
	Hardened steel	H												⧓	✱			

Machining type

● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated										Uncoated			Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	H05	l	d	t	r	d_1	a		
SDKN-MU	42AESN-MU								●									-	1/2	1/8	-	-	0.086		E47 E48 E53 E54
	53AESN-MU								●									-	5/8	3/16	-	-	0.083		
SDKN-SU	42AESN-SU								●				●	●				-	1/2	1/8	-	-	0.086		E47 E48 E53 E54
	53AESN-SU								●				●	●				-	5/8	3/16	-	-	0.083		
SDKR-MX	42AESN-MX																	-	1/2	1/8	-	-	0.057		E47 E48 E53 E54
	42AETN-MX																	-	1/2	1/8	-	-	0.057		
	42AEN-MX			●														-	1/2	1/8	-	-	0.057		
	53AESN-MX				●													-	5/8	3/16	-	-	0.057		
	53AETN-MX																	-	5/8	3/16	-	-	0.057		
	53AEN-MX			●														-	5/8	3/16	-	-	0.057		
SDMT-MM	322-MM								●				●					-	3/8	1/8	0.031	0.173	-		E305 E333
SDXT-MA	09M405R-MA															●	●	-	3/8	0.157	3/128	0.157	0.047		E220~ E225
	130508R-MA															●	●	-	0.531	7/32	1/32	0.219	0.087		
SDXT-MF	09M403R-MF																	-	3/8	0.157	3/256	0.157	0.047		E220~ E225
	09M403L-MF																	-	3/8	0.157	3/256	0.157	0.047		
	09M404R-MF																	-	3/8	0.157	1/64	0.157	0.047		
	09M404L-MF																	-	3/8	0.157	1/64	0.157	0.047		
	09M405R-MF			●					●	●	●		●	●				-	3/8	0.157	3/128	0.157	0.047		
	09M405L-MF																	-	3/8	0.157	3/128	0.157	0.047		
	130508R-MF			●						●	●		●	●				-	0.531	7/32	1/32	0.219	0.087		
SDXT-MM	09M405R-MM			●	●				●	●	●		●	●				-	3/8	0.157	3/128	0.157	0.047		E220~ E225
	09M405L-MM									●								-	3/8	0.157	3/128	0.157	0.047		
	130508R-MM			●	●				●	●	●		●	●				-	0.531	7/32	1/32	0.219	0.087		
	130508L-MM																	-	0.531	7/32	1/32	0.219	0.087		
	130538-MM																	-	0.531	7/32	5/32	0.219	0.087		
SECA	43AFSN			●														-	1/2	3/16	-	0.219	0.105		-
	43AFTN		●						●		●							-	1/2	3/16	-	0.219	0.105		
	43AFFN																	-	1/2	3/16	-	0.219	0.105		
	43AFEN																	-	1/2	3/16	-	0.219	0.105		
	53AFSN																	-	5/8	3/16	-	0.217	0.110		
	53AFTN																	-	5/8	3/16	-	0.217	0.110		
	53AFFN																	-	5/8	3/16	-	0.217	0.110		

●: Korea Stock

Workpiece			CN2500	CN30	NCM325	NCM335	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	PD2000	ST30A	G10	H01	H05
	Steel	P	●	⧓	⧓	✱	⧓				⧓	✱			⧓			
	Stainless steel	M			⧓	✱			⧓	✱	⧓	✱						
	Cast iron	K						●			⧓	✱				⧓	●	●
	Non-ferrous metal	N											✱	●			●	⧓
	Heat resistant alloy, Titanium alloy	S									⧓	✱						
	Hardened steel	H									⧓	✱						

Machining type

● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

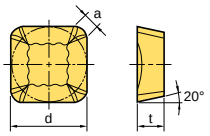
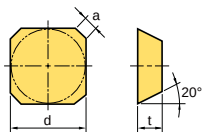
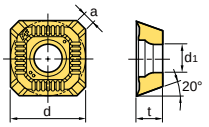
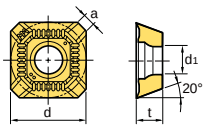
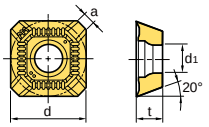
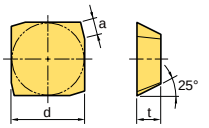
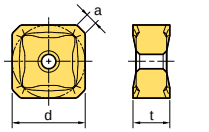
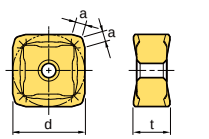
Insert	Designation	Cermet		Coated									Uncoated				Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NCM325	NCM335	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	PD2000	ST30A	G10	H01	H05	l	d	t	r	d_1	a		
SECN	42AFFN														●	●		-	1/2	0.125	-	-	0.091	▶Shape of Edge - S20: STS - RH: Strengthened edge, STS	E49
	42AFTN	●	●											●				-	1/2	0.125	-	-	0.091		E50
	42AFEN																	-	1/2	0.125	-	-	0.091		
	42AFSN			●	●													-	1/2	0.125	-	-	0.091		
	42AFEN-RH						●			●								-	1/2	0.125	-	-	0.091		
	42AFTN-RH																	-	1/2	0.125	-	-	0.091		
	42AFTN-S20							●										-	1/2	0.125	-	-	0.091		
	53AFFN														●			-	5/8	0.187	-	-	0.094		
	53AFTN		●															-	5/8	0.187	-	-	0.094		
	53AFEN																	-	5/8	0.187	-	-	0.094		
	53AFSN																	-	5/8	0.187	-	-	0.094		
	53AFEN-RH																	-	5/8	0.187	-	-	0.094		
	53AFSN-RH						●											-	5/8	0.187	-	-	0.094		
	53AFTN-S20																	-	5/8	0.187	-	-	0.094		
SEET-MA	32AGFN-MA															●	●	-	3/8	0.125	-	0.134	0.083		E214~
	14M4AGFN-MA											●	●			●	●	-	0.551	0.157	-	0.173	0.096		E219
SEET-MF	32AGSN-MF						●	●		●	●							-	3/8	0.125	-	0.134	0.083		E214~
	14M4AGSN-MF						●	●		●	●							-	0.551	0.157	-	0.173	0.096		E219
SEET-MM	32AGSN-MM			●			●			●	●							-	3/8	0.125	-	0.134	0.083		E214~
	14M4AGSN-MM				●	●	●	●		●	●							-	0.551	0.157	-	0.173	0.096		E219
SEEW	32AGTN																	-	3/8	0.125	-	0.134	0.083		E214~
	14M4AGTN		●															-	0.551	0.157	-	0.173	0.104		E219
SEEW-W	14M4AGFN-W																	-	0.551	0.157	-	0.173	0.335		E215
	14M4AGSN-W									●								-	0.551	0.157	-	0.173	0.335		E217
	14M4AGTN-W						●											-	0.551	0.157	-	0.173	0.335		E219
SEKN-SU	42AFSN-SU					●												-	1/2	1/8	-	-	0.076		E49
	53AFSN-SU					●					●							-	5/8	3/16	-	-	0.080		E50

●: Korea Stock

Workpiece			CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
	Steel	P	●	⧓	⧓	✱	●	●	●	⧓	⧓				⧓	✱	⧓	
	Stainless steel	M			⧓	✱				●			⧓	✱	⧓	✱		
	Cast iron	K					●	●	⧓	⧓		●			⧓	✱		●
	Non-ferrous metal	N																●
	Heat resistant alloy, Titanium alloy	S													⧓	✱		
	Hardened steel	H							●	⧓					⧓	✱		

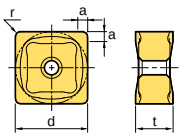
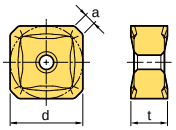
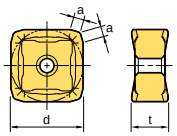
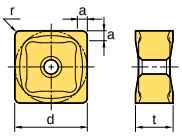
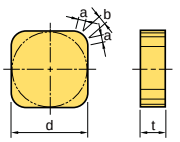
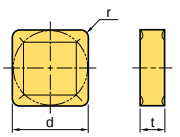
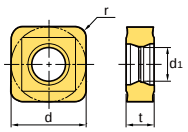
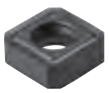
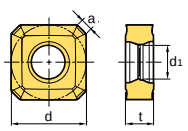
Machining type

● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated												Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	d_1	a		
SEKR-MX	42AFSN-MX			●	●							●						-	1/2	0.125	-	0.090		E49
	53AFSN-MX			●								●						-	5/8	0.187	-	0.094		E50
SEMN	43AZ																	-	1/2	3/16	-	0.087		-
SEXT-MF	32AGSN-MF										●			●	●			-	3/8	1/8	0.134	0.083		E214~ E219
	14M4AGSN-MF										●			●	●			-	0.551	0.157	0.173	0.104		
SEXT-MM	32AGSN-MM									●	●			●	●			-	3/8	1/8	0.134	0.083		E214~ E219
	14M4AGSN-MM			●						●	●	●		●	●			-	0.551	0.157	0.173	0.104		
SEXT-MR	32AGSN-MR											●		●				-	3/8	1/8	0.134	0.083		E214~ E219
	14M4AGSN-MR											●		●				-	0.551	0.157	0.173	0.104		
SFCN	42EFR																●	-	1/2	1/8	-	0.098		E51
SNC(M)F-MF	SNMF 1206ANN-MF																	-	1/2	17/64	-	0.079		E134 E135
	SNMF 1507ANN-MF																	-	5/8	0.289	-	0.083		
	SNCF 1206ANN-MF																	-	1/2	17/64	-	0.079		
	SNCF 1507ANN-MF										●							-	5/8	0.289	-	0.083		
SNC(M)F-MF	SNMF 1206ENN-MF									●								-	1/2	17/64	-	0.079		E136 E137
	SNMF 1507ENN-MF																	-	5/8	0.289	-	0.083		
	SNCF 1206ENN-MF										●							-	1/2	17/64	-	0.079		
	SNCF 1507ENN-MF										●							-	5/8	0.289	-	0.083		

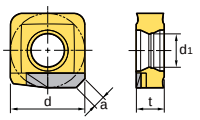
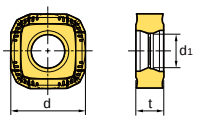
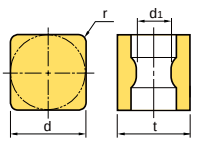
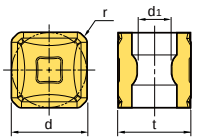
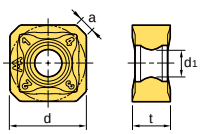
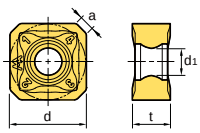
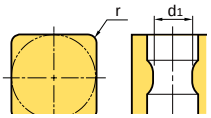
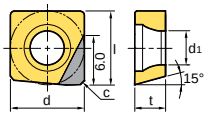
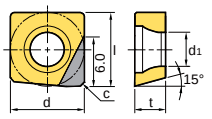
●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⬌ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation	Cermet		Coated										Uncoated		Dimension (inch)							Geometrie	Available tool
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1	a	b		
SNC(M)F-MF 	SNMF 1206QNN-MF									●								-	1/2	33/128	0.039	-	0.039	-		E138
	SNCF 1206QNN-MF										●							-	1/2	33/128	0.039	-	0.039	-		
SNC(M)F-MM 	SNMF 1206ANN-MM																	-	1/2	33/128	-	-	0.07	-		E134
	1507ANN-MM																	-	5/8	0.289	-	-	0.071	-		E135
	SNCF 1206ANN-MM																	-	1/2	33/128	-	-	0.07	-		
	1507ANN-MM																	-	5/8	0.289	-	-	0.071	-		
SNC(M)F-MM 	SNMF 1206ENN-MM									●								-	1/2	33/128	-	-	0.07	-		E136
	1507ENN-MM									●								-	5/8	0.289	-	-	0.07	-		E137
	SNCF 1206ENN-MM																	-	1/2	33/128	-	-	0.07	-		
	1507ENN-MM																	-	5/8	0.289	-	-	0.07	-		
SNC(M)F-MM 	SNMF 1206QNN-MM									●								-	1/2	33/128	0.031	-	0.039	-		E138
	SNCF 1206QNN-MM										●							-	1/2	33/128	0.031	-	0.039	-		
SNCN 	43ENN			●												●		-	1/2	0.187	-	-	0.055	0.039		E52
	53ENN																	-	5/8	0.187	-	-	0.055	0.039		
SNEF 	435										●							-	1/2	0.187	0.075	-	-	-		-
	535																	-	5/8	0.187	0.075	-	-	-		
SNEU-MF 	120420-MF										●							-	1/2	3/16	5/69	0.224	(0.091)	-		-
SNEU-MF 	1204ANN-MF																	-	1/2	3/16	-	0.224	(0.079)	-		-

●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation	Cermet		Coated										Uncoated	PCD		Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	DP150	DP200	l	d	t	r	d_1	a		
SNEU-TBW	**1204-TBW**																	-	1/2	3/16	-	0.224	(0.083)		-
SNEU-WMF	**1204R-WMF**																	-	1/2	3/16	-	0.224	-		-
SNEX	**101010**									●								-	25/64	25/64	5/128	23/128	-		-
	1010ZNN																	-	25/64	25/64	(5/128)	23/128	-		
SNEX-CU1	**101010-CU1**									●								-	25/64	25/64	5/128	23/128	-		-
	1010ZNN-CU1									●								-	25/64	25/64	(5/128)	23/128	-		
	121212-CU1																	-	1/2	1/2	3/64	23/128	-		
	1212ZNN-CU1																	-	1/2	1/2	(3/64)	23/128	-		
SNEX-MA	**1206ANN-MA**														●			-	1/2	1/4	-	0.177	0.093		E124 E125 E128 E129 E132 E133
	1206ENN-MA									●					●			-	1/2	1/4	-	0.205	0.072		
	1206QNN-MA														●			-	1/2	1/4	-	0.205	0.055		
	120612-MA														●			-	1/2	1/4	0.047	0.205	-		
SNEX-ML	**1206ANN-ML**												●	●				-	1/2	1/4	-	0.177	0.093		E124~ E133
	1206ENN-ML												●	●				-	1/2	1/4	-	0.205	0.072		
	1206QNN-ML												●	●				-	1/2	1/4	-	0.205	0.055		
	120612-ML												●	●				-	1/2	1/4	0.047	0.205	-		
	1507ANN-ML												●	●				-	5/8	1/4	-	0.220	0.124		
	1507ENN-ML												●	●				-	5/8	1/4	-	0.220	0.105		
SNEW	**09T3ADFR**														●			3/8	3/8	5/32	-	0.173	-		E152 E153
SNEW-NAF	**09T3ADTR-NAF**															●		3/8	3/8	5/32	-	0.173	-		E152 E153
	09T3ADTR-NAW															●		3/8	3/8	5/32	-	0.173	-		
	NAW: Wiper insert																								
SNEW-XAF	**09T3ADTR-XAF**															●		3/8	3/8	5/32	-	0.173	-		E152 E153
	09T3ADTR-XAW															●		3/8	3/8	5/32	-	0.173	-		
	XAW: Wiper insert																								

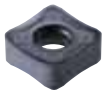
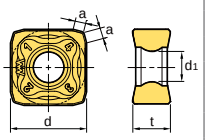
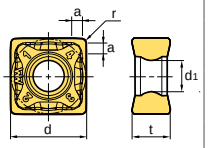
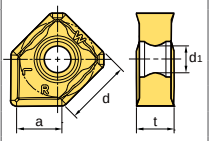
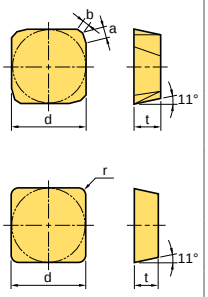
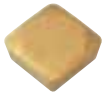
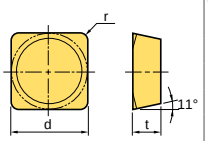
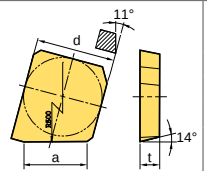
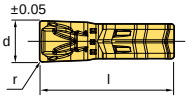
● : Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

Insert	Designation	Cermet		Coated									PCD		Dimension (inch)							Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	DP150	DP200	l	d	t	r	d_1	a	b		
SNHT-WX	1102308R-WX											●				-	0.433	0.090	-	0.157	-	-		E378
	110308R-WX											●				-	0.433	0.120	-	0.157	-	-		E379
	1203508R-WX											●				-	1/2	0.140	-	0.197	-	-		
	120408R-WX															-	1/2	0.160	-	0.197	-	-		
	1204508R-WX											●				-	1/2	0.180	-	0.197	-	-		
	120508R-WX											●				-	1/2	0.196	-	0.197	-	-		
	1205408R-WX											●				-	1/2	0.215	-	0.197	-	-		
	120608R-WX															-	1/2	0.236	-	0.197	-	-		
	1206508R-WX															-	1/2	0.256	-	0.197	-	-		
	120708R-WX															-	1/2	0.276	-	0.197	-	-		
	1207508R-WX															-	1/2	0.295	-	0.197	-	-		
	1102308L-WX											●				-	0.433	0.090	-	0.157	-	-		
	110308L-WX											●				-	0.433	0.120	-	0.157	-	-		
	120308L-WX															-	1/2	0.130	-	0.197	-	-		
	1203508L-WX											●				-	1/2	0.140	-	0.197	-	-		
	120408L-WX															-	1/2	0.160	-	0.197	-	-		
	1204508L-WX											●				-	1/2	0.180	-	0.197	-	-		
	120508L-WX											●				-	1/2	0.196	-	0.197	-	-		
	1205408L-WX											●				-	1/2	0.215	-	0.197	-	-		
	120608L-WX															-	1/2	0.236	-	0.197	-	-		
	1206508L-WX															-	1/2	0.256	-	0.197	-	-		
	120708L-WX															-	1/2	0.276	-	0.197	-	-		
	1207508L-WX															-	1/2	0.295	-	0.197	-	-		
SNKN	1204ENN								●							-	1/2	3/16	-	-	0.055	0.039		E52
	1504ENN															-	5/8	3/16	-	-	0.055	0.039		
SNM(E)X-MF	SNMX 1206ANN-MF				●			●	●		●	●	●			-	1/2	1/4	-	0.177	0.093	-		E124~
	1507ANN-MF				●			●	●			●	●			-	5/8	5/16	-	0.220	0.124	-		E127
	SNEX 1206ANN-MF							●	●			●	●			-	1/2	1/4	-	0.177	0.093	-		
	1507ANN-MF								●			●	●			-	5/8	5/16	-	0.220	0.124	-		
SNM(E)X-MF	SNMX 1206ENN-MF				●			●	●		●	●	●			-	1/2	1/4	-	0.205	0.072	-		E128~
	1507ENN-MF				●			●	●			●	●			-	5/8	5/16	-	0.220	0.105	-		E131
	SNEX 1206ENN-MF								●			●	●			-	1/2	1/4	-	0.205	0.072	-		
	1507ENN-MF								●			●	●			-	5/8	5/16	-	0.220	0.105	-		
SNM(E)X-MF	SNMX 1206QNN-MF				●			●	●			●	●			-	1/2	1/4	1/32	0.177	0.093	-		E133
	120612-MF								●			●	●			-	1/2	1/4	0.047	0.177	-	-		
	SNEX 1206QNN-MF							●	●			●	●			-	1/2	1/4	1/32	0.177	0.093	-		
	120612-MF								●			●	●			-	1/2	1/4	0.047	0.177	-	-		
SNM(E)X-MM	SNMX 1206ANN-MM			●	●			●	●	●	●	●	●			-	1/2	1/4	-	0.177	0.093	-		E124~
	1507ANN-MM				●			●	●			●	●			-	5/8	5/16	-	0.220	0.124	-		E127
	SNEX 1206ANN-MM							●	●	●		●	●			-	1/2	1/4	-	0.177	0.093	-		
	1507ANN-MM								●			●	●			-	5/8	5/16	-	0.220	0.124	-		

●: Korea Stock

Workpiece			Cermet		Coated										Uncoated			Machining type
			CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
	Steel	P	●	●	●	✱	●	●	●				●	✱	●			● Continuous cutting
	Stainless steel	M			●	✱					●	✱	●	✱				● General cutting
	Cast iron	K					●	●		●			●	✱		●	●	✱ Interrupted cutting
	Non-ferrous metal	N															●	
	Heat resistant alloy, Titanium alloy	S											●	✱				
	Hardened steel	H											●	✱				

Insert	Designation	Cermet		Coated										Uncoated			Dimension (inch)							Geometrie	Available tool
		CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	l	d	t	r	d_1	a	b		
SNM(E)X-MM 	SNMX 1206ENN-MM					●		●	●		●	●	●				-	1/2	1/4	-	0.205	0.072	-		E128~ E131
	1507ENN-MM					●		●	●			●	●				-	5/8	5/16	-	0.220	0.105	-		
	SNEX 1206ENN-MM								●			●	●				-	1/2	1/4	-	0.205	0.072	-		
	1507ENN-MM								●			●	●				-	5/8	5/16	-	0.220	0.105	-		
SNM(E)X-MM 	SNMX 1206QNN-MM					●		●	●		●	●	●				-	1/2	1/4	1/32	0.205	2.36	-		E132 E133
	120612-MM							●	●			●	●				-	1/2	1/4	0.047	0.205	-	-		
	SNEX 1206QNN-MM								●			●	●				-	1/2	1/4	1/32	0.205	2.36	-		
	120612-MM								●								-	1/2	1/4	0.047	0.205	-	-		
SNEX-W 	1206ANN-W							●	●			●					0.674	1/2	1/4	-	0.177	0.299	-		E124 E125
SPCN 	42EDR		●	●	●									●	●	●	-	1/2	1/8	-	-	0.055	0.039	 SPCN150412T	E53 E54
	42EDR-RH																-	1/2	1/8	-	-	0.055	0.039		
	42EDL													●			-	1/2	1/8	-	-	0.055	0.039		
	42EDR-G															●	-	1/2	1/8	-	-	0.055	0.039		
	42EDR-RN																-	1/2	1/8			0.055	0.039		
	42EDER-RH								●			●					-	1/2	1/8	-	-	0.064	0.031		
	42EDSR-RH								●								-	1/2	1/8	-	-	0.064	0.031		
	42EDTR-RH																-	1/2	1/8	-	-	0.064	0.031		
	42EDR-S20									●							-	1/2	1/8	-	-	0.055	0.039		
	5312T																-	5/8	3/16	0.047	-	-	-		
	53EDR		●	●	●									●	●		-	5/8	3/16	-	-	0.055	0.039		
	53EDR-RH																	5/8	3/16	-	-	0.055	0.039		
	53EDSR																-	5/8	3/16	-	-	0.055	0.039		
	53EDL								●								-	5/8	3/16	-	-	0.055	0.039		
	53EDR-G															●	-	5/8	3/16	-	-	0.055	0.039		
	53EDR-RN	●															-	5/8	3/16	-	-	0.055	0.039		
	53EDER-RH								●			●					-	5/8	3/16	-	-	0.064	0.031		
	53EDSR-RH								●								-	5/8	3/16	-	-	0.064	0.031		
	53EDTR-RH																-	5/8	3/16	-	-	0.064	0.031		
	53EDR-S20									●							-	5/8	3/16	-	-	0.055	0.039		
SPEN-WC 	434-WC																-	1/2	3/16	1/16	-	-	-		-
	533-WC																-	5/8	3/16	3/64	-	-	-		
	534-WC																-	5/8	3/16	1/16	-	-	-		
	535-WC																-	5/8	3/16	5/64	-	-	-		
	636-WC																-	3/4	3/16	3/32	-	-	-		
SPEX 	42EDR-1																-	1/2	1/8	-	-	0.402	-		E53 E54
	42EDL-1																-	1/2	1/8	-	-	0.402	-		
	53EDR-1																-	5/8	3/16	-	-	0.402	-		
	53EDL-1																-	5/8	3/16	-	-	0.402	-		
	63EDR-1																-	3/4	3/16	-	-	0.402	-		
	63EDL-1																-	3/4	3/16	-	-	0.402	-		
SPFN 	200-N																0.346	0.087	-	1/128	-	-	-		E375
	300-N																0.386	0.118	-	1/128	-	-	-		
	400-N																0.386	0.157	-	0.010	-	-	-		

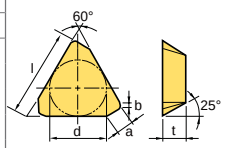
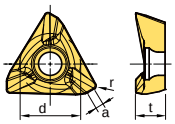
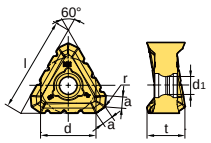
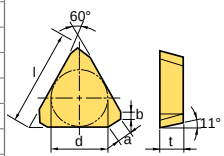
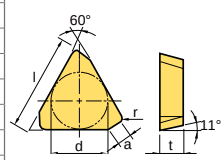
●: Korea Stock

| Workpiece | | | NC5330 | NC5335 | NC5340 | NC5345 | NC5350 | NC5355 | NC5360 | NC5365 | NC5370 | NC5375 | NC5380 | NC5385 | NC5390 | NC5395 | NC5400 | NC5405 | NC5410 | NC5415 | NC5420 | NC5425 |

Workpiece			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
	Steel	P	●	⬌	●	⬌	✱	●	●	⬌				⬌	✱	⬌		
	Stainless steel	M				⬌	✱						⬌	✱	⬌	✱		
	Cast iron	K			⬌			●	●		●			⬌	✱		⬌	●
	Non-ferrous metal	N																●
	Heat resistant alloy, Titanium alloy	S												⬌	✱			
	Hardened steel	H												⬌	✱			

Machining type

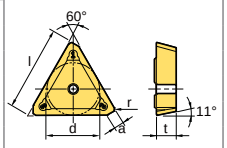
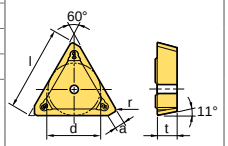
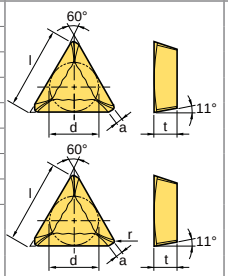
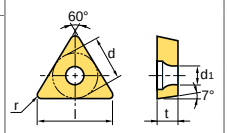
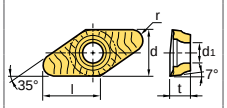
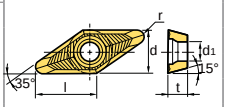
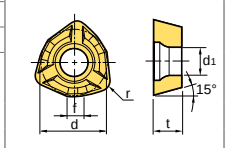
● Continuous cutting
⬌ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated										Uncoated			Dimension (inch)							Geometrie	Available tool
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	l	d	t	r	d_1	a	b		
TFCN	42PFR																●	1/2	55/64	0.125	-	-	0.095	0.028		E55
	42PFL																	1/2	55/64	0.125	-	-	0.095	0.028		
TNKT-ML new	110508PEER-ML								●			●	●					-	0.315	0.177	0.031	-	0.051	-		E256~ E259
	160608PEER-ML								●				●					-	0.461	0.217	0.031	-	0.059	-		
	200708PEER-ML								●			●	●					-	0.571	0.276	0.031	-	0.079	-		
TNKT-MM new	110508PESR-MM								●	●			●					-	0.315	4.531	0.031	-	0.051	-		E256~ E259
	160608PESR-MM								●	●			●					-	0.461	0.218	0.031	-	0.059	-		
	200708PESR-MM								●	●			●					-	0.571	0.277	0.031	-	0.079	-		
TNMX-NM new	2710AZNR-NM			●			●		●		●		●					1.063	5/8	0.394	1/32	0.220	0.104	-		E66~ E68
	2710AZNL-NM																	1.063	5/8	0.394	1/32	0.220	0.104	-		
	3012PNR-NM																	1.181	0.687	0.471	0.031	0.220	0.138	-		
TPCN	22PPN		●												●	●		0.433	1/4	1/8	-	-	0.028	0.028		E56
	22PPTN																	0.433	1/4	1/8	-	-	0.028	0.028		
	32PDR			●														0.650	3/8	1/8	-	-	0.047	0.028		
	32PPN		●	●						●						●		0.650	3/8	1/8	-	-	0.047	0.047		
	32PPR		●	●											●	●		0.650	3/8	1/8	-	-	0.047	0.039		
	32PPR-RH																	0.650	3/8	1/8	-	-	0.047	0.039		
	32PPR-G																●	0.650	3/8	1/8	-	-	0.047	0.039		
	32PPSR																	0.650	3/8	1/8	-	-	0.047	0.039		
	32PPTN																	0.650	3/8	1/8	-	-	0.047	0.047		
	32PPTR																	0.650	3/8	1/8	-	-	0.047	0.039		
	32PPTR-RH																	0.650	3/8	1/8	-	-	0.047	0.039		
	32PPR-RH																	0.650	3/8	1/8	-	-	0.047	0.039		
	32PDER-RH									●			●					0.650	3/8	1/8	1/32	-	0.059	-		
	32PDSR-RH									●								0.650	3/8	1/8	1/32	-	0.059	-		
	32PDR-S20										●							0.650	3/8	1/8	-	-	0.047	0.028		
	32PDR-RN																	0.650	3/8	1/8	-	-	0.059	0.039		
	43PDR		●	●											●	●		0.866	1/2	3/16	-	-	0.055	0.028		
	43PDR-RH																	0.866	1/2	3/16	-	-	0.055	0.028		
	43PDR-RN																	0.866	1/2	3/16	-	-	0.056	0.020		
	43PDR-G																●	0.866	1/2	3/16	-	-	0.055	0.028		
	43PDL														●			0.866	1/2	3/16	-	-	0.055	0.028		
	43PDSR				●													0.866	1/2	3/16	-	-	0.055	0.028		
	43PDTR																	0.866	1/2	3/16	-	-	0.055	0.028		
	43PPN																	0.866	1/2	3/16	-	-	0.047	0.047		
	43PPTN																	0.866	1/2	3/16	-	-	0.047	0.047		
	43PDER-RH									●			●					0.866	1/2	3/16	1/32	-	0.071	-		
	43PDSR-RH									●								0.866	1/2	3/16	1/32	-	0.071	-		
	43PDR-S20										●							0.866	1/2	3/16	-	-	0.055	0.028		

※ In this page, TPC(K)N □□□□P~N is for FC·HC and □□□□P~R is for Cutter (face).

●: Korea Stock

Workpiece			Machining type
	Steel	P	● Continuous cutting
	Stainless steel	M	⧓ General cutting
	Cast iron	K	✱ Interrupted cutting
	Non-ferrous metal	N	
	Heat resistant alloy, Titanium alloy	S	
	Hardened steel	H	

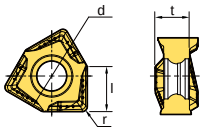
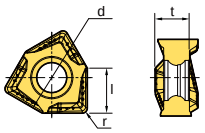
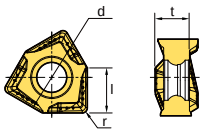
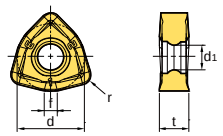
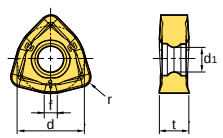
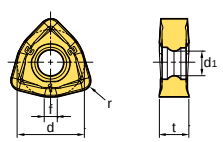
Insert	Designation	Cermet		Coated										Uwaxet	Dimension (inch)								Geometrie	Available tool
		CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	l	d	t	r	d1	a	b	f		
TPKN-MU	43PDSR-MU									●							0.866	1/2	3/16	1/32	-	0.077	-	-		E56
TPKN-SU	32PDSL-SU									●							0.650	3/8	1/8	0.039	-	0.067	-	-		E56
	32PDSR-SU									●							0.650	3/8	1/8	0.039	-	0.067	-	-		
	43PDSL-SU									●							0.866	1/2	3/16	0.039	-	0.075	-	-		
	43PDSR-SU									●				●	●		0.866	1/2	3/16	0.039	-	0.075	-	-		
TPKR-MX	32PDSN-MX																0.650	3/8	1/8	-	-	0.047	0.047	-		E56
	32PDSR-MX											●					0.650	3/8	1/8	-	-	0.047	0.028	-		
	32PPR-MX			●													0.650	3/8	1/8	-	-	0.047	0.039	-		
	32PPSN-MX																0.650	3/8	1/8	-	-	0.047	0.047	-		
	32PPSR-MX				●												0.650	3/8	1/8	-	-	0.047	0.039	-		
	43PDR-MX			●													0.866	1/2	3/16	0.039	-	0.055	-	-		
	43PDSR-MX			●	●												0.866	1/2	3/16	0.039	-	0.055	-	-		
	43PPR-MX																0.866	1/2	3/16	0.039	-	0.055	-	-		
TWX-KC	16R-KC									●				●			0.650	3/8	5/32	1/32	0.175	-	-	-		E338
	22R-KC									●							0.866	1/2	3/16	1/32	0.175	-	-	-		
VCKT-MA	220530N-MA															●	0.614	1/2	0.219	0.118	0.220	-	-	-		E350 E351
VDKT-MA	11T210N-MA															●	0.438	1/4	0.113	0.047	0.110	-	-	-		E350 E351
	11T220N-MA																0.264	1/4	0.113	0.079	0.110	-	-	-		
WDKT-MH	080316ZDSR-MH							●	●	●	●	●		●	●		-	5/16	0.125	1/16	0.130	-	-	0.071		E298~ E304
	10T320ZDSR-MH								●	●	●	●		●	●		-	25/64	0.156	5/64	0.169	-	-	0.091		
	130520ZDSR-MH							●	●	●	●	●		●	●		-	17/32	0.219	5/64	0.219	-	-	0.122		
	150625ZDSR-MH									●	●	●		●	●		-	19/32	0.250	13/128	0.219	-	-	0.138		

●: Korea Stock

Workpiece			CN2500	CN30	NCM535	NCM545	PC2010	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
	Steel	P	●	⧓	●	●	⧓	●	⧓	⧓				⧓	✱	⧓	
	Stainless steel	M					●					⧓	✱	⧓	✱		
	Cast iron	K			●	●	⧓	⧓	⧓		●			⧓	✱		●
	Non-ferrous metal	N															●
	Heat resistant alloy, Titanium alloy	S												⧓	✱		
	Hardened steel	H					⧓	●	⧓					⧓	✱		

Machining type

● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated											Uncoated		Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NCM535	NCM545	PC2010	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1	f		
WNGX-MA new	040304PNFR-MA															●	0.169	0.276	0.136	0.016	-	-		E118~ E123
	040308PNFR-MA																0.169	0.276	0.136	0.031	-	-		
	040312PNFR-MA															●	0.169	0.276	0.136	0.047	-	-		
	040316PNFR-MA															●	0.169	0.276	0.136	0.063	-	-		
	080604PNFR-MA															●	0.323	0.512	0.252	0.016	-	-		
	080608PNFR-MA															●	0.323	0.512	0.252	0.031	-	-		
	080612PNFR-MA																0.323	0.512	0.252	0.047	-	-		
	080616PNFR-MA															●	0.323	0.512	0.252	0.063	-	-		
	080620PNFR-MA															●	0.323	0.512	0.252	0.079	-	-		
WNGX-ML new	040304PNER-ML									●		●	●	●			0.169	0.276	0.136	0.016	-	-		E118~ E123
	040308PNER-ML												●	●			0.169	0.276	0.136	0.031	-	-		
	040312PNER-ML												●				0.169	0.276	0.136	0.047	-	-		
	040316PNER-ML												●				0.169	0.276	0.136	0.063	-	-		
	080604PNER-ML								●			●	●	●			0.323	0.512	0.252	0.016	-	-		
	080608PNER-ML			●					●	●		●	●	●			0.323	0.512	0.252	0.031	-	-		
	080612PNER-ML												●				0.323	0.512	0.252	0.047	-	-		
	080616PNER-ML												●				0.323	0.512	0.252	0.063	-	-		
	080620PNER-ML												●				0.323	0.512	0.252	0.079	-	-		
WNGX-MM new	040304PNSR-MM									●			●	●			0.169	0.276	0.136	0.016	-	-		E118~ E123
	040308PNSR-MM												●	●			0.169	0.276	0.136	0.031	-	-		
	040312PNSR-MM												●				0.169	0.276	0.136	0.047	-	-		
	040316PNSR-MM												●				0.169	0.276	0.136	0.063	-	-		
	080604PNSR-MM								●				●	●			0.323	0.512	0.252	0.016	-	-		
	080608PNSR-MM			●					●	●		●	●	●			0.323	0.512	0.252	0.031	-	-		
	080612PNSR-MM												●				0.323	0.512	0.252	0.047	-	-		
	080616PNSR-MM												●				0.323	0.512	0.252	0.063	-	-		
	080620PNSR-MM												●				0.323	0.512	0.252	0.079	-	-		
WNMX-MF new	060312ZNN-MF												●	●			-	0.250	0.125	0.047	0.113	0.047		E287~ E297
	09T316ZNN-MF								●				●	●			-	0.375	0.156	0.063	0.142	0.067		
	130520ZNN-MF												●	●			-	0.500	0.219	0.079	0.185	0.098		
	160720ZNN-MF												●	●			-	0.630	0.276	0.079	0.228	0.118		
WNMX-ML new	060312ZNN-ML												●	●			-	0.250	0.125	0.047	0.113	0.047		E287~ E297
	09T316ZNN-ML												●	●			-	0.375	0.156	0.063	0.142	0.067		
	130520ZNN-ML												●	●			-	0.500	0.219	0.079	0.185	0.098		
	160720ZNN-ML												●				-	0.630	0.276	0.079	0.228	0.118		
WNMX-MM	060312ZNN-MM						●	●	●				●	●			-	6.35	3.18	1.2	2.86	1.2		E287~ E297
	09T316ZNN-MM						●		●		●		●	●			-	9.525	3.97	1.6	3.6	1.7		
	130520ZNN-MM						●	●	●		●	●	●	●			-	12.7	5.56	2.0	4.7	2.5		
	160720ZNN-MM								●				●	●			-	16.0	7.0	2.0	5.8	3.0		

●: Korea Stock

Workpiece			Cermet		Coated										Uncoated			Machining type
			CN2500	CN30	NC5330	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	PD2000	ST30A	G10	H01	H05	
Workpiece	Steel	P	● ✱		●	●	●	● ✱				✱	✱			✱				● Continuous cutting
	Stainless steel	M								✱	✱	✱	✱							✱ General cutting
	Cast iron	K			✱	●	●		●			✱	✱				✱	●	●	✱ Interrupted cutting
	Non-ferrous metal	N												✱	●			●	✱	
	Heat resistant alloy, Titanium alloy	S										✱	✱							
	Hardened steel	H										✱	✱							

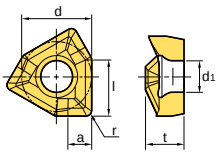
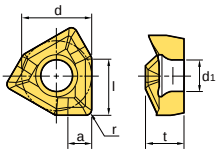
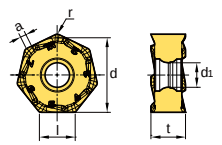
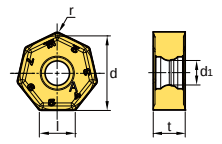
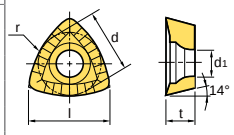
Insert	Designation	Cermet		Coated										Uncoated			Dimension (inch)								Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	PD2000	ST30A	G10	H01	H05	l	l2	l1	d	t	r	d1	a	
XCET-KC	310404ER-KC						●								●	●			1.217	-	-	3/8	0.177	1/64	0.173	-	E337
XDET-MA new	190504PEFR-MA															●	●		0.866	-	-	0.736	0.198	0.016	0.177	-	E363
	190508PEFR-MA															●	●		0.866	-	-	0.736	0.197	0.031	0.177	-	E364
	190512PEFR-MA															●	●		0.866	-	-	0.736	0.197	0.047	0.177	-	
	190516PEFR-MA															●	●		0.866	-	-	0.736	0.196	0.063	0.177	-	
	190520PEFR-MA															●	●		0.866	-	-	0.736	0.196	0.079	0.177	-	
	190524PEFR-MA															●	●		0.866	-	-	0.736	0.195	0.094	0.177	-	
	190530PEFR-MA															●	●		0.866	-	-	0.736	0.194	0.118	0.177	-	
	190532PEFR-MA															●	●		0.866	-	-	0.736	0.194	0.126	0.177	-	
	190540PEFR-MA															●	●		0.827	-	-	0.736	0.191	0.157	0.177	-	
	190550PEFR-MA															●	●		0.827	-	-	0.736	0.189	0.197	0.177	-	
XEKT-MA	19M504FR-MA												●	●		●	●		0.709	0.646	0.055	-	0.197	0.016	0.173	-	E353~
	19M508FR-MA												●	●		●	●		0.709	0.646	0.039	-	0.197	0.031	0.173	-	E357
	19M512FR-MA												●	●		●	●		0.709	0.646	0.024	-	0.197	0.047	0.173	-	
	19M516FR-MA												●			●	●		0.689	0.646	0.020	-	0.197	0.063	0.173	-	
	19M518FR-MA																		0.689	0.646	0.020	-	0.197	0.071	0.173	-	
	19M520FR-MA												●	●		●	●		0.689	0.646	0.020	-	0.197	0.079	0.173	-	
	19M530FR-MA												●			●	●		0.669	0.646	0.028	-	0.197	0.118	0.173	-	
	19M532FR-MA												●	●		●	●		0.669	0.646	0.020	-	0.197	0.126	0.173	-	
	19M540FR-MA												●	●		●	●		0.650	0.646	0.020	-	0.197	0.157	0.173	-	
	19M550FR-MA												●	●		●	●		0.630	0.646	0.016	-	0.197	0.197	0.173	-	
	250604FR-MA															●	●		0.965	0.862	0.059	-	0.250	0.016	0.236	-	
	250608FR-MA															●	●		0.965	0.862	0.047	-	0.250	0.031	0.236	-	
	250612FR-MA															●	●		0.965	0.862	0.031	-	0.250	0.047	0.236	-	
	250616FR-MA																		0.965	0.862	0.016	-	0.250	0.063	0.236	-	
	250620FR-MA															●	●		0.945	0.862	0.020	-	0.250	0.079	0.236	-	
	250630FR-MA																		0.933	0.862	0.024	-	0.250	0.118	0.236	-	
	250632FR-MA															●	●		0.933	0.862	0.016	-	0.250	0.126	0.236	-	
	250640FR-MA																		0.898	0.862	0.047	-	0.250	0.157	0.236	-	
	250650FR-MA															●	●		0.894	0.862	0.016	-	0.250	0.197	0.236	-	
XEKT-ML new	19M504ER-ML																		0.709	0.646	0.055	-	0.197	0.016	0.173	-	E353~
	19M508ER-ML																		0.709	0.646	0.039	-	0.197	0.031	0.173	-	E357
	19M512ER-ML																		0.709	0.646	0.024	-	0.197	0.047	0.173	-	
	19M516ER-ML																		0.689	0.646	0.020	-	0.197	0.063	0.173	-	
	19M518ER-ML																		0.689	0.646	0.020	-	0.197	0.071	0.173	-	
	19M520ER-ML																		0.689	0.646	0.020	-	0.197	0.079	0.173	-	
	19M530ER-ML																		0.669	0.646	0.028	-	0.197	0.118	0.173	-	
	19M532ER-ML																		0.669	0.646	0.020	-	0.197	0.126	0.173	-	
	19M540ER-ML																		0.650	0.646	0.020	-	0.197	0.157	0.173	-	
	19M550ER-ML																		0.630	0.646	0.016	-	0.197	0.197	0.173	-	
	250604ER-ML																		0.965	0.862	0.059	-	0.250	0.016	0.236	-	
	250608ER-ML																		0.965	0.862	0.047	-	0.250	0.031	0.236	-	
	250612ER-ML																		0.965	0.862	0.031	-	0.250	0.047	0.236	-	
	250616ER-ML																		0.965	0.862	0.016	-	0.250	0.063	0.236	-	
	250620ER-ML																		0.945	0.862	0.020	-	0.250	0.079	0.236	-	
	250630ER-ML																		0.933	0.862	0.024	-	0.250	0.118	0.236	-	
	250632ER-ML																		0.933	0.862	0.016	-	0.250	0.126	0.236	-	
	250640ER-ML																		0.898	0.862	0.047	-	0.250	0.157	0.236	-	
	250650ER-ML																		0.894	0.862	0.016	-	0.250	0.197	0.236	-	
XNCT-MA new	080504PNFR-MA															●			0.323	-	-	0.394	0.217	0.016	0.177	0.114	E98
	080508PNFR-MA															●			0.323	-	-	0.394	0.217	0.031	0.177	0.114	E99
	080512PNFR-MA															●			0.323	-	-	0.394	0.217	0.047	0.177	0.114	E101
	080520PNFR-MA															●			0.323	-	-	0.394	0.217	0.079	0.177	0.114	E102
	120608PNFR-MA															●			0.472	-	-	0.512	0.256	0.031	0.217	0.138	

●: Korea Stock

Workpiece			CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
	Steel	P	●	⧓	●	●	●	●	⧓	⧓				⧓	✱	⧓	
	Stainless steel	M										⧓	✱	⧓	✱		
	Cast iron	K			⧓	●	●	⧓	⧓		●			⧓	✱		●
	Non-ferrous metal	N															●
	Heat resistant alloy, Titanium alloy	S												⧓	✱		
	Hardened steel	H						●	⧓					⧓	✱		

Machining type

● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated											Uncoated		Dimension (inch)						Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1	a		
XNKT-ML new	060405PNER-ML							●	●	●		●	●	●			0.224	0.256	0.157	0.020	0.134	0.071		E97~ E102
	060408PNER-ML									●			●	●			0.224	0.256	0.157	0.031	0.134	0.071		
	080504PNER-ML												●	●			0.323	0.394	0.217	0.016	0.177	0.114		
	080508PNER-ML				●			●	●	●		●	●	●			0.323	0.394	0.217	0.031	0.177	0.114		
	080512PNER-ML												●	●			0.323	0.394	0.217	0.047	0.177	0.114		
	080516PNER-ML												●	●			0.323	0.394	0.217	0.063	0.177	0.114		
	080520PNER-ML												●	●			0.323	0.394	0.217	0.079	0.177	0.114		
	120608PNER-ML								●	●		●	●	●			0.472	0.512	0.256	0.031	0.217	0.138		
	120612PNER-ML												●	●			0.472	0.512	0.256	0.047	0.217	0.138		
	120616PNER-ML												●	●			0.472	0.512	0.256	0.063	0.217	0.138		
	120620PNER-ML												●	●			0.472	0.512	0.256	0.079	0.217	0.138		
XNKT-MM new	060405PNSR-MM							●	●	●		●	●	●			0.224	0.256	0.157	0.020	0.134	0.071		E97~ E102
	060408PNSR-MM							●	●	●			●	●			0.224	0.256	0.157	0.031	0.134	0.071		
	080504PNSR-MM									●			●	●			0.323	0.394	0.217	0.016	0.177	0.114		
	080508PNSR-MM				●			●	●	●		●	●	●			0.323	0.394	0.217	0.031	0.177	0.114		
	080512PNSR-MM							●	●	●			●	●			0.323	0.394	0.217	0.047	0.177	0.114		
	080516PNSR-MM							●	●	●			●	●			0.323	0.394	0.217	0.063	0.177	0.114		
	080520PNSR-MM							●	●				●	●			0.323	0.394	0.217	0.079	0.177	0.114		
	120604PNSR-MM												●	●			0.472	0.512	0.256	0.016	0.217	0.138		
	120608PNSR-MM							●	●	●	●		●	●			0.472	0.512	0.256	0.031	0.217	0.138		
	120612PNSR-MM							●	●				●	●			0.472	0.512	0.256	0.047	0.217	0.138		
	120616PNSR-MM							●	●				●	●			0.472	0.512	0.256	0.063	0.217	0.138		
	120620PNSR-MM							●	●				●	●			0.472	0.512	0.256	0.079	0.217	0.138		
XNMX-ML new	0606XNR-ML				●						●		●	●	●		0.264	0.551	0.256	0.031	0.181	0.039		E140
XNMX-ML new	060608-ML				●						●		●	●	●		0.264	0.551	0.236	0.031	0.181	-		E140
ZDMT-R-MM	080310R-MM								●				●				21/64	0.265	0.126	0.394	0.110	-		E332
	110312.5R-MM												●				27/64	0.334	0.144	0.492	0.110	-		
	130416R-MM								●				●				33/64	0.413	0.187	0.630	0.173	-		

● : Korea Stock

Workpiece			CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01
	Steel	P	●	⧓	●	●	●	●	⧓	⧓				⧓	⧓	⧓	
	Stainless steel	M										⧓	✱	⧓	⧓		
	Cast iron	K			⧓	●	●	⧓	⧓		●			⧓	⧓		●
	Non-ferrous metal	N															●
	Heat resistant alloy, Titanium alloy	S												⧓	✱		
	Hardened steel	H						●	⧓					⧓	✱		

Machining type

● Continuous cutting
⧓ General cutting
✱ Interrupted cutting

Insert	Designation	Cermet		Coated											Uncoated		Dimension (inch)					Geometrie	Available tool
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	l	d	t	r	d_1		
ZPET-MM Internal	080M-MM																0.630	0.315	0.138	0.315	0.114		E329~
	090M-MM																0.697	0.284	0.169	0.354	0.134		E331
	100M-MM							●	●				●				0.748	0.409	0.177	0.394	0.134		
	110M-MM																0.874	0.433	0.189	0.433	0.177		
	125M-MM							●	●				●				0.945	0.508	0.209	0.492	0.177		
	130M-MM																1.012	0.512	0.209	0.512	0.177		
	140M-MM																1.071	0.551	0.248	0.551	0.221		
	150M-MM								●				●				1.102	0.606	0.276	0.591	0.220		
	160M-MM							●	●				●				1.122	0.646	0.276	0.630	0.220		
	200M-MM								●								1.496	0.815	0.315	0.787	0.260		
	250M-MM																1.890	1.020	0.374	0.984	0.339		
ZPET-MM External	080S-MM																0.591	0.260	0.315	0.315	0.114		
	090S-MM																0.610	0.291	0.146	0.354	0.134		
	100S-MM							●	●				●				0.610	0.331	0.394	0.394	0.134		
	110S-MM																0.713	0.354	0.173	0.433	0.177		
	125S-MM							●	●				●				0.807	0.421	0.492	0.492	0.177		
	130S-MM																0.874	0.433	0.173	0.519	0.177		
	140S-MM																0.949	0.433	0.224	0.551	0.221		
	150S-MM								●				●				0.984	0.488	0.591	0.591	0.220		
	160S-MM							●	●				●				1.024	0.528	0.630	0.630	0.220		
	200S-MM								●								1.260	0.657	0.787	0.787	0.260		
	250S-MM																1.575	0.815	0.984	0.984	0.339		
ZPMT-MM	1504PPSR-MM								●				●				5/8	1/2	0.187	-	0.220		E305
	1505PPSR-MMN																5/8	1/2	0.227	-	0.220		
ZPMT-R-MM	160520R-MM								●				●				81/128	1/2	0.219	0.787	0.220		E333
	160525R-MM								●				●				81/128	1/2	0.219	0.984	0.220		
	160531.5R-MM												●				11/16	1/2	0.219	1.240	0.220		
ZPMT-R-MR	160525R-MR																11/16	1/2	0.219	0.984	0.220		E333

●: Korea Stock

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for face milling	Mill Max	ADNA 4000/5000+		45°	Ø3~Ø12	Excellent cutting-edge strength and chip flow	●					E47 E48
		AEA 4000/5000		45°	Ø3~Ø12	Low cutting load and good machinability	●					E49 E50
		EFA 4000	Al 	15°	Ø3~Ø12	High rake angle to prevents welding	●					E51
		ENA 4000		15°	Ø3~Ø12	Economical because double sided inserts applied	●					E52
		EPNA 4000/5000+		15°	Ø3~Ø12	Double posi rake angle and low cutting force	●					E53 E54
		PFA 4000	Al 	0°	Ø3~Ø12	High rake angle and good machinability	●	●	●			E55
		PPNA 4000		0°	Ø3~Ø12	Double posi rake angle and low cutting force	●	●	●			E56
	Turbo Mill	ADSA 4000/5000		45°	Ø0.75~Ø2.5	Anti-vibration	●					E57 E58
		PESA 2000/3000/ 4000		0°	Ø2~Ø2.5	High rake angle, Cutting efficiency	●	●	●			E59
	Double Mill	AFOA4000		45°	Ø3~Ø5	High rake angle low cutting force Economical (8 corners available)	●					E60
		AFOA5000			Ø3~Ø12							E61

Al Cutter for aluminum

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for face milling	Power Buster	PBACA5000		45°	Ø3~Ø12	Double-sided Insert High depth High feed roughing	●					E66
		PBZCA5000		0°	Ø3~Ø12		●					E67
		PBPCMA6000 new			Ø3~Ø12		●	●				E68
	Aero Mill	APDA A type, B type	Al 	0°	Ø3~Ø12	Aluminum cutter body suitable for high speed machining, Both cemented carbides and PCD inserts are available, G2.5 balance possible	●					E149
	Aero Mill Plus	APDA-PB	Al 	0°	Ø3~Ø12	Prevent overload to the spindle bearings through weight reduction of the Al alloy body and enable high-speed processing	●					E150 E151
	Aero Mill Mini	MAPDSA	Al 	0°	Ø1.25~Ø1.5	Available with small Machining center-Carbide, PCD insert Application-Balancing class G2.5	●					E152
		MAPDA	Al 	0°	Ø1.5~Ø2.5		●					E153
	Rich Mill	RM8ACA4000 RMH8ACA4000		45°	Ø2~Ø15	8 corners available Double-sided insert for steel, cast iron, stainless steel, aluminum	●					E124 E125
		RM8ACA5000 RMH8ACA5000			Ø3~Ø15		●					E126 E127
		RM8ECA4000 RMH8ECA4000		15°	Ø2~Ø15	8 corners available Double-sided insert for steel, cast iron	●					E128 E129
		RM8ECA5000 RMH8ECA5000			Ø3~Ø15		●					E130 E131

Al Cutter for aluminum

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for face milling	Rich Mill	RM8QCA4000 RMH8QCA4000		2°	Ø2.5~Ø8	8 corners available Reduced cutting interruption at cast Iron	●					E132 E133
		RMT8AA 4000/5000		45°	Ø3~Ø12		●					E134 E135
		RMT8EA 4000/5000		15°	Ø3~Ø12	Easy insert change and good machinability due to latch clamping system 8 corners available Excellent surface finish	●					E136 E137
		RMT8QA4000		2°	Ø3~Ø12		●					E138
		RMX8AC(M)-SA14 new		45°	Ø2~Ø5	Double sided insert with 8 corners Stable cutting performance due to double reversal positive relief surface Good machinability in stainless cutting with High helix cutting edge	●					E139
		RM14XCM-XN06 new		39°	Ø2~Ø6	Double sided insert with 14 corners Suitable for automobile components machining	●					E140
		RM16ACA 6000/8000		45°	Ø2.5~Ø15	16 corners available Wiper inserts can be applied for good surface finish Strong insert and powerful clamping	●					E141 E142
		RMRC(M)-RN12 new		-	Ø2~Ø5	High cost efficiency due to double sided round typed cutting edge Excellent rotating prevention by strong clamping system Suitable for Inconel cutting	●					E143
Cutters for molds	Rich Mill	RM3PCA3000 new		0°	Ø1.5~Ø3	Perfect perpendicularity Strong clamping	●	●	●		●	E97
		RM3PCA4000 new			Ø1.5~Ø5							E98
		RM3PCA5000 new			Ø3~Ø5							E99
		RM4PCA3000		0°	Ø1.5~Ø4	4 corners available High rake angle insert reduces cutting force. Excellent insert rigidity	●	●	●		●	E103 E104
		RM4PCA4000			Ø2~Ø6							

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	Rich Mill	RM4ZCA3000		0°	Ø1.5~Ø2	4 corners available In vertical machining, the maximum cutting depth for RM4Z3000: 0.354 inch, RM4Z4000: 0.551 inch	●	●	●		●	E116
		RM4ZCA4000			Ø2.5~Ø4							
		RM6PCA-WN04 new		0°	Ø1.5~Ø2.5	Improved productivity and high-quality shouldering through high speed and high feed machining	●	●	●		●	E118
		RM6PCA-WN08 new			Ø2~Ø5							E119
	Alpha Mill-X	AMXCA-AD10/12/17 new		0°	Ø1.5~Ø5	High rake angle cutting edge and chip breaker reduce cutting load and improve chip evacuation. High rigidity due to special design	●	●	●	●	●	E195 E196
	Alpha Mill	AMCA 1000S/1500S/ 2000S		0°	Ø1.5~Ø4	3-dimensional shape and high rake angle lowers cutting load and ensures better chip evacuation Inner coolant system for better chip control increases tool life Wide size range of inserts enlarges application range. Various types of Alpha Mills available for high depth of cut and high feed machining	●	●	●	●	●	E162~ E164
		AMCA 3000S/3000S-K /4000S		0°	Ø1.5~Ø5		●	●	●	●	●	E165~ E167
		AMCA 1000SE 2000SE 3000SE		15°	Ø1.5~Ø4		●					E168 E169
		AMCA 2000M 3000M 4000M		0°	Ø2~Ø5		●	●	●	●	●	E170~ E172
	Future Mill	FMACA3000		45°	Ø2~Ø5	Accurate inserts and cutter, Excellent chip flow	●					E214
		FMACA4000			Ø2~Ø8							E215
		FMACA3000A		45°	Ø2.5~Ø5	Excellent in high speed cutting and tapping center, low power machine due to light aluminum body	●					E216
		FMACA4000A			Ø2.5~Ø12							E217

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	Future Mill	FMPCA3000		0°	Ø2~Ø4	4 corners available various inserts can be applied to machine for different types of workpiece	●	●	●			E220
		FMPCA4000			Ø2.5~Ø5							E221
		FMPCA3000-A		0°	Ø2.5~Ø4	Excellent in high speed cutting and tapping center, low power machine due to light aluminum body	●	●	●			E222 E223
		FMPCA4000-A			Ø2.5~Ø12							
		FMRCA3000		-	Ø1.5~Ø4	4~8 corners available Double contact faces between insert & seat part of cutter for stable clamping Excellent rotating-free machining	●	●	●	●	●	E226
		FMRCA4000			Ø2~Ø5							E227
		FMRCA5000		-	Ø2~Ø5		●	●	●	●	●	E228
		FMRCA6000			Ø2.5~Ø6							E229
	Future Mill P-positive	FMRCA new 3000 4000 5000 6000		-	Ø1.5~Ø8	Stable clamping system enables stable machining and productivity Varied product line-up ensures wide application range Optimal shape and grade with high hardness for hard-to-cut material machining.	●	●	●	●	●	E240~ E243
	Triple Mill	TPMCA-TN16		0°	Ø2~Ø5	3-cornered insert for shouldering -Reduced cutting resistance due to high rake angled cutting edge and chip breaker	●	●	●			E256
		TPMCA-TN20			Ø2.5~Ø5							E257
	HFMD	HFMDCA-LN06		-	Ø1.25~Ø2.5	Double sided with 4 corners insert for small diameter machining For high feed and multi-functional machining Strong clamping realizes stable machining.	●	●	●		●	E270
		HFMDCA-LN10		-	Ø1.5~Ø4							E271
	HRM	HRMCA13		75°	Ø2~Ø3	Powerful clamping by double clamping system 3 corners available high feed cutting with low cutting load	●	●	●		●	E298
		HRMCA15			Ø2.5~Ø6							E299

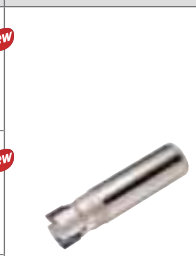
Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	HRMD	HRMDCA09		76°	Ø1.5~Ø4	Double side insert with 6 corner High feed cutting with strong simple screw-on clamp	●	●	●		●	E287
		HRMDCA13			Ø2~Ø5							E288
		HRMDCA16 new			Ø3~Ø12							E289
	Tangen-Pro	TP2PCA-LN08 new		0°	Ø1.5~Ø2.5	High-quality results available even under harsh cutting conditions, thanks to the stable clamping force	●	●	●			E309
		TP2PCA-LN14 new			Ø1.5~Ø5							E310
		TP2PCA-LN17 new			Ø1.5~Ø5							E311
Cutters for aluminum	Pro-A Mill	PACA 2000/4000	Al 	0°	Ø1.5~Ø4	Buffed insert controls chip flow without built-up edge	●	●	●	●	●	E350
	Pro-X Mill	PAXCA5000	Al 	0°	Ø1.5~Ø5	Powerful clamping Excellent body rigidity for rectangular and curve machining	●	●	●	●	●	E353
		PAXCA6000			Ø2~Ø5							E354
	Pro-L Mill	PALCA	Al 	0°	Ø2.5	High helix and high depth of cut High perpendicularity Low cutting load	●	●	●	●	●	E358
	Pro-V Mill	PAVCA-XD19	Al 	0°	Ø1.5~Ø5	Exclusive milling tool for high speed aluminum machining with key to key way structure ensures stable clamping.	●	●	●	●	●	E363
Indexable side cutter	Tangential type / Full-side cutter	TAFCPA		-	Ø4~Ø12	Various cutting depth can be possible because of adjustable length control. Medium to Roughing based on strengthened edge		●	●			E469
		TAFCBA		-	Ø4~Ø12		●	●	●			E469
	Tangential type / Half-side cutter	TAHCPA		-	Ø4~Ø12			●	●			E370
		TAHCBA		-	Ø4~Ø12		●	●	●			E370

Al Cutter for aluminum

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Indexable side cutter	Radial type / Full-side cutter	RAFCPA		-	Ø4~Ø12	Wide range of machining width with only one side cutter due to adjustable cutting-edge height Suitable for medium and finishing in narrow width side cutting due to good chip evacuation by 3-dimensional chip breaker		●	●			E371
		RAFCBA		-	Ø4~Ø12		●	●	●			E371
	Radial type / Half-side cutter	RAHCPA		-	Ø4~Ø12			●	●			E372
		RAHCBA		-	Ø4~Ø12		●	●	●			E372
Side cutters	Full-side cutter	SPPA		-	Ø3~Ø8	Economical by using pentagonal insert Suitable for narrow & deep grooving			●			E373
		SPBA		-	Ø3~Ø8	Economical by using pentagonal insert Suitable for narrow & deep grooving			●			E374
		SPSA		-	Ø2~Ø8	For narrow and deep width grooving			●			E375
	Full-side cutter	RM4PFCBA		-	Ø3~Ø6	4 corner usage with double-sided insert can be economical			●			E105 E106
		RM4PFCPA		-	Ø3~Ø6				●			E109 E110
	Half-side cutter	RM4PHCBA		-	Ø3~Ø6	4 corner usage with double-sided insert can be economical			●			E107 E108
		RM4PHCPA		-	Ø3~Ø6				●			E111 E112
	Wind Mill	WFSBA		-	Ø3~Ø8	The nose R shape of insert ensures long tool life. Wide applications with various widths and corner R sizes.	●	●	●			E378
		WFSPA		-	Ø3~Ø8			●	●			E379

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for face milling	Turbo Mill	ADSA 4000/5000		45°	Ø2~Ø2.5	Uneven insert spacing prevents chattering	●					E57 E58
		PESA 2000/3000/4000		0°	Ø0.75~Ø2.5	Good machinability due to the high rake angle	●	●	●			E59
Cutters for molds	Rich Mill	RM3PSA3000		0°	Ø0.75~Ø1.5	Perfect perpendicularity Strong clamping	●	●	●		●	E100
		RM3PSA4000 new			Ø1.25~Ø2.5		●	●	●		●	E101
		RM4PSA3000		0°	Ø0.562~Ø2	4 corners available High rake angle insert reduces cutting force Excellent insert rigidity	●	●	●		●	E113
		RM4PSA4000 new			Ø1.25~Ø2.5		●	●	●		●	E114
		RM4ZSA3000		0°	Ø1~Ø1.5	In vertical machining, the maximum cutting width: 0.354 inch	●	●	●		●	E117
		RM6PSA-WN04 new		0°	Ø0.75~Ø1.25	Improved productivity and high-quality shouldering through high speed and high feed machining	●	●	●		●	E120
		RM6PSA-WN08 new			Ø1.25~Ø2		●	●	●		●	E121
		RMRSA-RN12 new		-	Ø1.25~Ø2.5	High cost efficiency due to double sided round typed cutting edge Excellent rotating prevention by strong clamping system Suitable for Inconel cutting	●					E144
	Alpha Mill-X	AMXSA-AD10/12/17 new		0°	Ø0.75~Ø1.5	High rake angle cutting edge and chip breaker reduce cutting resistance and improve chip evacuation. High rigidity due to special design	●	●	●	●	●	E197 E198
	Alpha Mill	AMSA 1000S/1500S 2000S/3000S 3000S-K/4000S		0°	Ø0.438~Ø2.5	The combination of a 3-dimensional curve design & high rake angle helps chip-evacuation effectively with a low cutting force Inner coolant system The various range of inserts can provide the widened choice High depth and high feed can be available during operation	●	●	●	●	●	E173~ E180
		AMSA 1000SE/2000SE 3000SE		15°	Ø1~Ø2.5		●					E181 E182
		AMSA 1000M/1500M 2000M/4000M		0°	Ø0.625~Ø2		●	●	●	●	●	E183~ E185
		AMSA 1000MH/1500MH 2000MH/3000MH		0°	Ø0.562~Ø1.5		●	●	●	●	●	E186 E187

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	Future Mill	FMASA3000		45°	Ø1~Ø2.5	For precision machining Excellent chip evacuation	●					E218
		FMASA4000			Ø2~Ø2.5							E219
		FMPSA3000		0°	Ø1~Ø2.5	4 corners available Strong cutting-edge with low cutting load	●					E224
		FMPSA4000			Ø1.5~Ø2.5							E225
		FMRSA new 1000/1500/2000 2500/3000/4000 5000/6000		-	Ø0.312~Ø2.5	2 touch clamping system, convenient insert change	●	●	●	●	●	E230~ E235
	Future Mill P-positive	FMRSA 2500/3000 4000/5000 6000		-	Ø0.688~Ø2	P-positive relief angle ensures high rigidity and high machinability in die steel and high-resistant alloy machining Flat clearance face of insert prevents interference and revolution while machining	●	●	●	●	●	E244~ E247
	Triple Mill	TPMSA-TN11 new		0°	Ø1.0~Ø1.5	3-cornered insert for shouldering Reduced cutting resistance due to high rake angled cutting edge and chip breaker	●	●	●			E258
		TPMSA-TN16 new			Ø1.25~Ø1.5							E259
	HFMD	HFMDSA-LN04 new		-	Ø0.375~Ø0.750	Double sided insert with 4 corners for small diameter machining For high feed and multi-functional machining Strong clamping system for stable machining	●	●	●	●	●	E265 E266
		HFMDSA-LN06 new			Ø0.625~Ø1.5							E267 E268
		HFMDSA-LN10			Ø1.0~Ø1.5							E269
	HFM	HFMSA new 1000		77°	Ø0.563~Ø0.813	Apply helix cutting-edge on insert, low cutting load and reinforce toughness on corner Increased rigidity with double relief angle (11, 13), prevent interference with high feed To apply the negative axial rake angle when set up the holder, increased chipping resistance	●	●	●	●	●	E279 E280
	HRM	HRMSA 08/10/13/15		75°	Ø0.75~Ø2.5	Powerful clamping by double clamping system 3 corners available High feed cutting with low cutting load	●	●	●	●	●	E300~ E302
	HRMD	HRMDSA 06/09/13		76°	Ø0.68~Ø2.5	6 corners available, High feed, multi-function, only one screw application	●	●	●	●	●	E290~ E294

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	Tangen-Pro	TP2PSA-LN08 (new)		0°	Ø0.75~Ø1	High-quality results available even under harsh cutting conditions, thanks to the stable clamping force	●	●	●			E309
		TP2PSA-LN14 (new)			Ø1~Ø2							E310
		TP2PSA-LN17 (new)			Ø1.25~Ø2							E311
	Tank Mill	THEA		0°	Ø0.984~Ø1.968	Right-hand helix angle employed for good chip evacuation. Special surface treatment prevents body breaking and improves rigidity. Strong cutting-edge	●	●				E305
	Laser Mill	LBEA□□ LREA□□		-	Ø0.312~Ø1.5	Indexable ball endmill for precise mold. Rigid holder with simple design finishing MQL is available	●	●	●	●		E324~ E327
		LBEA□□-C LREA□□-C		-	Ø0.312~Ø1.5	Indexable ball endmill for precise mold. Rigid holder with simple design finishing MQL is available Carbide shank	●	●	●			E324~ E327
	Mach Mill	GBEA GBEA-M		-	Ø0.63~Ø1.969	Helical design of edge can reduce the force during operation. Safe application to prevent rotation guarantee the increased tool life	●	●	●	●		E329 E330
		BREA		-	Ø0.787~Ø2.48	Flute type chip-pocket can make chip-evacuation Customized edge design can prevent the breakage of holder's body	●	●	●	●		E332
	Chamfer Tool	CEA		15°	Ø1~Ø1.217	For Back & Front high quality chamfering and various Chamfering angle machining	●					E336
				30°	Ø1~Ø1.413							
				45°	Ø0.281~Ø1.587							
				60°	Ø1~Ø1.72							
				60°	Ø0.203~Ø1.384	Various chamfer degrees available Effective long chamfer cutting available	●	●	●			E337
				45°	Ø0.203~Ø1.896							
				30°	Ø0.203~Ø2.278							
				45°	Ø0.87~Ø1.14	Centering, Grooving, Chamfering	●	●	●		●	E338

Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	T-Cutter	TFEA		0°	Ø0.83~Ø1.97	For slotting	●	●	●	●	●	E339
Cutters for aluminum	Pro-A Mill	PASA 2000/4000		0°	Ø0.5~Ø1.5 Ø1.25~Ø1.5	Polished face increases chip flow and reduces built-up edge	●	●	●	●	●	E351
	Pro-X Mill	PAXSA 5000/6000		0°	Ø0.75~Ø1.5 Ø1.25~Ø1.5	Square shoulder and corner machining	●	●	●	●	●	E355 E356
	Pro-L Mill	PALSA-HR (Single edge)		0°	Ø1.25~Ø2.5	High helix and high depth of cut High perpendicularity Low cutting load	●	●	●	●	●	E359 E360
		PALS-HM (Multi edge)			Ø2.5		●	●	●	●	●	E361
	Pro-XL Mill	PXLA new		0°	Ø1.5~Ø3	Improved surface finish and perpendicularity achieved by a single pass with the deep cutting-edges	●	●				E362
	Pro-V Mill	PAVSA-XD19 new		0°	Ø1~Ø1.5	Exclusive milling tool for high speed aluminum machining with key to key way structure ensures stable machining.	●	●	●	●	●	E364
Thread milling	-	TM		-	Ø1.5~Ø2	For internal and external threading	●					D49

FMRMA type
E236~239
E248~251





LBEA-MHD type
E328



PAMA type
E352



PAXMA type
E357



AMMA type
E188~190



RM3PMA type
E102



RM4PMA type
E115





Steel Shank type
E365



Carbide Shank type
E366

RM4ZMA type
E117



RM6PMA type
E122, 123



HFMDMA type
E272~274



HFMMA type
E281



HRMMA type
E303, 304



HRMDMA type
E295~297



GBEMA type
E331





Steel Shank type
E365



Carbide Shank type
E366

ADNA4000



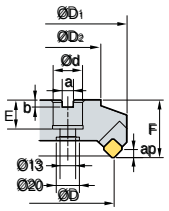


Fig. 1

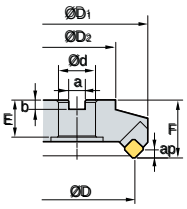


Fig. 2

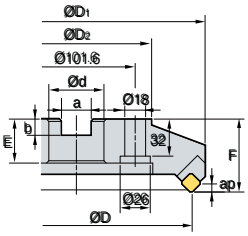


Fig. 3

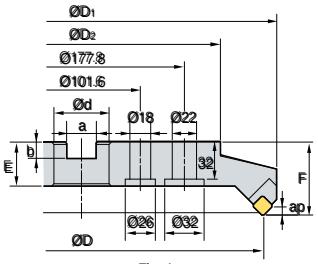


Fig. 4



AA
45°

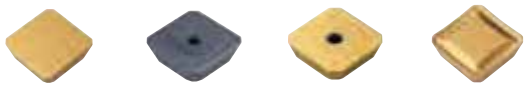
- AR: 15°
- RR: -4°

(inch)

Designation		⦶	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
ADNA	4300R/L	4	3	3.98	2.205	1	0.375	0.248	0.866	2.0	0.24	4.2	1
	4400R/L	5	4	4.98	2.874	1 1/4	0.500	0.319	0.866	2.0	0.24	5.5	2
	4500R/L	6	5	5.94	3.389	1 1/2	0.625	0.394	1.181	2.5	0.24	9.5	2
	4600R/L	8	6	6.91	4.882	2	0.750	0.433	1.181	2.5	0.24	14.1	2
	4800R/L	10	8	8.91	5.118	2 1/2	1.000	0.551	1.496	2.5	0.24	19.1	3
	41000R/L	12	10	10.91	7.087	2 1/2	1.000	0.551	1.496	2.5	0.24	30.8	3
	41200R/L	14	12	12.91	9.449	2 1/2	1.000	0.551	1.496	2.5	0.24	46.2	4

Available inserts

SDCN SDKN-MU SDKN-SU SDKR-MX

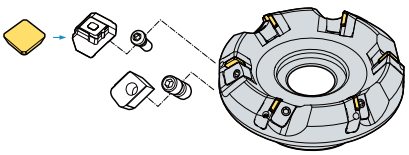


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SDCN	42M															●		E19
	42M-G																●	
	42MT	●	●			●									●			
	42MT-RH																	
	42MT-S20										●							
	42AEEN																	
	42AEEN-RH																	
	42AESN																	
	42AESN-RH																	
SDKN	42AESN-MU								●									E20
	42AESN-SU								●				●	●				
SDKR	42AESN-MX																	E20
	42AETN-MX																	
	42AEN-MX				●													

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000 400~800 300~600	0.006~0.002 0.008~0.002 0.008~0.002	NCM325 PC3700 ST30A
M	150~600 150~400	0.008~0.002 0.008~0.002	PC9530
K	500~900 300~600	0.012~0.002 0.012~0.002	PC6510 G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LADN4R/L	WEPN4R/L	DHA0821F	LTX0514	HW40

Available inserts **E19, E20**

ADNA5000+



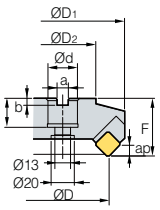


Fig. 1

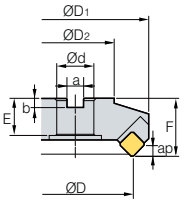


Fig. 2

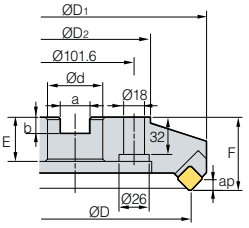


Fig. 3

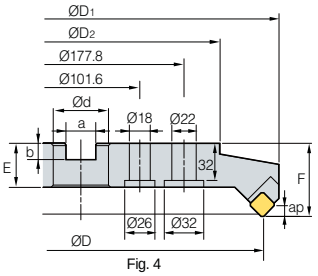


Fig. 4



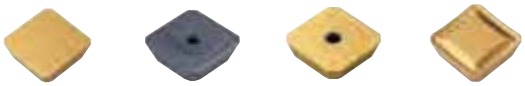
AA
45°

- AR: 15°
- RR: -4°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
ADNA	5300R/L+	4	3	4.07	2.205	1	0.374	0.248	0.866	2.0	0.32	4.4	1
	5400R/L+	5	4	5.02	2.874	1 1/4	0.500	0.319	0.866	2.0	0.32	5.9	2
	5500R/L+	6	5	5.98	3.389	1 1/2	0.625	0.394	1.181	2.5	0.32	9.5	2
	5600R/L+	8	6	6.98	4.882	2	0.750	0.433	1.181	2.5	0.32	14.3	2
	5800R/L+	10	8	8.98	5.118	2 1/2	1.000	0.551	1.496	2.5	0.32	20.0	3
	51000R/L+	12	10	10.98	7.087	2 1/2	1.000	0.551	1.496	2.5	0.32	31.9	3
	51200R/L+	14	12	12.98	9.449	2 1/2	1.000	0.551	1.496	2.5	0.32	46.2	4

Available inserts

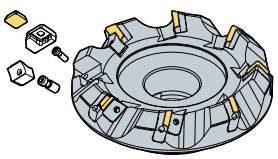


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SDCN	53M														●			E19
	53M-G																●	
	53MT		●		●										●			
	53MT-RH																	
	53MT-S20										●							
	53AEEN																	
	53AEEN-RH									●			●					
	53AESN																	
	53AESN-RH									●								
SDKN	53AESN-MU								●									E20
	53AESN-SU								●				●	●				
SDKR	53AESN-MX					●												E20
	53AETN-MX																	
	53AEN-MX				●													

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000	0.006~0.002	NCM325
	400~800	0.008~0.002	PC3700
	300~600	0.008~0.002	ST30A
M	150~600	0.008~0.002	PC9530
	150~400	0.008~0.002	
K	500~900	0.012~0.002	PC6510
	300~600	0.012~0.002	G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LADN5R/L	WHPS5R/L	WHX0817 WHX0813*	LTX0514	HW40

*: Ø3

Available inserts E19, E20

AEA4000



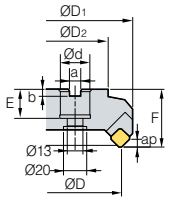


Fig. 1

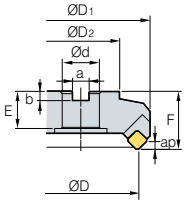


Fig. 2

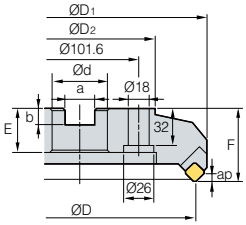


Fig. 3

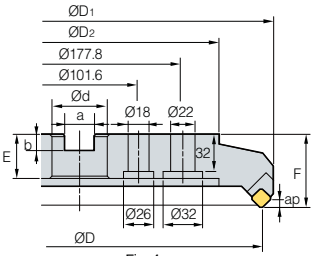


Fig. 4



AA
45°

- AR: 20°
- RR: -3°

(inch)

Designation		⭘	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
AEA	4300R/L	4	3	3.91	2.205	1	0.375	0.248	0.866	2.0	0.22	3.70	1
	4400R/L	5	4	4.87	2.874	1 1/4	0.5	0.319	0.866	2.0	0.22	6.40	2
	4500R/L	6	5	5.83	3.389	1 1/2	0.625	0.394	1.181	2.5	0.22	9.70	2
	4600R/L	8	6	6.83	4.882	2	0.75	0.433	1.181	5.5	0.22	13.40	2
	4800R/L	10	8	8.79	5.118	2 1/2	1.000	0.551	1.496	2.5	0.22	19.60	3
	41000R/L	12	10	10.79	7.087	2 1/2	1.000	0.551	1.496	2.5	0.22	34.50	3
	41200R/L	15	12	12.79	9.449	2 1/2	1.000	0.551	1.496	2.5	0.22	55.20	4

Available inserts

SECN SEKN-SU SEKR-MX

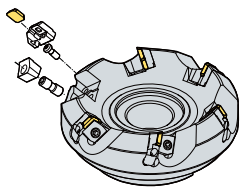


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SECN	42AFFN														●	●	●	E21
	42AFTN	●	●												●			
	42AFEN																	
	42AFSN			●	●													
	42AFEN-RH									●			●					
	42AFTN-RH																	
	42AFTN-S20										●							
SEKN	42AFSN-SU								●									E21
SEKR	42AFSN-MX			●	●						●							E22

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000 400~800 300~600	0.006~0.002 0.008~0.002 0.008~0.002	NCM325 PC3700 ST30A
M	150~600 150~400	0.008~0.002 0.008~0.002	PC9530
K	500~900 300~600	0.012~0.002 0.012~0.002	PC6510 G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LAE4R/L	WAE4R/L	DHA0821F	LTX0512	HW40

Available inserts **E21, E22**

AEA5000



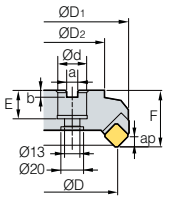


Fig. 1

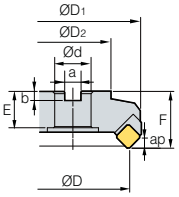


Fig. 2

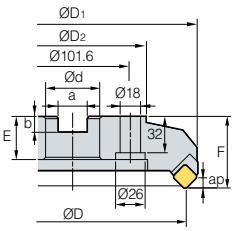


Fig. 3

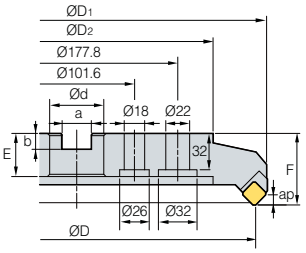


Fig. 4



AA
45°

- AR: 20°
- RR: -3°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
AEA	5300R/L	4	3	3.91	2.205	1	0.375	0.248	0.866	2.0	0.30	3.7	1
	5400R/L	5	4	4.87	2.874	1 1/4	0.500	0.319	0.866	2.0	0.30	6.4	2
	5500R/L	6	5	5.83	3.389	1 1/2	0.625	0.394	1.181	2.5	0.30	9.7	2
	5600R/L	8	6	6.83	4.882	2	0.750	0.433	1.181	2.5	0.30	13.4	2
	5800R/L	10	8	8.79	5.118	2 1/2	1.000	0.551	1.496	2.5	0.30	19.6	3
	51000R/L	12	10	10.79	7.087	2 1/2	1.000	0.551	1.496	2.5	0.30	34.5	3
	51200R/L	15	12	12.79	9.449	2 1/2	1.000	0.551	1.496	2.5	0.30	55.2	4

Available inserts

SECN SEKN-SU SEKR-MX

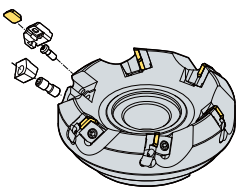


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SECN	53AFFN															●		E21
	53AFTN		●															
	53AFEN																	
	53AFSN																	
	53AFEN-RH																	
	53AFSN-RH										●							
	53AFTN-S20																	
SEKN	53AFSN-SU								●					●				E21
	53AFSN-MX				●						●							
SEKR	53AFSN-MX				●						●							E22

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000	0.006~0.002	NCM325
	400~800	0.008~0.002	PC3700
	300~600	0.008~0.002	ST30A
M	150~600	0.008~0.002	PC9530
	150~400	0.008~0.002	
K	500~900	0.012~0.002	PC6510
	300~600	0.012~0.002	G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LAE5R/L	WAE5R/L	DHA0821F	LTX0512	HW40

Available inserts E21, E22

EFA4000



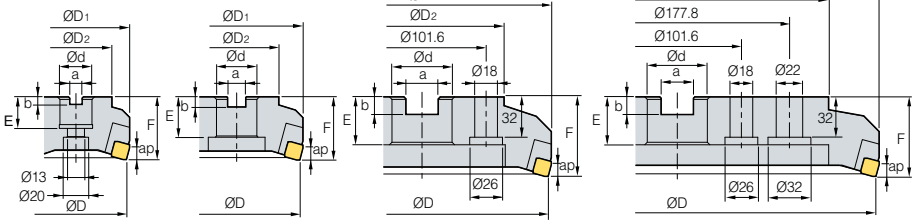


Fig. 1 Fig. 2 Fig. 3 Fig. 4

AA
15°

- AR: 18°
- RR: 11°

(inch)

Designation		⌀	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
EFA	4300R/L	4	3	3.35	2.205	1	0.375	0.248	0.866	2.0	0.32	3.3	1
	4400R/L	5	4	4.31	2.874	1 1/4	0.500	0.319	0.866	2.0	0.32	4.6	2
	4500R/L	6	5	5.31	3.389	1 1/2	0.625	0.394	1.181	2.5	0.32	8.4	2
	4600R/L	8	6	6.31	4.882	2	0.750	0.433	1.181	2.5	0.32	12.1	2
	4800R/L	10	8	8.31	5.118	2 1/2	1.000	0.551	1.496	2.5	0.32	18.0	3
	41000R/L	12	10	10.28	7.087	2 1/2	1.000	0.551	1.496	2.5	0.32	29.5	3
	41200R/L	16	12	12.28	9.449	2 1/2	1.000	0.551	1.496	2.5	0.32	46.6	4

Available inserts

SFCN

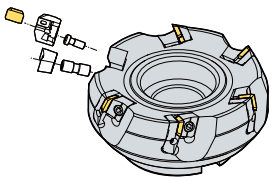


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SFCN	42EFR																●	E22

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
K	250~400	0.008~0.002	H01

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LEF4R/L LEF4R1*/L1*	WEFR/L	DHA0821F	LTX0512	HW40

Available inserts E22

*: Ø3~Ø4

ENA4000



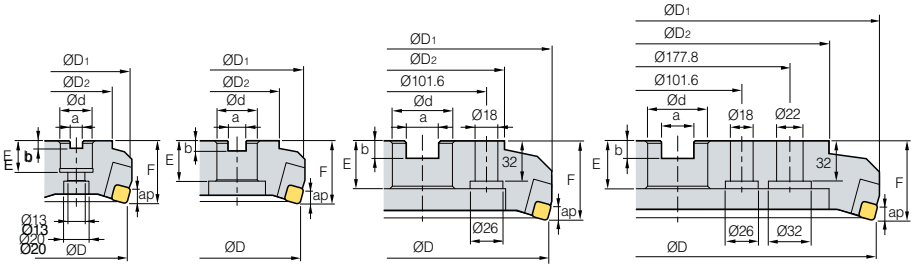


Fig. 1 Fig. 2 Fig. 3 Fig. 4



AA 15°

- AR: -6°
- RR: -5°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
ENA	4300R/L	5	3	3.28	2.205	1	0.375	0.248	0.866	2.0	0.33	3.1	1
	4400R/L	6	4	4.28	2.874	1 1/4	0.500	0.319	0.866	2.0	0.33	4.6	2
	4500R/L	8	5	5.28	3.389	1 1/2	0.625	0.394	1.181	2.5	0.33	8.4	2
	4600R/L	10	6	6.28	4.882	2	0.750	0.433	1.181	2.5	0.33	12.5	2
	4800R/L	12	8	8.28	5.118	2 1/2	1.000	0.551	1.496	2.5	0.33	18.5	3
	41000R/L	16	10	10.28	7.087	2 1/2	1.000	0.551	1.496	2.5	0.33	30.4	3
	41200R/L	20	12	12.28	9.449	2 1/2	1.000	0.551	1.496	2.5	0.33	47.5	4

Available inserts

SNCN SNKN

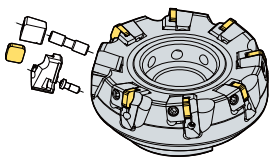


Designation		Cermet		Coated								Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNCN	43ENN				●										●			E23
SNKN	1204ENN									●								E25

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000	0.006~0.002	NCM325
	400~800	0.008~0.002	PC3700
	300~600	0.008~0.002	ST30A
M	150~600	0.008~0.002	PC9530
	150~400	0.008~0.002	
K	500~900	0.012~0.002	PC6510
	300~600	0.012~0.002	G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LEN4R/L	WENR/L WENR1*/L1*	DHA0830 DHA0825*	LTX0512	HW40

*: Ø3~Ø4

Available inserts E23, E2

EPNA4000



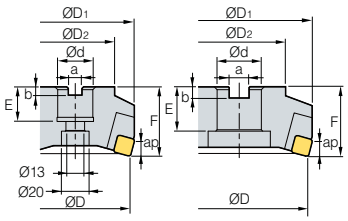


Fig. 1

Fig. 2

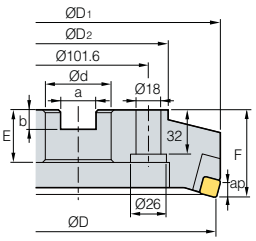


Fig. 3

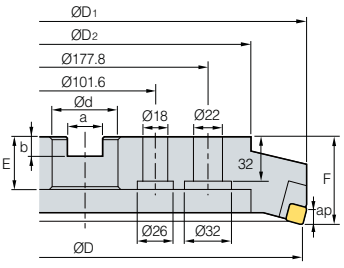


Fig. 4



AA
15°

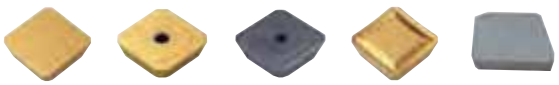
- AR: 7°
- RR: 0°

(inch)

Designation		⭘	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
EPNA	4300R/L	5	3	3.31	2.205	1	0.375	0.248	0.866	2.0	0.35	3.1	1
	4400R/L	6	4	4.28	2.874	1 1/4	0.500	0.319	0.866	2.0	0.35	4.6	2
	4500R/L	8	5	5.28	3.389	1 1/2	0.625	0.394	1.181	2.5	0.35	8.4	2
	4600R/L	10	6	6.24	4.882	2	0.750	0.433	1.181	2.5	0.35	12.5	2
	4800R/L	12	8	8.24	5.118	2 1/2	1.000	0.551	1.496	2.5	0.35	18	3
	41000R/L	16	10	10.24	7.087	2 1/2	1.000	0.551	1.496	2.5	0.35	29.7	3
	41200R/L	20	12	12.24	9.449	2 1/2	1.000	0.551	1.496	2.5	0.35	46.4	4

Available inserts

SPCN SPKN-SU SPKN-MU SPKR-MX SPEX

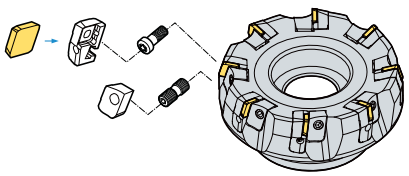


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SPCN	42EDR		●		●	●									●	●	●	
	42EDL														●			
	42EDR-G																●	
	42EDER-RH									●			●					E26
	42EDSR-RH									●								
	42EDTR-RH																	
	42EDR-S20										●							
SPKN	42EDSR-MU								●									
	42EDSR-SU								●				●	●				E27
	42EDSL-SU								●									
SPKR	42EDSR-MX				●	●												E27
	42EDSL-MX																	
SPEX	42EDR/L-1																	E26

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000	0.006~0.002	NCM325
	400~800	0.008~0.002	PC3700
	300~600	0.008~0.002	ST30A
M	150~600	0.008~0.002	PC9530
	150~400	0.008~0.002	
K	500~900	0.012~0.002	PC6510
	300~600	0.012~0.002	G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LEPN4R/L LEPN4R1*/L1*	WEPN4R/L	DHA0821F DHA0817F*	LTX0514	HW40

Available inserts **E26, E27**

*: Ø3~Ø4

EPNA5000+



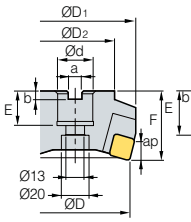


Fig. 1

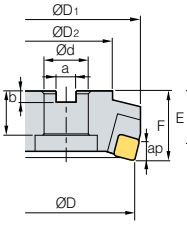


Fig. 2

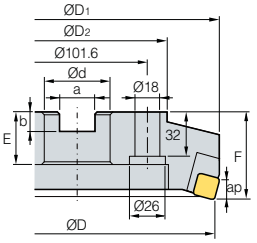


Fig. 3

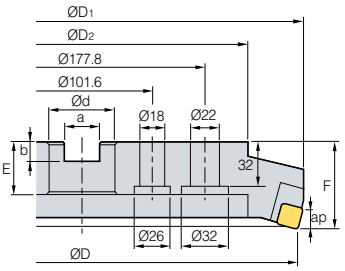


Fig. 4



AA
15°

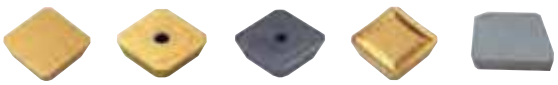
- AR: 7°
- RR: 0°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
EPNA	5300R/L+	5	3	3.42	2.205	1	0.374	0.248	0.866	2.0	0.47	3.8	1
	5400R/L+	6	4	4.35	2.874	1 1/4	0.500	0.319	0.866	2.0	0.47	5.5	2
	5500R/L+	8	5	5.38	3.389	1 1/2	0.625	0.394	1.181	2.5	0.47	8.4	2
	5600R/L+	10	6	6.36	4.882	2	0.750	0.433	1.181	2.5	0.47	12.1	2
	5800R/L+	12	8	8.36	5.118	2 1/2	1.000	0.551	1.496	2.5	0.47	17.6	3
	51000R/L+	16	10	10.36	7.087	2 1/2	1.000	0.551	1.496	2.5	0.47	32.6	3
	51200R/L+	20	12	12.35	9.449	2 1/2	1.000	0.551	1.496	2.5	0.47	49.4	4

Available inserts

SPCN SPKN-SU SPKN-MU SPKR-MX SPEX

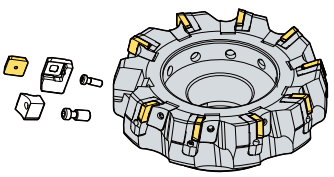


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SPCN	5312T																	E26
	53EDR		●		●										●	●		
	53EDSR																	
	53EDL									●								
	53EDR-G																●	
	53EDER-RH									●			●					
	53EDSR-RH									●								
	53EDTR-RH																	
	53EDR-S20										●							
SPKN	53EDSR-MU								●									E27
	53EDSR-SU								●				●	●				
	53EDSL-SU								●									
SPKR	53EDR-MX				●													E27
	53EDSR-MX																	
SPEX	53EDR/L-1																	E26

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000	0.006~0.002	NCM325
	400~800	0.008~0.002	PC3700
	300~600	0.008~0.002	ST30A
M	150~600	0.008~0.002	PC9530
	150~400	0.008~0.002	
K	500~900	0.012~0.002	PC6510
	300~600	0.012~0.002	G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LEPN5R/L LEPN5R1*/L1*	WHPS5R/L	WHX0817 WHX0813*	LTX0514	HW40

*: Ø3

Available inserts E26, E27

PFA4000



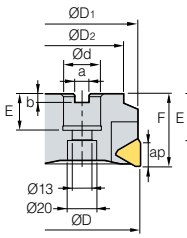


Fig. 1

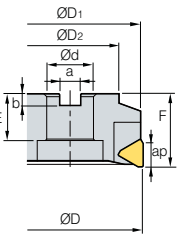


Fig. 2

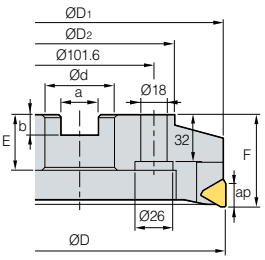


Fig. 3

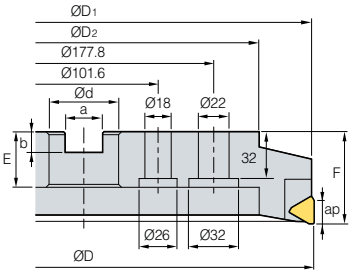


Fig. 4




AA
0°

- AR: 15°
- RR: 14°

(inch)

Designation		⌀	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
PFA	4300R/L	4	3	2.96	2.205	1	0.375	0.248	0.866	2.0	0.63	2.6	1
	4400R/L	4	4	3.88	2.874	1 1/4	0.500	0.319	0.866	2.0	0.63	4.0	2
	4500R/L	7	5	4.88	3.389	1 1/4	0.625	0.394	1.181	2.5	0.63	6.8	2
	4600R/L	9	6	5.92	4.882	2	0.750	0.433	1.181	2.5	0.63	12.3	2
	4800R/L	11	8	7.88	5.118	2 1/2	1.000	0.551	1.496	2.5	0.63	19.4	3
	41000R/L	15	10	9.88	7.087	2 1/2	1.000	0.551	1.496	2.5	0.63	35.2	3
	41200R/L	19	12	11.84	9.449	2 1/2	1.000	0.551	1.496	2.5	0.63	48.4	4

Available inserts

TFCN

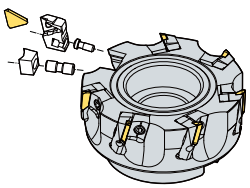


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
TFCN	42PFR																●	E28
	42PFL																	

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000 400~800 300~600	0.006~0.002 0.008~0.002 0.008~0.002	NCM325 PC3700 ST30A
M	150~600 150~400	0.008~0.002 0.008~0.002	PC9530
K	500~900 300~600	0.012~0.002 0.012~0.002	PC6510 G10

Assembling



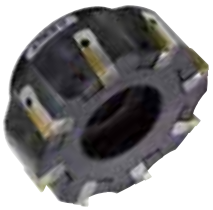
Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LPF4R/L LPF4R1**/L1**	WPFR/L	DHA0821F DHA0817F*	LTX0512	HW40

Available inserts E28

*: Ø3~Ø4/ **: Ø3~Ø5

PPNA4000



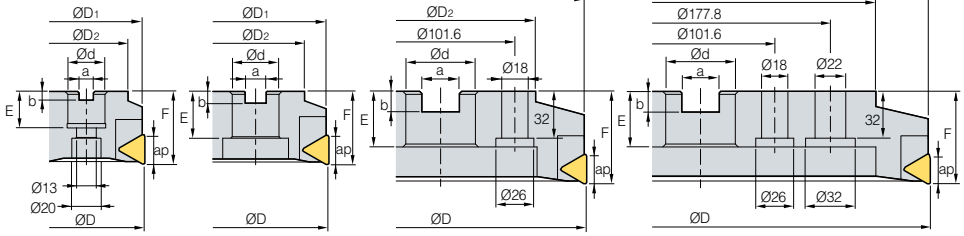


Fig. 1 Fig. 2 Fig. 3 Fig. 4




AA
0°

•A R : 7°
• RR: 0°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
PPNA	4300R/L	5	3	2.96	2.205	1	0.375	0.248	0.866	2.0	0.70	2.9	1
	4400R/L	6	4	3.96	2.874	1 1/4	0.500	0.319	0.866	2.0	0.70	4.2	2
	4500R/L	8	5	4.96	3.389	1 1/4	0.625	0.394	1.181	2.5	0.70	7.7	2
	4600R/L	10	6	5.92	4.882	2	0.750	0.433	1.181	2.5	0.70	12.3	2
	4800R/L	12	8	7.92	5.118	2 1/2	1.000	0.551	1.496	2.5	0.70	17.8	3
	41000R/L	16	10	9.92	7.087	2 1/2	1.000	0.551	1.496	2.5	0.70	29.3	3
	41200R/L	20	12	11.92	9.449	2 1/2	1.000	0.551	1.496	2.5	0.70	47.1	4

Available inserts

TPCN TPKN-SU TPKN-MU TPKR-MX

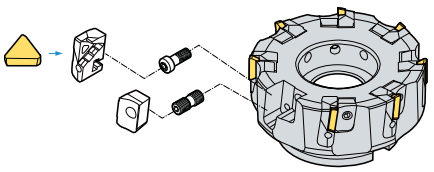


Designation		Cermet		Coated										Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
TPCN	43PDR		●		●										●	●		E28
	43PDR-G																●	
	43PDL														●			
	43PDSR					●												
	43PDTR																	
	43PDR-RH																	
	43PDER-RH									●			●					
	43PDSR-RH									●								
	43PDR-S20										●							
TPKN	43PDSR-MU								●									E29
	43PDSR-SU								●				●	●				
	43PDSL-SU								●									
TPKR	43PDR-MX				●													E29
	43PDSR-MX				●	●												
	43PPR-MX																	

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000	0.006~0.002	NCM325
	400~800	0.008~0.002	PC3700
	300~600	0.008~0.002	ST30A
M	150~600	0.008~0.002	PC9530
	150~400	0.008~0.002	
K	500~900	0.012~0.002	PC6510
	300~600	0.012~0.002	G10

Assembling



Parts

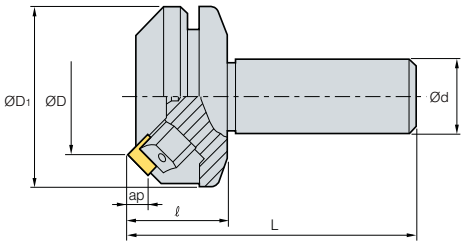
Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~Ø12	LPPN4R/L LPPN4R1*/L1*	WPPN4R/L	DHA0821F DHA0817F*	LTX0514	HW40

*: Ø3~Ø4

Available inserts E28, E29

ADSA4000







AA
45°

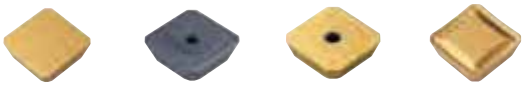
• AR: 15°
• RR: -3°

(inch)

Designation			ØD	ØD1	Ød	ℓ	L	ap	lbs
ADSA	4200R/L	3	2	2.984	1 1/4	1.575	4.724	0.26	4.0
	4200R/L-S150	3	2	2.984	1 1/2	1.575	4.724	0.26	4.8
	4250R/L	4	2 1/2	3.445	1 1/4	1.575	4.724	0.26	5.1
	4250R/L-S150	4	2 1/2	3.445	1 1/2	1.575	4.724	0.26	5.9

Available inserts

SDCN SDKN-MU SDKN-SU SDKR-MX

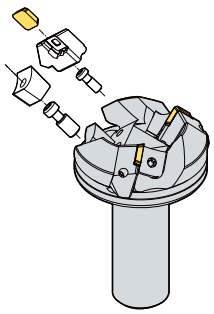


Designation		Cermet		Coated								Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SDCN	42M															●		E19
	42M-G																●	
	42MT	●	●			●									●			
	42MT-RH																	
	42MT-S20										●							
	42AEEN																	
	42AEEN-RH																	
	42AESN																	
	42AESN-RH																	
SDKN	42AESN-MU								●									E20
	42AESN-SU								●				●	●				
SDKR	42AESN-MX																	E20
	42AETN-MX																	
	42AEN-MX				●													

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000 400~800 300~600	0.006~0.002 0.008~0.002 0.008~0.002	NCM325 PC3700 ST30A
M	150~600 150~400	0.008~0.002 0.008~0.002	PC9530
K	500~900 300~600	0.012~0.002 0.012~0.002	PC6510 G10

Assembling



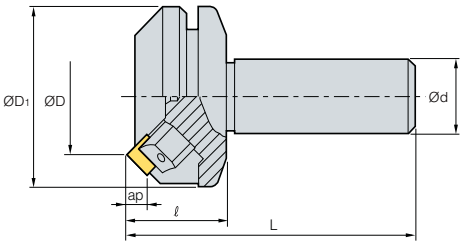
Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø2~Ø2 1/2	LASS4R/L	WASR/L	WTX0817	LTX0512	TW25

Available inserts **E19, E20**

ADSA5000







AA
45°

- AR: 15°
- RR: -3°

(inch)

Designation			ØD	ØD1	Ød	ℓ	L	ap	lbs
ADSA	5200R/L	3	2	2.984	1 1/4	1.575	4.724	0.33	4.2
	5200R/L-S150	3	2	2.984	1 1/2	1.575	4.724	0.33	5.1
	5250R/L	4	2 1/2	3.445	1 1/4	1.575	4.724	0.33	5.3
	5250R/L-S150	4	2 1/2	3.445	1 1/2	1.575	4.724	0.33	6.2

Available inserts

SDCN | SDKN-MU | SDKN-SU | SDKR-MX

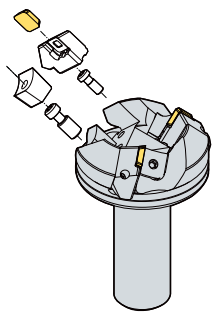


Designation		Cermet		Coated								Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SDCN	53M														●			E19
	53M-G																●	
	53MT		●		●										●			
	53MT-RH																	
	53MT-S20										●							
	53AEEN																	
	53AEEN-RH									●			●					
	53AESN																	
	53AESN-RH									●								
SDKN	53AESN-MU								●									E20
	53AESN-SU								●				●	●				
SDKR	53AESN-MX					●												E20
	53AETN-MX																	
	53AEN-MX				●													

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000 400~800 300~600	0.006~0.002 0.008~0.002 0.008~0.002	NCM325 PC3700 ST30A
M	150~600 150~400	0.008~0.002 0.008~0.002	PC9530
K	500~900 300~600	0.012~0.002 0.012~0.002	PC6510 G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø2~Ø2 1/2	LASS5R/L	WASR/L	WTX0817	LTX0512	TW25

Available inserts E19, E20

PESA2000/3000/4000



2000/3000 type 4000 type

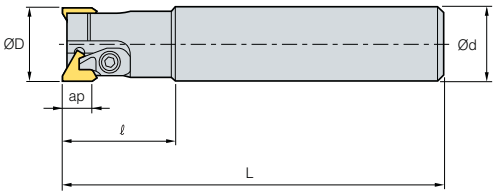


Fig. 1

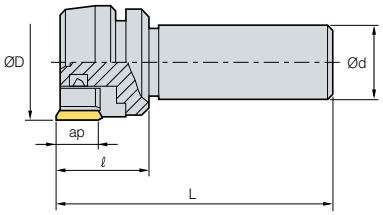


Fig. 2



AA 0°

- AR: 10°~15°
- RR: 2°~3°

(inch)

Designation		○	ØD	Ød	ℓ	L	ap	lbs	Fig.
PESA	2075R/L	2	3/4	3/4	1.181	4.331	0.32	0.7	1
	2100R/L	2	1	1	1.378	4.724	0.32	1.1	1
	3125R/L	2	1 1/4	1 1/4	1.772	6.299	0.51	2.2	1
	3150R/L	2	1 1/2	1 1/4	1.772	6.299	0.51	2.9	1
	4200R/L	3	2	1 1/4	1.575	4.724	0.65	2.6	2
	4200R/L-S150	3	2	1 1/2	1.575	4.724	0.65	3.3	2
	4250R/L	4	1 1/2	1 1/4	1.575	4.724	0.65	3.3	2
	4250R/L-S150	4	1 1/2	1 1/2	1.575	4.724	0.65	4.0	2

Available inserts

TECN TEEN

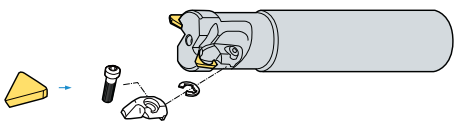


Designation			Cermet		Coated										Uncoated			page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
2000 type	TECN	22R																	E27
		22TR		●												●			
3000 type	TECN	32R															●		E27
		32TR		●			●									●			
		32TR-S20										●							
4000 type	TEEN	43R															●		E27
		43R-G																●	
		43TR	●	●		●	●				●					●			
		43TR-S20										●							
		43TR-Z														●			
		43TR-ZH										●							

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000	0.006~0.002	NCM325
	400~800	0.008~0.002	PC3700
	300~600	0.008~0.002	ST30A
M	150~600	0.008~0.002	PC9530
	150~400	0.008~0.002	
K	500~900	0.012~0.002	PC6510
	300~600	0.012~0.002	G10

Assembling



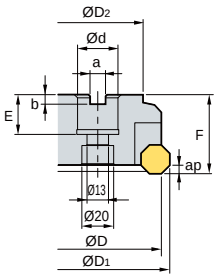
Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench	Wrench	Clamp	Ring
Ø3/4~Ø1 (2000 type)	-	-	-	CHX0407	HW25L	-	CH4R1	ER03
Ø1 1/4~1 1/2 (3000 type)	-	-	-	CHX0510	HW30L	-	CH5R1	ER04
Ø2~Ø2 1/2 (4000 type)	LPTS4R/L	WPTSR	DHA0815	LTX0512	-	HW40	-	-

Available inserts E27

AFOA4000







AA
45°

- AR: 15°
- RR: 5°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs
AFOA	4300R/L	5	3	3.31	2.205	1	0.375	0.248	0.866	2.0	0.26	3.1
	4400R/L	6	4	4.31	2.874	1 1/4	0.500	0.319	0.866	2.0	0.26	4.4
	4500R/L	8	5	5.31	3.389	1 1/2	0.625	0.394	1.181	2.5	0.26	6.8

Available inserts

OFCW | OFKT-MF | OFKT-MM | OFKT-MA

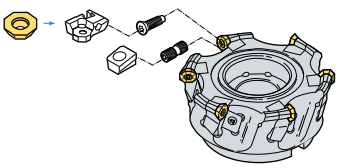


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
OFCW	05T3SN																	
	05T3FN																	E14
	05T308FN																	
OFKT	05T3SN-MF									●								
	05T308SN-MF																	
	05T3SN-MM				●				●		●							E14
	05T308SN-MM																	E15
	05T3FN-MA																●	
	05T3EN-MA																	

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	500~1,000 400~800 300~600	0.006~0.002 0.008~0.002 0.008~0.002	NCM325 PC3700 ST30A
M	150~600 150~400	0.008~0.002 0.008~0.002	PC9530
K	500~900 300~600	0.012~0.002 0.012~0.002	PC6510 G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Screw	Wrench
Ø3~Ø5	LAF04R/L	WAFO4R/L	DHA0815	FTKA0408	TW15S

Available inserts E14, E15

AFOA5000



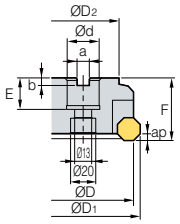


Fig. 1

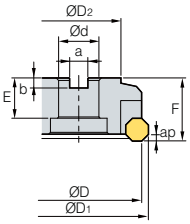


Fig. 2

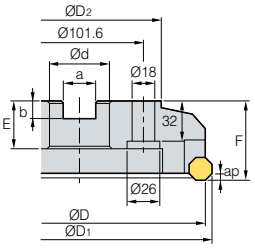


Fig. 3

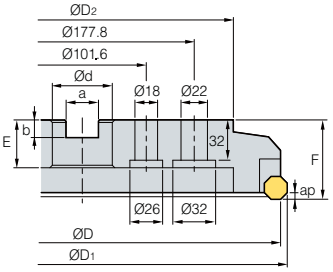


Fig. 4



AA
45°

- AR: 15°
- RR: 5°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
AFOA	5300R/L	5	3	3.43	2.205	1	0.375	0.248	0.866	2.0	0.37	3.1	1
	5400R/L	6	4	4.43	2.874	1 1/4	0.500	0.319	0.866	2.0	0.37	4.4	2
	5500R/L	8	5	5.43	3.389	1 1/2	0.625	0.394	1.181	2.5	0.37	6.8	2
	5600R/L	10	6	6.43	4.882	2	0.750	0.433	1.181	2.5	0.37	11.4	2
	5800R/L	12	8	8.43	5.118	2 1/2	1.000	0.551	1.496	2.5	0.37	16.5	3
	51000R/L	16	10	10.43	7.087	2 1/2	1.000	0.551	1.496	2.5	0.37	35.4	3
	51200R/L	20	12	12.43	9.449	2 1/2	1.000	0.551	1.496	2.5	0.37	50.2	4

Available inserts

OFKT-MM



OFKT-MA



OFCN



OFKR-MF



OFKR-MM



OFKR-MA



REKR-MM

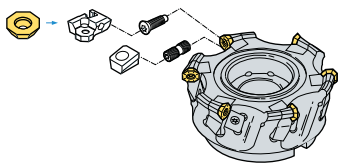


Designation		Cermet		Coated									Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
OFCN	0704SN									●								E14
	0704FN																	
	070408SN																	
	070408FN																	
OFKR	0704SN-MF				●	●												E14
	070408SN-MF																	
	0704SN-MM				●	●				●	●	●		●				
	070408SN-MM				●													
	0704FN-MA																●	
	0704EN-MA																	
OFKT	0704SN-MM																	E14 E15
	0704FN-MA																●	
	0704EN-MA																	
REKR	170400-MM																	E17

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	190~320	0.05~0.20	NCM325
	161~270	0.05~0.20	PC3700
	80~140	0.05~0.20	ST30A
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6510
	50~90	0.05~0.30	G10

Assembling



Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø3~ Ø12	LAF05R/L LAF05R*/L-1*	WEFR/L	DHA0821F	LTX0512	HW40

Available inserts **E14~E17**

*: Ø3~Ø4

New serrated edge design increases productivity by reducing insert cutting load

Power Buster

- New tooling utilizing a specially designed serrated edge to increase productivity by reducing the cutting load.
- Double-sided 6 corner insert geometry ensures high rigidity, long tool life and cost efficiency
- The serrated edge divides the chips into smaller pieces. This feature provides excellent chip control, reduces interference of the cutter and ensures good durability of the cutter body.
- Two types of inserts are available-TNMX27 for PBA (AA: 45°) and PBZ (AA: 10°), and TNMX30 for PBP (AA: 0°)
- Application: High depth of cut and feed rate (Steel, Cast iron)

Code system

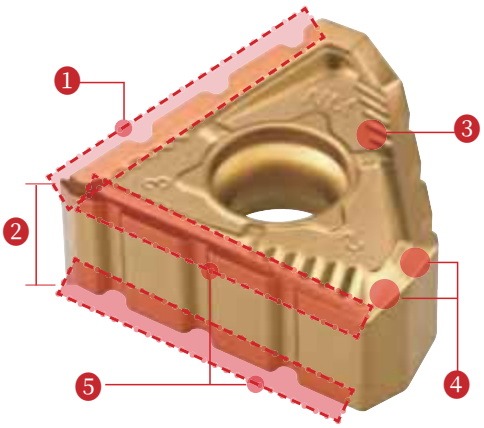
PB A C A 5 400 R/L – M

Power Buster	AA	Cutter type	Arbor type	Inscribed circle of insert	Tool Dia.	Hand	No of tooth
Power buster	A: 45° Z: 10° P: 0°	C: Cutter	M: Metric A: Inch	5: 5/8 6: 0.687	ØD: 4inch	R: Right L: Left	No code: Coarse pitch M: Close pitch 8: 8 teeth

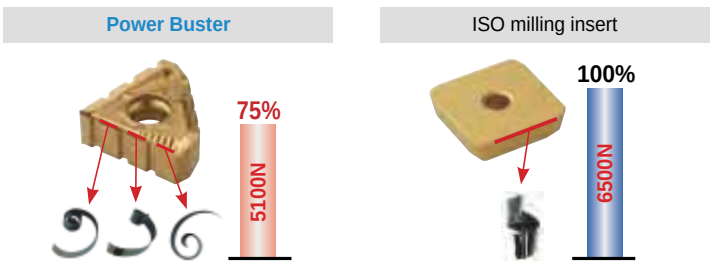
Features of insert

❶ Major cutting-edge (serrated edge)

- Low cutting force
- Ideal for chip control, divides chips into small pieces for proper chip evacuation.
- Ideal edge design for Steel and Cast iron rough milling



• Comparison of chip control and cutting force

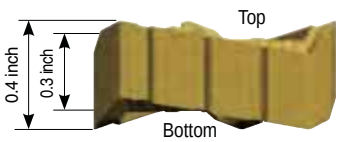


■**Workpiece** 4140

■**Cutting condition** vc = 656 sfm, ap = 0.32 inch, ae = 3.54 inch, fz = 0.012 ipt

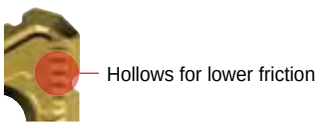
❷ Thicker insert

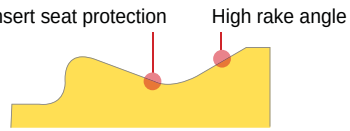
- Thick insert guarantees high rigidity
- Balanced insert design for stable mounting



❸ NM Chip breaker

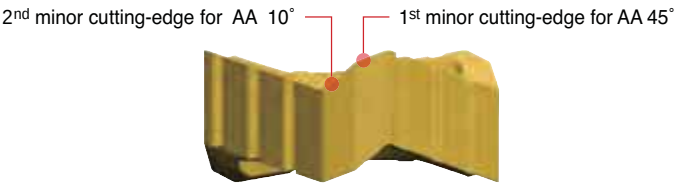
- High rake angle for low cutting force
- Good chip flow at various feed and depth of cut
- Inserts are protected with seats for a precise mounting
- Low friction and good heat evacuation at high depth cut





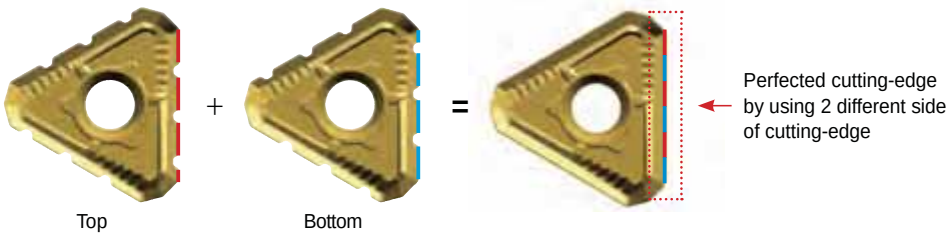
4 Insert shape applied to PBA/Z cutters (AA: 45°/10°)

- High rake angle to avoid interference with chip
- Calculated minor cutting-edge angel for both AA 45° & 10° cutter



5 Mirror system

- Cutting-edge on the both side of insert covers all overlapped cutting area



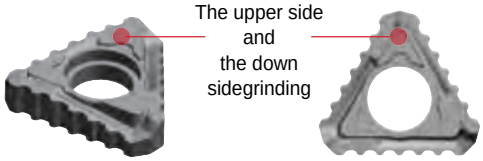
Features of cutter

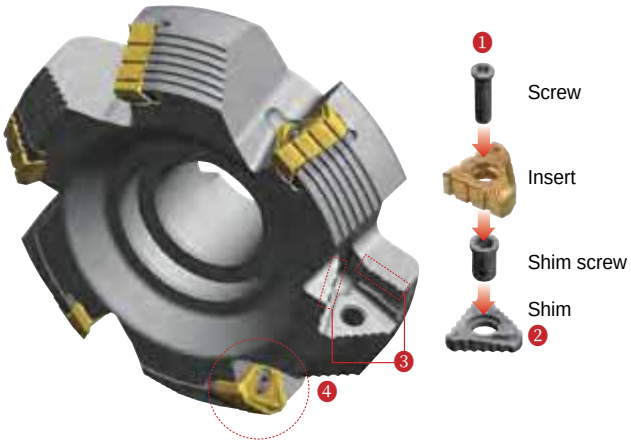
1 Screw-on clamping system

- Simple and strong screw on clamping system

2 Better rigidity & Stable Assembly system

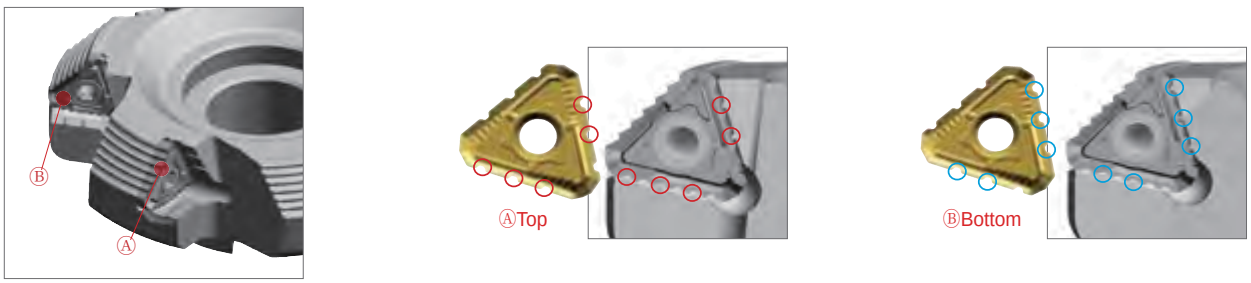
- The shim protects the cutter from insert damage
- High accuracy shim ensures tighter clamping





3 Foolproof System

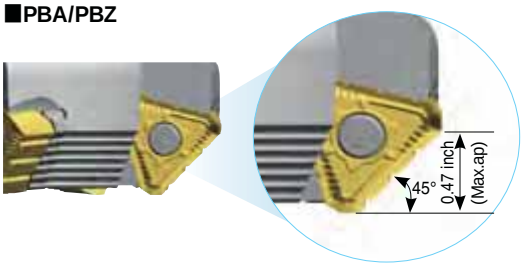
- Insert serrations match pocket design to prevent improper seating and alignment

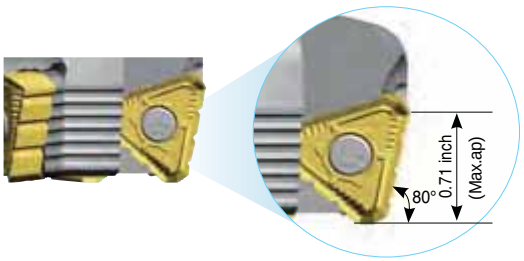


❹ Multi-application system

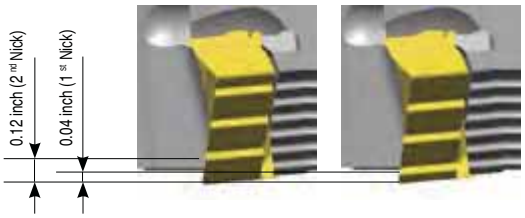
• Same insert for multi-use (45˚and 10˚)

■PBA/PBZ

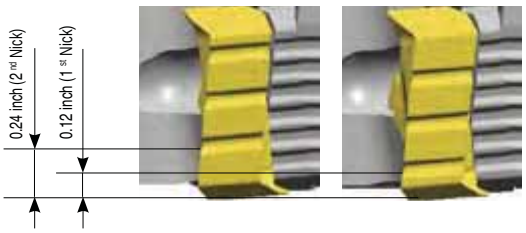




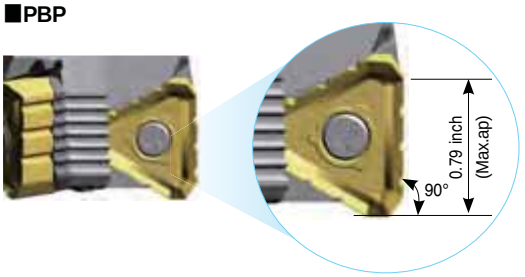
The serrations are effective with a depth of cut larger than 0.04 inch



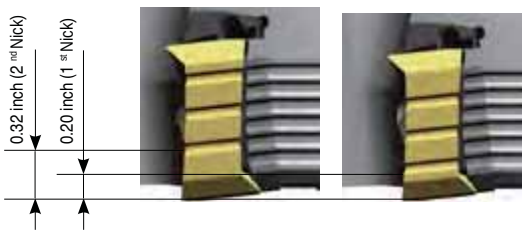
The serrations are effective with a depth of cut larger than 0.12 inch



■PBP

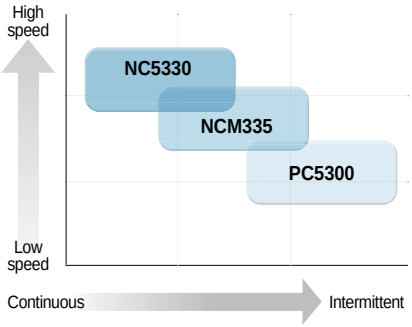


For the AA 90° cutter, nicks function properly at depth of cuts over 0.20 inch



Recommended cutting condition

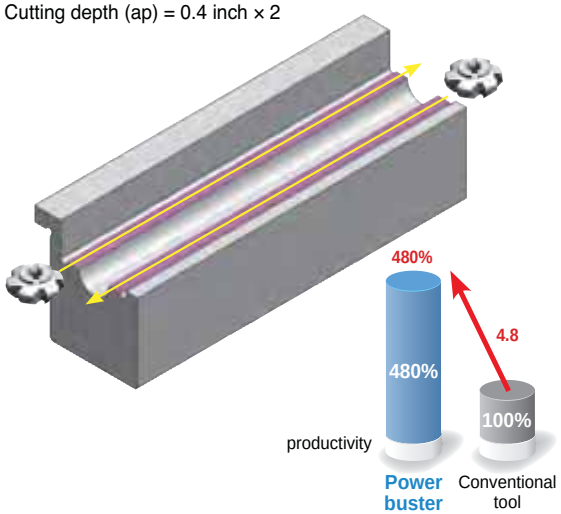
ISO	Workpiece		Material	NC5330	NCM335	PC5300
				fz (ipt)		
				0.004-0.008-0.012	0.004-0.008-0.012	0.004-0.008-0.012
				vc (sfm)		
P	Carbon steel	-	1213	1312	1099	919
		-	-	1198	1001	837
		-	-	1115	935	787
	Low alloy steel (Alloy constituent < 5%)	-	-	919	771	640
		Hardened	-	541	459	377
	High alloy steel (Alloy constituent > 5%)	Annealed	H13	689	591	492
		Hardened	M2, M35	574	476	394
K	Gray cast iron	Low tensile	No 30 B, No 35 B	410	-	476
		Hight tensile	No 45 B, No 50 B	344	-	394
		Ferric	60-40-18, 80-55-06	262	-	312
		Pearlitic	100-70-03	246	-	279



Power Buster test

■Cylinder block for ship engine (Cast iron)

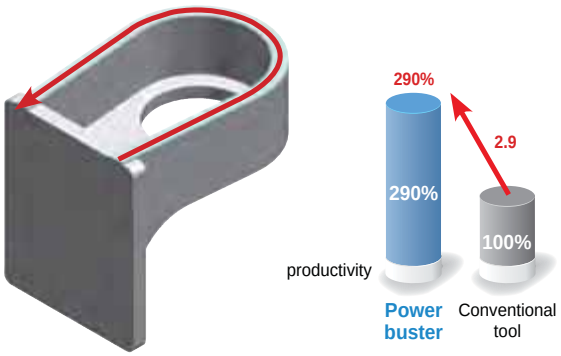
Cutting width (ae) = 6.3 inch × 2
Cutting depth (ap) = 0.4 inch × 2



Item	Power buster	Conventional tool
Diameter (ØD)	8 inch	8 inch
⦾	12 tooth	12 tooth
Grades	NC5330	PVD coating for Cast iron
vc	558 sfm	427 sfm
fz	0.009 ipt	0.006 ipt
ap	0.4 inch x 2 passes	0.16 inch x 5 passes
min	28.2 min/ea	137.5 min/ea
4.8 times productivity increased		• One-sided 4 corner insert (Without nick) • AA 45° cutter

■Heavy machinery part (Alloy steel)

Cutting width (ae) = 1.4 inch
Cutting depth (ap) = 0.2 inch × 2



Item	Power Buster	Conventional tool
Diameter (ØD)	5 inch	5 inch
⦾	8 tooth	8 tooth
Grades	NCM335	PVD coating for Cast iron
vc	591 sfm	492 sfm
fz	0.006 ipt	0.004 ipt
ap	0.2 inch x 2 passes	0.1 inch x 4 passes
min	5 min/ea	14.7 min/ea
2.9 times productivity increased		• Double-sided 8 corner insert (Without nick) • AA 45° cutter

PBACA5000



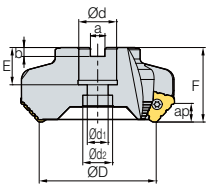


Fig. 1

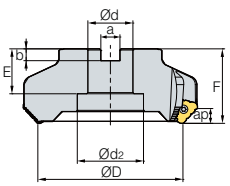


Fig. 2

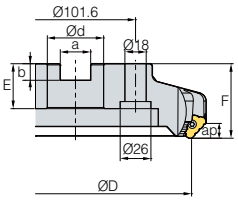


Fig. 3

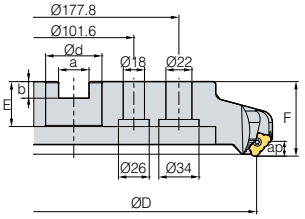


Fig. 4



AA 45°

- AR: -5°
- RR: -11°

(inch)

	Designation			ØD	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
Coarse pitch	PBACA	5300R/L	4	3	1.000	0.551	0.827	0.374	0.248	0.866	2.000	0.472	2.9	1
		5400R/L	4	4	1.250	-	1.772	0.500	0.319	0.866	2.000	0.472	4.6	2
		5500R/L	6	5	1.500	-	2.205	0.626	0.394	1.181	2.500	0.472	9.3	2
		5600R/L	8	6	2.000	-	3.937	0.748	0.433	1.181	2.500	0.472	11.7	2
		5800R/L	10	8	2.500	-	-	1.000	0.551	1.496	2.500	0.472	18.3	3
		51000R/L	12	10	2.500	-	-	1.000	0.551	1.496	2.500	0.472	30.0	3
		51200R/L	14	12	2.500	-	-	1.000	0.551	1.496	2.500	0.472	43.9	4
Close pitch	PBACA	5300R/L-M	6	3	1.000	0.551	0.827	0.374	0.248	0.866	2.000	0.472	2.8	1
		5400R/L-M	6	4	1.250	-	1.772	0.500	0.319	0.866	2.000	0.472	4.6	2
		5500R/L-M	8	5	1.500	-	2.205	0.626	0.394	1.181	2.500	0.472	9.1	2
		5600R/L-M	10	6	2.000	-	3.937	0.748	0.433	1.181	2.500	0.472	11.6	2
		5800R/L-M	12	8	2.500	-	-	1.000	0.551	1.496	2.500	0.472	17.9	3
		51000R/L-M	14	10	2.500	-	-	1.000	0.551	1.496	2.500	0.472	29.7	3
		51200R/L-M	16	12	2.500	-	-	1.000	0.551	1.496	2.500	0.472	43.4	4

Available inserts

TNMX-NM



Designation		Cermet		Coated													Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
TNMX	2710AZNR-NM			●			●				●		●		●					E28
	2710AZNL-NM																			

Parts

Specification	Screw	Shim	Shim screw	Wrench
Ø3~Ø12	FTGA0518	ST53AZR	SHXN0712F	TW20-100

Available inserts E28

PBZCA5000



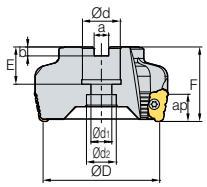


Fig. 1

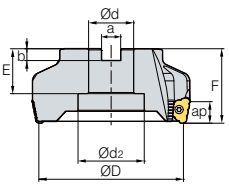


Fig. 2

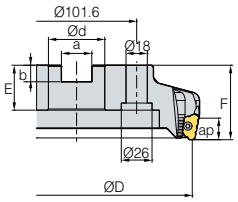


Fig. 3

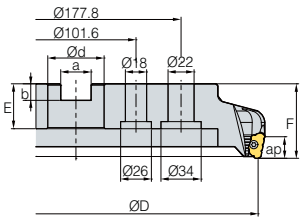


Fig. 4



AA
10°

- AR: -5°
- RR: -12°

(inch)

	Designation		○	ØD	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
Coarse pitch	PBZCA	5300R/L	4	3	1.000	0.551	0.827	0.374	0.248	0.866	2.000	0.709	2.2	1
		5400R/L	4	4	1.250	-	1.772	0.500	0.319	0.866	2.500	0.709	3.5	2
		5500R/L	6	5	1.500	-	2.205	0.626	0.394	1.181	2.500	0.709	7.5	2
		5600R/L	8	6	2.000	-	3.937	0.748	0.433	1.181	2.500	0.709	9.7	2
		5800R/L	10	8	2.500	-	-	1.000	0.551	1.496	2.500	0.709	15.7	3
		51000R/L	12	10	2.500	-	-	1.000	0.551	1.496	2.500	0.709	27.6	3
		51200R/L	14	12	2.500	-	-	1.000	0.551	1.496	2.500	0.709	41.3	4
Close pitch	PBZCA	5300R/L-M	6	3	1.000	0.551	0.827	0.374	0.248	0.866	2.000	0.709	2.2	1
		5400R/L-M	6	4	1.250	-	1.772	0.500	0.319	0.866	2.500	0.709	3.5	2
		5500R/L-M	8	5	1.500	-	2.205	0.626	0.394	1.181	2.500	0.709	7.9	2
		5600R/L-M	10	6	2.000	-	3.937	0.748	0.433	1.181	2.500	0.709	9.7	2
		5800R/L-M	12	8	2.500	-	-	1.000	0.551	1.496	2.500	0.709	15.7	3
		51000R/L-M	14	10	2.500	-	-	1.000	0.551	1.496	2.500	0.709	27.3	3
		51200R/L-M	16	12	2.500	-	-	1.000	0.551	1.496	2.500	0.709	40.8	4

Available inserts

TNMX-NM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
TNMX	2710AZNR-NM			●			●				●		●		●					E28
	2710AZNL-NM																			

Parts

Specification	Screw	Shim	Shim screw	Wrench
Ø3~Ø12	FTGA0518	ST53AZR	SHXN0712F	TW20-100

Available inserts **E28**

PBPCA6000 new



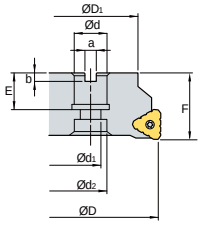


Fig. 1

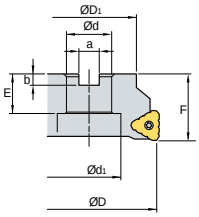


Fig. 2

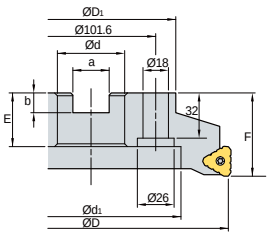


Fig. 3

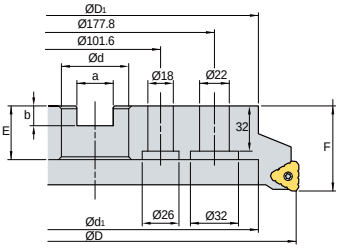


Fig. 4



AA
0°

- AR: -5°
- RR: -12°

(inch)

Designation		⊚	ØD	ØD1	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
PBPCA	6300R-4	4	3	2.205	1		1.496	0.374	0.248	0.866	2	0.787	1.706	1
	6400R-6	6	4	2.874	1.25	-	1.772	0.500	0.319	0.866	2	0.787	2.754	2
	6500R-6	6	5	3.937	1.5	-	2.205	0.626	0.394	1.181	2.5	0.787	6.250	2
	6600R-8	8	6	4.331	2	-	3.543	0.752	0.433	1.181	2.5	0.787	9.560	3
	6800R-10	10	8	5.118	2.5	-	5.197	1.000	0.551	1.496	2.5	0.787	12.000	3
	61000R-12	12	10	7.087	2.5	-	7.087	1.000	0.551	1.496	2.5	0.787	22.120	3
	61200R-14	14	12	9.449	2.5	-	9.370	1.000	0.551	1.496	2.5	0.787	34.590	4

Available inserts

TNMX-NM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
TNMX	3012PNR-NM																			E28

Parts

Specification	Screw	Shim	Shim Screw	Wrench
Ø3~Ø12	FTGA0518	ST53PNR	SHXN0712F	TW20-100

Available inserts E28

Rich Mill series is one of innovations that provides more available cutting-edges by double-sided insert and longer tool life for our customers

Rich Mill

- Rich Mill series is one of the innovations that provides more available cutting-edges with double-sided inserts and longer tool life for our customers
- The unique geometry and special cutting-edge guarantees low cutting loads and long tool life
- Rich Mill series has a wide application range from steel and stainless steel to cast iron and aluminum
- Applying negative inserts makes it even stronger and provides longer tool life
- Rich Mill series has both screw-on clamping system and latch clamping system

Code system

RM16 A C A 4 400 H R - M

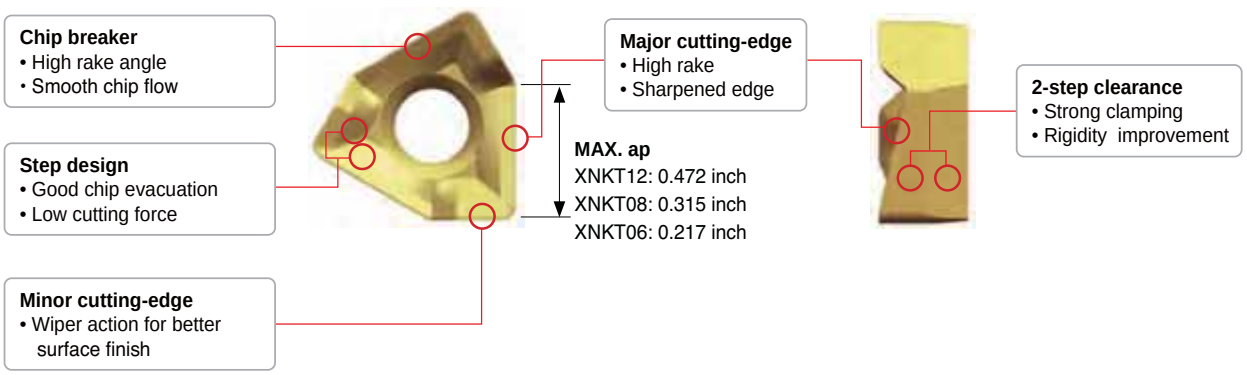
Number of edges	Approach angle	Tool type	Arbors type	Inscribed circle of insert	Tool Dia.	Coolant type	Hand	Pitch type
RM3 : Number of edges-3 RM4 : Number of edges-4 RM6 : Number of edges-6 RM8 : Number of edges-8 RM8-X : Number of edges-8 (High helix) RM14 : Number of edges-14 RM16 : Number of edges-16 RMT8 : Number of edges-8 (Latch Clamp) RMH8 : Number of edges-8 (Shim) RMR : Number of edges-8 (Round Type)	A : 45° D : 30° E : 15° F : 5° P : 0° Q : 2° Z : Plunging	C : Cutter S : Shank	M : Metric A : Inch	3 : 3/8 4 : 4/8 5 : 5/8	400 : Ø4	H : Thru-Hole No code : None	R : Right L : Left	M : Close H : Extra Close

Rich Mill RM3

Features

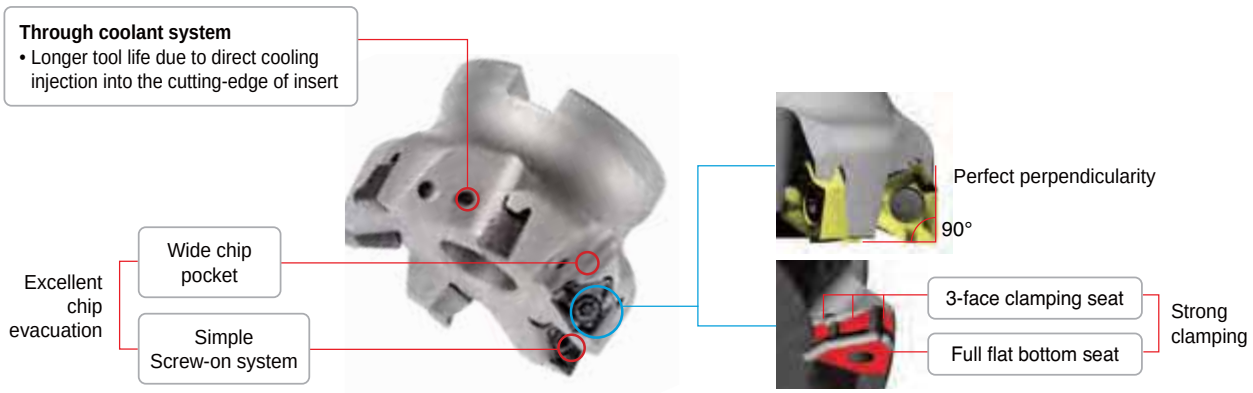
- High Quality - True 90° shouldering operation
- High Productivity - Strong thick insert and 3-face clamping ensure stable operation even tough condition.
- High Economics - Long tool life due to optimized manufacturing process

Features of insert



Rich Mill RM3

Features of cutter



Through coolant system

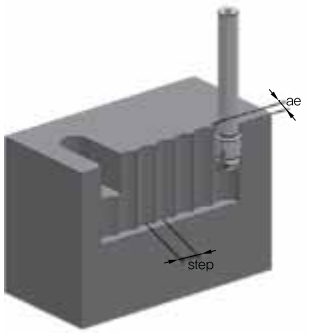
- Effective coolant distribution directly to cutting-edge
- Coolant supporting arbor required



Features of chip breakers

Insert		Cutting-edge	Uses	Features
MA			Aluminum	Superior cutting quality for aluminum due to sharp cutting-edge and buffed surface
ML			Light	Superior cutting quality for light and light cutting, difficult-to-cut material machining through the low cutting load of chip breaker
MM			General	Suitable for various cutting due to special shape design for general cutting

Max step in plunging



Type	max. ae
3000 type	0.098
4000 type	0.118
5000 type	0.138

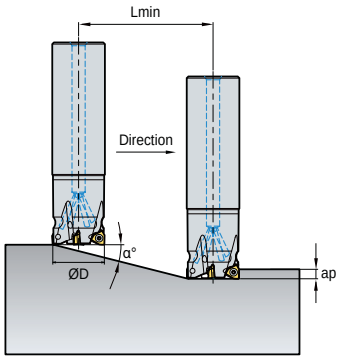
(inch)

ae	Cutter diameter (Ø)								
	Ø0.75	Ø1	Ø1.25	Ø1.5	Ø2	Ø2.5	Ø3	Ø4	Ø5
	Max step								
0.039	0.335	0.389	0.437	0.480	0.556	0.622	0.683	0.790	0.884
0.079	0.460	0.539	0.607	0.669	0.778	0.873	0.959	1.111	1.245
0.118	0.546	0.645	0.731	0.808	0.943	1.061	1.167	1.354	1.519
0.138	-	-	-	-	-	-	1.258	1.459	1.637

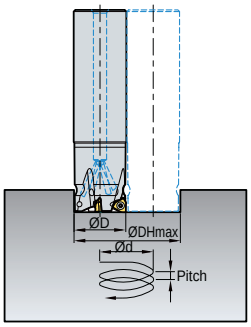
Rich Mill RM3

Ramping and helical cutting

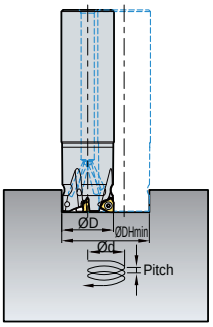
1. Ramping



2. Helical cutting for blind hole



3. Helical cutting for through hole



(inch)

Type	Tool Dia. ØD	ap	1. Ramping		2. Helical cutting for blind hole				3.Helical cutting for through hole	
			Max. rake angle α°	Lmin	Min. machining Dia. ØDHmin	Max. pitch	Max. machining Dia. ØDHmax	Max. pitch	Min. machining Dia. ØDHmin	Max. pitch
3000 type	0.75	0.217	17.5	0.708	1.400	0.217	1.440	0.217	1.212	0.220
	1.00	0.217	9.5	1.294	1.900	0.217	1.940	0.217	1.712	0.220
	1.25	0.217	6.5	1.901	2.400	0.217	2.440	0.217	2.212	0.220
	1.50	0.217	5.0	2.475	2.900	0.217	2.940	0.217	2.712	0.220
	2.00	0.217	3.5	3.540	3.900	0.217	3.940	0.217	3.712	0.220
	2.50	0.217	2.5	4.959	4.900	0.217	4.940	0.217	4.712	0.207
	3.00	0.217	2.0	6.201	5.900	0.217	5.940	0.217	5.712	0.201
4000 type	1.00	0.315	23.0	0.742	1.800	0.315	1.920	0.315	1.529	0.310
	1.25	0.315	13.0	1.312	2.300	0.315	2.300	0.315	2.029	0.310
	1.50	0.315	9.0	1.989	2.800	0.315	2.920	0.315	2.529	0.310
	2.00	0.315	5.5	3.271	3.800	0.315	3.920	0.315	3.529	0.310
	2.50	0.315	4.0	4.504	4.800	0.315	4.920	0.315	4.529	0.310
	3.00	0.315	3.0	6.010	5.800	0.315	5.920	0.315	5.529	0.310
	4.00	0.315	2.0	9.019	7.800	0.315	7.920	0.315	7.529	0.297
	5.00	0.315	1.5	12.028	9.800	0.303	9.920	0.307	9.529	0.288
5000 type	3.00	0.472	5.5	4.906	5.744	0.472	5.906	0.472	5.439	0.470
	4.00	0.472	3.5	7.724	7.744	0.472	7.913	0.472	7.439	0.470
	5.00	0.472	3.0	9.015	9.752	0.472	9.921	0.472	9.439	0.470

* Please be sure to use cutting oil or air for ramping and helical machining
Lmin = ap/tan (α°)

Rich Mill RM3

Application guideline for grade

Workpiece		P		M	K	N
		Carbon steel	Alloy steel	Stainless steel	Cast iron	Aluminum
Chip breaker	First choice	MM	MM	ML	ML	MA
	Second choice	ML	ML	-	MM	-
Grades	High speed machining	PC3700	PC3700	PC5300	PC6510	H01
	General machining	PC5400	PC5300	PC5400	PC5300	
	Interrupted machining	PC5400	PC5400	PC5400	PC5400	

Recommended cutting condition

• RM3 3000 type

Workpiece		Grade	Cutting conditions				Cutting conditions			
			vc (sfm)	fz (ipt)	max ap (inch)	Available insert	vc (sfm)	fz (ipt)	max ap (inch)	Available insert
P	steel	PC3700	524~885	0.010~0.002	0.217	XNKT0604□□ PNSR-MM	524~885	0.008~0.002	0.217	XNKT0604□□ PNER-ML
		PC5300	492~787	0.010~0.002			492~787	0.010~0.002		
		PC5400	426~688	0.010~0.002			426~688	0.010~0.002		
M	Stainless steel	PC5300	295~492	0.008~0.002			295~492	0.006~0.002		
		PC5400	229~393	0.008~0.002			229~393	0.006~0.002		
K	Cast iron	PC6510	459~754	0.012~0.003			459~754	0.010~0.003		
		PC5300	393~656	0.012~0.003			393~656	0.010~0.003		

※ Maximum cutting conditions: vc (sfm) = 1148, fz (ipt) = 0.020 according to the cutting environment

• RM3 4000 type

Workpiece		Grade	Cutting conditions				Cutting conditions			
			vc (sfm)	fz (ipt)	max ap (inch)	Available insert	vc (sfm)	fz (ipt)	max ap (inch)	Available insert
P	steel	PC3700	524~885	0.012~0.002	0.315	XNKT0805□□ PNSR-MM	524~885	0.010~0.002	0.315	XNKT0805□□ PNER-ML
		PC5300	492~787	0.012~0.002			492~787	0.010~0.002		
		PC5400	426~688	0.012~0.002			426~688	0.010~0.002		
M	Stainless steel	PC5300	295~492	0.010~0.002			295~492	0.008~0.002		
		PC5400	229~393	0.010~0.002			229~393	0.008~0.002		
K	Cast iron	PC6510	459~754	0.014~0.003			459~754	0.012~0.003		
		PC5300	393~656	0.014~0.003			393~656	0.012~0.003		
N	Aluminum	H01	1312~3937	0.016~0.004		XNCT0805□□PNFR-MA	-	-	-	-

※ Maximum cutting conditions: vc (sfm) = 1148, fz (ipt) = 0.028 according to the cutting environment

• RM3 5000 type

Workpiece		Grade	Cutting conditions				Cutting conditions			
			vc (sfm)	fz (ipt)	max ap (inch)	Available insert	vc (sfm)	fz (ipt)	max ap (inch)	Available insert
P	steel	PC3700	524~885	0.012~0.002	0.472	XNKT1206□□ PNSR-MM	524~885	0.010~0.002	0.472	XNKT1206□□ PNER-ML
		PC5300	492~787	0.012~0.002			492~787	0.010~0.002		
		PC5400	426~688	0.012~0.002			426~688	0.010~0.002		
M	Stainless steel	PC5300	295~492	0.010~0.002			295~492	0.008~0.002		
		PC5400	229~393	0.010~0.002			229~393	0.008~0.002		
K	Cast iron	PC6510	459~754	0.014~0.003			459~754	0.012~0.003		
		PC5300	393~656	0.014~0.003			393~656	0.012~0.003		
N	Aluminum	H01	1312~3937	0.016~0.004		XNCT1206□□PNFR-MA	-	-	-	-

※ Maximum cutting conditions: vc (sfm) = 1148, fz (ipt) = 0.028 according to the cutting environment

Rich Mill RM4

Features



- Economical 4 cutting-edges by using double-sided insert
- RM4, as a multi-functional milling tool, offers economical 4 cutting-edges by using an innovative double-sided insert
- Special designed chip breaker consists of high rake angle and strong cutting-edge to decrease the cutting load
- RM4 is multi-functional tool that can cover facing, side cutting, shouldering, slotting, ramping & helical cutting
- Optimal matching of the special cutting-edge geometry with variety of new grades provides consistence & long tool life of insert

Features of cutter

- 4 cutting - edges can be used by using double-sided insert
- High rake angle chip breaker and cutting-edge can make smooth cutting with low cutting load
- Strong negative insert
- High efficiency, economical, multi-functional tool



Through coolant system
- Longer tool life due to direct cooling injection into the cutting-edge of insert

Wide chip pocket for better chip evacuation

Simple screw on system

Improving chip control

Features of insert

- Double-sided insert using 4 cutting-edges
- High rake angle chip breaker, cutting-edge
- Flexibility of product
- High efficiency, economical, multi-functional tool
- Negative insert has strong cutting-edge

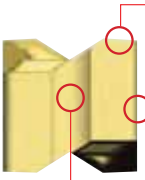


Chip breaker
- High rake angle chip breaker
- Improving chip control

Major cutting-edge
- High rake angle chip breaker
- Better surface roughness

Step design
- Improving chip control
- Reducing cutting load

Concave design
- 4 cutting-edges
- Minimize interference



Minor cutting-edge
- Special design of cutting-edge to improve surface roughness

Clearance face
- Strong negative face
- Strong cutting-edge

Uses



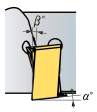
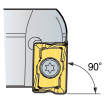
Facing | Shouldering | Slotting | Ramping | Helical cutting

Rich Mill RM4

Features of chip breakers

Insert		Cutting-edge	Uses	Features
MA			Aluminum, Light machining	With sharp edge application the better productivity has been accomplished, especially for Aluminum or low force cut
MF			Light cutting	Due to low cutting load, it is good for light cutting and difficult-to-cut material
MM			General cutting	It is suitable design for general milling

Setting configuration

Shape	Setting angle of insert	Features
		High rake chip breaker & positive setting angle for low cutting load → Improving machinability
		Multi applications for facing, shouldering, slotting, ramping, helical cutting, etc

Through coolant system

- To get optimal chip control, the direction of coolant injection has been designed to reach to each cutting-edge directly (through coolant arbor is required)

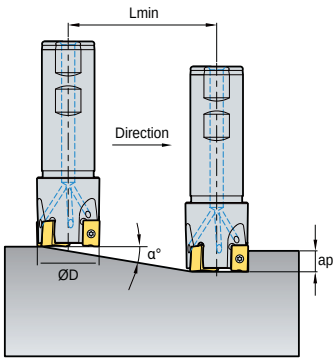


Through coolant system for decreasing cutting heat and good chip evacuation

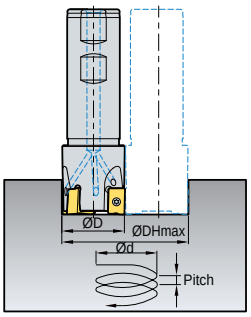
Rich Mill RM4

Ramping and helical cutting

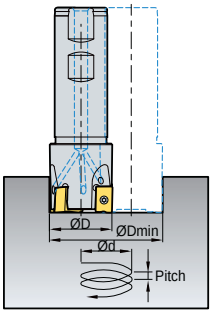
1. Ramping



2. Helical cutting for blind hole



3. Helical cutting for through hole



(inch)

Designation	Tool Dia. ØD	ap	1. Ramping		2. Helical cutting for blind hole				3.Helical cutting for through hole	
			Max. rake angle α°	Lmin	Min. machining Dia. Ø DHmin	Max. pitch	Max. machining Dia. Ø DHmax	Max. pitch	Min. machining Dia. Ø DHmin	Max. pitch
3056HR	0.562	0.354	5.6	3.92	0.990	0.13	1.069	0.15	0.785	0.06
3062HR	0.625	0.354	4.2	5.14	1.116	0.11	1.195	0.13	0.911	0.06
3068HR	0.688	0.354	3.5	6.27	1.242	0.11	1.321	0.12	1.037	0.06
3075HR	0.750	0.354	2.9	7.42	1.366	0.10	1.445	0.11	1.161	0.06
3100HR	1.000	0.354	1.8	12.40	1.866	0.08	1.945	0.09	1.661	0.06
3125HR	1.250	0.354	1.2	17.64	2.366	0.07	2.445	0.08	2.161	0.06
3150HR	1.500	0.354	0.9	23.04	2.866	0.07	2.945	0.07	2.661	0.06
3200HR	2.000	0.354	0.6	33.70	3.866	0.06	3.945	0.07	3.661	0.05
3150HR	1.500	0.354	0.9	23.04	2.866	0.07	2.945	0.07	2.661	0.06
3200HR	2.000	0.354	0.6	33.70	3.866	0.06	3.945	0.07	3.661	0.05
3250HR	2.500	0.354	0.5	44.27	4.866	0.06	4.945	0.06	4.661	0.05
3300HR	3.000	0.354	0.3	56.44	5.866	0.06	5.945	0.06	5.661	0.05
3400HR	4.000	0.354	0.2	77.85	7.866	0.05	7.945	0.06	7.661	0.05
4125HR	1.250	0.551	2.5	9.024	2.366	0.15	2.445	0.16	2.161	0.12
4150HR	1.500	0.551	2.0	11.283	2.866	0.14	2.945	0.15	2.661	0.12
4200HR	2.000	0.551	2.0	11.283	3.866	0.19	3.945	0.20	3.661	0.18
4250HR	2.500	0.551	2.0	11.283	4.866	0.24	4.945	0.25	4.661	0.23
4200HR	2.000	0.551	2.0	11.283	3.866	0.19	3.945	0.20	3.661	0.18
4250HR	2.500	0.551	2.0	11.283	4.866	0.24	4.945	0.25	4.661	0.23
4300HR	3.000	0.551	1.5	15.046	5.866	0.22	5.945	0.23	5.661	0.21
4400HR	4.000	0.551	1.0	22.572	7.866	0.19	7.945	0.20	7.661	0.20
4500HR	5.000	0.551	1.0	22.572	9.866	0.25	9.945	0.26	9.661	0.25
4600R	6.000	0.551	0.5	45.148	11.866	0.15	11.945	0.15	11.661	0.15

* Please be sure to use cutting oil or air for ramping and helical machining
Lmin = ap/tan (α°)

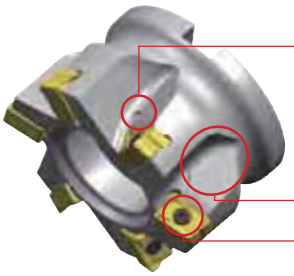
Recommended cutting condition

ISO	Grade	LNM(E)X100605PNR-MF		LNM(E)X100605PNR-MM		LNEX100605PNR-MA		Max-ap (inch)	LNM(E)X151008PNR-MF		LNM(E)X151008PNR-MM		LNEX151008PNR-MA		Max-ap (inch)
		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	
P	NCM535	-	-	-	-	-	-	0.354	490~985	0.01~0.002	390~985	0.012~0.002	490~985	0.008~0.001	0.551
P	PC3700	490~985	0.010~0.002	390~985	0.012~0.002	490~985	0.008~0.001		490~985	0.01~0.002	390~985	0.012~0.002	490~985	0.008~0.001	
M	PC5300	390~590	0.010~0.002	330~590	0.012~0.002	390~655	0.008~0.001		390~590	0.01~0.002	330~590	0.012~0.002	390~665	0.008~0.001	
K	PC6510	490~985	0.012~0.003	390~985	0.014~0.003	-	-		490~985	0.012~0.003	390~985	0.014~0.003	-	-	

Rich Mill RM4Z

Features

- Rich mill series RM4Z is a plunge mill for high efficiency vertical machining such as slotting and pocketing in roughing applications
- Rich mill series RM4Z is a highly efficient milling tool for plunging, shouldering and facing. It makes operations more economical with the use of its double-sided 4-corner insert
- Plunge machining reduces lead time for high productivity and precision machining.
- In plunging the max depth of RM4Z 3000 type is 0.354 inch and that of RM4Z 4000 type is 0.551 inch



Through coolant system
- Improving chip control
- Cooling inserts increases tool life

Wide chip pocket
Screw on system
Improving chip evacuation



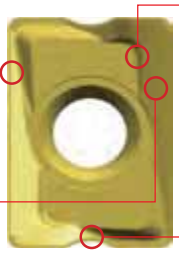
- Double-sided insert ···› 4 corner available
- High rake angle chip breaker and cutting-edge
- Various available machining types
- High efficiency and economical insert
- Negative type insert - Strong cutting-edge

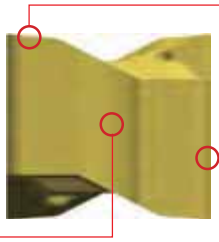
Features of insert

Major cutting-edge
- High rake cutting-edge
- Sharp cutting-edge

Step design
- Improving chip control
- Reducing cutting load

Minor cutting-edge
- Special design for plunge machining



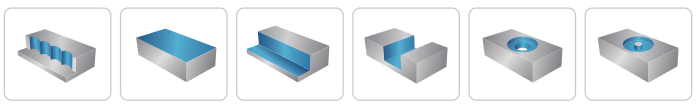


Chip breaker
- High rake angle
- Control chip flow

Concave design
- 4 corner available
- Avoiding interference of cutting-edges

Sides
- Negative type
- Strong cutting-edge

Uses

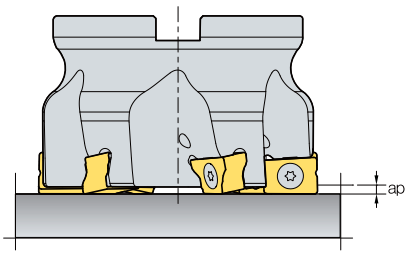


Plunging | Facing | Shouldering | Slotting | Counter Boring | Helical cutting

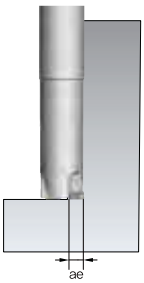
Rich Mill RM4Z

The depth of cut by machining type

• In horizontal machining, Depth of cut = ap (inch)



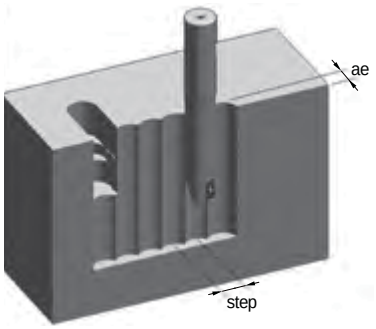
• In plunging, Depth of cut = ae (inch)



(inch)

RM4Z	Horizontality	Verticality	
	max ap	max ae	step
RM4Z 3000	0.059	0.354	< 0.7D
RM4Z 4000	0.098	0.551	< 0.7D

Max Step in plunging

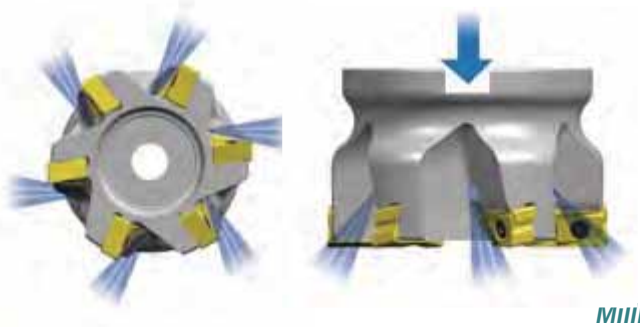


(inch)

ae	Cutter Diameter						
	1.00	1.25	1.50	2.00	2.50	3.00	4.00
	max step						
0.039	0.386	0.433	0.476	0.555	0.622	0.681	0.787
0.079	0.535	0.606	0.783	0.776	0.870	0.957	1.110
0.118	0.642	0.728	0.807	0.941	1.059	1.165	1.350
0.157	0.724	0.827	0.917	1.075	1.215	1.335	1.555
0.197	0.791	0.909	1.012	1.189	1.346	1.484	1.728
0.236	0.846	0.976	1.091	1.287	1.461	1.614	1.882
0.276	0.890	1.035	1.161	1.378	1.563	1.732	2.024
0.315	0.925	1.083	1.220	1.457	1.657	1.839	2.154
0.354	0.953	1.126	1.272	1.524	1.740	1.933	2.272
0.394	-	-	-	-	1.819	2.024	2.382
0.433	-	-	-	-	1.890	2.106	2.484
0.472	-	-	-	-	0.776	2.185	2.579
0.512	-	-	-	-	2.016	2.256	2.669
0.551	-	-	-	-	2.071	2.323	2.756

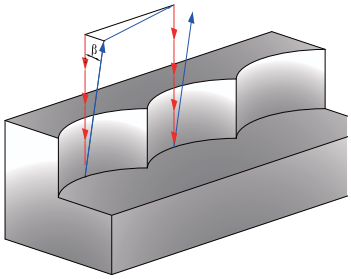
Through coolant system

- Direct coolant injection to cutting-edge improves cooling effectiveness
- Coolant type arbor should be used



Rich Mill RM4Z

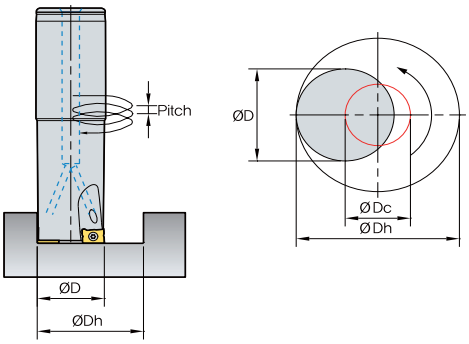
Programming tip



Plunging feed direction
Tool escape
β Escape angle (β ≥ 1°)

• When your tool steps back after plunging, please get over 1° more escape angle

Helical machining



ØDc = ØDh-ØD

ØDc = Tool center path
ØDh = Desired hole diameter
ØD = Tool Dia.

(inch)

Designation		Diameter ØD (inch)	Helical data			
			Min. machining Dia. ØDHmin	Max. pitch	Max. machining Dia. ØDHmax	Max. pitch
RM4ZSA	3100HR-L100	1.00	1.921	0.075	1.213	0.017
	3125HR-L125	1.25	2.421	0.038	1.674	0.013
	3150HR-L125	1.50	2.921	0.023	2.174	0.011
RM4ZCA	3150HR	1.50	2.921	0.023	2.174	0.011
	3200HR	2.00	3.921	0.021	3.174	0.012
RM4ZMA	3100HR-M12	1.00	1.921	0.075	1.213	0.017
	3125HR-M16	1.25	2.421	0.038	1.674	0.013
	3150HR-M16	1.50	2.921	0.023	2.174	0.011
RM4ZCA	4250HR	2.50	4.921	0.039	3.780	0.021
	4300HR	3.00	5.921	0.032	4.780	0.019
	4400HR	4.00	7.921	0.021	6.780	0.015

Recommended cutting condition

ISO	Grade	LNM(E)X100605PNL-MM				LNM(E)X151008PNL-MM			
		vc (sfm)	fz (ipt)	* max ae (inch)	** max ap (inch)	vc (sfm)	fz (ipt)	* max ae (inch)	** max ap (inch)
P	PC3700	350~820	0.010~0.002	0.354	0.059	400~820	0.010~0.002	0.551	0.098
M	PC5300	270~600	0.008~0.002			330~600	0.008~0.002		
K	PC6510	350~820	0.012~0.003			400~820	0.012~0.003		

*max ae (inch): (Plunging) max. radial depth of cut

**max ap (inch): (Shouldering/Facing) max depth of cut

Rich Mill RM6

Features

- Stable clamping - 3 clamping surfaces on the side and strong clamping screws
  → Improves cutting stability
- High quality results - High precision, excellent perpendicularity, outstanding surface finish on the flank, accurate tolerance
- High productivity - High rake angle and sharp cutting-edges for lower cutting resistance
  → Ideal for high speed and high feed machining

Features of insert

Higher clamping stability
- Wide clamping areas and strong clamping screws for rigid clamping

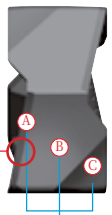
High rake angle chip breaker
- Maintains stable clamping
- Induces smooth chip flow
  → Increases insert life

Wide minor cutting-edges
- Improved surface finish
- Enable multi-purpose machining incl. plunging



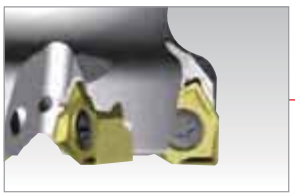
MAX. ap
WNGX08: 0.323 inch
WNGX04: 0.157 inch

High rake cutting-edges
- Improved machinability and reduces cutting resistance

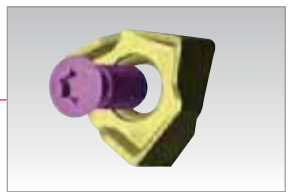


3-level flank relief surface
- Enhances rigidity and enables stable clamping
  → Improves cutting stability

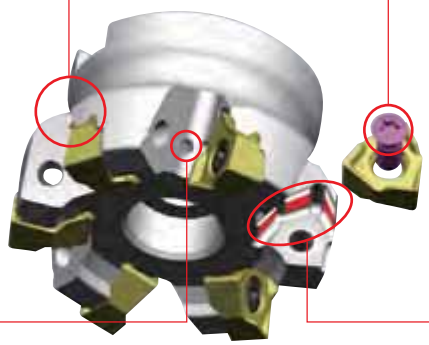
Features of cutter

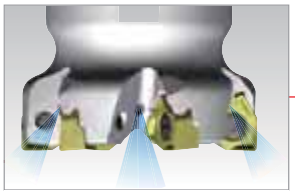


Streamlined holder design
- Improved chip evacuation in deep shouldering and slotting



Strong clamping screws
- Strong clamping screws enable rigid clamping





Through coolant system
- Improved chip flow and tool life thanks to insert cooling



3-side supporting system
- Stable tool life

Rich Mill RM6

Features of chip breakers

Insert		Cutting-edge	Uses	Features
MA			For aluminum	Sharp cutting-edges for excellent cutting performance in aluminum machining Buffed surface for excellent chip flow and welding resistance
ML			For light cutting	Chip breaker design of low cutting resistance, ideal for light cutting and machining hard-to-cut materials Excellent tool life and quality results
MM			For general cutting	Chip breaker design ideal for general shoulder milling and most applications

Application guideline for grade

Workpiece		P		M	K	N
		Carbon steel	Alloy steel	Stainless steel	Cast iron	Non-ferrous metal
Shape	1st recommended	MM	MM	ML	ML	MA
	2nd recommended	ML	ML	-	MM	MA
Grades	High speed milling	PC3700	PC3700	PC5300	PC6510	H01
	General milling	PC5400	PC5300	PC5400	PC5300	H01
	Interrupted milling	PC5400	PC5400	PC5400	PC5400	H01

Recommended cutting condition

• WNGX04

Workpiece		Grade	WNGX040304PNSR-MM			WNGX040304PNER-ML			WNGX040304PNFR-MA		
			vc (sfm)	fz (ipt)	max. ap (inch)	vc (sfm)	fz (ipt)	max. ap (inch)	vc (sfm)	fz (ipt)	max. ap (inch)
P	Steel	PC3700	525~886	0.010~0.002		525~886	0.008~0.002		-	-	
		PC5300	492~787	0.010~0.002		492~787	0.010~0.002		-	-	
		PC5400	427~689	0.010~0.002		427~689	0.010~0.002		-	-	
M	Stainless steel	PC5300	295~492	0.008~0.002	0.169	295~492	0.004~0.002	0.169	-	-	0.169
		PC5400	230~394	0.008~0.002		230~394	0.004~0.002		-	-	
K	Cast iron	PC6510	459~755	0.012~0.008		459~755	0.010~0.008		-	-	
		PC5300	394~656	0.012~0.008		394~656	0.010~0.008		-	-	
N	Non-ferrous metal	H01	-	-	-	-	-	-	1640~3281	0.008~0.002	0.169

※ The above data refer to general cutting conditions and can be adjustable up to 300 m/min and 0.4 mm/t depending on user environment.

• WNGX08

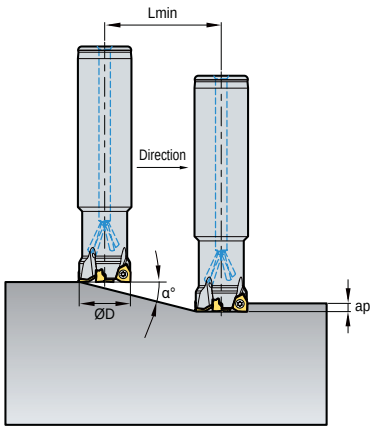
Workpiece		Grade	WNGX080608PNSR-MM			WNGX080608PNER-ML			WNGX080608PNFR-MA		
			vc (sfm)	fz (ipt)	max. ap (inch)	vc (sfm)	fz (ipt)	max. ap (inch)	vc (sfm)	fz (ipt)	max. ap (inch)
P	Steel	PC3700	525~886	0.010~0.002		525~886	0.008~0.002		-	-	
		PC5300	492~787	0.010~0.002		492~787	0.010~0.002		-	-	
		PC5400	427~689	0.010~0.002		427~689	0.010~0.002		-	-	
M	Stainless steel	PC5300	295~492	0.008~0.002	0.323	295~492	0.004~0.002	0.323	-	-	0.323
		PC5400	230~394	0.008~0.002		230~394	0.004~0.002		-	-	
K	Cast iron	PC6510	459~755	0.012~0.008		459~755	0.010~0.008		-	-	
		PC5300	394~656	0.012~0.008		394~656	0.010~0.008		-	-	
N	Non-ferrous metal	H01	-	-	-	-	-	-	1640~3281	0.002~0.008	0.323

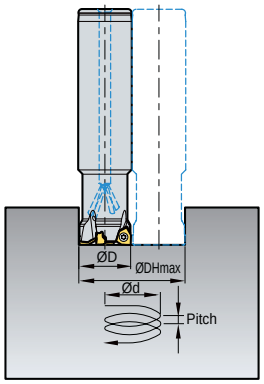
※ The above data refer to general cutting conditions and can be adjustable up to 300 m/min and 0.4 mm/t depending on user environment.

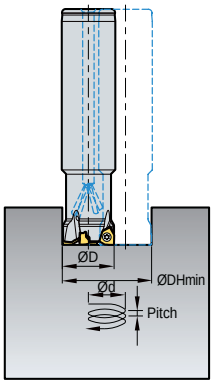
Rich Mill RM6

Ramping

1. Ramping | **2. Helical cutting for blind holes** | **3. Helical cutting for through holes**







(inch)

Designation		Tool Dia. ØD	ap	1. Ramping		2. Helical cutting for blind holes				3. Helical cutting for through holes	
				Max. rake angle α°	Lmin	Min. machining Dia. ØDHmin	Max. pitch	Max. machining Dia. ØDHmax	Max. pitch	Min. machining Dia. ØDHmin	Max. pitch
RM6PSA	125R-2W125-500-WN08	Ø1.25	0.315	0.8	22.6	2.1	0.03	2.43	0.05	1.476	0.02
	150R-3W125-500-WN08	Ø1.50	0.315	0.5	36.1	2.6	0.03	2.93	0.03	1.976	0.01
	200R-4W125-500-WN08	Ø2.00	0.315	0.3	60.2	3.6	0.02	3.93	0.03	2.976	0.01
RM6PCA	250R-100-6-WN08	Ø2.50	0.315	0.2	90.3	4.6	0.02	4.93	0.02	3.976	0.01
	300R-100-7-WN08	Ø3.00	0.315	0.2	90.3	5.6	0.03	5.93	0.03	4.976	0.01
	400R-150-8-WN08	Ø4.00	0.315	0.1	180.5	7.6	0.02	7.93	0.02	6.976	0.01
	500R-150-11-WN08	Ø5.00	0.315	0.1	180.5	9.6	0.02	9.93	0.02	8.976	0.01

Lmin = ap/tan (α°)

Lmin: Cutting length at min. rake angle
ap: Axial depth of cut
α°: Available rake angle for ramping

Rich Mill RM8

Features

- Double-sided insert to use 8 cutting-edges
- Innovative double-sided insert makes it possible to use 8 cutting-edges
  It is more economical than conventional single sided insert
- The unique geometry and high rake angle of cutting-edge guarantees excellent surface finish
  Applicable for various workpieces like steel, stainless steel, cast iron, aluminum
- Combined with the innovative geometry and various grades
  provided the tool offers durability and excellent tool life
- Various pitches and chip breakers can be applicable for diverse machining
- Light Rich Mill cutter can be useful for high speed machining and low power machine



Through coolant system

- To get optimal chip evacuation, the direction of coolant injection has been
  designed to reach to each cutting-edge directly. Through coolant arbor is required



Through coolant system for decreasing cutting heat and good chip evacuation

Features of chip breaker

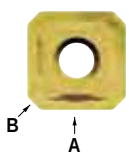
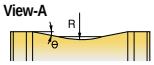
Insert		Cutting-edge	Uses	Features
MA			For aluminum	Due to sharp cutting-edge and buffed surface, it has good chip flow and welding resistance
ML			For hard-to-cut material	Chip breaker with low cutting load is optimal for machining hard-to-cut materials
MF			For light cutting	Due to low cutting load, it is good for light cutting and difficult-to-cut material
MM			For general cutting	It is suitable design for general milling
W			For wiper	Specialized edge design can be suitable for excellent surface roughness operation

Uses



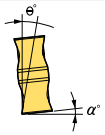
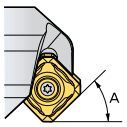
Facing

Features of insert

Insert	Cutting-edge	Features
	View-A 	High rake chip breaker & positive setting angle for low cutting load
	View-B 	Designed wiper technology in minor cutting-edge for improved surface roughness
	Chip breaker 	Low cutting load due to the positive setting and high rake angle chip breaker

Rich Mill RM8

Features of cutter

Shape	Setting angle of insert	Features
		High rake angle makes positive setting angle for low cutting load
		Suitable for facing and chamfering • RM8A A = 45° • RM8E A = 75° • RM8Q A = 88°

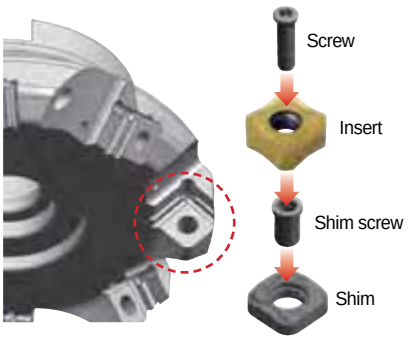
Recommended cutting condition

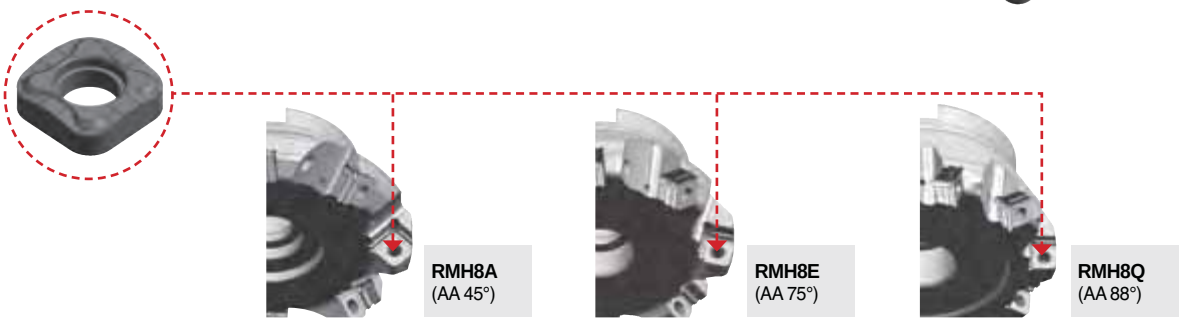
ISO	Grade	SNM(E)X1206A(E)NN-MF		SNM(E)X1206A(E)NN-MM		SNEX1206A(E)NN-MA		Max-ap (inch)	SNM(E)X1507A(E)NN-MF		SNM(E)X1507A(E)NN-MM		Max-ap (inch)
		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	
P	NC5330	-	-	490~985	0.014~0.004	-	-	RM8A 0.236 RM8E 0.354 RM8Q 0.453	-	-	490~985	0.014~0.004	RM8A 0.295 RM8E 0.433
P	NCM535	655~985	0.012~0.002	490~985	0.014~0.004	655~1150	0.010~0.001		655~985	0.012~0.002	490~985	0.014~0.004	
P	PC3700	655~985	0.012~0.002	490~985	0.014~0.004	655~1150	0.010~0.001		655~985	0.012~0.002	490~985	0.014~0.004	
M	PC9530	490~985	0.014~0.003	490~985	0.012~0.002	-	-		490~985	0.014~0.003	490~985	0.012~0.002	
M	PC5300	490~985	0.014~0.003	490~985	0.016~0.004	-	-		490~985	0.014~0.003	490~985	0.016~0.004	
K	PC6510	330~590	0.002	390~590	0.014~0.004	390~955	0.008~0.001		-	-	-	-	
K	PC5300	-	-	-	-	-	-		330~590	0.002	390~590	0.014~0.004	

Rich Mill RMH8

Features

- Screw on clamping system - Adaptable and Stable clamping system
- Reinforced rigidity and enhanced clamping power
  - Appling shim system, prevent cutter damage when insert breaks
- Adapting/exchangeable shim
  - Using various kinds of cutter (Approach angle 45°, 75°, 88°)
  - Stable clamping power with insert



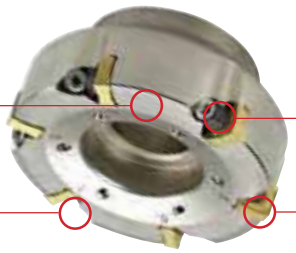


Rich Mill RMT8

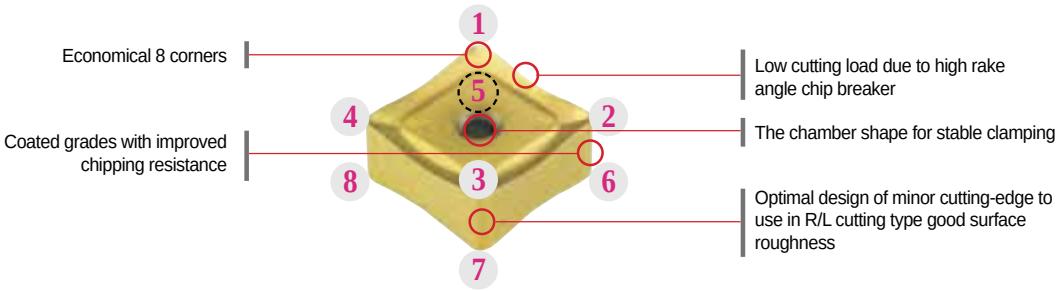
Features

- New latch clamping system provides a powerful cutting force and an easy insert change
- New grades with chipping resistance provides good surface roughness and better tool life
- Due to the specially designed chip breaker, all operations are possible
- RMT with various pitches can replace conventional ISO milling tool

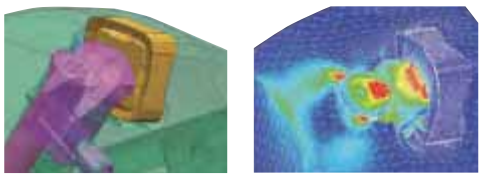
Features of cutter



Features of insert (Using R/L)



Clamping force analysis



Features of chip breakers

Insert		Cutting-edge	Uses	Features
MF			For fine finishing	Our specialized insert design creates low cutting forces suitable for light cutting, HRSA
MM			For strengthen	Suitable geometry design for general milling has wider ranges of machining

Recommended grades and chip breakers

ISO	Grade	MM	MF
P	NCM535	◎	○
	PC5300	◎	○
M	PC9530	○	◎
K	PC6510	○	◎

◎: Optimum ○: Proper

Recommended cutting condition

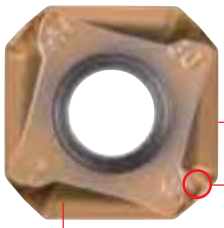
ISO	Grade	MM		MF	
		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)
P	NC5330	620~1010	0.014~0.004	620~1010	0.012~0.002
	NCM535	520~880	0.014~0.004	520~880	0.012~0.002
	PC3700	420~680	0.014~0.004	420~680	0.012~0.002
M	PC9530	290~490	0.012~0.002	290~490	0.012~0.002
K	PC6510	450~750	0.016~0.004	450~750	0.014~0.003

Rich Mill RM8-X

Features

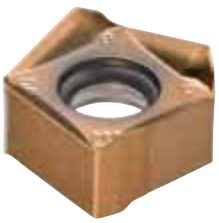
- High helix face milling tool with 8-cornered double-side inserts
- High performance in stainless steel machining due to sharp cutting edge and double reverse positive relief surface structure
- Economic tool by double-sided 8 corners and high helix right-handed shape realizing high depth of cut machining

Insert features



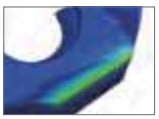
High Helix
- Improved surface finish
- Reduced cutting loa

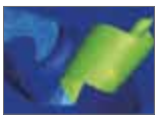


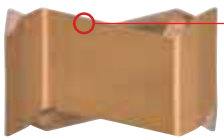


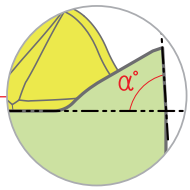
High rake angled major cutting edge/ Variable chip breaker
- Maintain its machinability in high depth of cut
- Enhanced chip control

Variable minor cutting edge chip breaker
- Protects its corner on the opposite side
- Enhanced chip control







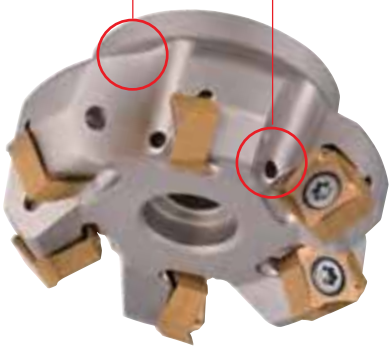


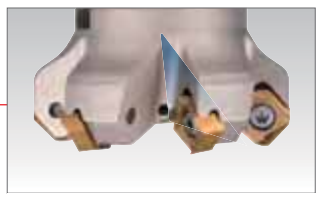
Reversal positive relief angle at the Major cutting edge
- Protects its corner on the opposite side
  - Increased chipping resistance and prevents unexpected breakage

Cutter features



Steamlined cutter design
Improved chip evacuation

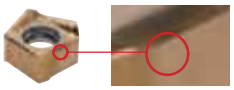




Internal coolant system
- Improved chip evacuation
- Tool life increase with the inserts' cooling

Rich Mill RM8-X

Recommended grade and cutting edge

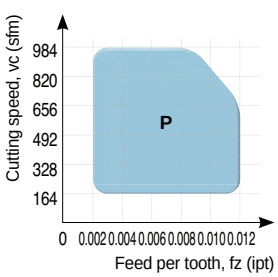
Type	SAGX			SNMX	
Features	Strong relief surface			Relief surface for surface finish	
Workpiece	M	S	H	P	K
Geometry	SAGX-ML ~ SAGX-MM			SNMX-MM	
	 [Double reverse positive relief surface]			 [Negative relief surface]	

Type	Recommended insert and grade for different workpiece (●: 1st recommendation)									
	P		M		K		S		H	
	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
SAGX140808ANER	○ML ○MM	○PC5300 ○PC3700	●ML ○MM	●PC9540 ○PC5300	○ML ○MM	○PC6510 ○PC5300	●ML ○MM	●PC5300	●MM	●PC2510 ○PC2505
SNMX140808ANER	●MM	●PC3700	-	-	●MM	●PC6510	-	-	-	-

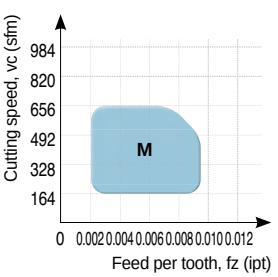
Recommended cutting condition

Grade		Machining type	Recommended grade	Recommended cutting speed vc(sfm)	ISO	Application range
P	Steel	Continuous cutting	PC3700 new	770 (590~950)	P30	PC3700 new, PC5300
		Interrupted cutting	PC5300	640 (490~790)	P40	
M	Stainless steel	Continuous cutting	PC5300	430 (330~530)	M20	PC5300
					M30	
		Interrupted cutting	PC9540	360 (260~460)	M40	PC9540
K	Cast iron	Continuous cutting	PC6510	590 (460~750)	K05	PC6510
					K10	
		Interrupted cutting	PC5300	475 (360~590)	K20	PC5300
					K30	
H	Hardened steel	Continuous cutting	PC2510 new	180 (131~230)	H10	PC2510 new

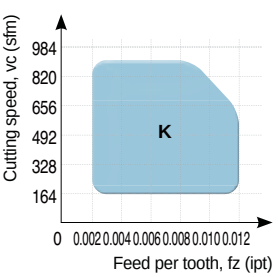
P Steel



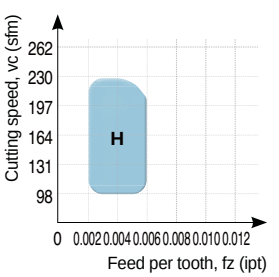
M Stainless steel



K Cast iron



H Hardened steel



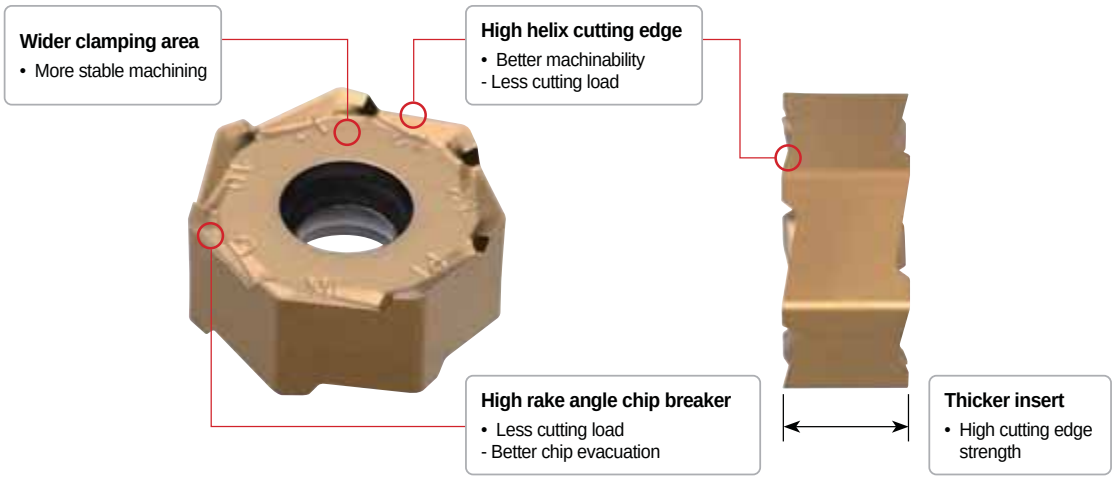
Rich Mill RM14

Features

- Economical face mill with 14 double-sided corners
- Minimized chattering of workpiece due to minimum lead angle and sharp cutting edge
- Reduced cutting resistance and improved chip emissions by high helix angle application

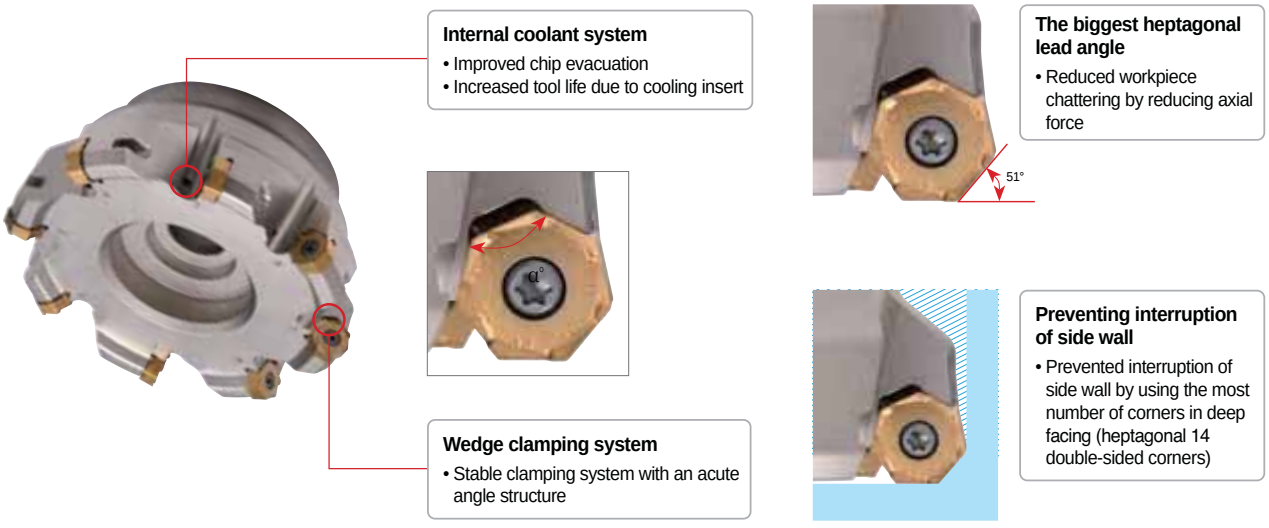
Insert features

- Wide supporting area of insert ensures stable clamping system.
- High rake angle cutting edge reduces cutting load and increases chip evacuation.
- Thicker insert realizes stability in machining.



Cutter features

- The biggest heptagonal lead angle reduces chatter in machining.
- Wedge type clamping system ensures stable clamping.
- Stepped machining is available without interruption of side wall of insert.



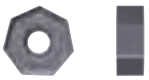
Rich Mill RM14

Features of chip breakes

Insert		Cutting-edge	Uses	Features
Flat			Neutral type Flat cutting edge	1st recommended for heat resistant stainless steel machining Generally applied in various machining Applicable for both right handed and left handed
Helix			Right handed type High helix cutting edge	1st recommended for cast iron machining Applicable for stainless steel machining with less than 3 mm depth of cut For high speed and high feed machining

Recommended grade and cutting edge

(●: 1st recommendation)

Type		Recommended grade and cutting edge by workpiece							
		M				K			
		Austenitic stainless steel		Heat resistance stainless steel		Gray cast iron		Ductile cast iron	
		Type	Grade	Type	Grade	Type	Grade	Type	Grade
Flat		-	●PC9540 ○PC5300 ○PC5400	●	●PC9540 ○PC5300 ○PC5400	-	○PC6510 ○PC5300 ●NCM535	-	●PC6510 ○PC5300 ○NCM535
Helix		●	●PC9540 ○PC5300 ○PC5400	-	●PC9540 ○PC5300 ○PC5400	●	○PC6510 ○PC5300 ●NCM535	●	●PC6510 ○PC5300 ○NCM535

Recommended cutting condition

ISO	Workpiece	AISI	ISO (DIN)*	KS	HB	Grades	Cutting conditions					
							Helix			Flat		
							vc (sfm)	fz (ipt)	ap (inch)	vc (sfm)	fz (ipt)	ap (inch)
M	Austenite	304 316	X5CrNi18 - 9 X5CrNiMo17-12 - 2	STS304 STS316	160 - 180	PC9540 (PC5300)	262 - 525	0.012 - 0.002	0.039 - 0.118	295 - 492	0.01 - 0.002	0.039 - 0.118
	Heat resistance stainless steel	-	(1.48□□)*	-	160 - 200	PC9540 (PC5300)	196 - 328	0.008 - 0.002	0.039 - 0.079	196 - 328	0.01 - 0.002	0.039 - 0.118
K	Gray cast iron	No 35 B	250 (GG 25)*	GC250	180-240	NCM535 (PC6510)	656 - 984	0.012 - 0.004	0.079 - 0.118	656 - 984	0.01 - 0.004	0.079 - 0.118
	Ductile cast iron	80 - 55 - 06	500 - 7 (GGG 50)*	GCD500	150 - 230	PC6510 (PC5300)	360 - 754	0.012 - 0.004	0.079 - 0.118	492 - 656	0.012 - 0.004	0.079 - 0.118
		-	600 - 3 (GGG 60)*	GCD600	170 - 270	PC6510 (PC5300)	278 - 656	0.01 - 0.006	0.079 - 0.118	492 - 656	0.01 - 0.006	0.079 - 0.118

Rich Mill RM16

Features

- Economical 16 cutting-edges
- Reduces cost in medium cutting
- Wiper insert can be used for good surface roughness
- Optimal matching of the special cutting-edge geometry with variety of new grades provides consistence & long tool
- When it is used 16 corners, maximum cutting depth is 0.22 inch, but it is used 8 corners, maximum cutting depth is 0.51 inch
- Wiper insert is placed 0.002 inch lower than facing insert in cutter
- When feed is bigger than wiper cutting-edge length (0.28 inch), 2 wiper inserts are placed in symmetrical position

Features of chip breakers

Insert		Cutting-edge	Uses	Features
MA			For aluminum cutting light	With sharp edge application, the better productivity has been accomplished, especially for aluminum cutting
ML			For hard-to-cut material	Chip breaker with low cutting load is optimal for machining hard-to-cut materials
MF			For light cutting	Due to low cutting load, it is good for light cutting and difficult-to-cut material
MM			For general cutting	It is suitable design for general milling
W			For wiper	It has better surface roughness than MM and MF chip breakers

Instruction for wiper insert

Hand	Correct setting	Incorrect setting			
Right hand					
Decision	○	×	×	×	×
Left hand					
Decision	○	×	×	×	×

Through coolant system

- Well designed chip pocket for better chip flow
- Through coolant system reduces cutting heat and improves chip evacuation



Recommended cutting condition

(inch)

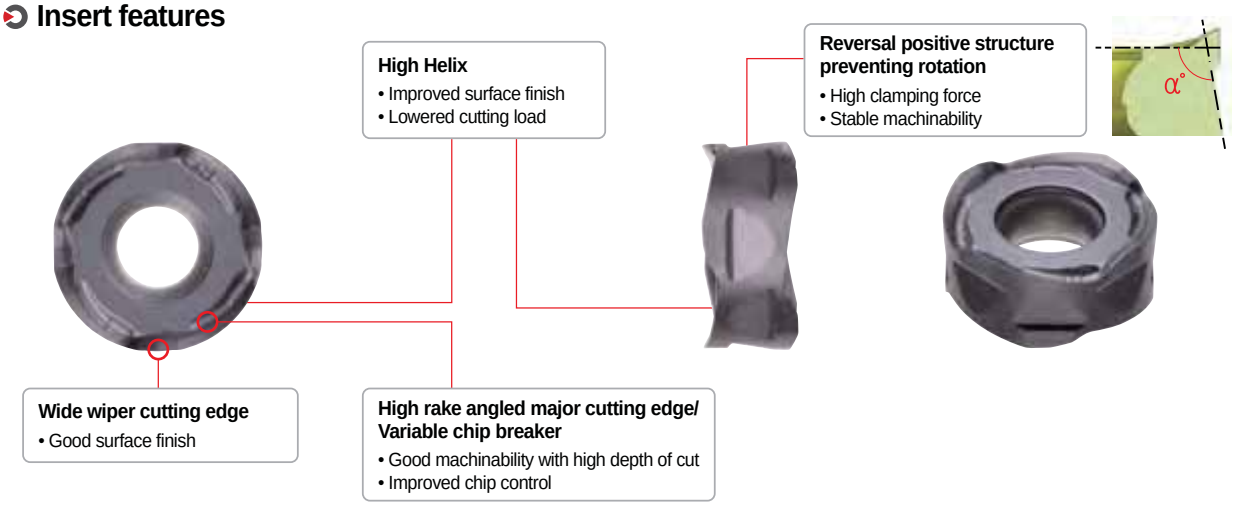
ISO	Grades	ONM(H)X060608-MM		ONM(H)X060608-MF		ONHX060608-W		ONM(H)X080608-MM		ONM(H)X080608-MF		ONHX080608-W	
		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)
P	NCM535	500~990	0.014~0.004	660~990	0.012~0.002	660~990	0.008~0.002	500~990	0.016~0.004	660~990	0.014~0.002	660~990	0.010~0.002
P	PC3700	500~990	0.014~0.004	660~990	0.012~0.002	660~990	0.008~0.002	500~990	0.016~0.004	660~990	0.014~0.002	660~990	0.010~0.002
M	PC9530	400~590	0.014~0.004	330~590	0.012~0.002	330~590	0.008~0.002	400~590	0.016~0.004	330~590	0.014~0.002	330~590	0.010~0.002
K	PC6510	500~990	0.016~0.004	500~990	0.014~0.003	500~990	0.010~0.002	500~990	0.018~0.004	500~990	0.016~0.003	500~990	0.012~0.002

Rich Mill RMR

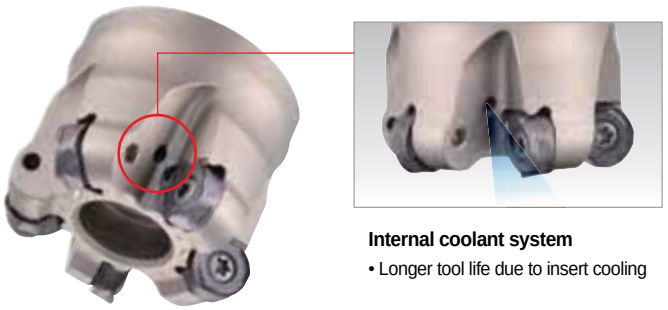
Features

- Improved machining stability with the combination of the reversal positive structure preventing rotation and wide upper and lower clamping sides.
- Helix cutting edge and sharp chip breaker realize smooth cutting.
- Wide minor cutting edge and optimized holder angle enhance high surface finish.

Insert features



Cutter features



Internal coolant system
• Longer tool life due to insert cooling

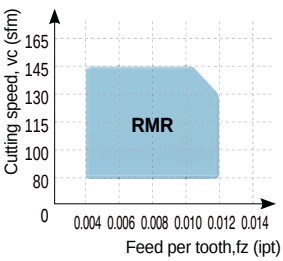
Recommended grade and cutting edge

Chip breaker	Cutting-edge	Recommended grade and cutting edge by workpiece (●: 1st recommendation)	
		S	M
		Grade	Grade
ML		●UNC840 ○UPC845	●PC9540 ○UPC845

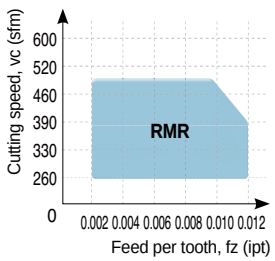
Recommended cutting condition

	Workpiece	Grade	AISI	ISO	KS	Cutting conditions		
						vc (sfm)	fz (ipt)	ap (inch)
S	High temperature alloys	UNC840	7718	15156-3	Inconel718	328~ 525	0.016- 0.004	0.039~ 0.118
		UPC845	7718	15156-3	Inconel718	213~ 427	0.024- 0.008	0.059~ 0.118
M	Stainless steel	PC9540	304	X5CrNi18-9	STS304	853~ 1706	0.012- 0.002	0.039~ 0.118
			316	X5CrNiMo17-12-2	STS316			

S UNC840 (Inconel718)



M PC9540 (STS304)



Cutters

Type	A.A	Designation	Shape	Cutter Diameter	Application		Features	Page
RM3	0°	**RM3PCA3000**		Ø1.5~Ø3	XNKT060405PNER-ML	XNKT060405PNSR-MM	• Economical 3 corners • Perfect perpendicularity • Longer tool life due to direct injection into the cutting-edge of insert	E97
		RM3PCA4000		Ø1.5~Ø5	XNCT080508PNFR-MA XNKT080508PNER-ML XNKT080508PNSR-MM	XNKT080512PNSR-MM XNKT080516PNSR-MM XNKT080520PNSR-MM		E98
		RM3PCA5000 new		Ø3~Ø5	XNCT120608PNER-MA XNKT120608PNER-ML XNKT120612PNER-ML XNKT120616PNER-ML XNKT120620PNER-ML	XNKT120608PNSR-MM XNKT120612PNSR-MM XNKT120616PNSR-MM XNKT120620PNSR-MM		E99
RM4	0°	**RM4PCA3000**		Ø1.5~Ø4	LNEX100605PNR-MF LNMX100605aPNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF	LNEX100608PNR-MM LNMX100608PNR-MM LNEX100605PNR-MA LNEX100605PNL-MM LNMX100605PNL-MM	• Economical 4 corners • Screw on type for slotting, facing	E103
		RM4PCA4000		Ø2~Ø6	LNEX151004PNR-MF LNMX151004PNR-MF LNEX151004PNR-MM LNMX151004PNR-MM LNEX151008PNR-MF LNMX151008PNR-MF LNEX151008PNR-MM LNMX151008PNR-MM	LNEX151016PNR-MF LNMX151016PNR-MF LNEX151016PNR-MM LNMX151016PNR-MM LNEX151004PNR-MA LNEX151008PNR-MA LNEX151008PNL-MM LNMX151008PNL-MM		E104
		RM4ZCA3000		Ø1.5~Ø2	LNEX100605PNL-MM	LNMX100605PNL-MM	• Economical 4 corners • Optimal insert application for vertical machining	E116
		RM4ZCA4000		Ø2.5~Ø4	LNEX151008PNL-MM	LNMX151008PNL-MM		

Cutters

Type	A.A	Designation	Shape	Cutter Diameter	Application		Features	Page
RM6	0°	RM6PCA-WN04 new		Ø1.5~Ø2.5	WNGX040304PNFR-MA WNGX040308PNFR-MA WNGX040312PNFR-MA WNGX040316PNFR-MA WNGX040304PNER-ML WNGX040308PNER-ML	WNGX040312PNER-ML WNGX040316PNER-ML WNGX040304PNSR-MM WNGX040308PNSR-MM WNGX040312PNSR-MM WNGX040316PNSR-MM	• Improved productivity and high-quality shouldering through high speed and high feed machining	E118
		RM6PCA-WN08 new		Ø2.0~Ø5.0	WNGX080604PNFR-MA WNGX080608PNFR-MA WNGX080612PNFR-MA WNGX080616PNFR-MA WNGX080620PNFR-MA WNGX080604PNER-ML WNGX080608PNER-ML WNGX080612PNER-ML	WNGX080616PNER-ML WNGX080620PNER-ML WNGX080604PNSR-MM WNGX080608PNSR-MM WNGX080612PNSR-MM WNGX080616PNSR-MM WNGX080620PNSR-MM		E119
RM8	45°	RM8ACA4000		Ø2~Ø10	SNEX1206ANN-MA SNEX1206ANN-MF SNMX1206ANN-MF SNEX1206ANN-ML	SNEX1206ANN-MM SNMX1206ANN-MM SNEX1206ANN-W	• Economical 8 corners • Low cutting load and excellent smooth cutting	E124
		RM8ACA5000		Ø3~Ø12	SNEX1507ANN-MF SNMX1507ANN-MF SNEX1507ANN-ML	SNEX1507ANN-MM SNMX1507ANN-MM		E126
	15°	RM8ECA4000		Ø2~Ø8	SNEX1206ENN-MA SNEX1206ENN-MF SNMX1206ENN-MF	SNEX1206ENN-ML SNEX1206ENN-MM SNMX1206ENN-MM		E128
		RM8ECA5000		Ø3~Ø12	SNEX1507ENN-MF SNMX1507ENN-MF SNEX1507ENN-ML	SNEX1507ENN-MM SNMX1507ENN-MM		E130
	2°	RM8QCA4000		Ø2.5~Ø8	SNEX1206QNN-MA SNEX1206QNN-MF SNMX1206QNN-MF SNEX1206QNN-ML SNEX1206QNN-MM SNMX1206QNN-MM	SNEX120612-MA SNEX120612-MF SNMX120612-MF SNEX120612-ML SNEX120612-MM SNMX120612-MM		E132

Cutters

Type	A.A	Designation	Shape	Cutter Diameter	Application			Features	Page
RM8	45°	**RMH8ACA4000**		Ø3~Ø15	SNEX1206ANN-MA SNEX1206ANN-MF SNMX1206ANN-MF	SNEX1206ANN-ML SNEX1206ANN-MM SNMX1206ANN-MM SNEX1206ANN-W		• Economical 8 corners • Low cutting load and excellent smooth cutting	E125
		RMH8ACA5000		Ø3~Ø15	SNEX1507ANN-MF SNMX1507ANN-MF SNEX1507ANN-ML	SNEX1507ANN-MM SNMX1507ANN-MM			E127
	15°	**RMH8ECA4000**		Ø3~Ø15	SNEX1206ENN-MA SNEX1206ENN-MF SNMX1206ENN-MF	SNEX1206ENN-ML SNEX1206ENN-MM SNMX1206ENN-MM			E129
		RMH8ECA5000		Ø3~Ø15	SNEX1507ENN-MF SNMX1507ENN-MF SNEX1507ENN-ML	SNEX1507ENN-MM SNMX1507ENN-MM			E131
	2°	**RMH8QCA4000**		Ø3~Ø8	SNEX1206QNN-MA SNEX1206QNN-MF SNMX1206QNN-MF SNEX1206QNN-ML SNEX1206QNN-MM SNMX1206QNN-MM	SNEX120612-MA SNEX120612-MF SNMX120612-MF SNEX120612-ML SNEX120612-MM SNMX120612-MM			E133
RMT8	45°	**RMT8AA 4000/5000**		Ø3~Ø12	SNCF1206ANN-MF SNCF1507ANN-MF SNMF1206ANN-MF SNMF1507ANN-MF	SNCF1206ANN-MM SNCF1507ANN-MM SNMF1206ANN-MM SNMF1507ANN-MM		• Economical 8 corners • Excellent tool life and surface toughness due to low cutting resistance and high rake edge geometry • Good performance with increased chipping resistance and grade	E134 E135
	15°	**RMT8EA 4000/5000**		Ø3~Ø12	SNCF1206ENN-MF SNCF1507ENN-MF SNMF1206ENN-MF SNMF1507ENN-MF	SNCF1206ENN-MM SNCF1507ENN-MM SNMF1206ENN-MM SNMF1507ENN-MM			E136 E137
	2°	**RMT8QA4000**		Ø3~Ø12	SNCF1206QNN-MF	SNMF1206QNN-MF			E138

Cutters

Type	A.A	Designation	Shape	Cutter Diameter	Application			Features	Page
RM8-X	45°	**RMX8ACA-SA14** new		Ø2~Ø5	SAGX140808ANER-ML	SAGX140808ANER-MM SNMX140808ANER-MM		• Double sided insert with 8 corners • Stable cutting performance due to double reversal positive relief surface • Good machinability in stainless cutting with High helix cutting edge	E139
RM14	51°	**RM14XCA-XN06** new		Ø2~Ø6	XNMX0606XNR-ML	XNMX060608-ML	 	• Reduced vibration with the application of maximum approach angle on heptangonal shape • Stable clamping from wedge type clamping structure • Available for multiple-staged cutting without interference of the cutter's side wall	E 140
RM16	45°	**RM16ACA 6000/8000**		Ø2.5~Ø8	ONHX060608-MF ONMX060608-MF ONHX0606ANN-MF ONMX0606ANN-MF ONHX080608-MF ONMX080608-MF ONHX0806ANN-MF ONMX0806ANN-MF ONHX060608-ML ONHX080608-ML ONHX060608-MM	ONMX060608-MM ONHX0606ANN-MM ONMX0606ANN-MM ONHX080608-MM ONMX080608-MM ONHX0806ANN-MM ONMX0806ANN-MM ONHX060608-MA ONHX060608-W ONHX080608-MA ONHX080608-W		• Economical 16 corners • Wiper insert for surface roughness	E141 E142
RMR	-	**RMRCA-RN12** new		Ø2~Ø5	RNMX1204M0E-ML			• High cost efficiency due to double sided round typed cutting edge • Excellent rotating prevention by strong clamping system • Suitable for Inconel cutting	E143

Shanks / Modulars

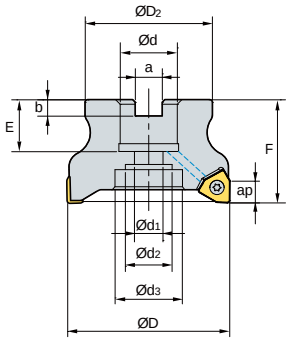
Type	A.A	Designation	Shape	Cutter Diameter	Application		Features	Page
RM3	0°	**RM3PSA3000** new		Ø0.75~Ø1.5	XNKT060405PNER-ML	XNKT060405PNSR-MM	• Economical 3 corners • Perfect perpendicular shouldering operation multi milling tool	E100
		RM3PSA4000 new		Ø1.25~Ø2.5	XNKT080508PNER-ML XNKT080508PNSR-MM XNKT080512PNSR-MM	XNKT080516PNSR-MM XNKT080520PNSR-MM		E101
		RM3PMA 3000/4000 new		Ø0.75~Ø2	XNKT060405PNER-ML XNKT060405PNSR-MM XNKT060408PNER-ML XNKT060408PNSR-MM XNCT080504PNFR-MA XNCT080508PNFR-MA XNCT080512PNFR-MA XNCT080520PNFR-MA	XNKT080508PNER-ML XNKT080508PNSR-MM XNKT080512PNER-ML XNKT080512PNSR-MM XNKT080516PNER-ML XNKT080516PNSR-MM XNKT080520PNER-ML XNKT080520PNSR-MM		E102
RM4	0°	**RM4PSA3000**		Ø0.562~Ø2	LNEX100605PNR-MF LNMX100605PNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF	LNEX100608PNR-MM LNMX100608PNR-MM LNEX100605PNR-MA LNEX100605PNL-MM LNMX100605PNL-MM	• Economical 4 corners • Screw on type for slotting, facing	E113
		RM4PSA4000		Ø1.25~Ø2.5	LNEX151004PNR-MF LNMX151004PNR-MF LNEX151004PNR-MM LNMX151004PNR-MM LNEX151008PNR-MF LNMX151008PNR-MF LNEX151008PNR-MM LNMX151008PNR-MM	LNEX151016PNR-MF LNMX151016PNR-MF LNEX151016PNR-MM LNMX151016PNR-MM LNEX151004PNR-MA LNEX151008PNR-MA LNEX151008PNL-MM LNMX151008PNL-MM		E114
		RM4ZSA3000		Ø1~Ø1.5	LNEX100605PNL-MM	LNMX100605PNL-MM	• Economical 4 corners • Optimal insert application for vertical machining	E117
		RM4PMA3000		Ø0.562~Ø2	LNEX100605PNR-MF LNMX100605PNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF	LNEX100608PNR-MM LNMX100608PNR-MM LNEX100605PNR-MA LNEX100605PNL-MM LNMX100605PNL-MM	• Economical 4 corners • Screw on type for slotting, facing	E115
		RM4ZMA3000		Ø1~Ø1.5	LNEX100605PNL-MM	LNMX100605PNL-MM	• Economical 4 corners • Optimal insert application for vertical machining	E117

Shanks / Modulars

Type	A.A	Designation	Shape	Cutter Diameter	Application		Features	Page
RM6	0°	RM6PSA-WN04 new		Ø0.75~Ø1.25	WNGX040304PNFR-MA WNGX040312PNER-ML WNGX040308PNFR-MA WNGX040316PNER-ML WNGX040312PNFR-MA WNGX040304PNSR-MM WNGX040316PNFR-MA WNGX040308PNSR-MM WNGX040304PNER-ML WNGX040312PNSR-MM WNGX040308PNER-ML WNGX040316PNSR-MM		• Improved productivity and high-quality shouldering through high speed and high feed machining	E120
		RM6PSA-WN08 new		Ø1.25~Ø2	WNGX080604PNFR-MA WNGX080616PNER-ML WNGX080608PNFR-MA WNGX080620PNER-ML WNGX080612PNFR-MA WNGX080604PNSR-MM WNGX080616PNFR-MA WNGX080608PNSR-MM WNGX080620PNFR-MA WNGX080612PNSR-MM WNGX080604PNER-ML WNGX080616PNSR-MM WNGX080608PNER-ML WNGX080620PNSR-MM WNGX080612PNER-ML			E121
		RM6PMA-WN04 new		Ø0.75~Ø1.25	WNGX040304PNFR-MA WNGX040312PNER-ML WNGX040308PNFR-MA WNGX040316PNER-ML WNGX040312PNFR-MA WNGX040304PNSR-MM WNGX040316PNFR-MA WNGX040308PNSR-MM WNGX040304PNER-ML WNGX040312PNSR-MM WNGX040308PNER-ML WNGX040316PNSR-MM			E122
		RM6PMA-WN08 new		Ø1.25~Ø1.5	WNGX080604PNFR-MA WNGX080616PNER-ML WNGX080608PNFR-MA WNGX080620PNER-ML WNGX080612PNFR-MA WNGX080604PNSR-MM WNGX080616PNFR-MA WNGX080608PNSR-MM WNGX080620PNFR-MA WNGX080612PNSR-MM WNGX080604PNER-ML WNGX080616PNSR-MM WNGX080608PNER-ML WNGX080620PNSR-MM WNGX080612PNER-ML			E123
RMR	-	RMRSA-RN12 new		Ø1.25~Ø2.5	RNMX1204M0E-ML		• High cost efficiency due to double sided round typed cutting edge • Excellent rotating prevention by strong clamping system • Suitable for Inconel cutting	E144

RM3PCA3000 new







AA 0°

- AR: -5°
- RR: -9°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
RM3PCA	3150HR	5	1.50	1.417	0.50	0.287	0.430	-	0.252	0.170	0.630	1.50	0.216	0.44
	3150HR-M	6	1.50	1.417	0.50	0.287	0.430	-	0.252	0.170	0.630	1.50	0.216	0.44
	3200HR	6	2.00	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.216	0.66
	3200HR-M	7	2.00	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.216	0.66
	3250HR	7	2.50	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.216	1.08
	3250HR-M	8	2.50	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.216	1.08
	3300HR	8	3.00	2.205	1.00	0.551	0.866	-	0.374	0.248	0.787	2.00	0.216	1.92
	3300HR-M	10	3.00	2.205	1.00	0.551	0.866	-	0.374	0.248	0.787	2.00	0.216	1.94

Available inserts

XNKT-ML



XNKT-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
XNKT	060405PNER-ML									●	●	●		●	●	●				E32
	060405PNSR-MM								●	●	●	●		●	●	●				
	060408PNER-ML											●			●	●				
	060408PNSR-MM								●	●	●	●			●	●				

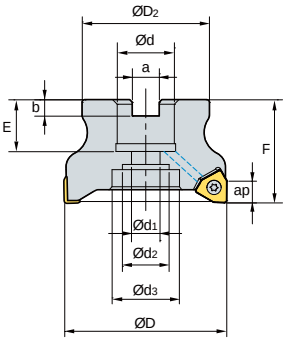
Parts

Specification	Screw	Wrench
Ø1.50~Ø3.00	FTNA0306	TW09S

Available inserts E32

RM3PCA4000 new





AA 0°

- AR: -5°
- RR: -8°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
RM3PCA	4150HR	3	1.5	1.417	0.50	0.287	0.430	-	0.252	0.170	0.630	1.50	0.315	0.45
	4150HR-M	4	1.5	1.417	0.50	0.287	0.430	-	0.252	0.170	0.630	1.50	0.315	0.45
	4200HR	4	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.315	0.72
	4200HR-M	5	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.315	0.72
	4250HR	5	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.315	1.15
	4250HR-M	6	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.315	1.15
	4300HR	5	3.0	2.205	1.00	0.551	0.866	-	0.374	0.248	0.787	2.00	0.315	1.81
	4300HR-M	7	3.0	2.205	1.00	0.551	0.866	-	0.374	0.248	0.787	2.00	0.315	1.81
	4400HR	7	4.0	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.315	3.51
	4400HR-M	8	4.0	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.315	3.51
	4400HR-1.5	7	4.0	3.386	1.50	-	1.500	1.969	0.625	0.394	1.102	2.00	0.315	3.44
	4400HR-M-1.5	8	4.0	3.386	1.50	-	1.500	1.969	0.625	0.394	1.102	2.00	0.315	3.44
	4500HR	8	5.0	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.50	0.315	7.24
	4500HR-M	10	5.0	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.50	0.315	7.30

Available inserts

XNCT-MA | XNKT-ML | XNKT-MM





Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
XNCT	080504PNFR-MA																		●	
	080508PNFR-MA																		●	
	080512PNFR-MA																		●	
	080520PNFR-MA																		●	
XNKT	080504PNER-ML														●	●				
	080504PNSR-MM										●				●	●				
	080508PNER-ML						●			●	●	●		●	●	●				E31
	080508PNSR-MM						●		●	●	●	●		●	●	●				E32
	080512PNER-ML														●	●				
	080512PNSR-MM								●	●	●				●	●				
	080516PNER-ML														●	●				
	080516PNSR-MM								●	●	●				●	●				
	080520PNER-ML														●	●				
	080520PNSR-MM								●	●					●	●				

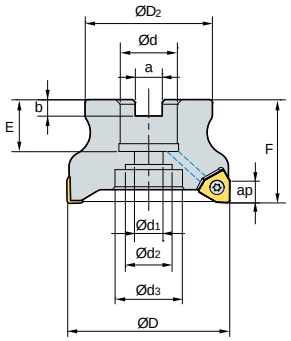
Parts

Specification	Screw	Wrench
Ø1.50~Ø5.00	FTNA0408	TW15S

Available inserts **E31, E32**

RM3PCA5000 new







AA 0°

- AR: -5°
- RR: -7°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
RM3PCA	5300HR	5	3.00	2.205	1.00	0.551	0.866	1.300	0.374	0.248	0.787	2.0	0.5	1.73
	5300HR-M	7	3.00	2.205	1.00	0.551	0.866	1.300	0.374	0.248	0.787	2.0	0.5	1.76
	5400HR	7	4.00	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.0	0.5	3.30
	5400HR-M	8	4.00	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.0	0.5	3.33
	5400HR-1.5	7	4.00	2.874	1.50	-	1.500	1.969	0.626	0.394	1.102	2.0	0.5	2.87
	5400HR-M-1.5	8	4.00	2.874	1.50	-	1.500	1.969	0.626	0.394	1.102	2.0	0.5	2.89
	5500HR	8	5.00	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.5	0.5	7.01
	5500HR-M	10	5.00	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.5	0.5	7.01

Available inserts

XNCT-MA | XNKT-ML | XNKT-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
XNCT	120608PNFR-MA																		●	
XNKT	120604PNSR-MM														●	●				
	120608PNER-ML										●	●		●	●	●				
	120608PNSR-MM								●	●	●	●		●	●	●				
	120612PNER-ML														●	●				E31
	120612PNSR-MM								●	●					●	●				E32
	120616PNER-ML														●	●				
	120616PNSR-MM								●	●					●	●				
	120620PNER-ML														●	●				
	120620PNSR-MM								●	●					●	●				

Parts

Specification	Screw	Wrench
Ø3.00~Ø5.00	FTNA0511	TW20-100

Available inserts **E31, E3**

RM3PSA3000 new



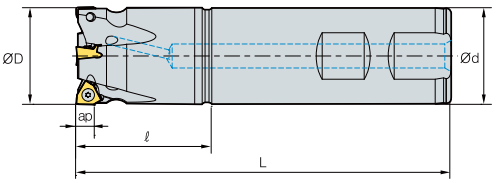


Fig. 1

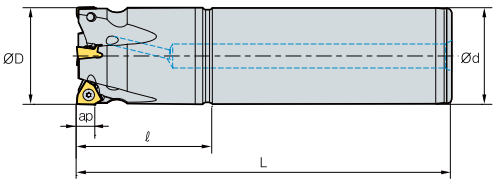


Fig. 2



AA 0°

- AR: -5°
- RR: -16°~-9°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
RM3PSA	3075HR-2S075	2	0.75	0.75	1.378	3.346	0.217	0.34	1
	3075HR-2M075	2	0.75	0.75	1.378	5.906	0.217	0.62	1
	3075HR-2L075	2	0.75	0.75	1.378	7.874	0.217	0.86	2
	3100HR-2S100	2	1.00	1.00	1.575	3.937	0.217	0.73	1
	3100HR-2M100	2	1.00	1.00	1.575	5.906	0.217	1.12	1
	3100HR-2L100	2	1.00	1.00	1.575	7.874	0.217	1.51	2
	3100HR-3S100	3	1.00	1.00	1.575	3.937	0.217	0.72	1
	3100HR-3M100	3	1.00	1.00	1.575	5.906	0.217	1.11	1
	3100HR-3L100	3	1.00	1.00	1.575	7.874	0.217	1.5	2
	3125HR-4S125	4	1.25	1.25	1.654	3.937	0.217	1.16	1
	3125HR-4L125	4	1.25	1.25	1.654	7.874	0.217	2.47	2
	3150HR-4S125	4	1.50	1.25	1.654	4.331	0.217	1.5	1
	3150HR-4L125	4	1.50	1.25	1.654	7.874	0.217	2.65	2
	3150HR-4L150	4	1.50	1.50	1.654	7.874	0.217	3.57	2
	3150HR-5S125	5	1.50	1.25	1.654	4.331	0.217	1.49	1
	3150HR-5L125	5	1.50	1.25	1.654	7.874	0.217	2.64	2
	3150HR-5L150	5	1.50	1.50	1.654	7.874	0.217	3.57	2

Available inserts

XNKT-ML



XNKT-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
XNKT	060405PNER-ML									●	●	●		●	●	●				E32
	060405PNSR-MM								●	●	●	●		●	●	●				
	060408PNER-ML											●			●	●				
	060408PNSR-MM								●	●	●	●			●	●				

Parts

Specification	Screw	Wrench
Ø0.75~Ø1.50	FTNA0306	TW09S

Available inserts E32

RM3PSA4000 new



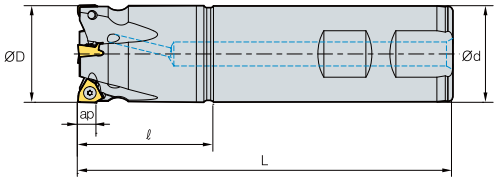


Fig. 1

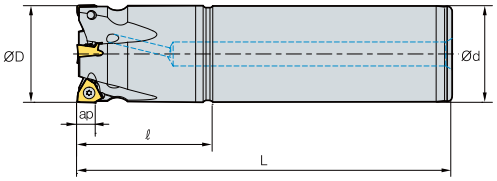


Fig. 2



AA 0°

- AR: -5°
- RR: -11°~-7°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
RM3PSA	4100HR-2L100	2	1.00	1.00	1.575	7.874	0.315	1.32	1
	4100HR-2S100	2	1.00	1.00	1.575	4.528	0.315	0.82	2
	4125HR-4L125	4	1.25	1.25	1.654	7.874	0.315	2.49	1
	4125HR-4S125	4	1.25	1.25	1.654	4.922	0.315	1.50	2
	4150HR-4L125	4	1.50	1.25	1.654	7.874	0.315	2.69	1
	4150HR-4S125	4	1.50	1.25	1.654	5.315	0.315	1.79	2
	4200HR-4L125	4	2.00	1.25	1.654	7.874	0.315	3.04	1
	4200HR-4S125	4	2.00	1.25	1.654	5.315	0.315	2.18	2
	4200HR-5L125	5	2.00	1.25	1.654	7.874	0.315	3.09	1
	4200HR-5S125	5	2.00	1.25	1.654	4.331	0.315	2.21	2

Available inserts

XNCT-MA | XNKT-ML | XNKT-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
XNCT	080504PNFR-MA																		●	
	080508PNFR-MA																		●	
	080512PNFR-MA																		●	
	080520PNFR-MA																		●	
XNKT	080504PNER-ML														●	●				
	080504PNSR-MM										●				●	●				
	080508PNER-ML						●			●	●	●		●	●	●				E31
	080508PNSR-MM						●		●	●	●	●		●	●	●				E32
	080512PNER-ML														●	●				
	080512PNSR-MM								●	●					●	●				
	080516PNER-ML														●	●				
	080516PNSR-MM								●	●					●	●				
	080520PNER-ML														●	●				
	080520PNSR-MM								●	●					●	●				

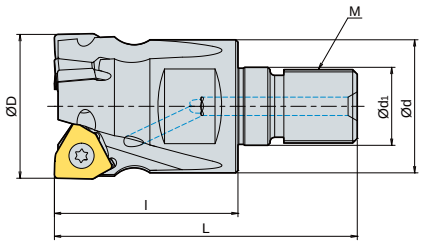
Parts

Specification	Screw	Wrench
Ø1.00~Ø2.00	FTNA0408	TW15S

Available inserts **E31, E32**

RM3PMA3000/4000 new







AA 0°

- AR: -5°
- RR: -16°~-7°

(inch)

Designation			ØD	Ød	Ød1	l	L	M	ap	lbs
RM3PMA	3075HR-2-M10	2	0.75	0.689	0.413	1.181	1.969	M10	0.217	0.13
	3100HR-3-M12	3	1.00	0.906	0.492	1.378	2.283	M12	0.217	0.22
	3125HR-4-M16	4	1.25	1.142	0.669	1.575	2.598	M16	0.217	0.47
	3150HR-5-M16	5	1.50	1.142	0.669	1.575	2.598	M16	0.217	0.58
RM3PMA	4125HR-3-M16	3	1.25	1.142	0.669	1.575	2.598	M16	0.315	0.47
	4150HR-4-M16	4	1.50	1.142	0.669	1.969	2.992	M16	0.315	0.73
	4200HR-5-M16	5	2.00	1.142	0.669	2.165	3.189	M16	0.315	1.09

Available inserts

XNCT-MA | XNKT-ML | XNKT-MM



Designation			Cermet		Coated												Uncoated			page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
3000 type	XNKT	060405PNER-ML									●	●	●		●	●	●				E32
		060405PNSR-MM								●	●	●	●		●	●	●				
		060408PNER-ML											●			●	●				
		060408PNSR-MM								●	●	●	●			●	●				
4000 type	XNCT	080504PNFR-MA																		●	E31 E32
		080508PNFR-MA																		●	
		080512PNFR-MA																		●	
		080520PNFR-MA																		●	
	XNKT	080504PNER-ML														●	●				
		080504PNSR-MM										●				●	●				
		080508PNER-ML						●			●	●	●		●	●	●				
		080508PNSR-MM						●		●	●	●	●		●	●	●				
		080512PNER-ML														●	●				
		080512PNSR-MM								●	●					●	●				
		080516PNER-ML														●	●				
		080516PNSR-MM								●	●					●	●				
		080520PNER-ML														●	●				
		080520PNSR-MM								●	●					●	●				

Available adaptor

Designation		Available adaptor
RM3PMA	3075HR-2-M10	MATA-M10
	3100HR-3-M12	MATA-M12
	3125HR-4-M16	MATA-M16
	3150HR-5-M16	MATA-M16
RM3PMA	4125HR-3-M16	MATA-M16
	4150HR-4-M16	MATA-M16
	4200HR-5-M16	MATA-M16

Designation: RM3PMA4125HR-3-M16
Modular head threading measure size (M16)

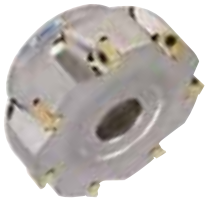
Adaptor spec.: MATA-M16-137-S125S
Adaptor threading measure (M16)

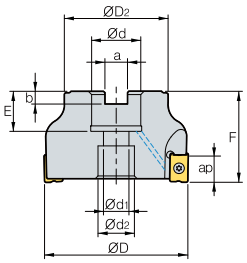
Parts

Specification	Screw	Wrench
Ø0.75~Ø1.50 (3000 type)	FTNA0306	TW09S
Ø1.25~Ø2.00 (4000 type)	FTNA0408	TW15S

Available inserts E31, E32 Available adaptor E366~E367

RM4PCA3000












AA 0°

- AR: -6°
- RR: -19°~-13°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Bolt
RM4PCA	3150HR	4	1.50	1.417	0.50	0.287	0.433	0.250	0.169	0.630	1.50	0.354	0.5	SB0825
	3150HR-M	5	1.50	1.417	0.50	0.287	0.433	0.250	0.169	0.630	1.50	0.354	0.5	SB0825
	3200HR	5	2.00	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	0.354	0.8	SB1025
	3200HR-M	7	2.00	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	0.354	0.8	SB1025
	3250HR	7	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	0.354	1.3	SB1025
	3250HR-M	9	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	0.354	1.3	SB1025
	3300HR	8	3.00	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.354	2.7	SB1230
	3300HR-M	10	3.00	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.354	2.7	SB1230
	3400HR	9	4.00	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.354	4.3	SB1630
	3400HR-M	12	4.00	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.354	4.2	SB1630

Available inserts

LNEX-MA



LNM(E)X-MF



LNM(E)X-MM



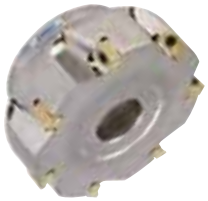
Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	100605PNR-MF											●			●	●				E11
	100605PNR-MM										●	●			●	●				
	100605PNR-MA																		●	
	100608PNR-MF										●	●			●	●				
	100608PNR-MM											●			●	●				
LNMX	100605PNR-MF											●			●	●				
	100605PNR-MM										●	●	●		●	●				
	100608PNR-MF											●			●	●				
	100608PNR-MM										●				●	●				

Parts

Specification	Screw	Wrench
Ø1.50~Ø4.00	FTKA0307	TW09S

Available inserts E11

RM4PCA4000



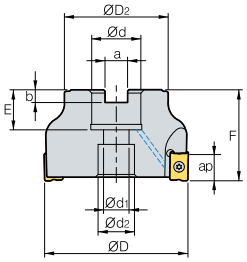


Fig. 1

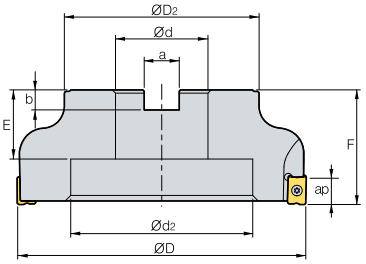


Fig. 2



AA
0°

- AR: -6°
- RR: -19°~-13°

(inch)

Designation		⚙	ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Bolt	Fig.
RM4PCA	4200HR	3	2.00	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	0.551	0.8	SB1025	1
	4200HR-M	4	2.00	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	0.551	0.8	SB1025	1
	4250HR	4	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	0.551	1.2	SB1025	1
	4250HR-M	6	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	0.551	1.3	SB1025	1
	4300HR	5	3.00	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.551	2.6	SB1230	1
	4300HR-M	6	3.00	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.551	2.5	SB1230	1
	4400HR	5	4.00	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.551	4.0	SB1630	1
	4400HR-M	8	4.00	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.551	4.0	SB1630	1
	4500HR	7	5.00	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.551	8.3	SB2040	1
	4500HR-M	10	5.00	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.551	8.1	SB2040	1
	4600R	8	6.00	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.551	10.5	MBA	2
	4600R-M	11	6.00	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.551	10.4	MBA	2

Available inserts

LNEX-MA



LNM(E)X-MF



LNM(E)X-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNEX	151004PNR-MF											●			●	●			E11
	151004PNR-MM											●			●	●			
	151004PNR-MA																	●	
	151008PNR-MF											●			●	●			
	151008PNR-MM										●	●			●	●			
	151008PNR-MA																	●	
	151016PNR-MF											●			●	●			
	151016PNR-MM											●				●			

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	151004PNR-MF										●	●			●	●			E11
	151004PNR-MM											●				●			
	151008PNR-MF						●				●	●			●	●			
	151008PNR-MM						●				●	●	●		●	●			
	151016PNR-MF											●			●	●			
	151016PNR-MM										●	●				●			

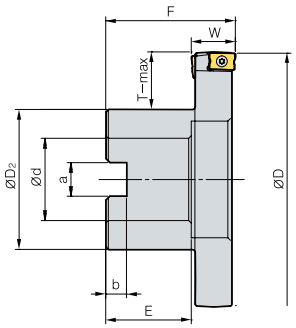
Parts

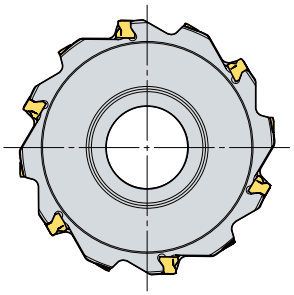
Specification	Screw	Wrench
Ø2.00~Ø6.00	FTKA0412B	TW15S

Available inserts E11

RM4PFCBA3000







(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	W	T-max
RM4PFCBA	3300043R	10	3.0	1.575	1.00	0.375	0.248	0.866	2.0	0.433	0.673
	3300051R	10	3.0	1.575	1.00	0.375	0.248	0.866	2.0	0.512	0.673
	3300059R	10	3.0	1.575	1.00	0.375	0.248	0.866	2.0	0.591	0.673
	3300066R	10	3.0	1.575	1.00	0.375	0.248	0.866	2.0	0.669	0.673
	3400043R	12	4.0	2.126	1.25	0.500	0.319	0.866	2.0	0.433	0.898
	3400051R	12	4.0	2.126	1.25	0.500	0.319	0.866	2.0	0.512	0.898
	3400059R	12	4.0	2.126	1.25	0.500	0.319	0.866	2.0	0.591	0.898
	3400066R	12	4.0	2.126	1.25	0.500	0.319	0.866	2.0	0.669	0.898
	3500043R	14	5.0	2.756	1.50	0.625	0.394	1.181	2.5	0.433	1.083
	3500051R	14	5.0	2.756	1.50	0.625	0.394	1.181	2.5	0.512	1.083
	3500059R	14	5.0	2.756	1.50	0.625	0.394	1.181	2.5	0.591	1.083
	3500066R	14	5.0	2.756	1.50	0.625	0.394	1.181	2.5	0.669	1.083
	3600043R	16	6.0	2.756	1.50	0.625	0.394	1.181	2.5	0.433	1.583
	3600051R	16	6.0	2.756	1.50	0.625	0.394	1.181	2.5	0.512	1.583
	3600059R	16	6.0	2.756	1.50	0.625	0.394	1.181	2.5	0.591	1.583
	3600066R	16	6.0	2.756	1.50	0.625	0.394	1.181	2.5	0.669	1.583

Available inserts

LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	100605PNR-MM										●	●			●	●				E11
	100605PNL-MM											●			●	●				
LNMX	100605PNR-MM										●	●	●		●	●				
	100605PNL-MM										●	●			●	●				

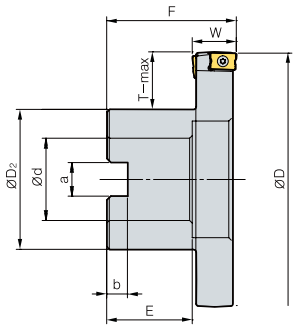
Parts

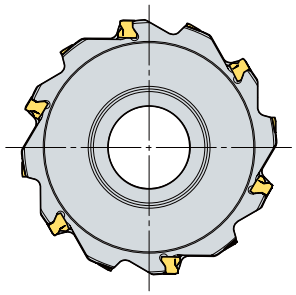
Specification	Screw	Wrench
Ø3.0~Ø6.0	FTKA0307	TW09S

Available inserts E11

RM4PFCBA4000







(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	W	T-max
RM4PFCBA	4300086R	6	3.0	1.575	1.00	0.375	0.248	0.866	2.0	0.866	0.673
	4300094R	6	3.0	1.575	1.00	0.375	0.248	0.866	2.0	0.945	0.673
	4300102R	6	3.0	1.575	1.00	0.375	0.248	0.866	2.0	1.024	0.673
	4300110R	6	3.0	1.575	1.00	0.375	0.248	0.866	2.0	1.102	0.673
	4400086R	8	4.0	2.126	1.25	0.500	0.319	0.866	2.0	0.866	0.898
	4400094R	8	4.0	2.126	1.25	0.500	0.319	0.866	2.0	0.945	0.898
	4400102R	8	4.0	2.126	1.25	0.500	0.319	0.866	2.0	1.024	0.898
	4400110R	8	4.0	2.126	1.25	0.500	0.319	0.866	2.0	1.102	0.898
	4500086R	10	5.0	2.756	1.50	0.625	0.394	1.181	2.5	0.866	1.083
	4500094R	10	5.0	2.756	1.50	0.625	0.394	1.181	2.5	0.945	1.083
	4500102R	10	5.0	2.756	1.50	0.625	0.394	1.181	2.5	1.024	1.083
	4500110R	10	5.0	2.756	1.50	0.625	0.394	1.181	2.5	1.102	1.083
	4600086R	12	6.0	2.756	1.50	0.625	0.394	1.181	2.5	0.866	1.583
	4600094R	12	6.0	2.756	1.50	0.625	0.394	1.181	2.5	0.945	1.583
	4600102R	12	6.0	2.756	1.50	0.625	0.394	1.181	2.5	1.024	1.583
	4600110R	12	6.0	2.756	1.50	0.625	0.394	1.181	2.5	1.102	1.583

Available inserts

LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	151008PNR-MM										●	●			●	●				E11
	151008PNL-MM											●			●	●				
LNMX	151008PNR-MM						●				●	●	●		●	●				
	151008PNL-MM														●	●				

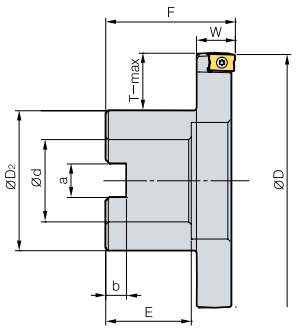
Parts

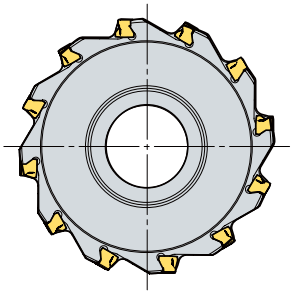
Specification	Screw	Wrench
Ø3.0~Ø6.0	FTKA0412B	TW15S

Available inserts E11

RM4PHCBA3000







(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	W	T-max
RM4PHCBA	3300059R	10	3.0	1.575	1.00	0.375	0.248	0.866	2.0	0.591	0.673
	3400059R	12	4.0	2.126	1.25	0.500	0.319	0.866	2.0	0.591	0.898
	3500059R	14	5.0	2.756	1.50	0.625	0.394	1.181	2.5	0.591	1.083
	3600059R	16	6.0	2.756	1.50	0.625	0.394	1.181	2.5	0.591	1.583

Available inserts

LNEX-MA



LNM(E)X-MF



LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	100605PNR-MF											●			●	●				E11
	100605PNR-MM										●	●			●	●				
	100605PNR-MA																		●	
	100608PNR-MF										●	●			●	●				
	100608PNR-MM											●			●	●				
LNMX	100605PNR-MF											●			●	●				
	100605PNR-MM										●	●	●		●	●				
	100608PNR-MF											●			●	●				
	100608PNR-MM										●				●	●				

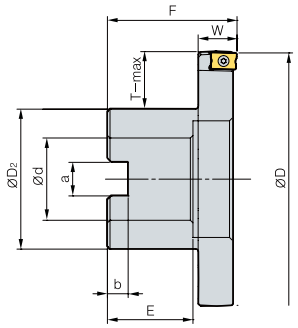
Parts

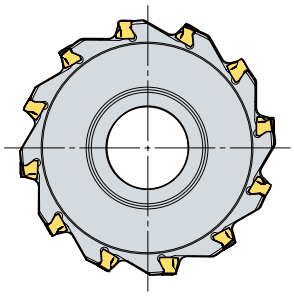
Specification	Screw	Wrench
Ø3.0~Ø6.0	FTKA0307	TW09S

Available inserts **E11**

RM4PHCBA4000







(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	W	T-max
RM4PHCBA	4300078R	6	3.0	1.575	1.00	0.375	0.248	0.866	2.0	0.787	0.673
	4400078R	8	4.0	2.126	1.25	0.500	0.319	0.866	2.0	0.787	0.898
	4500078R	10	5.0	2.756	1.50	0.625	0.394	1.181	2.5	0.787	1.083
	4600078R	12	6.0	2.756	1.50	0.625	0.394	1.181	2.5	0.787	1.583

Available inserts

LNEX-MA



LNM(E)X-MF



LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	151004PNR-MF											●			●	●				E11
	151004PNR-MM											●			●	●				
	151004PNR-MA																		●	
	151008PNR-MF											●			●	●				
	151008PNR-MM										●	●			●	●				
	151008PNR-MA																		●	
	151016PNR-MF											●			●	●				
	151016PNR-MM											●			●	●				
LNMX	151004PNR-MF										●	●			●	●				
	151004PNR-MM											●				●				
	151008PNR-MF						●				●	●			●	●				
	151008PNR-MM						●				●	●	●		●	●				
	151016PNR-MF											●			●	●				
	151016PNR-MM											●				●				

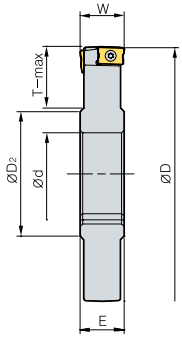
Parts

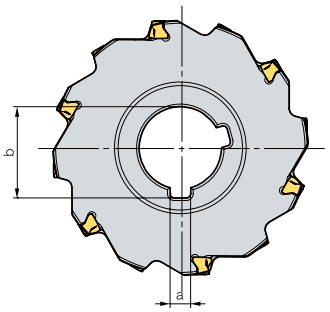
Specification	Screw	Wrench
Ø3.0~Ø6.0	FTKA0412B	TW15S

Available inserts E11

RM4PFCPA3000







(inch)

Designation			ØD	ØD2	Ød	a	b	E	W	T-max
RM4PFCPA	3300043R	10	3.0	1.634	1.00	0.250	1.104	0.433	0.433	0.604
	3300051R	10	3.0	1.634	1.00	0.250	1.104	0.512	0.512	0.604
	3300059R	10	3.0	1.634	1.00	0.250	1.104	0.591	0.591	0.604
	3300066R	10	3.0	1.634	1.00	0.250	1.104	0.669	0.669	0.604
	3400043R	12	4.0	1.890	1.25	0.313	1.385	0.433	0.433	0.945
	3400051R	12	4.0	1.890	1.25	0.313	1.385	0.512	0.512	0.945
	3400059R	12	4.0	1.890	1.25	0.313	1.385	0.591	0.591	0.945
	3400066R	12	4.0	1.890	1.25	0.313	1.385	0.669	0.669	0.945
	3500043R	14	5.0	2.283	1.50	0.375	1.666	0.433	0.433	1.280
	3500051R	14	5.0	2.283	1.50	0.375	1.666	0.512	0.512	1.280
	3500059R	14	5.0	2.283	1.50	0.375	1.666	0.591	0.591	1.280
	3500066R	14	5.0	2.283	1.50	0.375	1.666	0.669	0.669	1.280
	3600043R	16	6.0	2.283	1.50	0.375	1.666	0.433	0.433	1.780
	3600051R	16	6.0	2.283	1.50	0.375	1.666	0.512	0.512	1.780
	3600059R	16	6.0	2.283	1.50	0.375	1.666	0.591	0.591	1.780
	3600066R	16	6.0	2.283	1.50	0.375	1.666	0.669	0.669	1.780

Available inserts

LNM(E)X-MM



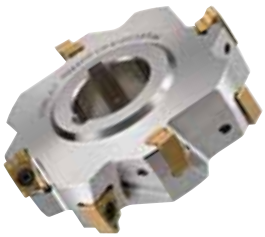
Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	100605PNR-MM										●	●			●	●				E11
	100605PNL-MM											●			●	●				
LNMX	100605PNR-MM										●	●	●		●	●				
	100605PNL-MM										●	●			●	●				

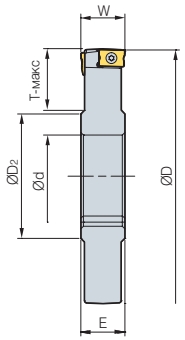
Parts

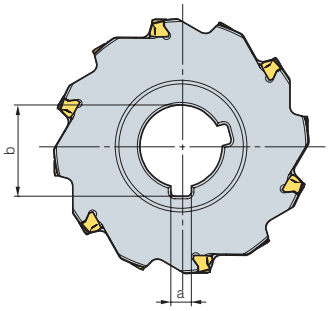
Specification	Screw	Wrench
Ø3.0~Ø6.0	FTKA0307	TW09S

Available inserts **E11**

RM4PFCPA4000







(inch)

Designation			ØD	ØD2	Ød	a	b	E	W	T-max
RM4PFCPA	4300086R	6	3.0	1.634	1.00	0.250	1.104	0.866	0.866	0.604
	4300094R	6	3.0	1.634	1.00	0.250	1.104	0.945	0.945	0.604
	4300102R	6	3.0	1.634	1.00	0.250	1.104	1.024	1.024	0.604
	4300110R	6	3.0	1.634	1.00	0.250	1.104	1.102	1.102	0.604
	4400086R	8	4.0	1.890	1.25	0.313	1.385	0.866	0.866	0.945
	4400094R	8	4.0	1.890	1.25	0.313	1.385	0.945	0.945	0.945
	4400102R	8	4.0	1.890	1.25	0.313	1.385	1.024	1.024	0.945
	4400110R	8	4.0	1.890	1.25	0.313	1.385	1.102	1.102	0.945
	4500086R	10	5.0	2.283	1.50	0.375	1.666	0.866	0.866	1.280
	4500094R	10	5.0	2.283	1.50	0.375	1.666	0.945	0.945	1.280
	4500102R	10	5.0	2.283	1.50	0.375	1.666	1.024	1.024	1.280
	4500110R	10	5.0	2.283	1.50	0.375	1.666	1.102	1.102	1.280
	4600086R	12	6.0	2.283	1.50	0.375	1.666	0.866	0.866	1.780
	4600094R	12	6.0	2.283	1.50	0.375	1.666	0.945	0.945	1.780
	4600102R	12	6.0	2.283	1.50	0.375	1.666	1.024	1.024	1.780
	4600110R	12	6.0	2.283	1.50	0.375	1.666	1.102	1.102	1.780

Available inserts

LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	151008PNR-MM										●	●			●	●				E11
	151008PNL-MM											●			●	●				
LNMX	151008PNR-MM						●				●	●	●		●	●				
	151008PNL-MM														●	●				

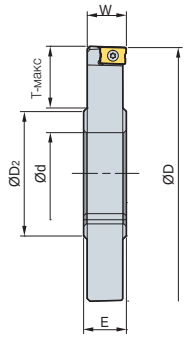
Parts

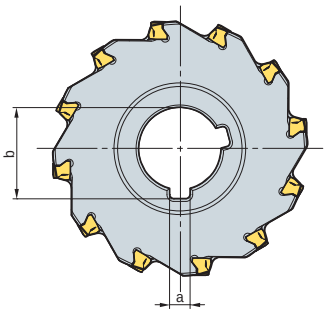
Specification	Screw	Wrench
Ø3.0~Ø6.0	FTKA0412B	TW15S

Available inserts E11

RM4PHCPA3000







(inch)

Designation			ØD	ØD2	Ød	a	b	E	W	T-max
RM4PHCPA	3300059R	10	3.0	1.634	1.00	0.250	1.104	0.650	0.594	0.604
	3400059R	12	4.0	1.890	1.25	0.313	1.385	0.650	0.594	0.945
	3500059R	14	5.0	2.283	1.50	0.375	1.666	0.650	0.594	1.280
	3600059R	16	6.0	2.283	1.50	0.375	1.666	0.650	0.594	1.780

Available inserts

LNEX-MA



LNM(E)X-MF



LNM(E)X-MM



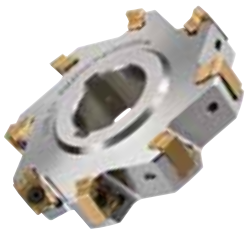
Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	100605PNR-MF											●			●	●				E11
	100605PNR-MM										●	●			●	●				
	100605PNR-MA																		●	
	100608PNR-MF										●	●			●	●				
	100608PNR-MM											●			●	●				
LNMX	100605PNR-MF											●			●	●				
	100605PNR-MM										●	●	●		●	●				
	100608PNR-MF											●			●	●				
	100608PNR-MM										●				●	●				

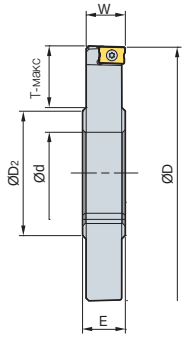
Parts

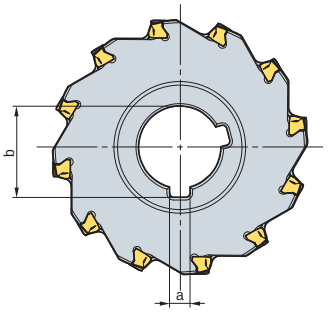
Specification	Screw	Wrench
Ø3.0~Ø6.0	FTKA0307	TW09S

Available inserts **E11**

RM4PHCPA4000







(inch)

Designation			ØD	ØD2	Ød	a	b	E	W	T-max
RM4PHCPA	4300078R	6	3.0	1.634	1.000	0.250	1.104	0.866	0.780	0.604
	4400078R	8	4.0	1.890	1.250	0.313	1.385	0.866	0.780	0.945
	4500078R	10	5.0	1.890	1.500	0.375	1.666	0.866	0.780	1.280
	4600078R	12	6.0	1.890	1.500	0.375	1.666	0.866	0.780	1.780

Available inserts

LNEX-MA



LNM(E)X-MF



LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	151004PNR-MF											●			●	●				E11
	151004PNR-MM											●			●	●				
	151004PNR-MA																			
	151008PNR-MF											●			●	●				
	151008PNR-MM										●	●			●	●				
	151008PNR-MA																			
	151016PNR-MF											●			●	●				
	151016PNR-MM											●			●	●				
LNMX	151004PNR-MF										●	●			●	●				
	151004PNR-MM											●				●				
	151008PNR-MF						●				●	●			●	●				
	151008PNR-MM						●				●	●			●	●				
	151016PNR-MF											●			●	●				
	151016PNR-MM											●				●				

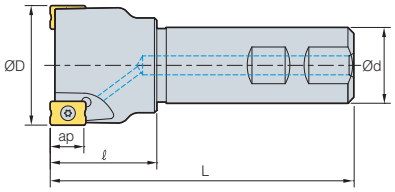
Parts

Specification	Screw	Wrench
Ø3.0~Ø6.0	FTKA0412B	TW15S

Available inserts E11

RM4PSA3000












AA 0°

- AR: -6°
- RR: -39°~-16°

(inch)

Designation		⦾	ØD	Ød	ℓ	L	ap	lbs
RM4PSA	3056HR-S062	1	0.562	0.625	0.906	3.543	0.354	0.2
	3062HR-S062	1	0.625	0.625	0.984	3.543	0.354	0.2
	3068HR-S062	2	0.688	0.625	0.906	3.543	0.354	0.3
	3075HR-S075	2	0.750	0.750	1.181	3.937	0.354	0.5
	3075HR-S075M	3	0.750	0.750	1.181	3.937	0.354	0.5
	3100HR-S100	2	1.000	1.000	1.378	4.528	0.354	0.8
	3100HR-S100M	3	1.000	1.000	1.378	4.528	0.354	0.8
	3125HR-S125	3	1.250	1.250	1.575	4.921	0.354	1.5
	3125HR-S125M	4	1.250	1.250	1.575	4.921	0.354	1.5
	3150HR-S125	4	1.500	1.250	1.654	5.118	0.354	1.9
	3150HR-S125M	5	1.500	1.250	1.654	5.118	0.354	1.9
	3150HR-S150	4	1.500	1.500	1.654	5.118	0.354	2.6
	3150HR-S150M	5	1.500	1.500	1.654	5.118	0.354	2.6
	3150HR-S165	4	1.500	1.654	1.654	5.118	0.354	2.8
	3150HR-S165M	5	1.500	1.654	1.654	5.118	0.354	2.8
	3200HR-S125	5	2.000	1.250	1.772	5.315	0.354	2.3
	3200HR-S125M	7	2.000	1.250	1.772	5.315	0.354	2.3
	3200HR-S150	5	2.000	1.500	1.772	5.315	0.354	3.0
	3200HR-S150M	7	2.000	1.500	1.772	5.315	0.354	3.0
	3200HR-S165	5	2.000	1.654	1.772	5.315	0.354	3.3
	3200HR-S165M	7	2.000	1.654	1.772	5.315	0.354	3.3

Available inserts

LNEX-MA



LNM(E)X-MF



LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	100605PNR-MF											●			●	●				E11
	100605PNR-MM										●	●			●	●				
	100605PNR-MA																		●	
	100605PNL-MM										●	●			●	●				
	100608PNR-MF											●			●	●				
	100608PNR-MM											●			●	●				
LNMX	100605PNR-MF										●	●	●		●	●				
	100605PNR-MM											●			●	●				
	100608PNR-MF										●				●	●				
	100608PNR-MM											●	●							

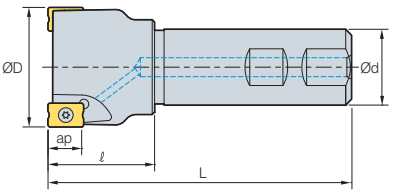
Parts

Specification	Screw	Wrench
Ø0.562~Ø2.000	FTKA0307	TW09S

Available inserts E11

RM4PSA4000












AA 0°

- AR: -6°
- RR: -24°~-14°

(inch)

Designation		○	ØD	Ød	ℓ	L	ap	lbs
RM4PSA	4125HR-S125	2	1.250	1.250	1.575	4.921	0.551	1.5
	4125HR-S125M	3	1.250	1.250	1.575	5.118	0.551	1.5
	4150HR-S125	3	1.500	1.250	1.654	5.118	0.551	1.8
	4150HR-S125M	4	1.500	1.250	1.654	5.118	0.551	1.8
	4150HR-S150	3	1.500	1.500	1.654	5.315	0.551	2.5
	4150HR-S165	3	1.500	1.654	1.654	5.315	0.551	2.7
	4200HR-S125	3	2.000	1.250	1.772	5.315	0.551	2.2
	4200HR-S125M	4	2.000	1.250	1.772	5.315	0.551	2.2
	4200HR-S150	3	2.000	1.500	1.772	5.315	0.551	3.0
	4200HR-S150M	4	2.000	1.500	1.772	5.315	0.551	2.9
	4200HR-S165	3	2.000	1.654	1.772	5.315	0.551	3.2
	4200HR-S165M	4	2.000	1.654	1.772	5.315	0.551	3.2
	4250HR-S125	4	2.500	1.250	1.772	5.315	0.551	2.8
	4250HR-S125M	6	2.500	1.250	1.772	5.315	0.551	2.7
	4250HR-S150	4	2.500	1.500	1.772	5.315	0.551	3.6
	4250HR-S150M	6	2.500	1.500	1.772	5.315	0.551	3.5
	4250HR-S165	4	2.500	1.654	1.772	5.315	0.551	3.8
	4250HR-S165M	6	2.500	1.654	1.772	5.315	0.551	3.7

Available inserts

LNEX-MA | LNM(E)X-MF | LNM(E)X-MM





Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	151004PNR-MF											●			●	●				E11
	151004PNR-MM											●			●	●				
	151004PNR-MA																		●	
	151008PNR-MF											●			●	●				
	151008PNR-MM										●	●			●	●				
	151008PNR-MA																		●	
	151016PNR-MF											●			●	●				
	151016PNR-MM											●			●	●				
LNMX	151004PNR-MF										●	●			●	●				
	151004PNR-MM											●				●				
	151008PNR-MF						●				●	●			●	●				
	151008PNR-MM						●				●	●	●		●	●				
	151016PNR-MF											●			●	●				
	151016PNR-MM											●				●				

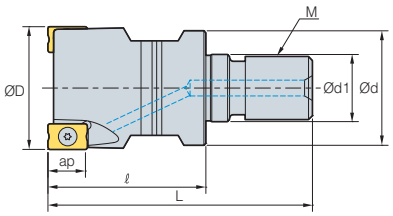
Parts

Specification	Screw	Wrench
Ø1.250~Ø2.500	FTKA0412B	TW15S

Available inserts E11

RM4PMA3000












AA 0°

- AR: -6°
- RR: -39°~-16°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	lbs
RM4PMA	3056HR-M06	1	0.563	0.433	0.256	0.984	1.575	M06	0.354	0.04
	3063HR-M08	1	0.625	0.571	0.335	0.984	1.654	M08	0.354	0.04
	3068HR-M08	2	0.688	0.571	0.335	0.984	1.654	M08	0.354	0.07
	3075HR-M10	2	0.750	0.689	0.413	1.181	2.008	M10	0.354	0.13
	3100HR-M12	2	1.000	0.906	0.492	1.378	2.323	M12	0.354	0.24
	3125HR-M16	3	1.250	1.142	0.669	1.575	2.638	M16	0.354	0.46
	3150HR-M16	4	1.500	1.142	0.669	1.575	2.638	M16	0.354	0.57
	3200HR-M16	5	2.000	1.142	0.669	1.772	2.835	M16	0.354	0.90

Available inserts

LNEX-MA



LNM(E)X-MF



LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	100605PNR-MF											●			●	●				E11
	100605PNR-MM										●	●			●	●				
	100605PNR-MA																		●	
	100608PNR-MF										●	●			●	●				
	100608PNR-MM											●			●	●				
LNMX	100605PNR-MF											●			●	●				
	100605PNR-MM										●	●	●		●	●				
	100608PNR-MF											●			●	●				
	100608PNR-MM										●				●	●				

Available adaptor

Designation		Available adaptor
RM4PMA	3056HR-M06	MATA-M06
	3063HR-M08	MATA-M08
	3068HR-M08	
	3075HR-M10	MATA-M10
	3100HR-M12	MATA-M12
	3125HR-M16	MATA-M16
	3150HR-M16	
	3200HR-M16	

Designation: RM4PMA3125HR-M16
Modular Head Threading Measure size (M16)

Adaptor spec.: MATA-M16-137-S125S
Adaptor Threading Measure (M16)

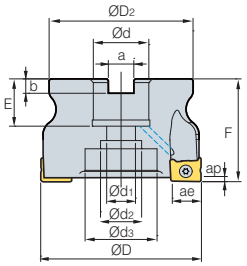
Parts

Specification	Screw	Wrench
Ø0.563~Ø2.000	FTKA0307	TW09S

Available inserts E11 Available adaptor E365~E366

RM4ZCA3000/4000





AA 0°

- AR: -11°
- RR: -12°~-10°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	ae	lbs
RM4ZCA	3150HR	4	1.50	1.417	0.50	0.287	0.433	-	0.250	0.169	0.630	1.50	0.059	0.354	0.4
	3200HR	5	2.00	1.850	0.75	0.433	0.630	-	0.313	0.220	0.787	1.75	0.059	0.354	0.7
RM4ZCA	4250HR	5	2.50	2.283	1.00	0.551	0.827	-	0.375	0.248	0.866	1.75	0.098	0.551	1.2
	4300HR	6	3.00	2.677	1.00	0.551	0.827	-	0.375	0.248	0.866	1.75	0.098	0.551	2.4
	4400HR	7	4.00	3.150	1.25	0.709	1.024	1.575	0.500	0.319	0.866	2.00	0.098	0.551	3.7

Available inserts

LNM(E)X-MM



Designation			Cermet		Coated												Uncoated			page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
3000 type	LNEX	100605PNL-MM											●			●	●				E11
	LNMX	100605PNL-MM										●	●			●	●				
4000 type	LNEX	151008PNL-MM											●			●	●				
	LNMX	151008PNL-MM														●	●				

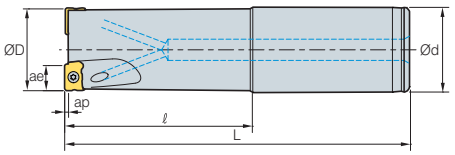
Parts

Specification	Screw	Wrench
Ø1.50~Ø2.00 (3000 type)	FTKA0307	TW09S
Ø2.50~Ø4.00 (4000 type)	FTKA0412B	TW15S

Available inserts E11

RM4ZSA3000





AA 0°

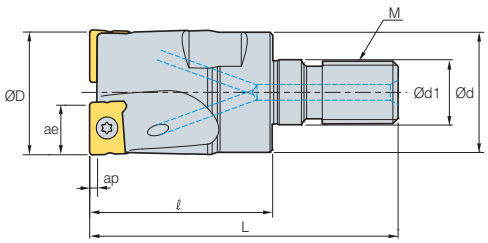
• AR: -11°
• RR: -17°~-14°

(inch)

Designation			ØD	Ød	ℓ	L	ap	ae	lbs
RM4ZSA	3100HR-L100	2	1.000	1.000	5.000	8.000	0.059	0.354	1.3
	3125HR-L125	3	1.250	1.250	5.000	8.500	0.059	0.354	2.4
	3150HR-L125	4	1.500	1.500	1.654	10.000	0.059	0.354	3.3

RM4ZMA3000





AA 0°

•AR : -11°
•RR : -17°~-14°

(inch)

Designation			ØD	Ød	Ød1	l	L	M	ap	ae	lbs
RM4ZMA	3100HR-M12	2	1.000	0.906	0.492	1.378	2.323	M12	0.059	0.354	0.2
	3125HR-M16	3	1.250	1.142	0.669	1.575	2.638	M16	0.059	0.354	0.4
	3150HR-M16	4	1.500	1.142	0.669	1.575	2.638	M16	0.059	0.354	0.6

Available inserts

LNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNEX	100605PNL-MM											●			●	●				E11
LNMX	100605PNL-MM										●	●			●	●				

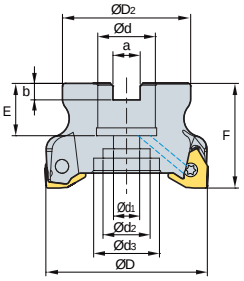
Parts

Specification	Screw	Wrench
Ø1.000~Ø1.500	FTKA0307	TW09S

Available inserts E11

RM6PCA-WN04 new













AA 0°

- AR: -6°
- RR: -14°~-11°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Available screw
RM6PCA	150R-050-6-WN04	6	1.5	1.417	0.50	0.287	0.433	-	0.252	0.170	0.630	1.50	0.169	0.421	ETNA02506
	150R-050-7-WN04	7	1.5	1.417	0.50	0.287	0.433	-	0.252	0.170	0.630	1.50	0.169	0.422	ETNA02506
	200R-075-8-WN04	8	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.169	0.772	ETNA02506
	200R-075-9-WN04	9	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.169	0.772	ETNA02506
	250R-100-10-WN04	10	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.169	1.194	ETNA02506
	250R-100-11-WN04	11	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.169	1.196	ETNA02506

Available inserts

WNGX-MA new　WNGX-ML new　WNGX-MM new

Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNGX	040304PNFR-MA																		●	E30
	040308PNFR-MA																			
	040312PNFR-MA																		●	
	040316PNFR-MA																		●	
	040304PNER-ML											●		●	●	●				
	040308PNER-ML														●	●				
	040312PNER-ML														●					
	040316PNER-ML														●					
	040304PNSR-MM											●			●	●				
	040308PNSR-MM														●	●				
	040312PNSR-MM														●					
	040316PNSR-MM														●					

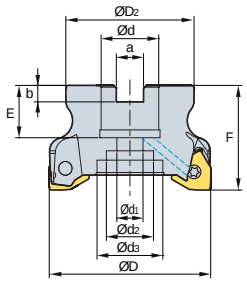
Parts

Specification	Screw	Wrench
Ø1.5~Ø2.5	ETNA02506	TW07S

Available inserts E30

RM6PCA-WN08 new





AA 0°

- AR: -6°
- RR: -14°~-11°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Available screw
RM6PCA	200R-075-4-WN08	4	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.323	0.662	FTNA0513
	200R-075-5-WN08	5	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.323	0.687	FTNA0511
	250R-100-5-WN08	5	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.323	1.091	FTNA0513
	250R-100-6-WN08	6	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.323	1.076	FTNA0513
	300R-100-7-WN08	7	3.0	2.205	1.00	0.551	0.866	1.299	0.374	0.248	0.787	2.00	0.323	1.735	FTNA0513
	300R-100-9-WN08	9	3.0	2.205	1.00	0.551	0.866	1.299	0.374	0.248	0.787	2.00	0.323	1.715	FTNA0511
	400R-150-8-WN08	8	4.0	3.385	1.50	-	-	1.969	0.626	0.394	1.102	2.00	0.323	3.397	FTNA0513
	400R-150-11-WN08	11	4.0	3.385	1.50	-	-	1.969	0.626	0.394	1.102	2.00	0.323	3.440	FTNA0511
	500R-150-11-WN08	11	5.0	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.50	0.323	7.528	FTNA0513
	500R-150-14-WN08	14	5.0	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.50	0.323	7.409	FTNA0511

Available inserts

WNGX-MA



WNGX-ML



WNGX-MM



Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
WNGX	080604PNFR-MA																●		E30
	080608PNFR-MA																●		
	080612PNFR-MA																		
	080616PNFR-MA																●		
	080620PNFR-MA																●		
	080604PNER-ML										●			●	●	●			
	080608PNER-ML						●				●	●		●	●	●			
	080612PNER-ML														●				

Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
WNGX	080616PNER-ML														●				E30
	080620PNER-ML														●				
	080604PNSR-MM										●				●	●			
	080608PNSR-MM						●				●	●		●	●	●			
	080612PNSR-MM														●				
	080616PNSR-MM														●				
	080620PNSR-MM														●				

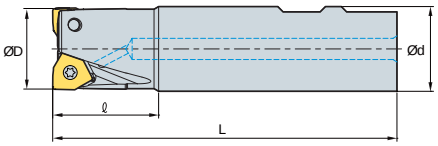
Parts

Specification	Screw	Wrench
Ø2.0~Ø5.0	FTNA0511/FTNA0513	TW20-100

Available inserts E30

RM6PSA-WN04 new







AA 0°

- AR: -6°
- RR: -20°~-14°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Available screw
RM6PSA	075R-2W075-450-WN04	2	0.75	0.75	1.378	4.5	0.169	0.447	ETNA02506
	075R-3W075-450-WN04	3	0.75	0.75	1.378	4.5	0.169	0.447	ETNA02506
	100R-3W100-450-WN04	3	1.00	1.00	1.378	4.5	0.169	0.850	ETNA02506
	100R-4W100-450-WN04	4	1.00	1.00	1.378	4.5	0.169	0.845	ETNA02506
	125R-5W125-450-WN04	5	1.25	1.25	1.378	4.5	0.169	1.356	ETNA02506
	125R-6W125-450-WN04	6	1.25	1.25	1.378	4.5	0.169	1.359	ETNA02506

Available inserts

WNGX-MA new | WNGX-ML new | WNGX-MM new



Designation		Cermet		Coated										Uncoated			page
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNGX	040304PNFR-MA																●	E30
	040308PNFR-MA																	
	040312PNFR-MA																●	
	040316PNFR-MA																●	
	040304PNER-ML									●		●	●	●				
	040308PNER-ML												●	●				
	040312PNER-ML												●					
	040316PNER-ML												●					
	040304PNSR-MM									●			●	●				
	040308PNSR-MM												●	●				
	040312PNSR-MM												●					
	040316PNSR-MM												●					

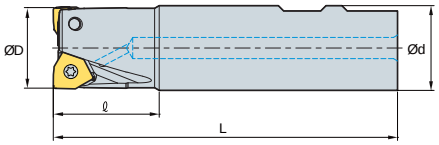
Parts

Specification	Screw	Wrench
Ø0.75~Ø1.25	ETNA02506	TW07S

Available inserts E30

RM6PSA-WN08 new







AA 0°

- AR: -6°
- RR: -20°~-14°

(inch)

	Designation		ØD	Ød	ℓ	L	ap	lbs	Available screw
RM6PSA	125R-2W125-500-WN08	2	1.25	1.25	1.575	5.0	0.323	1.463	FTNA0513
	150R-3W125-500-WN08	3	1.50	1.25	1.575	5.0	0.323	1.492	FTNA0513
	150R-4W125-500-WN08	4	1.50	1.25	1.575	5.0	0.323	1.482	FTNA0513
	200R-4W125-500-WN08	4	2.00	1.25	1.575	5.0	0.323	1.631	FTNA0513
	200R-5W125-500-WN08	5	2.00	1.25	1.575	5.0	0.323	1.656	FTNA0513

Available inserts

WNGX-MA new　WNGX-ML new　WNGX-MM new

	Designation	Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNGX	080604PNFR-MA																		●	E30
	080608PNFR-MA																		●	
	080612PNFR-MA																			
	080616PNFR-MA																		●	
	080620PNFR-MA																		●	
	080604PNER-ML										●			●	●	●				
	080608PNER-ML						●				●	●		●	●	●				
	080612PNER-ML														●					
	080616PNER-ML														●					
	080620PNER-ML														●					
	080604PNSR-MM										●				●	●				
	080608PNSR-MM						●				●	●		●	●	●				
	080612PNSR-MM														●					
	080616PNSR-MM														●					
	080620PNSR-MM														●					

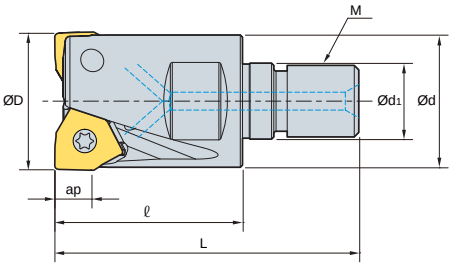
Parts

Specification	Screw	Wrench
Ø1.25~Ø2.00	FTNA0513	TW20-100

Available inserts E30

RM6PMA-WN04 new







AA 0°

- AR: -6°
- RR: -9°~-6°

(inch)

	Designation		ØD	Ød	Ød1	ℓ	L	M	ap	lbs
RM6PMA	075R-2-M10-WN04	2	0.75	0.689	0.413	1.181	1.969	M10	0.120	0.120
	075R-3-M10-WN04	3	0.75	0.689	0.413	1.181	1.969	M10	0.119	0.119
	100R-4-M12-WN04	4	1.00	0.906	0.492	1.181	2.087	M12	0.212	0.212
	100R-5-M12-WN04	5	1.00	0.906	0.492	1.181	2.087	M12	0.209	0.209
	125R-5-M16-WN04	5	1.25	1.142	0.669	1.575	2.598	M16	0.461	0.461
	125R-6-M16-WN04	6	1.25	1.142	0.669	1.575	2.598	M16	0.466	0.466

Available inserts

WNGX-MA new　WNGX-ML new　WNGX-MM new



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
WNGX	040304PNFR-MA																	●	E30
	040308PNFR-MA																	●	
	040312PNFR-MA																	●	
	040316PNFR-MA																	●	
	040304PNER-ML											●		●	●	●			
	040308PNER-ML														●	●			
	040312PNER-ML														●				
	040316PNER-ML														●				
	040304PNSR-MM											●			●	●			
	040308PNSR-MM														●	●			
	040312PNSR-MM														●				
	040316PNSR-MM														●				

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
WNGX	080604PNFR-MA																	●	E30
	080608PNFR-MA																	●	
	080612PNFR-MA																		
	080616PNFR-MA																	●	
	080620PNFR-MA																	●	
	080604PNER-ML										●				●	●			
	080608PNER-ML						●				●	●			●	●			
	080612PNER-ML														●				
	080616PNER-ML														●				
	080620PNER-ML														●				
	080604PNSR-MM										●				●	●			
	080608PNSR-MM						●				●	●		●	●	●			
	080612PNSR-MM														●				
	080616PNSR-MM														●				
	080620PNSR-MM														●				

Available adaptor

	Designation	Available adaptor
RM6PMA	075R-2-M10-WN04	MAT-M10
	075R-3-M10-WN04	MAT-M10
	100R-4-M12-WN04	MAT-M12
	100R-5-M12-WN04	MAT-M12
	125R-5-M16-WN04	MAT-M16
	125R-6-M16-WN04	MAT-M16

Designation: RM6PMA125R-5-M16-WN04
Modular Head Threading Measure size (M16)

||

Adaptor spec.: MATA-M16-354-S125S-C
Adaptor Threading Measure (M16)

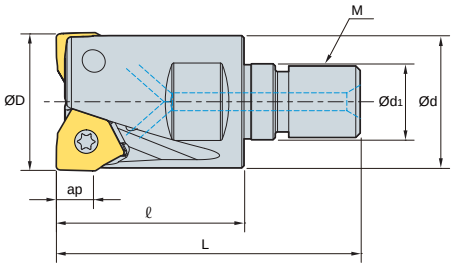
Parts

Specification	Screw	Wrench
Ø0.75~Ø1.25	ETNA02506	TW07S

Available inserts E30　Available adaptor E365~E366

RM6PMA-WN08 new







AA 0°

- AR: -6°
- RR: -9°~-6°

(inch)

	Designation		ØD	Ød	Ød1	ℓ	L	M	ap	lbs
RM6PMA	125R-2-M16-WN08	2	1.25	1.142	0.669	1.693	2.717	M16	0.439	0.439
	150R-3-M16-WN08	3	1.50	1.142	0.669	1.693	2.717	M16	0.505	0.505
	150R-4-M16-WN08	4	1.50	1.142	0.669	1.693	2.717	M16	0.505	0.505

Available inserts

WNGX-MA new　WNGX-ML new　WNGX-MM new

Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
WNGX	040304PNFR-MA																	●	E30
	040308PNFR-MA																	●	
	040312PNFR-MA																●		
	040316PNFR-MA																●		
	040304PNER-ML											●		●	●	●			
	040308PNER-ML														●	●			
	040312PNER-ML														●				
	040316PNER-ML														●				
	040304PNSR-MM											●			●	●			
	040308PNSR-MM														●	●			
	040312PNSR-MM														●				
	040316PNSR-MM														●				

Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
WNGX	080604PNFR-MA																	●	E30
	080608PNFR-MA																	●	
	080612PNFR-MA																		
	080616PNFR-MA																	●	
	080620PNFR-MA																	●	
	080604PNER-ML										●				●	●			
	080608PNER-ML						●				●	●			●	●			
	080612PNER-ML														●				
	080616PNER-ML														●				
	080620PNER-ML														●				
	080604PNSR-MM										●				●	●			
	080608PNSR-MM						●				●	●		●	●	●			
	080612PNSR-MM														●				
	080616PNSR-MM														●				
	080620PNSR-MM														●				

Available adaptor

	Designation	Available adaptor
RM6PMA	125R-2-M16-WN08	MAT-M16
	150R-3-M16-WN08	MAT-M16
	150R-4-M16-WN08	MAT-M16

Designation: RM6PMA125R-2-M16-WN08
Modular Head Threading Measure size (M16)

=

Adaptor spec.: MATA-M16-354-S125S-C
Adaptor Threading Measure (M16)

Parts

Specification	Screw	Wrench
Ø1.25~Ø1.50	FTNA0513	TW20-100

Available inserts E30　Available adaptor E365~E366

RM8ACA4000



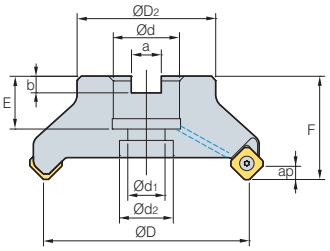


Fig. 1

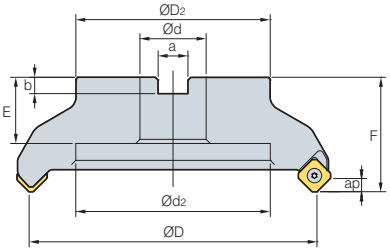


Fig. 2

AA 45°

- AR: -6°
- RR: -9°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RM8ACA	4200HR-M	4	2.0	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	0.236	1.1	1
	4200HR-H	6	2.0	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	0.236	1.1	1
	4250HR-M	6	2.5	2.205	1.00	0.551	0.827	0.375	0.248	0.787	1.75	0.236	1.5	1
	4250HR-H	8	2.5	2.205	1.00	0.551	0.827	0.375	0.248	0.787	1.75	0.236	1.5	1
	4300HR	5	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.236	2.6	1
	4300HR-M	7	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.236	2.6	1
	4300HR-H	10	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.236	2.9	1
RM8ACA	4400HR	6	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.236	3.7	1
	4400HR-M	8	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.236	3.7	1
	4400HR-H	12	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.236	3.7	1
	4500HR	8	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.236	7.9	1
	4500HR-M	10	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.236	7.9	1
	4500HR-H	16	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.236	8.1	1
	4600R	10	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.236	10.6	2
	4600R-M	12	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.236	11.7	2
	4600R-H	18	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.236	11.9	2
	4800R-M	14	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.50	0.236	15.6	2
	4800R-H	24	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.50	0.236	15.6	2
	41000R-M	16	10.0	7.087	2.50	-	7.087	1.000	0.551	1.496	2.50	0.236	26.2	2
	41000R-H	30	10.0	7.087	2.50	-	7.087	1.000	0.551	1.496	2.50	0.236	26.4	2

Available inserts

	SNM(E)X-MF	SNEX-ML	SNM(E)X-MM	SNEX-MA	SNEX-W
					

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
SNEX	1206ANN-MF										●	●			●	●			
	1206ANN-ML														●	●			
	1206ANN-MM										●	●	●		●	●			E24
	1206ANN-MA																	●	E25
	1206ANN-W										●	●			●				E26
SNMX	1206ANN-MF						●				●	●		●	●	●			
	1206ANN-MM			●			●				●	●	●	●	●	●			

Parts

Specification	Screw	Wrench
Ø2.0~Ø10.0	FTKA0410	TW15S

Available inserts E24~E26

RMH8ACA4000

Shim type



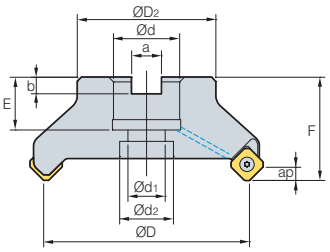


Fig. 1

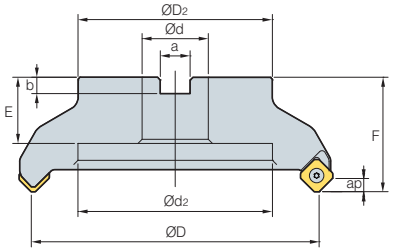


Fig. 2

AA 45°

- AR: -6°
- RR: -9°~-6°

(inch)

Designation		⦾	ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RMH8ACA	4300HR-M	7	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.0	0.236	2.6	1
	4400HR-M	8	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.0	0.236	3.7	1
	4500HR-M	10	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.5	0.236	7.9	1
	4600R-M	12	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.5	0.236	10.6	2
	4800R-M	14	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.5	0.236	15.6	2
	41000R-M	16	10.0	7.087	2.50	-	7.087	1.000	0.551	1.496	2.5	0.236	26.2	2
	41200R-M	20	12.0	9.449	2.50	-	9.370	1.000	0.551	1.496	2.5	0.236	40.8	2
	41500R-M	26	15.0	9.843	2.50	-	9.370	1.000	0.551	1.496	3.0	0.236	81.8	2

Available inserts



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1206ANN-MF										●	●			●	●				
	1206ANN-ML														●	●				
	1206ANN-MM										●	●	●		●	●				E24
	1206ANN-MA																		●	E25
	1206ANN-W										●	●			●					E26
SNMX	1206ANN-MF						●				●	●		●	●	●				
	1206ANN-MM			●			●					●	●		●	●				

Parts

Specification	Screw	Shim	Shim Screw	Wrench
Ø3.0~Ø15.0	FTKA0412B	SS42RM8	SHXN0609F	TW15S

Available inserts **E24~E26**

RM8ACA5000



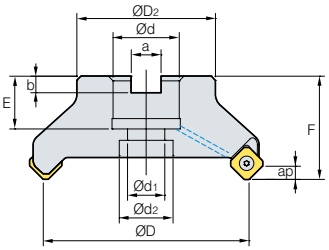


Fig. 1

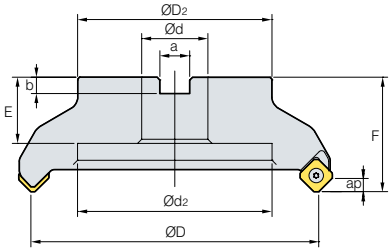


Fig. 2

AA
45°

- AR: -6°
- RR: -9°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RM8ACA	5300HR-M	6	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.295	2.6	1
	5400HR-M	7	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.295	3.7	1
	5500HR-M	8	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.295	7.9	1
	5600R-M	10	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.295	10.6	2
	5800R-M	12	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.50	0.295	15.6	2
	51000R-M	15	10.0	7.087	2.50	-	7.087	1.000	0.551	1.496	2.50	0.295	26.2	2
	51200R-M	20	12.0	9.449	2.50	-	9.370	1.000	0.551	1.496	2.50	0.295	47.5	2

Available inserts

SNM(E)X-MF



SNEX-ML



SNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1507ANN-MF											●			●	●				
	1507ANN-ML														●	●				E24
	1507ANN-MM											●			●	●				E25
SNMX	1507ANN-MF						●				●	●			●	●				E26
	1507ANN-MM						●				●	●			●	●				

Parts

Specification	Screw	Wrench
Ø3.0~Ø12.0	FTGA0513	TW20-100

Available inserts E24~E26

RMH8ACA5000

Shim type



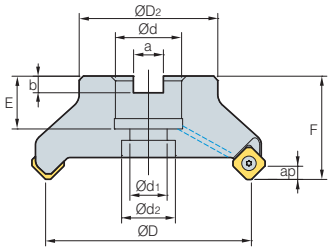


Fig. 1

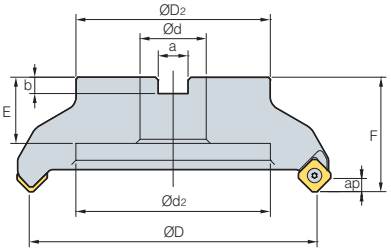


Fig. 2

AA
45°

- AR: -6°
- RR: -9°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RMH8ACA	5300HR-M	6	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.0	0.295	2.6	1
	5400HR-M	7	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.0	0.295	5.4	1
	5500HR-M	8	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.5	0.295	7.8	1
	5600R-M	10	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.5	0.295	10.8	2
	5800R-M	12	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.5	0.295	15.4	2
	51000R-M	15	10.0	7.087	2.50	-	7.087	1.000	0.551	1.496	2.5	0.295	25.8	2
	51200R-M	20	12.0	9.449	2.50	-	9.370	1.000	0.551	1.496	2.5	0.295	41.4	2
	51500R-M	22	15.0	9.843	2.50	-	9.370	1.000	0.551	1.496	3.0	0.295	81.8	2

Available inserts

SNM(E)X-MF | SNEX-ML | SNM(E)X-MM







Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1507ANN-MF											●			●	●				
	1507ANN-ML														●	●				E24
	1507ANN-MM											●			●	●				E25
SNMX	1507ANN-MF						●				●	●			●	●				E26
	1507ANN-MM						●				●	●			●	●				

Parts

Specification	Screw	Shim	Shim Screw	Wrench
Ø3.0~Ø15.0	FTGA0513	SS53RM8	SHXN0712F	TW20-100

Available inserts **E24~E26**

RM8ECA4000



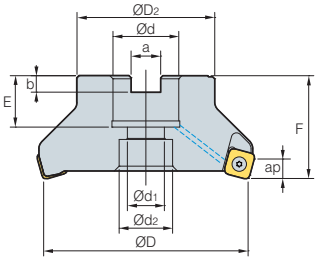


Fig. 1

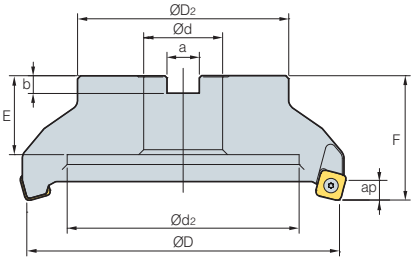


Fig. 2

AA 15°

- AR: -6°
- RR: -8°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RM8ECA	4200HR-M	4	2.0	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	0.354	1.1	1
	4250HR-M	6	2.5	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	0.354	1.3	1
	4300HR	5	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.354	2.6	1
	4300HR-M	7	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.354	2.4	1
	4400HR	6	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.354	3.7	1
	4400HR-M	8	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.354	5.5	1
	4500HR	8	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.354	6.6	1
	4500HR-M	10	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.354	6.8	1
	4600R	10	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.354	9.9	2
	4600R-M	12	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.354	8.8	2
	4800R-M	16	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.50	0.354	13.0	2

Available inserts

SNM(E)X-MF | SNEX-ML | SNM(E)X-MM | SNEX-MA







Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1206ENN-MF											●			●	●				E24 E25 E26
	1206ENN-ML														●	●				
	1206ENN-MM											●			●	●				
	1206ENN-MA											●							●	
SNMX	1206ENN-MF						●				●	●		●	●	●				
	1206ENN-MM						●				●	●		●	●	●				

Parts

Specification	Screw	Wrench
Ø2.0~Ø8.0	PTKA0411-R3	TW15S

Available inserts **E24~E26**

RMH8ECA4000

Shim type



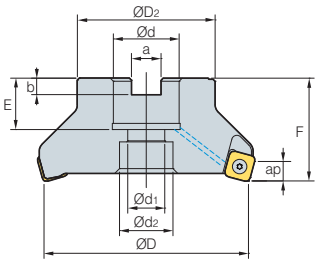


Fig. 1

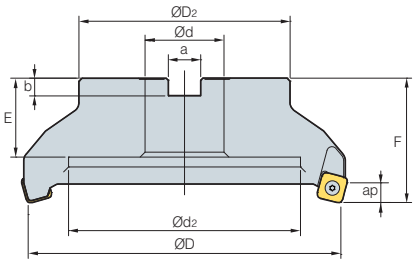


Fig. 2

AA 15°

- AR: -6°
- RR: -8°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RMH8ECA	4300HR-M	7	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.0	0.354	2.3	1
	4400HR-M	8	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.0	0.354	5.4	1
	4500HR-M	10	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.5	0.354	6.5	1
	4600R-M	12	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.5	0.354	8.6	2
	4800R-M	16	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.5	0.354	12.8	2
	41000R-M	16	10.0	7.087	2.50	-	7.087	1.000	0.551	1.496	2.5	0.354	23.6	2
	41200R-M	20	12.0	9.449	2.50	-	9.370	1.000	0.551	1.496	2.5	0.354	39.2	2
	41500R-M	24	15.0	9.843	2.50	-	9.370	1.000	0.551	1.496	3.0	0.354	69.0	2

Available inserts

	SNM(E)X-MF	SNEX-ML	SNM(E)X-MM	SNEX-MA
				

Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1206ENN-MF											●			●	●				E24 E25 E26
	1206ENN-ML														●	●				
	1206ENN-MM											●			●	●				
	1206ENN-MA											●							●	
SNMX	1206ENN-MF						●				●	●		●	●	●				
	1206ENN-MM						●				●	●		●	●	●				

Parts

Specification	Screw	Shim	Shim Screw	Wrench
Ø3.0~Ø15.0	PTKA0411-R3	SS42RM8	SHXN0609F	TW15S

Available inserts **E24~E26**

RM8ECA5000



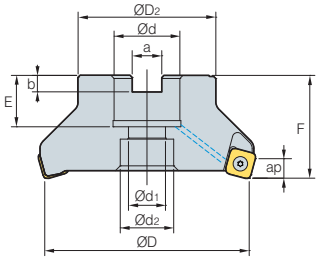


Fig. 1

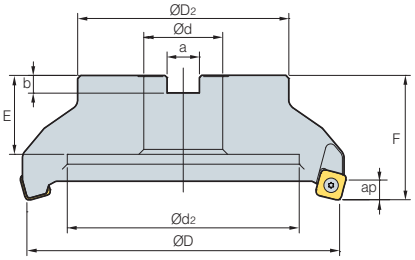


Fig. 2




AA 15°

- AR: -6°
- RR: -8°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RM8ECA	5300HR-M	6	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.433	2.6	1
	5400HR-M	7	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.433	3.7	1
	5500HR-M	8	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.433	7.9	1
	5600R-M	10	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.433	10.6	2
	5800R-M	12	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.50	0.433	15.6	2
	51000R-M	15	10.0	7.087	2.50	-	7.087	1.000	0.551	1.496	2.50	0.433	26.2	2
	51200R-M	20	12.0	9.449	2.50	-	9.370	1.000	0.551	1.496	2.50	0.433	47.5	2

Available inserts

SNM(E)X-MF | SNEX-ML | SNM(E)X-MM






Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1507ENN-MF											●			●	●				
	1507ENN-ML														●	●				E24
	1507ENN-MM											●			●	●				E25
SNMX	1507ENN-MF						●				●	●			●	●				E26
	1507ENN-MM						●				●	●			●	●				

Parts

Specification	Screw	Wrench
Ø3.0~Ø12.0	FTGA0513	TW20-100

Available inserts E24~E26

RMH8ECA5000

Shim type



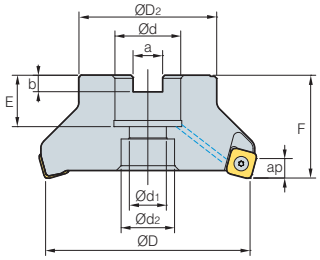


Fig. 1

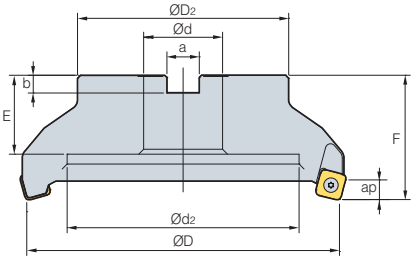


Fig. 2

AA
15°

- AR: -6°
- RR: -8°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RMH8ECA	5300HR-M	6	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.0	0.433	2.3	1
	5400HR-M	7	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.0	0.433	4.5	1
	5500HR-M	8	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.5	0.433	7.3	1
	5600R-M	10	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.5	0.433	9.5	2
	5800R-M	12	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.5	0.433	13.8	2
	51000R-M	15	10.0	7.087	2.50	-	7.087	1.000	0.551	1.496	2.5	0.433	23.8	2
	51200R-M	20	12.0	9.449	2.50	-	9.370	1.000	0.551	1.496	2.5	0.433	39.0	2
	51500R-M	22	15.0	9.843	2.50	-	9.370	1.000	0.551	1.496	3.0	0.433	77.4	2

Available inserts

SNM(E)X-MF



SNEX-ML



SNM(E)X-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1507ENN-MF											●			●	●				
	1507ENN-ML														●	●				E24
	1507ENN-MM											●			●	●				E25
SNMX	1507ENN-MF						●				●	●			●	●				E26
	1507ENN-MM						●				●	●			●	●				

Parts

Specification	Screw	Shim	Shim Screw	Wrench
Ø3.0~Ø15.0	FTGA0513	SS53RM8	SHXN0712F	TW20-100

Available inserts **E24~E26**

RM8QCA4000



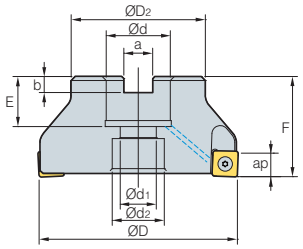


Fig. 1

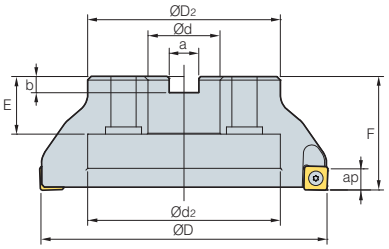


Fig. 2

AA 2°

- AR: -6°
- RR: -8°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RM8QCA	4250HR-M	6	2.5	2.205	1.00	0.551	0.827	0.375	0.248	0.787	1.75	0.453	1.2	1
	4250HR-H	8	2.5	2.205	1.00	0.551	0.827	0.375	0.248	0.787	1.75	0.453	1.2	1
	4300HR-M	7	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.453	2.3	1
	4300HR-H	10	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	0.453	2.1	1
	4400HR-M	8	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.453	3.6	1
	4400HR-H	12	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	0.453	3.4	1
	4500HR-M	10	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.453	7.1	1
	4500HR-H	14	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	0.453	7.1	1
	4600R-M	12	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.453	8.5	2
	4600R-H	18	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	0.453	8.5	2
	4800R-M	14	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.50	0.453	14.0	2
	4800R-H	22	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.50	0.453	14.0	2

Available inserts

SNM(E)X-MF | SNEX-ML | SNM(E)X-MM | SNEX-MA



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1206QNN-MF										●	●			●	●				E24 E25 E26
	1206QNN-ML														●	●				
	1206QNN-MM											●			●	●				
	1206QNN-MA																		●	
	120612-MF											●			●	●				
	120612-ML														●	●				
	120612-MM											●								
	120612-MA																		●	
SNMX	1206QNN-MF						●				●	●			●	●				
	1206QNN-MM						●				●	●		●	●	●				
	120612-MF											●			●	●				
	120612-MM											●			●	●				

Parts

Specification	Screw	Wrench
Ø2.5~Ø8.0	PTKA0411-R3	TW15S

Available inserts E24~E26

RMH8QCA4000

Shim type



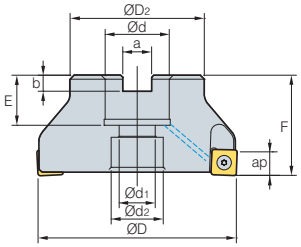


Fig. 1

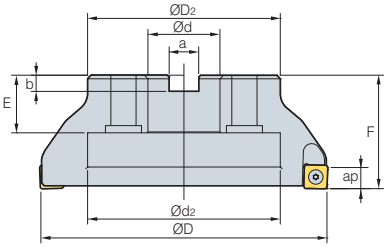


Fig. 2

AA 2°

- AR: -6°
- RR: -8°~-6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RMH8QCA	4300HR-M	7	3.0	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.0	0.453	2.3	1
	4400HR-M	8	4.0	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.0	0.453	5.4	1
	4500HR-M	10	5.0	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.5	0.453	6.5	1
	4600R-M	12	6.0	4.882	2.00	-	4.213	0.750	0.433	1.181	2.5	0.453	8.6	2
	4800R-M	16	8.0	5.118	2.50	-	5.315	1.000	0.551	1.496	2.5	0.453	10.8	2

Available inserts

	SNM(E)X-MF	SNEX-ML	SNM(E)X-MM	SNEX-MA
				

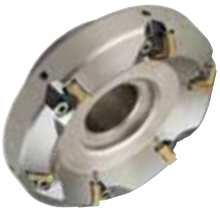
Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC3530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNEX	1206QNN-MF										●	●			●	●				E24 E25 E26
	1206QNN-ML														●	●				
	1206QNN-MM											●			●	●				
	1206QNN-MA																		●	
	120612-MF											●			●	●				
	120612-ML														●	●				
	120612-MM											●								
	120612-MA																		●	
SNMX	1206QNN-MF						●				●	●			●	●				
	1206QNN-MM						●				●	●		●	●	●				
	120612-MF											●			●	●				
	120612-MM											●			●	●				

Parts

Specification	Screw	Shim	Shim Screw	Wrench
Ø3.0~Ø8.0	PTKA0411-R3	SS42RM8	SHXN0609F	TW15S

Available inserts E24~E26

RMT8AA4000



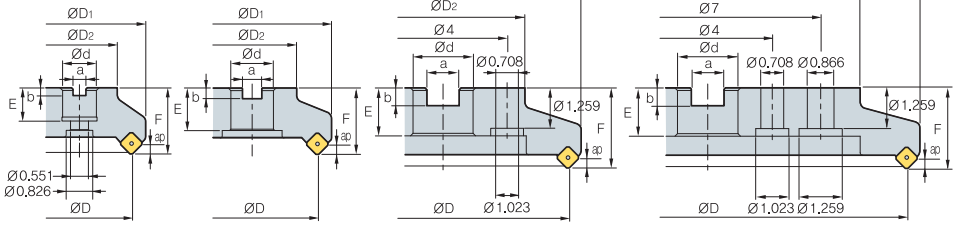


Fig. 1 Fig. 2 Fig. 3 Fig. 4



AA
45°

- AR: -6°
- RR: -6°

(inch)

Designation		⊚	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
RMT8AA	4300R/L	5	3.0	3,780	2.205	1.0	0.374	0.248	0.866	2.0	0.157	3.52	1
	4300R/L-M	6	3.0	2,953	2.205	1.0	0.374	0.248	0.866	2.0	0.157	3.52	1
	4400R/L	6	4.0	4,803	2.874	1.3	1.500	0.319	1.181	2.0	0.157	5.06	2
	4400R/L-M	8	4.0	3.996	2.874	1.3	1.500	0.319	1.181	2.0	0.157	5.06	2
	4500R/L	8	5.0	5.748	3.386	1.5	1.626	0.394	1.496	2.5	0.157	9.46	2
	4500R/L-M	10	5.0	4.961	3.386	1.5	1.626	0.394	1.496	2.5	0.157	9.46	2
	4600R/L	10	6.0	6.732	4.882	2.0	0.748	0.433	1.496	2.5	0.157	14.30	2
	4600R/L-M	14	6.0	5.965	4.882	2.0	0.748	0.433	1.496	2.5	0.157	14.30	2
	4800R/L	12	8.0	8.740	5.118	2.5	1.000	0.551	1.496	2.5	0.157	19.36	3
	4800R/L-M	18	8.0	7.953	5.118	2.5	1.000	0.551	1.496	2.5	0.157	19.36	3
	41000R/L	16	10.0	10.748	7.087	2.5	1.000	0.551	1.496	2.5	0.157	31.02	3
	41000R/L-M	22	10.0	9.961	7.087	2.5	1.000	0.551	1.496	2.5	0.157	31.02	3
	41200R/L	20	12.0	8.819	9.449	2.5	1.000	0.551	1.496	2.5	0.157	49.06	4
	41200R/L-M	28	12.0	11.969	9.449	2.5	1.000	0.551	1.496	2.5	0.157	49.06	4

Available inserts

SNC(M)F-MF SNC(M)F-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNCF	1206ANN-MF																			E22 E23
	1206ANN-MM																			
SNMF	1206ANN-MF																			
	1206ANN-MM																			

Parts

Specification	Screw	Screw	Spring	Latch	Wrench
Ø3.0~Ø12.0	ETKA0523	KHB0417	SPR0315	LTC05SR-RM4	TW20-100

Available inserts **E22, E23**

RMT8AA5000



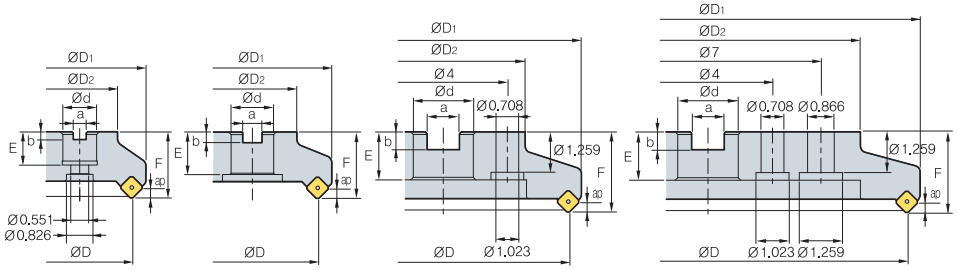


Fig. 1 Fig. 2 Fig. 3 Fig. 4

AA
45°

- AR: -6°
- RR: -6°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
RMT8AA	5300R/L	5	3.0	3.937	2.205	1.0	0.374	0.248	0.866	2.0	0.236	3.96	1
	5300R/L-M	6	3.0	2.953	2.205	1.0	0.374	0.319	0.866	2.0	0.236	3.96	1
	5400R/L	6	4.0	4.961	2.874	1.3	1.500	0.319	0.866	2.0	0.236	5.72	2
	5400R/L-M	8	4.0	3.996	2.874	1.3	1.500	0.394	0.866	2.0	0.236	5.72	2
	5500R/L	8	5.0	5.945	3.386	1.5	1.626	0.394	1.181	2.5	0.236	9.46	2
	5500R/L-M	10	5.0	4.961	3.386	1.5	1.626	0.433	1.181	2.5	0.236	9.46	2
	5600R/L	10	6.0	6.929	4.882	2.0	0.748	0.433	1.181	2.5	0.236	14.30	2
	5600R/L-M	14	6.0	5.965	4.882	2.0	0.748	0.551	1.181	2.5	0.236	14.30	2
	5800R/L	12	8.0	8.937	5.118	2.5	1.000	0.551	1.496	2.5	0.236	19.80	3
	5800R/L-M	18	8.0	7.953	5.118	2.5	1.000	0.551	1.496	2.5	0.236	19.80	3
	51000R/L	16	10.0	10.945	7.087	2.5	1.000	0.551	1.496	2.5	0.236	31.68	3
	51000R/L-M	22	10.0	9.961	7.087	2.5	1.000	0.551	1.496	2.5	0.236	31.68	3
	51200R/L	20	12.0	12.953	9.449	2.5	1.000	0.551	1.496	2.5	0.236	48.84	4
	51200R/L-M	28	12.0	11.969	9.449	2.5	1.000	0.551	1.496	2.5	0.236	48.84	4

Available inserts

SNC(M)F-MF SNC(M)F-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNCF	1507ANN-MF											●								
	1507ANN-MM																			E22
SNMF	1507ANN-MF																			E23
	1507ANN-MM																			

Parts

Specification	Screw	Screw	Spring	Latch	Wrench
Ø3.0~Ø12.0	ETKA0625	KHB0417	SPR0415	LTC06SR-RM5	TW20-100

Available inserts **E22, E23**

RMT8EA4000



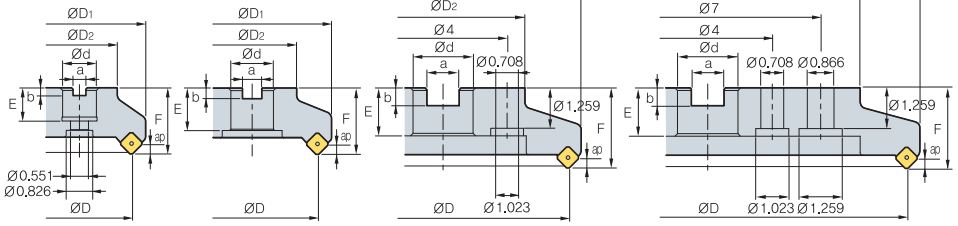


Fig. 1 Fig. 2 Fig. 3 Fig. 4

AA 15°

- AR: -6°
- RR: -8°~-6°

(inch)

Designation		⊚	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
RMT8EA	4300R/L	5	3.0	3.268	2.205	1.0	0.374	0.248	0.866	2.0	0.197	3.30	1
	4300R/L-M	6	3.0	2.953	2.205	1.0	0.374	0.248	0.866	2.0	0.197	3.30	1
	4400R/L	6	4.0	4.291	2.874	1.3	0.500	0.319	0.866	2.0	0.197	4.40	2
	4400R/L-M	8	4.0	3.996	2.874	1.3	0.500	0.319	0.866	2.0	0.197	4.40	2
	4500R/L	8	5.0	5.276	3.386	0.5	0.626	0.394	1.181	2.5	0.197	8.36	2
	4500R/L-M	10	5.0	4.496	3.386	0.5	0.626	0.394	1.181	2.5	0.197	8.36	2
	4600R/L	10	6.0	6.299	4.882	2.0	0.748	0.433	1.181	2.5	0.197	12.76	2
	4600R/L-M	14	6.0	5.965	4.882	2.0	0.748	0.433	1.181	2.5	0.197	12.76	2
	4800R/L	12	8.0	8.268	5.118	2.5	1.000	0.551	1.496	2.5	0.197	17.38	3
	4800R/L-M	18	8.0	7.953	5.118	2.5	1.000	0.551	1.496	2.5	0.197	17.38	3
	41000R/L	16	10.0	10.276	7.087	2.5	1.000	0.551	1.496	2.5	0.197	28.60	3
	41000R/L-M	22	10.0	9.961	7.087	2.5	1.000	0.551	1.496	2.5	0.197	28.60	3
	41200R/L	20	12.0	12.283	9.449	2.5	1.000	0.551	1.496	2.5	0.197	45.10	4
	41200R/L-M	28	12.0	11.969	9.449	2.5	1.000	0.551	1.496	2.5	0.197	45.10	4

Available inserts

SNC(M)F-MF SNC(M)F-MM



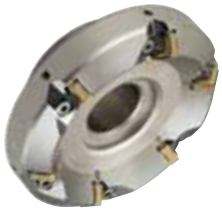
Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNCF	1206ENN-MF											●								
	1206ENN-MM																			E22
SNMF	1206ENN-MF										●									E23
	1206ENN-MM										●									

Parts

Specification	Screw	Screw	Spring	Latch	Wrench
Ø3.0~Ø12.0	ETKA0523	KHB0417	SPR0315	LTC05SR-RM4	TW20-100

Available inserts **E22, E23**

RMT8EA5000



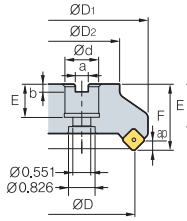


Fig. 1

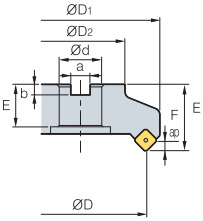


Fig. 2

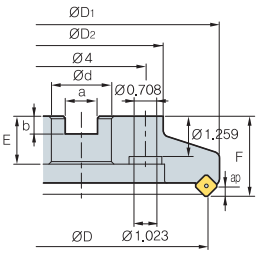


Fig. 3

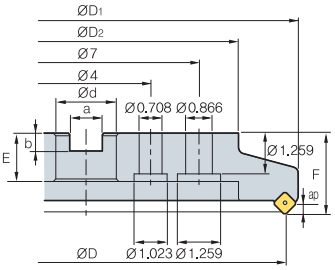


Fig. 4

AA 15°

- AR: -6°
- RR: -8°~-6°

(inch)

Designation			ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
RMT8EA	5300R/L	5	3.0	3.307	2.205	1.0	0.374	0.248	0.866	2.0	0.315	3.08	1
	5300R/L-M	6	3.0	2.953	2.205	1.0	0.374	0.248	0.866	2.0	0.315	4.18	1
	5400R/L	6	4.0	4.331	2.874	1.3	0.500	0.319	0.866	2.0	0.315	4.18	2
	5400R/L-M	8	4.0	3.996	2.874	1.3	0.500	0.319	0.866	2.0	0.315	4.18	2
	5500R/L	8	5.0	5.315	3.386	0.5	0.626	0.394	1.181	2.5	0.315	8.14	2
	5500R/L-M	10	5.0	4.961	3.386	0.5	0.626	0.394	1.181	2.5	0.315	8.14	2
	5600R/L	10	6.0	6.339	4.882	2.0	0.748	0.433	1.181	2.5	0.315	12.54	2
	5600R/L-M	14	6.0	5.965	4.882	2.0	0.748	0.433	1.181	2.5	0.315	12.54	2
	5800R/L	12	8.0	8.307	5.118	2.5	1.000	0.551	1.496	2.5	0.315	16.50	3
	5800R/L-M	18	8.0	7.953	5.118	2.5	1.000	0.551	1.496	2.5	0.315	16.50	3
	51000R/L	16	10.0	10.315	7.087	2.5	1.000	0.551	1.496	2.5	0.315	27.28	3
	51000R/L-M	22	10.0	9.961	7.087	2.5	1.000	0.551	1.496	2.5	0.315	27.28	3
	51200R/L	20	12.0	12.323	9.449	2.5	1.000	0.551	1.496	2.5	0.315	43.78	4
	51200R/L-M	28	12.0	11.969	9.449	2.5	1.000	0.551	1.496	2.5	0.315	43.78	4

Available inserts

SNC(M)F-MF



SNC(M)F-MM



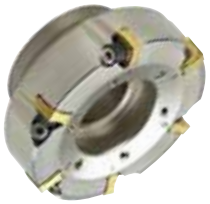
Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNCF	1507ENN-MF											●								
	1507ENN-MM																			E22
SNMF	1507ENN-MF																			E23
	1507ENN-MM										●									

Parts

Specification	Screw	Screw	Spring	Latch	Wrench
Ø3.0~Ø12.0	ETKA0625	KHB0417	SPR0415	LTC06SR-RM5	TW20-100

Available inserts **E22, E23**

RMT8QA4000



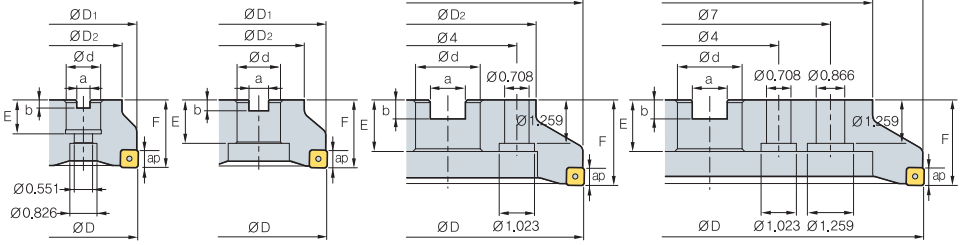


Fig. 1 Fig. 2 Fig. 3 Fig. 4



AA
2°

- AR: -6°
- RR: -11°~-6°

(inch)

Designation		⌖	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	lbs	Fig.
RMT8QA	4300R/L	5	3.0	2.953	2.205	1.0	0.374	0.248	0.866	2.0	0.197	3.08	1
	4300R/L-M	6	3.0	2.953	2.205	1.0	0.374	0.248	0.866	2.0	0.197	3.08	1
	4400R/L	6	4.0	3.996	2.874	1.3	0.500	0.319	0.866	2.0	0.197	3.86	2
	4400R/L-M	8	4.0	3.996	2.874	1.3	0.500	0.319	0.866	2.0	0.197	3.86	2
	4500R/L	8	5.0	4.961	3.386	1.5	0.626	0.394	1.181	2.5	0.197	7.92	2
	4500R/L-M	10	5.0	4.961	3.386	1.5	0.626	0.394	1.181	2.5	0.197	7.92	2
	4600R/L	10	6.0	5.965	4.882	2.0	0.748	0.433	1.181	2.5	0.197	12.54	2
	4600R/L-M	14	6.0	5.965	4.882	2.0	0.748	0.433	1.181	2.5	0.197	12.54	2
	4800R/L	12	8.0	7.953	5.118	2.5	1.000	0.551	1.496	2.5	0.197	16.50	3
	4800R/L-M	18	8.0	7.953	5.118	2.5	1.000	0.551	1.496	2.5	0.197	16.50	3
	41000R/L	16	10.0	9.961	7.087	2.5	1.000	0.551	1.496	2.5	0.197	27.50	3
	41000R/L-M	22	10.0	9.961	7.087	2.5	1.000	0.551	1.496	2.5	0.197	27.50	3
	41200R/L	20	12.0	11.969	9.449	2.5	1.000	0.551	1.496	2.5	0.197	43.78	4
	41200R/L-M	28	12.0	11.969	9.449	2.5	1.000	0.551	1.496	2.5	0.197	43.78	4

Available inserts

SNC(M)F-MF SNC(M)F-MM




Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SNCF	1206QNN-MF											●								
	1206QNN-MM											●								E22
SNMF	1206QNN-MF										●									E23
	1206QNN-MM										●									

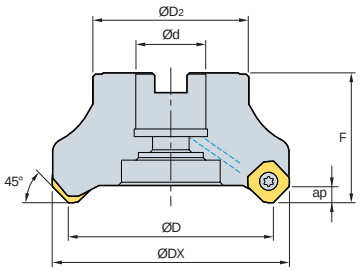
Parts

Specification	Screw	Screw	Spring	Latch	Wrench
Ø3.0~Ø12.0	ETKA0523	KHB0417	SPR0315	LTC05SR-RM4	TW20-100

Available inserts **E22, E23**

RMX8ACA-SA14 new





AA
45°

- AR: -8°
- RR: -11°~-9°

(inch)

Designation			ØDX	ØD	ØD2	Ød	F	ap	lbs
RMX8ACA	200R-075-4-SA14	4	2.492	2.00	1.622	0.75	1.75	0.217	1.058
	200R-075-5-SA14	5	2.492	2.00	1.622	0.75	1.75	0.217	1.058
	250R-100-5-SA14	5	2.992	2.50	2.122	1.00	1.75	0.217	1.631
	250R-100-6-SA14	6	2.992	2.50	2.122	1.00	1.75	0.217	1.653
	300R-100-6-SA14	6	3.492	3.00	2.622	1.00	2.00	0.217	2.05
	300R-100-8-SA14	8	3.492	3.00	2.622	1.00	2.00	0.217	2.094
	400R-125-8-SA14	8	4.492	4.00	3.622	1.25	2.00	0.217	3.637
	400R-125-10-SA14	10	4.492	4.00	3.622	1.25	2.00	0.217	3.725
	500R-150-8-SA14	8	5.492	5.00	4.622	1.50	2.00	0.217	8.419
	500R-150-12-SA14	12	5.492	5.00	4.622	1.50	2.00	0.217	8.507

Available inserts

SAGX-ML



SAGX-MM



SNMX-MM



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	ST30A	G10	H01	
SAGX	140808ANER-ML														●	●				E18
	140808ANER-MM															●				
SNMX	140808ANER-MM											●	●			●				

Parts

Specification	Screw	Wrench
Ø2.00 ~ Ø5.00	FTNA0513	TW20-100

Available inserts E18

RM14XCA-XN06 new



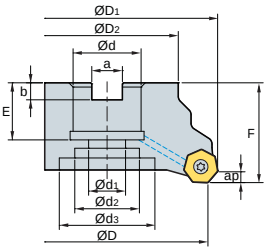


Fig. 1

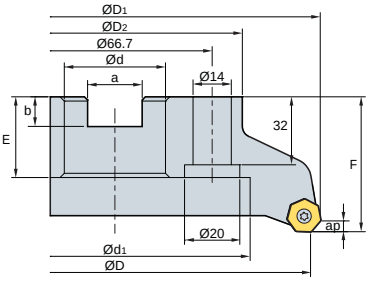


Fig. 2

AA
39°

- AR: -6°
- RR: -9°

(inch)

Designation			ØD	ØD1	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Fig.
RM14XCA	200R-075-5-XN06	5	2.0	2.336	1.772	0.75	0.413	0.63	-	0.315	0.22	0.787	1.75	0.137	0.750	1
	200R-075-6-XN06	6	2.0	2.336	1.772	0.75	0.413	0.63	-	0.315	0.22	0.787	1.75	0.137	0.750	1
	250R-100-6-XN06	6	2.5	2.836	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.137	1.124	1
	250R-100-8-XN06	8	2.5	2.836	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.137	1.279	1
	300R-100-6-XN06	6	3.0	3.336	2.205	1.00	0.551	0.827	1.299	0.374	0.248	0.787	2.00	0.137	2.161	1
	300R-100-8-XN06	8	3.0	3.336	2.205	1.00	0.551	0.827	1.299	0.374	0.248	0.787	2.00	0.137	2.381	1
	300R-100-10-XN06	10	3.0	3.336	2.205	1.00	0.551	0.827	1.299	0.374	0.248	0.787	2.00	0.137	2.359	1
	400R-125-10-XN06	10	4.0	4.336	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.137	3.527	1
	400R-125-12-XN06	12	4.0	4.336	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.137	3.483	1
	500R-150-12-XN06	12	5.0	5.336	3.386	1.50	0.827	1.181	1.969	0.626	0.394	1.063	2.50	0.137	7.562	1
	500R-150-14-XN06	14	5.0	5.336	3.386	1.50	0.827	1.181	1.969	0.626	0.394	1.063	2.50	0.137	7.496	1
	600R-200-16-XN06	16	6.0	6.336	4.882	2.00	3.543	-	-	0.752	0.433	1.181	2.50	0.137	10.714	2
	600R-200-18-XN06	18	6.0	6.336	4.882	2.00	3.543	-	-	0.752	0.433	1.181	2.50	0.137	10.670	2

※ In applying XNMX060608-□□, Max. ap = 0.189 inch

Available inserts

XNMX-ML



XNMX-ML



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
XNMX	0606XNR-ML						●					●		●	●	●				E32
	060608-ML						●					●		●	●	●				

Parts

Specification	Screw	Wrench
Ø2.0~Ø6.0	FTKA0412B	TW15S

Available inserts E32

RM16ACA6000



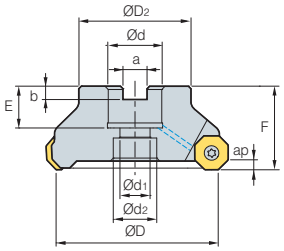


Fig. 1

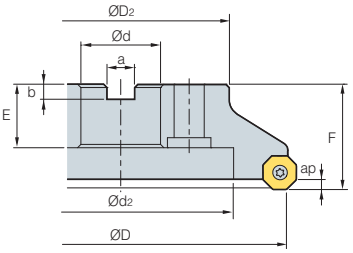


Fig. 2

AA 45°
- AR: -6°
- RR: -6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RM16ACA	6250HR-M	5	2.5	2.205	1.00	0.551	0.827	0.374	0.236	0.787	1.75	0.157	1.5	1
	6250HR-H	7	2.5	2.205	1.00	0.551	0.827	0.374	0.236	0.787	1.75	0.157	1.5	1
	6300HR-M	6	3.0	2.205	1.00	0.551	0.827	0.374	0.236	0.866	2.00	0.157	2.6	1
	6300HR-H	8	3.0	2.205	1.00	0.551	0.827	0.374	0.236	0.866	2.00	0.157	2.6	1
	6400HR-M	7	4.0	2.874	1.25	0.709	1.024	0.500	0.315	0.866	2.00	0.157	4.2	1
	6400HR-H	10	4.0	2.874	1.25	0.709	1.024	0.500	0.315	0.866	2.00	0.157	4.2	1
	6500HR-M	8	5.0	3.386	1.50	0.827	1.220	0.626	0.394	1.181	2.50	0.157	7.7	1
	6500HR-H	14	5.0	3.386	1.50	0.827	1.220	0.626	0.394	1.181	2.50	0.157	7.7	1
	6600R-M	10	6.0	4.882	2.00	-	4.213	0.748	0.433	1.181	2.50	0.157	9.0	2
	6600R-H	16	6.0	4.882	2.00	-	4.213	0.748	0.433	1.181	2.50	0.157	9.0	2
	6800R-M	12	8.0	5.118	2.50	-	5.315	1.012	0.551	1.496	2.50	0.157	13.4	2
	6800R-H	20	8.0	5.118	2.50	-	5.315	1.012	0.551	1.496	2.50	0.157	13.4	2

Available inserts

ONHX-MF	ONHX-ML	ONHX-MM	ONHX-W	ONHX-MA	ONMX-MF	ONMX-MM
						

Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
ONHX	060608-MM											●			●	●				E15
	060608-MF											●			●	●				
	060608-ML														●	●				
	060608-MA																		●	
	060608-W											●	●		●					
	0606ANN-MM											●			●	●				
	0606ANN-MF											●			●	●				
ONMX	060608-MM						●				●	●		●	●	●				
	060608-MF						●					●			●	●				
	0606ANN-MM						●				●	●			●	●				
	0606ANN-MF						●					●	●		●	●				

Parts

Specification	Screw	Wrench
Ø2.5~Ø8.0	FTGA0513	TW20-100

Available inserts E15

RM16ACA8000



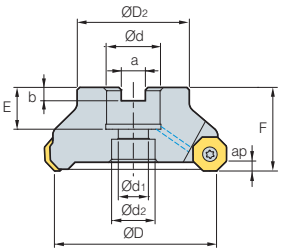


Fig. 1

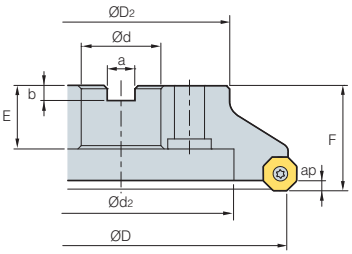


Fig. 2

AA 45°

- AR: -6°
- RR: -6°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Fig.
RM16ACA	8250HR-M	5	2.5	2.205	1.00	0.551	0.827	0.374	0.236	0.787	1.75	0.216	1.5	1
	8250HR-H	6	2.5	2.205	1.00	0.551	0.827	0.374	0.236	0.787	1.75	0.216	1.5	1
	8300HR-M	6	3.0	2.205	1.00	0.551	0.827	0.374	0.236	0.866	2.00	0.216	2.6	1
	8300HR-H	7	3.0	2.205	1.00	0.551	0.827	0.374	0.236	0.866	2.00	0.216	2.6	1
	8400HR-M	7	4.0	2.874	1.25	0.709	1.024	0.500	0.315	0.866	2.00	0.216	4.0	1
	8400HR-H	9	4.0	2.874	1.25	0.709	1.024	0.500	0.315	0.866	2.00	0.216	4.0	1
	8500HR-M	8	5.0	3.386	1.50	0.827	1.220	0.626	0.394	1.181	2.50	0.216	7.7	1
	8500HR-H	10	5.0	3.386	1.50	0.827	1.220	0.626	0.394	1.181	2.50	0.216	7.7	1
	8600R-M	10	6.0	4.882	2.00	-	4.213	0.748	0.433	1.181	2.50	0.216	9.9	2
	8600R-H	14	6.0	4.882	2.00	-	4.213	0.748	0.433	1.181	2.50	0.216	9.9	2
	8800R-M	12	8.0	5.118	2.50	-	5.315	1.012	0.551	1.496	2.50	0.216	12.8	2
	8800R-H	16	8.0	5.118	2.50	-	5.315	1.012	0.551	1.496	2.50	0.216	12.8	2

Available inserts

ONHX-MF	ONHX-ML	ONHX-MM	ONHX-W	ONHX-MA	ONMX-MF	ONMX-MM
						

Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
ONHX	080608-MM											●			●	●				E15
	080608-MF											●			●	●				
	080608-ML														●	●				
	080608-MA																		●	
	080608-W											●			●					
	0806ANN-MM											●			●	●				
	0806ANN-MF											●			●	●				
ONMX	080608-MM						●				●	●	●		●	●				
	080608-MF						●					●			●	●				
	0806ANN-MM						●					●	●		●	●				
	0806ANN-MF						●				●	●			●	●				

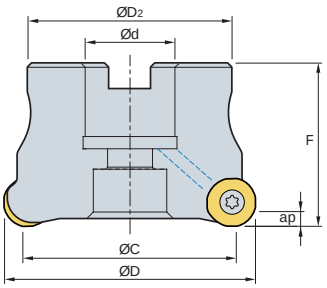
Parts

Specification	Screw	Wrench
Ø2.5~Ø8.0	FTGA0513	TW20-100

Available inserts E15

RMRCA-RN12 new







- AR: -7°
- RR: -13°

(inch)

Designation			ØD	ØC	ØD2	Ød	F	ap	lbs
RMRCA	200R-075-5-RN12	5	2.00	1.622	1.771	0.75	1.75	3.5	0.62
	200R-075-6-RN12	6	2.00	1.622	1.771	0.75	1.75	3.5	0.64
	250R-100-6-RN12	6	2.50	2.122	2.204	1.00	1.75	3.5	0.99
	250R-100-7-RN12	7	2.50	2.122	2.204	1.00	1.75	3.5	1.01
	300R-100-6-RN12	6	3.00	2.622	2.204	1.00	2.00	3.5	1.83
	300R-100-8-RN12	8	3.00	2.622	2.204	1.00	2.00	3.5	1.81
	400R-125-7-RN12	7	4.00	3.622	2.874	1.25	2.00	3.5	3.68
	400R-125-9-RN12	9	4.00	3.622	2.874	1.25	2.00	3.5	3.68
	500R-150-10-RN12	10	5.00	4.622	3.937	1.50	2.00	3.5	6.22
	500R-150-12-RN12	12	5.00	4.622	3.937	1.50	2.00	3.5	6.24

Available inserts

RNMX-ML



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	UNC840	UPC845	ST30A	G10	H01	
RNMX	1204M0E-ML														●	●				E17

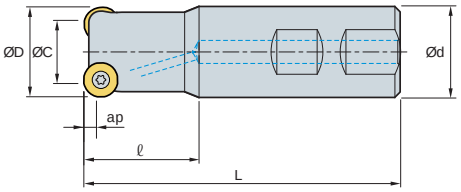
Parts

Specification	Screw	Wrench
Ø2.00~Ø5.00	FTNA0411-A	TW15S

Available inserts E17

RMRSA-RN12 new







• AR: -7°
• RR: -15°~-13°

(mm)

Designation			ØD	ØC	Ød	ℓ	L	Shank	ap	lbs
RMRSA	125R-2W125-400-RN12	2	1.25	0.872	1.25	1.5	4.0	W	3.5	1.23
	125R-3W125-400-RN12	3	1.25	0.872	1.25	1.5	4.0	W	3.5	1.21
	125R-2C125-800-RN12	2	1.25	0.872	1.25	1.5	8.0	C	3.5	2.40
	125R-3C125-800-RN12	3	1.25	0.872	1.25	1.5	8.0	C	3.5	2.40
	150R-3W125-450-RN12	3	1.50	1.122	1.25	1.5	4.5	W	3.5	1.37
	150R-4W125-450-RN12	4	1.50	1.122	1.25	1.5	4.5	W	3.5	1.37
	150R-3C125-450-RN12	3	1.50	1.122	1.25	1.5	8.0	C	3.5	2.54
	150R-4C125-450-RN12	4	1.50	1.122	1.25	1.5	8.0	C	3.5	2.54
	200R-5W150-500-RN12	5	2.00	1.622	1.50	1.5	5.0	W	3.5	2.38
	200R-6W150-500-RN12	6	2.00	1.622	1.50	1.5	5.0	W	3.5	2.38
	200R-5C150-1200-RN12	5	2.00	1.622	1.50	1.5	12.0	C	3.5	6.72
	200R-6C150-1200-RN12	6	2.00	1.622	1.50	1.5	12.0	C	3.5	6.72
	250R-6W150-500-RN12	6	2.50	2.122	1.50	2.0	5.0	W	3.5	3.15
	250R-7W150-500-RN12	7	2.50	2.122	1.50	2.0	5.0	W	3.5	3.15
	250R-6C150-1200-RN12	6	2.50	2.122	1.50	2.0	12.0	C	3.5	7.28
	250R-7C150-1200-RN12	7	2.50	2.122	1.50	2.0	12.0	C	3.5	7.19

Available inserts

RNMX-ML



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	UNC840	UPC845	ST30A	G10	H01	
RNMX	1204M0E-ML														●	●				E17

Parts

Specification	Screw	Wrench
Ø1.25~Ø2.50	FTNA0411-A	TW15S

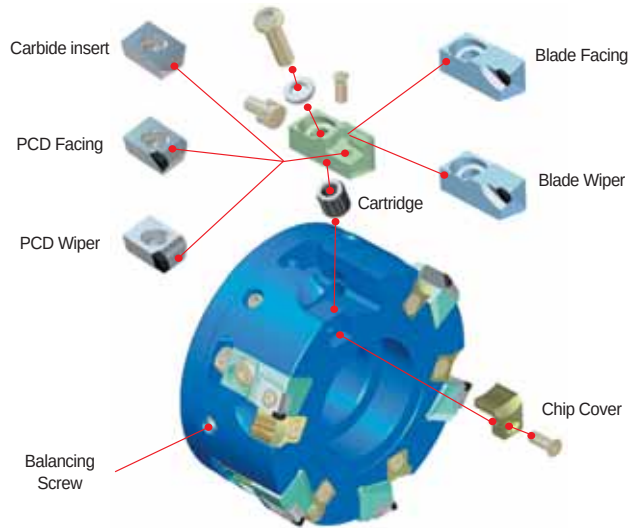
Available inserts E17

Lighter tool ensures excellent performance in high speed machining

Aero Mill

- Excellent machining performance can be acquired especially at the high speeds due to the light aluminum cutter body that is 50% of the weight of a conventional steel cutter body
- High speed milling cutter for precise machining
- Special aluminum material and high rake angle of insert provide rigid & stable machining
- High tolerance surface finishes can be acquired due to the low cutting load provided from the high rake angle
- Balanceable up to G2.5 level

Assembly structure of cutter

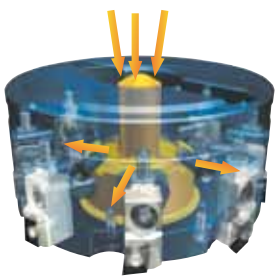
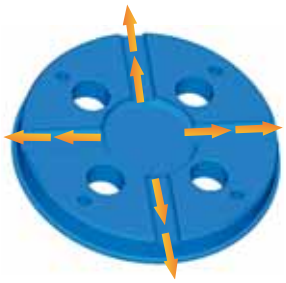


Features of cutter

- Increased stability based on cartridge type application
- Both insert and blade can be available in the same cutter
- Finishing to roughing can be possible because of wide chip pocket space
- Roughing and finishing available with carbide, PCD insert application
- Cutter breakage can be solved by making use of the chip cover

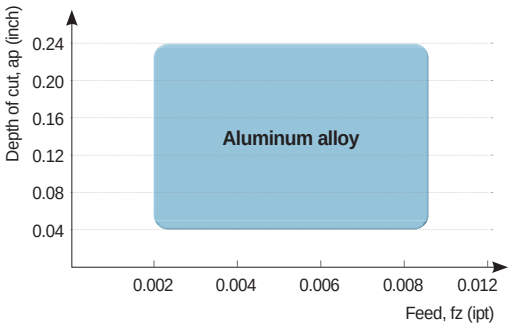
Coolant through system

- Specially designed coolant through system provides coolant from the center of the cutter to the insert enhances the cooling rate and chip evacuation.
- Direction of coolant has designed to focus directly to the insert cutting-edge to maximize chip evacuation and improve tool life
- Coolant bolt is applicable up to Ø6, coolant cover is applicable from Ø8 and over. Coolant devices are sold separately for through coolant system, through coolant arbor has to be used

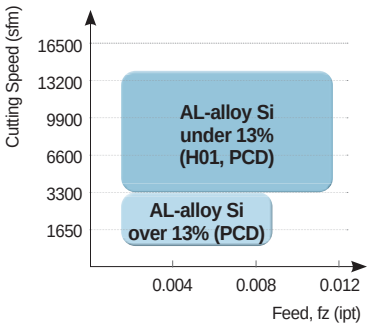
Coolant Bolt	Coolant Cover
	
For Ø3~Ø6	For Ø8 and over

Aero Mill

Application range



Recommended cutting condition

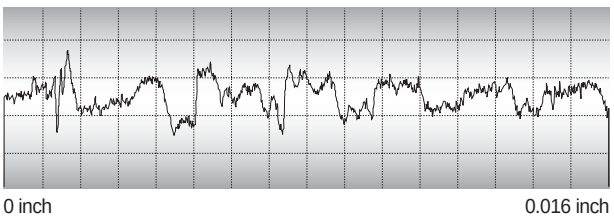


Surface finish

■Workpiece A6061

■Cutting condition
vc = 5200 sfm vf = 20 ipm
N = 5000 min^{-1} fz = 0.004 ipt
ap = 0.02 inch Machine = PCV620

■Designation **Cutter** APD100R-A6Z (6 Flutes)
Insert CDEW1204R-XCF (H01)



- Rmax: 2.1㎛
- Rz: 1.6 ㎛
- Ra: 0.3 ㎛

Max. revolution

Diameter (inch)	Max. revolution (rpm)
Ø3	16,000
Ø4	15,000
Ø5	12,500
Ø6	10,000
Ø8	8,000
Ø10	6,500
Ø12	5,000

Coolant parts

Diameter (inch)	Type	Designation		Shape	Note
Ø3	Coolant Bolt	CBP080-IN/MM			Extra charge
Ø4	Coolant Bolt	CBP100-IN	CBP100-MM-1		
Ø5	Coolant Bolt	CBP125-IN	CBP125-MM-1		
Ø6	Coolant Bolt	CBP160-IN	CBP160-MM		
Ø8	Coolant Cover	CCP200			
Ø10	Coolant Cover	CCP250			
Ø12	Coolant Cover	CCP315			

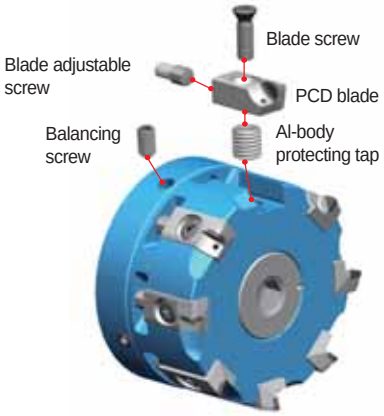
• Choice: CBP100-IN:APD type, General for unmarked item

High speed milling tool with PCD blade

Aero Mill Plus

- Improve tool life up to 20% with a coolant system that enables direct spray cooling to cutting blades
- Enable high feed milling by increasing the number of cutting blades by 20% through a simply structured coupling method for clamps
- Reduces set up time up to 40% by applying a spanner adjustment method
- Introduce an aluminum cutter body to provide a superior cutting performance during high speed milling

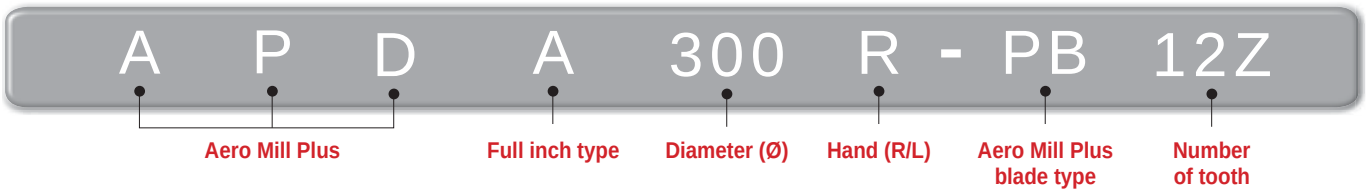
Assembly structure of cutter



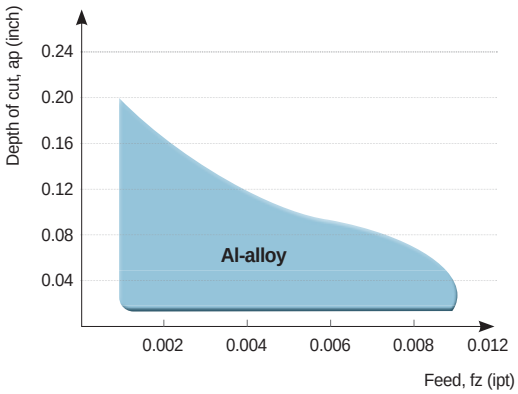
Features of cutter

- Prevent overload to the spindle bearings through weight reduction of the Al alloy body and enable high-speed processing
- Provide PCD Blade-dedicated cutter design to offer stable tool life and increase of applied blades
- Improve the blade life by applying a coolant system that enables direct spray cooling to cutting blades
- Adopt a clamping method with simple structure without set screw
- Reduce weight and apply a coolant bolt that is exclusively used for Aero Mill Plus that applies coolant to remove internal chip

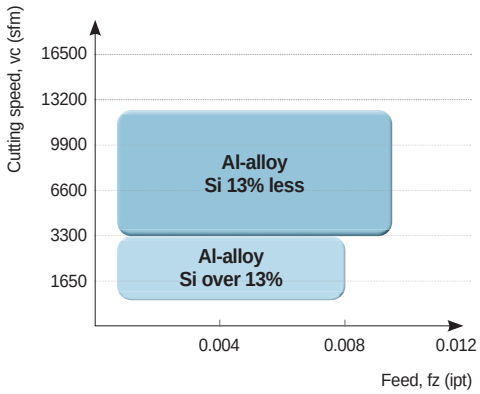
Code system



Application range



Recommended cutting speed



Max. RPM

Diameter (inch)	Max. revolution (rpm)
Ø3	20,000
Ø4	18,000
Ø5	16,000
Ø6	13,000
Ø8	10,000
Ø10	8,000
Ø12	7,000

Coolant parts

Diameter (inch)	Type	Designation	Shape	Material	Note
Ø3	Coolant bolt	CB-AMP300-IN		Steel	Included
Ø4		CB-AMP400-IN			
Ø5		CB-AMP500-IN			
Ø6		CB-AMP600-IN			
Ø8	Coolant cover	CCV-AMP800-IN		Aluminum	Extra charge
Ø10		CCV-AMP1000-IN			
Ø12		CCV-AMP1200-IN			

Good performance in small-medium size of operations

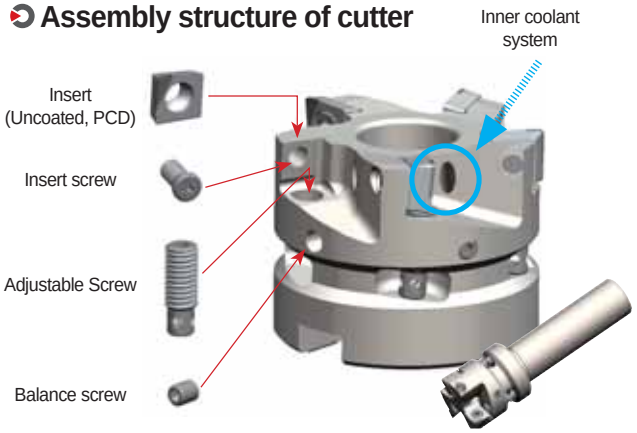
Aero Mill Mini

- Good performance in small-medium size of operations
- Good duration of the steel body
- Choice of Uncoated carbide/PCD grades can be applied to various kind of work material
- Balance level: G2.5

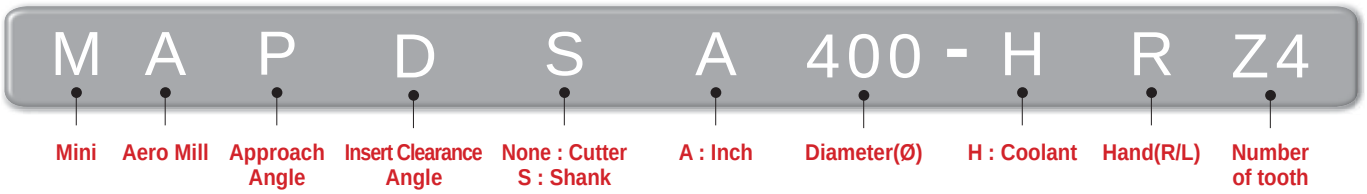
Features of cutter

- Simple and strong design of Screw-on clamping.
- Adjustable range: ± 0.004 inch Max
- Adjustable step: Min. 2 micro meter
- Wide chip pocket area for Roughing and Aluminum machining.
- Inner coolant system

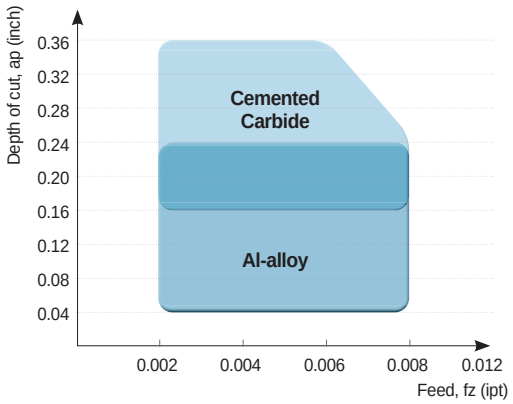
Assembly structure of cutter



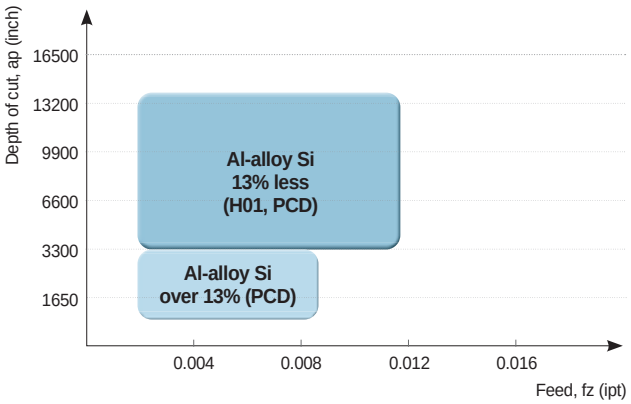
Code system



Application range



Recommended cutting condition

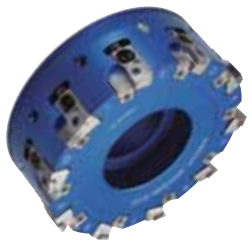


Max. RPM

Diameter	Max. RPM (min^{-1})
Ø1.25	26,000
Ø1.50	24,500
Ø2.00	22,000
Ø2.50	20,000

APDA-A

Cartridge + insert



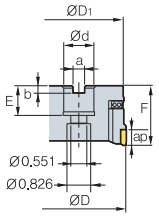


Fig. 1

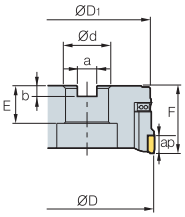


Fig. 2

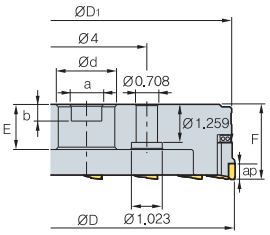


Fig. 3

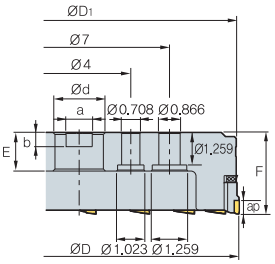


Fig. 4



AA
0°

- AR: 6°
- RR: 5°~9°

(inch)

Designation			ØD	ØD1	Ød	a	b	E	F	ap	Max rpm	lbs	Fig.
APDA	300R/L-A6Z	6	3.0	2.843	1.000	0.375	0.248	0.866	2.000	0.24	16000	1.7	1
	400R/L-A6Z	6	4.0	3.803	1.250	0.500	0.319	0.866	2.000	0.24	15000	2.1	2
	500R/L-A8Z	8	5.0	4.804	1.500	0.625	0.394	1.181	2.500	0.24	12500	4.0	2
	600R/L-A10Z	10	6.0	5.803	2.000	0.750	0.433	1.181	2.500	0.24	10000	6.4	2
	800R/L-A12Z	12	8.0	7.803	2.500	1.000	0.551	1.496	2.500	0.24	8000	8.8	3
	1000R/L-A16Z	16	10.0	9.803	2.500	1.000	0.551	1.496	2.500	0.24	6500	13.9	3
	1200R/L-A18Z	18	12.0	11.803	2.500	1.000	0.551	1.496	3.125	0.24	5000	24.9	4

Available inserts

CDEW-XCF CDEW-XAF,NAF CDEW-XAW,NAW



Designation		Uncoated			PCD	page
		H01	G10	ST30A	DP200	
CDEW	1204R-XCF	●				E07
	1204L-XCF					
	1204R-XAF				●	
	1204L-XAF					
	1204R-NAF				●	
	1204L-NAF					
	1204R-XAW				●	
	1204L-XAW					
	1204R-NAW				●	
	1204L-NAW					

Recommended cutting condition

Workpiece	Cutting Condition		Grade
	vc (sfm)	fz (ipt)	
Aluminum	3,300~13,200 1,650~8,250	0.002~0.012 0.002~0.008	DP200 H01

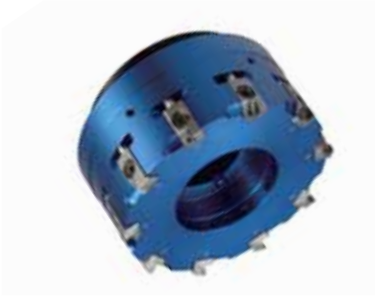
Parts

Specification	Cartridge	Chip cover	Chip cover Screw	Insert screw	Adjust screw	Cartridge Screw	Wrench for insert	Wrench for cartridge
Ø3.0~Ø12.0	LAPDR/L-AJ	CAPDR/L-AJ	PTMA0411	FTNA0411	AZ0514	BHA0619-NYLOK	TW15S	HW50

Available inserts E07

APDA-PB

Blade



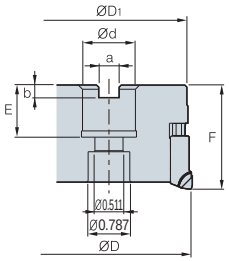


Fig. 1

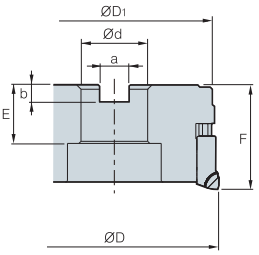


Fig. 2

AA 0°

- AR: 6°
- RR: -4°~1°

(inch)

Designation			Max	ØD	ØD1	Ød	a	b	E	F	ap	lbs	Fig.
APDA	300R-PB6Z	6	10	3.0	2.882	1	0.375	0.248	0.787	2	0.196	1.1	1
	300R-PB8Z	8	10	3.0	2.882	1	0.375	0.248	0.787	2	0.196	1.2	1
	400R-PB6Z	6	12	4.0	3.882	1.25	0.5	0.319	0.984	2	0.196	2.1	2
	400R-PB8Z	8	12	4.0	3.882	1.25	0.5	0.319	0.984	2	0.196	2.1	2
	500R-PB8Z	8	14	5.0	4.882	1.5	0.625	0.394	1.26	2.5	0.196	4.3	2
	500R-PB10Z	10	14	5.0	4.882	1.5	0.625	0.394	1.26	2.5	0.196	4.2	2
	600R-PB10Z	10	20	6.0	5.882	2	0.750	0.433	1.26	2.5	0.196	6.6	2
	600R-PB12Z	12	20	6.0	5.882	2	0.750	0.433	1.26	2.5	0.196	6.8	2

Available blades


BAMPR-XAF


BAMPR-XAW


BAMPR-XAWR

Designation	PCD	page
	DP150	
BAMPR-XAF		E07
BAMPR-XAW	●	
BAMPR-XAWR	●	

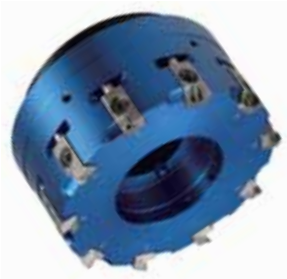
Parts

Specification	Blade screw	Blade adjustable screw	Al-body protecting tap	Balancing screw	Wrench for insert	Wrench for cartridge
Ø3.0~Ø6.0	ETKA0620	AZ0514-SPN6	UZD1010	KHE0610	SPN-6	TW25-100

Available inserts E07

APDA-PB

Blade



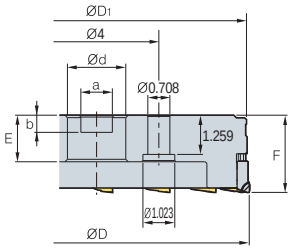


Fig. 1

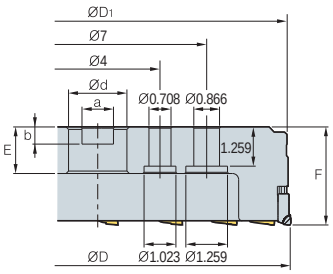


Fig. 2

AA
0°

- AR: -6°
- RR: -39°~-16°

(inch)

Designation			Max	ØD	ØD1	Ød	a	b	E	F	ap	lbs	Fig.
APDA	800R-PB12Z	12	26	8.0	7.882	2.50	1	0.551	1.575	2.5	0.196	9.9	1
	1000R-PB16Z	16	32	10.0	9.882	2.50	1	0.551	1.575	2.5	0.196	15.2	1
	1200R-PB18Z	18	42	12.0	11.88	2.50	1	0.551	1.575	2.5	0.196	22.1	2

Available blades



Designation	PCD	page
	DP150	
BAMPR-XAF		E07
BAMPR-XAW	●	
BAMPR-XAWR	●	

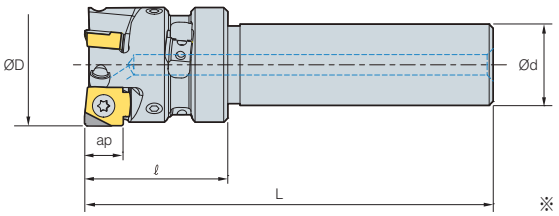
Parts

Specification	Blade screw	Blade adjustable screw	Al-body protecting tap	Balancing screw	Wrench for insert	Wrench for cartridge
Ø8.0~Ø12.0	ETKA0620	AZ0514-SPN6	UZD1010	KHE0610	SPN-6	TW25-100

Available inserts **E07**

MAPDSA000HR/L-Z0





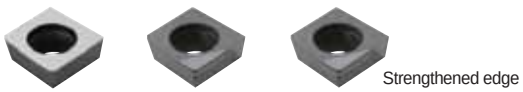
※ PCD ap: 0.236 inch

AA 0°
• AR: 6°
• RR: -4°~1°

(inch)

Designation			ØD	Ød	ℓ	L	ap	Max rpm	lbs
MAPDSA	125HR/L-Z3	3	1.25	0.75	1.5	4	0.354	26,000	0.35
	150HR/L-Z4	4	1.5	0.75	1.5	4	0.354	24,500	0.42

Available inserts



Designation		Uncoated			PCD	page
		H01	G10	ST30A	DP200	
SNEW	09T3ADFR	●				E24
	09T3ADTR-XAF				●	
	09T3ADTR-XAW				●	
	09T3ADTR-NAF				●	
	09T3ADTR-NAW				●	

Recommended cutting condition

Workpiece	Cutting Condition		Grade
	vc (sfm)	fz (ipt)	
Aluminum	3,300~13,200 1,650~8,250	0.002~0.012 0.002~0.008	DP200 H01

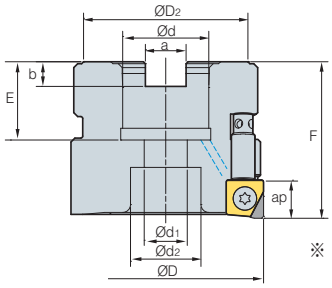
Parts

Specification	Insert screw	Adjust screw	Balance screw	Wrench for insert	Adjust wrench
Ø1.25~Ø1.5	FTKA0408	AHX0617F-NYLOK	KHD0405	TW15S	HW20L

Available inserts E24

MAPDA000HR/L-Z0





※ PCD ap: 0.236 inch

AA
0°

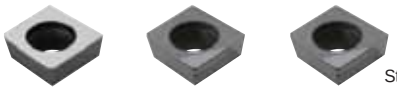
- AR: 6°
- RR: -1°~12°

(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	Max rpm	lbs
MAPDA	150HR/L-Z4	4	1.5	1.417	0.50	0.252	0.169	0.630	1.50	0.287	0.433	0.354	24,000	0.24
	200HR/L-Z5	5	2.0	1.772	0.75	0.321	0.220	0.787	1.75	0.433	0.630	0.354	22,000	0.35
	250HR/L-Z6	6	2.5	1.772	0.75	0.321	0.220	0.787	1.75	0.551	0.826	0.354	20,000	0.65

Available inserts

SNEW SNEW-XAF SNEW-NAF



Strengthened edge

Designation		Uncoated				PCD	page
		H01	G10	ST30A	ST20	DP200	
SNEW	09T3ADFR	●					E24
	09T3ADTR-XAF					●	
	09T3ADTR-XAW					●	
	09T3ADTR-NAF					●	
	09T3ADTR-NAW					●	

Recommended cutting condition

Workpiece	Cutting Condition		Grade
	vc (sfm)	fz (ipt)	
Aluminum	3,300~13,200 1,650~8,250	0.002~0.012 0.002~0.008	DP200 H01

Coolant Bolt (Not included)

Designation	Applicable cutter	Available Cutters
CB0525	MAPDA150HR/L-Z4	Ø1.5
CB1025	MAPDA200HR/L-Z5 MAPDA250HR/L-Z6	Ø2.0 Ø2.5

Parts

Specification	Insert screw	Adjust screw	Balance screw	Wrench for insert	Adjust wrench
Ø1.5~Ø2.5	FTKA0408	AHX0617F-NYLOK	KHD0405	TW15S	HW20L

Available inserts E24

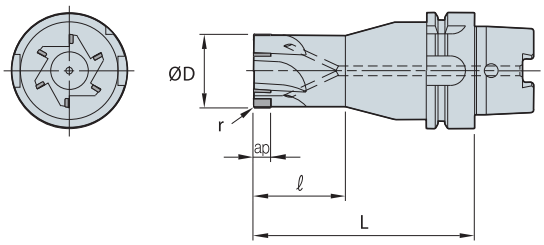
Code system

PDFA 6 2500 - HSK63A

PCD Face cutter | Tooth | Diameter | Shank

PCD Face cutter







AA
0°

• AR: 6°
• RR: 5°~9°

(inch)

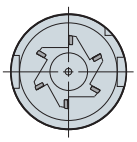
Designation		⊙	ØD	r	ap	ℓ	L
PDFA	41250-HSK50A	4	1.250	0.02	0.3	2.0	5.0
	41575-HSK50A	4	1.575	0.02	0.3	2.0	5.0
	41250-HSK63A	4	1.250	0.02	0.3	2.0	5.0
	41575-HSK63A	4	1.575	0.02	0.3	2.0	5.0
	42000-HSK63A	4	2.000	0.02	0.3	2.0	5.0
	62500-HSK63A	6	2.500	0.02	0.5	-	4.0
	62500-HSK100A	6	2.500	0.02	0.5	-	4.0

Recommended cutting condition

Workpiece	vc (sfm)	fz (ipt)	ap (inch)
Al, Brass, Alloy	655~6,550	0.001~0.004	0.002~0.157

Special PCD order sheet





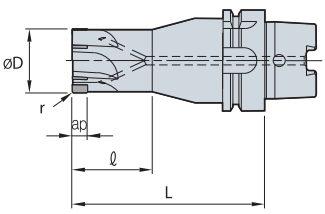


Fig. 1

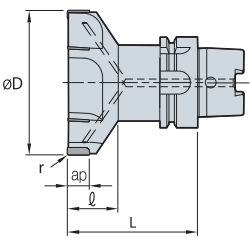


Fig. 2

Designation	Fig.	tooth	Dimension (inch)					
			ØD	r	ap	ℓ	L	Shank spec.
PDFA								

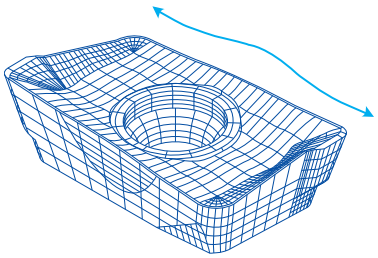
Various applications are available with multi-functional cutters

Alpha Mill

- Innovative curve cutting-edge and chip-breaker design ensures ideal 90-degree cutting, lower cutting resistance, and improved insert life.
- Various applications are available with multi-functional cutters. (facing, slotting, square shoulder milling, etc.)
- Excellent performance ensured at large depth of cut operations due to strong cutting-edge and low cutting resistance.

Features of insert

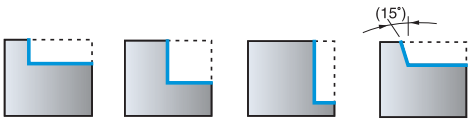
- Long tool life at high speed, high feed and deeper cutting by low cutting resistance and strong cutting-edge
- Distinguished features of Alpha-Curve reduce cutting resistance and improve cutting-edge strength and wear resistance



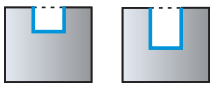
- Low cutting resistance is realized by KORLOY unique design-the alpha curve cutting-edge and optimal convex and concave design
- Highly efficient machining is available by the ideal application of the grade to material

Application example

Shouldering



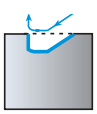
Slotting



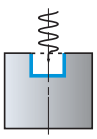
Drilling



Ramping



Helical cutting





Alpha Mill Nick new

- New nick cutting edge reduces cutting load
- High productivity
- APMT standard holders are compatible with Alpha Mill nick that is reducing stock management cost.

Features

• Lower cutting load due to the overlapping system





※ Nick types require both chip breaker types for application.

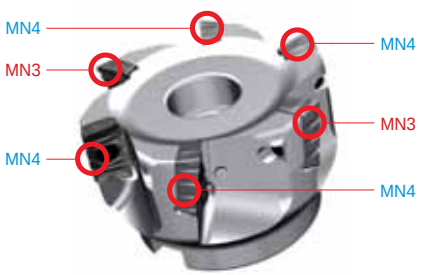
※ Can be used with the existing Alpha Mill holders. Use multi-edges for maximum results. (cutters with even-numbered teeth)

Type	Nick type		General type
Required No. of teeth	20		20
For AMCM3080M (4 Flute x 5 teeth)	 x 10 APMT16-**MN3**	 x 10 APMT16-**MN4**	 x 20 APMT16-**MM, MF, ML, MA**

How to clamp

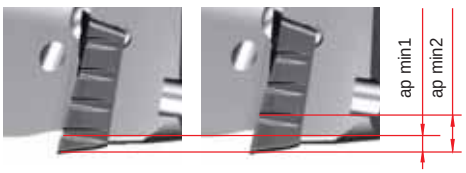
• Alternate the two types of chip breakers when clamping an insert.





Min. depth of cut

• The depth of cut must be greater than ap min1 for chip breaking.

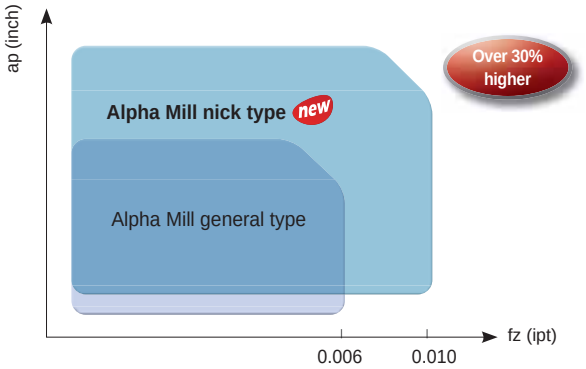


Type	ap min1	ap min2
APMT11 (2000 type)	0.063 inch	0.161 inch
APMT16 (3000 type)	0.087 inch	0.197 inch
APMT18 (4000 type)	0.091 inch	0.212 inch

Application examples

Deep cutting	Long overhang	Unstable clamping
		

Application area



• 30% or higher cutting conditions available compared to normal types

Recommended cutting condition

ISO	Grade	APMT 2000 type			APMT 3000 type			APMT 4000 type		
		vc (sfm)	fz (ipt)	ap (inch)	vc (sfm)	fz (ipt)	ap (inch)	vc (sfm)	fz (ipt)	ap (inch)
P	PC3700	590~984	0.002~0.006	0.433	525~886	0.002~0.007	0.630	525~886	0.002~0.007	0.670
P	PC5300	492~820	0.002~0.006		492~787	0.002~0.007		492~787	0.002~0.007	
M	PC5300	295~558	0.002~0.006		295~492	0.002~0.007		295~492	0.002~0.007	
K	PC5300	394~787	0.004~0.008		394~656	0.004~0.009		394~656	0.004~0.009	

※ Above cutting conditions can be applied up to cutting speed of 984 sfm and feed per tooth of 0.016 ipt.

Features of chip breakers

Insert		Cutting-edge	Uses	Features
MA			Al	Optimal cutting-edge and buffed surface for aluminum workpieces ensure high performance in machining
ML			Hard-to-cut material	Chip breaker with low cutting load is optimal for machining hard-to-cut materials
MF			Light cutting	Chip breaker with low cutting load and harder cutting-edge than ML's are optimal for light cutting
MM			General cutting	Optimal for milling in general ranges
MN			Roughing (Nick)	Design for easy chip cutting ensures high machinability in toughing

Product constitution

Item description	Type	Nose R	MA	ML
APMT	1000 type	0.016	APMT0602PDFR-MA	-
		0.031	APMT060208PDFR-MA	-
	1500 type	0.016	APMT0903PDFR-MA	APMT0903PDER-ML
		0.031	APMT090308PDFR-MA	APMT090308PDER-ML
	2000 type	0.020	APMT11T3PDFR-MA	APMT11T3PDER-ML
		0.031	APMT11T308PDFR-MA	APMT11T308PDER-ML
	3000 type	0.016	APMT160404PDFR-MA	APMT160404PDER-ML
		0.031	APMT1604PDFR-MA	APMT1604PDER-ML
	4000 type	0.016	APMT180604PDFR-MA	APMT180604PDER-ML
		0.031	APMT1806PDFR-MA	APMT1806PDER-ML
		0.047	APMT180612PDFR-MA	APMT180612PDER-ML
		0.063	APMT180616PDFR-MA	APMT180616PDER-ML
		0.079	APMT180620PDFR-MA	APMT180620PDER-ML
		0.094	APMT180624PDFR-MA	APMT180624PDER-ML
		0.118	APMT180630R-MA	APMT180630R-ML

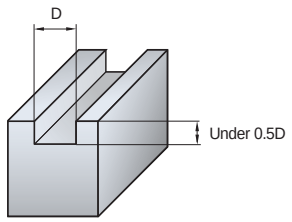
- The inserts can switch to the APMT type holders.

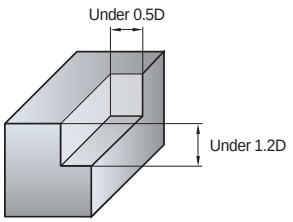
Recommended grades and chip breakers by workpiece

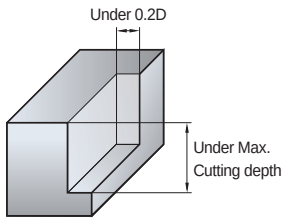
Chip breaker	Cutter edge	Recommended C/B and grade as per workpiece (●: 1st)											
		P				M		K		N		S	
		Low carbon steel/Mild steel		High carbon steel/Mild steel		Stainless steel		Cast iron		Aluminum alloy		Ti/Inconel	
		C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
MA		-	-	-	-	-	-	-	-	●	●H01	-	-
ML		-	-	-	-	●	●PC5300 ○PC5400 ○PC9530	-	-	-	-	●	●PC5300 ○PC5400
MF		●	●PC3700 ○PC5300 ○PC5400 ○NCM325 ○NCM335	-	○PC3700 ○NCM325 ○NCM335	-	●PC5300 ○PC5400 ○PC9530	-	●PC6510 ○PC5300 ○PC5400	-	-	-	●PC5300 ○PC5400
MM		-	●PC3700 ○PC5300 ○PC5400 ○NCM325 ○NCM335	●	●PC3700 ○PC5300 ○PC5400 ○NCM325 ○NCM335	-	●PC5300 ○PC5400 ○PC9530	●	●PC6510 ○PC5300 ○PC5400	-	-	-	●PC5300 ○PC5400
MN		-	●PC3700 ○PC5300 ○PC5400	-	-	-	●PC5300 ○PC5400 ○PC9530	-	●PC6510 ○PC5300 ○PC5400	-	-	-	●PC5300 ○PC5400

Recommended depth of cut

1. Slotting	2. Shouldering	3. Shouldering







Recommended cutting condition (for multi edge type)

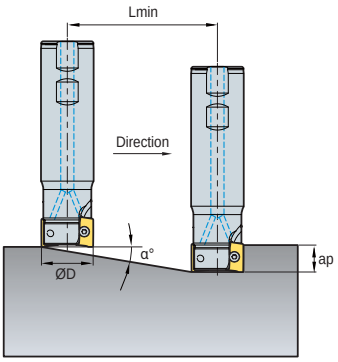
Workpiece	Grade	Fig.	Tool dia.									
			Ø0.43, Ø0.625		Ø0.75, 1.0		Ø1.25, 1.5		Ø2.0, 2.5		Ø3.0, 4.0	
			vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)
Mild steel, Low carbon steel)	NCM535 NCM325 PC5400 PC5300 PC3700	①	160~260	0.003~0.002	260~330	0.003~0.002	330~390	0.003~0.002	330~390	0.003~0.002	330~390	0.003~0.002
		②	210~295	0.004~0.003	330~390	0.004~0.003	390~460	0.004~0.003	390~460	0.004~0.003	390~460	0.004~0.003
		③	210~310	0.006~0.004	330~390	0.006~0.004	390~460	0.006~0.004	390~460	0.006~0.004	430~490	0.006~0.004
High carbon steel, Alloy steel	NCM535 NCM325 PC5300 PC3700	①	150~200	0.002	200~260	0.002	260~330	0.002	260~330	0.002	260~330	0.002
		②	160~260	0.003~0.002	260~330	0.003~0.002	330~390	0.004~0.003	330~390	0.004~0.003	330~390	0.004~0.003
		③	160~260	0.006~0.004	260~330	0.006~0.004	360~430	0.006~0.004	330~430	0.006~0.004	360~430	0.006~0.004
Alloy tool steel	PC5300 PC3700 PC2510 PC2505	①	130~180	0.002	160~230	0.002	230~300	0.002	230~300	0.002	230~300	0.002
		②	150~200	0.003~0.002	200~260	0.003~0.002	300~390	0.003~0.002	330~390	0.003~0.002	330~390	0.003~0.002
		③	160~250	0.007~0.005	300~360	0.007~0.005	330~430	0.006~0.004	330~390	0.006~0.004	360~430	0.006~0.004
Stainless steel	PC5300 PC9530	①	115~165	0.002	160~230	0.002	230~300	0.002	230~300	0.002	230~300	0.002
		②	150~200	0.003~0.002	200~260	0.003~0.002	300~390	0.003~0.002	330~390	0.003~0.002	330~390	0.003~0.002
		③	160~250	0.006~0.004	300~360	0.006~0.004	330~430	0.006~0.004	360~430	0.006~0.004	360~430	0.006~0.004
Cast iron	PC6510 PC5300	①	160~230	0.005~0.004	230~300	0.005~0.004	230~300	0.005~0.004	300~390	0.005~0.004	300~390	0.005~0.004
		②	160~260	0.005	260~330	0.005	300~390	0.005	330~460	0.005	330~460	0.005
		③	160~260	0.008~0.006	260~330	0.008~0.006	330~430	0.008~0.006	390~490	0.008~0.006	390~490	0.008~0.006
Aluminum alloy	H01	①	520~1970	0.008~0.004	660~2,620	0.008~0.004	980~2,950	0.008~0.004	1,310~3,280	0.008~0.004	1,310~3,280	0.008~0.004
		②	650~2,130	0.012~0.006	820~2,950	0.012~0.006	980~3,120	0.012~0.006	1,310~3,280	0.016~0.004	1,310~3,280	0.016~0.004
		③	650~2,130	0.012~0.006	820~2,950	0.012~0.006	980~3,120	0.012~0.006	1,310~3,280	0.016~0.004	1,310~3,280	0.016~0.004
Hardened steel	PC5300 PC2510 PC2505	①	115~160	0.001	160~230	0.001	200~300	0.001	200~300	0.001	200~300	0.001
		②	150~200	0.003~0.002	200~260	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002
		③	160~260	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002

Recommended cutting condition (for single edge type)

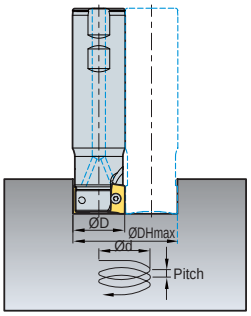
Workpiece	Grade	Fig.	Tool dia.									
			Ø0.43, Ø0.625		Ø0.75, 1.0		Ø1.25, 1.5		Ø2.0, 2.5		Ø3.0, 4.0	
			vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)
Mild steel, low carbon steel	NCM535 NCM325 PC5400 PC5300 PC3700	①	150~200	0.003~0.002	200~260	0.003~0.002	260~390	0.003~0.002	390~660	0.003~0.002	490~660	0.003~0.002
		②	200~295	0.004~0.003	260~390	0.004~0.003	390~590	0.004~0.003	590~820	0.004~0.003	660~820	0.004~0.003
		③	200~295	0.006~0.004	260~390	0.006~0.004	390~590	0.006~0.004	590~820	0.006~0.004	660~820	0.006~0.004
High carbon steel, alloy steel	NCM535 NCM325 PC5300 PC3700	①	130~200	0.002	160~260	0.002	260~360	0.002	330~490	0.002	330~490	0.002
		②	160~260	0.003~0.002	260~330	0.003~0.002	360~490	0.004~0.002	490~660	0.004~0.002	490~660	0.004~0.002
		③	160~260	0.006~0.004	260~330	0.006~0.004	390~490	0.006~0.004	590~660	0.006~0.004	590~660	0.006~0.004
Alloy tool steel	PC5300 PC3700 PC2510 PC2505	①	115~160	0.002	160~230	0.002	260~330	0.002	330~430	0.002	330~430	0.002
		②	150~230	0.003~0.002	230~330	0.003~0.002	330~430	0.004~0.002	430~590	0.004~0.002	430~590	0.004~0.002
		③	150~230	0.006~0.004	230~330	0.006~0.004	330~490	0.006~0.004	430~590	0.006~0.004	430~590	0.006~0.004
Stainless steel	PC5300 PC9530	①	115~160	0.002	160~230	0.002	260~330	0.002	330~430	0.002	330~430	0.002
		②	150~230	0.003~0.002	230~330	0.003~0.002	330~430	0.004~0.002	430~590	0.004~0.002	430~590	0.004~0.002
		③	150~230	0.006~0.004	230~330	0.006~0.004	330~490	0.006~0.004	430~590	0.006~0.004	430~590	0.006~0.004
Cast iron	PC6510 PC5300	①	160~260	0.005~0.003	260~330	0.005~0.003	260~330	0.006	390~490	0.006	390~490	0.006
		②	210~295	0.006~0.005	330~390	0.006~0.005	330~430	0.007~0.006	490~660	0.007~0.006	490~660	0.007~0.006
		③	210~295	0.008~0.006	330~390	0.008~0.006	330~430	0.008~0.006	490~660	0.008~0.006	490~660	0.008~0.006
Aluminum alloy	H01	①	650~1970	0.008~0.006	820~2,620	0.008~0.006	980~2,950	0.008~0.006	1,310~3,280	0.008~0.004	1,310~3,280	0.008~0.004
		②	650~2130	0.010~0.008	820~2,950	0.010~0.008	1,150~3,120	0.010~0.008	1,310~3,280	0.012~0.008	1,310~3,280	0.012~0.008
		③	650~2130	0.012~0.010	820~2,950	0.012~0.010	1,150~3,120	0.012~0.010	1,310~3,280	0.016~0.012	1,310~3,280	0.016~0.012
Hardened steel	PC5300 PC2510 PC2505	①	115~160	0.003	160~230	0.001	200~300	0.001	200~300	0.001	200~300	0.001
		②	150~210	0.003~0.002	200~260	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002
		③	160~260	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002	260~330	0.003~0.002

Cutting condition for ramping and helical operation

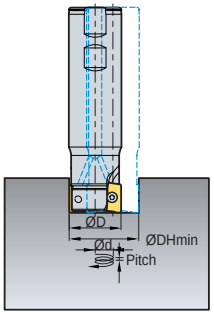
1. Ramping



2. Helical cutting for blind hole



3. Helical cutting for through hole



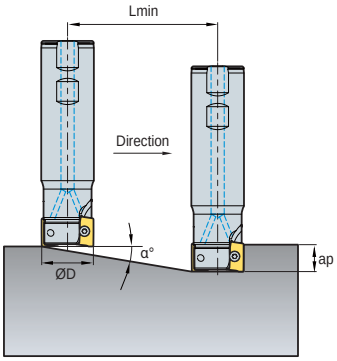
(inch)

Designation		Tool Dia. ØD(min)	ap	1. Ramping		2. Helical cutting for blind hole				3. Helical cutting for through hole	
				Maximum angle α(°)	Lmin	Max. desirable hole Dia. ØDHmax	Max. pitch dmax	Min. desirable hole Dia. ØDHmin	Max. pitch dmax	Min. desirable hole Dia. ØDHmin	Max. pitch dmax
AMSA	1043HS	0.438	0.220	5.50	2.045	0.828	0.080	0.781	0.075	0.599	0.058
	1050HS	0.500		4.52	2.492	0.953	0.075	0.906	0.072	0.724	0.057
	1056HS	0.563		3.83	2.938	1.078	0.072	1.031	0.069	0.849	0.057
	1062HS	0.625		3.33	3.384	1.203	0.070	1.156	0.067	0.974	0.057
	1068HS	0.688		2.94	3.831	1.328	0.068	1.281	0.066	1.099	0.056
	1075HS	0.750		2.64	4.277	1.453	0.067	1.406	0.065	1.224	0.056
	1081HS	0.813		2.39	4.724	1.578	0.066	1.531	0.064	1.349	0.056
	1087HS	0.875		2.18	5.170	1.703	0.065	1.656	0.063	1.474	0.056
	1100HS	1.000		1.86	6.063	1.953	0.063	1.906	0.062	1.724	0.056
	1106HS	1.063		1.73	6.509	2.078	0.063	2.031	0.061	1.849	0.056
	1125HS	1.250		1.44	7.849	2.453	0.062	2.406	0.060	2.224	0.056
	1131HS	1.313		1.36	8.295	2.578	0.061	2.531	0.060	2.349	0.056
AMCA	1150HS	1.500	0.220	1.17	9.634	2.953	0.060	2.906	0.059	2.724	0.056
	1200HS	2.000		0.85	13.206	3.953	0.059	3.906	0.058	3.724	0.056
	1250HS	2.500		0.67	16.777	4.953	0.058	4.906	0.058	4.724	0.055
AMSA	15050HS	0.500	0.354	5.93	3.410	0.953	0.099	0.898	0.093	0.646	0.067
	15056HS	0.563		6.05	3.342	1.078	0.114	1.023	0.108	0.771	0.082
	15062HS	0.625		5.10	3.967	1.203	0.107	1.148	0.103	0.896	0.080
	15068HS	0.688		4.41	4.592	1.328	0.102	1.273	0.098	1.021	0.079
	15075HS	0.750		3.89	5.217	1.453	0.099	1.398	0.095	1.146	0.078
	15081HS	0.813		3.47	5.842	1.578	0.096	1.523	0.092	1.271	0.077
	15087HS	0.875		3.14	6.467	1.703	0.093	1.648	0.090	1.396	0.076
	15093HS	0.938		2.86	7.092	1.828	0.091	1.773	0.089	1.521	0.076
	15100HS	1.000		2.63	7.717	1.953	0.090	1.898	0.087	1.646	0.076
	15112HS	1.125		2.26	8.967	2.203	0.087	2.148	0.085	1.896	0.075
	15118HS	1.188		2.12	9.592	2.328	0.086	2.273	0.084	2.021	0.075
	15125HS	1.250		1.99	10.217	2.453	0.085	2.398	0.083	2.146	0.074
	15137HS	1.375		1.77	11.467	2.703	0.084	2.648	0.082	2.396	0.074
AMCA	15150HS	1.500	0.354	1.60	12.717	2.953	0.082	2.898	0.081	2.646	0.074
	15200HS	2.000		1.15	17.717	3.953	0.079	3.898	0.078	3.646	0.073
	15250HS	2.500		0.89	22.717	4.953	0.077	4.898	0.076	4.646	0.072
	15300HS	3.000		0.73	27.717	5.953	0.076	5.898	0.075	5.646	0.072
	15400HS	4.000		0.54	37.717	7.953	0.075	7.898	0.074	7.646	0.072

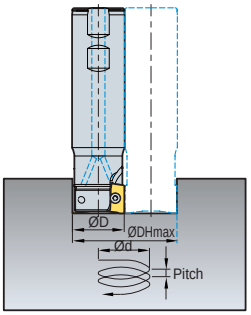
$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (inch)}$$

Cutting condition for ramping and helical operation

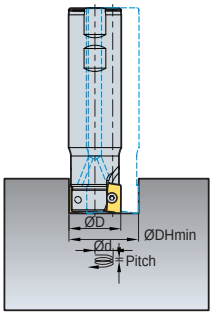
1. Ramping



2. Helical cutting for blind hole



3. Helical cutting for through hole

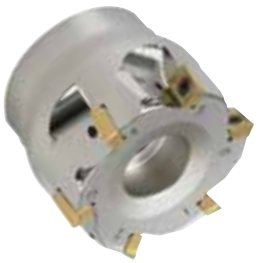


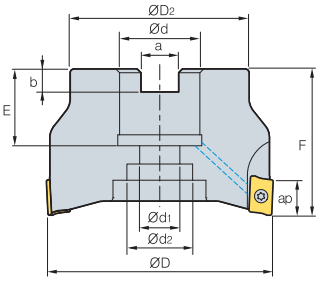
(inch)

Designation		Tool Dia. ØD(min)	ap	1. Ramping		2. Helical cutting for blind hole				3. Helical cutting for through hole	
				Maximum angle α(°)	Lmin	Max. desirable hole Dia. ØDHmax	Max. pitch dmax	Min. desirable hole Dia. ØDHmin	Max. pitch dmax	Min. desirable hole Dia. ØDHmin	Max. pitch dmax
AMSA	2050HS	0.500	0.433	11.69	1.903	0.921	0.191	0.858	0.178	0.646	0.134
	2056HS	0.563		7.55	2.969	1.046	0.139	0.983	0.130	0.771	0.102
	2063HS	0.625		10.30	2.165	1.171	0.213	1.093	0.199	0.896	0.163
	2069HS	0.688		8.23	2.723	1.296	0.187	1.218	0.176	1.021	0.148
	2075HS	0.750		5.60	4.016	1.421	0.139	1.343	0.132	1.146	0.112
	2088HS	0.875		5.15	4.366	1.671	0.151	1.593	0.144	1.396	0.126
	2100HS	1.000		3.92	5.748	1.921	0.132	1.843	0.126	1.646	0.113
	2125HS	1.250		2.70	8.346	2.421	0.114	2.343	0.110	2.146	0.101
	2150HS	1.500		1.98	11.378	2.921	0.101	2.843	0.098	2.646	0.092
	2200HS	2.000		1.48	15.197	3.921	0.102	3.843	0.100	3.646	0.094
	2250HS	2.500		1.11	20.236	4.921	0.096	4.843	0.094	4.646	0.090
AMCA	2150HS	1.500	0.433	0.36	62.047	2.921	0.019	2.843	0.018	2.646	0.017
	2200HS	2.000		0.36	62.047	3.921	0.025	3.843	0.024	3.646	0.023
	2250HS	2.500		0.27	82.835	4.921	0.023	4.843	0.023	4.646	0.022
	2300HS	3.000		0.21	109.606	5.921	0.021	5.843	0.021	5.646	0.020
	2400HS	4.000		0.16	141.102	7.921	0.022	7.843	0.022	7.646	0.021
AMSA	3100HS	1.000	0.63	4.72	4.764	1.921	0.159	1.843	0.152	1.449	0.120
	3125HS	1.250		3.00	7.520	2.421	0.127	2.343	0.123	1.949	0.102
	3150HS	1.500		2.29	9.843	2.921	0.117	2.843	0.114	2.449	0.098
	3200HS	2.000		1.64	13.780	3.921	0.112	3.843	0.110	3.449	0.099
	3250HS	2.500		1.22	18.504	4.921	0.105	4.843	0.103	4.449	0.095
AMCA	3150HS	1.500	0.63	1.99	11.319	2.921	0.102	2.843	0.099	2.449	0.085
	3200HS	2.000		1.67	13.504	3.921	0.114	3.843	0.112	3.449	0.101
	3250HS	2.500		1.22	18.504	4.921	0.105	4.843	0.103	4.449	0.095
	3300HS	3.000		0.90	25.039	5.921	0.093	5.843	0.092	5.449	0.086
	3400HS	4.000		0.69	32.677	7.921	0.095	7.843	0.094	7.449	0.090
AMSA	2100MH	1.000	0.433	1.50	30.070	1.921	0.050	1.843	0.048	-	-
	2125MH	1.250		1.50	45.104	2.421	0.063	2.343	0.061	-	-
AMSA	3150MH	1.500	0.63	1.50	60.139	2.921	0.076	2.843	0.074	-	-
AMSA	4125HS	1.250	0.709	3.42	10.737	2.453	0.147	2.398	0.143	2.146	0.128
	4150HS	1.500		2.65	13.871	2.953	0.137	2.898	0.134	2.646	0.122
	4200HS	2.000		1.82	20.141	3.953	0.126	3.898	0.124	3.646	0.116
	4250HS	2.500		1.39	26.410	4.953	0.120	4.898	0.119	4.646	0.113
AMCA	4200HS	2.000	0.709	1.82	20.141	3.953	0.126	3.898	0.124	3.646	0.116
	4250HS	2.500		1.39	26.410	4.953	0.120	4.898	0.119	4.646	0.113
	4300HS	3.000		1.12	32.679	5.953	0.117	5.898	0.116	5.646	0.111
	4400HS	4.000		0.81	45.217	7.953	0.113	7.898	0.112	7.646	0.109
	4500HS	5.000		0.64	57.756	9.953	0.111	9.898	0.110	9.646	0.107

$$Lmin = \frac{ap}{\tan \alpha^{\circ}} \text{ (inch)}$$

AMCA1000S












AA 0°

- AR: 9°~13°
- RR: -14°~5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs
AMCA	1150HS	10	1.500	1.417	0.500	0.287	0.433	0.252	0.169	0.630	1.500	0.220	0.53
	1200HS	12	2.000	1.772	0.750	0.433	0.630	0.321	0.220	0.787	1.750	0.220	0.79
	1250HS	14	2.500	1.772	0.750	0.433	0.630	0.321	0.220	0.787	1.750	0.220	1.34

Available inserts

APMT-MA



APMT-MM



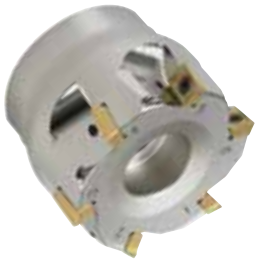
Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	0602PDFR-MA																	●	
	060208PDFR-MA																		
	060202PDSR-MM			●							●				●	●			
	0602PDSR-MM			●					●	●	●	●	●		●	●			E05
	060208PDSR-MM			●							●				●	●			
	060212R-MM			●											●	●			
	060216R-MM														●	●			

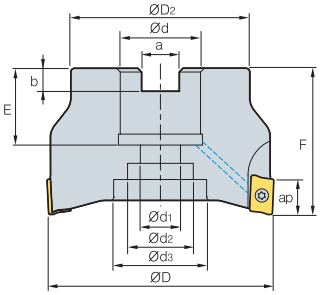
Parts

Specification	Screw	Wrench
Ø1.500~Ø2.500	FTKA01842	TW06S-A

Available inserts E05

AMCA1500S







AA 0°

- AR: 9°~13°
- RR: -14°~5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
AMCA	15150HS	5	1.500	1.417	0.500	0.287	0.433	-	0.252	0.169	0.630	1.500	0.354	0.48
	15200HS	6	2.000	1.772	0.750	0.433	0.630	-	0.321	0.220	0.787	1.750	0.354	0.75
	15250HS	8	2.500	1.772	0.750	0.433	0.630	-	0.321	0.200	0.787	1.750	0.354	1.25
	15300HS	10	3.000	2.205	1.000	0.551	1.260	-	0.384	0.248	0.866	2.000	0.354	2.42
	15400HS	12	4.000	2.874	1.250	0.709	1.024	1.575	0.510	0.319	0.866	2.000	0.354	4.62

Available inserts



APMT-MA



APMT-ML



APMT-MM

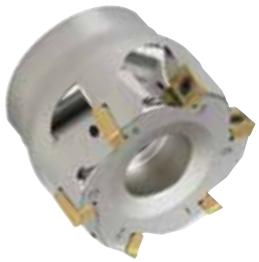
Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	0903PDFR-MA																	●	
	090308PDFR-MA																		
	0903PDER-ML														●	●			
	090308PDER-ML														●	●			
	0903PDSR-MM			●					●	●	●	●			●	●			E05
	090308PDSR-MM			●							●				●	●			
	090312R-MM										●				●	●			
	090316R-MM			●							●				●	●			
	090320R-MM										●				●	●			

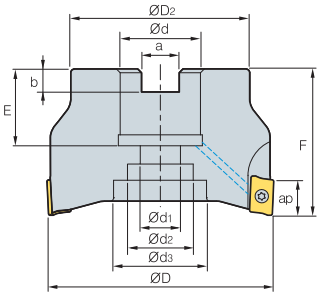
Parts

Specification	Screw	Wrench
Ø1.500~Ø4.000	FTKA02565S	TW08S

Available inserts **E05**

AMCA2000S












AA
0°

- AR: 9°~13°
- RR: -14°~5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
AMCA	2150HS	5	1.500	1.417	0.500	0.287	0.433	-	0.252	0.169	0.630	1.500	0.433	0.44
	2200HS	6	2.000	1.772	0.750	0.433	0.630	-	0.321	0.220	0.787	1.750	0.433	0.70
	2250HS	8	2.500	1.772	1.000	0.551	0.827	-	0.321	0.220	0.787	1.750	0.433	1.32
	2300HS	8	3.000	2.205	1.000	0.551	0.827	-	0.384	0.248	0.866	2.000	0.433	2.64
	2400HS	10	4.000	2.874	1.250	0.709	1.024	1.575	0.510	0.319	0.866	2.000	0.433	4.62

Available inserts

APMT-MA



APMT-ML



APMT-MM



APMT-MF



APMT-MN



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	11T3PDFR-MA																	●	
	11T308PDFR-MA																		
	11T3PDER-ML														●	●			
	11T308PDER-ML														●	●			
	11T3PDSR-MM			●	●		●		●	●	●	●	●		●	●			
	11T3PDSR-MF			●							●	●			●	●			
	11T308PDSR-MM			●							●		●	●	●	●			E06
	11T312PDSR-MM			●							●		●		●	●			
	11T316R-MM			●							●				●	●			
	11T318R-MM																		
	11T324R-MM			●							●				●	●			
	11T3PDSR-MN2														●				
	11T3PDSR-MN3														●				

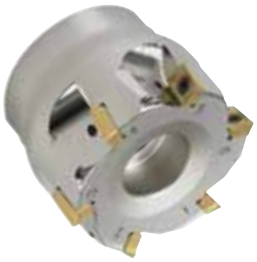
※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

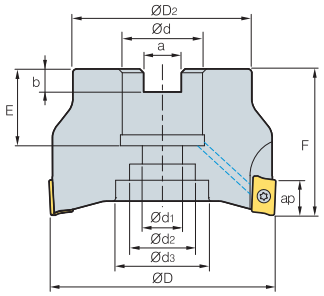
Parts

Specification	Screw	Wrench
Ø1.500~Ø4.000	FTKA02565S	TW08S

Available inserts E06

AMCA3000S












AA 0°

- AR: 14°
- RR: -12°~8°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
AMCA	3150HS	4	1.500	1.417	0.500	0.287	0.433	-	0.250	0.169	0.630	1.500	0.630	0.44
	3200HS	5	2.000	1.772	0.750	0.433	0.630	-	0.313	0.220	0.787	1.750	0.630	0.86
	3250HS	6	2.500	1.772	1.000	0.551	0.827	-	0.375	0.248	0.787	1.750	0.630	1.10
	3300HS	7	3.000	2.205	1.000	0.551	0.827	-	0.375	0.248	0.866	2.000	0.630	2.64
	3400HS	8	4.000	2.874	1.250	0.709	1.024	-	0.500	0.319	0.866	2.000	0.630	5.50

Available inserts

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN







Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1604PDFR-MA																	●	E06
	160404PDFR-MA																		
	1604PDER-ML														●	●			
	160404PDER-ML														●	●			
	1604PDSR-MM			●	●		●		●	●	●	●	●	●	●	●			
	1604PDSR-MF			●							●	●			●	●			
	160410PDSR-MM										●				●	●			
	160416PDSR-MM			●							●				●	●			
	160424R-MM			●							●				●	●			
	160430R-MM										●				●	●			
	160432R-MM			●							●				●	●			
	1604PDSR-MN3														●				
	1604PDSR-MN4														●				

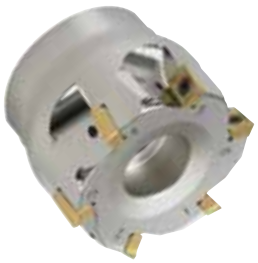
※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

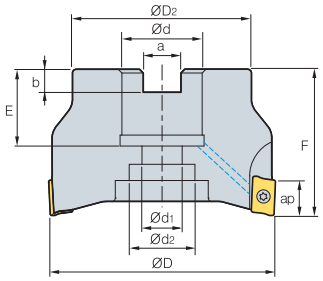
Parts

Specification	Screw	Wrench
Ø1.500~Ø4.000	FTKA0410	TW15S

Available inserts **E06**

AMCA3000S-K





AA 0°

- AR: 14°
- RR: -12°~8°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs
AMCA	3150HS-K	4	1.500	1.417	0.500	0.287	0.433	0.250	0.169	0.630	1.500	0.630	0.44
	3200HS-K	5	2.000	1.772	0.750	0.416	0.630	0.313	0.200	0.787	1.750	0.630	0.66
	3250HS-K	6	2.500	1.772	1.000	0.551	0.827	0.375	0.248	0.787	1.750	0.630	1.10
	3300HS-K	7	3.000	2.205	1.000	0.551	0.827	0.375	0.248	0.866	2.000	0.630	2.64
	3400HS-K	8	4.000	2.874	1.250	-	1.772	0.500	0.319	0.866	2.000	0.630	5.50

Available inserts

APKT | APKT-MF | APKT-MM | APKT-MA | APKT-MA2 | APKT-MA3



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	G10	H01	H05	
APKT	1604PDSR			●						●	●									E04
	1604PDSR-MF			●										●						
	1604PDSR-MM			●	●					●	●	●		●						
	1604PDFR-MA															●		●	●	
	1604PDFR-MA2																	●		
	160416FR-MA2																	●		
	160432FR-MA2																			
	1604PDFR-MA3																●	●	●	
	160420FR-MA3																			

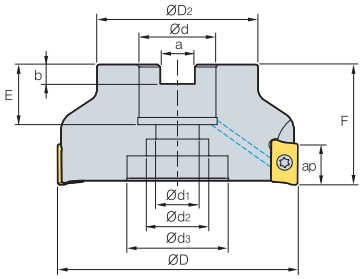
Parts

Specification	Screw	Wrench
Ø1.500~Ø4.000	FTKA0410	TW15S

Available inserts E04

AMCA4000S





AA 0°

- AR: 13°~15°
- RR: -12°~7°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
AMCA	4200HS	5	2.000	1.772	0.750	0.433	0.630	-	0.321	0.220	0.827	1.750	0.669	0.62
	4250HS	6	2.500	1.772	0.750	0.433	0.630	-	0.321	0.220	0.827	1.750	0.669	1.10
	4300HS	7	3.000	2.205	1.000	0.551	0.827	-	0.384	0.248	0.866	2.000	0.669	2.20
	4400HS	8	4.000	2.874	1.250	0.709	1.024	1.575	0.510	0.319	0.866	2.000	0.669	3.74
	4500HS	9	5.000	3.386	1.500	0.827	1.141	1.969	0.636	0.394	1.181	2.500	0.669	7.26

Available inserts

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1806PDFR-MA																	●	E06
	180604PDFR-MA																	●	
	180612PDFR-MA																	●	
	180616PDFR-MA																	●	
	180620PDFR-MA																	●	
	180624PDFR-MA																	●	
	180630R-MA																	●	
	1806PDER-ML															● ●			
	180604PDER-ML															● ●			
	180612PDER-ML															● ●			
	180616PDER-ML															●			
	180620PDER-ML															● ●			

Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	180624PDER-ML														●	●			E06
	180630R-ML														●	●			
	1806PDSR-MM			●					●	●	●	●	●	●	●	●			
	1806PDSR-MF			●								●			●	●			
	180612PDSR-MM			●							●				●	●			
	180616PDSR-MM			●											●	●			
	180620PDSR-MM																		
	180624PDSR-MM			●											●	●			
	180630R-MM														●	●			
	180632R-MM			●											●	●			
	1806PDSR-MN3														●				
	1806PDSR-MN4														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

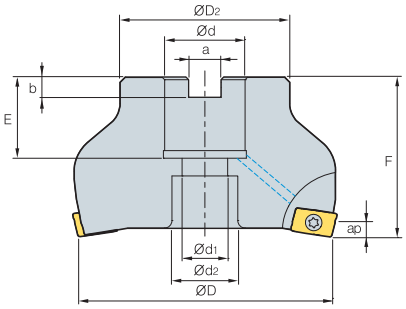
Parts

Specification	Screw	Wrench
Ø2.000~Ø5.000	FTKA0410	TW15S

Available inserts **E06**

AMCA1000SE/2000SE





AA 15°
• AR: 45°
• RR: 0°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs
AMCA	1150HSE	4	1.500	1.417	0.500	0.287	0.433	0.252	0.169	0.630	1.500	0.098	0.57
	1200HSE	5	2.000	1.772	0.750	0.433	0.630	0.315	0.220	0.787	1.750	0.098	0.86
AMCA	2300HSE	5	3.000	2.205	1.000	0.551	0.827	0.374	0.236	0.866	2.000	0.157	2.65
	2400HSE	6	4.000	2.874	1.250	0.709	1.024	0.500	0.315	0.866	2.000	0.157	5.14

Available inserts

APMT-MM APMT-MF



Type	Designation		Cermet		Coated													Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
1000 type	APMT	060202PDSR-MM			●							●				●	●			E06
		0602PDSR-MM			●					●	●	●	●	●		●	●			
		060208PDSR-MM			●							●				●	●			
		060212R-MM			●											●	●			
2000 type	APMT	11T3PDSR-MM			●	●		●		●	●	●	●	●		●	●			
		11T3PDSR-MF			●							●	●			●	●			
		11T308PDSR-MM			●							●		●	●	●	●			
		11T312PDSR-MM			●							●		●		●	●			
		11T316R-MM			●							●				●	●			
		11T318R-MM																		
		11T324R-MM			●							●				●	●			

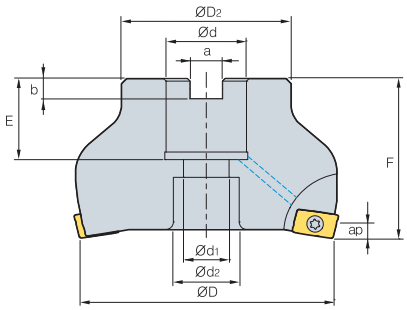
Parts

Specification	Screw	Wrench	Wrench
Ø1.500~Ø2.000 (1000 type)	FTKA01842	-	TW06S-A
Ø3.000~Ø4.000 (2000 type)	FTKA02565S	TW08S	-

Available inserts E06

AMCA3000SE





AA 15°

- AR: 45°
- RR: 0°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs
AMCA	3300HSE	4	3.000	2.205	1.000	0.551	0.827	0.374	0.236	0.866	2.000	0.236	2.87
	3400HSE	5	4.000	2.874	1.250	0.709	1.024	0.500	0.315	0.866	2.000	0.236	5.07

Available inserts

APMT-MM



APMT-MF



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1604PDSR-MM			●	●		●		●	●	●	●	●	●	●	●			E06
	1604PDSR-MF			●							●	●			●	●			
	160410PDSR-MM										●				●	●			
	160416PDSR-MM			●							●				●	●			
	160424R-MM			●							●				●	●			
	160430R-MM										●				●	●			
	160432R-MM			●							●				●	●			

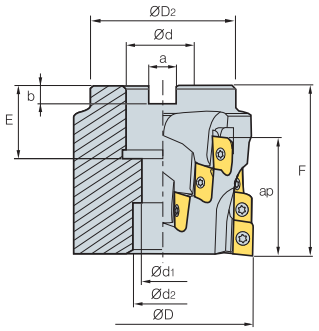
Parts

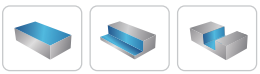
Specification	Screw	Wrench
Ø3.000~Ø4.000	FTKA0410	TW08S

Available inserts E06

AMCA2000M







AA 0°

- AR: 9°
- RR: -9°~-5°

(inch)

Designation		⊙	ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	No. of flute	ap	lbs
AMCA	2200M	16	2.0	1.772	0.75	0.433	0.630	0.315	0.220	0.866	2.283	4	1.535	1.54
	2250M	16	2.5	2.205	1.00	0.551	0.827	0.374	0.248	0.944	2.283	4	1.535	1.76
	2300M	20	3.0	2.756	1.25	0.708	1.023	0.500	0.319	0.944	2.480	5	1.535	2.12
	2400M	24	4.0	3.386	1.50	1.260	1.969	0.626	0.394	1.181	2.480	6	1.535	2.65

Available inserts

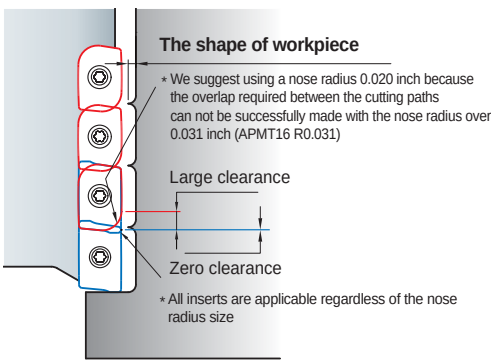
APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	11T3PDFR-MA																	●	
	11T308PDFR-MA																		
	11T3PDER-ML														●	●			
	11T308PDER-ML														●	●			
	11T3PDSR-MM			●	●		●		●	●	●	●	●		●	●			
	11T3PDSR-MF			●							●	●			●	●			
	11T308PDSR-MM			●							●		●	●	●	●			E06
	11T312PDSR-MM			●							●		●		●	●			
	11T316R-MM			●							●				●	●			
	11T318R-MM																		
	11T324R-MM			●							●				●	●			
	11T3PDSR-MN2														●				
	11T3PDSR-MN3														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

Caution when clamping the inserts



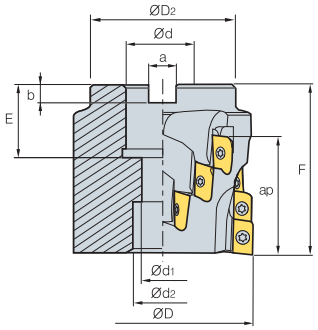
Parts

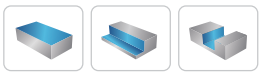
Specification	Screw	Wrench
Ø2.0~Ø4.0	FTKA02565S	TW08S

Available inserts E06

AMCA3000M







AA 0°

- AR: 9°
- RR: -9°~-5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	No. of flute	ap	lbs
AMCA	3250M	16	2.5	2.205	1.00	0.551	0.827	0.374	0.236	0.945	3.346	4	2.244	2.43
	3300M	20	3.0	2.205	1.25	0.709	1.024	0.500	0.315	1.690	3.937	4	2.795	4.92
	3400M	30	4.0	3.386	1.50	0.866	1.260	0.626	0.394	1.181	3.937	6	2.795	7.92

Available inserts

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN





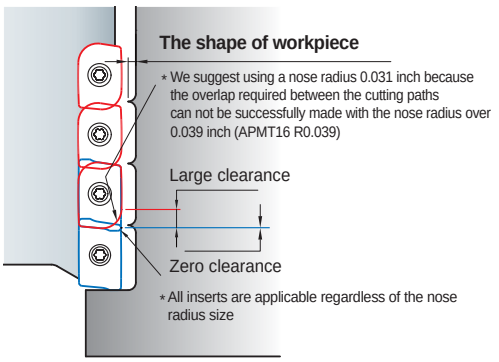




Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1604PDFR-MA																	●	E06
	160404PDFR-MA																		
	1604PDER-ML														●	●			
	160404PDER-ML														●	●			
	1604PDSR-MM			●	●		●		●	●	●	●	●	●	●	●			
	1604PDSR-MF			●							●	●			●	●			
	160410PDSR-MM										●				●	●			
	160416PDSR-MM			●							●				●	●			
	160424R-MM			●							●				●	●			
	160430R-MM										●				●	●			
	160432R-MM			●							●				●	●			
	1604PDSR-MN3														●				
	1604PDSR-MN4														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

Caution when clamping the inserts



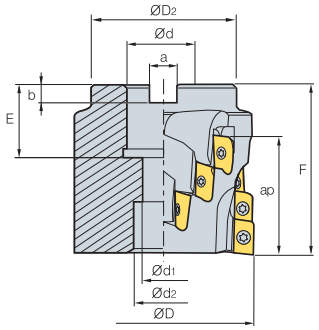
Parts

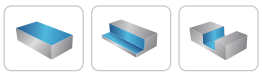
Specification	Screw	Wrench
Ø2.5~Ø4.0	FTKA0410	TW15S

Available inserts E06

AMCA4000M







AA 0°

- AR: 9°
- RR: -9°~-5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	No. of flute	ap	lbs
AMCA	4250M	16	2.5	2.205	1.00	0.551	0.827	0.374	0.248	0.944	3.346	4	2.406	2.43
	4300M	20	3.0	2.756	1.25	0.709	1.024	0.500	0.315	0.944	3.937	4	2.996	4.92
	4400M	30	4.0	3.386	1.50	0.866	1.260	0.626	0.394	1.181	3.937	6	2.996	7.92
	4500M	18	5.0	3.386	1.50	0.866	1.260	0.626	0.394	1.181	2.677	6	1.815	8.82

Available inserts

APMT-MA | APMT-ML | APMT-MM | APMT-MF | APMT-MN

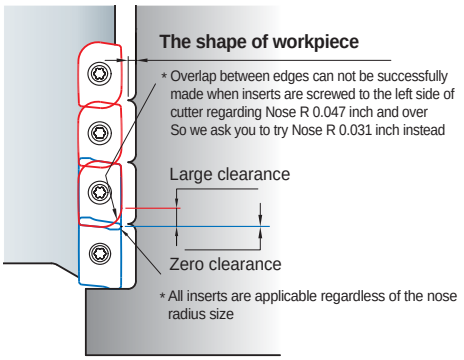


Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1806PDFR-MA																●		E06
	180604PDFR-MA																●		
	180612PDFR-MA																●		
	180616PDFR-MA																●		
	180620PDFR-MA																●		
	180624PDFR-MA																●		
	180630R-MA																●		
	1806PDER-ML														●	●			
	180604PDER-ML														●	●			
	180612PDER-ML														●	●			
	180616PDER-ML														●	●			
	180620PDER-ML														●	●			

Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	180624PDER-ML														●	●			E06
	180630R-ML														●	●			
	1806PDSR-MM			●					●	●	●	●	●	●	●	●			
	1806PDSR-MF			●								●			●	●			
	180612PDSR-MM			●							●				●	●			
	180616PDSR-MM			●											●	●			
	180620PDSR-MM																		
	180624PDSR-MM			●											●	●			
	180630R-MM																		
	180632R-MM			●											●	●			
	1806PDSR-MN3														●				
	1806PDSR-MN4														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

Caution when clamping the inserts



Parts

Specification	Screw	Wrench
Ø2.5~Ø5.0	FTKA0410	TW15S

Available inserts E06

AMSA1000S



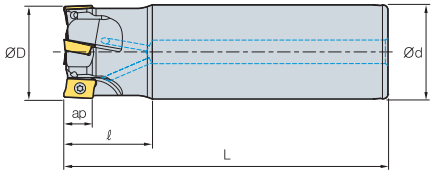


Fig. 1

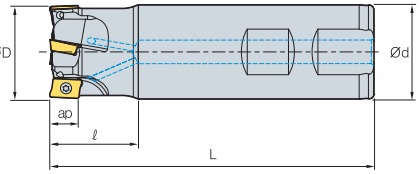


Fig. 2








AA
0°

- AR: 7.5°~13°
- RR: -17°~-6°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
AMSA	1043HS	2	0.438	0.375	0.787	3.150	0.22	0.09	2
	1050HS-2	2	0.500	0.500	0.984	3.150	0.22	0.12	2
	1050HS-2L050	2	0.500	0.500	0.984	4.724	0.22	0.20	1
	1050HS-3	3	0.500	0.500	0.984	3.150	0.22	0.12	2
	1056HS-2	2	0.563	0.625	0.984	3.543	0.22	0.24	2
	1056HS-2L062	2	0.563	0.625	0.984	5.512	0.22	0.40	1
	1056HS-3	3	0.563	0.625	0.984	3.543	0.22	0.24	2
	1062HS-3	3	0.625	0.625	0.984	3.543	0.22	0.26	2
	1062HS-3L062	3	0.625	0.625	0.984	6.299	0.22	0.49	1
	1062HS-4	4	0.625	0.625	0.984	3.543	0.22	0.26	2
	1068HS	4	0.688	0.625	0.984	3.543	0.22	0.26	2
	1068HS-3L062	3	0.688	0.625	0.984	6.299	0.22	0.49	1
	1075HS-4	4	0.750	0.750	1.181	4.331	0.22	0.51	2
	1075HS-4L075	4	0.750	0.750	1.181	7.874	0.22	0.95	1
	1075HS-5	5	0.750	0.750	1.181	4.331	0.22	0.51	2
	1081HS	5	0.813	0.750	1.181	4.331	0.22	0.53	2
	1081HS-4L075	4	0.813	0.750	1.181	7.874	0.22	0.95	1
	1087HS	5	0.875	0.750	1.181	4.331	0.22	0.60	2
	1100HS	7	1.000	1.000	1.181	4.724	0.22	0.86	2
	1106HS	7	1.063	1.000	1.181	4.724	0.22	0.86	2
	1125HS	8	1.250	1.250	1.378	4.724	0.22	1.43	2
	1131HS	8	1.313	1.250	1.378	4.724	0.22	1.43	2

Available inserts

APMT-MA



APMT-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	0602PDFR-MA																	●	E06
	060208PDFR-MA																		
	060202PDSR-MM			●							●				●	●			
	0602PDSR-MM			●					●	●	●	●	●		●	●			
	060208PDSR-MM			●							●				●	●			
	060212R-MM			●											●	●			
	060216R-MM														●	●			

Parts

Specification	Screw	Wrench
Ø0.438~Ø1.313	FTKA01842	TW06S-A

Available inserts E06

AMSA1500S



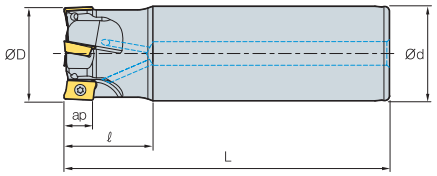


Fig. 1

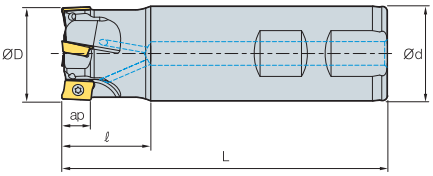


Fig. 2



AA 0°

- AR: 7.5°~12.5°
- RR: -28°~-14°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
AMSA	15050HS	1	0.500	0.625	0.984	3.150	0.354	0.21	2
	15050HS-1L062	1	0.500	0.625	1.181	6.299	0.354	0.46	1
	15056HS	1	0.563	0.625	0.984	3.150	0.354	0.22	2
	15056HS-1L062	1	0.563	0.625	1.181	6.299	0.354	0.46	1
	15062HS	2	0.625	0.625	1.181	3.543	0.354	0.24	2
	15062HS-2L062	2	0.625	0.625	1.181	6.299	0.354	0.46	1
	15068HS	2	0.688	0.625	1.181	3.543	0.354	0.27	2
	15068HS-2L062	2	0.688	0.625	1.181	6.299	0.354	0.46	1
	15075HS	2	0.750	0.750	1.181	3.543	0.354	0.40	2
	15075HS-2L075	2	0.750	0.750	1.181	6.299	0.354	0.75	1
	15075HS-3	3	0.750	0.750	1.181	3.543	0.354	0.40	2
	15081HS	2	0.813	0.750	1.181	3.543	0.354	0.44	2
	15081HS-2L075	2	0.813	0.750	1.181	6.299	0.354	0.75	1
	15081HS-3	3	0.813	0.750	1.181	3.543	0.354	0.44	2
	15087HS	3	0.875	0.750	1.181	4.331	0.354	0.51	2
	15087HS-3L075	3	0.875	0.750	1.181	7.087	0.354	0.84	1
	15093HS	3	0.938	0.750	1.181	4.331	0.354	0.66	2
	15093HS-4	4	0.938	0.750	1.181	4.331	0.354	0.66	2
	15100HS-3S075	3	1.000	0.750	1.181	4.331	0.354	0.77	2
	15100HS	3	1.000	1.000	1.181	4.331	0.354	0.77	2
	15100HS-3L100	3	1.000	1.000	1.181	7.087	0.354	1.30	2
	15100HS-4S075	4	1.000	0.750	1.181	4.331	0.354	0.55	1
	15100HS-4S100	4	1.000	1.000	1.181	4.331	0.354	0.55	2

Available inserts

APMT-MA



APMT-ML



APMT-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	0903PDFR-MA																	●	E06
	090308PDFR-MA																		
	0903PDER-ML														●	●			
	090308PDER-ML														●	●			
	0903PDSR-MM			●					●	●	●	●			●	●			
	090308PDSR-MM			●							●				●	●			
	090312R-MM										●				●	●			
	090316R-MM			●							●				●	●			
	090320R-MM										●				●	●			

Parts

Specification	Screw	Wrench
Ø0.500~Ø0.563	FTKA02555S	TW08S
Ø0.625~Ø1.000	FTKA02565S	

Available inserts E06

AMSA1500S



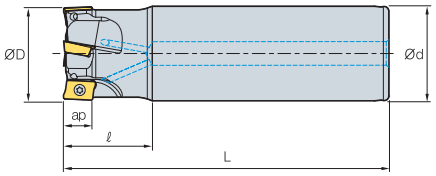


Fig. 1

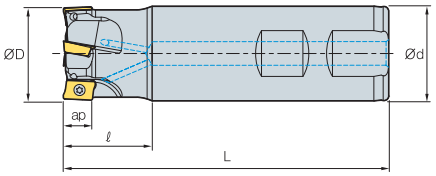


Fig. 2



AA 0°

- AR: 7.5°~12.5°
- RR: -28°~-14°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
AMSA	15100HS-3L100	3	1.000	1.000	1.181	7.087	0.354	1.30	1
	15100HS-4S075	4	1.000	0.750	1.181	4.331	0.354	0.55	2
	15100HS-4S100	4	1.000	1.000	1.181	4.331	0.354	0.55	2
	15112HS	4	1.125	1.000	1.181	4.331	0.354	0.79	2
	15112HS-4L100	4	1.125	1.000	1.181	7.087	0.354	1.35	1
	15112HS-5	5	1.125	1.000	1.181	4.331	0.354	0.79	2
	15118HS	4	1.188	1.000	1.181	4.331	0.354	0.84	2
	15118HS-4L100	4	1.188	1.000	1.181	7.087	0.354	1.37	1
	15118HS-5	5	1.188	1.000	1.181	4.331	0.354	0.84	2
	15125HS	4	1.250	1.250	1.181	4.331	0.354	1.32	2
	15125HS-4L125	4	1.250	1.250	1.181	7.087	0.354	2.21	1
	15125HS-5	5	1.250	1.250	1.181	4.331	0.354	1.32	2
	15137HS	5	1.375	1.250	1.181	4.331	0.354	1.54	2
	15137HS-6	6	1.375	1.250	1.181	4.331	0.354	1.54	2
	15150HS-S125	5	1.500	1.250	1.378	5.118	0.354	1.76	2
	15150HS-5L125	5	1.500	1.250	1.378	7.874	0.354	2.65	1
	15150HS-6S125	6	1.500	1.250	1.378	5.118	0.354	1.76	2
	15150HS-S150	5	1.500	1.500	1.378	5.118	0.354	2.49	2
	15150HS-6S150	6	1.500	1.500	1.378	5.118	0.354	2.49	2

Available inserts

APMT-MA



APMT-ML



APMT-MM



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	0903PDFR-MA																	●	
	090308PDFR-MA																		
	0903PDER-ML														●	●			
	090308PDER-ML														●	●			
	0903PDSR-MM			●					●	●	●	●			●	●			E06
	090308PDSR-MM			●							●				●	●			
	090312R-MM										●				●	●			
	090316R-MM			●							●				●	●			
	090320R-MM										●				●	●			

Parts

Specification	Screw	Wrench
Ø1.000~Ø1.500	FTKA02565S	TW08S

Available inserts **E06**

AMSA2000S



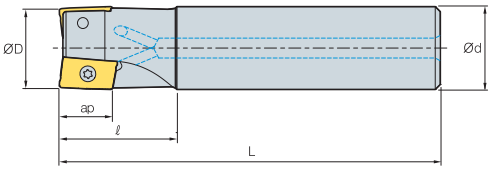


Fig. 1

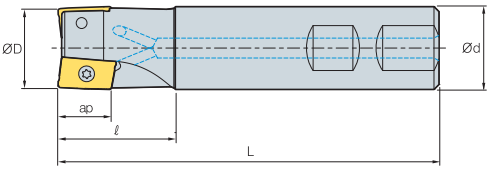


Fig. 2



AA 0°

- AR: 3°~14°
- RR: -25°~-18°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
AMSA	2050HS	1	0.500	0.625	0.984	3.346	0.433	0.22	2
	2050HS-1L062	1	0.500	0.625	1.181	6.299	0.433	0.46	1
	2056HS	1	0.563	0.625	0.984	3.543	0.433	0.26	2
	2056HS-1L062	1	0.563	0.625	1.181	6.299	0.433	0.46	1
	2062HS	2	0.625	0.625	0.984	3.543	0.433	0.26	2
	2062HS-2L062	2	0.625	0.625	1.181	7.087	0.433	0.46	1
	2068HS	2	0.688	0.625	0.984	3.543	0.433	0.26	2
	2068HS-2L062	2	0.688	0.625	1.181	7.087	0.433	0.46	1
	2075HS	2	0.750	0.750	1.181	3.937	0.433	0.46	2
	2075HS-2L075	2	0.750	0.750	1.181	8.268	0.433	0.75	1
	2087HS	3	0.875	0.750	1.378	4.528	0.433	0.55	2
	2087HS-3L075	3	0.875	0.750	1.378	7.087	0.433	0.84	1
	2100HS	3	1.000	1.000	1.378	4.528	0.433	0.88	2
	2100HS-3L100	3	1.000	1.000	1.575	7.087	0.433	1.30	1
	2125HS	4	1.250	1.250	1.575	4.921	0.433	1.54	2
	2125HS-4L125	4	1.250	1.250	1.969	7.087	0.433	2.21	1
	2150HS	5	1.500	1.250	1.654	5.118	0.433	1.85	2
	2150HS-5L125	5	1.500	1.250	1.969	7.874	0.433	2.65	1
	2150HS-S150	5	1.500	1.500	1.654	5.118	0.433	2.54	2
	2200HS	6	2.000	1.250	1.772	5.315	0.433	2.34	2
	2200HS-S150	6	2.000	1.500	1.772	5.315	0.433	3.04	2
	2250HS	8	2.500	1.250	1.772	5.315	0.433	2.89	2
	2250HS-S150	8	2.500	1.500	1.772	5.315	0.433	3.57	2

Available inserts

APMT-MA



APMT-ML



APMT-MM



APMT-MF



APMT-MN



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	11T3PDFR-MA																	●	E06
	11T308PDFR-MA																		
	11T3PDER-ML														●	●			
	11T308PDER-ML														●	●			
	11T3PDSR-MM			●	●		●		●	●	●	●	●		●	●			
	11T3PDSR-MF			●							●	●			●	●			
	11T308PDSR-MM			●							●		●	●	●	●			
	11T312PDSR-MM			●							●		●		●	●			
	11T316R-MM			●							●				●	●			
	11T318R-MM																		
	11T324R-MM			●							●				●	●			
	11T3PDSR-MN2														●				
	11T3PDSR-MN3														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

Parts

Specification	Screw	Wrench
Ø0.500~Ø0.563	FTKA02555S	TW08S
Ø0.625~Ø2.500	FTKA02565S	

Available inserts E06

AMSA3000S



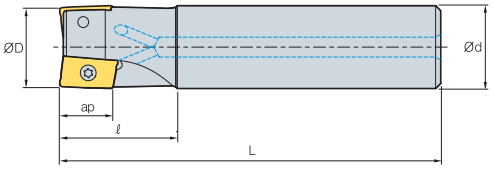


Fig. 1

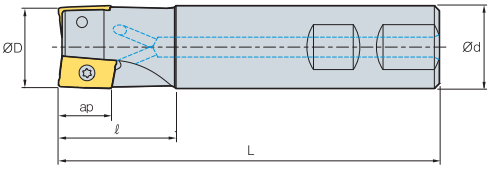


Fig. 2








AA 0°

- AR: 3°~14°
- RR: -18°~-10°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
AMSA	3100HS	2	1.000	1.000	1.378	4.528	0.630	0.88	2
	3100HS-2M100	2	1.000	1.000	1.378	7.087	0.630	1.43	1
	3100HS-2L100	2	1.000	1.000	2.362	8.661	0.630	1.65	1
	3125HS	3	1.250	1.250	1.575	4.921	0.630	1.52	2
	3125HS-2M125	2	1.250	1.250	1.575	7.874	0.630	2.49	1
	3125HS-2L125	2	1.250	1.250	2.559	10.236	0.630	3.35	1
	3125HS-3M125	3	1.250	1.250	1.575	7.874	0.630	2.47	1
	3125HS-3L125	3	1.250	1.250	2.559	10.236	0.630	3.26	1
	3150HS	4	1.500	1.250	1.654	5.118	0.630	1.76	2
	3150HS-3M125	3	1.500	1.250	1.654	7.874	0.630	2.73	1
	3150HS-3L125	3	1.500	1.250	1.654	10.236	0.630	3.55	1
	3150HS-4M125	4	1.500	1.250	1.654	7.874	0.630	2.67	1
	3150HS-4L125	4	1.500	1.250	1.654	10.236	0.630	3.48	1
	3150HS-S150	4	1.500	1.500	1.654	5.118	0.630	2.43	2
	3200HS	5	2.000	1.250	1.772	5.315	0.630	2.21	2
	3200HS-S150	5	2.000	1.500	1.772	5.315	0.630	2.87	2
	3250HS	6	2.500	1.250	1.772	5.315	0.630	2.76	2
	3250HS-S150	6	2.500	1.500	1.772	5.315	0.630	3.31	2

• It is recommended to use made to order holders in case of nose radius over R0.126

Available inserts

APMT-MA



APMT-ML



APMT-MM



APMT-MF



APMT-MN



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1604PDFR-MA																	●	
	160404PDFR-MA																		
	1604PDER-ML														●	●			
	160404PDER-ML														●	●			
	1604PDSR-MM			●	●		●		●	●	●	●	●	●	●	●			
	1604PDSR-MF			●							●	●			●	●			
	160410PDSR-MM										●				●	●			E06
	160416PDSR-MM			●							●				●	●			
	160424R-MM			●							●				●	●			
	160430R-MM										●				●	●			
	160432R-MM			●							●				●	●			
	1604PDSR-MN3														●				
	1604PDSR-MN4														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

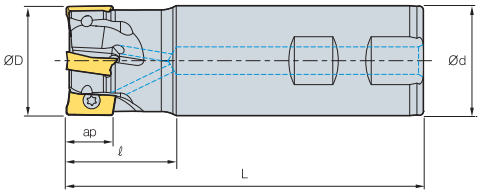
Parts

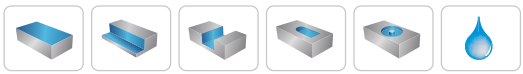
Specification	Screw	Wrench
Ø1.000 Ø1.250~Ø2.500	FTKA0408 FTKA0410	TW15S

Available inserts **E06**

AMSA3000S-K







AA
0°

- AR: 14°
- RR: -18°~-10°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
AMSA	3100HS-K	2	1.000	1.000	1.378	4.528	0.630	0.88
	3125HS-K	3	1.250	1.250	1.575	4.921	0.630	1.52
	3150HS-K	4	1.500	1.250	1.654	5.118	0.630	1.76
	3150HS-K-150	4	1.500	1.500	1.654	5.118	0.630	2.43
	3200HS-K	5	2.000	1.250	1.772	5.315	0.630	2.21
	3200HS-K-150	5	2.000	1.500	1.772	5.315	0.630	2.87
	3250HS-K	6	2.500	1.250	1.772	5.315	0.630	2.76
	3250HS-K-150	6	2.500	1.500	1.772	5.315	0.630	3.31

Available inserts



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	G10	H01	H05	
APKT	1604PDSR			●						●	●									E04
	1604PDSR-MF			●										●						
	1604PDSR-MM			●	●					●	●	●		●						
	1604PDFR-MA															●		●	●	
	1604PDFR-MA2																	●		
	160416FR-MA2																	●		
	160432FR-MA2																			
	1604PDFR-MA3																●	●	●	

Parts

Specification	Screw	Wrench
Ø1.000 Ø1.250~Ø2.500	FTKA0408 FTKA0410	TW15S

Available inserts E04

AMSA4000S



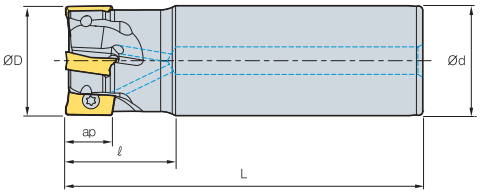


Fig. 1

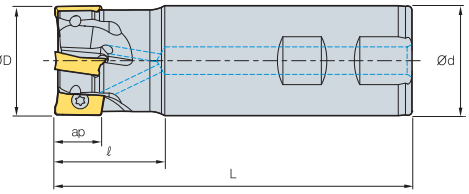


Fig. 2



AA 0°

- AR: 7°~13°
- RR: -20°~-6°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
AMSA	4100HS	2	1.000	1.000	1.575	4.331	0.669	0.77	2
	4100HS-2M100	2	1.000	1.000	1.575	7.087	0.669	1.28	1
	4100HS-2L100	2	1.000	1.000	1.575	9.055	0.669	1.59	1
	4106HS	2	1.063	1.000	1.575	4.331	0.669	0.82	2
	4106HS-2M100	2	1.063	1.000	1.575	7.087	0.669	1.32	1
	4106HS-2L100	2	1.063	1.000	1.575	9.055	0.669	1.63	1
	4125HS	3	1.250	1.250	1.575	4.921	0.669	1.43	2
	4125HS-2M125	2	1.250	1.250	1.969	7.874	0.669	2.58	1
	4125HS-2L125	2	1.250	1.250	1.969	10.236	0.669	3.35	1
	4125HS-3M125	3	1.250	1.250	1.969	7.874	0.669	2.43	1
	4125HS-3L125	3	1.250	1.250	1.969	10.236	0.669	3.26	1
	4131HS	3	1.313	1.250	1.575	4.921	0.669	1.50	2
	4131HS-2M125	2	1.313	1.250	1.969	7.874	0.669	2.47	1
	4131HS-2L125	2	1.313	1.250	1.969	10.236	0.669	3.31	1
	4131HS-3M125	3	1.313	1.250	1.969	7.874	0.669	2.47	1
	4131HS-3L125	3	1.313	1.250	1.969	10.236	0.669	3.31	1

- It is recommended to use made to order holders in case of nose radius over R0.126

Available inserts

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1806PDFR-MA																●		E06
	180604PDFR-MA																●		
	180612PDFR-MA																●		
	180616PDFR-MA																●		
	180620PDFR-MA																●		
	180624PDFR-MA																●		
	180630R-MA																●		
	1806PDER-ML														●	●			
	180604PDER-ML														●	●			
	180612PDER-ML														●	●			
	180616PDER-ML														●				
	180620PDER-ML														●	●			

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	180624PDER-ML														●	●			E06
	180630R-ML														●	●			
	1806PDSR-MM			●					●	●	●	●	●	●	●	●			
	1806PDSR-MF			●								●			●	●			
	180612PDSR-MM			●							●				●	●			
	180616PDSR-MM			●											●	●			
	180620PDSR-MM																		
	180624PDSR-MM			●											●	●			
	180630R-MM														●	●			
	180632R-MM			●											●	●			
	1806PDSR-MN3														●				
	1806PDSR-MN4														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

Parts

Specification	Screw	Wrench
Ø1.000~Ø1.063	FTKA0408	TW15S
Ø1.250~Ø2.500	FTKA0410	

Available inserts E06

AMSA4000S



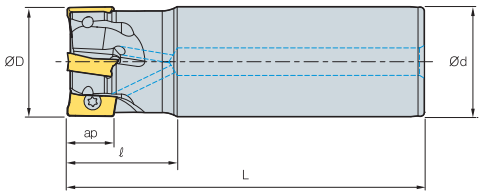


Fig. 1

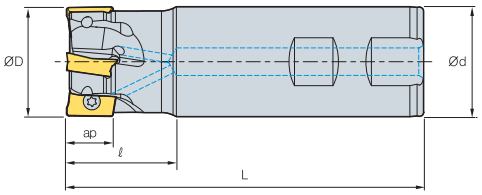


Fig. 2








AA
0°

- AR: 7°~13°
- RR: -20°~-6°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
AMSA	4150HS-3M125	3	1.500	1.250	1.969	7.874	0.669	2.65	1
	4150HS-3L125	3	1.500	1.250	1.969	10.236	0.669	3.53	1
	4150HS-4M125	4	1.500	1.250	1.969	7.874	0.669	2.65	1
	4150HS-4L125	4	1.500	1.250	1.969	10.236	0.669	3.53	1
	4150HS-S125	4	1.500	1.250	1.575	5.118	0.669	1.68	2
	4150HS-S150	4	1.500	1.500	1.575	5.118	0.669	2.43	2
	4200HS-S125	5	2.000	1.250	1.575	5.315	0.669	2.09	2
	4200HS-S150	5	2.000	1.500	1.575	5.315	0.669	2.87	2
	4250HS-S125	6	2.500	1.250	1.575	5.315	0.669	2.76	2
	4250HS-S150	6	2.500	1.500	1.575	5.315	0.669	3.53	2

- It is recommended to use made to order holders in case of nose radius over R0.126

Available inserts

APMT-MA | APMT-ML | APMT-MM | APMT-MF | APMT-MN









Designation		Cermet		Coated														Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400		G10	H01	
APMT	1806PDFR-MA																●			E06
	180604PDFR-MA																●			
	180612PDFR-MA																●			
	180616PDFR-MA																●			
	180620PDFR-MA																●			
	180624PDFR-MA																●			
	180630R-MA																●			
	1806PDER-ML														●	●				
	180604PDER-ML														●	●				
	180612PDER-ML														●	●				
	180616PDER-ML														●					
	180620PDER-ML														●	●				

Designation		Cermet		Coated														Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400		G10	H01	
APMT	180624PDER-ML														●	●				E06
	180630R-ML														●	●				
	1806PDSR-MM			●					●	●	●	●	●	●	●	●				
	1806PDSR-MF			●								●			●	●				
	180612PDSR-MM			●							●				●	●				
	180616PDSR-MM			●											●	●				
	180620PDSR-MM																			
	180624PDSR-MM			●											●	●				
	180630R-MM														●	●				
	180632R-MM			●											●	●				
	1806PDSR-MN3														●					
	1806PDSR-MN4														●					

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

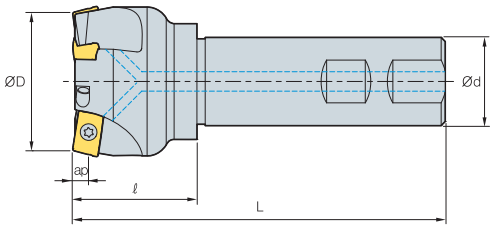
Parts

Specification	Screw	Wrench
Ø1.500~Ø2.500	FTKA0410	TW15S

Available inserts E06

AMSA1000SE/2000SE








AA 15°

- AR: -4.5°~-1°
- RR: -3°~0°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
AMSA	1100HSE	3	1.000	1.000	1.181	4.528	0.098	0.90
AMSA	2100HSE	2	1.000	1.000	1.181	4.528	0.157	0.88
	2125HSE	3	1.250	1.250	1.575	4.921	0.157	1.59
	2150HSE	3	1.500	1.250	1.575	5.118	0.157	1.90
	2150HSE-S150	3	1.500	1.500	1.575	5.118	0.157	2.65
	2200HSE	4	2.000	1.250	1.575	5.315	0.157	2.16
	2200HSE-S150	4	2.000	1.500	1.575	5.315	0.157	2.87
	2250HSE	5	2.500	1.250	1.575	5.315	0.157	2.73
	2250HSE-S150	5	2.500	1.500	1.575	5.315	0.157	3.46

Available inserts

APMT-MF



APMT-MM



Type	Designation		Cermet		Coated												Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
1000 type	APMT	060202PDSR-MM			●							●				●	●			E06
		0602PDSR-MM			●					●	●	●	●	●		●	●			
		060208PDSR-MM			●							●				●	●			
		060212R-MM			●											●	●			
		060216R-MM														●	●			
2000 type	APMT	11T3PDSR-MM			●	●		●		●	●	●	●	●		●	●			
		11T3PDSR-MF			●							●	●			●	●			
		11T308PDSR-MM			●							●		●	●	●	●			
		11T312PDSR-MM			●							●		●		●	●			
		11T316R-MM			●							●				●	●			
		11T318R-MM																		
		11T324R-MM			●							●				●	●			

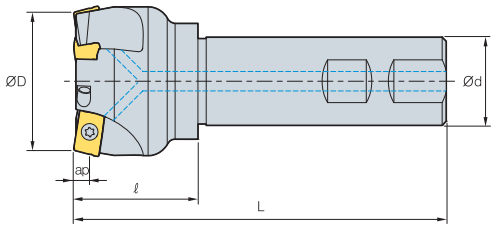
Parts

Specification	Screw	Wrench	Wrench
Ø1.000 (1000 type)	FTKA01842	-	TW06S-A
Ø1.000~Ø2.500 (2000 type)	FTKA02565S	TW08S	-

Available inserts **E06**

AMSA3000SE





AA 15°

- AR: -4.5°~-1°
- RR: -3°~0°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
AMSA	3200HSE	3	2.000	1.250	1.772	5.315	0.236	2.21
	3200HSE-S150	3	2.000	1.500	1.772	5.315	0.236	2.87
	3250HSE	4	2.500	1.250	1.772	5.315	0.236	2.87
	3250HSE-S150	4	2.500	1.500	1.772	5.315	0.236	3.53

Available inserts

APMT-MF



APMT-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1604PDSR-MM			●	●		●		●	●	●	●	●	●	●	●			E06
	1604PDSR-MF			●							●	●			●	●			
	160410PDSR-MM										●				●	●			
	160416PDSR-MM			●							●				●	●			
	160424R-MM			●							●				●	●			
	160430R-MM										●				●	●			
	160432R-MM			●							●				●	●			

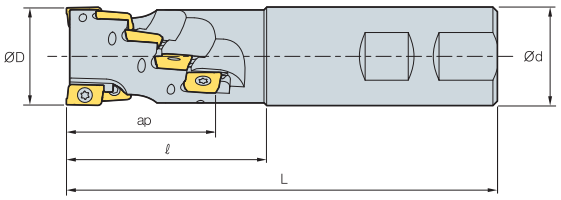
Parts

Specification	Screw	Wrench
Ø2.000~Ø2.500	FTKA0410	TW15S

Available inserts E06

AMSA1000M/1500M







AA 0°

- AR: 7°~9°
- RR: -13°~-10°

(inch)

Designation			ØD	Ød	ℓ	L	No. of flute	ap	lbs
AMSA	1062M	6	0.625	0.625	1.181	3.150	2	0.610	0.66
	1075M	12	0.750	0.750	1.260	3.346	3	0.807	0.66
	1100M	20	1.000	1.000	1.535	3.740	4	1.004	0.66
AMSA	15075M	3	0.750	0.750	1.654	4.134	1	1.043	0.66
	15100M	8	1.000	1.000	1.969	4.331	2	1.378	0.66
	15125M	10	1.250	1.250	2.362	4.724	2	1.732	0.66

Available inserts

APMT-MA APMT-ML APMT-MM

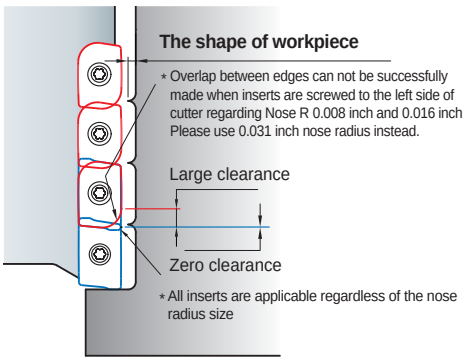






Type	Designation		Cermet		Coated												Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
1000 type	APMT	0602PDFR-MA																	●	E06
		060208PDFR-MA																		
		060202PDSR-MM			●							●				●	●			
		0602PDSR-MM			●					●	●	●	●	●		●	●			
		060208PDSR-MM			●							●				●	●			
		060212R-MM			●											●	●			
		060216R-MM														●	●			
1500 type	APMT	0903PDFR-MA																	●	
		090308PDFR-MA																		
		0903PDER-ML														●	●			
		090308PDER-ML														●	●			
		0903PDSR-MM			●					●	●	●	●			●	●			
		090308PDSR-MM			●							●				●	●			
		090312R-MM										●				●	●			
		090316R-MM			●							●				●	●			
		090320R-MM										●				●	●			

Caution when clamping the inserts



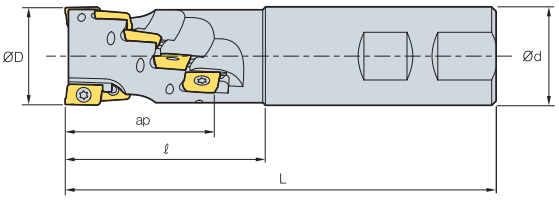
Parts

Specification	Screw	Wrench	Wrench
Ø0.625~Ø1.000 (1000 type)	FTKA01842	-	TW06S-A
Ø0.750~Ø1.250 (1500 type)	FTKA02565S	TW08S	-

Available inserts **E06**

AMSA2000M







AA 0°

- AR: 7°~9°
- RR: -13°~-10°

(inch)

Designation			ØD	Ød	ℓ	L	No. of flute	ap	lbs
AMSA	2075M	3	0.750	0.750	1.772	4.724	1	1.157	0.71
AMSA	2100M	8	1.000	1.000	2.165	5.118	2	1.531	0.88
	2125M	10	1.250	1.250	2.559	5.512	2	1.909	1.43
	2150M	14	1.500	1.654	2.953	5.906	2	2.283	1.65

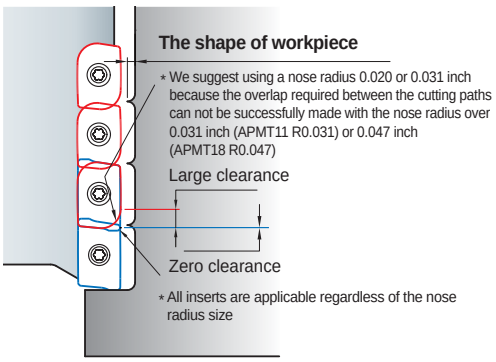
Available inserts

	APMT-MA	APMT-ML	APMT-MM	APMT-MF	APMT-MN
					

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	11T3PDFR-MA																	●	E06
	11T308PDFR-MA																		
	11T3PDER-ML														●	●			
	11T308PDER-ML														●	●			
	11T3PDSR-MM			●	●		●		●	●	●	●	●		●	●			
	11T3PDSR-MF			●							●	●			●	●			
	11T308PDSR-MM			●							●		●	●	●	●			
	11T312PDSR-MM			●							●		●		●	●			
	11T316R-MM			●							●				●	●			
	11T318R-MM																		
	11T324R-MM			●							●				●	●			
	11T3PDSR-MN2														●				
	11T3PDSR-MN3														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

Caution when clamping the inserts



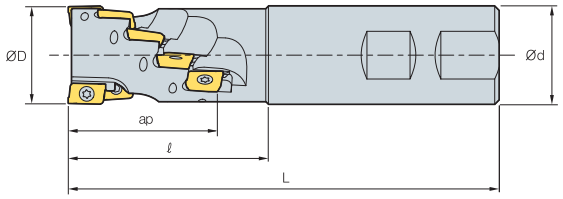
Parts

Specification	Screw	Wrench
Ø0.750~Ø1.500	FTKA02565S	TW08S

Available inserts E06

AMSA4000M











AA 0°

- AR: 7°~9°
- RR: -13°~-10°

(inch)

Designation			ØD	Ød	ℓ	L	No. of flute	ap	lbs
AMSA	4125M	4	1.250	1.250	2.362	5.118	2	1.244	1.43
	4150M	6	1.500	1.500	2.756	5.512	2	1.811	2.45
AMSA	4200M-S150	6	2.000	1.500	2.165	4.921	2	1.811	2.69
	4200M	8	2.000	1.500	2.756	5.512	2	2.402	3.02

Available inserts







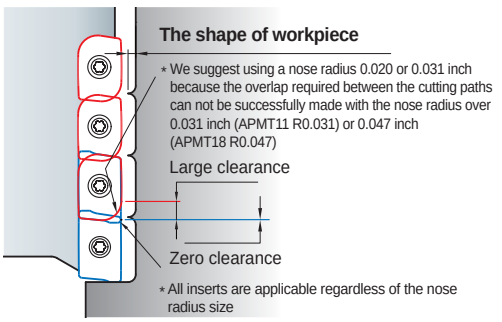




Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	1806PDFR-MA																	●	
	180604PDFR-MA																	●	
	180612PDFR-MA																	●	
	180616PDFR-MA																	●	
	180620PDFR-MA																	●	
	180624PDFR-MA																	●	
	180630R-MA																	●	
	1806PDER-ML														●	●			
	180604PDER-ML														●	●			
	180612PDER-ML														●	●			
	180616PDER-ML														●				
	180620PDER-ML														●	●			
	180624PDER-ML														●	●			
	180630R-ML														●	●			
	1806PDSR-MM			●					●	●	●	●	●	●	●	●			
	1806PDSR-MF			●								●			●	●			
	180612PDSR-MM			●							●				●	●			
	180616PDSR-MM			●											●	●			
	180620PDSR-MM																		
	180624PDSR-MM			●											●	●			
	180630R-MM														●	●			
	180632R-MM			●											●	●			
	1806PDSR-MN3														●				
	1806PDSR-MN4														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers.
※ Please use the cutters with even teeth.

Caution when clamping the inserts



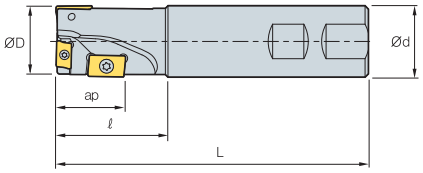
Parts

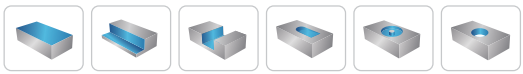
Specification	Screw	Wrench
Ø1.250~Ø2.000	FTKA02565S	TW08S

Available inserts E06

AMSA1000MH/1500MH







AA 0°

- AR: 9°~12°
- RR: -12°~-10°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	APMT 0602	APMT 0903	APM(X)T 11T3 -	APMT 1604	APKT 1604 -
AMSA	1056MH	3	0.5625	0.500	1.181	4.724	0.433	0.35	3	-	-	-	-
	1062MH	3	0.6250	0.625	1.181	5.512	0.433	0.44	3	-	-	-	-
	1068MH	3	0.6875	0.625	1.181	5.512	0.433	0.46	3	-	-	-	-
AMSA	15075MH	3	0.7500	0.750	1.378	5.512	0.669	0.68	1	2	-	-	-

Available inserts

APMT-MA APMT-ML APMT-MM







Type	Designation		Cermet		Coated												Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
1000 type	APMT	0602PDFR-MA																	●	E06
		060208PDFR-MA																		
		060202PDSR-MM			●							●				●	●			
		0602PDSR-MM			●					●	●	●	●	●		●	●			
		060208PDSR-MM			●							●				●	●			
1500 type	APMT	0903PDFR-MA																	●	
		090308PDFR-MA																		
		0903PDER-ML														●	●			
		090308PDER-ML														●	●			
		0903PDSR-MM			●					●	●	●	●			●	●			
		090308PDSR-MM			●							●				●	●			

Parts

Specification	Screw	Wrench	Wrench
Ø0.5625~Ø0.6875 (1000 type)	FTKA01842	-	TW06S-A
Ø0.7500 (1500 type)	FTKA02565S	TW08S	-

Recommended cutting condition

	Drilling	Shouldering	Slotting
vc(sfm)	260~650	260~650	260~650
fz(ipt)	0.002~0.001	0.010~0.002	0.008~0.002

- Please keep the drill depth under 0.25D when you're drilling
- Please keep the step depth from 0.008 to 0.012 inch

Available inserts E06

AMSA2000MH/3000MH



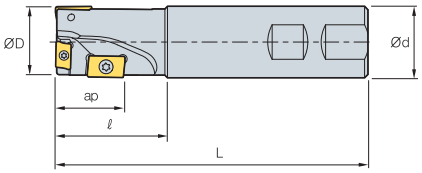


Fig. 1

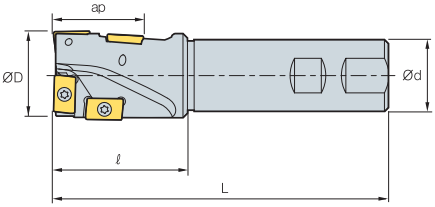
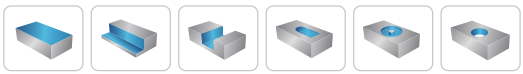


Fig. 2



AA 0°

- AR: 9°~12°
- RR: -12°~-10°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	APMT 0602	APMT 0903	APM(X)T 11T3 -	APMT 1604	APKT 1604 -	Fig.
AMSA	2100MH	3	1.000	1.000	1.575	5.118	0.787	0.99	-	-	3	-	-	1
	2125MH	3	1.250	1.250	1.969	5.512	1.181	1.65	-	-	1	2		1
AMSA	3150MH	4	1.500	1.250	2.362	5.906	1.575	1.98	-	-	-	-	4	2

Available inserts

APKT-MF | APKT-MM | APMT-MA | APMT-MF | APMT-ML | APMT-MM



Type	Designation		Cermet		Coated												Uncoated	page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	
2000 type	APMT	11T3PDFR-MA																●	E06
		11T308PDFR-MA																	
		11T3PDER-ML														●	●		
		11T308PDER-ML														●	●		
		11T3PDSR-MM			●	●		●		●	●	●	●	●		●	●		
		11T3PDSR-MF			●							●	●			●	●		
		11T308PDSR-MM			●							●		●	●	●	●		
		11T312PDSR-MM			●							●		●		●	●		
		11T316R-MM			●							●				●	●		
		11T318R-MM			●														
		11T324R-MM			●							●				●	●		
3000 type	APMT	1604PDSR-MM			●	●				●	●	●	●	●		●	●		
		1604PDSR-MF			●							●	●			●	●		
3000-K type	APKT	1604PDSR-MM				●	●					●	●	●		●			
		1604PDSR-MF				●										●			

Parts

Specification	Screw	Wrench	Wrench
Ø1.000 (2000 type)	FTKA02565S	TW08S	-
Ø1.250 (2000 type)	FTKA02565S+FTKA0410	TW08S+TW15S	
Ø1.500 (3000 type)	FTKA0410	TW15S	-

Available inserts **E06**

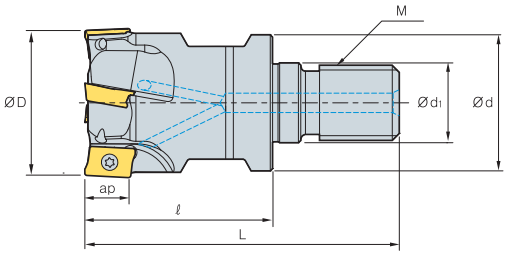
Recommended cutting condition

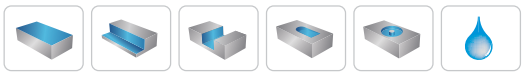
	Drilling	Shouldering	Slotting
vc(sfm)	260~650	260~650	260~650
fz(ipt)	0.002~0.001	0.010~0.002	0.008~0.002

- Please keep the drill depth under 0.25D when you're drilling
- Please keep the step depth from 0.008 to 0.012 inch

AMMA1000







AA 0°

• AR: 7.5°~12.5°
• RR: -28°~-6°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	lbs
AMMA	1050HR-M06	3	0.500	0.433	0.256	0.984	1.575	M06	0.22	0.04
	1062HR-M08	4	0.625	0.571	0.335	0.984	1.654	M08	0.22	0.07
	1075HR-M10	5	0.750	0.689	0.413	1.181	2.008	M10	0.22	0.15
	1100HR-M12	7	1.000	0.906	0.492	1.378	2.323	M12	0.22	0.26
	1125HR-M16	8	1.250	1.142	0.669	1.575	2.638	M16	0.22	0.51

Available inserts

APMT-MA



APMT-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	0602PDFR-MA																	●	E06
	060208PDFR-MA																		
	060202PDSR-MM			●							●				●	●			
	0602PDSR-MM			●					●	●	●	●	●		●	●			
	060208PDSR-MM			●							●				●	●			
	060212R-MM			●											●	●			
	060216R-MM														●	●			

Available adaptor

Designation		Available adaptor
AMMA	1050HR-M06	MATA - M06
	1062HR-M08	MATA - M08
	1075HR-M10	MATA - M10
	1100HR-M12	MATA - M12
	1125HR-M16	MATA - M16

Designation: AMMA1125HR-M16
Modular head threading measure size (M16)

II

Adaptor spec.: MATA-M16-354-S125S-C
Adaptor threading measure (M16)

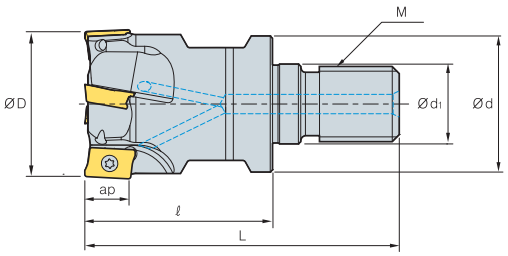
Parts

Specification	Screw	Wrench
Ø0.500~Ø1.250	FTKA01842	TW06S-A

Available inserts E06 Available adaptor E365~E366

AMMA1500







AA 0°

- AR: 7.5°~12.5°
- RR: -28°~-6°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	lbs
AMMA	15050HR-M06	1	0.500	0.433	0.256	0.984	1.575	M06	0.35	0.14
	15062HR-M08	2	0.625	0.571	0.335	0.984	1.654	M08	0.35	0.17
	15075HR-M10	2	0.750	0.689	0.413	1.181	2.008	M10	0.35	0.13
	15100HR-M12	3	1.000	0.906	0.492	1.378	2.323	M12	0.35	0.26
	15125HR-M16	4	1.250	1.142	0.669	1.575	2.638	M16	0.35	0.48

Available inserts

APMT-MA APMT-ML APMT-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	0903PDFR-MA																	●	E06
	090308PDFR-MA																		
	0903PDER-ML														●	●			
	090308PDER-ML														●	●			
	0903PDSR-MM			●					●	●	●	●			●	●			
	090308PDSR-MM			●							●				●	●			
	090312R-MM										●				●	●			
	090316R-MM			●							●				●	●			
	090320R-MM										●				●	●			

Available adaptor

Designation		Available adaptor
AMMA	15050HR-M06	MATA - M06
	15062HR-M08	MATA - M08
	15075HR-M10	MATA - M10
	15100HR-M12	MATA - M12
	15125HR-M16	MATA - M16
	15032HR-M16	MATA - M16

Designation: AMMA15125HR-M16
Modular head threading measure size (M16)

||

Adaptor spec.: MATA-M16-354-S125S-C
Adaptor threading measure (M16)

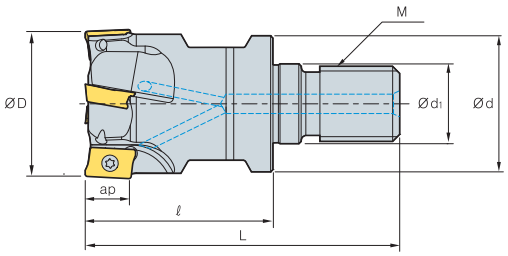
Parts

Specification	Screw	Wrench
Ø0.5000~Ø0.563 Ø0.625~Ø1.250	FTKA02555S FTKA02565S	TW08S

Available inserts E06 Available adaptor E365~E366

AMMA2000












AA 0°

- AR: 7.5°~12.5°
- RR: -28°~-6°

(inch)

Designation		◎	ØD	Ød	Ød1	ℓ	L	M	ap	lbs
AMMA	2062HR-M08	2	0.625	0.571	0.335	0.984	1.654	M08	0.43	0.09
	2075HR-M10	2	0.750	0.689	0.413	1.181	2.008	M10	0.43	0.15
	2100HR-M12	3	1.000	0.906	0.492	1.378	2.323	M12	0.43	0.24
	2125HR-M16	4	1.250	1.142	0.669	1.575	2.638	M16	0.43	0.51
	2150HR-M16	5	1.500	1.142	0.669	1.575	2.638	M16	0.43	0.55

Available inserts

APMT-MA



APMT-ML



APMT-MM



APMT-MF



APMT-MN



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
APMT	11T3PDFR-MA																	●	E06
	11T308PDFR-MA																		
	11T3PDER-ML														●	●			
	11T308PDER-ML														●	●			
	11T3PDSR-MM			●	●		●		●	●	●	●	●		●	●			
	11T3PDSR-MF			●							●	●			●	●			
	11T308PDSR-MM			●							●		●	●	●	●			
	11T312PDSR-MM			●							●		●		●	●			
	11T316R-MM			●							●				●	●			
	11T318R-MM																		
	11T324R-MM			●							●				●	●			
	11T3PDSR-MN2														●				
	11T3PDSR-MN3														●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

Available adaptor

Designation		Available adaptor
AMMA	2062HR-M08	MATA - M08
	2075HR-M10	MATA - M10
	2100HR-M12	MATA - M12
	2125HR-M16	MATA - M16
	2150HR-M16	

Designation: AMMA2125HR-M16
Modular head threading measure size (M16)

II

Adaptor spec.: MATA-M16-354-S125S-C
Adaptor threading measure (M16)

Parts

Specification	Screw	Wrench
Ø0.625~Ø1.500	FTKA02565S	TW08S

Available inserts E06 Available adaptor E365~E366

Shoulder milling tool for high helix

Alpha Mill-X new

- High helix cutting edge realizes high speed and high feed machining (15% higher speed than conventional tool's machining) and increases 20% higher productivity.
- Highly precise cutting edge ensures high quality surface finish in milling.

Code system

• Cutter

AMX C A 200 R - 075 - 4 - AD17

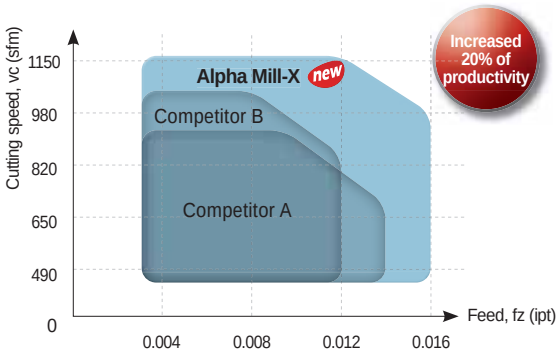
- **Alpha Mill-X**
- **Type**: C: Cutter
- **Arbor type**: M: Metric; A: Inch; None: Asia
- **Diameter**: 200: Ø2.00 inch
- **Oil hole & Hand**: R: With Oil hole, right-handed; NR: Without oil hole, right-handed
- **Internal diameter**: 075 : Ø0.75 inch
- **No. of tooth**: 4: 4 teeth
- **Insert**: AD17: ADKT17; AD12: ADKT12; AD10: ADKT10

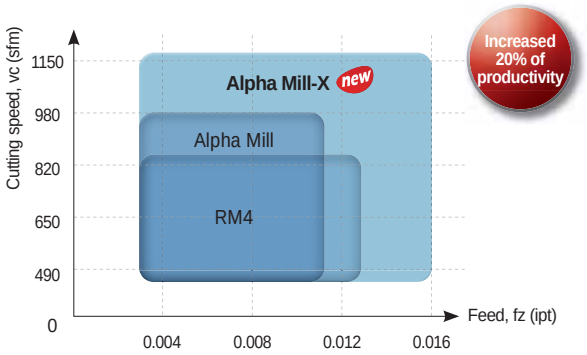
• Shank

AMX S 125 R - 3 C 125 - 800 - AD17

- **Alpha Mill-X**
- **Type**: S: Shank
- **Diameter**: 125: Ø1.25 inch
- **Oil hole & Hand**: R: With Oil hole, right-handed; NR: Without oil hole, right-handed
- **No. of tooth**: 3: 3 teeth
- **Shank type**: C: Cylinder; W: Weldon
- **Shank Dia.**: 125: Ø1.25 inch
- **Overall length**: 800: 8.00 inch
- **Insert**: AD17: ADKT17; AD12: ADKT12; AD10: ADKT10

Application area

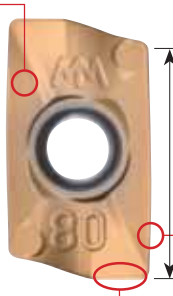




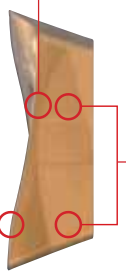
Features of insert

High rake angle chip breaker
- Applied high rake angle
- Improved chip control

Applied minor cutting edge with a wiper function
- Minor cutting edge design optimized for excellent surface finish



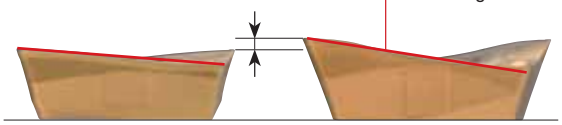
Max. ap
ADKT17: 0.650 inch
ADKT12: 0.453 inch
ADKT10: 0.374 inch



Proprietary relief surface shape
- High rigidity of insert

Flat clamping area
- Stable clamping in high speed and high feed machining

High rake cutting edge
- Better surface toughness
- Lower cutting load



Existing Alpha Mill
(APMT1604PDSR-MM)

Alpha Mill-X
(ADKT170608PESR-MM)

- Applying cutting edge with high rake angle: decreased cutting load
- Thicker insert: high rigidity of insert

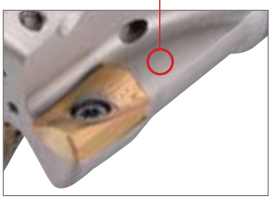
▶ Optimal for high speed and high feed machining

Cutter features



High rake angle cutting edge
- Improved surface finish
- Decreased cutting load

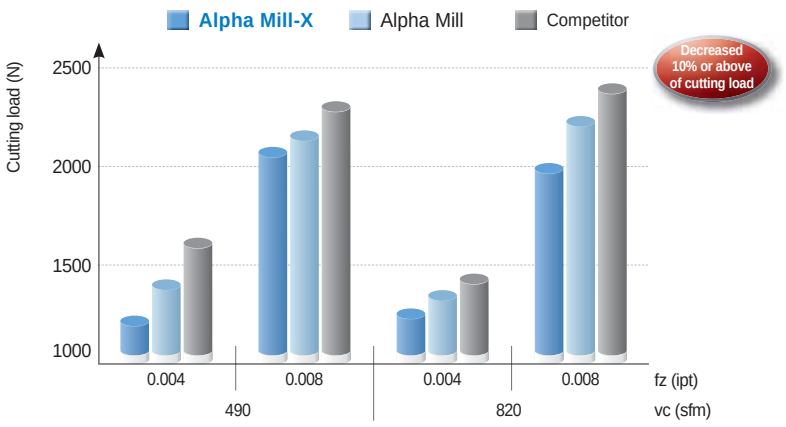




Wider chip pocket
- Maximized chip control
- Outstanding chip control in high speed and high feed machining

Perfect perpendicularity

Cutting load



Recommended cutting conditions

• In face machining and shouldering

Workpiece		Grade	Cutting speed vc (sfm)	Feed, fz (ipt)		
				ADKT17	ADKT12	ADKT10
P	Steel	PC5300	492 - 787	0.012 - 0.002	0.010 - 0.002	0.008 - 0.002
		PC5400	426 - 688			
		PC3700	426 - 688			
		NCM535	820 - 1148			
M	Stainless steel	PC5300	295 - 492	0.01 - 0.002	0.008 - 0.002	0.006 - 0.002
		PC5400	229 - 393			
		PC9540	164 - 492			
K	Cast iron	PC6510	393 - 820	0.014 - 0.003	0.012 - 0.003	0.010 - 0.003
		PC5300	393 - 656			
		NCM535	656 - 984			
S	HRSA	PC5300	131 - 229	0.008 - 0.002	0.006 - 0.002	0.004 - 0.002
		PC5400	98 - 164			

※ The above data refer to general cutting conditions and can be adjustable up to 1150 sfm and 0.016 ipt depending on user environment.

• In grooving, ramping and helical machining

Workpiece		Grade	Cutting speed vc (sfm)	Feed, fz (ipt)		
				ADKT17	ADKT12	ADKT10
P	Steel	PC5300	492 - 787	0.012 - 0.002	0.012 - 0.002	0.012 - 0.002
		PC5400	426 - 688			
		PC3700	426 - 688			
		NCM535	820 - 1148			
M	Stainless steel	PC5300	295 - 492	0.006 - 0.002	0.006 - 0.002	0.006 - 0.002
		PC5400	229 - 393			
		PC9540	164 - 492			
K	Cast iron	PC6510	393 - 820	0.008 - 0.003	0.008 - 0.003	0.008 - 0.003
		PC5300	393 - 656			
		NCM535	656 - 984			
S	HRSA	PC5300	131 - 229	0.006 - 0.002	0.006 - 0.002	0.004 - 0.002
		PC5400	98 - 164			

※ In deep grooving, set the ap under 0.197 inch and use coolant and air.

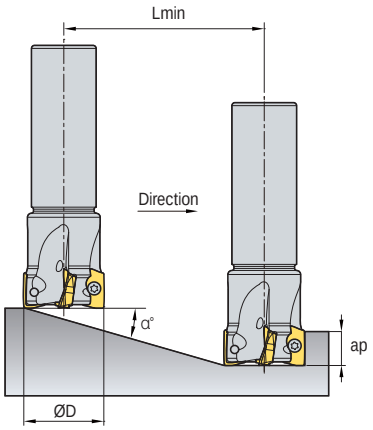
Recommended grades and chip breakers

(●: 1st Recommendation)

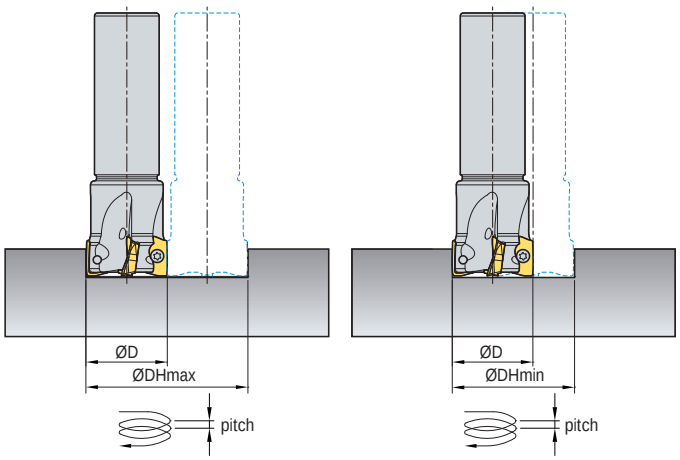
C/B	Cutting edge	P				M		K		N		S	
		Low carbon steel/ Mild steel		High carbon steel/ Alloy steel		Stainless steel		Cast iron		Non-ferrous metal		HRSA	
		C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
ML		-	●PC3700 ○PC5300 ○PC5400 ○NCM535	-	●PC3700 ○PC5300 ○PC5400 ○NCM535	●	●PC5300 ○PC5400 ○PC9540	-	●PC6510 ○PC5300 ○PC5400 ○NCM535	-	-	●	●PC5300 ○PC5400
MM		●	●PC3700 ○PC5300 ○PC5400 ○NCM535	●	●PC3700 ○PC5300 ○PC5400 ○NCM535	-	●PC5300 ○PC5400 ○PC9540	●	●PC6510 ○PC5300 ○PC5400 ○NCM535	-	-	-	●PC5300 ○PC5400

Cutting condition for ramping and helical operation

Ramping



H elical cutting



(inch)

Designation	Tool dia. ØD (min)	ap	Ramping		Blind hole helical cutting				Through hole helical cutting	
			Max. rake angle α°	Lmin	Min. desirable hole dia. ØDHmin	Max. pitch dmax	Max. desirable hole dia. ØDHmax	Max. pitch dmax	Min. desirable hole dia. ØDHmin	Max. pitch dmax
ADKT17	1.00	0.650	8.0	4.62	1.62	0.06	1.94	0.27	1.24	0.17
	1.25		3.7	10.05	2.12	0.08	2.44	0.16	1.74	0.11
	1.50		2.6	14.31	2.62	0.10	2.94	0.13	2.24	0.10
	2.00		1.9	19.58	3.62	0.14	3.94	0.13	3.24	0.11
	2.50		1.3	28.63	4.62	0.18	4.94	0.11	4.24	0.10
	3.00		1.1	33.83	5.62	0.22	5.94	0.11	5.24	0.10
	3.50		0.7	53.17	6.62	0.26	6.94	0.08	6.24	0.08
	4.00		0.5	74.44	7.62	0.30	7.94	0.07	7.24	0.06
ADKT12	0.75	0.472	7.0	3.85	1.24	0.05	1.44	0.18	0.98	0.12
	1.00		3.5	7.72	1.74	0.07	1.94	0.12	1.48	0.09
	1.25		2.5	10.82	2.24	0.09	2.44	0.11	1.98	0.09
	1.50		1.5	18.04	2.74	0.11	2.94	0.08	2.48	0.06
	2.00		1.2	22.55	3.74	0.15	3.94	0.08	3.48	0.07
	2.50		1.0	27.07	4.74	0.19	4.94	0.09	4.48	0.08
	3.00		0.7	38.67	5.74	0.23	5.94	0.07	5.48	0.07
ADKT10	0.63	0.374	4.5	4.75	1.09	0.04	1.22	0.10	0.94	0.07
	0.75		3.5	6.12	1.34	0.05	1.47	0.09	1.19	0.07
	1.00		2.2	9.74	1.84	0.07	1.97	0.08	1.69	0.06
	1.25		1.5	14.28	2.34	0.09	2.47	0.06	2.19	0.06
	1.50		1.2	17.86	2.84	0.11	2.97	0.06	2.69	0.06
	2.00		0.8	26.79	3.84	0.15	3.97	0.06	3.69	0.05
	2.50		0.6	35.71	4.84	0.19	4.97	0.05	4.69	0.05
	3.00		0.5	42.86	5.84	0.23	5.97	0.05	5.69	0.05

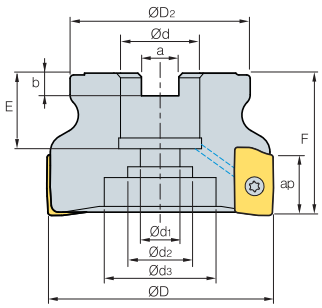
※ In ramping and helical machining, use coolant and air.

※ Lmin : Cutting length in machining with Min. rake angle
α° : Rake angle for ramping
ap : Depth of cut in axial direction

$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (inch)}$$

AMXCA-AD10/12 new












AA
0°

- AR: 8°
- RR: -10°~-3°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
AMXCA	150R-050-5-AD10	5	1.500	1.378	0.500	0.287	0.430	-	0.252	0.170	0.630	1.500	0.370	0.397
	150R-050-6-AD10	6	1.500	1.378	0.500	0.287	0.430	-	0.252	0.170	0.630	1.500	0.370	0.397
	200R-075-6-AD10	6	2.000	1.772	0.750	0.413	0.630	-	0.315	0.220	0.787	1.750	0.370	0.507
	200R-075-7-AD10	7	2.000	1.772	0.750	0.413	0.630	-	0.315	0.220	0.787	1.750	0.370	0.441
	250R-100-7-AD10	7	2.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.370	0.970
	250R-100-8-AD10	8	2.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.370	1.080
	300R-100-8-AD10	8	3.000	2.205	1.000	0.551	0.867	1.299	0.374	0.248	0.787	2.000	0.370	1.940
	300R-100-9-AD10	9	3.000	2.205	1.000	0.551	0.867	1.299	0.374	0.248	0.787	2.000	0.370	1.984
AMXCA	150R-050-4-AD12	4	1.500	1.378	0.500	0.287	0.430	-	0.252	0.170	0.630	1.500	0.450	0.397
	150R-050-5-AD12	5	1.500	1.378	0.500	0.287	0.430	-	0.252	0.170	0.630	1.500	0.450	0.353
	200R-075-5-AD12	5	2.000	1.772	0.750	0.413	0.630	-	0.315	0.220	0.787	1.750	0.450	0.507
	200R-075-6-AD12	6	2.000	1.772	0.750	0.413	0.630	-	0.315	0.220	0.787	1.750	0.450	0.441
	250R-100-6-AD12	6	2.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.450	0.970
	250R-100-7-AD12	7	2.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.450	1.080
	300R-100-7-AD12	7	3.000	2.205	1.000	0.551	0.867	1.299	0.374	0.248	0.787	2.000	0.450	1.940
	300R-100-8-AD12	8	3.000	2.205	1.000	0.551	0.867	1.299	0.374	0.248	0.787	2.000	0.450	1.984

Available inserts

ADKT-ML



ADKT-MM



Type	Designation		Cermet		Coated												Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
10 type	ADKT	10T304PEER-ML						●				●	●		●	●	●			E04
		10T304PESR-MM						●				●	●		●	●	●			
		10T308PESR-MM														●	●			
		10T312PESR-MM															●			
12 type	ADKT	120408PESR-ML						●				●	●		●	●	●			
		120408PESR-MM						●				●	●		●	●	●			
		120412PESR-MM										●	●			●	●			
		120416PESR-MM										●	●			●	●			

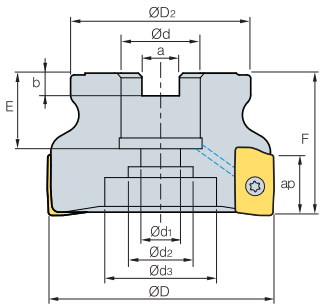
Parts

Specification	Screw	Wrench
Ø1.500~Ø3.000 (10 type)	FTKA02555S	TW08S
Ø1.500~Ø3.000 (12 type)	FTNA0306	TW09S

Available inserts E04

AMXCA-AD17 new












AA 0°

- AR: 8°
- RR: -10°~-3°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
AMXCA	150R-050-3-AD17	3	1.500	1.378	0.500	0.287	0.430	-	0.252	0.170	0.630	1.500	0.649	0.419
	150R-050-4-AD17	4	1.500	1.378	0.500	0.287	0.430	-	0.252	0.170	0.630	1.500	0.649	0.375
	200R-075-4-AD17	4	2.000	1.772	0.750	0.413	0.630	-	0.315	0.220	0.787	1.750	0.649	0.507
	200R-075-5-AD17	5	2.000	1.772	0.750	0.413	0.630	-	0.315	0.220	0.787	1.750	0.649	0.441
	250R-100-5-AD17	5	2.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.649	0.970
	250R-100-6-AD17	6	2.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.649	1.080
	300R-100-6-AD17	6	3.000	2.205	1.000	0.551	0.867	1.299	0.374	0.248	0.787	2.000	0.649	1.940
	300R-100-7-AD17	7	3.000	2.205	1.000	0.551	0.867	1.299	0.374	0.248	0.787	2.000	0.649	1.984
	400R-125-8-AD17	8	4.000	3.937	1.250	0.689	1.024	1.614	0.500	0.319	0.787	2.000	0.649	3.879
	400R-125-10-AD17	10	4.000	3.937	1.250	0.689	1.024	1.614	0.500	0.319	0.787	2.000	0.649	3.703
	500R-150-8-AD17	8	5.000	4.921	1.500	0.827	1.220	1.969	0.626	0.394	1.063	2.500	0.649	6.370
	500R-150-10-AD17	10	5.000	4.921	1.500	0.827	1.220	1.969	0.626	0.394	1.063	2.500	0.649	6.237

Available inserts

ADKT-ML



ADKT-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
ADKT	170608PESR-ML						●				●	●		●	●	●			E04
	170604PESR-MM										●				●				
	170608PESR-MM						●				●	●		●	●	●			
	170616PESR-MM														●	●			
	170620PESR-MM														●	●			

Parts

Specification	Screw	Wrench
Ø1.500~Ø5.000	FTKA0408	TW15S

Available inserts E04

AMXSA-AD10/12 new



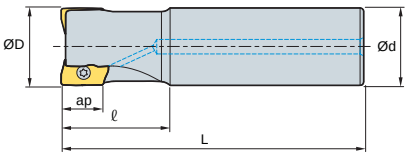


Fig. 1

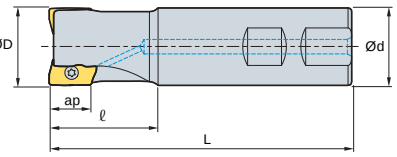


Fig. 2








AA 0°

- AR: 8°
- RR: -10°~-3°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
AMXSA	062R-2W062-400-AD10	2	0.625	0.625	0.984	4.00	0.37	0.220	2
	062R-2C062-800-AD10	2	0.625	0.625	0.984	8.00	0.37	0.397	1
	075R-3W075-400-AD10	3	0.750	0.750	1.378	4.00	0.37	0.485	2
	075R-3C075-800-AD10	3	0.750	0.750	1.378	8.00	0.37	0.992	1
	100R-4W100-500-AD10	4	1.000	1.000	1.575	5.00	0.37	0.793	2
	100R-4C100-800-AD10	4	1.000	1.000	1.575	8.00	0.37	1.124	1
	125R-4W125-500-AD10	4	1.250	1.250	1.771	5.00	0.37	1.366	2
	125R-4C125-800-AD10	4	1.250	1.250	1.771	8.00	0.37	2.028	1
	150R-5W125-500-AD10	5	1.500	1.250	1.968	5.00	0.37	2.072	2
	150R-5C125-800-AD10	5	1.500	1.250	1.968	8.00	0.37	2.314	1
AMXSA	075R-2W075-400-AD12	2	0.750	0.750	1.378	4.00	0.45	0.551	
	075R-2C075-800-AD12	2	0.750	0.750	1.378	8.00	0.45	1.080	1
	100R-3W100-500-AD12	3	1.000	1.000	1.575	5.00	0.45	0.882	2
	100R-3C100-800-AD12	3	1.000	1.000	1.575	8.00	0.45	1.300	1
	125R-4W125-500-AD12	4	1.250	1.250	1.771	5.00	0.45	1.543	2
	125R-4C125-800-AD12	4	1.250	1.250	1.771	8.00	0.45	2.204	1
	150R-4W125-500-AD12	4	1.500	1.250	1.968	5.00	0.45	2.314	2
	150R-4C125-800-AD12	4	1.500	1.250	1.968	8.00	0.45	2.645	1

Available inserts

ADKT-ML



ADKT-MM



Type	Designation		Cermet		Coated												Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
10 type	ADKT	10T304PEER-ML						●				●	●		●	●	●			E04
		10T304PESR-MM						●				●	●		●	●	●			
		10T308PESR-MM														●	●			
		10T312PESR-MM															●			
12 type	ADKT	120408PESR-ML						●				●	●		●	●	●			
		120408PESR-MM						●				●	●		●	●	●			
		120412PESR-MM										●	●			●	●			
		120416PESR-MM										●	●			●	●			

Parts

Specification	Screw	Wrench
Ø0.625~Ø1.500 (10 type)	FTKA02555S	TW08S
Ø0.750~Ø1.500 (12 type)	FTNA0306	TW09S

Available inserts E04

AMXSA-AD17 new



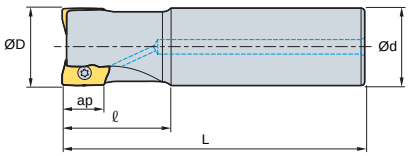


Fig. 1

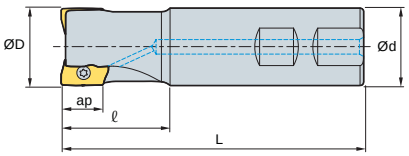


Fig. 2

AA
0°

- AR: 8°
- RR: -10°~-3°

(inch)

	Designation		ØD	Ød	ℓ	L	ap	lbs	Fig.
AMXSA	100R-2W100-500-AD17	2	1.000	1.000	1.575	5.00	0.649	0.793	2
	100R-2C100-800-AD17	2	1.000	1.000	1.575	8.00	0.649	1.499	1
	125R-3W125-500-AD17	3	1.250	1.250	1.771	5.00	0.649	1.366	2
	125R-3C125-800-AD17	3	1.250	1.250	1.771	8.00	0.649	2.314	1
	150R-3W125-500-AD17	3	1.500	1.250	1.968	5.00	0.649	1.653	2
	150R-3C125-800-AD17	3	1.500	1.250	1.968	8.00	0.649	2.579	1
	150R-4W125-500-AD17	4	1.500	1.250	1.968	5.00	0.649	1.631	2
	150R-4C125-800-AD17	4	1.500	1.250	1.968	8.00	0.649	2.645	1

Available inserts

ADKT-ML



ADKT-MM



	Designation	Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	
ADKT	170608PESR-ML						●				●	●		●	●	●			E04
	170604PESR-MM										●				●				
	170608PESR-MM						●				●	●		●	●	●			
	170616PESR-MM														●	●			
	170620PESR-MM														●	●			

Parts

Specification	Screw	Wrench
Ø1.000~Ø1.500	FTKA0408	TW15S

Available inserts E04

Rigid body employs high tensile aluminum

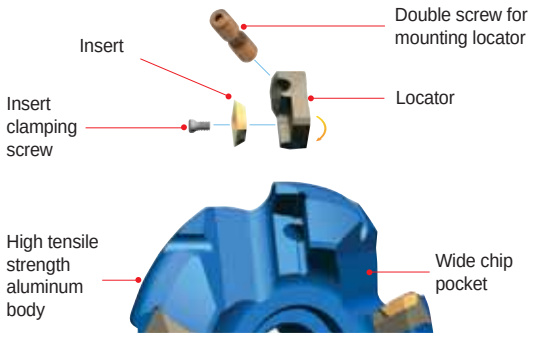
Future Mill

- Light-weight aluminum body (50% of steel body) can be used for high speed cutting, tapping center, and on low power machines
- Easy handling
- It can be used for aluminum alloys, medium cutting of steel, and cast iron
- Rigid body employs high tensile aluminum
- Locators for excellent durability
- A variety of chip breaker are available
- The high rake angle provides low cutting loads and good surface roughness

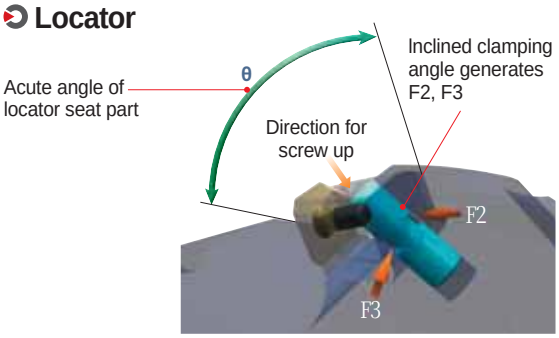
Features of cutter

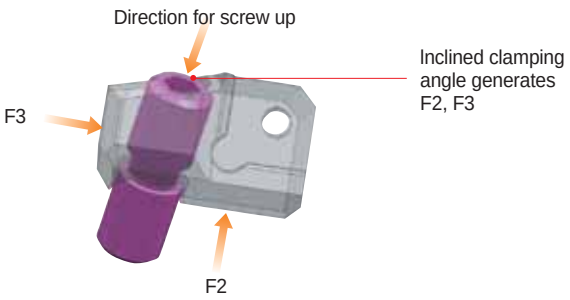
- Strong clamping between aluminum body and locator with double screw provides high efficiency
- Acute angle of locator seat provides strong clamping
- Wide chip pocket area provides good chip evacuation
- High tensile strength aluminum body

Assembly structure of cutter



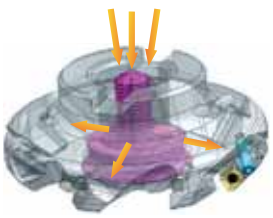
Locator



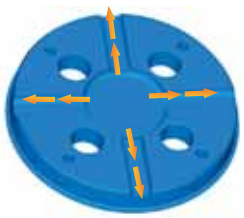


Through coolant system

- Exclusively designed coolant bolt and cover provide excellent coolant action and chip evacuation for improved tool life
- Exact coolant direction to cutting area
- Exclusive coolant bolt and cover are sold separately. Through coolant arbor is required

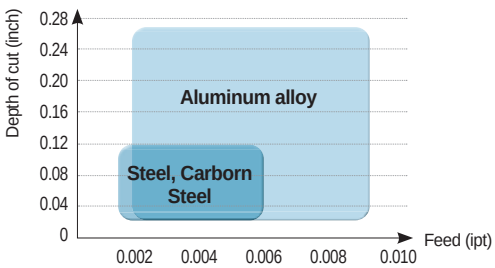


Bolt: Ø2.5~Ø6.0

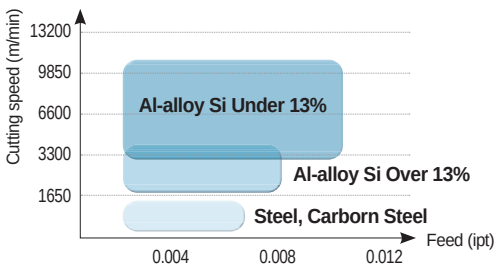


Cover: Over Ø8.0

Application range



Cutting speed



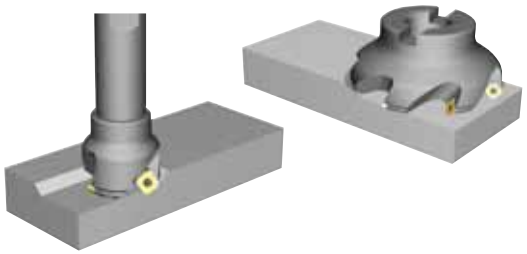
Max. available revolution

Cutter diameter	Max. revolution (rpm)
Ø2.5	20,000
Ø3.0	16,000
Ø4.0	13,000
Ø5.0	10,000
Ø6.0	8,000
Ø8.0	6,500
Ø10.0	5,000
Ø12.0	4,000

Future Mill (FMA)

Features

- General milling cutter for high productivity
- Adjustable pitch of cutter and various chip breaker offer wide application range.
- Light cutter body allows high speed cutting and can be used in low horse power machine
- Smooth cutting with low cutting load is accomplished with high-rake angle



Features of chip breaker

Insert		Cutting-edge	Uses	Features
None C/B			Light cutting	Superior surface roughness at finishing due to ground type cermet insert
MF			Light cutting	Superior cutting quality for light and difficult-to-cut material machining through the low cutting load of chip breaker
MM			General cutting	Suitable for various cutting due to special shape design for general cutting
MR			Roughing	Tough cutting-edge provides stable cutting performance in severe interruption
MA			For aluminum	Superior cutting quality for aluminum due to sharp cutting-edge and buffed surface - S□ET-MA: Sharp cutting-edge due to high accurate grinding - S□XT-MA: Suitable cutting-edge for roughing

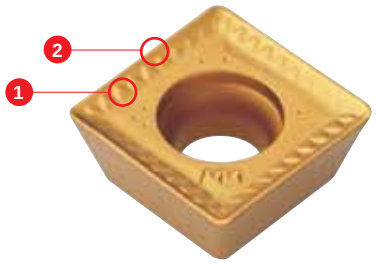
Recommended cutting condition

ISO	Grade	vc (sfm)	MF	MM	MR	MA
			fz (ipt)	fz (ipt)	fz (ipt)	fz (ipt)
P	NC5330	690~1150	0.008~0.002	0.012~0.004	0.012~0.004	-
	NCM325	620~1020	0.008~0.002	0.012~0.004	0.012~0.004	-
	PC3700	525~885	0.008~0.002	0.012~0.004	0.012~0.004	-
M	PC9530	295~490	0.006~0.002	0.012~0.004	-	-
	NCM335	230~390	0.006~0.002	0.012~0.004	-	-
K	PC5300	360~590	0.008~0.002	0.012~0.004	-	-
N	H01	850~1440	-	-	-	0.014~0.004

Future Mill (FMP)

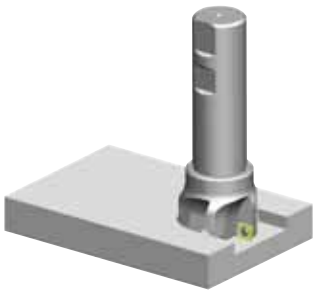
Features

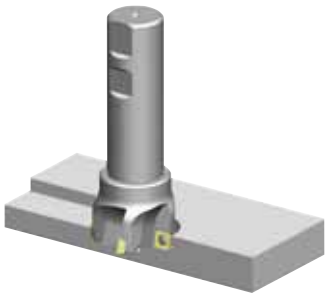
- The strong cutting-edge ensures excellent tool life in high feed and high speed, deep depth of cut, with low cutting loads
- Optimal grades for most workpieces make high efficiency cutting possible
- Unique chip breaker makes good chip evacuation and lower cutting loads (1)
- Innovative curve cutting-edge lowers cutting load and provides a stronger cutting-edge (2)



Machining examples







Features of chip breaker

- Innovative special cutting-edge and chip breaker design ensures ideal 90˚cutting and low cutting load
- Various applications are available with multi functional cutters (Facing, Slotting, Shouldering)
- Improved tool life due to special coated grades
- Superior cutting quality at deep cutting depth through the low cutting load and strong cutting-edge

Recommended C/B and grade as per workpiece

Insert		Cutting-edge	Uses	Recommended C/B and grade as per workpiece (●: 1st)									
				Low carbon steel/Mild steel		High carbon steel/Mild steel		Stainless steel		Cast iron		Aluminum alloy	
				C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grades	C/B	Grade
MF			Low cutting load type	●	○NCM325 ○NC5330 ●NCM335		●NCM325 ○NC5330 ○NCM335	●	○NCM325 ○NC5330 ●NCM335	●	●PC6510 ○PC215K	-	-
MM			Reinforced cutting edge type		○NCM325 ○NC5330 ●NCM335		●NCM325 ○NC5330 ○NCM335		○NCM325 ○NC5330 ●NCM335		●PC6510 ○PC215K	-	-
MA			Sharp cutting edge type	-	-	-	-	-	-	-	-	●	○H01 ○G10

Recommended cutting condition

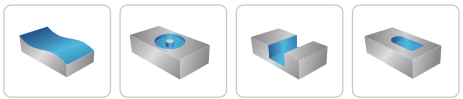
ISO	Cutting Speed vc (sfm)							
	CVD Coated		PVD Coated					Carbide
	NCM325	NCM335	PC3700	PC6510	PC5300	PC9530	PC5400	H01
P	620~1020	590~950	525-886	-	492-787	-	427-689	-
M	360~590	330~530	-	-	295-492	295-492	230-394	-
K	-	-	-	459-755	394-656	-	328-525	-
N	-	-	-	-	-	-	-	853-1444

Future Mill (FMR)

Features

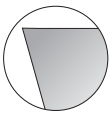
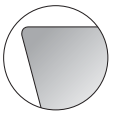
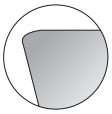
- Wide coverage for medium to roughing, general steel to high hardness mold materials
- 2 step shape of insert provides strong clamping and can minimize components to replace the shim
- 4-8 cutting-edge available per insert (Inscribed circle 05, 06, 07, 08, 10, 12, 16, 20)
- Uneven flute spacing prevents vibration on high speed applications and provides more stable machining
- Precise design of the insert seat prevents insert from chattering
- Special design of the insert bottom prevents movement and chatter of insert
- Easy to change cutting-edge due to the rotation prevention design of the insert

Uses



Copying | Helical | Slotting & Side cutting | Ramping

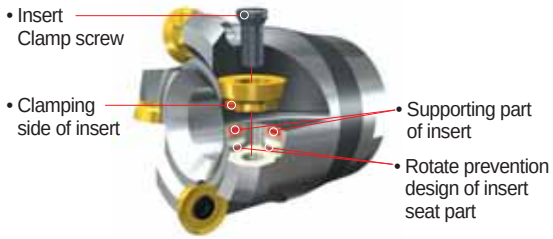
FMR Insert cutting-edge shape

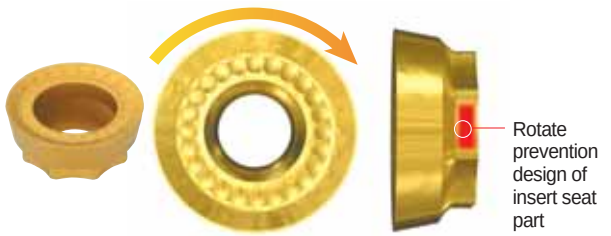
Designation	RDHW□□□□M0F	RDHW□□□□M0E	RDHW□□□□M0S
Cutting edge shape (G calss)			

Features of chip breaker

Insert		Cutting-edge	Uses	Features
MF			Light cutting	Low cutting resistance chip breaker design guarantees long tool life good performance at finishing and difficult-to-cut material machining
MM			General	Suitable for general milling at wide application range
MA			Aluminum	Sharp cutting-edge and buffed top face for aluminum machining prevent welding and control chip flow

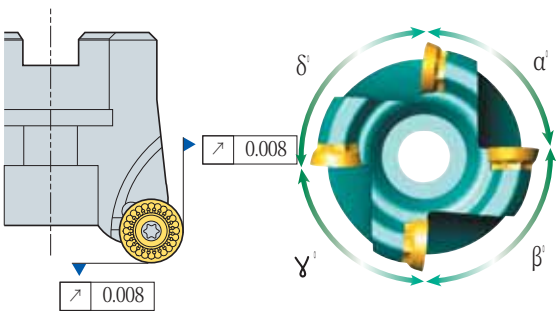
Clamping system





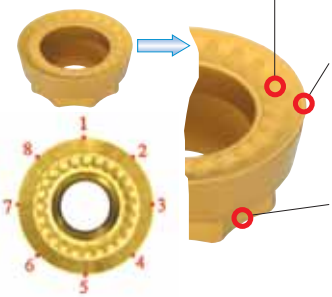
FMR鞿3000 type FMR鞿4000 type	FMR鞿5000 type FMR鞿6000 type

RDKT10T3M0-鞿鞿 RDKT1204M0-鞿鞿	RDKT1605M0-MM RDKT2006M0-MM



Good surface finish due to the precise design of insert seat part of cutter

Uneven flute spacing prevents vibration at high speed application and provides stable machining



4-8 cutting-edge available per insert

Special chip breaker for low cutting load
Minimized heat generation due to smooth chip flow

Smooth cutting-edge preparation
Inclined land angle
Low cutting load and better surface roughness

Facial contact through curved face
Prevent rotation at high speed cutting
Stable and tight clamping of insert
Good positioning of insert repeatedly

Future Mill (FMR)

Chip removal rate (inch³/min)

Workpiece		Grades	Ø0.31	Ø0.37	Ø0.50	Ø0.62	Ø0.63	Ø0.75	Ø0.87	Ø1.00	Ø1.10	Ø1.25	Ø1.30	Ø1.50	Ø2.00	Ø2.48	Ø2.50	Ø4.00	Ø5.00	Ø6.00
P	General structure steel (under 200HB)	PC3700 PC5300	4.97	9.94	9.94	14.92	31.83	31.83	47.74	47.74	47.74	71.61	38.19	95.49	119.36	143.23	167.11	190.98	133.69	509.29
			vc=820, fz=0.010, ap=0.020, ae=0.5D				vc (sfm)=984, fz (ipt)=0.016 ap (inch)=0.040, ae=0.5D		vc(sfm)=820, fz(ipt)=0.016, ap(inch)=0.060, ae=0.5D											vc (sfm)=656, fz (ipt)=0.020 ap (inch)=0.157, ae=0.5D
	General carbon steel (under 30 HRC)		3.97	7.95	7.95	11.93	25.46	25.46	38.19	38.19	38.19	57.29	38.19	76.39	95.49	114.59	133.69	152.78	133.69	458.36
			vc=656, fz=0.010, ap=0.020, ae=0.5D				vc (sfm)=820, fz (ipt)=0.016 ap (inch)=0.040, ae=0.5D		vc (sfm)=656, fz (ipt)=0.016, ap (inch)=0.060, ae=0.5D											vc (sfm)=590, fz (ipt)=0.020 ap (inch)=0.157, ae=0.5D
	High carbon steel, Alloy steel (30~40 HRC)		2.86	5.72	5.72	8.59	22.91	22.91	34.37	34.37	34.37	51.56	34.37	68.75	85.94	103.13	120.32	137.5	120.32	407.43
			vc=590, fz=0.008, ap=0.020, ae=0.5D				vc (sfm)=656, fz (ipt)=0.016 ap (inch)=0.040, ae=0.5D		vc (sfm)=590, fz (ipt)=0.016, ap (inch)=0.060, ae=0.5D											vc (sfm)=525, fz (ipt)=0.020 ap (inch)=0.157, ae=0.5D
	High carbon steel, Alloy steel (40~50 HRC)		1.24	2.48	2.48	3.72	11.45	11.45	14.32	17.18	14.32	21.48	14.32	28.64	35.8	42.97	50.13	57.29	50.13	249.55
			Vc=426, fz=0.006, ap=0.016, ae=0.5D				vc (sfm)=558, fz (ipt)=0.012 ap (inch)=0.035, ae=0.5D		vc (sfm)=492, fz (ipt)=0.012, ap (inch)=0.040, ae=0.5D											vc (sfm)=459, fz (ipt)=0.016 ap (inch)=0.138, ae=0.5D
	Alloy steel (over 50 HRC)		0.95	1.9	1.9	2.86	7.63	7.63	9.54	11.45	9.54	14.32	9.54	19.09	23.87	28.64	33.42	38.19	33.42	152.78
			vc=328, fz=0.006, ap=0.016, ae=0.5D				vc (sfm)=426, fz (ipt)=0.012 ap (inch)=0.035, ae=0.5D		vc (sfm)=328, fz (ipt)=0.012, ap (inch)=0.040, ae=0.5D											vc (sfm)=328, fz (ipt)=0.016 ap (inch)=0.012, ae=0.5D
M	Stainless steel	PC5300	2.06	4.13	4.13	6.2	16.55	16.55	12.41	24.82	12.41	18.62	12.41	24.82	31.03	37.24	43.44	49.65	43.44	331.04
			vc=426, fz=0.010, ap=0.020, ae=0.5D				vc (sfm)=656, fz (ipt)=0.008 ap (inch)=0.040, ae=0.5D		vc (sfm)=426, fz (ipt)=0.008, ap (inch)=0.060, ae=0.5D											vc (sfm)=426, fz (ipt)=0.020 ap (inch)=0.016, ae=0.5D
K	Cast iron	PC5300	2.86	5.72	5.72	8.59	14.32	14.32	21.48	21.48	21.48	32.22	21.48	42.97	53.71	64.45	75.2	85.94	75.2	366.69
			vc=590, fz=0.010, ap=0.020, ae=0.5D				vc (sfm)=590, fz (ipt)=0.008 ap (inch)=0.040, ae=0.5D		vc (sfm)=590, fz (ipt)=0.008, ap (inch)=0.060, ae=0.5D											vc (sfm)=590, fz (ipt)=0.016 ap (inch)=0.016, ae=0.5D

Required machine power (P_{KW} = 0.75 x P_{HP})

• RDKT10□□

(inch)

Workpiece		Grades	7/8	1	1	1 1/4	1 5/8	2	2 1/2	3 1/4	4	Cutting condition			
												vc	fz	ap	ae
P	General structure steel (under 200HB)	PC3700 PC5300	2.2	2.2	2.2	3.3	4.4	5.5	6.6	7.7	8.8	830	0.016	0.06	0.5D
	General carbon steel (under 30 HRC)		2.1	2.1	2.1	3.1	4.1	5.2	6.2	7.3	8.3	660	0.016	0.06	0.5D
	High carbon steel, Alloy steel (30~40 HRC)		2.2	2.2	2.2	3.3	4.5	5.6	6.7	7.9	9	600	0.016	0.06	0.5D
	High carbon steel, Alloy steel (40~50 HRC)		1.1	1.1	1.1	1.6	2.1	2.6	3.2	3.7	4.2	500	0.012	0.04	0.5D
	Alloy steel (over 50 HRC)		0.7	0.7	0.7	1.1	1.4	1.7	2.1	2.4	2.8	330	0.012	0.04	0.5D
M	Stainless steel	PC5300	0.6	0.6	0.6	0.8	1.2	1.5	1.7	2	2.3	430	0.008	0.06	0.5D
K	Cast iron	PC5300	0.6	0.6	0.6	0.9	1.2	1.5	1.8	2.1	2.4	600	0.008	0.06	0.5D

• The figures in the above chart means Php value.

• RDKT12□□

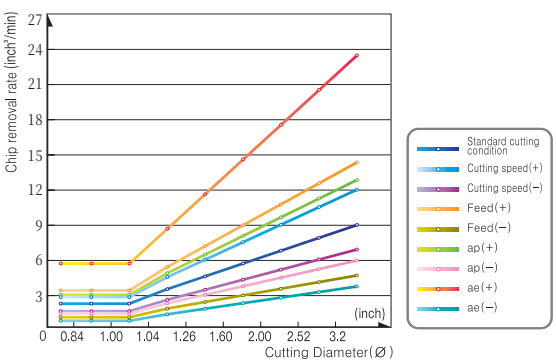
(inch)

Workpiece		Grades	1 1/4	15/16	1 5/8	2	2 1/2	3 1/4	4	5	Cutting condition			
											vc	fz	ap	ae
P	General structure steel (under 200HB)	PC3700 PC5300	1.7	1.7	2.6	3.5	3.5	4.4	5.3	6.1	660	0.016	0.06	0.5D
	General carbon steel (under 30 HRC)		2	2	3.1	4.1	2.6	5.2	6.2	7.2	600	0.016	0.06	0.5D
	High carbon steel, Alloy steel (30~40 HRC)		2.2	2.2	3.3	4.4	2.8	5.6	6.7	7.8	530	0.016	0.06	0.5D
	High carbon steel, Alloy steel (40~50 HRC)		1	1	1.5	1.6	2.1	2.6	3.1	3.6	460	0.012	0.04	0.5D
	Alloy steel (over 50 HRC)		0.7	0.7	1	1.4	0.8	1.7	2.1	2.4	330	0.012	0.04	0.5D
M	Stainless steel	PC5300	0.5	0.5	0.8	1.1	0.7	1.4	1.7	2	430	0.008	0.06	0.5D
K	Cast iron	PC5300	0.6	0.6	0.9	1.2	0.7	1.5	1.8	2.1	600	0.008	0.06	0.5D

• The figures in the above chart means Php value.

Chip removal rate by cutting condition

• Used insert: RDKT10□□



• Variation of cutting condition

Standard	ISO
	vc = 656 fz = 0.016 ap = 0.06 ae = 0.5D
Speed (+)	830
Speed (-)	500
Feed (+)	0.024
Feed (-)	0.008
ap (+)	0.080
ap (-)	0.040
ae (+)	D
ae (-)	0.008D

Recommended cutting condition

• Side milling, slotting, ramping, copying

Workpiece		Hardness	Grades	Cutting speed (sfm)	FMR1000		FMR1500		FMR2000		FMR2500		FMR3000		FMR4000		FMR5000		FMR6000	
					ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)
P	Cabon steel	200HB ≤	PC5300	919	0.039	0.016	0.047	0.016	0.059	0.016	0.067	0.016	0.079	0.02	0.094	0.024	0.118	0.028	0.157	0.031
			PC5400	804																
		30HRC ≤	PC5300	820	0.028	0.016	0.047	0.016	0.059	0.016	0.067	0.016	0.079	0.02	0.094	0.024	0.118	0.028	0.157	0.031
			PC5400	689																
	Alloy steel	30~40HRC	PC5300	640	0.028	0.008	0.035	0.008	0.047	0.008	0.059	0.008	0.067	0.012	0.079	0.016	0.106	0.02	0.146	0.024
			PC5400	558																
	High alloy steel (alloy constituent > 5%)	40~50HRC	PC5300	492	0.028	0.008	0.035	0.008	0.047	0.008	0.059	0.008	0.067	0.012	0.079	0.016	0.106	0.02	0.146	0.024
			PC5400	427																
		Tensile strength 350MPa ≤	PC5300	394	0.028	0.008	0.035	0.008	0.047	0.008	0.059	0.008	0.067	0.012	0.079	0.016	0.106	0.02	0.146	0.024
			PC5400	344																
M	Stainless steel	270HB≤	PC5300	427	0.028	0.008	0.035	0.008	0.047	0.008	0.059	0.008	0.067	0.012	0.079	0.016	0.106	0.02	0.146	0.024
			PC5400	361																
K	Cast iron, Ductile cast iron	Low tensile	PC5300	476	0.028	0.016	0.047	0.016	0.059	0.016	0.067	0.016	0.079	0.02	0.094	0.024	0.118	0.028	0.157	0.031
			PC5400	361																

• Plunging

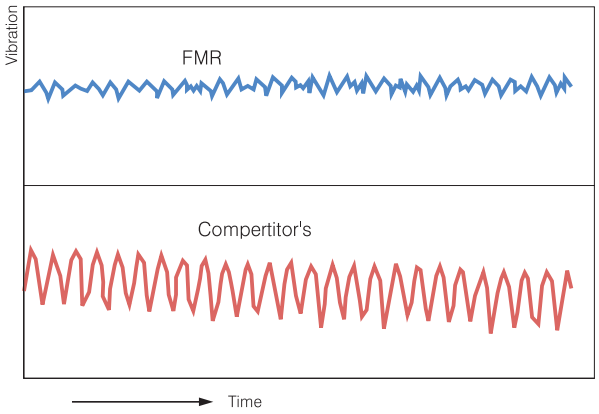
Workpiece		Hardness	Grades	Cutting speed (sfm)	FMR1000		FMR1500		FMR2000		FMR2500		FMR3000		FMR4000		FMR5000		FMR6000	
					ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)
P	Cabon steel	200HB ≤	PC5300	919	0.098	0.008	0.118	0.008	0.138	0.008	0.157	0.008	0.197	0.012	0.236	0.016	0.315	0.02	0.394	0.024
			PC5400	804																
		30HRC ≤	PC5300	820	0.098	0.008	0.118	0.008	0.138	0.008	0.157	0.008	0.197	0.012	0.236	0.016	0.315	0.02	0.394	0.024
			PC5400	689																
	Alloy steel	30~40HRC	PC5300	640	0.098	0.004	0.118	0.004	0.138	0.004	0.157	0.004	0.197	0.008	0.236	0.012	0.315	0.016	0.394	0.02
			PC5400	558																
	High alloy steel (alloy constituent > 5%)	40~50HRC	PC5300	492	0.098	0.004	0.118	0.004	0.138	0.004	0.157	0.004	0.197	0.008	0.236	0.012	0.315	0.016	0.394	0.02
			PC5400	427																
		Tensile strength 350MPa ≤	PC5300	394	0.098	0.004	0.118	0.004	0.138	0.004	0.157	0.004	0.197	0.008	0.236	0.012	0.315	0.016	0.394	0.02
			PC5400	344																
M	Stainless steel	270HB≤	PC5300	427	0.098	0.004	0.118	0.004	0.138	0.004	0.157	0.004	0.197	0.008	0.236	0.012	0.315	0.016	0.394	0.02
			PC5400	361																
K	Cast iron, Ductile cast iron	Low tensile	PC5300	476	0.098	0.008	0.118	0.008	0.138	0.008	0.157	0.008	0.197	0.012	0.236	0.016	0.315	0.02	0.394	0.024
			PC5400	361																

• Helical cutting

Workpiece		Hardness	Grades	Cutting speed (sfm)	FMR1000		FMR1500		FMR2000		FMR2500		FMR3000		FMR4000		FMR5000		FMR6000	
					ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)
P	Cabon steel	200HB ≤	PC5300	919	0.039	0.008	0.039	0.008	0.039	0.008	0.039	0.008	0.079	0.012	0.079	0.016	0.157	0.02	0.157	0.024
			PC5400	804																
		30HRC ≤	PC5300	820	0.028	0.008	0.028	0.008	0.028	0.008	0.028	0.008	0.079	0.012	0.079	0.016	0.146	0.02	0.146	0.024
			PC5400	689																
	Alloy steel	30~40HRC	PC5300	640	0.028	0.004	0.028	0.004	0.028	0.004	0.028	0.004	0.067	0.008	0.067	0.012	0.146	0.016	0.146	0.02
			PC5400	558																
	High alloy steel (alloy constituent > 5%)	40~50HRC	PC5300	492	0.028	0.004	0.028	0.004	0.028	0.004	0.028	0.004	0.067	0.008	0.067	0.012	0.146	0.016	0.146	0.02
			PC5400	427																
		Tensile strength 350MPa ≤	PC5300	394	0.028	0.004	0.028	0.004	0.028	0.004	0.028	0.004	0.067	0.008	0.067	0.012	0.146	0.016	0.146	0.02
			PC5400	344																
M	Stainless steel	270HB≤	PC5300	427	0.028	0.004	0.028	0.004	0.028	0.004	0.028	0.004	0.067	0.008	0.067	0.012	0.157	0.016	0.157	0.02
			PC5400	361																
K	Cast iron, Ductile cast iron	Low tensile	PC5300	476	0.039	0.008	0.039	0.008	0.039	0.008	0.039	0.008	0.079	0.012	0.079	0.016	0.394	0.02	0.394	0.024
			PC5400	361																

Future Mill (FMR)

FMR Vibration test



Machining example



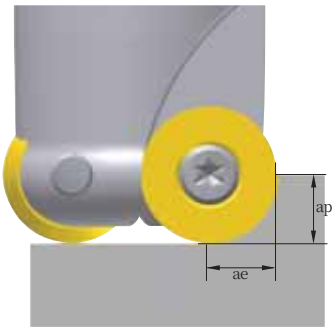
- **Workpiece** STD11
- **Cutting condition** vc = 650 sfm
  fz = 0.015 ipt
  ap = 0.08 inch
  ae = 0.16 inch
- **Designation** FMRS3032RD-S
  RDKT10T3M0-MM
  (PC3500)

Cutting condition formulas for milling

Cutting speed	RPM
$vc = \frac{\pi \times D \times n}{12}$ (sfm)	$n = \frac{vc \times 12}{\pi \times D}$ (min^{-1})

Feed (per tooth)	Feed (per minute)
$fz = \frac{vf}{Z \times n}$ (ipt)	$vf = fz \times n \times z$ (ipm)

Chip removal rate	Required machine power
$Q = ap \times ae \times vf$ ($inch^3$/min)	$Pkw = \frac{Q \times kc}{60 \times 102 \times \eta}$ (kW) $Php = \frac{Pkw}{0.75}$ (hp)



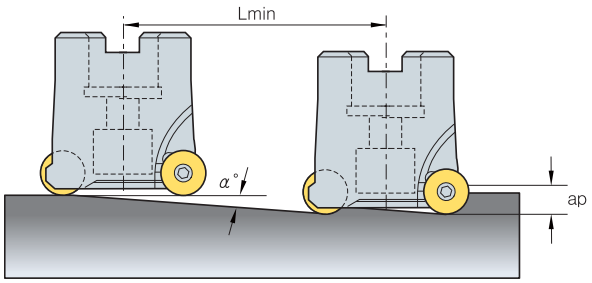
vc = Cutting speed (sfm)	**Pkw** = Required machine power (kW)
n = Revolution per a minute (min^{-1})	**Php** = Horsepower requirement (hp)
D = Cutting diameter (inch)	**Q** = Chip removal amount ($inch^3$/min)
De = Efficient cutting diameter (inch)	**ap** = Depth of cut (inch)
vf = Feed per a minute (ipm)	**ae** = Width of cut (inch)
fz = Feed per tooth (ipt)	**Kc** = Specific cutting resistance (MPa)
z = Number of tooth	η = Mechanical efficiency (%)
Pc = Power requirement (kW)	

Feed as per cutting depth

Designation	Chip breaker	Depth of cut (inch)								
		0.008~0.020	0.020~0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315
RDHW0501M0	**-**	0.010	0.006	-	-	-	-	-	-	-
RDHW06T1M0	**-**	0.012	0.008	0.004	-	-	-	-	-	-
RDHW0702M0	**-**	0.014	0.010	0.004	0.003	-	-	-	-	-
RDHW0803M0	**-**	0.016	0.012	0.006	0.0004	-	-	-	-	-
RDKT10T3M0 -	**MF/MM**	-	0.016	0.014	0.012	0.008	-	-	-	-
RDKT1204M0 -	**MF/MM**	-	0.020	0.018	0.012	0.010	0.009	-	-	-
RDHW1605M0	**-**	-	0.024	0.020	0.018	0.014	0.012	0.008	0.004	-
RDHW2006M0	**-**	-	-	0.024	0.020	0.016	0.012	0.010	0.006	0.004
RDKT1605M0 -	**MM**	-	0.024	0.020	0.018	0.014	0.012	0.008	0.004	-
RDKT2006M0 -	**MM**	-	-	0.024	0.020	0.016	0.012	0.010	0.006	0.004

Future Mill (FMR)

Ramping technical data



$$Lmin = \frac{ap}{\tan \alpha^{\circ}} \text{ (inch)}$$

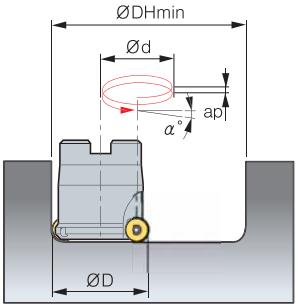
※ Lmin: Min. inclination cutting length
α°: Max. ramping angle
ap: Depth of cut

(inch)

Section	Tool Dia.	Ramping angle α° (Max)	Cutting length L (inch) by ramping angle									
			ap=0.039	ap=0.079	ap=0.098	ap=0.118	ap=0.138	ap=0.157	ap=0.197	ap=0.236	ap=0.315	ap=0.394
FMR1000	0.312	18.14	0.12	0.24	0.30	-	-	-	-	-	-	-
	0.375	11.7	0.19	0.38	0.48	-	-	-	-	-	-	-
	0.500	8.43	0.26	0.53	0.66	-	-	-	-	-	-	-
	0.625	5.93	0.38	0.76	0.95	-	-	-	-	-	-	-
FMR1500	0.375	20.67	0.81	0.21	0.26	0.31	-	-	-	-	-	-
	0.500	10.05	0.40	0.44	0.56	0.67	-	-	-	-	-	-
	0.625	6.12	0.24	0.73	0.92	1.1	-	-	-	-	-	-
	0.750	4.36	0.17	1.03	1.29	1.55	-	-	-	-	-	-
FMR2000	0.625	9.42	0.24	0.47	0.59	0.71	0.83	-	-	-	-	-
	0.750	5.85	0.38	0.77	0.96	1.15	1.34	-	-	-	-	-
FMR2500	0.625	13.7	0.16	0.32	0.40	0.48	0.57	0.65	-	-	-	-
	0.750	9.29	0.24	0.48	0.60	0.72	0.84	0.96	-	-	-	-
	1.000	6.56	0.34	0.68	0.86	1.03	1.20	1.37	-	-	-	-
FMR3000	1.500	9.09	0.25	0.49	0.62	0.74	0.86	0.98	1.23	-	-	-
	2.000	6.52	0.34	0.69	0.86	1.03	1.21	1.38	1.72	-	-	-
	2.500	4.76	0.47	0.95	1.18	1.42	1.65	1.89	2.36	-	-	-
	3.000	3.52	0.64	1.28	1.60	1.92	2.24	2.56	3.20	-	-	-
	4.000	2.69	0.84	1.68	2.09	2.51	2.93	3.35	4.19	-	-	-
FMR4000	2.000	7.13	0.31	0.63	0.79	0.94	1.10	1.26	1.57	1.89	-	-
	2.500	5.08	0.44	0.89	1.11	1.33	1.55	1.77	2.21	2.66	-	-
	3.000	3.69	0.61	1.22	1.53	1.83	2.14	2.44	3.05	3.66	-	-
	4.000	2.79	0.81	1.62	2.02	2.42	2.83	3.23	4.04	4.85	-	-
	5.000	2.14	1.05	2.11	2.63	3.16	3.69	4.21	5.27	6.32	-	-
FMR5000	2.000	5.22	0.43	0.86	1.08	1.29	1.51	1.72	2.15	2.59	3.45	-
	2.500	3.79	0.59	1.19	1.49	1.78	2.08	2.38	2.97	3.57	4.75	-
	3.000	2.97	0.76	1.52	1.90	2.28	2.66	3.04	3.79	4.55	6.07	-
	4.000	2.09	1.08	2.16	2.70	3.24	3.78	4.32	5.39	6.47	8.63	-
	5.000	1.63	1.38	2.77	3.46	4.15	4.84	5.53	6.92	8.30	11.07	-
FMR6000	2.500	3.69	0.61	1.22	1.53	1.83	2.14	2.44	3.05	3.66	4.88	2.44
	3.000	2.72	0.83	1.66	2.07	2.49	2.9	3.31	4.14	4.97	6.63	3.31
	4.000	2.12	1.06	2.13	2.66	3.19	3.72	4.25	5.32	6.38	8.51	4.25
	5.000	1.57	1.44	2.87	3.59	4.31	5.03	5.75	7.18	8.62	11.49	5.74

Future Mill (FMR)

Helical cutting technical data - ØDH Min



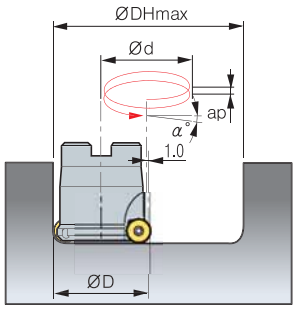
- ØD = Tool dia. (inch), ØDH Min, Max = Min, Max diameter (inch)
- Ød = Tool path (inch)
- ØDH Min (Min diameter) = ØD × 2 - Insert size, ØDH Max (Max diameter) = ØD × 2 - 2
- Ød (Tool path) = ØDH Min, Max - ØD

(inch)

Section	Insert Size	Tool Dia. (ØD)	ØDH Min	Ød	Ramping angle (α°)									
					ap=0.039	ap=0.079	ap=0.098	ap=0.118	ap=0.138	ap=0.157	ap=0.197	ap=0.236	ap=0.315	ap=0.394
FMR1000	0.312	0.31	0.43	0.12	6.11	12.35	15.57	-	-	-	-	-	-	-
	0.375	0.39	0.59	0.20	3.65	7.34	7.34	-	-	-	-	-	-	-
	0.500	0.47	0.75	0.28	2.61	5.23	5.23	-	-	-	-	-	-	-
	0.625	0.59	0.98	0.39	1.83	3.65	3.65	-	-	-	-	-	-	-
FMR1500	0.375	0.39	0.55	0.16	4.57	9.20	9.20	13.95	-	-	-	-	-	-
	0.500	0.47	0.71	0.24	3.04	6.11	6.11	9.20	-	-	-	-	-	-
	0.625	0.63	1.02	0.39	1.83	3.65	3.65	5.49	-	-	-	-	-	-
	0.750	0.79	1.34	0.55	1.30	2.61	2.61	3.92	-	-	-	-	-	-
FMR2000	0.625	0.59	0.91	0.31	2.28	4.57	4.57	6.88	8.04	-	-	-	-	-
	0.750	0.79	1.3	0.51	1.40	2.81	2.81	4.22	4.92	-	-	-	-	-
FMR2500	0.625	0.63	0.94	0.31	2.28	4.57	4.57	6.88	8.04	9.20	-	-	-	-
	0.750	0.79	1.26	0.47	1.52	3.04	3.04	4.57	5.34	6.11	-	-	-	-
	1.000	0.98	1.65	0.67	1.07	2.15	2.15	3.22	3.76	4.30	-	-	-	-
FMR3000	1.500	1.57	2.76	1.18	0.61	1.22	1.22	1.83	2.13	2.43	3.04	-	-	-
	2.000	1.97	3.54	1.57	0.46	0.91	0.91	1.37	1.60	1.83	2.28	-	-	-
	2.500	2.48	4.57	2.09	0.34	0.69	0.69	1.03	1.21	1.38	1.72	-	-	-
	3.000	3.15	5.91	2.76	0.26	0.52	0.52	0.78	0.91	1.04	1.30	-	-	-
	4.000	3.94	7.48	3.54	0.20	0.41	0.41	0.61	0.71	0.81	1.01	-	-	-
FMR4000	2.000	1.97	3.46	1.5	0.48	0.96	0.96	1.44	1.68	1.92	2.4	2.88	-	-
	2.500	2.48	4.49	2.01	0.36	0.72	0.72	1.07	1.25	1.43	1.79	2.15	-	-
	3.000	3.15	5.83	2.68	0.27	0.54	0.54	0.81	0.94	1.07	1.34	1.61	-	-
	4.000	3.94	7.40	3.46	0.21	0.41	0.41	0.62	0.73	0.83	1.04	1.24	-	-
	5.000	4.92	9.37	4.45	0.16	0.32	0.32	0.48	0.57	0.65	0.81	0.97	-	-
FMR5000	2.000	1.97	3.31	1.34	0.54	1.07	1.07	1.61	1.88	2.15	2.69	3.22	4.30	-
	2.500	2.48	4.33	1.85	0.39	0.78	0.78	1.16	1.36	1.55	1.94	2.33	3.11	-
	3.000	3.15	5.67	2.52	0.29	0.57	0.57	0.86	1.00	1.14	1.43	1.71	2.28	-
	4.000	3.94	7.24	3.31	0.22	0.43	0.43	0.65	0.76	0.87	1.09	1.30	1.74	-
	5.000	4.92	9.21	4.29	0.17	0.33	0.33	0.50	0.59	0.67	0.84	1.00	1.34	-
FMR6000	2.500	3.15	5.51	2.36	0.30	0.61	0.61	0.91	1.06	1.22	1.52	1.83	2.43	3.04
	3.000	3.94	7.09	3.15	0.23	0.46	0.46	0.68	0.8	0.91	1.14	1.37	1.83	2.28
	4.000	4.92	9.06	4.13	0.17	0.35	0.35	0.52	0.61	0.70	0.87	1.04	1.39	1.74
	5.000	6.30	11.81	5.51	0.13	0.26	0.26	0.39	0.46	0.52	0.65	0.78	1.04	1.30

Future Mill (FMR)

Helical cutting technical data - ØDHMax



- ØD = Tool dia. (inch), ØDHMin, Max = Min, Max diameter (inch)
- Ød = Tool path (inch)
- ØDHMin (Min diameter) = ØD × 2 - Insert size, ØDHMax (Max diameter) = ØD × 2 - 2
- Ød (Tool path) = ØDHMin, Max - ØD

(inch)

Section	Insert Size	Tool Dia. (ØD)	ØDHMax	Ød	Ramping angle (α°)									
					ap = 0.039	ap = 0.079	ap = 0.098	ap = 0.118	ap = 0.138	ap = 0.157	ap = 0.197	ap = 0.236	ap = 0.315	ap = 0.394
FMR1000	0.312	0.31	0.55	0.24	3.04	6.11	7.65	-	-	-	-	-	-	-
	0.375	0.39	0.71	0.31	2.28	4.57	5.72	-	-	-	-	-	-	-
	0.500	0.47	0.87	0.39	1.83	3.65	4.57	-	-	-	-	-	-	-
	0.625	0.59	1.10	0.51	1.40	2.81	3.51	-	-	-	-	-	-	-
FMR1500	0.375	0.39	0.71	0.31	2.28	4.57	5.72	6.88	-	-	-	-	-	-
	0.500	0.47	0.87	0.39	1.83	3.65	4.57	5.49	-	-	-	-	-	-
	0.625	0.63	1.18	0.55	1.30	2.61	3.26	3.92	-	-	-	-	-	-
	0.750	0.79	1.50	0.71	1.01	2.03	2.54	3.04	-	-	-	-	-	-
FMR2000	0.625	0.59	1.10	0.51	1.40	2.81	3.51	4.22	4.92	-	-	-	-	-
	0.750	0.79	1.50	0.71	1.01	2.03	2.54	3.04	3.55	-	-	-	-	-
FMR2500	0.625	0.63	1.18	0.55	1.30	2.61	3.26	3.92	4.57	5.23	-	-	-	-
	0.750	0.79	1.50	0.71	1.01	2.03	2.54	3.04	3.55	4.06	-	-	-	-
	1.000	0.98	1.89	0.91	0.79	1.59	1.98	2.38	2.78	3.18	-	-	-	-
FMR3000	1.500	1.57	3.07	1.50	0.48	0.96	1.20	1.44	1.68	1.92	2.40	-	-	-
	2.000	1.97	3.86	1.89	0.38	0.76	0.95	1.14	1.33	1.52	1.90	-	-	-
	2.500	2.48	4.88	2.40	0.30	0.60	0.75	0.90	1.05	1.20	1.50	-	-	-
	3.000	3.15	6.22	3.07	0.23	0.47	0.58	0.70	0.82	0.94	1.17	-	-	-
	4.000	3.94	7.80	3.86	0.19	0.37	0.47	0.56	0.65	0.74	0.93	-	-	-
FMR4000	2.000	1.97	3.86	1.89	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	-	-
	2.500	2.48	4.88	2.40	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	-	-
	3.000	3.15	6.22	3.07	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	-	-
	4.000	3.94	7.80	3.86	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	-	-
	5.000	4.92	9.76	4.84	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	-	-
FMR5000	2.000	1.97	3.86	1.89	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	3.04	-
	2.500	2.48	4.88	2.40	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	2.39	-
	3.000	3.15	6.22	3.07	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	1.87	-
	4.000	3.94	7.80	3.86	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	1.49	-
	5.000	4.92	9.76	4.84	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	1.19	-
FMR6000	2.500	3.15	6.22	3.07	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	1.87	2.34
	3.000	3.94	7.80	3.86	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	1.49	1.86
	4.000	4.92	9.76	4.84	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	1.19	1.48
	5.000	6.30	12.52	6.22	0.12	0.23	0.29	0.35	0.40	0.46	0.58	0.69	0.92	1.16

Future Mill series for mold making

FMR P-Positive

- Stable clamping system enables stable machining and productivity
- Varied product line-up ensures wide application range
- Optimal shape and grade with high hardness for hard-to-cut material machining

Features

- P-positive relief angle (11°) ensures high rigidity and high machinability in die steel and high-resistant alloy machining
- Flat clearance face of insert prevents interference and revolution while machining
- Optimal grades and chip breakers for various workpieces
- Chip breaker
  - Concave shape ensures wide chip pocket and lowers cutting temperature
- Clearance face for preventing rotation
  - Prevents rotation in machining
  - Divides corners
  - Prevents interference in high-feed machining
  - Ensures stable clamping
- Through-coolant system
  - Superb chip evacuation
  - Low cutting heat ensures long tool life

Features of chip breaker

Insert		Cutting-edge	Uses	Features
MA			Aluminum machining	Optimal cutting-edge for aluminum machining and buffed surface ensure high machinability
ML			Titanium & Inconel machining	Excellent results in titanium machining thanks to a high hardness cutting-edge and the chip breaker reducing the cutting load
MF			Light machining	Chip breaker for low cutting resistance enables fine finishing.
MM			General machining	Optimal for general machining
None C/B			Super hard material machining	Optimal for high hardness die steel and heat resistant alloy

Recommended cutting condition

* Recommended chip breaker: ● First ◦ Second

Workpiece			Hardness	Grade	Cutting conditions				Chip breaker					
					vc (sfm)	fz (ipt)	ap (inch)	ae (inch)	MA	ML	MF	MM	None C/B 1	None C/B 2
P	Low carbon steel		HB80~180	PC5400	328~820	0.028~0.005	0.012~0.236	0.7D~0.1D	-	-	●	○	-	-
	High carbon steel		HB180~280	PC5400	328~722	0.028~0.005	0.012~0.236	0.7D~0.1D	-	-	●	○	-	-
	Low alloy steel		Under HRC27	PC3700	590~951	0.024~0.008	0.012~0.236	0.7D~0.1D	-	-	-	●	○	-
				PC5400/PC5300	328~656	0.024~0.008	0.012~0.236	0.7D~0.1D	-	-	-	●	○	-
	Low pre-hardened steel		HRC20~50	PC3700	426~820	0.020~0.012	~0.020	0.7D~0.1D	-	-	-	-	●	○
				PC2510/PC5300	164~492	0.020~0.012	~0.020	0.7D~0.1D	-	-	-	-	●	○
	High alloy steel		Under HRC27	PC3700	426~820	0.020~0.012	~0.020	0.7D~0.1D	-	-	-	●	○	-
				PC5300	164~492	0.020~0.012	~0.020	0.7D~0.1D	-	-	-	●	○	-
	High pre-hardened steel		HRC20~48	PC2510/PC5300	164~492	0.020~0.012	~0.020	0.7D~0.1D	-	-	-	-	●	○
M	Stainless steel		Under HB270	PC5300/PC5400	328~492	0.024~0.008	0.012~0.236	0.7D~0.1D	-	-	○	●	-	-
K	Gray cast iron, Ductile cast iron		Under 350MPa	PC5300	394~689	0.024~0.008	0.012~0.236	0.7D~0.1D	-	-	○	●	-	-
N	Aluminum		-	H01	984~2,625	0.024~0.012	0.012~0.236	0.7D~0.1D	●	-	-	-	-	-
S	Heat resistant alloy	Fe	HRC20~30	PC5300/PC5400	115~197	0.020~0.012	~0.020	0.7D~0.1D	-	●	○	-	-	-
		Ni or Co	HRC40~45	PC5300/PC5400	98~164	0.020~0.012	~0.020	0.7D~0.1D	-	●	○	-	-	-
	Titanium		HRC35~45	PC5300/PC5400	131~230	0.020~0.012	~0.059	0.7D~0.1D	-	●	○	-	-	-
H	High hardened materials		Over HRC50	PC2505/PC2510	98~164	0.020~0.012	~0.020	0.7D~0.1D	-	-	-	-	●	○

Feed per tooth according to ap (fz, ipt)

(inch)

Insert	Insert size (d)	Feed per tooth according to ap							
		ap = 0.039	ap = 0.079	ap = 0.118	ap = 0.157	ap = 0.197	ap = 0.236	ap = 0.315	ap = 0.394
RPMT08	0.315	0.012	0.009	0.007	0.006	-	-	-	-
RPMT10	0.394	0.016	0.011	0.01	0.008	0.005	-	-	-
RPMT12	0.472	0.024	0.018	0.014	0.012	0.01	0.008	-	-
RPMT16	0.630	0.026	0.018	0.016	0.013	0.012	0.011	0.009	-
RPMT20	0.787	0.028	0.02	0.017	0.014	0.013	0.011	0.01	0.009

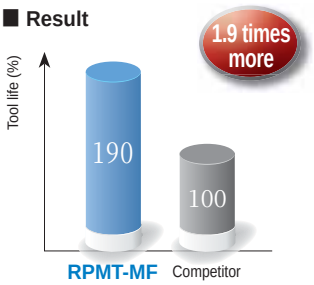
Performance evaluation

Alloy steel (SM490A Heat treatment, HRC 38~40)

■ **Cutting conditions**
vc (sfm) = 820
fz (ipt) = 0.024
ap (inch) = 0.039
wet

■ **Tools**
Insert RPMT1204M0E-MF(PC5300)
Holder FMRSA4125HRP-3L100

■ **Result**



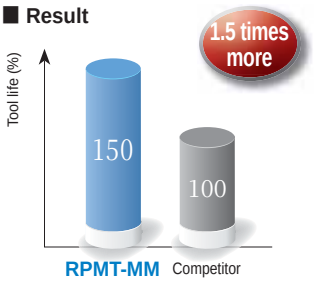


Low pre-hardened steel (KP4M Heat treatment, HRC 30~45)

■ **Cutting conditions**
vc (sfm) = 584
fz (ipt) = 0.028
ap (inch) = 0.059
dry

■ **Tools**
Insert RPMT1606M0S-MM(PC5300)
Holder FMRCA5250HRP-4

■ **Result**



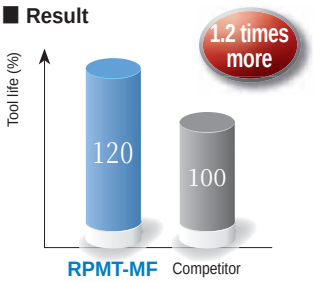


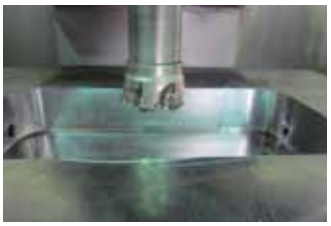
Low pre-hardened steel (KP1, HRC 28~33)

■ **Cutting conditions**
vc (sfm) = 584
fz (ipt) = 0.029
ap (inch) = 0.031
dry

■ **Tools**
Insert RPMT1204M0E-MF(PC5300)
Holder FMRCA4250HRP-6

■ **Result**



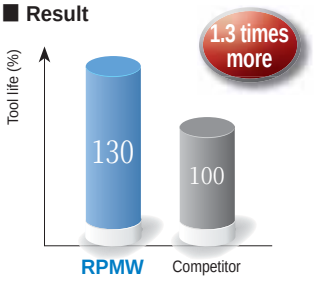


High pre-hardened steel (STD61, HRC 50~52)

■ **Cutting conditions**
vc (sfm) = 164
fz (ipt) = 0.006
ap (inch) = 0.157
dry

■ **Tools**
Insert RPMW1204M0S1(PC5300)
Holder FMRSA4125HRP-3L100

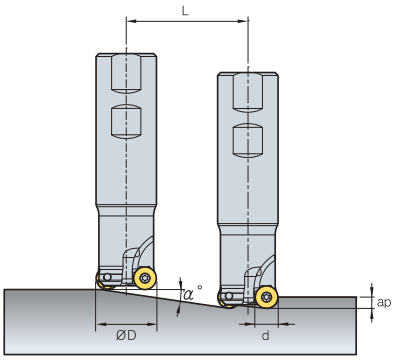
■ **Result**





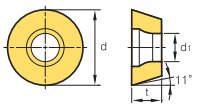
FMR P-Positive

Maximum angle table for ramping machining



$$Lmin = \frac{ap}{\tan \alpha°} \text{ (inch)}$$

※ L (inch): Cutting length
α°: Max. ramping angle
ap: Depth of cut



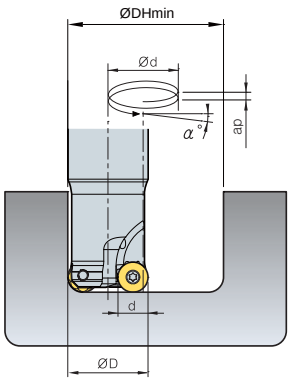
(inch)

Section	Insert size (d)	Tool Dia. (ØD)	Ramping angle α°(max)	Cutting length L by ap									
				ap = 0.039	ap = 0.079	ap = 0.098	ap = 0.118	ap = 0.138	ap = 0.157	ap = 0.197	ap = 0.236	ap = 0.315	ap = 0.394
FMR2500	0.315	0.688	4.44	0.507	1.013	1.266	1.52	1.773	2.026	-	-	-	-
	0.315	0.75	17.3	0.126	0.253	0.316	0.379	0.442	0.506	-	-	-	-
	0.315	0.813	14.4	0.153	0.307	0.383	0.46	0.537	0.613	-	-	-	-
	0.315	1	9.54	0.234	0.468	0.585	0.703	0.82	0.937	-	-	-	-
	0.315	1.063	8.57	0.261	0.522	0.653	0.783	0.914	1.044	-	-	-	-
FMR3000	0.394	1	13.3	0.167	0.333	0.416	0.5	0.583	0.666	0.833	-	-	-
	0.394	1.063	11.67	0.191	0.381	0.477	0.572	0.667	0.762	0.953	-	-	-
	0.394	1.25	8.52	0.263	0.525	0.657	0.788	0.92	1.051	1.314	-	-	-
	0.394	1.313	7.82	0.287	0.574	0.717	0.86	1.004	1.147	1.434	-	-	-
	0.394	1.5	6.26	0.359	0.718	0.897	1.077	1.256	1.435	1.794	-	-	-
	0.394	2	4.09	0.551	1.102	1.378	1.654	1.929	2.205	2.756	-	-	-
	0.394	2.5	3.03	0.743	1.487	1.859	2.23	2.602	2.974	3.717	-	-	-
FMR4000	0.472	1	4.34	0.519	1.038	1.297	1.557	1.816	2.076	2.594	3.113	-	-
	0.472	1.063	3.76	0.599	1.198	1.498	1.797	2.097	2.396	2.995	3.594	-	-
	0.472	1.25	14.94	0.148	0.295	0.369	0.443	0.517	0.59	0.738	0.886	-	-
	0.472	1.313	13.49	0.164	0.328	0.41	0.492	0.574	0.656	0.821	0.985	-	-
	0.472	1.5	10.44	0.214	0.427	0.534	0.641	0.748	0.855	1.069	1.282	-	-
	0.472	2	6.49	0.346	0.692	0.865	1.038	1.211	1.384	1.73	2.076	-	-
	0.472	2.5	4.71	0.478	0.957	1.196	1.435	1.674	1.913	2.391	2.87	-	-
	0.472	3	3.69	0.611	1.221	1.526	1.832	2.137	2.442	3.053	3.663	-	-
	0.472	4	2.58	0.875	1.75	2.188	2.625	3.063	3.5	4.375	5.251	-	-
FMR5000	0.63	1.5	20.01	0.108	0.216	0.27	0.324	0.378	0.432	0.541	0.649	0.865	-
	0.63	2	10.99	0.203	0.406	0.507	0.608	0.71	0.811	1.014	1.217	1.623	-
	0.63	2.5	7.54	0.298	0.595	0.744	0.893	1.041	1.19	1.488	1.785	2.38	-
	0.63	3	5.73	0.392	0.784	0.981	1.177	1.373	1.569	1.961	2.353	3.138	-
	0.63	4	3.87	0.582	1.163	1.454	1.745	2.036	2.326	2.908	3.49	4.653	-
	0.63	5	2.92	0.771	1.542	1.927	2.313	2.698	3.084	3.855	4.626	6.168	-
	0.63	6	2.35	0.96	1.921	2.401	2.881	3.361	3.842	4.802	5.762	7.683	-
FMR6000	0.787	2	17.22	0.127	0.254	0.318	0.381	0.445	0.508	0.635	0.762	1.016	1.271
	0.787	2.5	10.99	0.203	0.406	0.507	0.608	0.71	0.811	1.014	1.217	1.623	2.028
	0.787	3	8.04	0.279	0.557	0.696	0.836	0.975	1.114	1.393	1.671	2.229	2.786
	0.787	4	5.23	0.43	0.86	1.075	1.29	1.505	1.72	2.15	2.581	3.441	4.301
	0.787	5	3.87	0.582	1.163	1.454	1.745	2.036	2.326	2.908	3.49	4.653	5.816
	0.787	6	3.07	0.733	1.466	1.833	2.199	2.566	2.932	3.666	4.399	5.865	7.331
	0.787	8	2.18	1.036	2.072	2.59	3.108	3.627	4.145	5.181	6.217	8.289	10.361
	0.787	10	1.68	1.339	2.678	3.348	4.018	4.687	5.357	6.696	8.035	10.713	13.392

* Insert size (d): Please refer page E17~E18 applicable insert drawing.

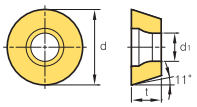
FMR P-Positive

Minimum hole diameter table for helical machining (ØDHmin)



- ØD = Tool dia. (inch)
- Ød (Tool path, inch) = ØDHmin, Max - ØD
- ØDHmin (Minimum hole diameter) = ØD × 2 - Insert size (d)
- ØDHmax (Maximum hole diameter) = ØD × 2 - 2
- Ramping angle by ap (α°) = $\tan^{-1}\left(\frac{ap}{\pi \times Ød}\right)$

  Helical angle adjusted by ap cannot exceed maximum angle
- ap = Depth of cut



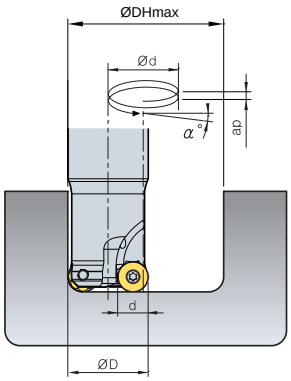
(inch)

Section	Insert size (d)	Tool Dia. (ØD)	Ramping angle α° (max)	ØDH min	Ød	Ramping angle by ap									
						ap = 0.039	ap = 0.079	ap = 0.098	ap = 0.118	ap = 0.138	ap = 0.157	ap = 0.197	ap = 0.236	ap = 0.315	ap = 0.394
FMR2500	0.315	0.688	4.44	1.06	0.37	0.076	0.152	-	-	-	-	-	-	-	-
	0.315	0.75	17.3	1.19	0.44	0.065	0.13	0.163	0.196	0.228	0.261	-	-	-	-
	0.315	0.813	14.4	1.31	0.5	0.057	0.114	0.142	0.171	0.199	0.228	-	-	-	-
	0.315	1	9.54	1.69	0.69	0.041	0.083	0.103	0.124	0.145	0.165	-	-	-	-
	0.315	1.063	8.57	1.81	0.75	0.038	0.076	0.095	0.114	0.133	0.152	-	-	-	-
FMR3000	0.394	1	13.3	1.61	0.61	0.047	0.093	0.117	0.14	0.164	0.187	-	-	-	-
	0.394	1.063	11.67	1.73	0.67	0.042	0.085	0.106	0.127	0.148	0.169	-	-	-	-
	0.394	1.25	8.52	2.11	0.86	0.033	0.066	0.083	0.099	0.116	0.132	-	-	-	-
	0.394	1.313	7.82	2.23	0.92	0.031	0.062	0.077	0.092	0.108	0.123	-	-	-	-
	0.394	1.5	6.26	2.61	1.11	0.026	0.051	0.064	0.077	0.09	0.102	-	-	-	-
	0.394	2	4.09	3.61	1.61	0.018	0.035	0.044	0.053	0.062	0.07	-	-	-	-
	0.394	2.5	3.03	4.61	2.11	0.013	0.027	0.034	0.04	0.047	0.054	-	-	-	-
FMR4000	0.472	1	4.34	1.53	0.53	0.054	0.107	0.134	-	-	-	-	-	-	-
	0.472	1.063	3.76	1.65	0.59	0.048	0.096	0.12	-	-	-	-	-	-	-
	0.472	1.25	14.94	2.03	0.78	0.036	0.073	0.091	0.109	0.127	0.146	0.182	0.219	-	-
	0.472	1.313	13.49	2.15	0.84	0.034	0.067	0.084	0.101	0.118	0.135	0.169	0.203	-	-
	0.472	1.5	10.44	2.53	1.03	0.028	0.055	0.069	0.083	0.096	0.11	0.138	0.165	-	-
	0.472	2	6.49	3.53	1.53	0.019	0.037	0.046	0.056	0.065	0.074	0.093	0.111	-	-
	0.472	2.5	4.71	4.53	2.03	0.014	0.028	0.035	0.042	0.049	0.056	0.07	0.084	-	-
	0.472	3	3.69	5.53	2.53	0.011	0.022	0.028	0.034	0.039	0.045	0.056	0.067	-	-
	0.472	4	2.58	7.53	3.53	0.008	0.016	0.02	0.024	0.028	0.032	0.04	0.048	-	-
FMR5000	0.63	1.5	20.01	2.37	0.87	0.033	0.065	0.081	0.098	0.114	0.13	0.163	0.196	0.261	-
	0.63	2	10.99	3.37	1.37	0.021	0.041	0.052	0.062	0.072	0.083	0.103	0.124	0.165	-
	0.63	2.5	7.54	4.37	1.87	0.015	0.03	0.038	0.045	0.053	0.061	0.076	0.091	0.121	-
	0.63	3	5.73	5.37	2.37	0.012	0.024	0.03	0.036	0.042	0.048	0.06	0.072	0.096	-
	0.63	4	3.87	7.37	3.37	0.008	0.017	0.021	0.025	0.029	0.034	0.042	0.05	0.067	-
	0.63	5	2.92	9.37	4.37	0.006	0.013	0.016	0.019	0.023	0.026	0.032	0.039	0.052	-
	0.63	6	2.35	11.37	5.37	0.005	0.011	0.013	0.016	0.018	0.021	0.026	0.032	0.042	-
FMR6000	0.787	2	17.22	3.21	1.21	0.023	0.047	0.058	0.07	0.082	0.093	0.117	0.14	0.187	0.234
	0.787	2.5	10.99	4.21	1.71	0.017	0.033	0.041	0.05	0.058	0.066	0.083	0.099	0.132	0.165
	0.787	3	8.04	5.21	2.21	0.013	0.026	0.032	0.038	0.045	0.051	0.064	0.077	0.102	0.128
	0.787	4	5.23	7.21	3.21	0.009	0.018	0.022	0.026	0.031	0.035	0.044	0.053	0.07	0.088
	0.787	5	3.87	9.21	4.21	0.007	0.013	0.017	0.02	0.023	0.027	0.034	0.04	0.054	0.067
	0.787	6	3.07	11.21	5.21	0.005	0.011	0.014	0.016	0.019	0.022	0.027	0.033	0.043	0.054
	0.787	8	2.18	15.21	7.21	0.004	0.008	0.01	0.012	0.014	0.016	0.02	0.024	0.031	0.039
	0.787	10	1.68	19.21	9.21	0.003	0.006	0.008	0.009	0.011	0.012	0.015	0.018	0.025	0.031

* Insert size (d): Please refer page E17~E18 applicable insert drawing.

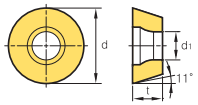
FMR P-Positive

Maximum hole diameter table for helical machining (ØDHmax)



- ØD = Tool dia. (inch)
- Ød (Tool path, inch) = ØDHmin, Max - ØD
- ØDHmin (Minimum hole diameter) = ØD × 2 - Insert size (d)
- ØDHmax (Maximum hole diameter) = ØD × 2 - 2
- Ramping angle by ap (α°) = $\tan^{-1}\left(\frac{ap}{\pi \times Ød}\right)$

  Helical angle adjusted by ap cannot exceed maximum angle
- ap = Depth of cut



(inch)

Section	Insert size (d)	Tool Dia. (ØD)	Ramping angle α° (max)	ØDH max	Ød	Ramping angle by ap									
						ap = 0.039	ap = 0.079	ap = 0.098	ap = 0.118	ap = 0.138	ap = 0.157	ap = 0.197	ap = 0.236	ap = 0.315	ap = 0.394
	0.315	0.688	4.44	1.3	0.61	0.046	0.093	0.116	0.14	-	-	-	-	-	-
	0.315	0.75	17.3	1.42	0.67	0.042	0.084	0.105	0.127	0.148	0.169	-	-	-	-
FMR2500	0.315	0.813	14.4	1.55	0.73	0.039	0.077	0.096	0.116	0.135	0.154	-	-	-	-
	0.315	1	9.54	1.92	0.92	0.031	0.061	0.077	0.092	0.108	0.123	-	-	-	-
	0.315	1.063	8.57	2.05	0.98	0.029	0.058	0.072	0.086	0.101	0.115	-	-	-	-
	0.394	1	13.3	1.92	0.92	0.031	0.061	0.077	0.092	0.108	0.123	-	-	-	-
	0.394	1.063	11.67	2.05	0.98	0.029	0.058	0.072	0.086	0.101	0.115	-	-	-	-
	0.394	1.25	8.52	2.42	1.17	0.024	0.048	0.06	0.072	0.085	0.097	-	-	-	-
FMR3000	0.394	1.313	7.82	2.55	1.23	0.023	0.046	0.057	0.069	0.08	0.092	-	-	-	-
	0.394	1.5	6.26	2.92	1.42	0.02	0.04	0.05	0.06	0.07	0.08	-	-	-	-
	0.394	2	4.09	3.92	1.92	0.015	0.029	0.037	0.044	0.052	0.059	-	-	-	-
	0.394	2.5	3.03	4.92	2.42	0.012	0.023	0.029	0.035	0.041	0.047	-	-	-	-
	0.472	1	4.34	1.92	0.92	0.031	0.061	0.077	0.092	0.108	0.123	-	-	-	-
	0.472	1.063	3.76	2.05	0.98	0.029	0.058	0.072	0.086	0.101	0.115	-	-	-	-
	0.472	1.25	14.94	2.42	1.17	0.024	0.048	0.06	0.072	0.085	0.097	0.121	0.145	-	-
	0.472	1.313	13.49	2.55	1.23	0.023	0.046	0.057	0.069	0.08	0.092	0.115	0.138	-	-
FMR4000	0.472	1.5	10.44	2.92	1.42	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12	-	-
	0.472	2	6.49	3.92	1.92	0.015	0.029	0.037	0.044	0.052	0.059	0.074	0.088	-	-
	0.472	2.5	4.71	4.92	2.42	0.012	0.023	0.029	0.035	0.041	0.047	0.058	0.07	-	-
	0.472	3	3.69	5.92	2.92	0.01	0.019	0.024	0.029	0.034	0.039	0.048	0.058	-	-
	0.472	4	2.58	7.92	3.92	0.007	0.014	0.018	0.022	0.025	0.029	0.036	0.043	-	-
	0.63	1.5	20.01	2.92	1.42	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12	0.159	-
	0.63	2	10.99	3.92	1.92	0.015	0.029	0.037	0.044	0.052	0.059	0.074	0.088	0.118	-
	0.63	2.5	7.54	4.92	2.42	0.012	0.023	0.029	0.035	0.041	0.047	0.058	0.07	0.094	-
FMR5000	0.63	3	5.73	5.92	2.92	0.01	0.019	0.024	0.029	0.034	0.039	0.048	0.058	0.077	-
	0.63	4	3.87	7.92	3.92	0.007	0.014	0.018	0.022	0.025	0.029	0.036	0.043	0.058	-
	0.63	5	2.92	9.92	4.92	0.006	0.011	0.014	0.017	0.02	0.023	0.029	0.034	0.046	-
	0.63	6	2.35	11.92	5.92	0.005	0.01	0.012	0.014	0.017	0.019	0.024	0.029	0.038	-
	0.787	2	17.22	3.92	1.92	0.015	0.029	0.037	0.044	0.052	0.059	0.074	0.088	0.118	0.147
	0.787	2.5	10.99	4.92	2.42	0.012	0.023	0.029	0.035	0.041	0.047	0.058	0.07	0.094	0.117
	0.787	3	8.04	5.92	2.92	0.01	0.019	0.024	0.029	0.034	0.039	0.048	0.058	0.077	0.097
FMR6000	0.787	4	5.23	7.92	3.92	0.007	0.014	0.018	0.022	0.025	0.029	0.036	0.043	0.058	0.072
	0.787	5	3.87	9.92	4.92	0.006	0.011	0.014	0.017	0.02	0.023	0.029	0.034	0.046	0.057
	0.787	6	3.07	11.92	5.92	0.005	0.01	0.012	0.014	0.017	0.019	0.024	0.029	0.038	0.048
	0.787	8	2.18	15.92	7.92	0.004	0.007	0.009	0.011	0.012	0.014	0.018	0.021	0.029	0.036
	0.787	10	1.68	19.92	9.92	0.003	0.006	0.007	0.009	0.01	0.011	0.014	0.017	0.023	0.029

* Insert size (d): Please refer page E17~E18 applicable insert drawing.

FMACA3000



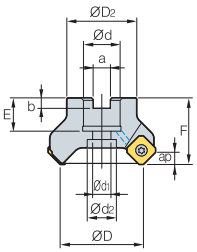


Fig. 1

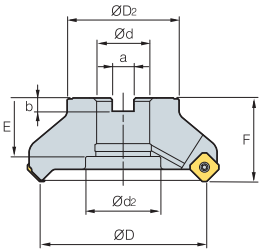


Fig. 2

AA 45°

- AR: 21°
- RR: -17°~-12°

(inch)

Designation		⊙	ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs	Fig.
FMACA	3200HR	4	2.0	1.772	0.75	0.313	0.22	0.787	1.75	0.413	0.63	1.157	0.9	1
	3200HR-H	6	2.0	1.772	0.75	0.313	0.22	0.787	1.75	0.413	0.63	1.157	0.9	1
	3250HR	5	2.5	2.205	1.00	0.375	0.248	0.787	1.75	0.551	0.827	1.157	1.1	1
	3250HR-H	8	2.5	2.205	1.00	0.375	0.248	0.787	1.75	0.551	0.827	1.157	1.3	1
	3300HR	6	3.0	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	1.157	2.4	1
	3300HR-H	10	3.0	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	1.157	2.6	1
	3400HR	7	4.0	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	1.157	3.9	1
	3400HR-H	12	4.0	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	1.157	3.7	1
	3500HR	8	5.0	3.386	1.50	0.625	0.394	1.063	2.50	0.823	1.22	1.157	7.7	2
	3500HR	14	5.0	3.386	1.50	0.625	0.394	1.063	2.50	0.823	1.22	1.157	7.7	2

Available inserts

SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW

Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	H05	
SEET	32AGFN-MA																		●	●	E21 E22
	32AGSN-MF											●	●		●	●					
	32AGSN-MM				●							●			●	●					
SEXT	32AGSN-MF											●			●	●					
	32AGSN-MM										●	●			●	●					
	32AGSN-MR																				
SEEW	32AGTN																				

Parts

Specification	Screw	Insert wrench
Ø2.0~Ø5.0	FTKA0307	TW09S

Available inserts **E21, E22**

FMACA4000



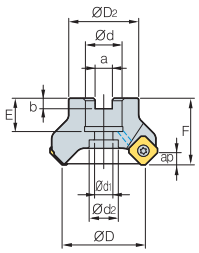


Fig. 1

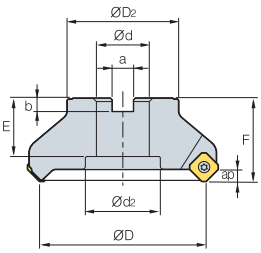


Fig. 2

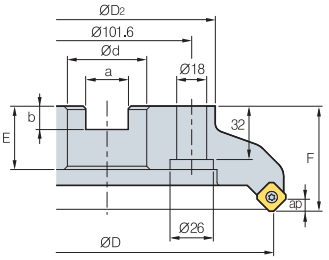


Fig. 3

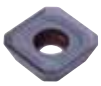
AA 45°

- AR: 21°
- RR: -17°~-12°

(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs	Fig.
FMACA	4200HR	3	2.0	1.772	0.75	0.313	0.22	0.787	1.75	0.413	0.63	0.256	0.9	1
	4250HR	4	2.5	2.205	1.00	0.375	0.248	0.787	1.75	0.551	0.827	0.256	1.3	1
	4250HR-M	5	2.5	2.205	1.00	0.375	0.248	0.787	1.75	0.551	0.827	0.256	1.3	1
	4250HR-H	6	2.5	2.205	1.00	0.375	0.248	0.787	1.75	0.551	0.827	0.256	1.3	1
	4300HR	5	3.0	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.256	2.4	1
	4300HR-M	6	3.0	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.256	2.4	1
	4300HR-H	8	3.0	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.256	2.4	1
	4400HR	5	4.0	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.256	3.5	1
	4400HR-M	7	4.0	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.256	3.5	1
	4400HR-H	10	4.0	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.256	3.5	1
	4500HR	6	5.0	3.386	1.50	0.625	0.394	1.063	2.50	0.823	1.220	0.256	6.8	1
	4500HR-M	8	5.0	3.386	1.50	0.625	0.394	1.063	2.50	0.823	1.220	0.256	6.8	1
	4500HR-H	12	5.0	3.386	1.50	0.625	0.394	1.063	2.50	0.823	1.220	0.256	6.8	1
	4600R	7	6.0	4.882	2.00	0.750	0.433	1.181	2.50	-	-	0.256	10.6	2
	4600R-M	10	6.0	4.882	2.00	0.750	0.433	1.181	2.50	-	-	0.256	10.6	2
	4600R-H	16	6.0	4.882	2.00	0.750	0.433	1.181	2.50	-	-	0.256	10.6	2
	4800R	8	8.0	5.118	2.50	1.000	0.551	1.496	2.50	-	-	0.256	13.4	3
	4800R-M	12	8.0	5.118	2.50	1.000	0.551	1.496	2.50	-	-	0.256	13.4	3
	4800R-H	18	8.0	5.118	2.50	1.000	0.551	1.496	2.50	-	-	0.256	13.4	3

Available inserts

SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW	SEEW-W
							

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	H01	H05	
SEET	14M4AGFN-MA														●	●	●	●	E21 E22
	14M4AGSN-MF					●				●	●		●	●					
	14M4AGSN-MM					●			●	●	●		●	●					
SEXT	14M4AGSN-MF									●			●	●					
	14M4AGSN-MM				●				●	●	●		●	●					

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	H05	
SEXT	14M4AGSN-MR												●		●				E21 E22
SEEW	14M4AGTN		●																
	14M4AGFN-W																		
	14M4AGSN-W														●				
	14M4AGTN-W											●							

Parts

Specification	Screw	Shim	Shim screw	Insert wrench	Shim wrench
Ø2.0~Ø8.0	FTGA03512	SS42SAF	SHXN0509F	TW15S	HW35L

Available inserts **E21, E22**

FMACA3000-A

Aluminum body



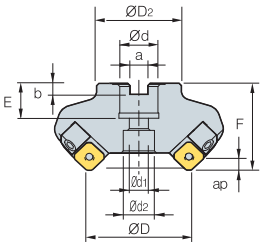


Fig. 1

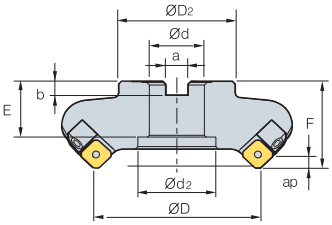


Fig. 2



AA
45°

- AR: 21°
- RR: -16°~-12°

(inch)

Designation		⊙	ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs	Fig.
FMACA	3250R-A	3	2.50	2.205	1.00	0.38	0.248	0.866	1.75	0.551	0.827	0.157	1.0	1
	3300R-A	4	3.00	2.205	1.00	0.38	0.248	0.866	2.00	0.551	0.827	0.157	1.5	1
	3400R-A	5	4.00	2.874	1.25	0.50	0.319	1.181	2.00	-	1.772	0.157	1.9	2
	3500R-A	6	5.00	3.386	1.50	0.63	0.394	1.181	2.50	-	2.205	0.157	3.4	2

Available inserts



Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	H05	
SEET	32AGFN-MA																		●	●	E21 E22
	32AGSN-MF											●	●		●	●					
	32AGSN-MM				●							●			●	●					
SEXT	32AGSN-MF											●			●	●					
	32AGSN-MM										●	●			●	●					
	32AGSN-MR																				
SEEW	32AGTN																				

Parts

Specification	Screw	Insert wrench	Locator wrench	Locator	Locator screw
Ø2.50~Ø5.00	FTKA0307	TW09S	HW30L	LFMA3R-A	DHA0620

Available inserts **E21, E22**

FMACA4000-A

Aluminum body



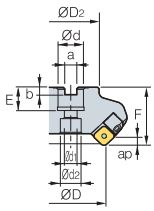


Fig. 1

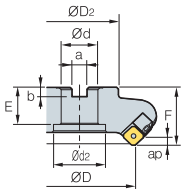


Fig. 2

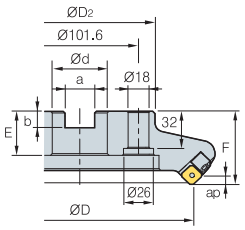


Fig. 3

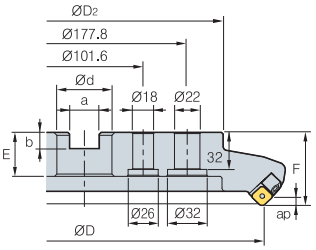


Fig. 4



AA
45°

- AR: 21°
- RR: -16°~-12°

(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs	Fig.
FMACA	4250R-A	3	2.50	2.205	1.00	0.75	0.433	1.181	2.0	-	0.827	0.256	1.2	1
	4300R-A	4	3.00	2.205	1.00	0.38	0.248	0.866	2.0	-	0.827	0.256	1.6	1
	4400R-A	5	4.00	2.874	1.25	0.5	0.319	1.181	2.0	0.551	1.772	0.256	2.2	2
	4500R-A	6	5.00	3.386	1.50	0.63	0.394	1.181	2.5	0.551	2.205	0.256	3.3	2
	4600R-A	7	6.00	4.882	2.00	0.75	0.433	1.181	2.5	-	2.953	0.256	4.6	2
	4800R-A	8	8.00	5.118	2.50	1.00	0.551	1.496	2.5	-	-	0.256	6.4	3
	41000R-A	10	10.00	7.087	2.50	1.00	0.551	1.496	2.5	-	-	0.256	9.0	3
	41200R-A	12	12.00	9.449	2.50	1.00	0.551	1.496	2.5	-	-	0.256	14.5	4

Note) Through coolant type between Ø2.0~Ø5.0

Available inserts

SEET-MF | SEET-MM | SEET-MA | SEXT-MF | SEXT-MM | SEXT-MR | SEEW | SEEW-W



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	H01	H05	
SEET	14M4AGFN-MA														●	●	●	●	E21 E22
	14M4AGSN-MF				●					●	●		●	●					
	14M4AGSN-MM				●				●	●	●		●	●					
SEXT	14M4AGSN-MF								●				●	●					
	14M4AGSN-MM			●					●	●	●		●	●					

Designation		Cermet		Coated													Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	H05	
SEXT	14M4AGSN-MR												●		●				E21 E22
SEEW	14M4AGTN	●																	
	14M4AGFN-W																		
	14M4AGSN-W															●			
	14M4AGTN-W											●							

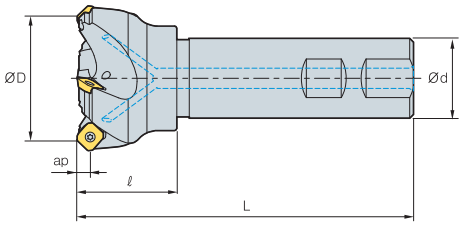
Parts

Specification	Screw	Insert wrench	Locator wrench	Locator	Locator screw
Ø2.50~Ø12.00	FTGA03510	TW15S	HW40L	LFMA4R-A	DHA0830

Available inserts **E21, E22**

FMASA3000





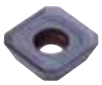
AA 45°

- AR: 23°
- RR: -17°~-13°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
FMASA	3100HR	2	1.00	1.00	1.378	4.528	0.157	0.9
	3125HR	3	1.25	1.00	1.575	4.921	0.157	1.1
	3125HR-S125	3	1.25	1.25	1.575	4.921	0.157	1.8
	3150HR	3	1.50	1.25	1.575	5.118	0.157	2.0
	3200HR	4	2.00	1.25	1.575	5.315	0.157	2.2
	3200HR-S150	4	2.00	1.50	1.575	5.512	0.157	2.9
	3250HR	5	2.50	1.25	1.772	5.315	0.157	3.5
	3250HR-S150	5	2.50	1.50	1.772	5.512	0.157	3.7

Available inserts

	SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW
							

Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	H05	
SEET	32AGFN-MA																		●	●	E21 E22
	32AGSN-MF											●	●		●	●					
	32AGSN-MM				●							●			●	●					
SEXT	32AGSN-MF											●			●	●					
	32AGSN-MM										●	●			●	●					
	32AGSN-MR																				
SEEW	32AGTN																				

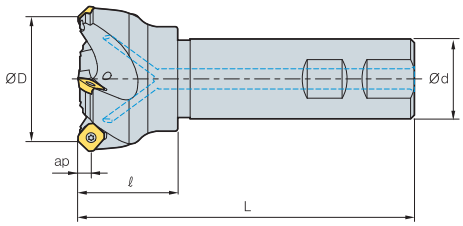
Parts

Specification	Screw	Insert wrench
Ø1.00~Ø2.50	FTKA0307	TW09S

Available inserts **E21, E22**

FMASA4000





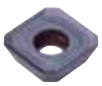
AA
45°

- AR: 23°
- RR: -17°~-13°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
FMASA	4200HR	3	2.0	1.25	1.772	5.315	0.256	3.3
	4200HR-S150	3	2.0	1.50	1.772	5.315	0.256	4.6
	4250HR	4	2.5	1.25	1.772	5.315	0.256	4.4
	4250HR-S150	4	2.5	1.50	1.772	5.315	0.256	5.7

Available inserts

SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW	SEEW-W
							

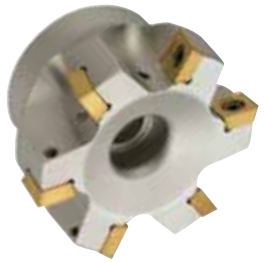
Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	H01	H05	
SEET	14M4AGFN-MA															●	●		●	●	
	14M4AGSN-MF					●					●	●		●	●						
	14M4AGSN-MM					●				●	●	●		●	●						
SEXT	14M4AGSN-MF										●			●	●						
	14M4AGSN-MM				●					●	●	●		●	●						E21
	14M4AGSN-MR											●		●							E22
SEEW	14M4AGTN		●																		
	14M4AGFN-W																				
	14M4AGSN-W													●							
	14M4AGTN-W										●										

Parts

Specification	Screw	Shim	Shim screw	Insert wrench	Shim wrench
Ø2.0~Ø2.5	FTGA03512	SS42SAF	SHXN0509F	TW15S	HW35L

Available inserts **E21, E22**

FMPCA3000



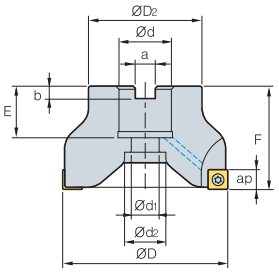


Fig. 1

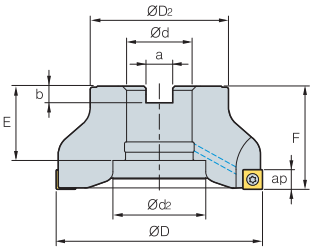


Fig. 2






AA 0°

- AR: 10°
- RR: -9°~-8°

(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs
FMPCA	3200HS	5	2.0	1.772	0.75	0.787	1.75	0.413	0.63	0.313	0.220	0.275	0.7
	3250HS	6	2.5	2.205	1.00	0.787	1.75	0.551	0.827	0.375	0.248	0.275	1.1
	3300HS	7	3.0	2.205	1.00	0.866	2.00	0.551	0.827	0.375	0.248	0.275	2.2
	3400HS	8	4.0	2.874	1.25	0.866	2.00	0.709	1.024	0.500	0.319	0.275	3.3

Available inserts

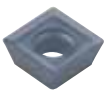










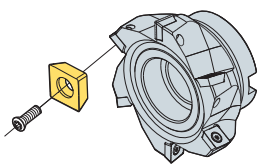


Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A	G10	H01	H05	
SDET	09M402R-MA															●			●	●	
	09M405R-MF																				
	09M405R-MM																				
SDXT	09M405R-MF				●					●	●	●		●	●						E19
	09M405L-MF																				E20
	09M405R-MM				●	●				●	●	●		●	●						
	09M405L-MM										●										
	09M405R-MA																		●	●	

Parts

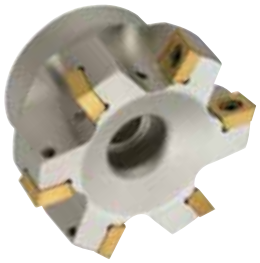
Specification	Screw	Wrench
Ø2.0~Ø4.0	FTGA03508	TW15S

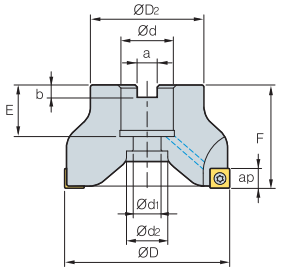
Assembling



Available inserts **E19, E20**

FMPCA4000










AA
0°

• AR: 10°
• RR: -9°~-8°

(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs
FMPCA	4250HS	5	2.5	2.205	1.00	0.787	1.75	0.551	0.827	0.375	0.248	0.433	0.9
	4300HS	6	3.0	2.205	1.00	0.787	2.00	0.551	0.827	0.375	0.248	0.433	2.0
	4400HS	7	4.0	2.874	1.25	0.827	2.00	0.709	1.024	0.500	0.319	0.433	3.3
	4500HS	8	5.0	3.386	1.50	1.063	2.50	0.823	1.220	0.625	0.394	0.433	6.8

Available inserts







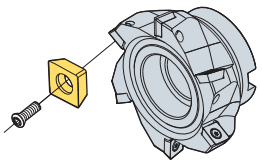

Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	ST30A	G10	H01	H05	
SDET	130504R-MA															●			●	●	
	130508R-MF																				
	130508R-MM																				E19
SDXT	130508R-MF				●						●	●		●	●						E20
	130508R-MM				●	●				●	●	●		●	●						
	130508R-MA																		●	●	

Parts

Specification	Screw	Wrench
Ø2.5~Ø5.0	FTNC04511	TW20S

Available inserts **E19,E20**

Assembling	



FMPCA3000-A

Aluminum body



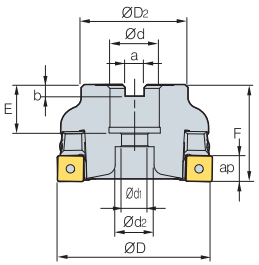


Fig. 1

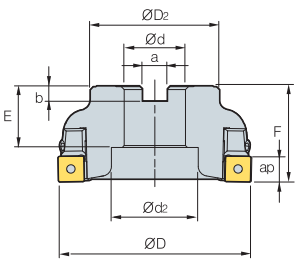


Fig. 2




AA
0°

- AR: 10°
- RR: -9°~-7.3°

(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs	Fig.
FMPCA	3250S-A	3	2.50	-	1.00	0.375	0.248	0.866	1.75	-	0.827	0.157	0.5	1
	3300S-A	4	3.00	-	1.00	0.375	0.248	0.866	2.00	-	0.827	0.157	1.0	1
	3400S-A	5	4.00	-	1.25	0.500	0.319	1.181	2.00	-	1.772	0.157	1.5	2

Available inserts













Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A	G10	H01	H05	
SDET	09M402R-MA															●			●	●	
	09M405R-MF																				
	09M405R-MM																				
SDXT	09M405R-MF				●					●	●	●		●	●						E19
	09M405L-MF																				E20
	09M405R-MM				●	●				●	●	●		●	●						
	09M405L-MM										●										
	09M405R-MA																		●	●	

Parts

Specification	Screw	Insert wrench	Locator wrench	Locator	Locator screw	Chip cover	Chip cover screw
Ø2.50	FTGA03508	TW15S	HW30L	LFMP3R-A	DHA0624	CFMP3R14R1-A	PXMA0306
Ø3.00~Ø4.00	FTGA03508	TW15S	HW30L	LFMP3R-A	DHA0624	CFMP3R-A	PXMA0306

Available inserts **E19, E20**

FMPCA4000-A

Aluminum body



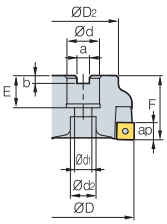


Fig. 1

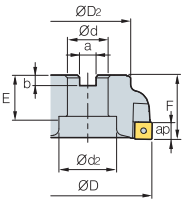


Fig. 2

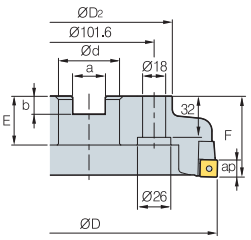


Fig. 3

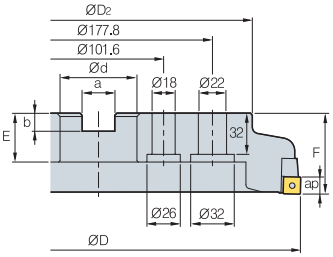


Fig. 4




AA
0°

- AR: 10°
- RR: -9°~-7.3°

(inch)

Designation			ØD	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs	Fig.
FMPCA	4250S-A	3	2.50	-	1.00	0.750	0.433	1.181	1.75	-	0.827	0.256	0.5	1
	4300S-A	4	3.00	-	1.00	0.375	0.248	0.866	2.00	-	0.827	0.256	1.0	1
	4400S-A	5	4.00	-	1.25	0.500	0.319	1.181	2.00	-	1.772	0.256	1.5	2
	4500S-A	6	5.00	-	1.50	0.625	0.394	1.181	2.50	-	2.205	0.256	2.9	2
	4600S-A	8	6.00	-	2.00	0.750	0.433	1.181	2.50	-	2.756	0.256	4.4	2
	4800S-A	10	8.00	-	2.50	1.000	0.551	1.496	2.50	-	-	0.256	7.3	3
	41000S-A	12	10.00	-	2.50	1.000	0.551	1.496	2.50	-	-	0.256	11.6	3
	41200S-A	14	12.00	-	2.50	1.000	0.551	1.496	2.50	-	-	0.256	18.4	4

Available inserts

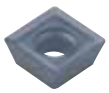












Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	ST30A	G10	H01	H05	
SDET	130504R-MA															●			●	●	
	130508R-MF																				
	130508R-MM																				E19
SDXT	130508R-MF				●						●	●		●	●						E20
	130508R-MM				●	●				●	●	●		●	●						
	130508R-MA																		●	●	

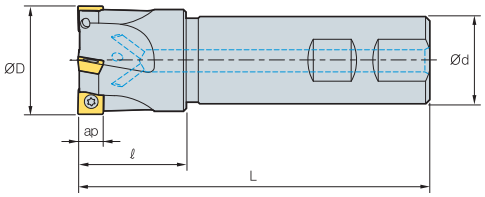
Parts

Specification	Screw	Insert wrench	Locator wrench	Locator	Locator screw	Chip cover	Chip cover screw
Ø2.50~Ø3.00	FTNC04509	TW20S	HW40L	LFMP4R1-A	DHA0825	CFMP3R14R1-A	PXMA0306
Ø4.00~Ø12.00	FTNC04509	TW20S	HW40L	LFMP4R-A	DHA0830	CFMP4R-A	PXMA0306

Available inserts **E19, E20**

FMPSA3000





AA 0°

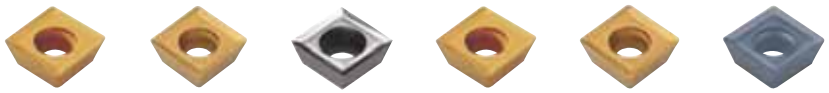
• AR: 10°
• RR: -9°~-8°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
FMPSA	3100HS	2	1.00	1.00	1.378	4.528	0.275	0.9
	3125HS	3	1.25	1.00	1.575	4.921	0.275	1.1
	3125HS-S125	3	1.25	1.25	1.575	5.118	0.275	1.3
	3150HS	4	1.50	1.25	1.575	5.118	0.275	1.8
	3200HS	5	2.00	1.25	1.575	5.315	0.275	2.2
	3200HS-S150	5	2.00	1.50	1.575	5.512	0.275	2.9
	3250HS	6	2.50	1.25	1.772	5.709	0.275	2.6
	3250HS-S150	6	2.50	1.50	1.772	5.709	0.275	3.5

Available inserts

SDET-MF | SDET-MM | SDET-MA | SDXT-MF | SDXT-MM | SDXT-MA

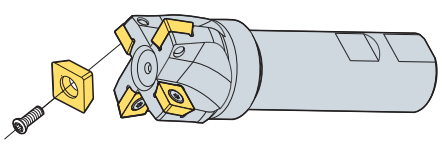


Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A	G10	H01	H05	
SDET	09M402R-MA															●			●	●	
	09M405R-MF																				
	09M405R-MM																				
SDXT	09M405R-MF				●					●	●	●		●	●						E19
	09M405L-MF																				E20
	09M405R-MM				●	●				●	●	●		●	●						
	09M405L-MM										●										
	09M405R-MA																		●	●	

Parts

Specification	Screw	Wrench
Ø1.00~Ø2.50	FTGA03508	TW15S

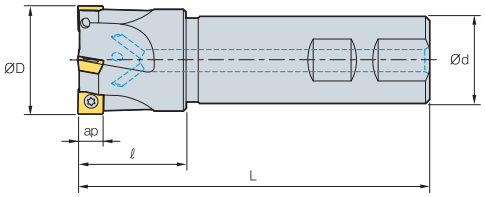
Assembling



Available inserts **E19, E20**

FMPSA4000





AA 0°

• AR: 10°
• RR: -9°~-8°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
FMPSA	4150HS	3	1.5	1.25	1.575	5.180	0.433	2.2
	4200HS	4	2.0	1.25	1.772	5.315	0.433	3.3
	4200HS-S150	4	2.0	1.50	1.772	5.709	0.433	3.7
	4250HS	5	2.5	1.25	1.772	5.315	0.433	4.6
	4250HS-S150	5	2.5	1.50	1.772	5.709	0.433	5.3

Available inserts

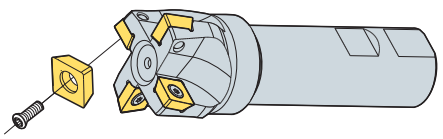


Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	ST30A	G10	H01	H05	
SDET	130504R-MA															●			●	●	
	130508R-MF																				
	130508R-MM																				E19
SDXT	130508R-MF				●						●	●		●	●						E20
	130508R-MM				●	●				●	●	●		●	●						
	130508R-MA																		●	●	

Parts

Specification	Screw	Wrench
Ø1.5~Ø2.5	FTNC04511	TW20S

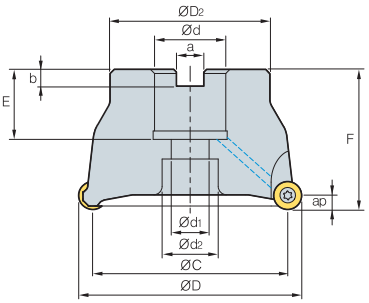
Assembling



Available inserts E19, E20

FMRCA3000







• AR: 5°
• RR: -5°

(inch)

Designation			ØD	ØC	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs
FMRCA	3150HRD	3	1.5	1.11	1.417	0.50	0.250	0.169	0.630	1.50	0.287	0.433	0.196	0.4
	3150HRD-H	4	1.5	1.11	1.417	0.50	0.250	0.169	0.630	1.50	0.287	0.433	0.196	0.4
	3200HRD	4	2.0	1.61	1.772	0.75	0.313	0.220	0.787	1.75	0.433	0.630	0.196	0.7
	3200HRD-H	5	2.0	1.61	1.772	0.75	0.313	0.220	0.787	1.75	0.433	0.630	0.196	0.7
	3250HRD	5	2.5	2.11	1.772	0.75	0.313	0.220	0.787	1.75	0.433	0.630	0.196	1.4
	3250HRD-H	6	2.5	2.11	1.772	0.75	0.313	0.220	0.787	1.75	0.433	0.630	0.196	1.4
	3300HRD	6	3.0	2.61	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.196	2.4
	3300HRD-H	7	3.0	2.61	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.196	2.4
	3400HRD	7	4.0	3.61	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.196	4.6
	3400HRD-H	8	4.0	3.61	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.196	4.6

Note) It's general that you measure of inner diameter when the diameter of FMRC/FMRCM is Ø1.5~Ø2.5

Available inserts


RDKT-MF


RDKT-MM


RDCT-MA

Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDCT	10T3M0-MA																●	E16 E17
RDKT	10T3M0-MF											●		●				
	10T3M0-MM				●					●	●	●		●				

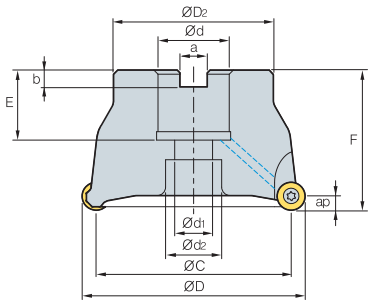
Parts

Specification	Screw	Wrench
Ø1.5~Ø4.0	FTGA03508	TW15S

Available inserts E16, E17

FMRCA4000







• AR: 5°
• RR: -5°

(inch)

Designation			ØD	ØC	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs
FMRCA	4200HRD	4	2.0	1.53	1.772	0.75	0.313	0.220	0.787	1.75	0.433	0.630	0.236	0.9
	4250HRD	4	2.5	2.03	1.772	0.75	0.313	0.220	0.787	1.75	0.433	0.630	0.236	1.3
	4250HRD-M	5	2.5	2.03	1.772	0.75	0.313	0.220	0.787	1.75	0.433	0.630	0.236	1.3
	4300HRD	5	3.0	2.53	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.236	2.2
	4300HRD-M	6	3.0	2.53	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.236	2.2
	4400HRD	6	4.0	3.53	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.236	4.2
	4400HRD-M	7	4.0	3.53	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.236	4.2
	4500HRD	7	5.0	4.53	3.386	1.50	0.626	0.394	1.063	2.50	0.827	1.220	0.236	6.6
	4500HRD-M	8	5.0	4.53	3.386	1.50	0.626	0.394	1.063	2.50	0.827	1.220	0.236	6.6

Note) It's general that you measure of inner diameter when the diameter of FMRC/FMRCM is Ø1.5~Ø2.5

Available inserts

RDKT-MF



RDKT-MM



RDCT-MA



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDCT	1204M0-MA																●	E16 E17
RDKT	1204M0-MF									●		●		●				
	1204M0-MM				●					●	●	●		●				

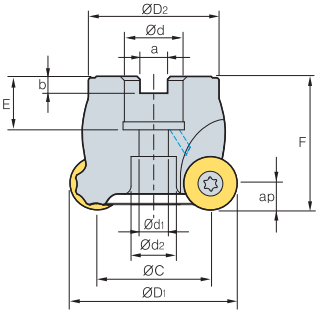
Parts

Specification	Screw	Wrench
Ø2.0~Ø5.0	FTKA0410	TW15S

Available inserts **E16, E17**

FMRCA5000







• AR: 5°
• RR: -5°

(inch)

Designation			ØD	ØC	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs
FMRCA	5200HRD	3	2.0	1.37	1.772	0.75	0.313	0.220	0.827	2.00	0.433	0.630	0.314	0.9
	5250HRD	4	2.5	1.87	1.772	0.75	0.313	0.220	0.827	2.00	0.433	0.630	0.314	1.3
	5250HRD-H	5	2.5	1.87	1.772	0.75	0.313	0.220	0.827	2.00	0.433	0.630	0.314	1.3
	5300HRD	5	3.0	2.37	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.314	2.0
	5300HRD-H	6	3.0	2.37	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.314	2.0
	5400HRD	6	4.0	3.37	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.314	4.2
	5400HRD-H	7	4.0	3.37	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.314	4.2
	5500HRD	7	5.0	4.37	3.386	1.50	0.626	0.394	1.063	2.50	0.827	1.220	0.314	6.6
	5500HRD-H	8	5.0	4.37	3.386	1.50	0.626	0.394	1.063	2.50	0.827	1.220	0.314	6.6

Note) It's general that you measure of inner diameter when the diameter of FMRC/FMRCM is Ø2.0~Ø2.5

Available inserts

		RDHW-E,F,S	RDKT-MF	RDKT-ML	RDKT-MM
					

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDHW	1605M0E																	
	1605M0F																	
	1605M0S																	E16
RDKT	1605M0-MM									●								E17
	1605M0-MF																	
	1605M0-ML																	

Parts

Specification	Screw	Wrench
Ø2.0~Ø5.0	FTGA0513-P	TW20-100

Available inserts E16, E17

FMRCA6000



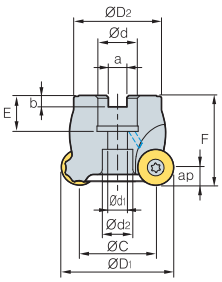


Fig. 1

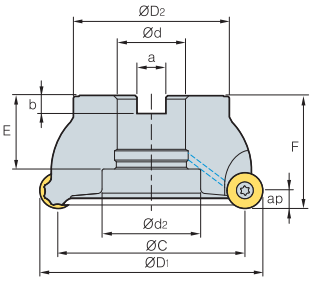


Fig. 2

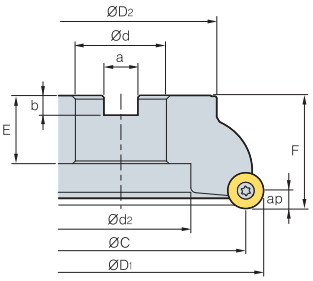


Fig. 3



• AR: 5°
• RR: -5°

(inch)

Designation			ØD	ØC	ØD2	Ød	a	b	E	F	Ød1	Ød2	ap	lbs	Fig.
FMRCA	6250HRD	3	2.5	1.72	1.772	0.75	0.313	0.220	0.787	2.00	0.433	0.630	0.393	1.1	1
	6250HRD-M	4	2.5	1.72	1.772	0.75	0.313	0.220	0.787	2.00	0.433	0.630	0.393	1.1	1
	6300HRD	4	3.0	2.22	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.393	1.8	1
	6300HRD-M	5	3.0	2.22	2.205	1.00	0.375	0.248	0.866	2.00	0.551	0.827	0.393	1.8	1
	6400HRD	5	4.0	3.22	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.393	3.5	1
	6400HRD-M	6	4.0	3.22	2.874	1.25	0.500	0.319	0.827	2.00	0.709	1.024	0.393	3.5	1
	6500HRD	6	5.0	4.22	3.386	1.50	0.626	0.394	1.063	2.50	0.827	1.220	0.393	6.0	2
	6500HRD-M	7	5.0	4.22	3.386	1.50	0.626	0.394	1.063	2.50	0.827	1.220	0.393	6.0	2
	6600HRD	7	6.0	5.22	3.937	1.50	0.626	0.394	1.181	2.50	-	3.150	0.393	9.7	3
	6600HRD-M	8	6.0	5.22	3.937	1.50	0.626	0.394	1.181	2.50	-	3.150	0.393	9.7	3

Available inserts

RDHW-E,F,S



RDKT-MM



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDHW	2006M0E																	E16
	2006M0F																	E17
	2006M0S																	
RDKT	2006M0-MM									●								

Parts

Specification	Screw	Wrench
Ø2.5~Ø6.0	FTGA0515-P	TW20-100

Available inserts **E16, E17**

FMRSA1000/1500



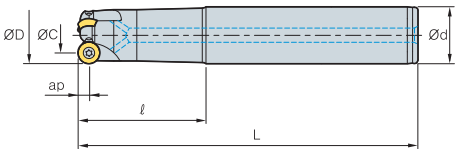


Fig. 1

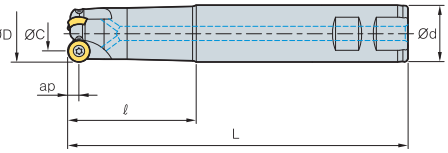


Fig. 2



• AR: 5°
• RR: -5°~-1°

(inch)

Designation			ØD	ØC	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	10031HRD-M	1	0.312	0.118	0.375	1.181	3.150	0.098	0.4	1
	10031HRD-L	1	0.312	0.118	0.375	1.969	3.937	0.098	0.4	1
	10037HRD-M	1	0.375	0.177	0.500	1.732	3.937	0.098	0.4	1
	10037HRD-L	1	0.375	0.177	0.500	2.520	4.724	0.098	0.4	1
	10050HRD-M	2	0.500	0.303	0.500	1.732	3.937	0.098	0.7	1
	10050HRD-L	2	0.500	0.303	0.625	3.150	6.299	0.098	0.7	1
	10062HRD-M	3	0.625	0.425	0.625	3.150	6.299	0.098	0.7	1
	10062HRD-L	3	0.625	0.425	0.625	3.937	7.874	0.098	0.9	1
FMRSA	15037HRD-M	1	0.375	0.138	0.500	1.732	3.937	0.118	0.4	1
	15037HRD-L	1	0.375	0.138	0.500	2.520	4.724	0.118	0.4	1
	15050HRD-M	2	0.500	0.264	0.500	2.126	4.331	0.118	0.7	1
	15050HRD-L	2	0.500	0.264	0.625	3.150	6.299	0.118	0.7	1
	15062HRD-M	3	0.625	0.386	0.625	2.362	5.118	0.118	0.7	1
	15062HRD-L	3	0.625	0.386	0.750	3.543	7.087	0.118	0.9	1
	15075HRD-M	3	0.750	0.512	0.750	3.150	5.906	0.118	0.9	1
	15075HRD-L	3	0.750	0.512	0.750	3.543	7.874	0.118	1.1	1

Available inserts

RDHW-E,F,S



RDKW



Type	Designation		Cermet		Coated												Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
1000 type	RDHW	0501M0E											●						
		0501M0F																	
		0501M0S																	
	RDKW	0501M0E									●								E16
1500 type	RDHW	06T1M0E											●						E17
		06T1M0F																	
		06T1M0S																	
	RDKW	06T1M0E									●								

Parts

Specification	Screw	Wrench
Ø0.312~Ø0.625 (1000 type)	FTNA0203	TW06P
Ø0.375~Ø0.750 (1500 type)	FTNA02205	TW06P

Available inserts E16, E17

FMRSA2000/2500



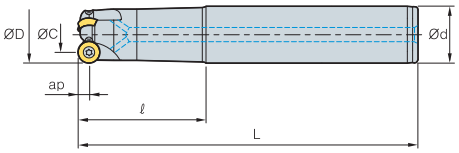


Fig. 1

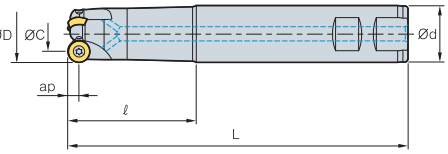


Fig. 2



- AR: 5°
- RR: -5°~-1°

(inch)

Designation			ØD	ØC	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	20062HRD-S	2	0.625	0.346	0.625	2.165	4.528	0.138	0.7	2
	20062HRD-M	2	0.625	0.346	0.750	3.150	5.906	0.138	0.9	1
	20062HRD-L	2	0.625	0.346	0.750	3.543	7.874	0.138	1.1	1
	20075HRD-S	3	0.750	0.472	0.750	2.559	4.921	0.138	1.1	2
	20075HRD-M	3	0.750	0.472	0.750	3.150	5.906	0.138	1.1	1
	20075HRD-L	3	0.750	0.472	1.000	3.543	7.874	0.138	1.1	1
FMRSA	25062HRD-S	2	0.625	0.307	0.625	2.559	4.921	0.157	1.1	2
	25062HRD-M	2	0.625	0.307	0.625	3.150	5.906	0.157	1.1	1
	25062HRD-L	2	0.625	0.307	0.750	3.543	7.874	0.157	1.1	1
	25075HRD-S	2	0.750	0.433	0.750	2.559	4.921	0.157	0.9	2
	25075HRD-M	2	0.750	0.433	0.750	3.150	5.906	0.157	1.1	1
	25075HRD-L	2	0.750	0.433	1.000	3.543	7.874	0.157	1.3	1
	25100HRD-S	3	1.000	0.685	1.000	2.165	4.921	0.157	1.1	2
	25100HRD-M	3	1.000	0.685	1.000	3.543	7.874	0.157	1.3	1
	25100HRD-L	3	1.000	0.685	1.250	4.331	9.843	0.157	1.5	1

Available inserts

RDHW-E,F,S



RDKW



Type	Designation		Cermet		Coated											Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
2000 type	RDHW	0702M0E											●						
		0702M0F																	
		0702M0S																	
	RDKW	0702M0E									●								E16
2500 type	RDHW	0803M0E											●						E17
		0803M0F																	
		0803M0S																	
	RDKW	0803M0E									●								

Parts

Specification	Screw	Wrench
Ø0.625~Ø0.750 (2000 type)	FTNA02555	TW07S
Ø0.625~Ø1.000 (2500 type)	FTNA0305 FTNA0306 (Ø0.750 over)	TW09S

Available inserts **E16, E17**

FMRSA3000



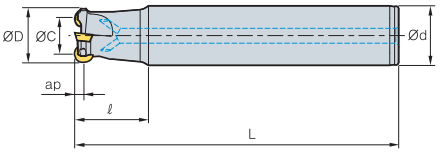


Fig. 1

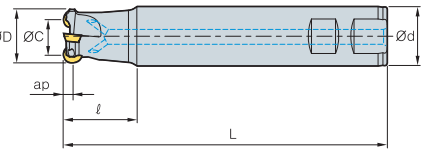


Fig. 2



• AR: 5°
• RR: -8°~-5°

(inch)

Designation			ØD	ØC	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	3075HRD-M	1	0.750	0.358	0.750	1.575	5.906	0.197	0.9	1
	3087HRD-M	2	0.875	0.480	0.750	1.575	5.906	0.197	0.9	1
	3087HRD-M2	1	0.875	0.480	0.750	1.575	5.906	0.197	1.3	1
	3087HRD-L	2	0.875	0.480	0.750	1.969	7.874	0.197	1.3	1
	3087HRD-L2	2	0.875	0.480	0.750	1.969	7.874	0.197	1.1	1
	3100HRD-S	2	1.000	0.606	1.000	1.378	4.528	0.197	1.5	1
	3100HRD-M	2	1.000	0.606	1.000	2.756	7.874	0.197	1.5	1
	3100HRD-L	2	1.000	0.606	1.000	3.937	9.843	0.197	1.5	1
	3125HRD-S	2	1.250	0.858	1.250	1.575	4.921	0.197	1.5	1
	3125HRD-M	3	1.250	0.858	1.250	2.756	7.874	0.197	2.2	2
	3125HRD-L	3	1.250	0.858	1.250	5.906	11.811	0.197	2.9	1
	3150HRD-S	3	1.500	1.106	1.250	1.575	4.921	0.197	3.5	1
	3150HRD-M	4	1.500	1.106	1.250	2.756	7.874	0.197	2.9	2
	3150HRD-L	4	1.500	1.106	1.250	5.906	11.811	0.197	3.3	1
	3040HRD-L	4	1.500	1.106	1.250	1.575	4.921	0.197	4.0	1

Available inserts

RDKT-MF



RDKT-MM



RDCT-MA



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDCT	10T3M0-MA																●	E16 E17
RDKT	10T3M0-MF											●		●				
	10T3M0-MM				●					●	●	●		●				

Parts

Specification	Screw	Wrench
Ø0.750 Ø0.875~Ø1.500	FTGA03507 FTGA03508	TW15S

Available inserts **E16, E17**

FMRSA4000



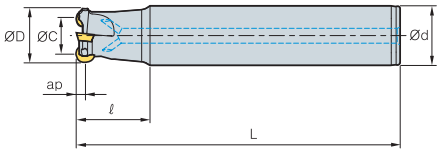


Fig. 1

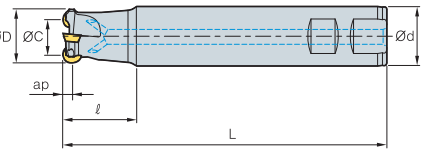


Fig. 2



• AR: 5°
• RR: -8°~-5°

(inch)

Designation			ØD	ØC	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	4125HRD-S	2	1.250	0.708	1.250	1.575	4.921	0.197	1.8	2
	4125HRD-M	2	1.250	0.708	1.250	2.756	7.874	0.236	2.4	1
	4125HRD-L	2	1.250	0.708	1.250	5.906	11.811	0.236	3.5	1
	4150HRD-S	3	1.500	1.028	1.250	1.575	4.921	0.236	2.0	2
	4150HRD-M	3	1.500	1.028	1.250	2.756	7.874	0.236	2.4	1
	4150HRD-L	3	1.500	1.028	1.250	5.906	11.811	0.236	3.7	1
	4150HRD-S150	3	1.500	1.028	1.500	1.575	4.921	0.236	2.2	2
	4150HRD-M150	3	1.500	1.028	1.500	2.756	7.874	0.236	3.5	1
	4150HRD-L150	3	1.500	1.028	1.500	5.906	11.811	0.236	4.0	1
	4200HRD-S	4	2.000	1.528	1.500	1.969	5.906	0.236	2.9	2
	4200HRD-M	4	2.000	1.528	1.500	1.969	9.843	0.236	4.4	1
	4200HRD-L	4	2.000	1.528	1.500	1.969	11.811	0.236	5.3	1

Available inserts

RDKT-MF



RDKT-MM



RDCT-MA



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDCT	1204M0-MA																●	E16 E17
RDKT	1204M0-MF									●		●		●				
	1204M0-MM				●					●	●	●		●				

Parts

Specification	Screw	Wrench
Ø1.250~Ø2.000	FTKA0410	TW15S

Available inserts **E16, E17**

FMRSA5000



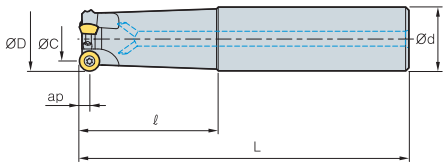


Fig. 1

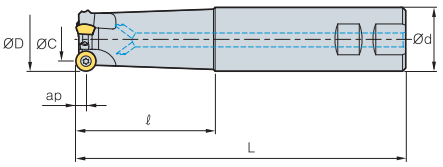


Fig. 2



• AR: 5°
• RR: -8°~-5°

(inch)

Designation			ØD	ØC	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	5150HRD-S	2	1.500	0.870	1.250	1.575	4.921	0.315	3.1	2
	5150HRD-M	2	1.500	0.870	1.250	1.969	7.874	0.315	4.0	1
	5150HRD-L	2	1.500	0.870	1.250	1.969	11.811	0.315	4.4	1
	5150HRD-S150	2	1.500	0.870	1.500	1.575	4.921	0.315	3.5	2
	5150HRD-M150	2	1.500	0.870	1.500	2.756	7.874	0.315	4.0	1
	5150HRD-L150	2	1.500	0.870	1.500	5.906	11.811	0.315	5.3	1
	5200HRD-S	3	2.000	1.370	1.500	1.969	5.906	0.315	4.0	2
	5200HRD-M	3	2.000	1.370	1.500	1.969	9.843	0.315	5.3	1
	5200HRD-L	3	2.000	1.370	1.500	1.969	11.811	0.315	6.2	1
	5250HRD-S	4	2.500	1.862	1.500	1.969	5.906	0.315	4.0	2
	5250HRD-M	4	2.500	1.862	1.500	1.969	9.843	0.315	5.3	1
	5250HRD-L	4	2.500	1.862	1.500	1.969	11.811	0.315	5.7	1

Available inserts

RDHW-E,F,S | RDKT-MF | RDKT-ML | RDKT-MM



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDHW	1605M0E																	
	1605M0F																	
	1605M0S																	E16
RDKT	1605M0-MF									●								E17
	1605M0-MM																	
	1605M0-ML																	

Parts

Specification	Screw	Wrench
Ø1.500~Ø2.500	FTGA0513-P	TW20-100

Available inserts **E16, E17**

FMRSA6000



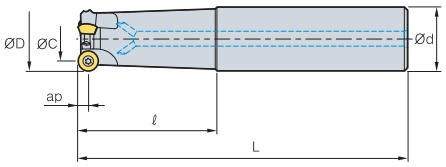


Fig. 1

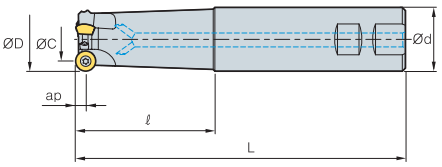


Fig. 2



- AR: 5°
- RR: -8°~-5°

(inch)

Designation		⦾	ØD	ØC	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	6200HRD-S	3	2.000	1.213	1.500	1.969	5.906	0.394	2.9	2
	6200HRD-M	3	2.000	1.213	1.500	1.969	9.843	0.394	3.1	1
	6200HRD-L	3	2.000	1.213	1.500	1.969	11.811	0.394	4.9	1
	6250HRD-S	4	2.500	1.713	1.500	1.969	5.906	0.394	5.3	2
	6250HRD-M	4	2.500	1.713	1.500	1.969	9.843	0.394	6.0	1
	6250HRD-L	4	2.500	1.713	1.500	1.969	11.811	0.394	6.6	1

Available inserts

RDHW-E,F,S



RDKT-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDHW	2006M0E																	E16
	2006M0F																	E17
	2006M0S																	
RDKT	2006M0-MM									●								

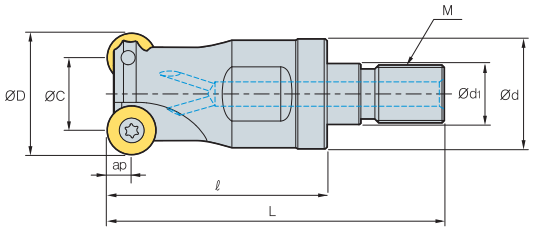
Parts

Specification	Screw	Wrench
Ø2.000~Ø2.500	FTGA0515-P	TW20-100

Available inserts **E16, E17**

FMRMA1000/1500







• AR: 0°~5°
• RR: -5°~-1°

(inch)

Designation			ØD	ØC	Ød	Ød1	ℓ	L	M	ap	lbs
FMRMA	10031HRD-M06	1	0.312	0.118	0.256	0.374	0.984	1.575	M06	0.098	0.04
	10037HRD-M06	2	0.375	0.177	0.256	0.374	0.984	1.575	M06	0.098	0.04
	10050HRD-M06	2	0.500	0.303	0.256	0.433	0.984	1.575	M06	0.098	0.09
	10062HRD-M08	3	0.625	0.425	0.335	0.570	1.181	1.850	M08	0.098	0.09
FMRMA	15037HRD-M06	1	0.375	0.138	0.256	0.374	0.984	1.575	M06	0.118	0.07
	15050HRD-M06	2	0.500	0.264	0.256	0.433	0.984	1.575	M06	0.118	0.04
	15062HRD-M08	3	0.625	0.390	0.335	0.700	1.181	1.850	M08	0.118	0.04
	15075HRD-M10	3	0.750	0.512	0.413	0.709	1.378	2.205	M10	0.118	0.15

Available inserts

RDHW-E,F,S



RDKW



Type	Designation		Cermet		Coated											Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
1000 type	RDHW	0501M0E											●						
		0501M0F																	
		0501M0S																	
	RDKW	0501M0E									●								E16
1500 type	RDHW	06T1M0E											●						E17
		06T1M0F																	
		06T1M0S																	
	RDKW	06T1M0E									●								

Available adaptor

Designation		Available adaptor
FMRMA	10031HRD-M06	MATA-M06
	10037HRD-M06	
	10050HRD-M06	
	10062HRD-M08	MATA-M08
	15037HRD-M06	MATA-M06
	15050HRD-M06	
	15062HRD-M08	MATA-M08
	15075HRD-M10	MATA-M10

Designation: FMRMA10031HRD-M06
Modular head threading measure size (M06)

=

Adaptor spec.: MATA-M06-078-S037S
Adaptor threading measure (M06)

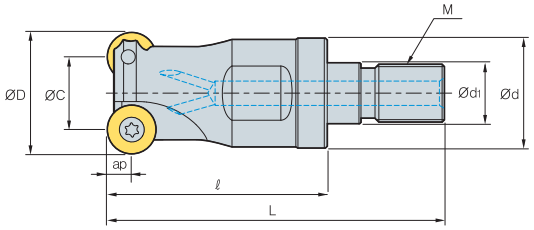
Parts

Specification	Screw	Wrench
Ø0.312~Ø0.625 (1000 type)	FTNA0203	TW06P
Ø0.375~Ø0.750 (1500 type)	FTNA02205	TW06P

Available inserts E16, E17 Available adaptor E365~E366

FMRMA2000/2500







• AR: 0°~5°
• RR: -5°~-1°

(inch)

Designation			ØD	ØC	Ød	Ød1	ℓ	L	M	ap	lbs
FMRMA	20062HRD-M08	2	0.625	0.350	0.335	0.570	1.181	1.850	M08	0.138	0.09
	20075HRD-M10	3	0.790	0.472	0.413	0.709	1.378	2.205	M10	0.138	0.15
FMRMA	25062HRD-M08	2	0.625	0.311	0.335	0.570	1.181	1.850	M08	0.157	0.09
	25075HRD-M10	2	0.750	0.433	0.413	0.709	1.378	2.205	M10	0.157	0.15
	25100HRD-M12	3	1.000	0.685	0.492	0.886	1.772	2.717	M12	0.157	0.29

Available inserts

RDHW-E,F,S



RDKW



Type	Designation		Cermet		Coated											Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
2000 type	RDHW	0702M0E											●						
		0702M0F																	
		0702M0S																	
	RDKW	0702M0E									●								E16
2500 type	RDHW	0803M0E											●						E17
		0803M0F																	
		0803M0S																	
	RDKW	0803M0E									●								

Available adaptor

Designation		Available adaptor
FMRMA	20062HRD-M08	MATA - M08
	20075HRD-M08	MATA - M10
	25062HRD-M10	MATA - M08
	25075HRD-M10	MATA - M10
	25100HRD-M12	MATA - M12

Designation: FMRMA20062HRD-M08
Modular Head Threading Measure size (M08)

||

Adaptor spec.: MATA-M08-078-S062S
Adaptor Threading Measure (M08)

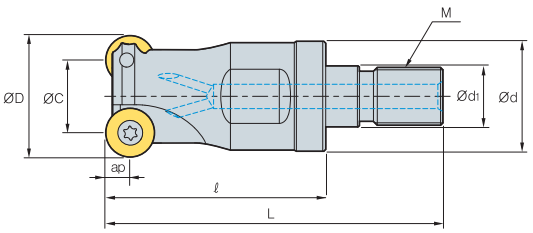
Parts

Specification	Screw	Wrench
Ø0.625~Ø0.790 (2000 type)	FTNA02555	TW07S
Ø0.625~Ø1.000 (2500 type)	FTNA0305	TW09S

Available inserts E16, E17 Available adaptor E365~E366

FMRMA3000







• AR: 5°
• RR:-8°~-5°

(inch)

Designation			ØD	ØC	Ød	Ød1	ℓ	L	M	ap	lbs
FMRMA	3087HRD-M10	2	0.875	0.480	0.413	0.709	1.378	2.205	M10	0.197	0.2
	3100HRD-M12	2	1.000	0.606	0.492	0.886	1.772	2.717	M12	0.197	0.3
	3125HRD-M16	3	1.250	0.858	0.650	1.142	1.969	3,031	M16	0.197	0.4
	3150HRD-M16	4	1.500	1.106	0.650	1.142	1.969	3.031	M16	0.197	0.5

Available inserts



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RDCT	10T3M0-MA																●	E16
RDKT	10T3M0-MF											●		●				E17
	10T3M0-MM				●					●	●	●		●				

Available adaptor

Designation		Available adaptor
FMRMA	3087HRD-M10	MATA-M10
	3100HRD-M12	MATA-M12
	3125HRD-M16	MATA-M16
	3150HRD-M16	

Designation: FMRMA3087HRD-M10
Modular Head Threading Measure size (M10)

||

Adaptor spec.: MATA-M10-118-S075S
Adaptor Threading Measure (M10)

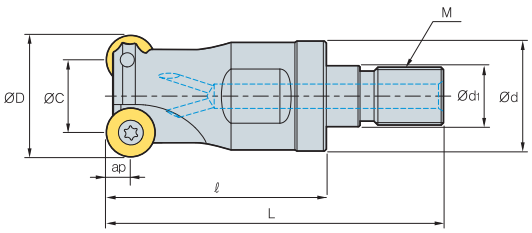
Parts

Specification	Screw	Wrench
Ø0.875 Ø1.000~Ø1.500	FTGA03507 FTGA03508	TW15S

Available inserts E16, E17 Available adaptor E365~E366

FMRMA4000/5000







• AR: 5°
• RR: -8°~-5°

(inch)

Designation			ØD	ØC	Ød	Ød1	ℓ	L	M	ap	lbs
FMRMA	4100HRD-M12	2	1.000	0.528	0.492	0.886	1.772	2.717	M12	0.236	0.3
	4125HRD-M16	2	1.250	0.780	0.669	1.142	1.969	3.031	M16	0.236	0.5
	4150HRD-M16	3	1.500	1.028	0.669	1.142	1.969	3.031	M16	0.236	0.5
FMRMA	5150HRD-M16	2	1.500	0.870	0.669	1.142	1.969	3.031	M16	0.315	0.6

Available inserts



Type	Designation		Cermet		Coated												Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
4000 type	RDCT	1204M0-MA																●	E16 E17
	RDKT	1204M0-MF									●		●		●				
		1204M0-MM				●					●	●	●		●				
5000 type	RDHW	1605M0E																	
	RDKT	1605M0-MF																	
		1605M0-ML																	
		1605M0-MM									●								

Available adaptor

Designation		Available adaptor
FMRMA	4100HRD-M12	MATA-M12
	4125HRD-M16	MATA-M16
	4150HRD-M16	
	5150HRD-M16	MATA-M16

Designation: FMRMA4100HRD-M12
Modular Head Threading Measure size (M12)

Adaptor spec.: MATA-M12-118-S100S
Adaptor Threading Measure (M12)

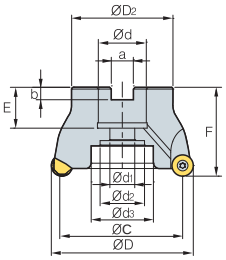
Parts

Specification	Screw	Wrench
Ø1.000~Ø1.500 (4000 type)	FTKA0410	TW15S
Ø1.500 (5000 type)	FTGA0513-P	TW20-100

Available inserts E16, E17 Available adaptor E365~E366

FMRCA3000 new







• AR: 5°
• RR: -4°~ 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs
FMRCA	3150HRP-5	5	1.500	38.100	1.106	28.100	1.417	0.500	0.287	0.433	0.252	0.169	0.630	1.500	0.20	0.49
	3200HRP-6	6	2.000	50.800	1.606	40.800	1.772	0.750	0.413	0.630	0.315	0.220	0.787	1.750	0.20	0.77
	3250HRP-6	6	2.500	63.500	2.106	53.500	2.205	1.000	0.551	0.827	0.374	0.248	0.787	1.750	0.20	1.21
	3250HRP-7	7	2.500	63.500	2.106	53.500	2.205	1.000	0.551	0.827	0.374	0.248	0.787	1.750	0.20	1.23

Available inserts


RPCT-MA


RPET-ML


RPMT-MF


RPMT-MM


RPMW

Designation		Cermet		Coated										Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	10T3M0-MA																●	E17 E18
RPET	10T3M0E-ML													●	●			
RPMT	10T3M0E-MF													●	●			
	10T3M0S-MM							●	●	●				●	●			
RPMW	10T3M0E1							●	●					●	●			

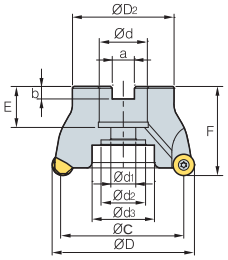
Parts

Specification	Screw	Wrench
Ø1.500~Ø2.500	FTGA03508	TW15S

Available inserts **E17, E18**

FMRCA4000







• AR: 5°
• RR: -2°~ 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
FMRCA	4200HRP-4	4	2.000	50.800	1.528	38.800	1.772	0.750	0.413	0.630	-	0.315	0.220	0.787	1.750	0.24	0.57
	4200HRP-5	5	2.000	50.800	1.528	38.800	1.772	0.750	0.413	0.630	-	0.315	0.220	0.787	1.750	0.24	0.62
	4250HRP-5	5	2.500	63.500	2.028	51.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.24	0.97
	4250HRP-6	6	2.500	63.500	2.028	51.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.24	1.06
	4300HRP-6	6	3.000	76.200	2.528	64.200	2.205	1.000	0.551	0.866	1.299	0.374	0.248	0.787	2.000	0.24	2.03
	4300HRP-7	7	3.000	76.200	2.528	64.200	2.205	1.000	0.551	0.866	1.299	0.374	0.248	0.787	2.000	0.24	1.98
	4400HRP-7	7	4.000	101.600	3.528	89.600	2.874	1.250	0.689	1.024	1.614	0.500	0.319	0.787	2.000	0.24	3.22

Available inserts



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	1204M0-MA																●	
RPET	1204M0E-ML													●	●			
RPMT	1204M0E-MF												●	●	●			E17
	1204M0S-MM							●	●	●			●	●	●			E18
RPMW	1204M0S1							●	●	●				●	●			
	1204M0S2													●	●			

Parts

Specification	Screw	Wrench
Ø2.000~Ø4.000	FTKA0410	TW15S

Available inserts **E17, E18**

FMRCA5000 new



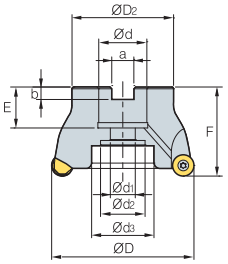


Fig. 1

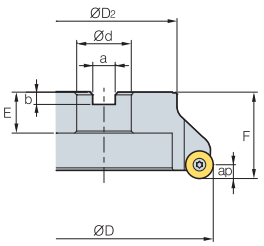


Fig. 2



• AR: 5°
• RR: -1°~ 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Fig.
FMRCA	5250HRP-4	4	2.500	63.500	1.870	47.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.31	1.95	1
	5250HRP-5	5	2.500	63.500	1.870	47.500	2.205	1.000	0.551	0.827	-	0.374	0.248	0.787	1.750	0.31	0.97	1
	5300HRP-5	5	3.000	76.200	2.370	60.200	2.205	1.000	0.551	0.866	1.299	0.374	0.248	0.787	2.000	0.31	1.70	1
	5300HRP-6	6	3.000	76.200	2.370	60.200	2.205	1.000	0.551	0.866	1.299	0.374	0.248	0.787	2.000	0.31	1.81	1
	5400HRP-6	6	4.000	101.600	3.370	85.600	2.874	1.250	0.689	1.024	1.614	0.500	0.319	0.787	2.000	0.31	3.13	1
	5500HRP-7	7	5.000	127.000	4.370	111.000	3.386	1.500	0.827	1.220	1.969	0.626	0.394	1.063	2.500	0.31	6.13	1
	5500HRP-8	8	5.000	127.000	4.370	111.000	3.386	1.500	0.827	1.220	1.969	0.626	0.394	1.063	2.500	0.31	6.15	1
	5600RP-8	8	6.000	152.400	5.370	136.400	4.882	2.000	-	-	-	0.752	0.433	1.181	2.500	0.31	8.84	2(3)

Available inserts


RPCT-MA


RPET-ML


RPMT-MF


RPMT-MM


RPMW

Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	1606M0-MA																●	E17 E18
RPET	1606M0E-ML													●	●			
RPMT	1606M0E-MF													●	●			
	1606M0S-MM							●	●	●				●	●			
RPMW	1606M0S1							●	●					●	●			

Parts

Specification	Screw	Wrench
Ø2.500~Ø6.000	FTGA0512-P	TW20-100

Available inserts E17, E18

FMRCA6000 new



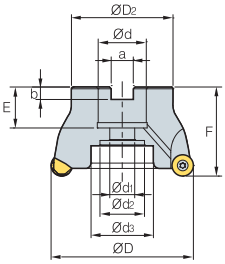


Fig. 1

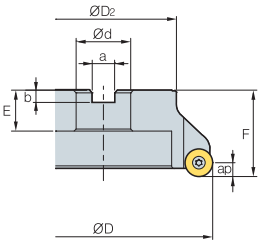


Fig. 2

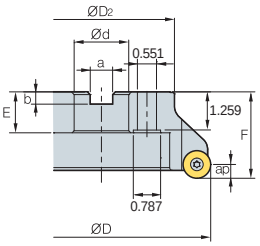


Fig. 3

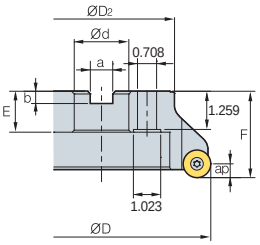


Fig. 4



• AR: 5°
• RR: 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Fig.
FMRCA	6250HRP-4	4	2.500	63.500	1.713	43.500	2.205	1.000	0.551	0.787	-	0.374	0.248	0.787	1.750	0.39	0.82	1
	6300HRP-5	5	3.000	76.200	2.213	56.200	2.205	1.000	0.551	0.827	-	0.374	0.248	0.866	2.000	0.39	1.92	1
	6400HRP-5	5	4.000	101.600	3.213	81.600	2.874	1.250	0.689	1.024	1.614	0.500	0.319	0.787	2.000	0.39	2.89	1
	6400HRP-6	6	4.000	101.600	3.213	81.600	2.874	1.250	0.689	1.024	1.614	0.500	0.319	0.787	2.000	0.39	3.09	1
	6500HRP-5	5	5.000	127.000	4.213	107.000	3.386	1.500	0.827	1.220	1.969	0.626	0.394	1.063	2.500	0.39	6.11	1
	6500HRP-7	7	5.000	127.000	4.213	107.000	3.386	1.500	0.827	1.220	1.969	0.626	0.394	1.063	2.500	0.39	6.37	1
	6600RP-6	6	6.000	152.400	5.213	132.400	4.882	2.000	-	-	-	0.752	0.433	1.181	2.500	0.39	7.89	2(3)
	6600RP-8	8	6.000	152.400	5.213	132.400	4.882	2.000	-	-	-	0.752	0.433	1.181	2.500	0.39	7.78	2(3)
	6800RP-8	8	8.000	203.200	7.213	183.200	5.118	2.500	-	-	-	1.000	0.551	1.496	2.500	0.39	11.36	4
	61000RP-9	9	10.000	254.000	9.213	234.000	7.087	2.500	-	-	-	1.000	0.551	1.496	2.500	0.39	21.43	4

Available inserts

	RPCT-MA	RPET-ML	RPMT-MF	RPMT-MM	RPMW
					

Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	2007M0-MA																●	E17 E18
RPET	2007M0E-ML													●	●			
RPMT	2007M0E-MF													●	●			
	2007M0S-MM							●	●	●				●	●			
RPMW	2007M0S1							●	●					●	●			

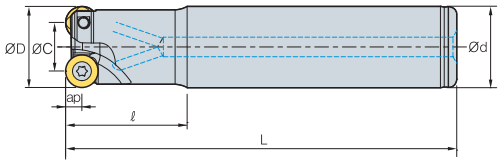
Parts

Specification	Screw	Wrench
Ø2.500~Ø10.000	FTKA0615-P	TW25-100

Available inserts **E17, E18**

FMRSA2500 new







• AR: -4°
• RR: -4°~-1°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	Ød	ℓ	L	ap	lbs
FMRSA	25068HRP-2S062	2	0.688	17.463	0.373	9.463	0.625	1.378	3.543	0.16	0.24
	25068HRP-2M062	2	0.688	17.463	0.373	9.463	0.625	1.378	5.906	0.16	0.44
	25068HRP-2L062	2	0.688	17.463	0.373	9.463	0.625	1.378	7.874	0.16	0.60
	25075HRP-3S075	3	0.750	19.050	0.435	11.050	0.750	1.378	5.118	0.16	0.60
	25075HRP-3M075	3	0.750	19.050	0.435	11.050	0.750	3.937	7.087	0.16	0.79
	25075HRP-3L075	3	0.750	19.050	0.435	11.050	0.750	5.118	9.843	0.16	1.10
	25081HRP-3S075	3	0.813	20.638	0.498	12.638	0.750	1.378	5.118	0.16	0.62
	25081HRP-3M075	3	0.813	20.638	0.498	12.638	0.750	1.378	7.087	0.16	0.88
	25081HRP-3L075	3	0.813	20.638	0.498	12.638	0.750	1.378	9.843	0.16	1.21
	25100HRP-4S100	4	1.000	25.400	0.685	17.400	1.000	1.378	5.906	0.16	1.06
	25100HRP-4M100	4	1.000	25.400	0.685	17.400	1.000	2.362	7.087	0.16	1.32
	25100HRP-4L100	4	1.000	25.400	0.685	17.400	1.000	5.118	9.843	0.16	1.79
	25106HRP-4S100	4	1.063	26.988	0.748	18.988	1.000	1.378	5.906	0.16	1.06
	25106HRP-4L100	4	1.063	26.988	0.748	18.988	1.000	5.118	9.843	0.16	1.87

Available inserts

RPET-ML | RPMT-MF | RPMT-MM | RPMW



Designation		Cermet		Coated										Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPET	0803M0E-ML													●	●			
RPMT	0803M0E-MF													●	●			E17
	0803M0S-MM							●	●					●	●			E18
RPMW	0803M0E1							●	●					●	●			

Parts

Specification	Screw	Wrench
Ø0.688	FTNA0305	TW09S
Ø0.750~Ø1.063	FTNA0306	

Available inserts **E17, E18**

FMRSA3000 new



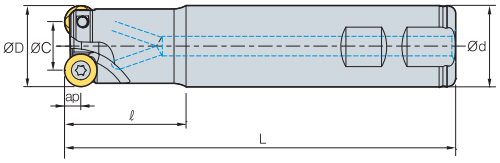


Fig. 1

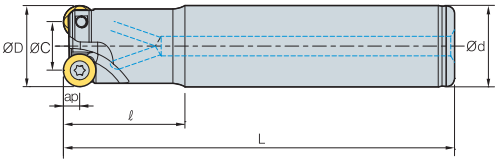


Fig. 2



• AR: -4°
• RR: -1°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	3100HRP-2M075	2	1.000	25.400	0.606	15.400	0.750	1.575	6.693	0.20	0.88	2
	3100HRP-2S100	2	1.000	25.400	0.606	15.400	1.000	1.575	4.724	0.20	0.86	1
	3100HRP-2M100	2	1.000	25.400	0.606	15.400	1.000	2.362	6.299	0.20	1.15	2
	3100HRP-2L100	2	1.000	25.400	0.606	15.400	1.000	5.118	9.843	0.20	1.76	2
	3106HRP-2L100	2	1.063	26.988	0.669	16.988	1.000	1.181	7.874	0.20	1.52	2
	3125HRP-3S125	3	1.250	31.750	0.856	21.750	1.250	1.575	4.921	0.20	1.50	1
	3125HRP-3L125	3	1.250	31.750	0.856	21.750	1.250	2.362	7.874	0.20	2.38	2
	3125HRP-4S125	4	1.250	31.750	0.856	21.750	1.250	1.575	4.921	0.20	1.46	1
	3125HRP-4L100	4	1.250	31.750	0.856	21.750	1.250	2.362	7.874	0.20	1.63	2
	3131HRP-4S125	4	1.313	33.338	0.919	23.338	1.250	1.575	4.921	0.20	1.48	1
	3131HRP-4M125	4	1.313	33.338	0.919	23.338	1.250	2.362	7.087	0.20	2.21	2
	3131HRP-4L125	4	1.313	33.338	0.919	23.338	1.250	7.087	11.811	0.20	3.62	2

Available inserts

	RPCT-MA	RPET-ML	RPMT-MF	RPMT-MM	RPMW
					

Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	10T3M0-MA																●	E17 E18
RPET	10T3M0E-ML													●	●			
RPMT	10T3M0E-MF													●	●			
	10T3M0S-MM							●	●	●				●	●			
RPMW	10T3M0E1							●	●					●	●			

Parts

Specification	Screw	Wrench
Ø1.000~Ø1.063 Ø1.250~Ø1.313	FTGA03507 FTGA03508	TW15S

Available inserts **E17, E18**

FMRSA4000 new



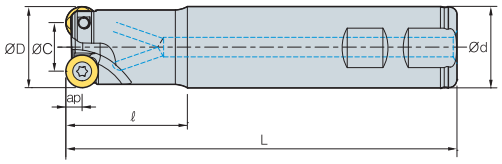


Fig. 1

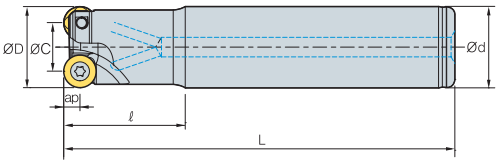


Fig. 2



• AR: -4°
• RR: -2°~ 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	4100HRP-2S100	2	1.000	25.400	0.528	13.400	1.000	2.362	6.299	0.24	1.01	1
	4106HRP-2L100	2	1.063	26.988	0.590	14.988	1.000	2.362	7.874	0.24	1.06	2
	4125HRP-2L100	2	1.250	31.750	0.778	19.750	1.000	1.575	7.480	0.24	1.50	2
	4125HRP-2S125	2	1.250	31.750	0.778	19.750	1.250	1.969	4.921	0.24	1.41	1
	4125HRP-2L125	2	1.250	31.750	0.778	19.750	1.250	1.969	9.843	0.24	3.09	2
	4125HRP-3S125	3	1.250	31.750	0.778	19.750	1.250	1.969	4.921	0.24	1.41	1
	4125HRP-3M125	3	1.250	31.750	0.778	19.750	1.250	2.362	6.299	0.24	1.87	2
	4131HRP-3M125	3	1.313	33.338	0.840	21.338	1.250	2.362	7.874	0.24	2.23	2
	4131HRP-3L125	3	1.313	33.338	0.840	21.338	1.250	2.362	11.811	0.24	3.68	2
	4150HRP-3S125	3	1.500	38.100	1.028	26.100	1.250	1.378	4.134	0.24	1.32	1
	4150HRP-3M125	3	1.500	38.100	1.028	26.100	1.250	1.969	6.299	0.24	2.12	2
	4150HRP-4S125	4	1.500	38.100	1.028	26.100	1.250	1.378	4.134	0.24	1.32	1
	4150HRP-4M125	4	1.500	38.100	1.028	26.100	1.250	1.378	5.906	0.24	1.92	2
	4150HRP-4L125	4	1.500	38.100	1.028	26.100	1.250	1.378	9.843	0.24	3.22	2
	4200HRP-4M125	4	2.000	50.800	1.528	38.800	1.250	1.969	5.906	0.24	2.43	2
	4200HRP-4M150	4	2.000	50.800	1.528	38.800	1.500	1.969	5.906	0.24	3.18	2

Available inserts



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	1204M0-MA																●	
RPET	1204M0E-ML													●	●			
RPMT	1204M0E-MF												●	●	●			E17
	1204M0S-MM							●	●	●			●	●	●			E18
RPMW	1204M0S1							●	●	●				●	●			
	1204M0S2													●	●			

Parts

Specification	Screw	Wrench
Ø1.000~Ø1.063 Ø1.250~Ø2.000	FTKA0408 FTKA0410	TW15S

Available inserts **E17, E18**

FMRSA5000/6000 new



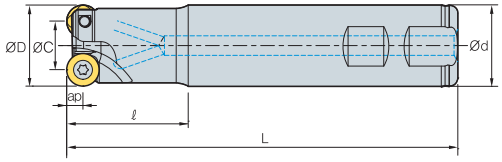


Fig. 1

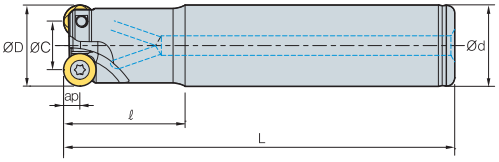


Fig. 2



• AR: -4°
• RR: 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	Ød	ℓ	L	ap	lbs	Fig.
FMRSA	5150HRP-2M125	2	1.500	38.100	0.870	22.100	1.250	1.969	6.299	0.31	2.03	2
	5150HRP-2L125	2	1.500	38.100	0.870	22.100	1.250	1.969	9.843	0.31	3.20	2
	5200HRP-3M150	3	2.000	50.800	1.370	34.800	1.500	1.969	6.299	0.31	3.26	2
	5200HRP-3L150	3	2.000	50.800	1.370	34.800	1.500	1.969	11.811	0.31	6.31	2
FMRSA	6200HRP-3S125	3	2.000	50.800	1.213	30.800	1.250	1.969	6.299	0.39	2.34	1
	6200HRP-3M125	3	2.000	50.800	1.213	30.800	1.250	1.969	7.874	0.39	2.87	2
	6200HRP-3L125	3	2.000	50.800	1.213	30.800	1.500	1.969	11.811	0.39	4.19	2
	6200HRP-3S150	3	2.000	50.800	1.213	30.800	1.500	1.969	4.921	0.39	3.20	1
	6200HRP-3M150	3	2.000	50.800	1.213	30.800	1.500	1.969	7.874	0.39	4.08	2

Available inserts

RPCT-MA new | RPET-ML new | RPMT-MF new | RPMT-MM new | RPMW new



Type	Designation		Cermet		Coated											Uncoated		page
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
5000 type	RPCT	1606M0-MA																●	
	RPET	1606M0E-ML													●	●			
	RPMT	1606M0E-MF													●	●			
		1606M0S-MM							●	●	●				●	●			
	RPMW	1606M0S1							●	●					●	●			E17
6000 type	RPCT	2007M0-MA																●	E18
	RPET	2007M0E-ML													●	●			
	RPMT	2007M0E-MF													●	●			
		2007M0S-MM							●	●	●				●	●			
	RPMW	2007M0S1							●	●					●	●			

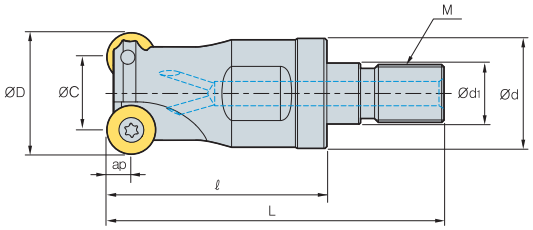
Parts

Specification	Screw	Wrench
Ø1.500~Ø2.000 (5000 type)	FTGA0511-P	TW20-100
Ø2.000 (6000 type)	FTKA0615-P	TW25-100

Available inserts **E17, E18**

FMRMA2500 new







• AR: -4°
• RR: -4°~ 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	Ød	Ød1	ℓ	L	M	ap	lbs
FMRMA	25068HRP-M08	2	0.688	17.463	0.373	9.463	0.571	0.335	0.984	1.654	M08	0.16	0.07
	25075HRP-M10	3	0.750	19.050	0.435	11.050	0.709	0.413	1.181	2.008	M10	0.16	0.13
	25100HRP-M12	4	1.000	25.400	0.685	17.400	0.906	0.492	1.378	2.323	M12	0.16	0.24
	25125HRP-M16	4	1.250	31.750	0.935	23.750	1.142	0.669	1.575	2.638	M16	0.16	0.49
	25150HRP-M16	5	1.500	38.100	1.185	30.100	1.142	0.669	1.575	2.638	M16	0.16	0.57

Available inserts

RPCT-MA | RPET-ML | RPMT-MF | RPMT-MM | RPMW



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPET	0803M0E-ML													●	●			
RPMT	0803M0E-MF													●	●			E17
	0803M0S-MM							●	●					●	●			E18
RPMW	0803M0E1							●	●					●	●			

Available adaptor

Designation		Available adaptor
FMRMA	25068HRP-M08	MATA-M08
	25075HRP-M10	MATA-M10
	25100HRP-M12	MATA-M12
	25125HRP-M16	MATA-M16
	25150HRP-M16	

Designation: FMRMA25068HRP-M08
Modular Head Threading Measure size (M08)

II

Adaptor spec.: MATA-M08-078-S062S
Adaptor Threading Measure (M08)

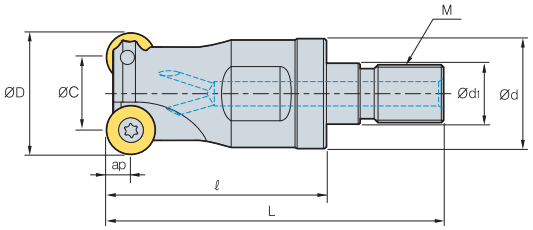
Parts

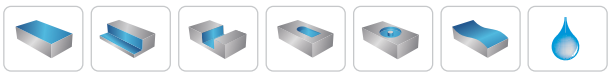
Specification	Screw	Wrench
Ø0.688 Ø0.750~Ø1.500	FTNA0305 FTNA0306	TW09S

Available inserts E17, E18 Available adaptor E365~E366

FMRMA3000 new







• AR: -4°
• RR: -1°~ 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	Ød	Ød1	ℓ	L	M	ap	lbs
FMRMA	3100HRP-M12	2	1.000	25.400	0.606	15.400	0.906	0.492	1.378	2.323	M12	0.20	0.22
	3125HRP-M16	3	1.250	31.750	0.856	21.750	1.142	0.669	1.575	2.638	M16	0.20	0.44
	3150HRP-M16	3	1.500	38.100	1.106	28.100	1.142	0.669	1.575	2.638	M16	0.20	0.55

Available inserts

RPCT-MA | RPET-ML | RPMT-MF | RPMT-MM | RPMW



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	10T3M0-MA																●	E17 E18
RPET	10T3M0E-ML													●	●			
RPMT	10T3M0E-MF													●	●			
	10T3M0S-MM							●	●	●				●	●			
RPMW	10T3M0E1							●	●					●	●			

Available adaptor

Designation		Available adaptor
FMRMA	3100HRP-M12	MATA-M12
	3125HRP-M16	MATA-M16
	3150HRP-M16	

Designation: FMRMA3125HRP-M16
Modular Head Threading Measure size (M16)

||

Adaptor spec.: MATA-M16-137-S125S
Adaptor Threading Measure (M16)

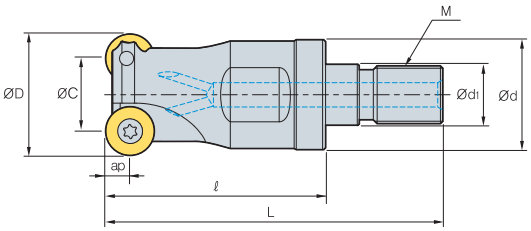
Parts

Specification	Screw	Wrench
Ø1.000	FTGA03507	TW15S
Ø1.250~Ø1.500	FTGA03508	

Available inserts E17, E18 Available adaptor E365~E366

FMRMA4000 new







• AR: -4°
• RR: 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	Ød	Ød1	ℓ	L	M	ap	lbs
FMRMA	4100HRP-M12	2	1.000	25.400	0.528	13.400	0.906	0.492	1.378	2.323	M12	0.24	0.22
	4125HRP-M16	3	1.250	31.750	0.778	19.750	1.142	0.669	1.575	2.638	M16	0.24	0.46
	4150HRP-M16	4	1.500	38.100	1.028	26.100	1.142	0.669	1.575	2.638	M16	0.24	0.53

Available inserts



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	1204M0-MA																●	
RPET	1204M0E-ML													●	●			
RPMT	1204M0E-MF												●	●	●			E17
	1204M0S-MM							●	●	●			●	●	●			E18
RPMW	1204M0S1							●	●	●				●	●			
	1204M0S2													●	●			

Available adaptor

Designation		Available adaptor
FMRMA	4100HRP-M12	MATA-M12
	4125HRP-M16	MATA-M16
	4150HRP-M16	

Designation: FMRMA4100HRP-M12
Modular Head Threading Measure size (M12)

Adaptor spec.: MATA-M12-118-S100S
Adaptor Threading Measure (M12)

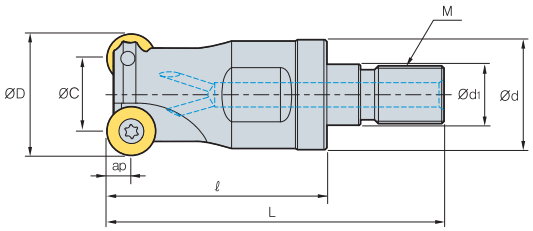
Parts

Specification	Screw	Wrench
Ø1.000	FTKA0408	TW15S
Ø1.250~Ø1.500	FTKA0410	

Available inserts E17, E18 Available adaptor E365~E366

FMRMA5000 new







• AR: -4°
• RR: 0°

(inch)

Designation			ØD (inch)	ØD (mm)	ØC (inch)	ØC (mm)	Ød	Ød1	ℓ	L	M	ap	lbs
FMRMA	5150HRP-M16	2	1.500	38.100	0.870	22.100	1.142	0.669	1.575	2.638	M16	0.31	0.46

Available inserts



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
RPCT	1606M0-MA																●	E17 E18
RPET	1606M0E-ML													●	●			
RPMT	1606M0E-MF													●	●			
	1606M0S-MM							●	●	●				●	●			
RPMW	1606M0S1							●	●					●	●			

Available adaptor

Designation		Available adaptor
FMRMA	5150HRP-M16	MATA-M16

Designation: FMRMA5150HRP-M16
Modular Head Threading Measure size (M16)

=

Adaptor spec.: MATA-M16-137-S125S
Adaptor Threading Measure (M16)

Parts

Specification	Screw	Wrench	Wrench
Ø1.500	FTGA0511-P	-	TW20-100

Available inserts E17, E18 Available adaptor E365~E366

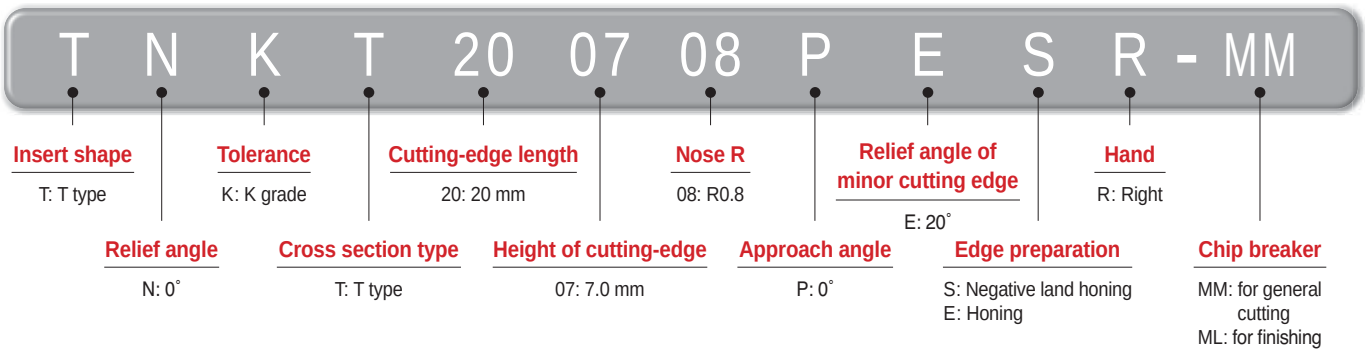
High depth of cut milling tool with 3 corners for perpendicularity

Triple Mill new

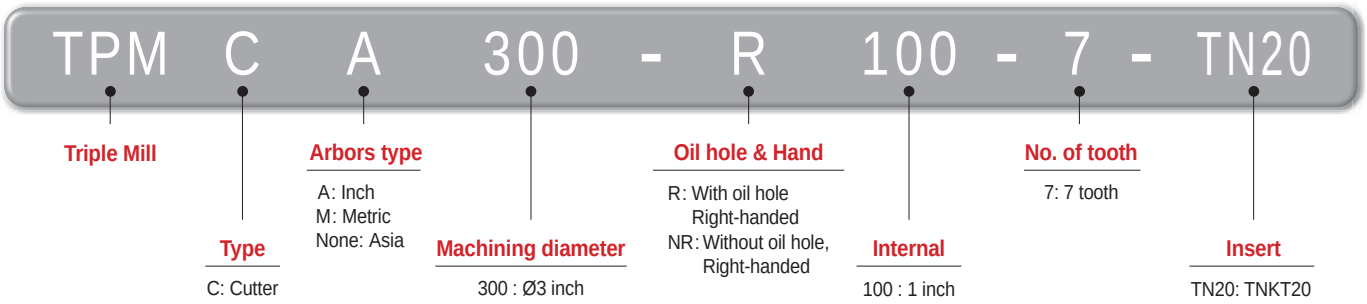
- Economical milling tool with 3 corners with positive cutting edge for high depth of cut machining
- Stable machinability in high feed machining due to enhanced chip evacuation and thicker insert
- High precision machining from less cutting load due to high helix and sharp cutting edge

Code system

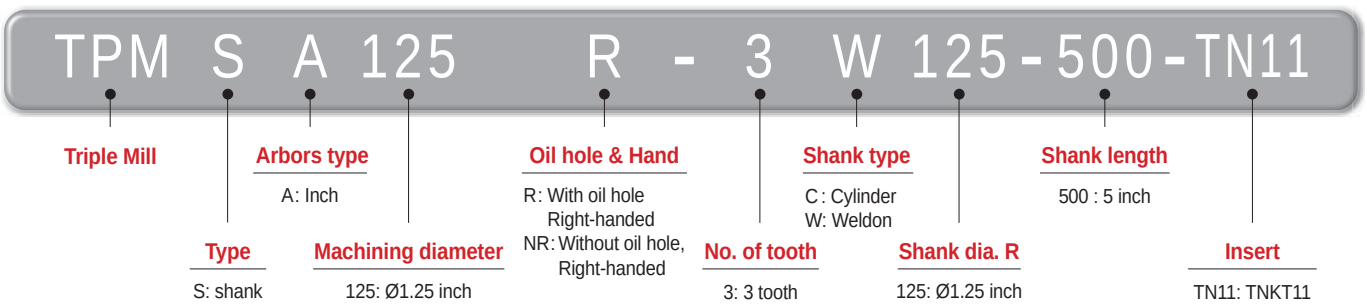
• Insert



• Cutter

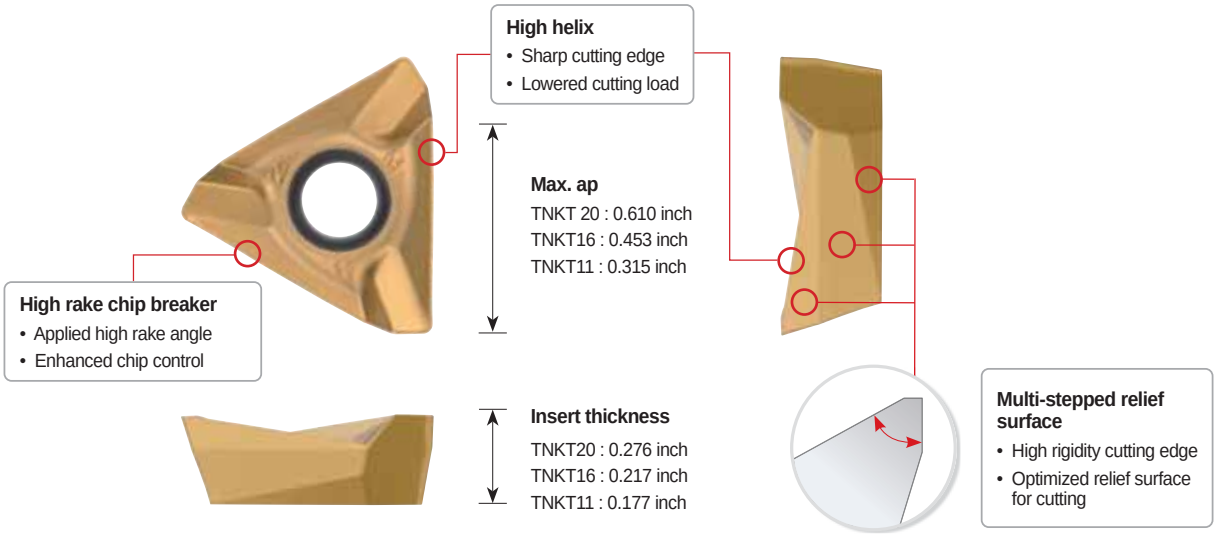


• Shank

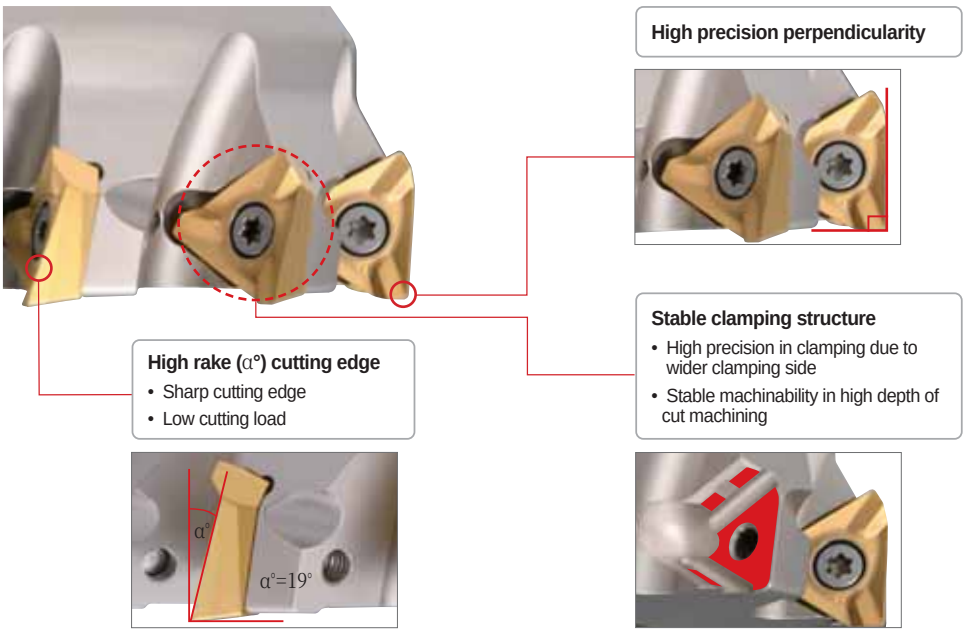


Insert features

- Economical insert with 3 corners due to high depth of cut cutting edge
- Lowered cutting load and enhanced chip evacuation by sharp chip breaker and high helix cutting edge
- Stable machinability even in high cutting conditions from high rigidity design



Cutter features



Recommended grade and chip breaker

(●: 1st Recommendation)

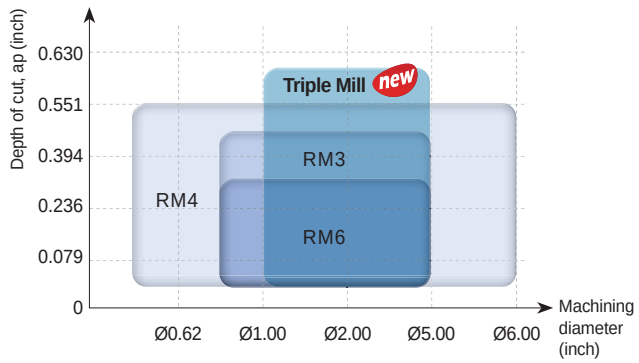
C/B	Cutting edge	P				M		K		S	
		Low carbon steel/ Mild steel		High carbon steel/ Alloy steel		Stainless steel		Cast iron		HRSA	
		C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
ML		-	●PC3700 ○PC5300 ○PC5400	-	●PC3700 ○PC5300 ○PC5400	●	●PC5300 ○PC5400 ○PC9540	-	●PC6510 ○PC5300 ○PC5400	-	○PC5300 ○PC5400
MM		●	●PC3700 ○PC5300 ○PC5400	●	●PC3700 ○PC5300 ○PC5400	-	●PC5300 ○PC5400 ○PC9540	●	●PC6510 ○PC5300 ○PC5400	-	○PC5300 ○PC5400

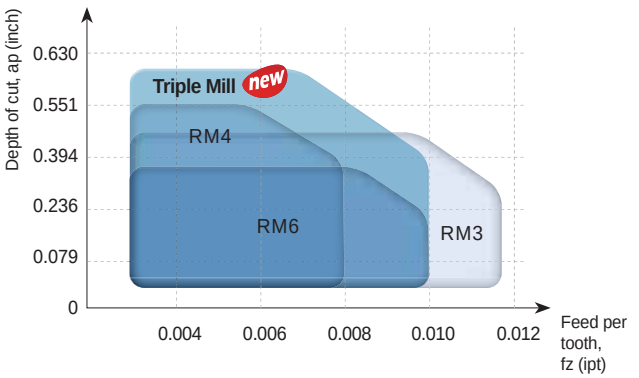
Recommended cutting condition

Workpiece		Grade	Cutting speed vc(sfm)	TNKT11		TNKT16		TNKT20	
				fz (ipt)	Max. ap (inch)	fz (ipt)	Max. ap (inch)	fz (ipt)	Max. ap (inch)
P	Steel	PC3700	524 - 885	0.010 - 0.004	0.315	0.010 - 0.004	0.453	0.010 - 0.004	0.610
		PC5300	459 - 787	0.010 - 0.004	0.315	0.010 - 0.004	0.453	0.010 - 0.004	0.610
M	Stainless steel	PC5300	295 - 492	0.008 - 0.002	0.315	0.008 - 0.002	0.453	0.008 - 0.002	0.610
		PC5400	229 - 393	0.008 - 0.002	0.315	0.008 - 0.002	0.453	0.008 - 0.002	0.610
		PC9540	229 - 393	0.008 - 0.002	0.315	0.008 - 0.002	0.453	0.008 - 0.002	0.610
K	Cast iron	PC6510	492 - 820	0.010 - 0.004	0.315	0.010 - 0.004	0.453	0.010 - 0.004	0.610
S	HRSA	PC5300	65 - 164	0.006 - 0.002	0.315	0.006 - 0.002	0.453	0.006 - 0.002	0.610

※ The above data refer to general cutting conditions and can be adjustable to the speed of 1148 sfm and the feed per tooth of 0.012 ipt depending on user environment.

Application range





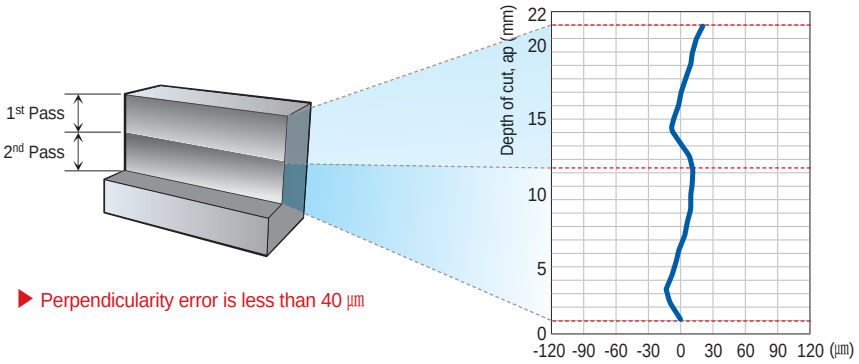
Performance evaluation

Perpendicularity

■**Workpiece** Alloy steel (4140, HB200), 11.811(L) x 7.874(W) x 3.937(H)

■**Cutting conditions** vc (sfm) = 656, fz (ipt) = 0.008, ap (inch) = 0.472 inch x 2Passes (Total 0.945 inch), ae (inch) = 0.197, dry

■**Tools** **Insert** TNKT200708PESR-MM (PC5300) **Holder** TPMCA300R-100-7-TN20



▶ Perpendicularity error is less than 40 ㎛

[Graph of measured perpendicularities]



Triple Mill



Competitor

[Comparison picture of flank surface finish]

Wear resistance

■**Workpiece** Alloy steel (4140, HB200), 11.811(L) x 7.874(W) x 3.937(H)

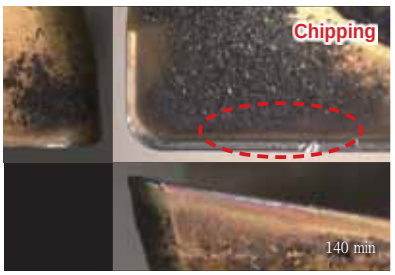
■**Cutting conditions** vc (sfm) = 656, fz (ipt) = 0.008, ap (inch) = 0.276, ae (inch) = 0.394, dry

■**Tools** **Insert** TNKT160608PESR-MM (PC5300) **Holder** TPMCA250R-100-6-TN16



Triple Mill

57% longer tool life



Competitor

Surface finish

■**Workpiece** Alloy steel (4140, HB200), 11.811(L) x 7.874(W) x 3.937(H)

■**Cutting conditions** vc (sfm) = 656, fz (ipt) = 0.008, ap (inch) = 0.276, ae (inch) = 0.394, dry

■**Tools** **Insert** TNKT160608PESR-MM (PC5300) **Holder** TPMCA250R-100-6-TN16



Triple Mill

Enhanced surface finish



Competitor

TPMCA-TN16 new



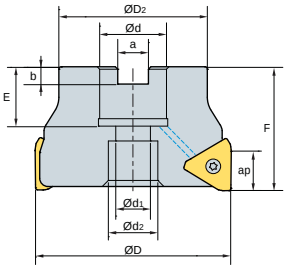


Fig. 1

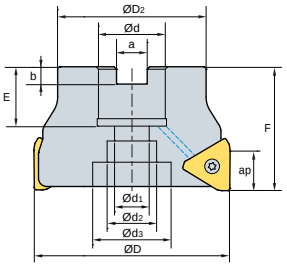


Fig. 2





AA
0°

- AR: 10°
- RR: -11°~-13.5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Fig.	Available insert
TPMCA	200R-075-4-TN16	4	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.453	0.573	1	TNKT16
	200R-075-5-TN16	5	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.453	0.573	1	
	250R-100-4-TN16	4	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.453	1.102	1	
	250R-100-6-TN16	6	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.453	1.058	1	
	300R-100-6-TN16	6	3.0	2.205	1.00	0.551	0.866	1.299	0.374	0.248	0.787	2.00	0.453	2.183	1	
	300R-100-8-TN16	8	3.0	2.205	1.00	0.551	0.866	1.299	0.374	0.248	0.787	2.00	0.453	2.183	1	
	400R-125-8-TN16	8	4.0	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.453	4.079	2	
	400R-125-10-TN16	10	4.0	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.453	4.034	2	
	500R-150-12-TN16	12	5.0	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.00	0.453	6.878	2	
	500R-150-14-TN16	14	5.0	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.00	0.453	6.834	2	

Available inserts

TNKT-ML



TNKT-MM



Designation		Cermet		Coated												page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	
TNKT	160608PEER-ML										●				●		E28
	160608PESR-MM										●	●			●		

Parts

Specification	Screw	Wrench
Ø2.0~Ø5.0	FTKA0410	TW15S

Available inserts E28

TPMCA-TN20 new



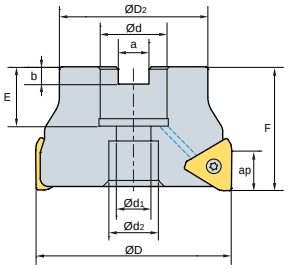


Fig. 1

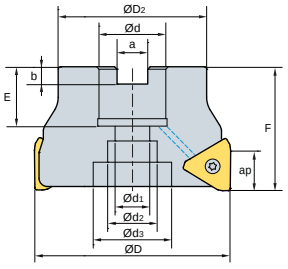


Fig. 2

AA 0°

- AR: 10°
- RR: -10.5°~-14°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Fig.	Available insert
TPMCA	250R-100-5-TN20	5	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.61	1.257	1	TNKT20
	250R-100-6-TN20	6	2.5	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.61	1.279	1	
	300R-100-5-TN20	5	3.0	2.205	1.00	0.551	0.866	1.299	0.374	0.248	0.787	2.00	0.61	2.028	1	
	300R-100-7-TN20	7	3.0	2.205	1.00	0.551	0.866	1.299	0.374	0.248	0.787	2.00	0.61	1.896	1	
	400R-125-7-TN20	7	4.0	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.61	3.946	2	
	400R-125-9-TN20	9	4.0	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.61	3.704	2	
	500R-150-8-TN20	8	5.0	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.00	0.61	6.790	2	
	500R-150-11-TN20	11	5.0	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.00	0.61	6.592	2	

Available inserts



TNKT-ML



TNKT-MM

Designation		Cermet		Coated												page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	
TNKT	200708PEER-ML										●			●	●		E28
	200708PESR-MM										●	●			●		

Parts

Specification	Screw	Wrench
Ø2.5~Ø5.0	FTGA0511-P	TW20-100

Available inserts E28

TPMSA-TN11 new



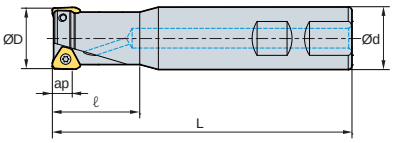


Fig. 1

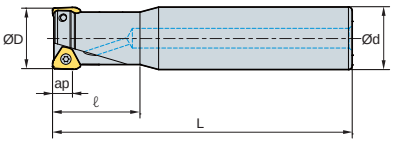


Fig. 2

AA
0°

- AR: 8°~10°
- RR: -14°~-15°

(inch)

	Designation		ØD	Ød	ℓ	L	ap	lbs	Fig.	Available insert
TPMSA	100R-2W100-500-TN11	2	1.00	1.00	1.4	5	0.315	0.816	1	TNKT11
	100R-2C100-800-TN11	2	1.00	1.00	1.4	8	0.315	1.433	2	
	100R-3W100-500-TN11	3	1.00	1.00	1.4	5	0.315	0.794	1	
	100R-3C100-800-TN11	3	1.00	1.00	1.4	8	0.315	1.411	2	
	125R-2W125-500-TN11	2	1.25	1.25	1.5	5	0.315	1.565	1	
	125R-2C125-800-TN11	2	1.25	1.25	1.5	8	0.315	2.469	2	
	125R-3W125-500-TN11	3	1.25	1.25	1.5	5	0.315	1.543	1	
	125R-3C125-800-TN11	3	1.25	1.25	1.5	8	0.315	2.513	2	
	125R-4W125-500-TN11	4	1.25	1.25	1.5	5	0.315	1.543	1	
	125R-4C125-800-TN11	4	1.25	1.25	1.5	8	0.315	2.447	2	
	150R-4W150-500-TN11	4	1.50	1.50	1.5	5	0.315	2.469	1	
	150R-5W150-500-TN11	5	1.50	1.50	1.5	5	0.315	2.447	1	

Available inserts

TNKT-ML



TNKT-MM



	Designation	Cermet		Coated												page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	
TNKT	110508PEER-ML										●			●	●		E28
	110508PESR-MM										●	●			●		

Parts

Specification	Screw	Wrench
Ø1.00~Ø1.50	FTKA0307	TW09S

Available inserts E28

TPMSA-TN16 new



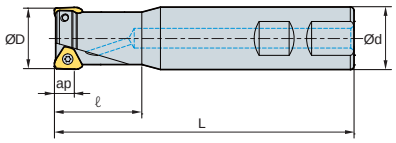


Fig. 1

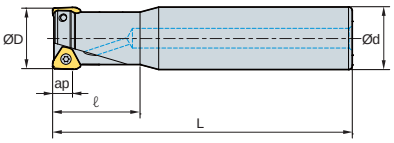


Fig. 2

AA 0°

- AR: 10°
- RR: -13.5°

(inch)

	Designation	⊚	ØD	Ød	ℓ	L	ap	lbs	Fig.	Available insert
TPMSA	125R-2W125-500-TN16	2	1.25	1.25	1.5	5	0.453	1.499	1	TNKT16
	125R-2C125-800-TN16	2	1.25	1.25	1.5	8	0.453	2.425	2	
	150R-3W150-500-TN16	3	1.50	1.50	1.5	5	0.453	2.403	1	
	150R-3C150-800-TN16	3	1.50	1.50	1.5	8	0.453	3.858	2	
	150R-4W150-500-TN16	4	1.50	1.50	1.5	5	0.453	2.381	1	

Available inserts

TNKT-ML



TNKT-MM



	Designation	Cermet		Coated												page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	
TNKT	160608PEER-ML										●				●		E28
	160608PESR-MM										●	●			●		

Parts

Specification	Screw	Wrench
Ø1.25~Ø1.50	FTKA0410	TW15S

Available inserts **E28**

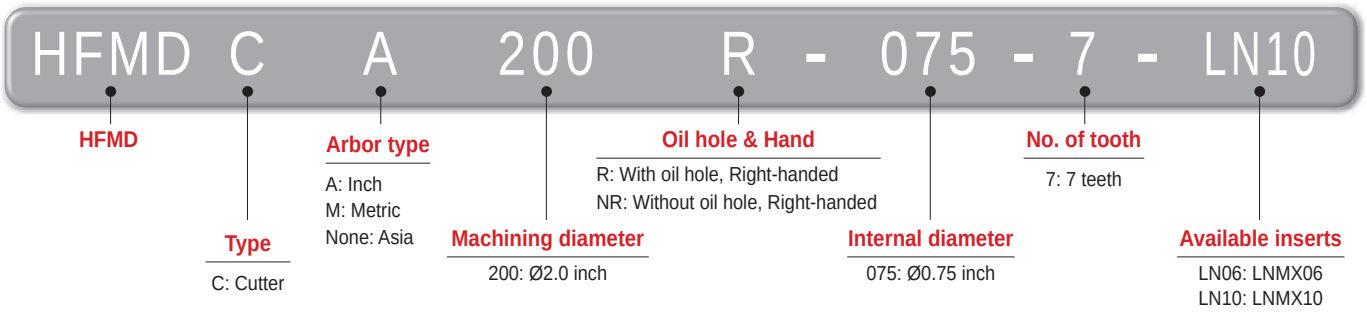
High Feed Milling Tool with 4 Corners for Small Diameter

HFMD new

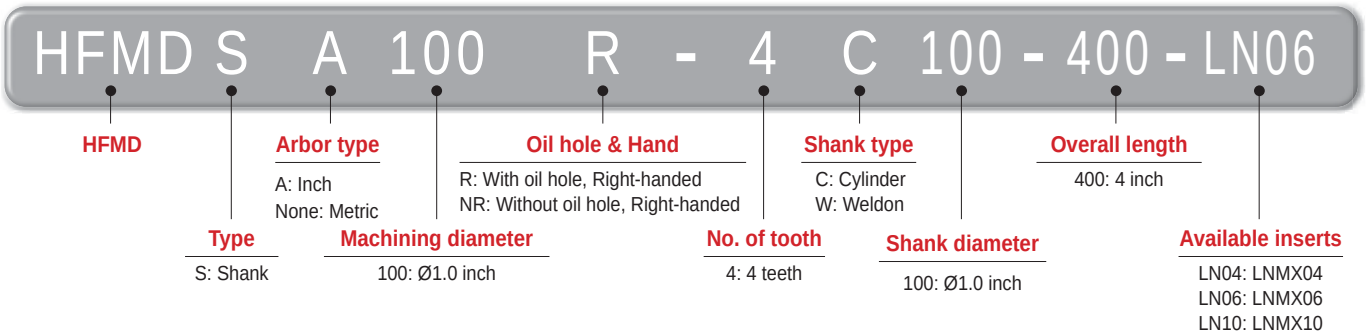
- Economical 4-corner double sided insert
- Increased productivity due to thinner and elongated shape of the insert which makes fine pitch available
- Insert designed for low cutting resistance with high rake angle and helix angle which reduces cutting load
- Inhibiting chipping and breakage due to concave clamping system and stronger screw

Code system

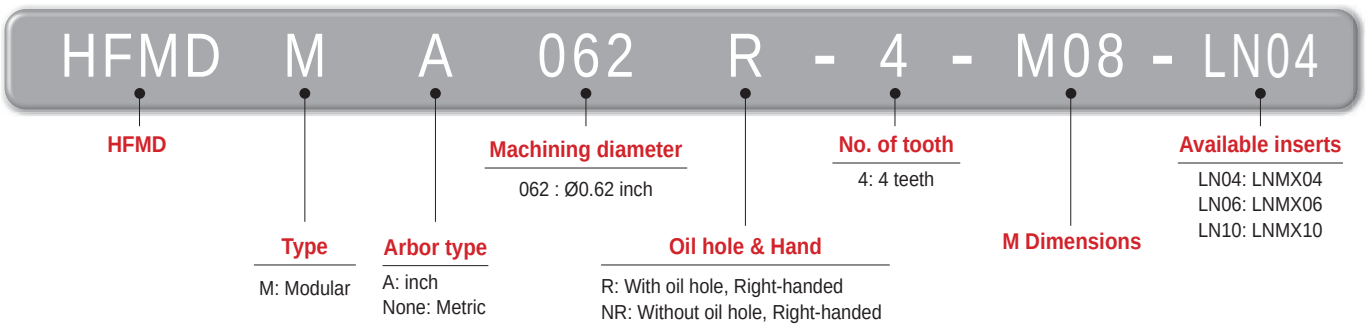
• Cutter



• Shank



• Modular



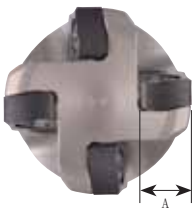
Features

Economical 4-corner insert
- Can use 4 corners with 1 insert by utilizing front/back face; High feed due to finer pitch

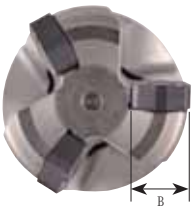




Highly efficient insert due to fine pitch
- Able to use fine pitch at the same machining diameter with typical types of milling cutters due to smaller inscribed circle (A < B)



HFMD

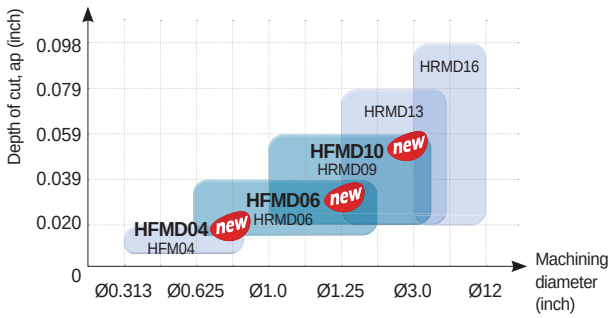


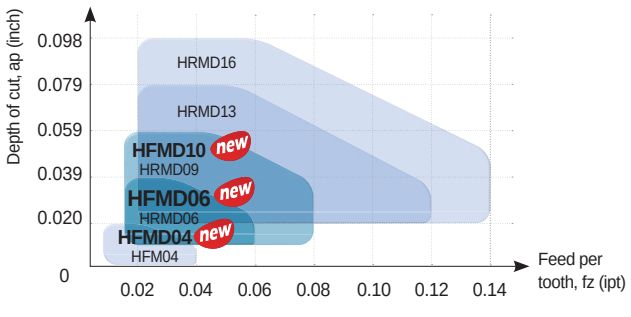
HRMD

Features of chip breaker

Insert		Cutting-edge	Uses	Features
ML			For heat resistant alloy and titanium	Ensures superior machining quality by applying a low cutting resistance chip breaker and high-strength cutting edge design suitable for machining heat resistant alloy
MF			For light cutting	Suitable for light cutting with a low cutting resistance chip breaker design
MM			For multi-purpose	Available for most cutting area with its exclusive design suitable for general high feed machining

Application area





Recommended cutting condition

※ Recommended chip breaker: ●1st ○2nd



Workpiece				Grade	vc (sfm)	LNMX04		LNMX06		LNMX10		ae	Available chip breaker		
ISO	Workpiece materials	AISI	HB (HRC)			fz (ipt)	ap (inch)	fz (ipt)	ap (inch)	fz (ipt)	ap (inch)		ML	MF	MM
P	Mild steel	1020	120 - 180	PC5400 (PC5300)	328.1 - 787.4	0.047-0.012	0.008-0.02	0.047-0.012	0.008-0.039	0.055 - 0.012	0.012-0.059	0.7D - 0.1D	○	●	
	Carbon steel	1045	200	PC5400 (PC5300)	328 .1-787.4	0.047-0.012	0.008 - 0.02	0.047-0.012	0.008 - 0.039	0.055 - 0.012	0.012-0.059	0.7D - 0.1D	○	●	
	Alloy steel	4140	270 (28)	PC3700 (PC5300)	328.1-721.8	0.047-0.012	0.008 - 0.02	0.047-0.012	0.008 - 0.039	0.055 - 0.012	0.012-0.059	0.7D - 0.1D		●	○
	Pre-hardened steel	P20 (Improved)	300 (32)	PC3700 (PC5300)	328.1-656.2	0.039 - 0.012	0.008-0.016	0.039 - 0.012	0.008-0.031	0.047-0.012	0.012-0.047	0.7D - 0.1D		○	●
		P21 (Improved)	370 (40)	PC3700 (PC5300)	328.1-656.2	0.039 - 0.012	0.008 - 0.016	0.039 - 0.012	0.008 - 0.031	0.047-0.012	0.012-0.047	0.7D - 0.1D		○	●
		P21 (Improved)	370 (40)	PC3700 (PC5300)	328.1-656.2	0.039 - 0.012	0.008-0.016	0.039 - 0.012	0.008-0.031	0.047-0.012	0.012-0.047	0.7D - 0.1D		○	●
		P21 (Improved)	400 (43)	PC5300 (PC3700)	328.1-656.2	0.039 - 0.012	0.008 - 0.016	0.039 - 0.012	0.008 - 0.031	0.047-0.012	0.012-0.047	0.7D - 0.1D		○	●
		420	510 (52)	PC3700 (PC2510)	262.5 - 524.9	0.028 - 0.012	0.008 - 0.016	0.028 - 0.012	0.008 - 0.031	0.035-0.012	0.012-0.047	0.7D - 0.1D		○	●
	Alloy tool steel	D2 H13	- (40 - 50)	PC2510 (PC5300)	262.5 - 426.5	0.028 - 0.012	0.008 - 0.012	0.026 - 0.012	0.008 - 0.024	0.031-0.012	0.012-0.035	0.7D - 0.1D		○	●
M	Stainless steel	316	Under 270	PC9540 (PC5400)	295.3 - 590.6	0.031 - 0.012	0.008 - 0.02	0.031 - 0.012	0.008 - 0.031	0.039 - 0.012	0.012-0.047	0.7D - 0.1D	●	○	
K	Grey cast iron, Ductile cast iron	65 - 45 -12	Tensile Strength Over 450Mpa	PC5300 (PC5400)	426.5 - 721.8	0.035 - 0.012	0.008 - 0.02	0.035 - 0.012	0.008 - 0.039	0.047-0.012	0.012-0.059	0.7D - 0.1D		●	○
S	HRSA Fe series	N09901	- (25 - 35)	PC9540 (PC5300)	98.4 - 328.1	0.028 - 0.012	0.008 - 0.012	0.024 - 0.012	0.008 - 0.024	0.028 - 0.012	0.012-0.035	0.7D - 0.4D	●	○	
	HRSA Ni or Co series	N07718	- (35 - 45)	PC9540 (PC5300)	98.4 - 147.6	0.028 - 0.012	0.008 - 0.012	0.028 - 0.012	0.008 - 0.024	0.031-0.012	0.012-0.035	0.7D - 0.4D	○	●	
	Titanium	R56400	- (40 - 45)	PC9540 (PC5300)	98.4 - 164.0	0.031 - 0.012	0.008 - 0.012	0.039 - 0.012	0.008 - 0.024	0.047-0.012	0.012-0.035	0.7D - 0.1D	●	○	

Performance evaluation

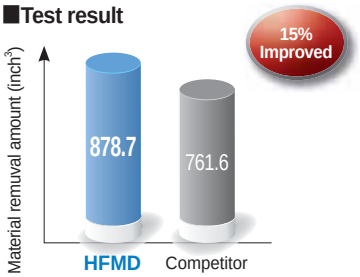
Carbon steel (1042, HB200)

■**Workpiece** Steel rectangular tube (11.8 × 7.8 × 3.9)

■**Cutting conditions** vc (sfm) = 656, fz (ipt) = 0.047,
ap (inch) = 0.031, ae (inch) = 0.787, dry

■**Tools** **Insert** LNMX060310R-MF (PC5300)
Holder HFMDSA125R-5C125-600-LN06

■**Test result**





- Material removal rate Q (inch³/min): 11.6
- Cutting time (min): 75.4

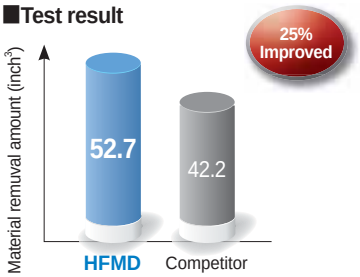
Pre - hardened steel [P20 (Improved), HRC30]

■**Workpiece** Steel rectangular tube (11.8 × 7.8 × 3.9)

■**Cutting conditions** vc (sfm) = 525, fz (ipt) = 0.047,
ap (inch) = 0.047, ae (inch) = 0.787, dry

■**Tools** **Insert** LNMX100412R-MF (PC5300)
Holder HFMDSA125R-4C125-600-LN10

■**Test result**





- Material removal rate Q (inch³/min): 11.17
- Cutting time (min): 4.7

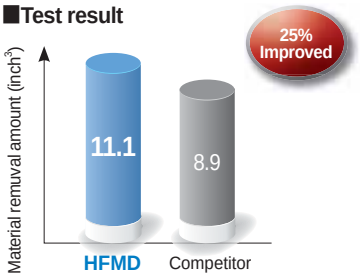
Alloy tool stell (D2, HRC40 - 45)

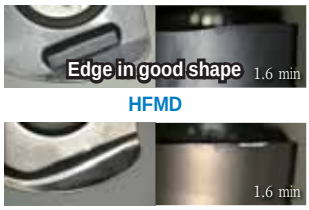
■**Workpiece** Steel rectangular tube (11.8 × 7.8 × 3.9)

■**Cutting conditions** vc (sfm) = 525, fz (ipt) = 0.047,
ap (inch) = 0.035, ae (inch) = 0.787, dry

■**Tools** **Insert** LNMX100412R-MF (PC2510)
Holder HFMDSA125R-4C125-600-LN10

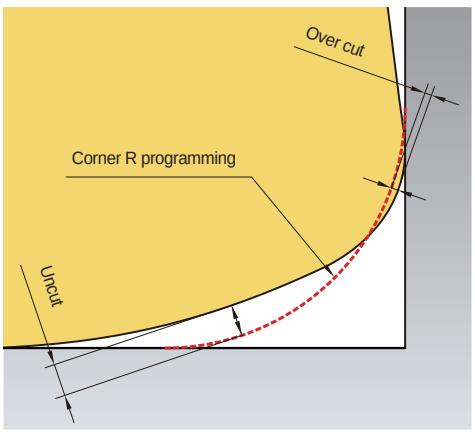
■**Test result**





- Material removal rate Q (inch³/min): 5.6
- Cutting time (min): 2.0

Corner R programming



------ Corner R programming

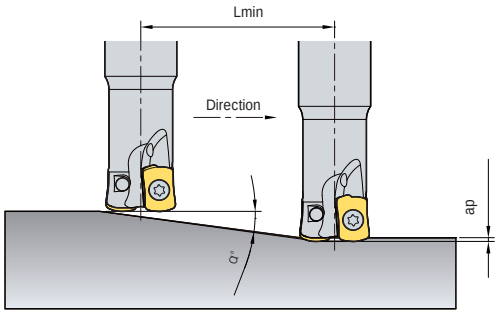
(inch)

Insert	Corner R programming	Cutting conditions		Over Cut	Uncut
		Nose R	Max. ap		
LNMX040205R-ML LNMX040205R-MM	R0.031	0.020	0.020	0.000	0.011
	R0.035 (Standard)			0.000	0.009
	R0.039			0.000	0.009
LNMX060310R-ML LNMX060310R-MF LNMX060310R-MM	R0.059	0.039	0.039	0.000	0.016
	R0.063 (Standard)			0.000	0.015
	R0.079			0.002	0.011
LNMX100412R-ML LNMX100412R-MF LNMX100412R-MM	R0.079	0.047	0.059	0.000	0.033
	R0.098 (Standard)			0.000	0.025
	R0.118			0.002	0.020

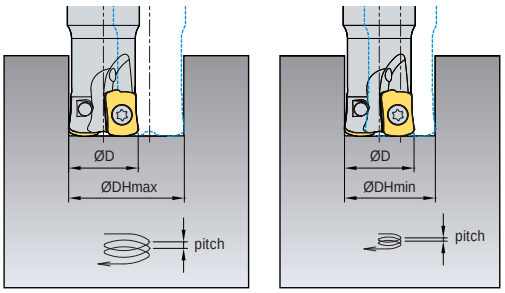
- During usage of CNC program, over cut & uncut would be occurred on the corner processing site if entering the correct program corner R value for each insert
- To prevent overcut, you will need to complete a CNC program considering the above overcut

Ramping and helical cutting

Ramping



Helical cutting



(inch)

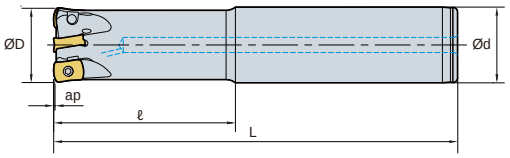
Designation	Tool dia. ØD	Depth of cut ap	Ramping		Blind hole helical cutting				Thru hole helical cutting	
			Max ramping angle α (°)	Lmin	Max diameter ØDHmax	Max pitch	Min diameter ØDHmin	Max pitch	Min diameter ØDHmin	Max pitch
LNMX04	0.375	0.016	0.6	1.464	0.593	0.012	0.474	0.012	0.474	0.012
	0.438	0.020	0.8	1.439	0.718	0.012	0.599	0.012	0.599	0.012
	0.500		1.0	1.091	0.843	0.016	0.724	0.016	0.724	0.016
	0.625		1.0	1.078	1.093	0.016	0.974	0.016	0.974	0.016
	0.688		1.0	1.101	1.218	0.020	1.099	0.020	1.099	0.020
	0.750		1.0	1.139	1.343	0.020	1.224	0.020	1.224	0.020
	1.000		0.9	1.284	1.843	0.020	1.724	0.020	1.724	0.020
	1.250		0.7	1.730	2.343	0.020	2.224	0.020	2.224	0.020
LNMX06	0.625	0.028	3.0	0.523	1.181	0.028	0.877	0.028	0.818	0.028
	0.750	0.039	1.5	1.463	1.496	0.039	1.165	0.039	1.106	0.039
	1.000		1.4	1.583	1.890	0.039	1.559	0.039	1.500	0.039
	1.250		1.0	2.158	2.441	0.039	2.110	0.039	2.051	0.039
	1.500		0.8	2.814	3.071	0.039	2.740	0.039	2.681	0.039
	2.000		0.6	3.634	3.858	0.039	3.527	0.039	3.468	0.039
	2.500		0.5	4.700	4.882	0.039	4.551	0.039	4.492	0.039
LNMX10	1.000	1.500	2.8	1.212	1.685	0.059	1.409	0.059	1.311	0.059
	1.250		2.0	1.681	2.185	0.059	1.909	0.059	1.811	0.059
	1.500		1.6	2.150	2.685	0.059	2.409	0.059	2.311	0.059
	2.000		1.1	3.087	3.685	0.059	3.409	0.059	3.311	0.059
	2.500		0.8	4.025	4.685	0.059	4.409	0.059	4.311	0.059
	3.000		0.7	4.962	5.685	0.059	5.409	0.059	5.311	0.059
	4.000		0.5	6.837	7.685	0.059	7.409	0.059	7.311	0.059

- When ramping and helical milling, table feed, vf (ipm) should be lower than 70% of the recommended cutting conditions.
- When helical milling, Max. pitch, DHmax should be lower than max. depth of cut, ap.
- When ramping, the depth of cut should be lower than max. depth of cut, ap.

- Lmin = ap/tan (α°) (inch)
- Lmin: Min. length of ramping
- ap: Depth of cut
- α°: Max. rake angle in ramping

HFMDSA-LN04 new







• AR: -8°~-7°
• RR: -19°~-15°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HFMDSA	037R-1C031-300-LN04	1	0.375	0.313	0.787	3.0	0.02	0.07
	037R-1C037-300-LN04	1	0.375	0.375	1.181	3.0	0.02	0.11
	037R-1C037-400-LN04	1	0.375	0.375	0.787	4.0	0.02	0.11
	037R-1C037-600-LN04	1	0.375	0.375	1.575	6.0	0.02	0.15
	043R-2C037-400-LN04	2	0.438	0.375	0.787	4.0	0.02	0.11
	043R-2C037-600-LN04	2	0.438	0.375	0.787	6.0	0.02	0.18
	050R-3C050-400-LN04	3	0.500	0.500	1.969	4.0	0.02	0.15
	050R-3C050-600-LN04	3	0.500	0.500	1.575	6.0	0.02	0.24

Available inserts

LNMX-ML LNMX-MM





Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	040205R-ML														●	●			E12
	040205R-MM									●	●				●	●			

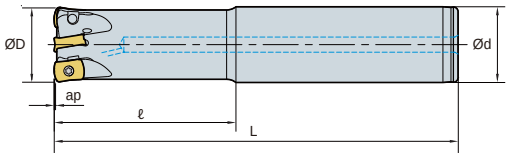
Parts

Specification	Screw	Wrench
Ø0.375 ~ Ø0.500	FTKA01844-A	TW06S-A

Available inserts E12

HFMDSA-LN04 new







• AR: -8°
• RR: -14°~-13°

(inch)

	Designation		ØD	Ød	ℓ	L	ap	lbs
HFMDSA	062R-4C062-400-LN04	4	0.625	0.625	1.969	4	0.02	0.29
	062R-4C062-476-LN04	4	0.625	0.625	2.756	5	0.02	0.44
	062R-4C062-600-LN04	4	0.625	0.625	3.150	6	0.02	0.44
	062R-4C062-800-LN04	4	0.625	0.625	4.724	8	0.02	0.57
	068R-4C062-400-LN04	4	0.688	0.625	0.787	4	0.02	0.31
	068R-4C062-600-LN04	4	0.688	0.625	0.787	6	0.02	0.44
	068R-4C062-800-LN04	4	0.688	0.625	0.787	8	0.02	0.64
	075R-5C075-400-LN04	5	0.750	0.750	0.787	4	0.02	0.49
	075R-5C075-600-LN04	5	0.750	0.750	1.575	6	0.02	0.66
	075R-5C075-800-LN04	5	0.750	0.750	3.150	8	0.02	0.88

Available inserts

LNMX-ML



LNMX-MM



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	040205R-ML														●	●			E12
	040205R-MM									●	●				●	●			

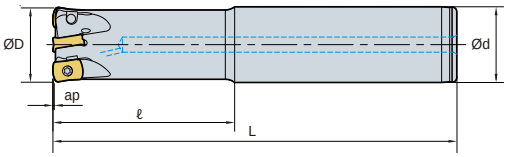
Parts

Specification	Screw	Wrench
Ø0.625 ~ Ø0.750	FTKA01844-A	TW06S-A

Available inserts E12

HFMDSA-LN06 new







• AR: -9°
• RR: -14°~-13°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HFMDSA	062R-2C062-400-LN06	2	0.625	0.625	1.181	4.0	0.028	0.29
	062R-2C062-600-LN06	2	0.625	0.625	1.969	6.0	0.028	0.42
	075R-3C075-400-LN06	3	0.750	0.750	1.575	4.0	0.039	0.44
	075R-3C075-500-LN06	3	0.750	0.750	1.969	5.0	0.039	0.57
	075R-3C075-600-LN06	3	0.750	0.750	3.150	6.0	0.039	0.68
	075R-3C075-800-LN06	3	0.750	0.750	4.724	8.0	0.039	0.88
	100R-4C100-400-LN06	4	1.000	1.000	1.575	4.0	0.039	0.73
	100R-4C100-600-LN06	4	1.000	1.000	2.362	6.0	0.039	1.01
	100R-4C100-800-LN06	4	1.000	1.000	3.937	8.0	0.039	1.28
	100R-4C100-1000-LN06	4	1.000	1.000	5.906	10.0	0.039	1.48

Available inserts

LNMX-ML LNMX-MF LNMX-MM



Designation		Cermet		Coated											Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	060310R-ML														●	●			E12
	060310R-MF									●	●				●	●			
	060310R-MM									●	●				●	●			

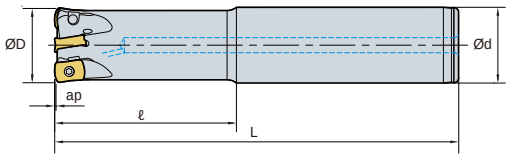
Parts

Specification	Screw	Wrench
Ø0.625 ~ Ø1.000	FTNA0306	TW09S

Available inserts E12

HFMDSA-LN06 new







• AR: -9°
• RR: -12°~-10°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HFMDSA	125R-5C125-600-LN06	5	1.250	1.250	2.756	6.0	0.039	1.81
	125R-5C125-800-LN06	5	1.250	1.250	4.724	8.0	0.039	2.38
	125R-5C125-1000-LN06	5	1.250	1.250	5.906	10.0	0.039	2.65
	150R-6C125-600-LN06	6	1.500	1.250	1.575	6.0	0.039	2.14
	150R-6C125-800-LN06	6	1.500	1.250	1.575	8.0	0.039	2.82
	150R-6C125-1000-LN06	6	1.500	1.250	1.575	10.0	0.039	3.04

Available inserts

LNMX-ML LNMX-MF LNMX-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	060310R-ML														●	●			E12
	060310R-MF									●	●				●	●			
	060310R-MM									●	●				●	●			

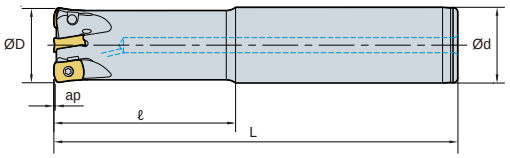
Parts

Specification	Screw	Wrench
Ø1.250 ~ Ø1.500	FTNA0306	TW09S

Available inserts E12

HFMDSA-LN10 new







• AR: -9°
• RR: -16°~-13°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HFMDSA	100R-2C100-600-LN10	2	1.000	1.000	3.0	6.0	0.059	1.01
	100R-2C100-800-LN10	2	1.000	1.000	4.0	8.0	0.059	1.32
	100R-3C100-600-LN10	3	1.000	1.000	3.0	6.0	0.059	0.99
	100R-3C100-800-LN10	3	1.000	1.000	4.0	8.0	0.059	1.32
	125R-4C125-600-LN10	4	1.250	1.250	3.0	6.0	0.059	1.65
	125R-4C125-800-LN10	4	1.250	1.250	4.0	8.0	0.059	2.21
	125R-4C125-1000-LN10	4	1.250	1.250	6.0	10.0	0.059	2.65
	150R-4C125-600-LN10	4	1.500	1.250	1.5	6.0	0.059	1.96
	150R-4C125-800-LN10	4	1.500	1.250	1.5	8.0	0.059	2.65
	150R-4C125-1000-LN10	4	1.500	1.250	1.5	10.0	0.059	3.26
	150R-5C125-600-LN10	5	1.500	1.250	1.5	6.0	0.059	1.96
	150R-5C125-800-LN10	5	1.500	1.250	1.5	8.0	0.059	2.62
	150R-5C125-1000-LN10	5	1.500	1.250	1.5	10.0	0.059	3.26

Available inserts

LNMX-ML LNMX-MF LNMX-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	100412R-ML													●	●	●			E12
	100412R-MF									●	●			●	●	●			
	100412R-MM									●	●				●	●			

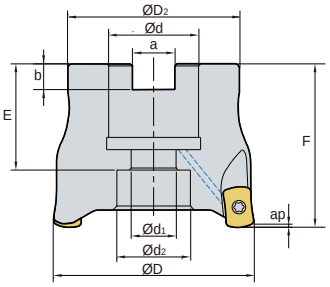
Parts

Specification	Screw	Wrench
Ø1.000 ~ Ø1.500	FTNA0408	TW15S

Available inserts E12

HFMDCA-LN06 new







• AR: -9°
• RR: -12°~-10°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs
HFMDCA	125R-050-5-LN06	5	1.25	1.181	0.50	0.287	0.413	0.252	0.169	0.630	1.50	0.039	0.265
	150R-050-6-LN06	6	1.50	1.417	0.50	0.287	0.433	0.252	0.169	0.630	1.50	0.039	0.463
	200R-075-7-LN06	7	2.00	1.772	0.75	0.413	0.630	0.315	0.220	0.787	1.75	0.039	0.706
	200R-075-8-LN06	8	2.00	1.772	0.75	0.413	0.630	0.315	0.220	0.787	1.75	0.039	0.706
	250R-075-8-LN06	8	2.50	1.772	0.75	0.413	0.630	0.315	0.220	0.787	1.75	0.039	1.125
	250R-075-9-LN06	9	2.50	1.772	0.75	0.413	0.630	0.315	0.220	0.787	1.75	0.039	1.125
	250R-100-8-LN06	8	2.50	2.205	1.00	0.551	0.827	0.374	0.248	0.787	1.75	0.039	0.169
	250R-100-9-LN06	9	2.50	2.205	1.00	0.551	0.827	0.374	0.248	0.787	1.75	0.039	0.169

Available inserts

LNMX-ML



LNMX-MF



LNMX-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	060310R-ML														●	●			E12
	060310R-MF									●	●				●	●			
	060310R-MM									●	●				●	●			

Parts

Specification	Screw	Wrench
Ø1.25~Ø2.50	FTNA0306	TW09S

Available inserts E12

HFMDCA-LN10 new



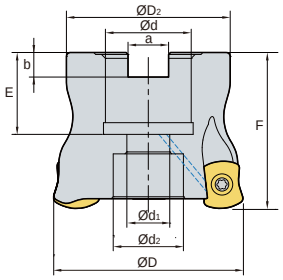


Fig. 1

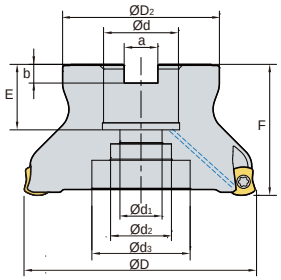


Fig. 2



- AR: -9°
- RR: -16°~-13°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Fig.
HFMDCA	150R-050-4-LN10	4	1.50	1.417	0.50	0.287	0.430	-	0.252	0.17	0.630	1.500	0.059	0.41888	1
	150R-050-5-LN10	5	1.50	1.417	0.50	0.287	0.430	-	0.252	0.17	0.630	1.500	0.059	0.37479	1
	200R-075-6-LN10	6	2.00	1.772	0.75	0.413	0.630	-	0.315	0.22	0.787	1.750	0.059	0.5732	1
	200R-075-7-LN10	7	2.00	1.772	0.75	0.413	0.630	-	0.315	0.22	0.787	1.750	0.059	0.5732	1
	250R-075-7-LN10	7	2.50	1.772	0.75	0.413	0.630	-	0.315	0.22	0.787	1.750	0.059	1.03617	1
	250R-075-8-LN10	8	2.50	1.772	0.75	0.413	0.630	-	0.315	0.22	0.787	1.750	0.059	1.03617	1
	250R-100-7-LN10	7	2.50	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.750	0.059	1.21254	1
	250R-100-8-LN10	8	2.50	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.750	0.059	1.21254	1
	300R-100-9-LN10	9	3.00	2.205	1.00	0.551	0.866	1.299	0.374	0.248	0.787	2.000	0.059	1.56528	2
	300R-100-10-LN10	10	3.00	2.205	1.00	0.551	0.866	1.299	0.374	0.248	0.787	2.000	0.059	1.63142	2
	400R-125-10-LN10	10	4.00	2.874	1.25	0.689	1.024	1.614	0.50	0.319	0.787	2.000	0.059	3.39512	2
	400R-125-11-LN10	11	4.00	2.874	1.25	0.689	1.024	1.614	0.50	0.319	0.787	2.000	0.059	3.39512	2
	400R-125-12-LN10	12	4.00	2.874	1.25	0.689	1.024	1.614	0.50	0.319	0.787	2.000	0.059	3.39512	2

Available inserts

LNMX-ML LNMX-MF LNMX-MM



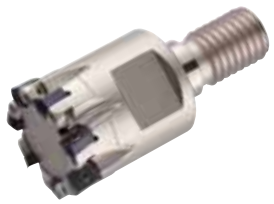
Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	100412R-ML													●	●	●			E12
	100412R-MF									●	●			●	●	●			
	100412R-MM									●	●				●	●			

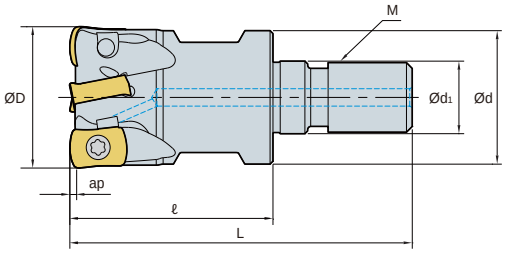
Parts

Specification	Screw	Wrench
Ø1.500~Ø4.000	FTNA0408	TW15S

Available inserts E12

HFMDMA-LN04 new







• AR: -8°
• RR: -16°~-10°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	lbs
HFMDMA	037R-1-M06-LN04	1	0.375	0.374	0.255	0.866	1.457	M06	0.02	0.02
	043R-2-M06-LN04	2	0.438	0.433	0.255	0.866	1.457	M06	0.02	0.02
	050R-3-M06-LN04	3	0.500	0.433	0.255	0.866	1.457	M06	0.02	0.02
	062R-4-M08-LN04	4	0.625	0.571	0.255	0.866	1.535	M08	0.02	0.07
	068R-4-M08-LN04	4	0.688	0.571	0.334	0.866	1.535	M08	0.02	0.07
	075R-5-M10-LN04	5	0.750	0.709	0.334	1.181	2.008	M10	0.02	0.13
	100R-7-M12-LN04	7	1.000	0.906	0.413	1.181	2.323	M12	0.02	0.22
	125R-8-M16-LN04	8	1.250	1.142	0.492	1.378	2.441	M16	0.02	0.44

Available inserts

LNMX-ML



LNMX-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	040205R-ML														●	●			E12
	040205R-MM									●	●				●	●			

Available adaptor

Designation		Available adaptor
HFMDMA	010R-2-M06-LN04	MAT-M06
	011R-2-M06-LN04	
	012R-3-M06-LN04	
	013R-3-M06-LN04	
	016R-4-M08-LN04	MAT-M08
	017R-4-M08-LN04	

Designation		Available adaptor
HFMDMA	020R-5-M10-LN04	MAT-M10
	025R-7-M12-LN04	MAT-M12
	032R-8-M16-LN04	MAT-M16
	033R-8-M16-LN04	
	035R-8-M16-LN04	

Designation : HFMDMA016R-4-M08-LN04
Modular head threading measure size (M08)

=

Adaptor spec.: MAT-M08-157-S062T
Adaptor threading measure (M08)

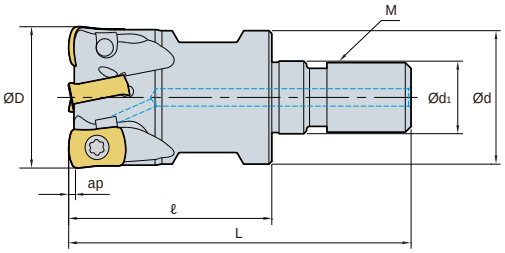
Parts

Specification	Screw	Wrench
Ø0.375~Ø1.250	FTKA01844-A	TW06S-A

Available inserts E12 Available adaptor E365~E366

HFMDMA-LN06 new







• AR: -9°
• RR: -15°~-10°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	lbs
HFMDMA	062R-2-M08-LN06	2	0.625	0.571	0.335	0.98	1.65	M08	0.028	0.07
	075R-3-M10-LN06	3	0.750	0.709	0.413	1.18	2.01	M10	0.039	0.13
	100R-4-M12-LN06	4	1.000	0.906	0.492	1.38	2.32	M12	0.039	0.22
	125R-5-M16-LN06	5	1.250	1.142	0.669	1.57	2.64	M16	0.039	0.44
	150R-6-M16-LN06	6	1.500	1.142	0.669	1.57	2.64	M16	0.039	0.53

Available inserts

LNMX-ML LNMX-MF LNMX-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	060310R-ML														●	●			E12
	060310R-MF									●	●				●	●			
	060310R-MM									●	●				●	●			

Available adaptor

Designation		Available adaptor
HFMDMA	062R-□-M08-LN06	MAT-M08
	075R-□-M10-LN06	MAT-M10
	100R-□-M12-LN06	MAT-M12
	125R-□-M16-LN06	MAT-M16
	150R-□-M16-LN06	

Designation : HFMDMA125R-□-M16-LN06
Modular head threading measure size (M16)

Adaptor spec.: MATA-M16-354-S125S-C
Adaptor threading measure (M16)

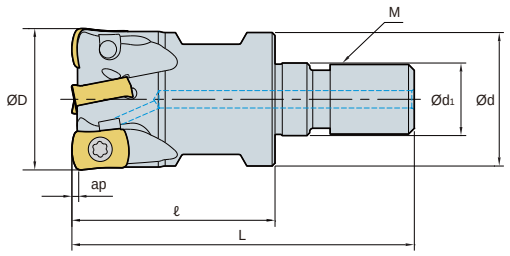
Parts

Specification	Screw	Wrench
Ø0.625 ~ Ø1.500	FTNA0306	TW09S

Available inserts E12 Available adaptor E365~E366

HFMDMA-LN10 new







• AR: -9°
• RR: -16°~-13°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	lbs
HFMDMA	100R-2-M12-LN10	2	1.000	0.906	0.492	1.378	2.323	M12	0.059	0.20
	100R-3-M12-LN10	3	1.000	0.906	0.492	1.378	2.323	M12	0.059	0.20
	125R-3-M16-LN10	3	1.250	1.142	0.669	1.575	2.638	M16	0.059	0.42
	125R-4-M16-LN10	4	1.250	1.142	0.669	1.575	2.638	M16	0.059	0.42
	150R-4-M16-LN10	3	1.500	1.142	0.669	1.575	2.638	M16	0.059	0.49
	150R-5-M16-LN10	4	1.500	1.142	0.669	1.575	2.638	M16	0.059	0.49

Available inserts

LNMX-ML LNMX-MF LNMX-MM



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNMX	100412R-ML													●	●	●			E12
	100412R-MF									●	●			●	●	●			
	100412R-MM									●	●				●	●			

Available adaptor

Designation		Available adaptor
HFMDMA	100R-□-M12-LN10	MATA-M12
	125R-□-M16-LN10	MATA-M16
	150R-□-M16-LN10	

Designation: HFMDMA125R-□-M16-LN10
Modular head threading measure size (M16)

II

Adaptor spec.: MATA-M16-354-S125S-C
Adaptor threading measure (M16)

Parts

Specification	Screw	Wrench
Ø1.000~Ø1.500	FTNA0408	TW15S

Available inserts E12 Available adaptor E366~E367

Stable machining, high efficiency milling tools for small diameter machining

HFM new

- Increase productivity through improved insert shape and size, high feed per tooth, and many cutting-edges, for small diameter machining
- Stable tool life through the combination of the reinforced toughness on corner and suitable grades of high hardness in the area of high speed and high hardness

Code system

• Shank type

HFM	S	A	1	043	H	R	-2	S	037
High Feed Mill	Tool type: S: Shank	Inch type	Inscribed circle of insert: 1: 04 type insert	Tool dia.: 043 : 0.438 inch	Coolant type: No code: None, H: Thru-hole	Hand: R: Right, L: Left	No. of tooth: 2: 2teeth	Shank length: S: Standard type, M: Middle type, L: Long type	Shank Dia.: 037 : 0.375 inch

• Modular type

HFM	M	A	1	043	H	R	-M06
High Feed Mill	Tool type: M: Modular	Inch type	Inscribed circle of insert: 1: 04 type insert	Tool dia.: 043 : 0.438 inch	Coolant type: No code: None, H: Thru-hole	Hand: R: Right, L: Left	M Dimensions

• Modular adapter

MAT	A	-M06	-118	-S039	S	-	C	-	315
Modular Adaptor	Inch type	M Dimensions: M06	Neck length: 118: 1.181 inch	Shank Dia.: S039: Ø0.394 inch	Neck type: T: Taper, S: Straight		Adaptor material: Unmarked: Steel, C: Carbide		Adaptor length: 315 : 3.150 inch

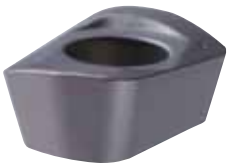
Features

- Apply helix cutting-edge on insert, low cutting load and reinforce toughness on corner
- Increased rigidity with double relief angle (11, 13), prevent interference with high feed
- To apply the negative axial rake angle when set up the holder, increased chipping resistance
- Tool life is increased with suitable C/B and grade for every material



• Holder setup
- To set up the negative axial rake angle, increased chipping resistance

• No. of tooth
- Increased tool life with increased flutes
- HRM(D) Ø0.75 (2 flutes) 鰯 HFM Ø0.75 (5 flutes)



• Relief angle
- 11, 13 double relief angle increase rigidity and prevent interference

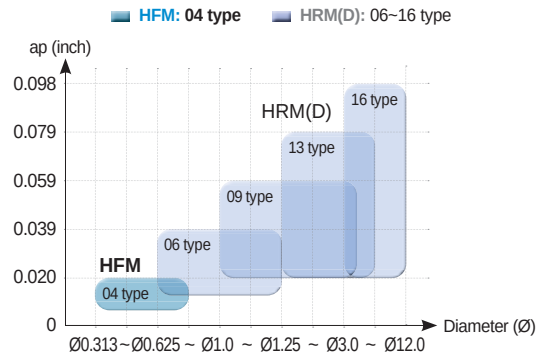
• Major cutting-edge
- Improved sharpness of principle edge
- Improved toughness of corner edge

Features of chip breaker

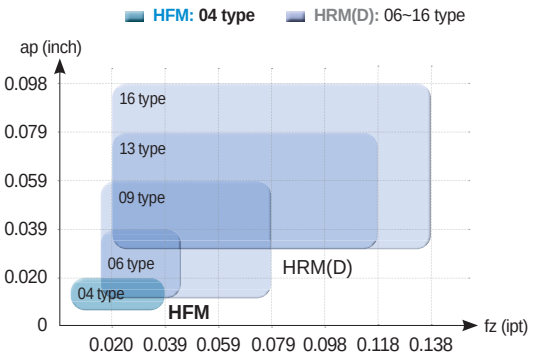
Insert		Cutting-edge	Uses	Features
MF			Light cutting Titanium & Inconel machining	Low cutting resistance C/B, suitable for light cutting
None C/B			Super hard material machining	High toughness shape, suitable for hard die steel cutting

Application area

Application area (ap & Diameter)



Application area (ap & fz)



Recommended cutting condition

※ Recommended chip breaker: ●1st ○2nd



Workpiece					HB (HRC)	Grade	Cutting conditions				Chip breaker	
Workpiece		USA (AISI)	GER (DIN)	KOR (KS)			vc (sfm)	fz (ipt)	ap (inch)	ae	MF	None C/B
P	Mild steel	1020	C22	SM20C	120~180	PC5400 (PC5300)	328.1 ~721.8	0.039~0.020	0.020	0.7D~0.1D	●	-
	Carbon steel	1045	C45	SM45C	200	PC5400 (PC5300)	328.1 ~656.2	0.039~0.020	0.020	0.7D~0.1D	●	-
	Alloy steel	4140	41CrMo4	SCM440	270 (28)	PC5300	328.1 ~656.2	0.039~0.020	0.020	0.7D~0.1D	●	-
	Pre-hardened steel	P20 (Improved)	1.2738 (Improved)	KP4M	300 (32)	PC5300 (PC2510) new	328.1 ~590.6	0.035~0.020	0.016	0.7D~0.1D	●	○
		P21 (Improved)	-	NIMAX	370 (40)	PC5300 (PC2510) new	328.1 ~590.6	0.035~0.020	0.016	0.7D~0.1D	●	○
		P21 (Improved)	-	CENA1	370 (40)	PC5300 (PC2510) new	328.1 ~590.6	0.035~0.020	0.016	0.7D~0.1D	●	○
		P21 (Improved)	-	NAK80	400 (43)	PC5300	328.1 ~524.9	0.028~0.020	0.016	0.7D~0.1D	○	-
							328.1 ~590.6	0.035~0.020	0.016	0.7D~0.1D	-	●
		420	X30Cr13	STAVAX	510 (52)	PC2510 new (PC5300)	262.5 ~492.1	0.024~0.012	0.016	0.7D~0.1D	●	-
	Alloy tool steel	D2 H13	X155CrVMo12-1 X40CrMoV5-1	STD11 STD61	- (40~50)	PC2510 new (PC2505) new	262.5 ~426.5	0.022~0.012	0.012	0.7D~0.1D	-	●
		D2	X155CrVMo12-1	STD11 (Cold forging)	630 (60)	PC2505 new	98.4 ~246.1	0.020~0.012	0.008	0.7D~0.1D	-	●
M	Stainless steel	316	X5CrNiMo17-12-2	STS316	Under 270	PC5400 (PC5300)	229.7 ~492.1	0.028~0.020	0.020	0.7D~0.1D	●	-
K	Gray cast iron, Ductile cast iron	65-45-12	GGG40.3	GCD450	Tensile Strength Over 450Mpa	PC5300	426.5 ~721.8	0.031~0.024	0.016	0.7D~0.1D	●	-
S	HRSA Fe series	N09901	- (WS 2.4662)	Incoloy901	- (25~35)	PC5300 (PC5400)	98.4 ~328.1	0.020~0.012	0.012	0.4D~0.7D	●	○
	HRSA Ni or Co series	N07718	NiCr19FeNbMo (WS 2.4668)	Inconel718	- (35~45)	PC5300 (PC5400)	65.6 ~164.0	0.024~0.012	0.012	0.4D~0.7D	●	○
	Titanium	R56400	TiAl6V4	Ti-6Al-4V	- (40~45)	PC5300	98.4 ~164.0	0.039~0.016	0.012	0.7D~0.1D	●	-

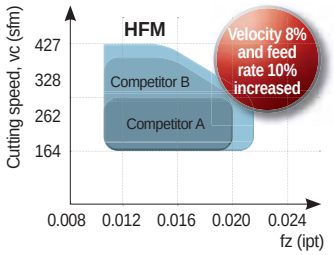
Performance evaluation

High speed machining

■**Workpiece**
D2 (HRC40~45)

■**Insert**
LPM(E)W0402□□R

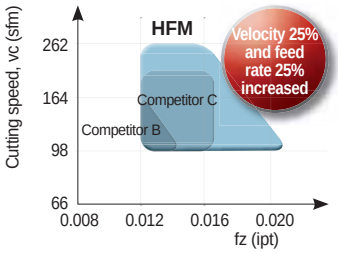
■**Recommended grade**
PC2505 (1st), PC2510 (2nd)



■**Workpiece**
D2 (Over HRC60)

■**Insert**
LPM(E)W0402□□R

■**Recommended grade**
PC2505 (1st), PC2510 (2nd)

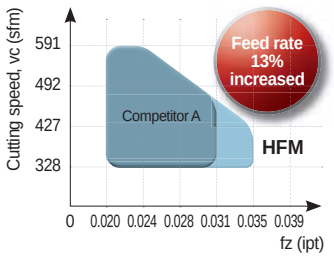


High feed machining

■**Workpiece**
P20 (HRC32),
P21 (HRC43)

■**Insert**
LPMT0402□□R-MF

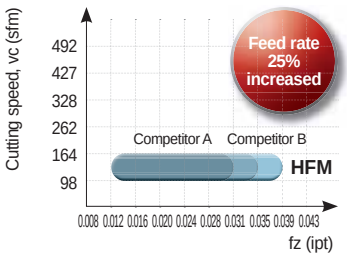
■**Recommended grade**
PC5300 (1st), PC2510 (2nd)



■**Workpiece**
R56400 (HRC40~45)

■**Insert**
LPMT0402□□R-MF

■**Recommended grade**
PC5300 (1st), PC5400 (2nd)



Machining example

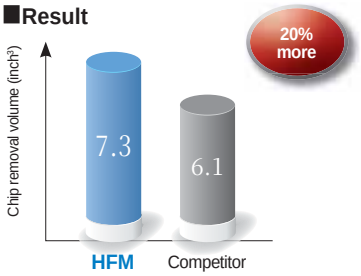
Alloy tool steel [D2(AISI) / X155CrVMo12-1(DIN) / STD11(KS), HRC40~45]

■**Workpiece** Mold

■**Cutting conditions** vc (sfm) = 262, fz (ipt) = 0.020
ap (inch) = 0.012, ae (inch) = 0.394
dry

■**Tools**
Insert LPMW040210R (PC2510)
Holder HFMSA1062HR-4S062

■**Result**





Competitor

- Chip removal rate Q (inch³/min): 0.293
- Cutting time (min): 25

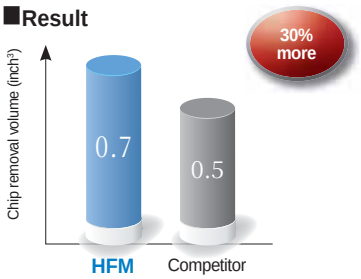
Alloy tool steel [D2(AISI) / X155CrVMo12-1(DIN) / STD11(KS), HRC60]

■**Workpiece** Mold

■**Cutting conditions** vc (sfm) = 246, fz (ipt) = 0.016
ap (inch) = 0.006, ae (inch) = 0.197
dry

■**Tools**
Insert LPMW040210R (PC2505)
Holder HFMSA1037HR-2S037

■**Result**





Competitor

- Chip removal rate Q (inch³/min): 0.085
- Cutting time (min): 7.85

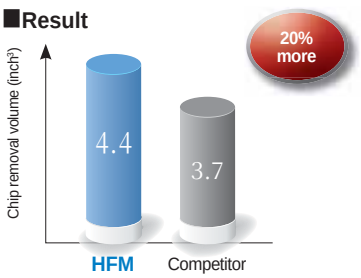
HRSA [R56400(AISI) / TiAl6V4(DIN) / Ti-6Al-4V(KS), HRC48]

■**Workpiece** Aviation parts

■**Cutting conditions** vc (sfm) = 164, fz (ipt) = 0.047
ap (inch) = 0.012, ae (inch) = 0.394
wet

■**Tools**
Insert LPMT040210R-MF (PC5300)
Holder HFMSA1062HR-4S062

■**Result**



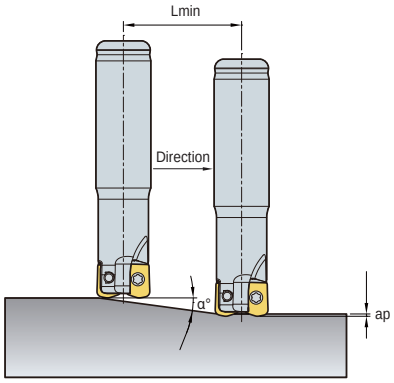


Competitor

- Chip removal rate Q (inch³/min): 0.439
- Cutting time (min): 10.05

Ramping and helical cutting

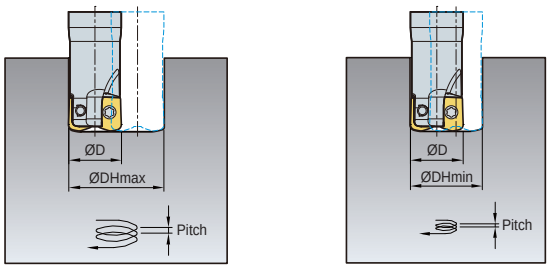
Ramping



$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (inch)}$$

※ Lmin: Min. inclination cutting length
α°: Max. ramping angle
ap: Depth of cut

Helical cutting



- ØD = Tool dia. (inch)
- Ød = Tool path (inch) = ØDHmin, Max - ØD
- ØDHmin (Min diameter, inch) = ØD × 2 - 5.4
- ØDHmax (Max diameter, inch) = ØD×2 - 2

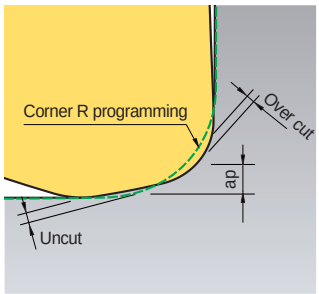
(inch)

Designation	Tool dia. ØD	Depth of cut ap	Ramping		Helical cutting		
			Max ramping angle α (°)	Lmin	Max diameter ØDHmax	Min diameter ØDHmin	Max pitch dmax
HFMSA1037	0.375	0.016 ~0.021	3.5	0.256	0.709	0.591	0.016
HFMSA1043	0.438	0.016 ~0.021	3.1	0.295	0.787	0.669	0.016
HFMSA1050	0.500	0.016 ~0.021	2.7	0.335	0.866	0.748	0.016
HFMSA1056	0.563	0.016 ~0.021	2.2	0.374	0.945	0.827	0.016
HFMSA1062	0.625	0.016 ~0.021	1.8	0.413	1.024	0.906	0.016
HFMSA1068	0.688	0.016 ~0.021	1.7	0.453	1.102	0.984	0.016
HFMSA1075	0.750	0.016 ~0.021	1.4	0.492	1.181	1.063	0.016
HFMSA1081	0.813	0.016 ~0.021	1.3	0.531	1.260	1.142	0.016
HFMMA1100	1.000	0.016 ~0.021	1.1	0.571	1.339	1.220	0.016
HFMMA1106	1.063	0.016 ~0.021	1.0	0.610	1.417	1.299	0.016
HFMMA1118	1.188	0.016 ~0.021	0.9	0.650	1.496	1.378	0.016
HFMMA1125	1.250	0.016 ~0.021	0.8	0.689	1.575	1.457	0.016
HFMMA1131	1.313	0.016 ~0.021	0.8	0.846	1.890	1.772	0.016

- Adjust feed to under 70% of recommended cutting condition when ramping & helical cutting
- In helical ramping, max. cutting depth per 1 helical revolution of cutter should not exceed max. cutting depth as per insert size
- In ramping, max. cutting depth per 1 ramping process of cutter should not exceed max. depth of cut as per used insert size

Corner R programming

(inch)

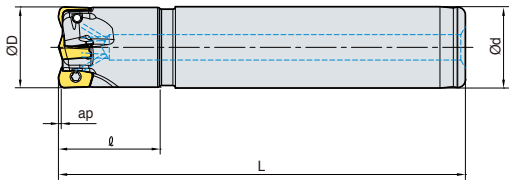


Insert	Corner R programming	Cutting conditions		Over Cut	Uncut
		Nose R	Max. ap		
LPMT040210R-MF **LPMW040210R** **LPEW040210R**	R0.039	0.039	0.016	0.000	0.007
	R0.059			0.004	0.003
	R0.079			0.012	0.000
LPMT040220R-MF **LPMW040220R** **LPEW040220R**	R0.039	0.079	0.020	0.000	0.016
	R0.059			0.000	0.008
	R0.079			0.000	0.000

- When using CNC program, overcut & uncut occurs on the corner processing site if entering the correct program corner R value for each insert
- To prevent overcut, you will need to complete a CNC program considering the above overcut

HFMSA1000 new












AA 77°

- AR: -4°
- RR: -14°~-7°

(inch)

Designation			ØD (Inch)	ØD (mm)	Ød	ℓ	L	ap	lbs
HFMSA	1031HR-1S037	1	0.313	7.938	0.375	0.787	3.150	0.016~0.020	0.07
	1031HR-1M037	1	0.313	7.938	0.375	0.984	3.937	0.016~0.020	0.07
	1031HR-1L037	1	0.313	7.938	0.375	1.378	4.724	0.016~0.020	0.07
	1037HR-2S031	2	0.375	9.525	0.312	0.787	3.150	0.016~0.020	0.07
	1037HR-2M031	2	0.375	9.525	0.312	0.984	3.937	0.016~0.020	0.09
	1037HR-2L031	2	0.375	9.525	0.312	1.378	4.724	0.016~0.020	0.09
	1037HR-2S037	2	0.375	9.525	0.375	0.787	3.150	0.016~0.020	0.09
	1037HR-2M037	2	0.375	9.525	0.375	0.984	4.134	0.016~0.020	0.11
	1037HR-2L037	2	0.375	9.525	0.375	1.378	4.724	0.016~0.020	0.13
	1043HR-2S037	2	0.438	11.113	0.375	0.787	3.150	0.016~0.020	0.09
	1043HR-2M037	2	0.438	11.113	0.375	0.984	4.134	0.016~0.020	0.13
	1043HR-2L037	2	0.438	11.113	0.375	1.378	4.724	0.016~0.020	0.15
	1050HR-3S037	3	0.500	12.700	0.375	0.787	3.150	0.016~0.020	0.11
	1050HR-3M037	3	0.500	12.700	0.375	0.984	4.134	0.016~0.020	0.13
	1050HR-3L037	3	0.500	12.700	0.375	1.378	4.724	0.016~0.020	0.15
	1050HR-3S050	3	0.500	12.700	0.500	0.787	3.150	0.016~0.020	0.13
	1050HR-3M050	3	0.500	12.700	0.500	0.984	4.134	0.016~0.020	0.18
	1050HR-3L050	3	0.500	12.700	0.500	1.378	4.724	0.016~0.020	0.20

Available inserts

LPMT-MF



LPMW



LPEW



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LPMT	040210R-MF									●	●				●	●				E12
	040220R-MF									●	●				●	●				E13
LPMW	040210R								●	●					●					
	040220R								●	●					●					
LPEW	040210R								●	●					●					
	040220R								●	●					●					

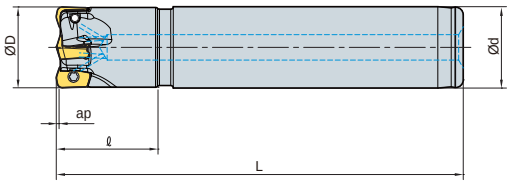
Parts

Specification	Screw	Wrench
Ø0.313~Ø0.375	FTKA01840	TW06S-A
Ø0.438~Ø0.813	FTKA01842	

Available inserts E12, E13

HFMSA1000 new












AA
77°

- AR: -4°
- RR: -6°~-3°

(inch)

Designation		⌖	ØD (Inch)	ØD (mm)	Ød	ℓ	L	ap	lbs
HFMSA	1056HR-3S056	3	0.563	14.288	0.563	0.787	3.150	0.016~0.020	0.15
	1056HR-3M056	3	0.563	14.288	0.563	0.984	4.134	0.016~0.020	0.20
	1056HR-3L056	3	0.563	14.288	0.563	1.575	4.724	0.016~0.020	0.22
	1062HR-4S062	4	0.625	15.875	0.625	0.787	3.150	0.016~0.020	0.24
	1062HR-4M062	4	0.625	15.875	0.625	0.984	4.134	0.016~0.020	0.31
	1062HR-4L062	4	0.625	15.875	0.625	1.575	4.724	0.016~0.020	0.35
	1068HR-4S062	4	0.688	17.463	0.625	0.787	3.150	0.016~0.020	0.24
	1068HR-4M062	4	0.688	17.463	0.625	0.984	4.134	0.016~0.020	0.33
	1068HR-4L062	4	0.688	17.463	0.625	1.575	4.724	0.016~0.020	0.37
	1075HR-4S075	4	0.750	19.050	0.750	0.787	3.150	0.016~0.020	0.37
	1075HR-4M075	4	0.750	19.050	0.750	0.984	4.134	0.016~0.020	0.49
	1075HR-4L075	4	0.750	19.050	0.750	1.575	4.724	0.016~0.020	0.57
	1075HR-5S075	5	0.750	19.050	0.750	0.787	3.150	0.016~0.020	0.37
	1075HR-5M075	5	0.750	19.050	0.750	0.984	4.134	0.016~0.020	0.51
	1075HR-5L075	5	0.750	19.050	0.750	1.575	4.724	0.016~0.020	0.60
	1081HR-5S075	5	0.813	20.638	0.750	0.787	3.150	0.016~0.020	0.37
	1081HR-5M075	5	0.813	20.638	0.750	0.984	4.134	0.016~0.020	0.51
	1081HR-5L075	5	0.813	20.638	0.750	1.575	4.724	0.016~0.020	0.60

Available inserts

LPMT-MF



LPMW



LPEW



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LPMT	040210R-MF									●	●				●	●				
	040220R-MF									●	●				●	●				
LPMW	040210R								●	●					●					E12
	040220R								●	●					●					E13
LPEW	040210R								●	●					●					
	040220R								●	●					●					

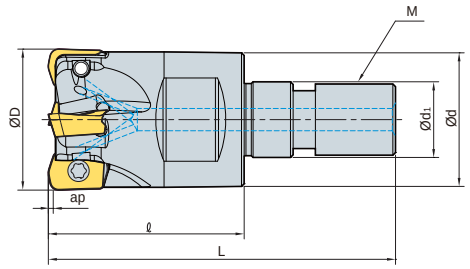
Parts

Specification	Screw	Wrench
Ø0.563~Ø0.813	FTKA01842	TW06S-A

Available inserts **E12, E13**

HFMMA new












AA 77°

- AR: -4°
- RR: -14°~-3°

(inch)

Designation			ØD (Inch)	ØD (mm)	Ød	Ød1	ℓ	L	M	ap	lbs
HFMMA	1031HR-M06	1	0.313	7.938	0.295	0.256	0.669	1.260	M6	0.016~0.020	0.02
	1037HR-M06	2	0.375	9.525	0.374	0.256	0.669	1.260	M6	0.016~0.020	0.02
	1043HR-M06	2	0.438	11.113	0.433	0.256	0.669	1.260	M6	0.016~0.020	0.02
	1050HR-M06	3	0.500	12.700	0.433	0.256	0.748	1.339	M6	0.016~0.020	0.02
	1062HR-M08	4	0.625	15.875	0.571	0.335	0.866	1.535	M8	0.016~0.020	0.07
	1068HR-M08	4	0.688	17.463	0.571	0.335	0.866	1.535	M8	0.016~0.020	0.07
	1075HR-M10	5	0.750	19.050	0.709	0.413	0.984	1.811	M10	0.016~0.020	0.13
	1081HR-M10	5	0.813	20.638	0.709	0.413	0.984	1.811	M10	0.016~0.020	0.13
	1100HR-M12	6	1.000	25.400	0.906	0.492	1.063	2.008	M12	0.016~0.020	0.24
	1106HR-M12	6	1.063	26.988	0.906	0.492	1.063	2.008	M12	0.016~0.020	0.24
	1118HR-M16	7	1.188	30.163	1.142	0.669	1.181	2.362	M16	0.016~0.020	0.37
	1125HR-M16	8	1.250	31.750	1.142	0.669	1.181	2.362	M16	0.016~0.020	0.40
	1131HR-M16	8	1.313	33.338	1.142	0.669	1.181	2.362	M16	0.016~0.020	0.40

Available inserts

LPMT-MF new　LPMW new　LPEW new





Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LPMT	040210R-MF									●	●				●	●				
	040220R-MF									●	●				●	●				
LPMW	040210R								●	●					●					E12
	040220R								●	●					●					E13
LPEW	040210R								●	●					●					
	040220R								●	●					●					

Available adaptor

Designation		Available adaptor
HFMMA	1031HR-M06	MATA-M06
	1037HR-M06	
	1043HR-M06	
	1050HR-M06	
	1062HR-M08	MATA-M08
	1068HR-M08	

Designation		Available adaptor
HFMMA	1075HR-M10	MATA-M10
	1081HR-M10	
	1100HR-M12	MATA-M12
	1106HR-M12	
	1118HR-M16	MATA-M16
	1125HR-M16	
	1131HR-M16	

Designation: HFMMA1031HR-M06
Modular head threading measure size (M06)

Adaptor spec.: MATA-M06-078-S038S
Adaptor threading measure (M06)

Parts

Specification	Screw	Wrench
Ø0.313~Ø0.375	FTKA01840	TW06S-A
Ø0.438~Ø1.313	FTKA01842	

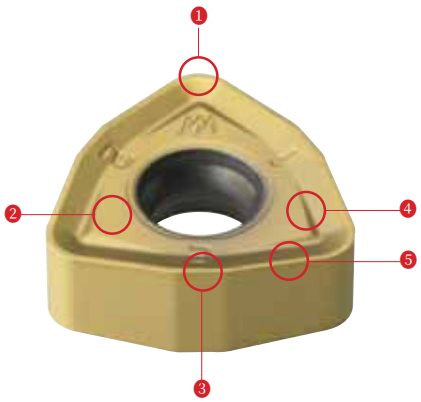
Available inserts E12, E13　Available adaptor E365~E366

HRMD is more economical due to the use of 6 cutting-edges compared to HRM tool with a 3-edge positive insert

HRMD

- HRMD is more economical due to the use of 6 cutting-edges compared to HRM tool with a 3-edge positive insert
- High-rake angle cutting-edge and chip breaker reduces cutting load
- Negative geometry has been designed for rigidity of cutting-edge and double-sided function
- Screw on system and stable support achieves strong clamping force
- Unique insert design for high feed and multifunctional machining
- HRMD insert with symmetrical cutting-edge is applicable for both R and L type machining

Features of insert



❶ Nose-R

- Security of rigid edge in ramping pocket machining
- Round edge suitable for high feed rates insert geometry
- Possible to use R/L type machining

❷ Clamping surface

- Design for stable clamping
- Prevention of friction by chip

❸ Minor cutting-edge

- Improvement of surface roughness in high feed machining
- Special design for decreasing thrust force
- Symmetrical insert design for R/L type tool

❹ Chip breaker

- Reduction of cutting load due to High-rake angle
- Improvement of chip flow and evacuation in various applications
- Prevention of damage on clamping face of insert

❺ Major cutting-edge

- Symmetrical design insert for R/L type tool
- Superior cutting performance due to high rake angle cutting-edge
- Low cutting resistance in high feed
- Special design for decreasing thrust force

Features of cutter



Inner coolant system

- Improvement of chip control and evacuation
- Longer tool life due to reduced cutting temperature

3-surface constrained system

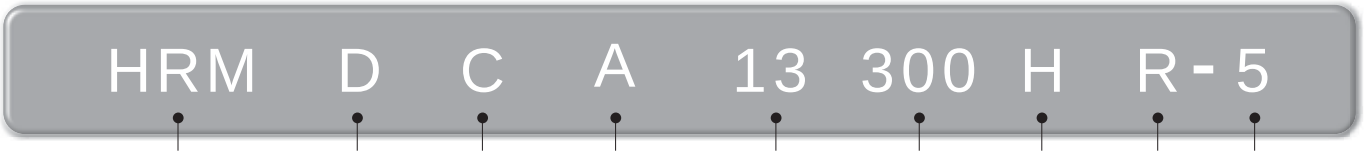
- Strong clamping system
- Stable clamping system against different cutting resistances in various machining applications

Simple screw on system

- Strong clamping of screw on system
- Convenient clamping system
- Wide chip pocket for better chip evacuation

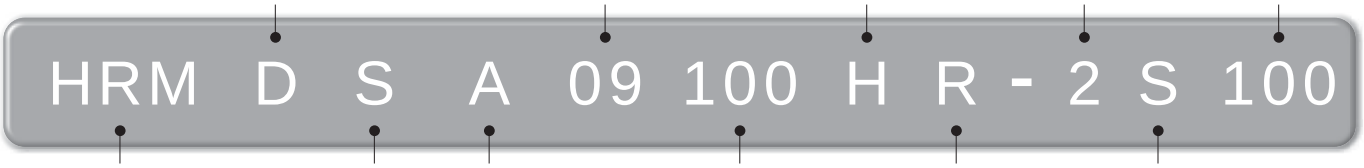
Code system

• Cutter



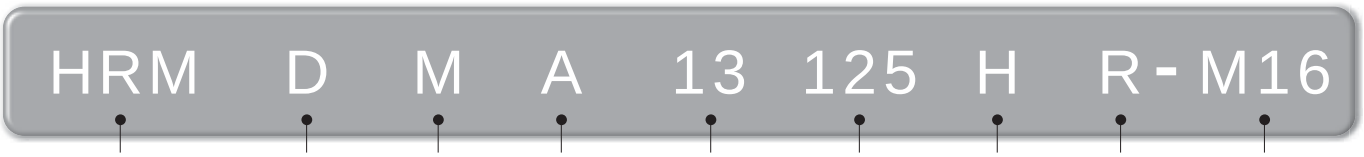
High Removal Milling	Double-sided Insert	Tool type	Unit	Inscribed circle of insert	Tool dia.	Coolant type	Hand	No. of tooth
		C: Cutter	A: Inch M: Metric	09: 09 type insert 13: 13 type insert 16: 16 type insert	300 : Ø3.0	No code: None H: Thru-hole	R: Right L: Left	5: 5 teeth

• Shank



High Removal Milling	Double-sided Insert	Tool type	Unit	Inscribed circle of insert	Tool dia.	Coolant type	Hand	No. of tooth	Tool length	Shank Dia.
		S: Shank	A: Inch M: mm	06: 06 type insert 09: 09 type insert 13: 13 type insert	100: Ø1.0	Unmarked: None H: Thru-hole	R: Right L: Left	2: 2 teeth	S: Standard type M: Middle type L : Long type	100: Ø1.00

• Modular



High Removal Milling	Double-sided Insert	Tool type	Unit	Inscreibed circle of insert	Tool dia.	Coolant type	Hand	M Dimensions
		M: Modular	A: Inch M: mm	06: 06 type insert 09: 09 type insert 13: 13 type insert	125: Ø1.25	Unmarked: None H: Thru-hole	R: Right L: Left	

• Modular adaptor

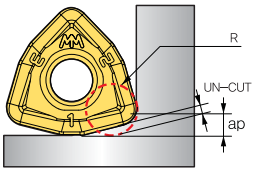


Modular Adaptor	M Dimensions	Neck length	Shank Dia.	Neck type	Adaptor material	Total length
		078: 0.78	S125: Ø1.25	T: Taper S: Straight	Unmarked: Steel C: Carbide	708: 7.08

Corner R programming

Designation	Cutting condition		Approx. R (inch)	
	Max.ap (inch)	Max.fz (ipt)	Input. R	Uncut
WNMX060312ZNN-☐☐	0.04	0.05	0.07	0.015
WNMX09T316ZNN-☐☐	0.06	0.08	0.10	0.024
WNMX130520ZNN-☐☐	0.08	0.12	0.12	0.032
WNMX160720ZNN-☐☐	0.10	0.14	0.14	0.047

·Information for uncut part by using "Input.R" for CAM program

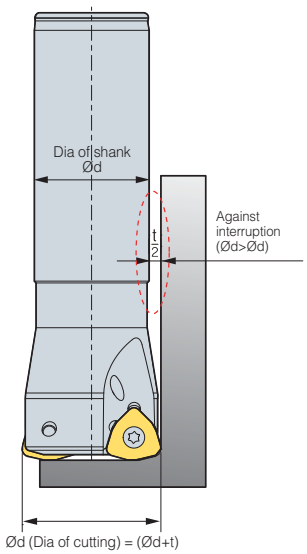


· Uncut part can be changed by poor machine condition or weak clamp of workpiece, etc

Interference prevent system

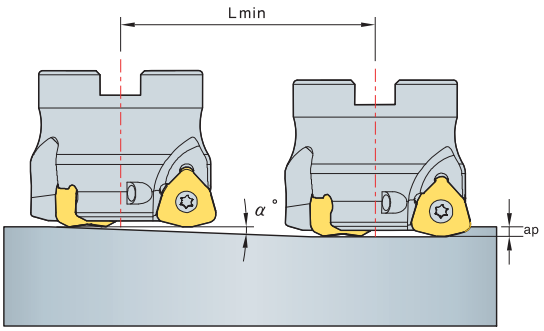
Designation	ØD (inch)	Ød (inch)	t (inch)
HRMDSA06068HR-2☐062	0.6880	0.625	0.063
HRMDSA06087HR-2☐075	0.8750	0.750	0.125
HRMDSA06112HR-3☐100	1.1250	1.000	0.125
HRMDSA06137HR-4☐125	1.3750	1.250	0.125
HRMDSA06106HR-2☐100	1.0625	1.000	0.060
HRMDSA09131HR-3☐125	1.3125	1.250	0.060
HRMDSA09137HR-4☐125	1.3750	1.250	0.130
HRMDSA09150HR-4☐125	1.5000	1.250	0.250
HRMDSA09200HR-4☐150	2.0000	1.500	0.500
HRMDSA13131HR-2☐125	1.3130	1.250	0.060
HRMDSA13137HR-2☐125	1.3750	1.250	0.130
HRMDSA13150HR-3☐125	1.5000	1.250	0.250
HRMDSA13162HR-3☐125	1.6250	1.250	0.380
HRMDSA13162HR-3☐150	1.6250	1.500	0.130
HRMDSA13200HR-3☐150	2.0000	1.500	0.500
HRMDSA13250HR-4☐150	2.5000	1.500	1.000

• The side clearance prevents to interference between tool and workpiece even in deep hole machining

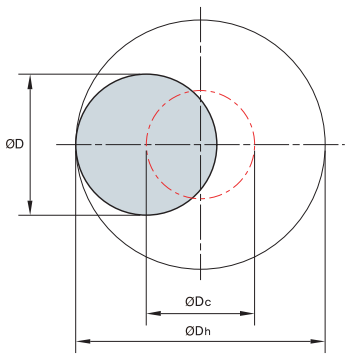


Ramping & helical cutting technical data

Ramping



Helical cutting



$$L_{min} = \frac{ap}{\tan \alpha} \text{ (inch)}$$

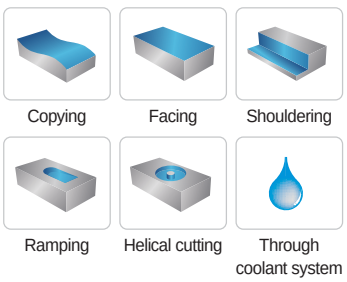
$$\text{ØDc} = \text{ØDh} - \text{ØD}$$

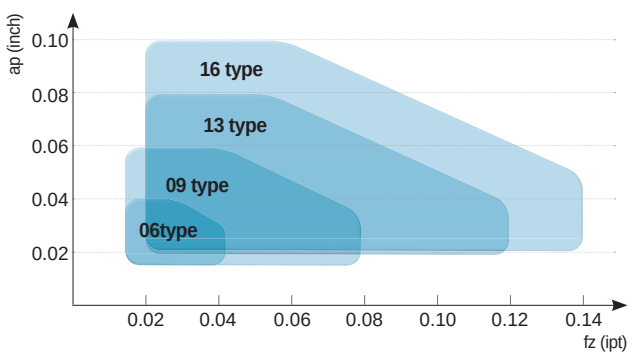
ØDc = Tool pass of tool center
ØDh = Desirable hole diameter on workpiece
ØD = Tool dia.

- Adjust feed to under 70% of Recommended cutting condition when ramping & helical cutting
- In helical ramping, max. cutting depth per 1 helical revolution of cutter should not exceed max. cutting depth as per insert size
- in ramping, max. cutting depth for 1 ramping process should not exceed max. depth of cut as per used insert size

Designation		Tool Dia.	Efficient cutting diameter ØDe (inch)	Ramping			Helical ramping	
				Max. ap (inch)	Max. angle α°	Cutting Length Lmin (inch)	Dh Min. Cutting diameter (inch)	Dh Max. Cutting diameter (inch)
HRMDSA	06068HR	0.688	0.433	0.039	3.7	0.603	1.052	1.281
	06075HR	0.750	0.495	0.039	3.3	0.676	1.177	1.406
	06087HR	0.875	0.619	0.039	2.1	1.063	1.427	1.656
	06100HR	1.000	0.741	0.039	2.6	0.858	1.677	1.906
	06112HR	1.125	0.866	0.039	1.9	1.175	1.927	2.156
	06125HR	1.250	0.992	0.039	0.6	3.724	2.177	2.406
	06137HR	1.375	1.115	0.039	0.4	5.586	2.427	2.656
HRMDSA	09100HR-2□□□	1.000	0.606	0.059	5.4	0.622	1.480	1.843
	09106HR-2□□□	1.063	0.646	0.059	5.0	0.669	1.559	1.921
	09118HR-3□□□	1.188	0.803	0.059	3.9	0.866	1.874	2.236
	09125HR-3□□□	1.250	0.878	0.059	3.5	0.965	2.031	2.394
	09131HR-3□□□	1.313	0.917	0.059	3.3	1.016	2.110	2.472
	09137HR-4□□□	1.375	1.000	0.059	3.0	1.114	2.268	2.630
	09150HR-4□□□	1.500	1.125	0.059	2.5	1.351	2.512	2.874
	09162HR-4□□□	1.625	1.189	0.059	2.5	1.358	2.661	3.024
	09200HR-□□□□	2.000	1.583	0.059	1.8	1.850	3.449	3.811
	13125HR-2□□□□	1.250	0.760	0.079	5.7	0.787	1.850	2.362
	13131HR-2□□□□	1.313	0.799	0.079	5.4	0.839	1.929	2.441
	13137HR-2□□□□	1.375	0.878	0.079	4.8	0.945	2.087	2.598
	13150HR-3□□□□	1.500	0.996	0.079	3.7	1.222	2.331	2.843
	13162HR-3□□□□	1.625	1.071	0.079	3.7	1.209	2.480	2.992
	13200HR-□□□□	2.000	1.457	0.079	2.6	1.732	3.268	3.780
	13250HR-□□□□	2.500	1.969	0.079	1.9	2.413	4.291	4.803
HRMDCA	09200HR-□	2.000	1.583	0.059	1.8	1.850	3.449	3.811
	09250HR-□	2.500	2.091	0.059	1.4	2.492	4.472	4.835
	09300HR-□	3.000	2.760	0.059	1.0	3.327	5.811	6.173
	09400HR-□	4.000	3.543	0.059	0.8	4.311	7.386	7.748
	13200HR-□	2.000	1.457	0.079	2.6	1.732	3.268	3.780
	13250HR-□	2.500	1.969	0.079	1.9	2.413	4.291	4.803
	13300HR-□	3.000	2.634	0.079	1.4	3.307	5.630	6.142
	13400HR-□	4.000	3.421	0.079	1.0	4.358	7.205	7.717
	13500HR-□	5.000	4.406	0.079	0.8	4.488	9.173	9.685
HRMDCA	16300HR-□	3.000	2.343	0.098	1.5	3.742	5.134	5.843
	16400HR-□	4.000	3.344	0.098	1.0	5.614	7.134	7.843
	16500HR-□	5.000	4.345	0.098	0.8	7.018	9.134	9.843
	16600R-□	6.000	5.345	0.098	0.6	9.357	11.134	11.843
	16800R-□	8.000	7.346	0.098	0.3	18.716	15.134	15.843
	161000R-□	10.000	9.346	0.098	0.2	28.074	19.134	19.843
	161200R-□	12.000	11.346	0.098	0.1	56.149	23.134	23.843

Uses





Recommended cutting condition

ISO	Workpiece		Material	Grade	Cutting speed, vc (sfm)
P	Carbon steel	Low carbon steel	1213, C = 0.1~25	PC5300	919
				PC5400	804
		General carbon steel	C = 0.30~55	PC5300	837
				PC5400	722
		High carbon steel	C = 0.55~80	PC5300	787
				PC5400	673
	Low alloy steel (Alloy constituent < 5%)	-	4115, 4120, 4140	PC5300	640
				PC5400	558
		Hardened	-	PC5300	377
				PC5400	328
	High alloy steel (Alloy constituent > 5%)	Annealed	H13	PC5300	492
				PC5400	427
		Hardened	M2, M35	PC5300	394
				PC5400	344
M	Stainless steel	Ferritic / Martensitic	S41000, S42000, S43000	PC5300	525
				PC5400	443
		Austenitic	S30300, S30400, S31600	PC5300	427
				PC5400	361
		Duplex (Austenitic / Ferrictic)	31803	PC5300	328
				PC5400	279
K	Gray cast iron	Low tensile	No30B, No35B	PC5300	558
				PC5400	492
		Hight tensile	No45B, No50B	PC5300	492
				PC5400	427
	Ductile cast iron	Ferric	60-40-18, 80-55-06	PC5300	558
				PC5400	492
		Pearlitic	80-55-06, 100-70-03	PC5300	492
				PC5400	427
S	Fe Base	-	Incoloy	PC5300	197
				PC5400	164
	Ni Base	-	Inconel, Nimonic, Hastelloy	PC5300	180
				PC5400	148
	Co Base	-	Stelite	PC5300	82
				PC5400	66
	Titanium alloys	-	Pure Ti	PC5300	427
				PC5400	344
			Alloy(TiAl6V4)	PC5300	213
				PC5400	180

Machining example



AISI 1045 (SM45C, HRC22)

■**Cutting conditions**
vc = 930 sfm
fz = 0.055 ipt
vf = 398 ipm
ap = 0.032 inch
ae = 1.378 inch
Coolant: Dry, Machining: Copying
Machine: MCT (Horizontal)
Overhang of tool: 10 inch

■**Tools**
Insert WNMX130520ZNN-MM
Holder HRMDCA13200HR-4

40% Increased productivity
80% Reduced tool cost

→ In comparing HRMD with our competitor using the same cutting conditions, the cutting speed of HRMD was higher with the same depth of cut (ap×ae), the cycle time was reduced by 40% and the tool life was increased to over 60%. HRMD is economically more efficient due to the use of 6 cutting-edges compared to EDNW type with positive insert



AISI 304 (STS304)

■**Cutting conditions**
vc = 430 sfm
fz = 0.047 ipt
vf = 117 ipm
ap = 0.04 inch
ae = 3.15 inch
Coolant: Wet, Machining : Facing and Slotting
Machine: MCT (Horizontal)
Overhang of tool: 10 inch

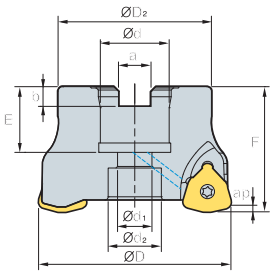
■**Tools**
Insert WNMX130520ZNN-MM)
Holder HRMDCA13400HR-6

80% Increased productivity
25% Reduced tool cost

→ In comparing HRMD with our competitor using the same cutting conditions, the cutting speed of HRMD was higher with the same depth of cut (ap×ae), the cycle time was reduced by 80% and the tool life was same, but HRMD is economically more efficient due to the use of 6 cutting-edges compared to SDKN type with positive insert

HRMDCA09







AA 76°

- AR: -7°
- RR: -12°~-18°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Bolt
HRMDCA	09200HR-4	4	2.000	1.772	0.750	0.413	0.630	0.315	0.220	0.787	1.75	0.06	0.662	3/8-24UNF
	09200HR-5	5	2.000	1.772	0.750	0.413	0.630	0.315	0.220	0.787	1.75	0.06	0.662	3/8-24UNF
	09250HR-5	5	2.500	1.772	0.750	0.413	0.630	0.315	0.220	0.787	1.75	0.06	1.103	3/8-24UNF
	09250HR-6	6	2.500	1.772	0.750	0.413	0.630	0.315	0.220	0.787	1.75	0.06	1.103	3/8-24UNF
	09300HR-6	6	3.000	2.205	1.000	0.551	0.827	0.374	0.248	0.866	2.00	0.06	3.308	1/2-20UNF
	09300HR-7	7	3.000	2.205	1.000	0.551	0.827	0.374	0.248	0.866	2.00	0.06	3.308	1/2-20UNF
	09400HR-7	7	4.000	2.874	1.250	0.709	1.024	0.500	0.319	0.866	2.00	0.06	4.631	5/8-18UNF
	09400HR-8	8	4.000	2.874	1.250	0.709	1.024	0.500	0.319	0.866	2.00	0.06	4.631	5/8-18UNF

Available inserts

WNMX-MF | WNMX-ML | WNMX-MM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	09T316ZNN-MF									●				●	●				E30
	09T316ZNN-ML													●	●				
	09T316ZNN-MM							●	●	●		●		●	●				

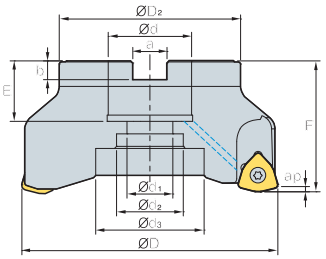
Parts

Specification	Screw	Wrench
Ø2.000~Ø4.000	FTKA0307	TW09S

Available inserts E3

HRMDCA13











AA 76°

- AR: -7°
- RR: -12°~-4°

(inch)

Designation		⊙	ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Bolt
HRMDCA	13200HR-3	3	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.08	0.662	3/8-24UNF
	13200HR-4	4	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.08	0.662	3/8-24UNF
	13250HR-4	4	2.5	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.08	1.103	3/8-24UNF
	13250HR-5	5	2.5	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.08	1.103	3/8-24UNF
	13300HR-5	5	3.0	2.205	1.00	0.551	0.827	-	0.374	0.248	0.866	2.00	0.08	2.205	1/2-20UNF
	13300HR-6	6	3.0	2.205	1.00	0.551	0.827	-	0.374	0.248	0.866	2.00	0.08	2.205	1/2-20UNF
	13400HR-6	6	4.0	2.874	1.25	0.709	1.024	-	0.500	0.319	0.866	2.00	0.08	3.528	5/8-18UNF
	13400HR-7	7	4.0	2.874	1.25	0.709	1.024	-	0.500	0.319	0.866	2.00	0.08	3.528	5/8-18UNF
	13500HR-7	7	5.0	3.433	1.50	0.827	1.220	2.125	0.626	0.394	1.181	2.50	0.08	4.410	3/4-16UNF
	13500HR-8	8	5.0	3.433	1.50	0.827	1.220	2.125	0.626	0.394	1.181	2.50	0.08	4.410	3/4-16UNF

Available inserts

WNMX-MF



WNMX-ML



WNMX-MM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	130520ZNN-MF													●	●				E30
	130520ZNN-ML													●	●				
	130520ZNN-MM							●	●	●		●	●	●	●				

Parts

Specification	Screw	Wrench
Ø2.0~Ø5.0	FTKA0412B	TW15S

Available inserts E30

HRMDCA16 new



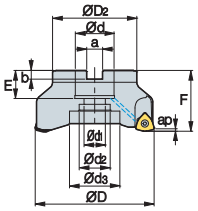


Fig. 1

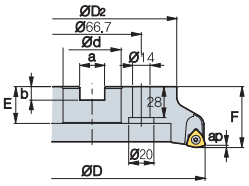


Fig. 2

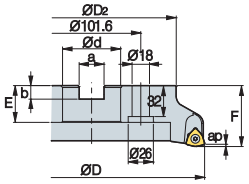


Fig. 3

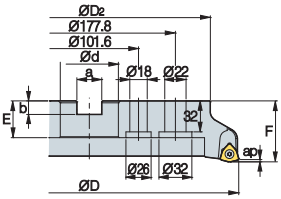


Fig. 4







AA 14°

- AR: -7°
- RR: -12°~-4°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs	Bolt	Fig.
HRMDCA	16300HR-4	4	3.0	2.362	1.00	0.551	0.827	-	0.374	0.248	0.866	2.00	0.098	1.94	1/2-20UNF	1
	16300HR-5	5	3.0	2.362	1.00	0.551	0.827	-	0.374	0.248	0.866	2.00	0.098	1.81	1/2-20UNF	1
	16400HR-5	5	4.0	3.346	1.25	0.709	1.024	-	0.500	0.319	0.866	2.00	0.098	3.77	5/8-18UNF	1
	16400HR-6	6	4.0	3.346	1.25	0.709	1.024	-	0.500	0.319	0.866	2.00	0.098	3.86	5/8-18UNF	1
	16500HR-6	6	5.0	3.937	1.50	0.827	1.220	2.205	0.626	0.394	1.181	2.50	0.098	7.23	3/4-16UNF	1
	16500HR-7	7	5.0	3.937	1.50	0.827	1.220	2.205	0.626	0.394	1.181	2.50	0.098	7.25	3/4-16UNF	1
	16600R-7	7	6.0	5.039	2.00	-	3.543	-	0.752	0.433	1.181	2.50	0.098	8.99	1-14UNF	2
	16600R-8	8	6.0	5.039	2.00	-	3.543	-	0.752	0.433	1.181	2.50	0.098	9.13	1-14UNF	2
	16800R-8	8	8.0	5.701	2.50	-	5.197	-	1.000	0.551	1.496	2.50	0.098	14.7	-	3
	16800R-10	10	8.0	5.701	2.50	-	5.197	-	1.000	0.551	1.496	2.50	0.098	14.79		3
	161000R-10	10	10.0	7.480	2.50	-	7.087	-	1.000	0.551	1.496	2.50	0.098	24.98	-	3
	161000R-12	12	10.0	7.480	2.50	-	7.087	-	1.000	0.551	1.496	2.50	0.098	24.89		3
	161200R-12	12	12.0	9.646	2.50	-	9.370	-	1.000	0.551	1.496	2.50	0.098	37.15	-	4
	161200R-14	14	12.0	9.646	2.50	-	9.370	-	1.000	0.551	1.496	2.50	0.098	37.39		4

Available inserts



WNMX-MF



WNMX-ML


WNMX-MM

Designation		Cermet		Coated										Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	160720ZNN-MF													●	●				E30
	160720ZNN-ML													●					
	160720ZNN-MM									●				●	●				

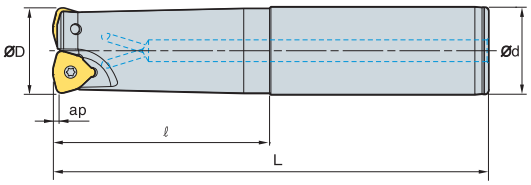
Parts

Specification	Screw	Wrench
Ø3.0~Ø12.0	FTGA0513-P	TW20-100

Available inserts **E30**

HRMDSA06 new











AA 76°

- AR: -7°
- RR: -17°~-25°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HRMDSA	06068HR-2S062	2	0.688	0.625	0.787	4.331	0.039	0.32
	06068HR-2M062	2	0.688	0.625	0.787	5.906	0.039	0.44
	06068HR-2L062	2	0.688	0.625	0.787	7.874	0.039	0.60
	06075HR-2S075	2	0.750	0.750	1.969	5.118	0.039	0.55
	06075HR-2M075	2	0.750	0.750	3.937	7.087	0.039	0.75
	06075HR-2L075	2	0.750	0.750	5.118	9.843	0.039	1.06
	06087HR-2S075	2	0.875	0.750	0.787	5.118	0.039	0.59
	06087HR-2M075	2	0.875	0.750	0.787	7.087	0.039	0.82
	06087HR-2L075	2	0.875	0.750	0.787	9.843	0.039	1.14
	06100HR-3S100	3	1.000	1.000	2.362	5.512	0.039	1.01
	06100HR-3M100	3	1.000	1.000	3.150	7.087	0.039	1.31
	06100HR-3L100	3	1.000	1.000	4.724	9.843	0.039	1.84
	06112HR-3S100	3	1.125	1.000	1.181	5.512	0.039	1.09
	06112HR-3M100	3	1.125	1.000	1.181	7.087	0.039	1.40
	06112HR-3L100	3	1.125	1.000	1.181	9.843	0.039	1.95
	06125HR-4S125	4	1.250	1.250	2.756	5.906	0.039	1.76
	06125HR-4M125	4	1.250	1.250	3.937	7.874	0.039	2.38
	06125HR-4L125	4	1.250	1.250	7.087	11.811	0.039	3.58
	06137HR-4S125	4	1.375	1.250	1.575	7.874	0.039	2.53
	06137HR-4M125	4	1.375	1.250	1.575	9.843	0.039	3.17
	06137HR-4L125	4	1.375	1.250	1.575	11.811	0.039	3.81

Available inserts

WNMX-MF



WNMX-ML



WNMX-MM



Designation		Cermet		Coated										Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	060312ZNN-MF													●	●				E30
	060312ZNN-ML													●	●				
	060312ZNN-MM							●	●	●				●	●				

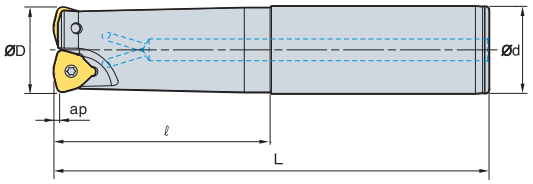
Parts

Specification	Screw	Wrench
Ø0.688~Ø1.375	ETNA02506	TW07S

Available inserts E30

HRMDSA09











AA 76°

- AR: -7°
- RR: -17°~-25°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HRMDSA	09100HR-2S100	2	1.0000	1.00	2.362	5.512	0.06	1.103
	09100HR-2M100	2	1.0000	1.00	4.724	7.874	0.06	1.323
	09100HR-2L100	2	1.0000	1.00	7.087	11.811	0.06	2.205
	09106HR-2S100	2	1.0625	1.00	2.362	5.512	0.06	1.103
	09106HR-2M100	2	1.0625	1.00	2.362	7.874	0.06	1.544
	09106HR-2L100	2	1.0625	1.00	2.362	11.811	0.06	2.205
	09118HR-3S125	3	1.1875	1.25	2.756	5.906	0.06	1.764
	09118HR-3M125	3	1.1875	1.25	4.724	7.874	0.06	2.205
	09118HR-3L125	3	1.1875	1.25	7.087	11.811	0.06	3.308
	09125HR-3S125	3	1.2500	1.25	2.756	5.906	0.06	1.764
	09125HR-3M125	3	1.2500	1.25	4.724	7.874	0.06	2.426
	09125HR-3L125	3	1.2500	1.25	7.087	11.811	0.06	3.749

Available inserts

WNMX-MF



WNMX-ML



WNMX-MM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	09T316ZNN-MF									●				●	●				E30
	09T316ZNN-ML													●	●				
	09T316ZNN-MM							●	●	●		●		●	●				

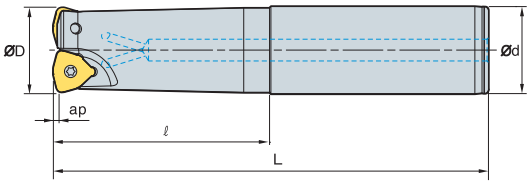
Parts

Specification	Screw	Wrench
Ø1.0000~Ø1.2500	FTKA0307	TW09S

Available inserts **E30**

HRMDSA09











AA 76°

- AR: -7°
- RR: -17°~-25°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HRMDSA	09131HR-3S125	3	1.3125	1.25	2.756	5.906	0.06	1.764
	09131HR-3M125	3	1.3125	1.25	2.756	7.874	0.06	2.426
	09131HR-3L125	3	1.3125	1.25	2.756	11.811	0.06	3.749
	09137HR-4S125	4	1.3750	1.25	1.969	5.906	0.06	1.985
	09137HR-4M125	4	1.3750	1.25	1.969	7.874	0.06	2.426
	09137HR-4L125	4	1.3750	1.25	1.969	11.811	0.06	3.749
	09150HR-4S125	4	1.5000	1.25	1.969	5.906	0.06	1.985
	09150HR-4M125	4	1.5000	1.25	1.969	9.843	0.06	3.308
	09150HR-4L125	4	1.5000	1.25	1.969	11.811	0.06	3.969
	09200HR-4S150	4	2.0000	1.50	1.575	5.906	0.06	3.087
	09200HR-4M150	4	2.0000	1.50	1.575	9.843	0.06	5.292
	09200HR-4L150	4	2.0000	1.50	1.575	11.811	0.06	6.395
	09200HR-5S150	5	2.0000	1.50	1.575	5.906	0.06	3.087
	09200HR-5M150	5	2.0000	1.50	1.575	9.843	0.06	5.292
	09200HR-5L150	5	2.0000	1.50	1.575	11.811	0.06	6.395

Available inserts

WNMX-MF WNMX-ML WNMX-MM







Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	09T316ZNN-MF									●				●	●				E30
	09T316ZNN-ML													●	●				
	09T316ZNN-MM							●	●	●		●		●	●				

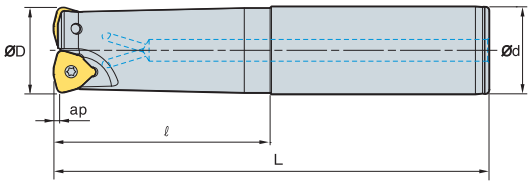
Parts

Specification	Screw	Wrench
Ø1.3125~Ø2.0000	FTKA0307	TW09S

Available inserts E30

HRMDSA13











AA 76°

- AR: -7°
- RR: -14°~-16°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HRMDSA	13125HR-2S125	2	1.250	1.250	2.756	5.906	0.08	1.764
	13125HR-2M125	2	1.250	1.250	4.724	7.874	0.08	2.205
	13125HR-2L125	2	1.250	1.250	7.087	11.811	0.08	3.528
	13131HR-2S125	2	1.313	1.250	2.756	5.906	0.08	1.754
	13131HR-2M125	2	1.313	1.250	2.756	7.874	0.08	2.426
	13131HR-2L125	2	1.313	1.250	2.756	11.811	0.08	3.749
	13137HR-2S125	2	1.375	1.250	1.969	5.906	0.08	1.764
	13137HR-2M125	2	1.375	1.250	1.969	7.874	0.08	2.426
	13137HR-2L125	2	1.375	1.250	1.969	11.811	0.08	3.749
	13150HR-3S125	3	1.500	1.250	1.969	5.906	0.08	1.764
	13150HR-3M125	3	1.500	1.250	1.969	9.843	0.08	3.087
	13150HR-3L125	3	1.500	1.250	1.969	11.811	0.08	3.749
	13150HR-3S150	3	1.500	1.500	2.362	5.906	0.08	2.646
	13150HR-3M150	3	1.500	1.500	5.118	9.843	0.08	4.631
	13150HR-3L150	3	1.500	1.500	7.087	11.811	0.08	5.733

Available inserts

WNMX-MF



WNMX-ML



WNMX-MM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	130520ZNN-MF													●	●				E30
	130520ZNN-ML													●	●				
	130520ZNN-MM							●	●	●		●	●	●	●				

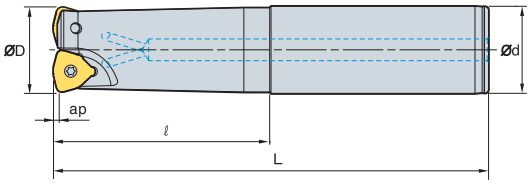
Parts

Specification	Screw	Wrench
Ø1.250~Ø1.500	FTKA0412B	TW15S

Available inserts **E30**

HRMDSA13











AA 76°

- AR: -7°
- RR: -14°~-16°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HRMDSA	13162HR-3S125	3	1.625	1.250	1.969	5.906	0.08	1.985
	13162HR-3M125	3	1.625	1.250	1.969	9.843	0.08	2.646
	13162HR-3L125	3	1.625	1.250	1.969	11.811	0.08	3.969
	13162HR-3S150	3	1.625	1.500	1.969	5.906	0.08	2.867
	13162HR-3M150	3	1.625	1.500	1.969	9.843	0.08	4.851
	13162HR-3L150	3	1.625	1.500	1.969	11.811	0.08	5.954
	13200HR-3S150	3	2.000	1.500	1.969	5.906	0.08	2.426
	13200HR-3M150	3	2.000	1.500	1.969	9.843	0.08	3.749
	13200HR-3L150	3	2.000	1.500	1.969	11.811	0.08	4.410
	13200HR-4S150	4	2.000	1.500	1.969	5.906	0.08	3.308
	13200HR-4M150	4	2.000	1.500	1.969	9.843	0.08	5.292
	13200HR-4L150	4	2.000	1.500	1.969	11.811	0.08	6.395
	13250HR-4S150	4	2.500	1.500	1.969	5.906	0.08	3.087
	13250HR-4M150	4	2.500	1.500	1.969	9.843	0.08	4.631
	13250HR-4L150	4	2.500	1.500	1.969	11.811	0.08	5.292
	13250HR-5S150	5	2.500	1.500	1.969	5.906	0.08	3.969
	13250HR-5M150	5	2.500	1.500	1.969	9.843	0.08	6.174
	13250HR-5L150	5	2.500	1.500	1.969	11.811	0.08	7.056

Available inserts

WNMX-MF



WNMX-ML



WNMX-MM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	130520ZNN-MF													●	●				E30
	130520ZNN-ML													●	●				
	130520ZNN-MM							●	●	●		●	●	●	●				

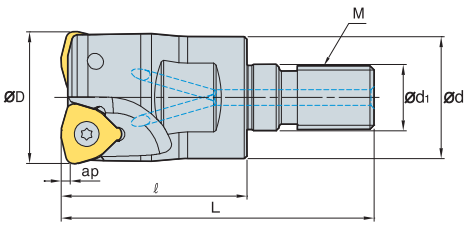
Parts

Specification	Screw	Wrench
Ø1.625~Ø2.500	FTKA0412B	TW15S

Available inserts E30

HRMDMA06 new











AA 76°

- AR: -7°
- RR: -18°~-25°

(inch)

Designation		⌾	ØD	Ød	Ød1	ℓ	L	M	ap	lbs
HRMDMA	06068HR-M08	2	0.688	0.571	0.335	0.984	1.654	M08	0.039	0.07
	06075HR-M10	2	0.750	0.689	0.413	1.181	2.008	M10	0.039	0.13
	06087HR-M10	2	0.875	0.709	0.413	1.181	2.008	M10	0.039	0.15
	06100HR-M12	3	1.000	0.906	0.492	1.378	2.323	M12	0.039	0.23
	06112HR-M12	3	1.125	0.906	0.492	1.378	2.323	M12	0.039	0.28
	06125HR-M16	4	1.250	1.142	0.669	1.575	2.638	M16	0.039	0.45
	06137HR-M16	4	1.375	1.142	0.669	1.575	2.638	M16	0.039	0.51

Available inserts

WNMX-MF new



WNMX-ML new



WNMX-MM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	060312ZNN-MF													●	●				E30
	060312ZNN-ML													●	●				
	060312ZNN-MM							●	●	●		●	●	●	●				

Available adaptor

Designation		Available adaptor
HRMDMA	06068HR-M08	MATA- M08
	06075HR-M10	MATA- M10
	06087HR-M10	

Designation		Available adaptor
HRMDMA	06100HR-M12	MATA- M12
	06112HR-M12	
	06125HR-M16	MATA- M16
	06137HR-M16	

Designation: HRMDMA06100HR-M12
Modular head threading measure size (M12)

=

Adaptor spec.: MATA-M12-118-S100S
Adaptor threading measure (M12)

Parts

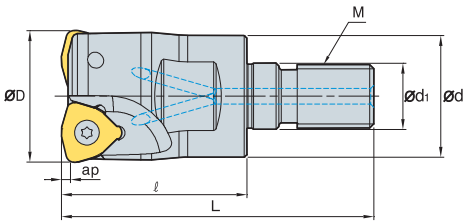
Specification	Screw	Wrench
Ø0.688~Ø1.375	ETNA02506	TW07S




Available inserts **E30** Available adaptor **E365~E366**

HRMDMA09











AA
76°

- AR: -7°
- RR: -18°~-25°

(inch)

Designation			ØD	Ød	ød1	ℓ	L	M	ap	lbs
HRMDMA	09100HR-M12	2	1.000	0.906	0.492	1.378	2.323	M12	0.06	0.22
	09106HR-M12	2	1.063	0.906	0.492	1.378	2.323	M12	0.06	0.24
	09118HR-M16	3	1.188	1.142	0.669	1.575	2.638	M16	0.06	0.42
	09125HR-M16	3	1.250	1.142	0.669	1.575	2.638	M16	0.06	0.44
	09131HR-M16	3	1.313	1.142	0.669	1.575	2.638	M16	0.06	0.46
	09137HR-M16	4	1.375	1.142	0.669	1.575	2.638	M16	0.06	0.49
	09150HR-M16	4	1.500	1.142	0.669	1.575	2.638	M16	0.06	0.55

Available inserts

WNMX-MF



WNMX-ML



WNMX-MM



Designation		Cermet		Coated										Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	09T316ZNN-MF									●				●	●				E30
	09T316ZNN-ML													●	●				
	09T316ZNN-MM							●		●		●		●	●				

Available adaptor

Designation		Available adaptor
HRMDMA	09100HR-M12	MATA- M12
	09106HR-M12	
	09118HR-M16	MATA- M16
	09125HR-M16	
	09131HR-M16	
	09137HR-M16	
	09150HR-M16	

Designation: HRMDMA09125HR-M16
Modular head threading measure size (M16)

II

Adaptor spec.: MATA-M16-137-S125S
Adaptor threading measure (M16)

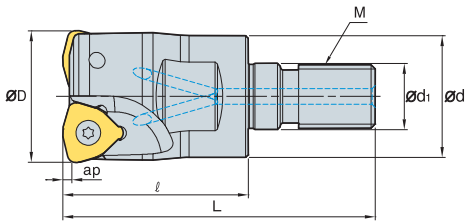
Parts

Specification	Screw	Wrench
Ø1.000~Ø1.500	FTKA0307	TW09S

Available inserts E30 Available adaptor E365~E366

HRMDMA13





AA 76°

- AR: -7°
- RR: -18°~-25°

(inch)

Designation			ØD	Ød	ød1	ℓ	L	M	ap	lbs
HRMDMA	13125HR-M16	2	1.250	1.142	0.669	1.575	2.638	M16	0.08	0.44
	13131HR-M16	2	1.313	1.142	0.669	1.575	2.638	M16	0.08	0.44
	13137HR-M16	2	1.375	1.142	0.669	1.575	2.638	M16	0.08	0.49
	13150HR-M16	3	1.500	1.142	0.669	1.772	2.835	M16	0.08	0.57

Available inserts

WNMX-MF WNMX-ML WNMX-MM



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WNMX	130520ZNN-MF													●	●				E30
	130520ZNN-ML													●	●				
	130520ZNN-MM							●	●	●		●	●	●	●				

Available adaptor

Designation		Available adaptor
HRMDMA	13125HR-M16	MATA-M16
	13131HR-M16	
	13137HR-M16	
	13150HR-M16	

Designation: HRMDMA13125HR-M16
Modular head threading measure size (M16)

Adaptor spec.: MATA-M16-137-S125S
Adaptor threading measure (M16)

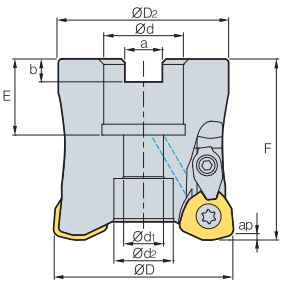
Parts

Specification	Screw	Wrench
Ø1.250~Ø1.500	FTKA0412B	TW15S

Available inserts **E30** Available adaptor **E365~E366**

HRMCA13











AA 75°

- AR: 7°
- RR: -15°~-5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Bolt
HRMCA	13200HR-3	3	2	1.850	3/4	0.433	0.646	0.321	0.220	0.787	1.75	0.08	0.88	3/8-24UNF
	13200HR-4	4	2	1.850	3/4	0.433	0.646	0.321	0.220	0.787	1.75	0.08	0.88	3/8-24UNF
	13250HR-4	4	2 1/2	2.362	3/4	0.433	0.669	0.321	0.220	0.787	1.75	0.08	1.54	3/8-24UNF
	13300HR-5	5	3	2.992	1	0.709	1.024	0.384	0.248	0.866	2.00	0.08	3.52	1/2-20UNF

Available inserts

WDKT-MH



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WDKT	130520ZDSR-MH							●	●	●	●	●		●	●				E29

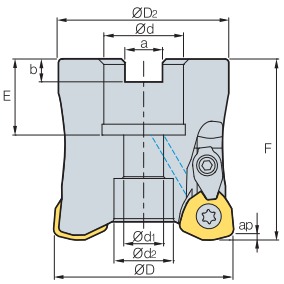
Parts

Specification	Screw	Clamp	Clamp screw	C-ring	Wrench
Ø2~Ø3	FTGA0513-P	CHH4.5R1	CTX04513H	CR03	TW20-100

Available inserts E29

HRMCA15











AA 75°

- AR: 7°
- RR: -15°~-5°

(inch)

Designation			ØD	ØD	Ød	Ød1	Ød2	a	b	E	F	ap	lbs	Bolt
HRMCA	15250HR-3	3	2 1/2	2.362	3/4	0.433	0.669	0.321	0.220	0.787	1.75	0.10	1.54	3/8-24UNF
	15300HR-4	4	3	2.992	1	0.709	1.024	0.384	0.248	0.866	2.00	0.10	3.74	1/2-20UNF
	15400HR-5	5	4	3.780	1 1/4	0.709	1.024	0.510	0.319	0.866	2.00	0.10	6.16	1/2-20UNF
	15400HR-6	6	4	3.780	1 1/4	0.709	1.024	0.510	0.319	0.866	2.00	0.10	7.04	1/2-20UNF
	15500HR-6	6	5	3.858	1 1/2	0.866	1.260	0.636	0.394	1.181	2.50	0.10	7.26	3/4-16UNF
	15600HR-7	7	6	3.937	2	-	2.835	0.758	0.433	1.181	2.50	0.10	9.46	1-14UNF

Available inserts

WDKT-MH



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WDKT	150625ZDSR-MH									●	●	●		●	●				E29

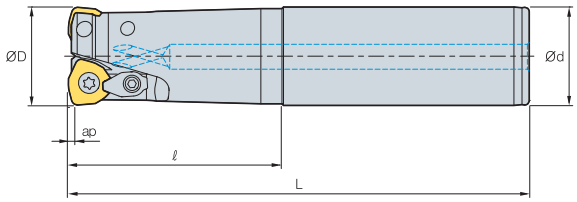
Parts

Specification	Screw	Clamp	Clamp screw	C-ring	Wrench
Ø2 1/2~6	FTGA0513-P	CHH5.5R1	CTX0515	CR04	TW20-100

Available inserts E29

HRMSA08/10





AA 75°

- AR: 7°
- RR: -11°~-5°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HRMSA	08075HR-2S075	2	3/4	3/4	1.969	5.118	0.04	0.66
	08075HR-2M075	2	3/4	3/4	3.937	7.087	0.04	0.88
	08075HR-2L075	2	3/4	3/4	5.118	9.843	0.04	1.10
	08087HR-2S075	2	7/8	3/4	1.969	5.118	0.04	0.66
	08087HR-2M075	2	7/8	3/4	1.969	7.087	0.04	0.88
	08087HR-2L075	2	7/8	3/4	1.969	9.843	0.04	1.10
HRMSA	10100HR-2S100	2	1	1	2.362	5.512	0.06	0.88
	10100HR-2M100	2	1	1	4.724	7.874	0.06	0.32
	10100HR-2L100	2	1	1	7.087	11.811	0.06	0.98
	10106HR-2S100	2	1 1/16	1	2.362	5.512	0.06	0.88
	10106HR-2M100	2	1 1/16	1	2.362	7.874	0.06	1.32
	10106HR-2L100	2	1 1/16	1	2.362	11.811	0.06	2.20
	10118HR-2S125	2	1 3/16	1 1/4	2.756	5.906	0.06	1.76
	10118HR-2M125	2	1 3/16	1 1/4	4.724	7.874	0.06	2.20
	10118HR-2L125	2	1 3/16	1 1/4	7.087	11.811	0.06	3.30

Available inserts

WDKT-MH



Type	Designation		Cermet		Coated											Uncoated			page
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
08 type	WDKT	080316ZDSR-MH							●	●	●	●	●		●	●				E29
10 type	WDKT	10T320ZDSR-MH								●	●	●	●		●	●				

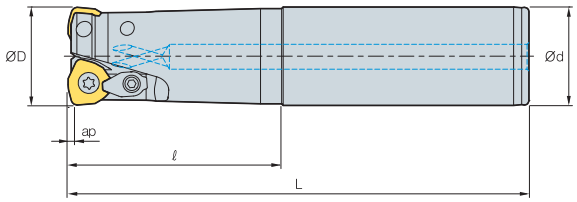
Parts

Specification	Screw	Clamp	Clamp screw	C-ring	Wrench
Ø3/4~Ø7/8 (08 type)	FTNA0306	-	-	-	TW09P
Ø1~Ø1 3/16 (10 type)	FTKA0408	CHH3.5R1	CTX03510	CR03	TW15S

Available inserts E29

HRMSA13











AA 75°

- AR: 7°
- RR: -11°~-5°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HRMSA	13125HR-2S125	2	1 1/4	1 1/4	2.756	5.906	0.08	1.76
	13125HR-2M125	2	1 1/4	1 1/4	4.724	7.874	0.08	2.20
	13125HR-2L125	2	1 1/4	1 1/4	7.087	11.811	0.08	3.52
	13131HR-2S125	2	1 5/16	1 1/4	2.756	5.906	0.08	1.76
	13131HR-2M125	2	1 5/16	1 1/4	2.756	7.874	0.08	2.42
	13131HR-2L125	2	1 5/16	1 1/4	2.756	11.811	0.08	3.74
	13137HR-2S125	2	1 3/8	1 1/4	1.969	5.906	0.08	1.76
	13137HR-2M125	2	1 3/8	1 1/4	1.969	7.874	0.08	2.42
	13137HR-2L125	2	1 3/8	1 1/4	1.969	11.811	0.08	3.74
	13150HR-3S125	3	1 1/2	1 1/4	1.969	5.906	0.08	1.76
	13150HR-3M125	3	1 1/2	1 1/4	1.969	9.843	0.08	3.08
	13150HR-3L125	3	1 1/2	1 1/4	1.969	11.811	0.08	3.74
	13150HR-3S150	3	1 1/2	1 1/2	2.362	5.906	0.08	2.64
	13150HR-3M150	3	1 1/2	1 1/2	5.118	9.843	0.08	4.62
	13150HR-3L150	3	1 1/2	1 1/2	7.087	11.811	0.08	5.72

Available inserts

WDKT-MH



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WDKT	130520ZDSR-MH							●	●		●	●		●	●				E29

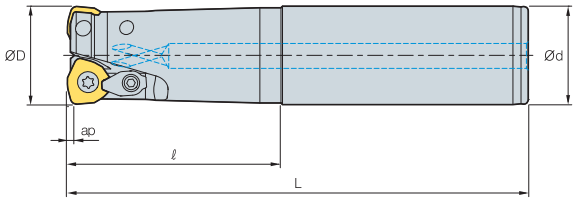
Parts

Specification	Screw	Clamp	Clamp screw	C-ring	Wrench
Ø1 1/4, 1 5/16, 1 3/8	FTGA0510-P	CHH4.5R1	CTX04513H	CR03	TW20
Ø1 1/2	FTGA0512-P	CHH4.5R1	CTX04513H	CR03	TW20

Available inserts **E29**

HRMSA15







AA 75°

- AR: 7°
- RR: -8°~-6°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
HRMSA	15200HR-3S125	3	2	1 1/4	1.969	5.906	0.10	2.20
	15200HR-3M125	3	2	1 1/4	1.969	9.843	0.10	3.52
	15200HR-3L125	3	2	1 1/4	1.969	11.811	0.10	4.18
	15200HR-3S150	3	2	1 1/2	1.969	5.906	0.10	3.08
	15200HR-3M150	3	2	1 1/2	1.969	9.843	0.10	5.06
	15200HR-3L150	3	2	1 1/2	1.969	11.811	0.10	6.16
	15250HR-4S125	4	2 1/2	1 1/4	1.969	5.906	0.10	2.86
	15250HR-4M125	4	2 1/2	1 1/4	1.969	9.843	0.10	4.18
	15250HR-4L125	4	2 1/2	1 1/4	1.969	11.811	0.10	4.84
	15250HR-4S150	4	2 1/2	1 1/2	1.969	5.906	0.10	3.74
	15250HR-4M150	4	2 1/2	1 1/2	1.969	9.843	0.10	5.72
	15250HR-4L150	4	2 1/2	1 1/2	1.969	11.811	0.10	6.82

Available inserts

WDKT-MH



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WDKT	150625ZDSR-MH									●	●	●		●	●				E29

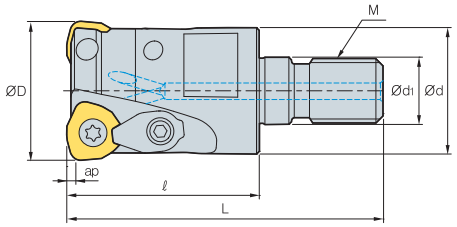
Parts

Specification	Screw	Clamp	Clamp screw	C-ring	Wrench
Ø2~Ø2 1/2	FTGA0513-P	CHH5.5R1	CTX0515	CR04	TW20

Available inserts E29

HRMMA08







AA 75°

- AR: 7°
- RR: -11°~-5°

(inch)

Designation			ØD	Ød	ød1	ℓ	L	M	ap	lbs
HRMMA	08075HR-M10	2	3/4	0.689	0.413	1.181	2.008	M10	0.04	0.11
	08081HR-M10	2	13/16	0.689	0.413	1.181	2.008	M10	0.04	0.11
	08100HR-M12	3	1	0.906	0.492	1.378	2.323	M12	0.04	0.22
	08106HR-M12	3	1 1/16	0.906	0.492	1.378	2.323	M12	0.04	0.26
	08112HR-M12	3	1 1/8	0.906	0.492	1.378	2.323	M12	0.04	0.46
	08125HR-M16	4	1 1/4	1.142	0.669	1.575	2.638	M16	0.04	0.48
	08131HR-M16	4	1 5/16	1.142	0.669	1.575	2.638	M16	0.04	0.48
	08137HR-M16	4	1 3/8	1.142	0.669	1.575	2.638	M16	0.04	0.51
	08150HR-M16	5	1 1/2	1.142	0.669	1.575	2.638	M16	0.04	0.55

Available inserts

WDKT-MH



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
WDKT	080316ZDSR-MH							●	●	●	●	●		●	●				E29

Available adaptor

Designation		Available adaptor
HRMMA	08075HR-M10	MATA-M10
	08081HR-M10	
	08100HR-M12	MATA-M12
	08106HR-M12	
	08112HR-M12	
	08125HR-M16	MATA-M16
	08131HR-M16	
	08137HR-M16	
	08150HR-M16	

Designation: HRMMA08075HR-M10
Modular head threading measure size (M10)

=

Adaptor spec.: MATA-M10-118-S075S
Adaptor threading measure (M10)

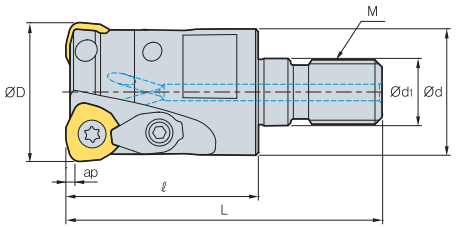
Parts

Specification	Screw	Clamp	Clamp screw	C-ring	Wrench	Wrench
Ø3/4~Ø1 1/2	FTNA0306	-	-	-	TW09S	-

Available inserts E29 Available adaptor E365~E366

HRMMA10/13







AA 75°

- AR: 7°
- RR: -11°~-5°

(inch)

Designation			ØD	Ød	ød1	ℓ	L	M	ap	lbs
HRMMA	10100HR-M12	2	1	0.906	0.492	1.378	2.323	M12	0.06	0.20
	10106HR-M12	2	1 1/16	0.906	0.492	1.378	2.323	M12	0.06	0.20
	10118HR-M16	2	1 3/16	1.142	0.669	1.575	2.638	M16	0.06	0.37
	10125HR-M16	3	1 1/4	1.142	0.669	1.772	2.835	M16	0.06	0.46
	10137HR-M16	3	1 3/8	1.142	0.669	1.772	2.835	M16	0.06	0.51
	10150HR-M16	4	1 1/2	1.142	0.669	1.772	2.835	M16	0.06	0.59
HRMMA	13125HR-M16	2	1 1/4	1.142	0.669	1.575	2.638	M16	0.08	0.37
	13131HR-M16	2	1 5/16	1.142	0.669	1.575	2.638	M16	0.08	0.37
	13137HR-M16	2	1 3/8	1.142	0.669	1.575	2.638	M16	0.08	0.42
	13150HR-M16	3	1 1/2	1.142	0.669	1.772	2.835	M16	0.08	0.53

Available inserts

WDKT-MH



Type	Designation		Cermet		Coated												Uncoated			page
			CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
10 type	WDKT	10T320ZDSR-MH								●	●	●	●		●	●				E29
13 type	WDKT	130520ZDSR-MH							●	●	●	●	●		●	●				

Available adaptor

Designation		Available adaptor
HRMMA	10100HR-M12	MATA-M12
	10106HR-M12	
	10118HR-M16	MATA-M16
	10125HR-M16	
	10137HR-M16	
	10150HR-M16	
	13125HR-M16	MATA-M16
	13131HR-M16	
	13137HR-M16	
	13150HR-M16	

Designation: HRMMA10125HR-M16
Modular head threading measure size (M16)

II

Adaptor spec.: MATA-M16-137-S125S
Adaptor threading measure (M16)

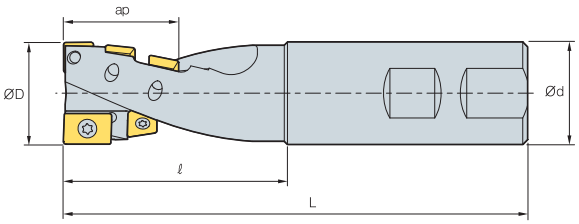
Parts

Specification	Screw	Clamp	Clamp screw	C-ring	Wrench	Wrench
Ø1~Ø1 1/2 (10 type)	FTKA0408	CHH3.5R1	CTX03510	CR03	TW15S	-
Ø1 1/4, 1 5/16, 1 3/8 (13 type)	FTGA0510-P	CHH4.5R1	CTX04513H	CR03	-	TW20
Ø1 1/2 (13 type)	FTGA0512-P	CHH5.5R1	CTX04513H	CR03	-	TW20

Available inserts E29 Available adaptor E365~E366

THEA










AA 0°

- AR: 5°, 10°
- RR: -5°

(inch)

Designation		ØD	Ød	ℓ	L	ap	No. of flute	lbs	Available insert			
									Lower cutting-edge		External cutting-edge	
THEA	098R	0.984	3/4	2.165	4.724	0.984	2	0.88	APLT070304R 1z	1	SPMT060304 4z	4
	125R	1.259	1	2.756	5.709	1.575	2	1.10	ADLT150308R 1z	1	SDMT090308-MM 5z	5
	157R	1.574	1 1/4	3.465	6.89	2.126	2	2.86	ZPMT1504PPSR-MM 1z	1	SPMT120408-MM 5z	5
	196R	1.968	1 1/2	3.346	6.89	2.126	4	3.08	ZPMT1504PPSR-MM 2z	2	SPMT120408-MM 10z	10

Available inserts













Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NCM325	NCM335	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
SPMT	221			●																E04 E05 E20 E27 E33
SDMT	322-MM										●				●					
SPMT	432-MM										●				●					
APLT	070304R														●					
ADLT	150308R			●											●					
ZPMT	1504PPSR-MM										●				●					

Recommended cutting condition

- Grooving

Workpiece	Cutting Condition		Grade
	vc (sfm)	fz (ipt)	
P	290~460	0.010~0.002	PC5300
M	165~295	0.010~0.002	PC5300
K	230~390	0.010~0.002	PC5300

- Side cutting

Workpiece	Cutting Condition		Grade
	vc (sfm)	fz (ipt)	
P	490~790	0.008~0.002	PC5300
M	295~490	0.008~0.002	PC5300
K	390~655	0.010~0.004	PC5300

Parts

Specification	Screw	Wrench	Wrench
Ø0.984	ETNA02506	TW07P	-
Ø1.259	ETNA0408	-	TW15S
Ø1.574	ETNA0511	-	TW20S
Ø1.968	ETNA0511	-	TW20S

Available inserts **E04, E05, E20, E27, E33**

This milling tool series with its tangential clamping system increases stable machining and productivity, while improving perpendicularity

Tangen-Pro TP2P new

- Clamping stability gained through tangential clamping system and wedge-shaped inserts
- Excellent surface finish nearly perfect perpendicularity, and highly even flank surface compared to competitors' designs
- Improved productivity due to High-rake angles and sharp cutting-edges which lead to lower cutting resistance
  → Ideally suited for high speed and high feed machining

Code system

• Insert

L	N	K	T	17	07	–	08	P	N	R	–	MM
Insert shape	Relief angle of major cutting-edge	Tolerance	Shape of cross section	Cutting-edge length	Height of cutting-edge		Nose R	Approach angle	Relief angle of minor cutting-edge	Hand		Chip breaker
L: L type	N: 0°	K: K Class	T: T type	17: 17 mm	07: 7 mm		08: R0.8	P: 0°	N: 0°	R: Right-handed		MA: Aluminum cutting MM: General cutting ML: Light cutting

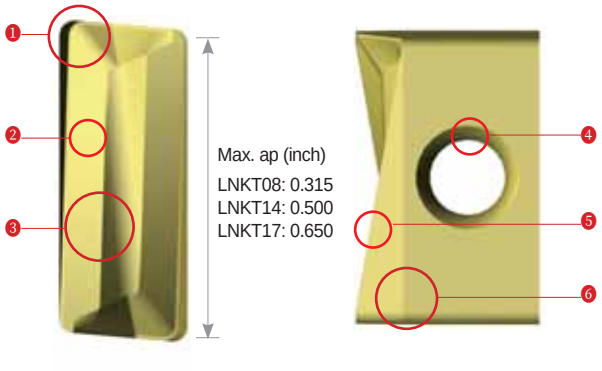
• Cutter

TP	2	P	C	A	300	R	–	100	–	7	–	LN17
Tangen-Pro	No. of corner	Approach angle	Type	Arbor type	Machining diameter	Oil hole & Hand		Internal diameter		No. of tooth		Applicable insert
	2: 2 corner	P: 0°	C: Cutter	A: Inch M: Metric None: Asia	300: Ø3 inch	R: With oil hole, Right-handed NR: Without oil hole, Right-handed		100: 1 inch		7: 7 teeth		LN08: LNKT08 LN14: LNKT14 LN17: LNKT17

• Shank

TP	2	P	S	A	125	R	–	2	W	125	–	500	–	LN17
Tangen-Pro	No. of corner	Approach angle	Type	Arbor type	Machining diameter	Oil hole & Hand		No. of tooth	Shank type	Shank diameter		Overall length		Applicable insert
	2: 2 corner	P: 0°	S: Shank	A: Inch None: Metric	125: Ø1.25	R: With oil hole, Right-handed NR: Without oil hole, Right-handed		2: 2 teeth	W: Weldon C: Cylinder	125: Ø1.25		500: 5 inch		LN08: LNKT08 LN14: LNKT14 LN17: LNKT17

Features of insert



1 Wedge type clamping area

- Clamping in wedge form on seats
  → Creates strong clamping force

2 High-rake angle chip breaker

- High-rake angle applied
- Produces smooth chip flow
  → Extended insert life

3 Convex projection

- Improved chip evacuation
- Enhances rigidity

4 Side hole (tangential type)

- Higher clamping stability

5 High-rake angle cutting-edges

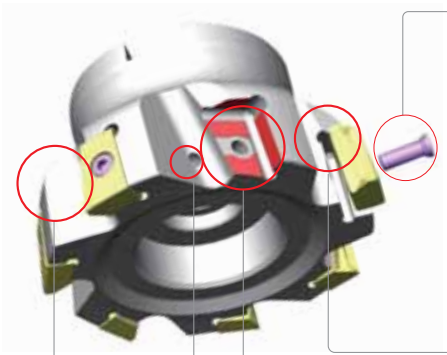
- Improves cutting performance while reducing cutting load

6 2-level flank relief surface

- 1st reverse positive relief surface enhances rigidity
- 2nd negative relief surface enables stable clamping
  → Improved chipping resistance and surface finish

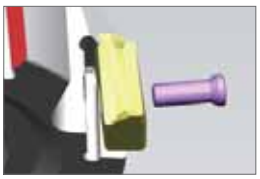
Features of cutter

- Tangential clamping system, wedge-shaped inserts and wide seat area
  → Higher clamping stability
  → Lower vibrations and cutting resistance during machining
- Optimized H/D design with curved surface for smooth chip flow
  → Excellent chip evacuation in ramping or deep shouldering



Tangential clamping

- Multi-corner use
  → High feed machining availability



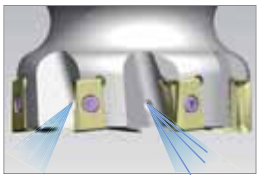
Efficient holder design

- Smoother chip evacuation in slotting or deep shouldering



Through coolant system

- Improved chip evacuation
- Longer tool life due to insert cooling



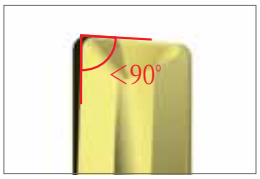
Wide seat area

- Strong clamping force



Wedge type clamping

- Stable insert life



Application guideline for grade

Workpiece		P		K	N
		Carbon steel	Alloy steel	Cast iron	Aluminum
Grade	High speed cutting	PC5300	PC5300	PC6510	H01
	General cutting	PC5400	PC5300	PC6510	H01
	Interrupted cutting	PC5400	PC5400	PC5300	H01

Features of chip breaker

Insert		Cutting-edge	Uses	Features
MA			Aluminum	Exclusive sharp cutting edge for aluminum machining ensures good chip flow due to surface buffing treatment and high welding resistance.
ML			Light cutting	Chip breaker design for low cutting resistance that provides excellent tool life and quality surface finishes in light cutting and hard-to-cut materials
MM			General cutting	Universal design for general shoulder milling operations, highly suitable in most applications

Recommended cutting condition

• LNKT08

Workpiece		Grades	vc (sfm)	fz (ipt)	Max. ap (inch)	Applicable insert
P	Steel	PC5300	490~780	0.01~0.002	0.315	LNKT0804□□PNR-MM
		PC5400	430~680	0.01~0.002	0.315	
K	Cast iron	PC6510	330~820	0.01~0.002	0.315	LNKT0804□□PNR-ML
		PC5300	330~656	0.01~0.002	0.315	
N	Aluminum	H01	1580~3280	0.01~0.002	0.315	LNKT0804□□PNR-MA

※ The above data refer to general cutting conditions and can be adjustable to the speed of 900 sfm and the feed per tooth of 0.02 ipt depending on user environment.

• LNKT14

Workpiece		Grades	vc (sfm)	fz (ipt)	Max. ap (inch)	Applicable insert
P	Steel	PC5300	490~780	0.01~0.002	0.500	LNKT1406□□PNR-MM
		PC5400	430~680	0.01~0.002	0.500	
K	Cast iron	PC6510	330~820	0.01~0.002	0.500	LNKT1406□□PNR-ML
		PC5300	330~656	0.01~0.002	0.500	
N	Aluminum	H01	1580~3280	0.01~0.002	0.500	LNKT1406□□PNR-MA

※ The above data refer to general cutting conditions and can be adjustable to the speed of 900 sfm and the feed per tooth of 0.02 ipt depending on user environment.

• LNKT17

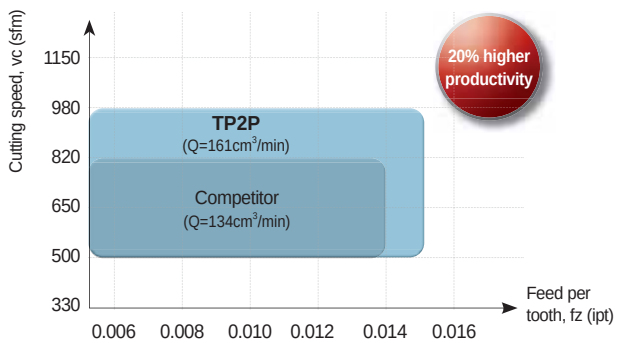
Workpiece		Grades	vc (sfm)	fz (ipt)	Max. ap (inch)	Applicable insert
P	Steel	PC5300	490~780	0.01~0.002	0.650	LNKT1707□□PNR-MM
		PC5400	430~680	0.01~0.002	0.650	
K	Cast iron	PC6510	330~820	0.01~0.002	0.650	LNKT1707□□PNR-ML
		PC5300	330~656	0.01~0.002	0.650	
N	Aluminum	H01	1580~3280	0.01~0.002	0.650	LNKT1707□□PNR-MA

※ The above data refer to general cutting conditions and can be adjustable to the speed of 900 sfm and the feed per tooth of 0.02 ipt depending on user environment.

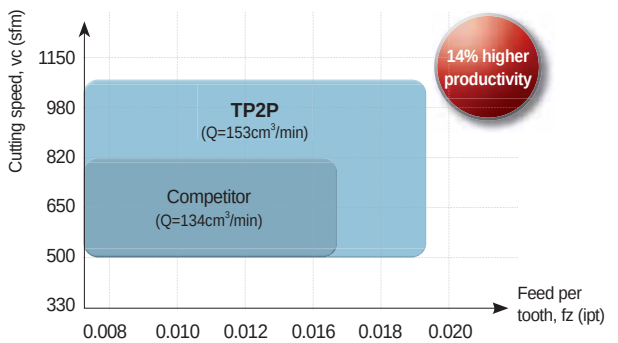
Application area

▶ **Higher speed and feed machining than competitor's increases machinability.**

Application area: ap (inch) = 0.551, ae (inch) = 0.394

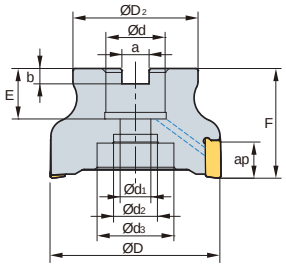


Application area: ap (inch) = 0.315, ae (inch) = 0.394



TP2PCA-LN08 new





AA 0°

- AR: -6°
- RR: -26°~-22°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
TP2PCA	150R-050-6-LN08	6	1.5	1.417	0.5	0.287	0.433	-	0.252	0.169	0.63	1.5	0.310	0.419
	150R-050-7-LN08	7	1.5	1.417	0.5	0.287	0.433	-	0.252	0.169	0.63	1.5	0.310	0.419
	200R-075-7-LN08	7	2.0	1.772	0.75	0.413	0.63	-	0.315	0.22	0.787	1.75	0.310	0.705
	200R-075-10-LN08	10	2.0	1.772	0.75	0.413	0.63	-	0.315	0.22	0.787	1.75	0.310	0.683
	250R-100-10-LN08	10	2.5	2.205	1.0	0.551	0.827	-	0.374	0.248	0.787	1.75	0.310	1.124
	250R-100-11-LN08	11	2.5	2.205	1.0	0.551	0.827	-	0.374	0.248	0.787	1.75	0.310	1.102

Available inserts

LNKT-MA new | LNKT-ML new | LNKT-MM new

Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNKT	080404PNR-MA																			E10 E11
	080408PNR-MA																			
	080412PNR-MA																			
	080416PNR-MA																			
	080404PNR-ML																			
	080408PNR-ML																			
	080412PNR-ML																			
	080416PNR-ML																			
	080404PNR-MM																			
	080408PNR-MM																			
	080412PNR-MM																			
	080416PNR-MM																			

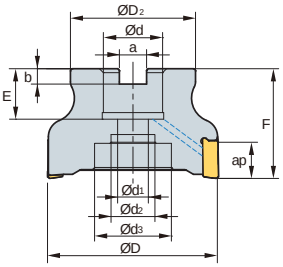
Parts

Specification	Screw	Wrench
Ø1.5 ~ Ø2.5	FTKA02565S	TW07S

Available inserts E10~E11

TP2PCA-LN14 new







AA 0°

- AR: -6°
- RR: -22°~-12°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
TP2PCA	150R-050-4-LN14	4	1.5	1.417	0.5	0.287	0.433	-	0.252	0.169	0.63	1.5	0.470	0.402
	150R-050-5-LN14	5	1.5	1.417	0.5	0.287	0.433	-	0.252	0.169	0.63	1.5	0.470	0.402
	200R-075-5-LN14	5	2.0	1.772	0.75	0.413	0.63	-	0.315	0.22	0.787	1.75	0.470	0.661
	200R-075-6-LN14	6	2.0	1.772	0.75	0.413	0.63	-	0.315	0.22	0.787	1.75	0.470	0.639
	250R-100-6-LN14	6	2.5	2.205	1.0	0.551	0.827	-	0.374	0.248	0.787	1.75	0.470	1.124
	250R-100-8-LN14	8	2.5	2.205	1.0	0.551	0.827	-	0.374	0.248	0.787	1.75	0.470	1.146
	300R-100-7-LN14	7	3.0	2.205	1.0	0.551	0.866	1.299	0.374	0.248	0.787	2.0	0.470	1.918
	300R-100-10-LN14	10	3.0	2.205	1.0	0.551	0.866	1.299	0.374	0.248	0.787	2.0	0.470	2.028
	400R-125-8-LN14	8	4.0	3.386	1.25	0.689	1.024	1.614	0.5	0.319	0.787	2.0	0.470	3.99
	400R-125-13-LN14	13	4.0	3.386	1.25	0.689	1.024	1.614	0.5	0.319	0.787	2.0	0.470	4.101
	500R-150-9-LN14	9	5.0	3.937	1.5	0.827	1.22	1.969	0.626	0.394	1.063	2.5	0.470	6.768
	500R-150-17-LN14	17	5.0	3.937	1.5	0.827	1.22	1.969	0.626	0.394	1.063	2.5	0.470	6.945

Available inserts

LNKT-MA new | LNKT-ML new | LNKT-MM new



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNKT	140604PNR-MA																		
	140608PNR-MA																		
	140612PNR-MA																		E10
	140616PNR-MA																		E11
	140604PNR-ML																		
	140608PNR-ML																		

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNKT	140612PNR-ML																		
	140616PNR-ML																		
	140604PNR-MM																		E10
	140608PNR-MM																		E11
	140612PNR-MM																		
	140616PNR-MM																		

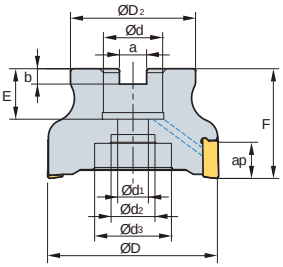
Parts

Specification	Screw	Wrench
Ø1.5~Ø5.0	FTKA03510	TW15S

Available inserts E10~E11

TP2PCA-LN17 new







AA 0°

• AR: -6°
• RR: -21°~-15°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
TP2PCA	150R-050-3-LN17	3	1.5	1.378	0.5	0.287	0.43	-	0.252	0.17	0.63	1.5	0.65	0.402
	150R-050-4-LN17	4	1.5	1.378	0.5	0.287	0.43	-	0.252	0.17	0.63	1.5	0.65	0.379
	200R-075-4-LN17	4	2.0	1.614	0.75	0.413	0.63	-	0.315	0.22	0.787	1.75	0.65	0.692
	200R-075-5-LN17	5	2.0	1.614	0.75	0.413	0.63	-	0.315	0.22	0.787	1.75	0.65	0.685
	250R-100-6-LN17	6	2.5	1.929	1.0	0.551	0.827	-	0.374	0.248	0.787	1.75	0.65	1.021
	250R-100-7-LN17	7	2.5	1.929	1.0	0.551	0.827	-	0.374	0.248	0.787	1.75	0.65	1.038
	300R-100-7-LN17	7	3.0	2.244	1.0	0.551	0.866	-	0.374	0.248	0.787	2.0	0.65	1.830
	300R-100-8-LN17	8	3.0	2.244	1.0	0.551	0.866	-	0.374	0.248	0.787	2.0	0.65	1.853
	400R-150-8-LN17	8	4.0	2.638	1.5	-	2.204	-	0.5	0.319	0.787	2.0	0.65	3.268
	400R-150-9-LN17	9	4.0	2.638	1.5	-	2.024	-	0.5	0.319	0.787	2.0	0.65	3.269
	500R-150-10-LN17	10	5.0	3.543	1.5	0.827	1.22	1.969	0.626	0.394	1.063	2.5	0.65	6.439
	500R-150-11-LN17	11	5.0	3.543	1.5	0.827	1.22	1.969	0.626	0.394	1.063	2.5	0.65	6.372

Available inserts

LNKT-MA new | LNKT-ML new | LNKT-MM new





Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNKT	170704PNR-MA																		E11
	170708PNR-MA																		
	170712PNR-MA																		
	170716PNR-MA																		
	170720PNR-MA																		
	170704PNR-ML																		
	170708PNR-ML											●		●	●				
	170712PNR-ML																		

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
LNKT	170716PNR-ML																		E10 E11
	170720PNR-ML																		
	170704PNR-MM																		
	170708PNR-MM														●	●			
	170712PNR-MM																		
	170716PNR-MM																		
	170720PNR-MM																		

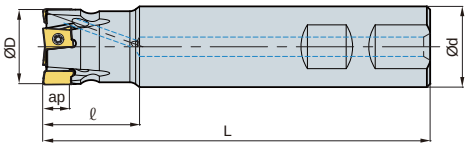
Parts

Specification	Screw	Wrench
Ø1.5~Ø5.0	FTKA0412B	TW15S

Available inserts **E10~E11**

TP2PSA-LN08 new





AA 0°

- AR: -6°
- RR: -35°~-26°

(inch)

Designation		⦾	ØD	Ød	ℓ	L	ap	lbs
TP2PSA	075R-2W075-450-LN08	2	0.75	0.75	1.181	4.50	0.315	0.463
	075R-3W075-450-LN08	3	0.75	0.75	1.181	4.50	0.315	0.463
	100R-3W100-500-LN08	3	1.00	1.00	1.181	5.00	0.315	0.860
	100R-4W100-500-LN08	4	1.00	1.00	1.181	5.00	0.315	0.860

Available inserts

LNKT-MA new LNKT-ML new LNKT-MM new

Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNKT	080404PNR-MA																			
	080408PNR-MA																			
	080404PNR-ML																			E10
	080408PNR-ML																			E11
	080404PNR-MM																			
	080408PNR-MM																			

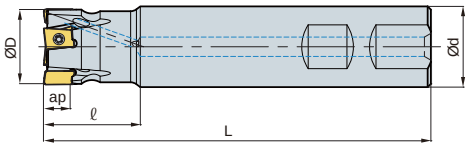
Parts

Specification	Screw	Wrench
Ø0.75 ~ Ø1.00	FTKA02565S	TW07S

Available inserts E10~E11

TP2PSA-LN14 new





AA 0°

- AR: -6°
- RR: -21°~-18°

(inch)

	Designation		ØD	Ød	ℓ	L	ap	lbs
TP2PSA	100R-2W100-500-LN14	2	1.00	1.00	1.575	5.00	0.472	0.926
	125R-3W125-500-LN14	3	1.25	1.25	1.575	5.00	0.472	1.455
	150R-3W125-500-LN14	3	1.50	1.25	1.575	5.00	0.472	1.565
	150R-4W125-500-LN14	4	1.50	1.25	1.575	5.00	0.472	1.565
	200R-4W125-500-LN14	4	2.00	1.25	1.575	5.00	0.472	1.830
	200R-5W125-500-LN14	5	2.00	1.25	1.575	5.00	0.472	1.830

Available inserts

LNKT-MA new | LNKT-ML new | LNKT-MM new

	Designation	Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNKT	140608PNR-MA																			E10 E11
	140608PNR-ML																			
	140608PNR-MM																			

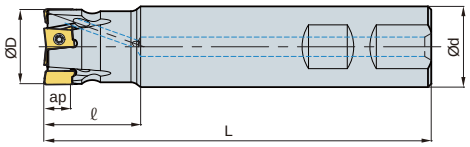
Parts

Specification	Screw	Wrench
Ø1.00~Ø2.00	FTKA03510	TW15S

Available inserts E10~E11

TP2PSA-LN17 new







AA 0°

- AR: -6°
- RR: -26°~-18°

(inch)

Designation		⦾	ØD	Ød	ℓ	L	ap	lbs
TP2PSA	125R-2W125-500-LN17	2	1.25	1.25	1.575	5.00	0.65	1.422
	125R-3W125-500-LN17	3	1.25	1.25	1.575	5.00	0.65	1.422
	150R-3W125-500-LN17	3	1.50	1.25	1.575	5.00	0.65	1.507
	150R-4W125-500-LN17	4	1.50	1.25	1.575	5.00	0.65	1.507
	200R-4W125-500-LN17	4	2.00	1.25	1.575	5.00	0.65	1.786
	200R-5W125-500-LN17	5	2.00	1.25	1.575	5.00	0.65	1.808

Available inserts

LNKT-MA new | LNKT-ML new | LNKT-MM new



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LNKT	170704PNR-MA																			E10 E11
	170708PNR-MA																			
	170712PNR-MA																			
	170716PNR-MA																			
	170720PNR-MA																			
	170704PNR-ML																			
	170708PNR-ML											●			●	●				
	170712PNR-ML																			
	170716PNR-ML																			
	170720PNR-ML																			
	170704PNR-MM																			
	170708PNR-MM														●	●				
	170712PNR-MM																			
	170716PNR-MM																			
	170720PNR-MM																			

Parts

Specification	Screw	Wrench
Ø1.25~Ø2.00	FTKA0412B	TW15S

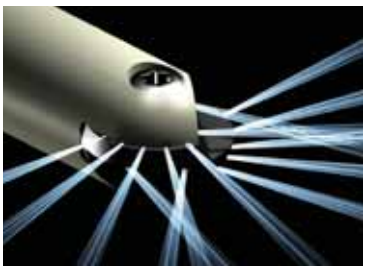
Available inserts E10~E11

Longer tool life guaranteed thanks to the excellent cutting performance of our grades

Laser Mill

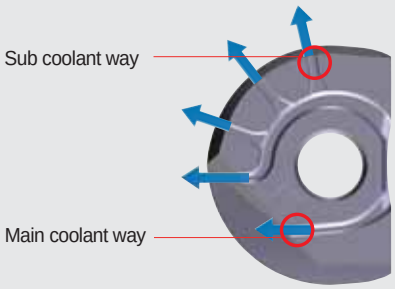
- Long tool life has been achieved due to the excellent cutting performance of the insert grade
- Optimum machining of molds has been achieved with the MQL available system
- Easy clamping with simple screw on system
- Various holder line up: steel shank, carbide shank, modular type
- High accuracy indexable endmills for mold finishing

MQL System

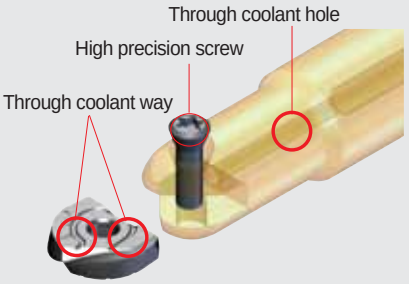


- Environmental friendly system
- Decreased coolant cost
- Lubrication of cutting-edge
- Improved chip control property
- Increased tool life & improved surface quality

Clamping system



- High precision
  (ground internal diameter)
  Run-out: 0.0008 inch
  Accuracy of 'R part: below 0.0004
- Through coolant system



Features

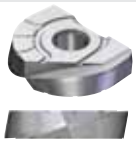
LBE



- Six types of inserts are available with one holder
- Single screw for clamping of insert: Easy clamping system
- Various types of holders
  (Steel shank, Carbide shank, Modular type)
- MQL applicable- environmentally responsible with longer tool life & improved surface quality.

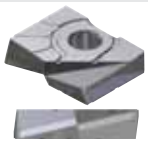
LBS, LR Order-made items

LBH-Ball



- Helical cutting-edge
- Suitable for harder material with high feed

LRH-Corner radius



- Helical cutting-edge
- Variety of nose-R

LFH-High feed



- Helical cutting-edge
- Suitable for high feed

LCF-Chamfer



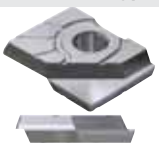
- Straight cutting-edge
- Center drilling and chamfering

LBS-Ball type



- Straight cutting-edge
- Suitable for precise

LR-Corner R type

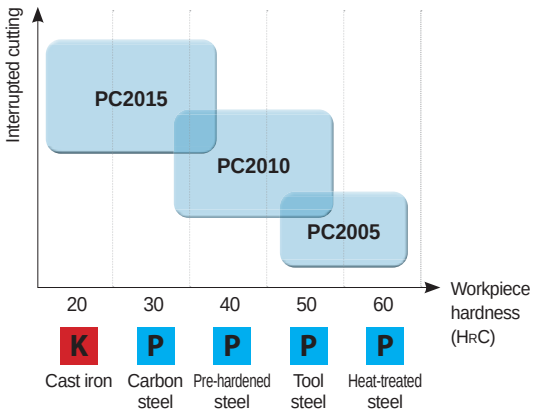


- Straight cutting-edge
- Variety of nose-R

Features of Laser Mill grades

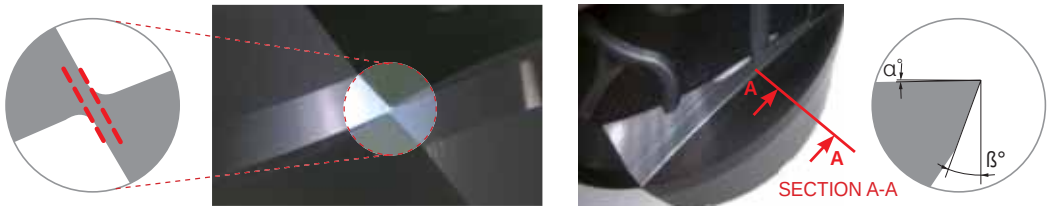
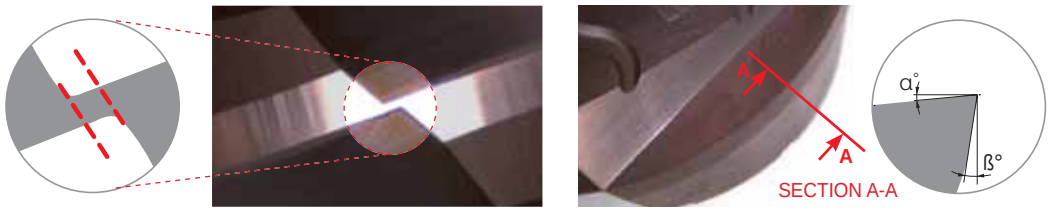
PC2005	• Extremely high hardness grade • The harmony between improved blade design and strong chip breaker • Optimized for machining heat-treated steel and high hardness steel
PC2010	• High wear resistance and excellent toughness • The harmony between excellent thermal shock resistance and strong cutting-edges. • Optimized for machining tool steel and pre-hardened steel
PC2015	• High welding resistance and excellent toughness • The harmony between tough grade and excellent cutting-edge design • Optimized for machining carbon steel

Application guideline per workpiece



Features of KF/KH chip breaker

- KF: Exclusive chip breaker for stable machining of carbon steel with its characteristics of high wear resistance at center part and improved blade design
- KH: Stronger insert with the combination of rake angle and relief angle that are ideal for machining high hardness workpiece

Type	Shape comparison
Standard (For general cutting)	 • Proper to general cutting • Insert shape for uniform performance
KH (For high hardness steel)	 • Center shaper proper for machining high hardness workpiece and uniformed tool life at center part • Improved cutting-edge design by higher rake angle (α°) • Lower relief angle (ß°) increases strength of cutting-edges than universal inserts.
KF (For carbon steel)	 • Smaller chisel improves wear resistance at center for machining carbon steel. • Improved cutting-edge design by higher rake angle (α°) • Longer tool life and better cutting performance with the use of excellent blade design

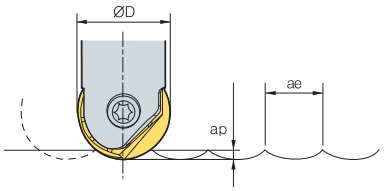
Recommended cutting condition

Workpiece				Grade	Chip breaker	Recommended cutting conditions			
ISO		Material	HB (HRC)			vc (sfm)	fz (ipt)	ap (inch)	ae (inch)
K	Gray cast iron	GC250	180 (8)	PC2015 PC2010 PC2005	KF	427~689	0.020~0.008	0.003D	0.003D
K	Ductile cast iron	GCD600	250 (24)						
P	Carbon steel	S20C~S50C	150			558~820	0.020~0.008	0.003D	0.003D
P	Alloy steel	SCM21~SCM5H	270 (28)	PC2010 PC2015 PC210F	KH	427~689	0.012~0.004	0.003D	0.003D
P	Pre-hardened steel	KP4M	300 (32)			328~525	0.012~0.004	0.020D	0.020D
P	Pre-hardened steel	NIMAX	370 (40)						
P	Pre-hardened steel	CENA1	370 (40)						
P	Pre-hardened steel	NAK80	400 (43)						
P	Pre-hardened steel	STAVAX	510 (52)						
P	High speed tool steel	SKH51~SKH59	550 (55)	PC2005 PC2010	KH	262~427	0.080~0.004	0.012D	0.012D
P	Alloy tool steel	STD61 (Hot forging)	630 (60)			230~394	0.080~0.004	0.020D	0.020D
P	Alloy tool steel	STD11 (Cold forging)							

Overhang	vc (sfm)	fz (ipt)
Under 3D	100%	100%
3D~5D	70%	70%
5D~8D	60%	60%
8D~10D	50%	50%

Cutting speed calculation formulas

Practical cutting speed	RPM
$vce = \frac{\pi \times De \times n}{1000}$ (sfm)	$n = \frac{vce \times 12}{\pi \times De}$ (min^{-1})
Feed per tooth	**Feed per minute**
$fz = \frac{vf}{z \times n}$ (ipt)	$vf = fz \times z \times n$ (ipm)
Chip removal amount	**Power requirement**
$Q = ap \times ae \times vf$ ($inch^3/min$)	$Pkw = \frac{Q \times kc}{60 \times 102 \times \eta}$ (kW) $Php = \frac{Pc}{0.75}$ (hp)



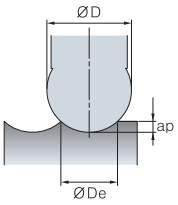
vc	= Cutting speed (sfm)	Pkw	= Power Requirement (kW)
vc_e	= Practical cutting speed (sfm)	Php	= Horsepower requirement (hp)
n	= Revolution per Minute (min^{-1})	Q	= Chip removal amount ($inch^3$/min)
D	= Cutting diameter (inch)	ap	= Depth of cut (inch)
De	= Actual diameter (inch)	ae	= Width of cut (inch)
vf	= Feed per minute (ipm)	kc	= Specific cutting resistance (kg/mm^2)
fz	= Feed per tooth (ipt)	η	= Mechanical efficiency (%)
z	= Number of tooth		

Practical cutting speed calculation formulas

1. Formula of actual diameter

• **Formula**
: Actual diameter

$De = 2\sqrt{ap\,(D - ap)}$



2. θ°Using: Calculating cutting speed at P point
(Cutting speed according to depth of cut when ramping)

• **Formula**
: Practical cutting speed

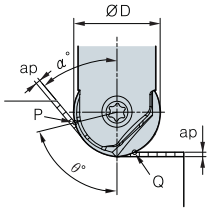
$vce = \frac{\pi\, Dsin\theta \times n}{12}$ (sfm)

$\theta = \cos^{-1}\left(\frac{D - 2ap}{D}\right) + (90 - \alpha°)$

3. In case of using ap: Calculating cutting speed at Q point

• **Formula**
: Pratical cutting speed

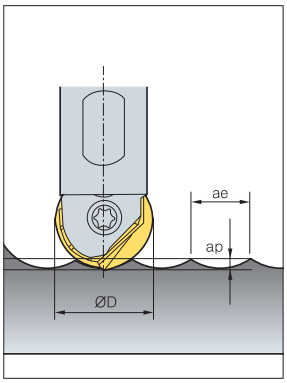
$vce = \frac{2\pi n\sqrt{ap\,(D - ap)}}{12}$



Theoretical surface roughness

h (surface roughness) (μm)										
ae (inch) / R (inch)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
5	0.3	1.0	2.3	4.0	6.3	9.0	12.3	16.0	20.3	25.0
6	0.2	0.8	1.9	3.3	5.2	7.5	10.2	13.3	16.9	20.8
8	0.2	0.6	1.4	2.5	3.9	5.6	7.7	10.0	12.7	15.6
10	0.1	0.5	1.1	2.0	3.1	4.5	6.1	8.0	10.1	12.5
12.5	0.1	0.4	0.9	1.6	2.5	3.6	4.9	6.4	8.1	10.0
15	0.1	0.3	0.8	1.3	2.1	3.0	4.1	5.3	6.8	8.3
16	0.1	0.3	0.7	1.3	2.0	2.8	3.8	5.0	6.3	7.8

• Formula of surface roughness: h (surface finish) = $\frac{(ae)^2}{8R} \times 1000$ (μm)

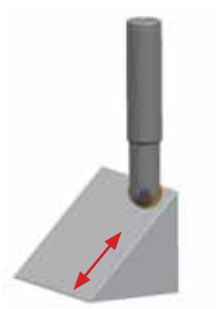


Actual diameter data

ap \ ØD	Ø0.31	Ø0.38	Ø0.50	Ø0.63	Ø0.75	Ø1.00	Ø1.25
0.0039	0.0709	0.0787	0.0866	0.0984	0.1102	0.1260	0.1401
0.0079	0.0984	0.1102	0.1220	0.1417	0.1575	0.1772	0.1978
0.0118	0.1181	0.1339	0.1457	0.1693	0.1929	0.2126	0.2419
0.0197	0.1535	0.1732	0.1890	0.2205	0.2441	0.2756	0.2794
0.0394	0.2087	0.2362	0.2598	0.3031	0.3425	0.3858	0.4367
0.0591	0.2441	0.2795	0.3110	0.7598	0.4134	0.4685	0.5304
0.0787	0.2717	0.3150	0.3504	0.4173	0.4724	0.5354	0.6074
0.0984	0.2913	0.3425	0.3819	0.4567	0.5197	0.5906	0.6733
0.1181	0.3031	0.3622	0.4094	0.4921	0.5630	0.6378	0.7313
0.1378	0.3110	0.3740	04291	0.5197	0.5984	0.6811	0.7803
0.1575	0.3150	0.3858	0.4449	0.5472	0.6299	0.7205	0.8296
0.1969			0.4646	0.5827	0.6811	0.7874	0.9106
0.2362			0.4724	0.6102	0.7205	0.8425	0.9787
0.2756				0.6260	0.7520	0.8819	1.0364
0.3150				0.6299	0.7717	0.9173	1.0854
0.3937					0.7874	0.9646	1.1613

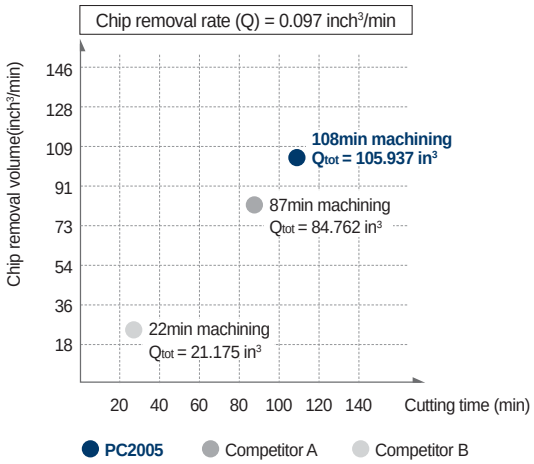
Performance evaluation

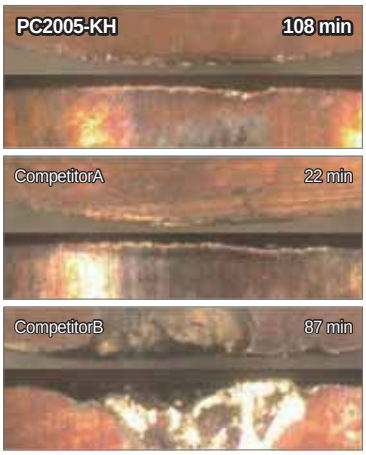
PC2005 tool life test — High hardness heat-treated steel (X100CrMoV5 1, heat-treated HRC60)



Cutting conditions
vc = 459 sfm
fz = 0.006 ipt
ap = 0.047 inch
ae = 0.047 inch
Coolant (Air)

Tools
Insert LBH0500-KH (PC2005)



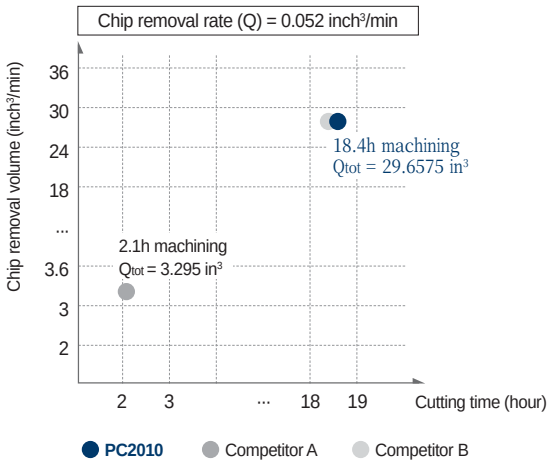


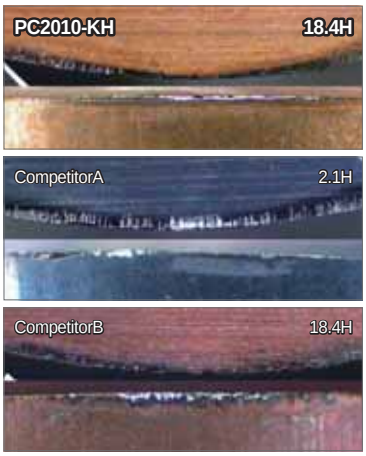
PC2010 tool life test — Pre-hardened steel (X40CrMnNiMo8-6-4)



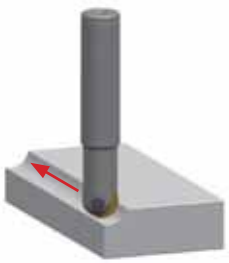
Cutting conditions
vc = 906 sfm
fz = 0.006 ipt
ap = 0.012 inch
ae = 0.047 inch
Wet

Tools
Insert LBH0500-KH (PC2010)



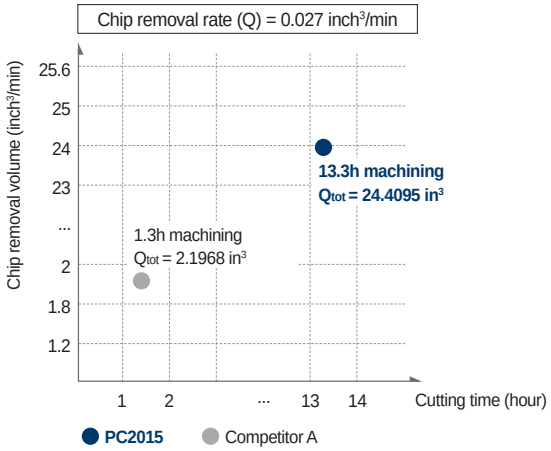


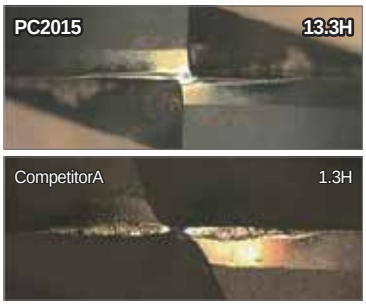
PC2015 tool life test — Carbon steel (C45)



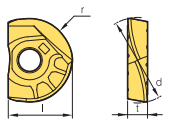
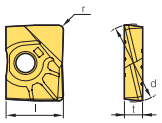
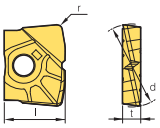
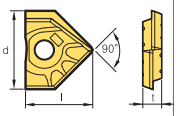
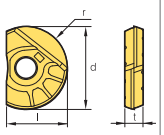
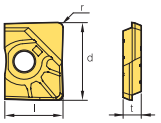
Cutting conditions
vc = 820 sfm
fz = 0.014 ipt
ap = 0.012 inch
ae = 0.012 inch
Dry

Tools
Insert LBH0500 (PC2015)





Available inserts

Holders			LFH (High feed type)	LCF (Chamfer type)	LBS(Ball type)	
					 R accuracy ±0.0002	
LBEA031	LBH0312 LBH0312-KF LBH0312-KH				LBS0312	
LBEA037	LBH0375 LBH0375-KF LBH0375-KF	LRH0375-R015 LRH0375-R031 LRH0375-R062	LFH0375		LBS0375	LR0375-R015 LR0375-R031 LR0375-R062
LBEA050	LBH0500 LBH0500-KF LBH0500-KH	LRH0500-R015 LRH0500-R031 LRH0500-R062	LFH0500		LBS0500	LR0500-R015 LR0500-R031 LR0500-R062
LBEA062	LBH0625 LBH0625-KF LBH0625-KH	LRH0625-R015 LRH0625-R062 LRH0625-R031 LRH0625-R125	LFH0625	LCF0625-D90	LBS0625	LR0625-R015 LR0625-R062 LR0625-R031 LR0625-R125
LBEA075	LBH0750 LBH0750-KF LBH0750-KH	LRH0750-R015 LRH0750-R062 LRH0750-R031 LRH0750-R125	LFH0750	LCF0750-D90	LBS0750	LR0750-R015 LR0750-R062 LR0750-R031 LR0750-R125
LBEA100	LBH1000 LBH1000-KF LBH1000-KH	LRH1000-R015 LRH1000-R062 LRH1000-R031 LRH1000-R125	LFH1000	LCF1000-D90	LBS1000	LR1000-R015 LR1000-R062 LR1000-R031 LR1000-R125
LBEA125	LBH1250 LBH330 LBH1250-KF LBH330-KF LBH1250-KH LBH330-KH	LRH1250-R015 LRH330-R10 LRH1250-R031 LRH330-R20 LRH1250-R062 LRH330-R30	LFH1250		LBS1250	LR1250-R015 LR1250-R031 LR1250-R062

Available inserts **E08~E10**

* LBH for general cutting, LBH-KF for carbon steel, and LBH-KH for high hardened steel.

Long tool life due to high hardness grade

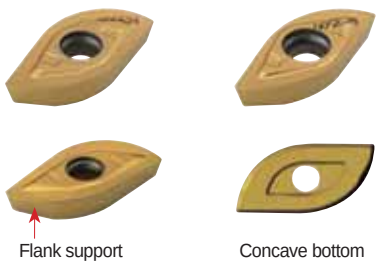
GBE

- Indexable ball nose endmill for molds in medium & roughing applications
- Long tool life with high hardness grade
- Helical high accuracy cutting-edge
- Optimized mold machining process with our internal coolant system
- Able to adjust to medium processing in middle & big roughing mold process
- Wide variety of holders in normal & long style holders

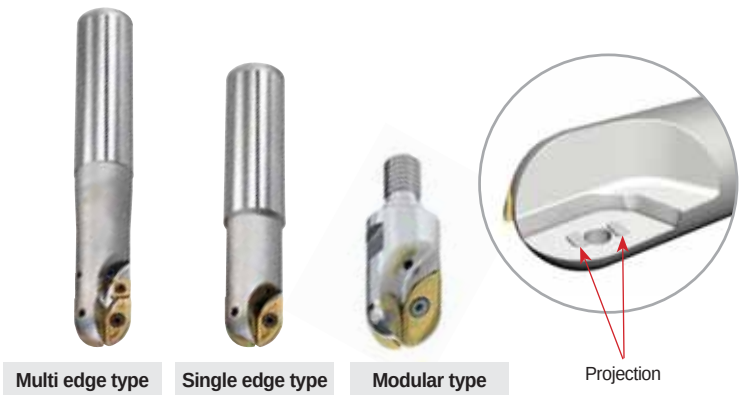
Holder code system

GBE	063	-	S	125
Product Name	**Machining Dia.**		**Type**	**Shank Dia.**
General Indexable Ball Endmill	Ø0.630, Ø0.790, Ø0.980, Ø1.180 Ø1.260, Ø1.530, Ø1.970		S: Standard shank L: Long shank	125 : Ø1.25

Internal | **External**



- Ability to handle high accuracy & large depth of cut applications
  - Run-out: within 0.002 inch
  - R accuracy: within 0.002 inch
- Various diameters (Ø0.630, Ø0.790, Ø0.980, Ø1.180, Ø1.260, Ø1.530, Ø1.970)
- Minimal cutting resistance due to Helical cutting-edge
- Anti-rotation of insert due to concave bottom & stable setting by flank support
- Long tool life & better processing due to 2 cutting inserts
- Better tool life with new grade



Multi edge type | **Single edge type** | **Modular type**

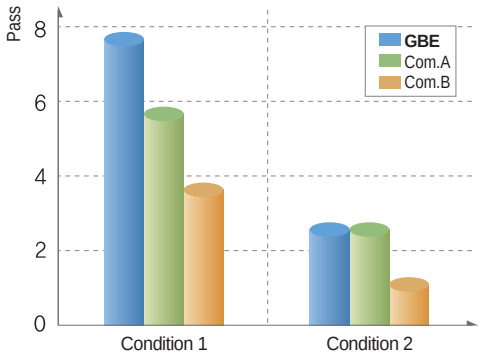
- Various diameters (Ø0.630, Ø0.790, Ø0.980, Ø1.180, Ø1.260, Ø1.530, Ø1.970)
- Improved chip treatment with internal coolant (cutting-edge portion)
- Long tool life & better processing
- Easy insert setting with projection part to prevent vibration during processing

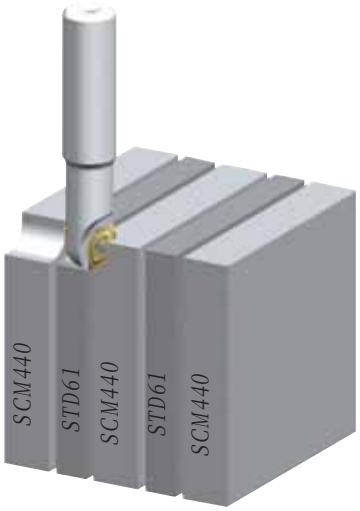
How to set insert



1. Set the insert to the holder projection seat
2. Push the insert into the pocket as shown by red arrows and screw down with wrench

Performance evaluation





Cutting condition

Class.	Cutting speed (vc)	Feed (fz)	Depth of cut (ap)	Depth of cut (ae)	Workpiece	Etc.
Condition 1	492 sfm	0.006 ipt	0.197 inch	0.315 inch	H13(HRC50) + 4140(HRC20)	Dry
Condition 2	492 sfm	0.004 ipt	0.315 inch	0.315 inch		

Inserts/parts

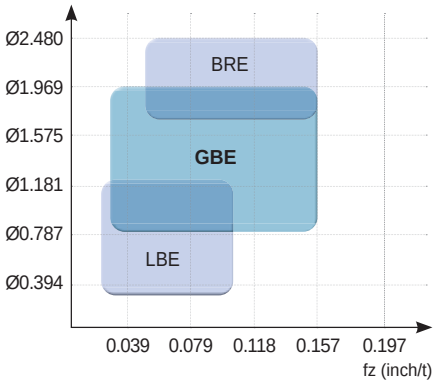
Type	Insert			Parts	
					

Dia.	Internal I/S	External I/S	External main I/S	Screw		Wrench	
				Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type
Ø0.630	ZPET080M-MM	ZPET080S-MM	-	FTKA02555S	-	TW08S	-
Ø0.709	ZPET090M-MM	ZPET090S-MM	-	FTKA0307	-	TW09S	-
Ø0.787	ZPET100M-MM	ZPET100S-MM	SPMT060304	FTKA0307	ETNA02506	TW09S	TW07P
Ø0.866	ZPET110M-MM	ZPET110S-MM	SPMT060304	FTKA0408	ETNA02506	TW15S	TW07P
Ø0.984	ZPET125M-MM	ZPET125S-MM	SPMT060304	FTKA0409	ETNA02506	TW15S	TW07P
Ø1.024	ZPET130M-MM	ZPET130S-MM	SDMT090308-MM	FTKA0409	ETNA0408	TW15S	TW15S
Ø1.102	ZPET140M-MM	ZPET140S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20	TW15S
Ø1.181	ZPET150M-MM	ZPET150S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S
Ø1.260	ZPET160M-MM	ZPET160S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S
Ø1.575	ZPET200M-MM	ZPET200S-MM	SPMT120408-MM	FTGA0614	ETNA0511	TW20-100	TW20S
Ø1.969	ZPET250M-MM	ZPET250S-MM	SPMT120408-MM	FTGA0818	ETNA0511	TW25S	TW20S

Recommended cutting condition

Workpiece	Machining type	Hardness (HRC)	vc (sfm)	fz (ipt)	ap (inch)	ae (inch)
Carbon, Alloy steel	Flank Groove Deep flank	Under 25	520~820 300~650 520~820	0.020~0.012 0.020~0.012 0.039~0.020	0.012~0.020D 0.012~0.020D 0.039~0.059D	0.008~0.012D - 0.004~0.008D
Carbon, Alloy steel	Flank Groove Deep flank	Under 45	300~650 300~520 300~650	0.020~0.012 0.020~0.012 0.039~0.020	0.012~0.020D 0.012~0.020D 0.039~0.059D	0.008~0.012D - 0.004~0.008D
Mold Alloy steel	Flank Groove Deep flank	30~40	300~650 300~520 300~650	0.012 0.012 0.039~0.012	0.012~0.020D 0.012~0.020D 0.039~0.059D	0.008~0.012D - 0.004~0.008D
Cast iron (GC, GCD)	Flank Groove Deep flank	20~30	150~300 150~300 150~300	0.028~0.012 0.028~0.012 0.039~0.028	0.012~0.020D 0.012~0.020D 0.039~0.059D	0.008~0.012D - 0.004~0.008D
Heat-treated steel	Flank Groove Deep flank	50~60	130~320 130~320 130~320	0.012 0.012 0.039~0.012	0.012~0.020D 0.012~0.020D 0.039~0.059D	0.008~0.012D - 0.004~0.008D

Line-up for indexable ball endmill



Type	Application				
	Machining Dignity	Machining Efficiency	Machining Dia. Equivalence	Economical	Flank Machining with Long Edge
Laser Mill	●	○	◐	○	○
GBE	◐	●	◐	◐	●
BRE	○	●	●	●	●

●: Very Good ◐: Good ○: Normal

Test result for wear resistance

Cutting conditioin	Wear resistance photo

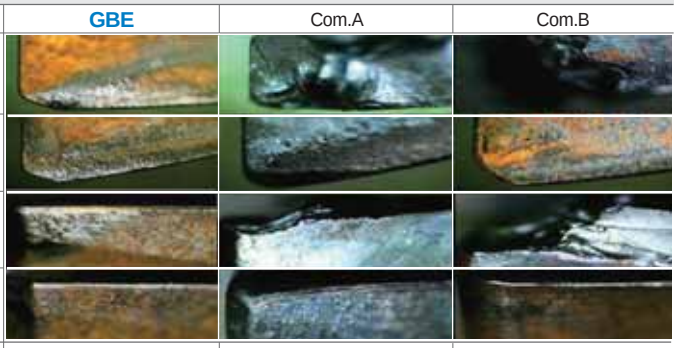


Time engaged : 4 Pass

■Workpiece
KP4M(HRC33), Dry

■Condition
vc = 920 sfm
fz = 0.01 ipt
ap = 0.2~0.4 inch
ae = 0.2~0.4 inch
vf = 58.5 sfm
n = 2,971 rpm

■Tool
Holder : GBEA118-S125
Insert : ZPET150M-MM (PC3700)
ZPET150S-MM (PC3700)



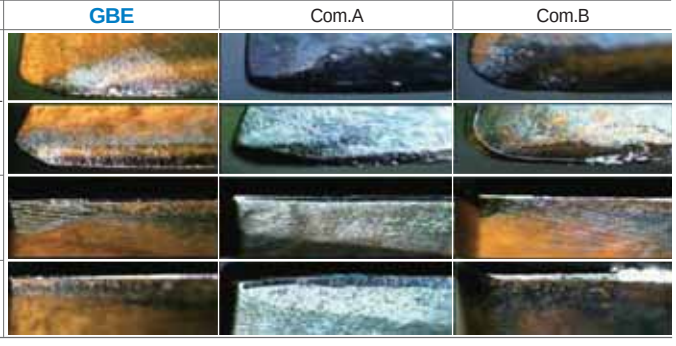


Time engaged : 4 Pass

■Workpiece
STD11(HRC20), Dry

■Condition
vc = 820 sfm
fz = 0.008 ipt
ap = 0.2 inch
ae = 0.2 inch
vf = 42.45 sfm
n = 2,653 rpm

■Tool
Holder : GBEA118-S125
Insert : ZPET150M-MM (PC3700)
ZPET150S-MM (PC3700)



Better tool life with its anti-breakage special surface treatment

BRE

- Cutting performance: Good chip control & Superior cutting performance with optimal cutting-edge line
- High rigidity body: Better tool life and special surface treatment to strengthen the holder
  Easy to set and good durability with TCRX screw
  Good chip control with our 3D flute design & improved external quality
- Insert: Grade available for high speed & feed applications due to it's high wear and breakage resistance providing a stable cutting performance with high cutting-edge toughness and a chip breaker featuring a high rake angle

Multi edge holder ISO View



• Good chip flow
• Good heat emission



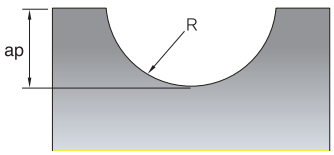
• Wider insert ensures cutting-edge strength

• Better setting force by recess



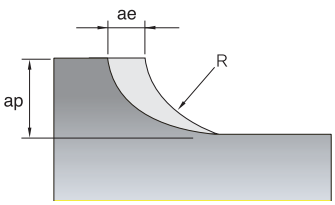
BRE machining type for roughing & Recommended cutting condition

Machining type 1



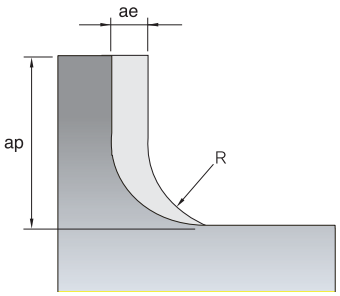
ap = 0.3D-0.5D

Machining type 2



ae = 0.2D-0.3D ap = 0.3D-0.5D

Machining type 3



ae = 0.1D-0.5D ap = 1.2D-1.5D

Workpiece	Machining type	Cutting speed (sfm)	Feed (ipt)	Grades
Carbon/alloy steel	1 2 3	390~720 390~720 330~590	0.016~0.004 0.016~0.008 0.012~0.004	**NCM325** **NCM325** **NCM325**
Alloy steel	1 2 3	330~655 330~655 260~525	0.016~0.004 0.016~0.008 0.012~0.004	**NCM325** **NCM325** **NCM325**
Tool steel	1 2 3	260~490 260~490 195~395	0.012~0.004 0.014~0.006 0.012~0.004	**NCM325** **NCM325** **NCM325**
High hardness material (HRC35~45)	1 2 3	195~395 195~395 165~260	0.012~0.004 0.012~0.004 0.008~0.004	**NCM325** **NCM325** **NCM325**
Cast iron	1 2 3	330~590 330~590 260~525	0.020~0.008 0.020~0.008 0.016~0.006	**NCM320K** **NCM320K** **NCM320K**

LBEA031-C/037-C/050-C/062-C/075-C/100-C/125-C

Straight type

Carbide Shank (Ball type)



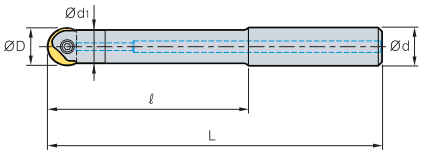


Fig. 1

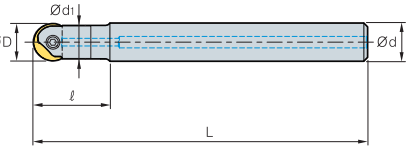


Fig. 2



(inch)

Designation		Dimensions					Part		Available Insert (Ø)	Fig.
		ØD	Ød	Ød1	ℓ	L	Clamp Screw	Wrench		
LBEA	031315S-S031C	5/16	5/16	0.283	3.150	5.354	ETND02506F	TWP07S	5/16	1
	031394S-S031C	5/16	5/16	0.283	3.937	6.142				
	031079S-S031C-512	5/16	5/16	0.283	0.787	5.118	ETND02506F	TWP07S	5/16	2
	031079S-S031C-591	5/16	5/16	0.283	0.787	5.906				
	037315S-S037C	3/8	3/8	0.335	3.150	5.354	ETND0307F	TWP08S	3/8	1
	037472S-S037C	3/8	3/8	0.335	4.724	6.929				
	037091S-S037C-512	3/8	3/8	0.335	0.906	5.118	ETND0307F	TWP08S	3/8	2
	037091S-S037C-669	3/8	3/8	0.335	0.906	6.693				
	050394S-S050C	1/2	1/2	0.433	3.937	6.142	ETND03509	TWP10S	1/2	1
	050591S-S050C	1/2	1/2	0.433	5.906	8.110				
	050098S-S050C-591	1/2	1/2	0.433	0.984	5.906	ETND03509	TWP10S	1/2	2
	050098S-S050C-787	1/2	1/2	0.433	0.984	7.874				
	062394S-S062C	5/8	5/8	0.571	3.937	6.299	ETND0413	TWP15S	5/8	1
	062591S-S062C	5/8	5/8	0.571	5.906	8.268				
	062118S-S062C-630	5/8	5/8	0.571	1.181	6.299	ETND0413	TWP15S	5/8	2
	062118S-S062C-827	5/8	5/8	0.571	1.181	8.268				
	075472S-S075C	3/4	3/4	0.689	4.724	7.480	ETKD0516	TWP20	3/4	1
	075669S-S075C	3/4	3/4	0.689	6.693	9.449				
	075138S-S075C-748	3/4	3/4	0.689	1.378	7.480	ETKD0516	TWP20	3/4	2
	075138S-S075C-945	3/4	3/4	0.689	1.378	9.449				
	100551S-S100C	1	1	0.906	5.512	8.661	ETKD0620	TWP25	1	1
	100669S-S100C	1	1	0.906	6.693	9.843				
	150157S-S100C-866	1	1	0.906	1.575	8.661	ETKD0620	TWP25	1	2
	150157S-S100C-984	1	1	0.906	1.575	9.843				
	125551S-S125C	1 1/4	1 1/4	1.142	5.512	9.055	ETGD0825	TWP40	1 1/4	1
	125669S-S125C	1 1/4	1 1/4	1.142	6.693	10.236				
	125197S-S125C-906	1 1/4	1 1/4	1.142	1.969	9.055	ETGD0825	TWP40	1 1/4	2
	125197S-S125C1024	1 1/4	1 1/4	1.142	1.969	10.236				

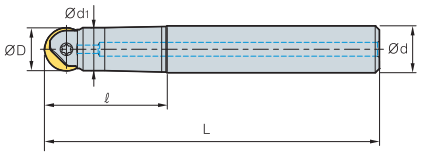
Available inserts **E08~E10**

LBEA031/037/050/062/075/100/125

Taper type

Steel Shank (Ball type)







(inch)

Designation		Dimensions					Part		Available Insert (Ø)
		ØD	Ød	Ød1	ℓ	L	Clamp Screw	Wrench	
LBEA	031138T-S050	5/16	1/2	0.283	1.378	3.583	ETND02506F	TWP07S	5/16
	031217T-S050	5/16	1/2	0.283	2.165	4.370			
	031295T-S050	5/16	1/2	0.283	2.953	5.157			
	037138T-S050	3/8	1/2	0.335	1.378	3.583	ETND0307F	TWP08S	3/8
	037217T-S050	3/8	1/2	0.335	2.165	4.370			
	037295T-S050	3/8	1/2	0.335	2.953	5.157			
	050217T-S050	1/2	1/2	0.433	2.165	4.370	ETND03509	TWP10S	1/2
	050335T-S062	1/2	5/8	0.433	3.346	5.709			
	062256T-S062	5/8	5/8	0.571	2.559	4.921	ETND0413	TWP15S	5/8
	062394T-S075	5/8	3/4	0.571	3.937	6.693			
	075295T-S100	3/4	1	0.689	2.953	5.709	ETKD0516	TWP20	3/4
	075453T-S100	3/4	1	0.689	4.528	7.677			
	100354T-S100	1	1	0.906	3.543	6.693	ETKD0620	TWP25	1
	100532T-S125	1	1 1/4	0.906	5.315	8.858			
	125413T-S125	1 1/4	1 1/4	1.142	4.134	7.677	ETGD0825	TWP40	1 1/4
	125630T-S125	1 1/4	1 1/4	1.142	6.299	9.843			

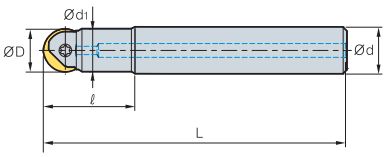
Available inserts **E08~E10**

LBEA050/062/075/100/125

Straight type

Steel Shank (Ball type)







(inch)

Designation		Dimensions					Part		Available insert (Ø)
		ØD	Ød	Ød1	ℓ	L	Clamp screw	Wrench	
LBEA	050138S-S050	1/2	1/2	0.433	1.378	3.583	ETND03509	TWP10S	1/2
	062138S-S062	5/8	5/8	0.571	1.378	3.74	ETND0413	TWP15S	5/8
	075157S-S075	3/4	3/4	0.689	1.575	4.331	ETKD0516	TWP20	3/4
	100177S-S100	1	1	0.906	1.772	4.921	ETKD0620	TWP25	1
	125217S-S125	1 1/4	1 1/4	1.142	2.165	5.709	ETGD0825	TWP40	1 1/4

Available inserts **E08~E10**

LREA-C/037-C/050-C/062-C/075-C/100-C/125-C

Straight type

Carbide Shank (Corner R type)



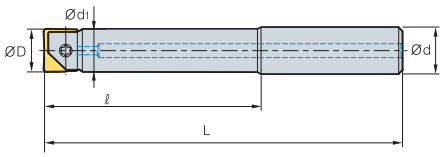


Fig. 1

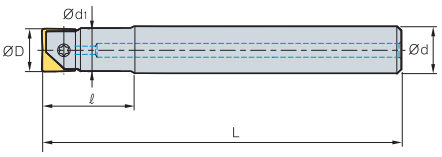


Fig. 2



(inch)

Designation		Dimensions					Part		Available Insert (Ø)	Fig.
		ØD	Ød	Ød1	ℓ	L	Clamp Screw	Wrench		
LREA	037315S-S037C	3/8	3/8	0.335	3.150	5.354	ETND0307F	TWP08S	3/8	1
	037472S-S037C	3/8	3/8	0.335	4.724	6.929				
	037091S-S037C-512	3/8	3/8	0.335	0.906	5.118	ETND0307F	TWP08S		2
	037091S-S037C-660	3/8	3/8	0.335	0.906	6.693				
	050394S-S050C	1/2	1/2	0.433	3.937	6.142	ETND03509	TWP10S	1/2	1
	050591S-S050C	1/2	1/2	0.433	5.906	8.110				
	050098S-S050C-591	1/2	1/2	0.433	0.984	5.906	ETND03509	TWP10S		2
	050098S-S050C-787	1/2	1/2	0.433	0.984	7.874				
	062394S-S062C	5/8	5/8	0.571	3.937	6.299	ETND0413	TWP15S	5/8	1
	062591S-S062C	5/8	5/8	0.571	5.906	8.268				
	062117S-S062C-630	5/8	5/8	0.571	1.181	6.299	ETND0413	TWP15S		2
	062117S-S062C-827	5/8	5/8	0.571	1.181	8.268				
	075472S-S075C	3/4	3/4	0.689	4.724	7.480	ETKD0516	TWP20	3/4	1
	075669S-S075C	3/4	3/4	0.689	6.693	9.449				
	075138S-S075C-748	3/4	3/4	0.689	1.378	7.480	ETKD0516	TWP20		2
	075138S-S075C-945	3/4	3/4	0.689	1.378	9.449				
	100551S-S100C	1	1	0.906	5.512	8.661	ETKD0620	TWP25	1	1
	100669S-S100C	1	1	0.906	6.693	9.843				
	100157S-S100C-866	1	1	0.906	1.575	8.661	ETKD0620	TWP25		2
	100157S-S100C-984	1	1	0.906	1.575	9.843				
	125551S-S125C	1 1/4	1 1/4	1.142	5.512	9.055	ETGD0825	TWP40	1 1/4	1
	125669S-S125C	1 1/4	1 1/4	1.142	6.693	10.236				
	125197S-S125C-906	1 1/4	1 1/4	1.142	1.969	9.055	ETGD0825	TWP40		2
	125197S-S125C1024	1 1/4	1 1/4	1.142	1.969	10.236				

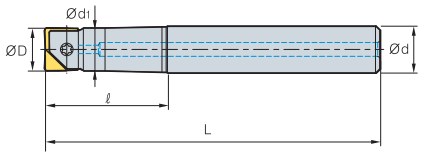
Available inserts **E08~E10**

LREA037/050

Taper type

Steel Shank (Corner R type)







(inch)

Designation		Dimensions					Part		Available insert (Ø)
		ØD	Ød	Ød1	ℓ	L	Clamp screw	Wrench	
LREA	037098T-S050	3/8	1/2	0.335	0.984	4.370	ETND0307F	TWP08S	3/8
	037197T-S050	3/8	1/2	0.335	1.969	5.906			
	050236T-S062	1/2	5/8	0.433	2.362	6.299	ETND03509	TWP10S	1/2

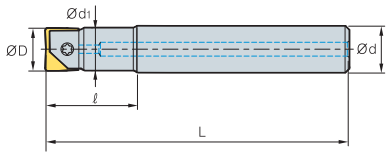
Available inserts **E08~E10**

LREA050/062/075/100/125

Straight type

Steel Shank (Corner R type)







(inch)

Designation		Dimensions					Part		Available insert (Ø)
		ØD	Ød	Ød1	ℓ	L	Clamp screw	Wrench	
LREA	050117S-S050	1/2	1/2	0.433	1.181	4.370	ETND03509	TWP08S	1/2
	062197S-S062	5/8	5/8	0.571	1.969	5.157	ETND0413	TWP15S	5/8
	062236S-S062	5/8	5/8	0.571	2.362	6.299			
	075236S-S075	3/4	3/4	0.689	2.362	5.709	ETKD0516	TWP20	3/4
	075315S-S075	3/4	3/4	0.689	3.150	7.087			
	100276S-S100	1	1	0.906	2.756	5.709	ETKD0620	TWP20	1
	100394S-S100	1	1	0.906	3.937	8.858			
	125315S-S125	1 1/4	1 1/4	1.142	2.756	6.299	ETGD0825	TWP40	1 1/4
	125394S-S125	1 1/4	1 1/4	1.142	3.937	8.858			

Available inserts **E08~E10**

LBEA-MHD



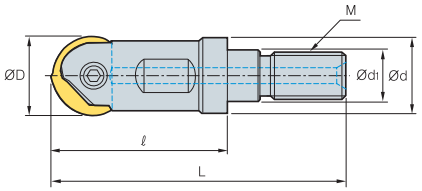


Fig. 1

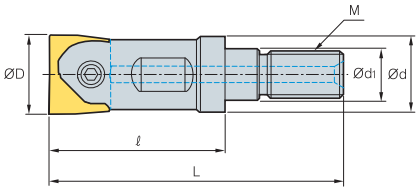


Fig. 2



(inch)

Designation		Dimensions						Part		Available insert (Ø)
		M	ØD	L	ℓ	Ød	Ød1	Clamp screw	Wrench	
LBEA	037-MHD-M06	M06	3/8	1.575	0.984	0.335	0.256	ETND0307F	TWP08S	3/8
	050-MHD-M06	M06	1/2	1.575	0.984	0.433	0.268	ETND03509	TWP10S	1/2
	062-MHD-M08	M08	5/8	1.850	1.181	0.571	0.335	ETND0413	TWP15S	5/8
	075-MHD-M10	M10	3/4	2.205	1.378	0.689	0.413	ETKD0516	TWP20	3/4
	100-MHD-M12	M12	1	2.717	1.772	0.906	0.492	ETKD0620	TWP25	1
	125-MHD-M16	M16	1 1/4	3.031	1.969	1.142	0.650	ETGD0825	TWP40	1 1/4

Available inserts **E08~E10** Available adaptors **E365~E366**

Designation: LBEA125-MHD-M16
Modular head threading measure size (M16)

=

Adaptor spec.: MATA-M16-137-S125S
Adaptor threading measure (M16)

GBEA (single edge)



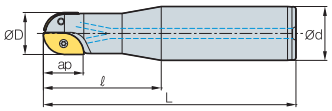


Fig. 1

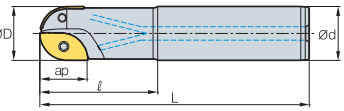


Fig. 2

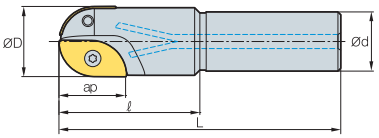


Fig. 3



(inch)

Designation		Dimensions					Available inserts		Part		Fig.
		ØD	Ød	ℓ	L	ap	Internal	External	Screw Int./Ext. type	Wrench Ext. main type	
GBEA	063-S075	0.630	0.750	1.95	5.10	0.6	ZPET080M-MM	ZPET080S-MM	FTKA02555S	TW08S	1
	063-L075	0.630	0.750	3.50	7.90	0.6	ZPET080M-MM	ZPET080S-MM	FTKA02555S	TW08S	
	071-S075	0.709	0.750	2.35	5.10	0.7	ZPET090M-MM	ZPET090S-MM	FTKA0307	TW09S	
	071-L075	0.709	0.750	3.15	7.90	0.7	ZPET090M-MM	ZPET090S-MM	FTKA0307	TW09S	
	079-S100	0.787	1.000	2.35	5.50	0.7	ZPET100M-MM	ZPET100S-MM	FTKA0307	TW09S	
	079-L100	0.787	1.000	3.10	9.80	0.7	ZPET100M-MM	ZPET100S-MM	FTKA0307	TW09S	
	086-S100	0.866	1.000	2.75	5.50	0.8	ZPET110M-MM	ZPET110S-MM	FTKA0408	TW15S	
	086-L100	0.866	1.000	3.95	9.85	0.8	ZPET110M-MM	ZPET110S-MM	FTKA0408	TW15S	
	098-S125	0.984	1.250	2.70	5.90	0.9	ZPET125M-MM	ZPET125S-MM	FTKA0409	TW15S	
	098-L125	0.984	1.250	3.90	11.80	0.9	ZPET125M-MM	ZPET125S-MM	FTKA0409	TW15S	
	102-S125	1.024	1.250	2.75	5.90	1.0	ZPET130M-MM	ZPET130S-MM	FTKA0409	TW15S	
	102-L125	1.024	1.250	3.95	11.80	1.0	ZPET130M-MM	ZPET130S-MM	FTKA0409	TW15S	
	110-S125	1.102	1.250	2.75	5.90	1.0	ZPET140M-MM	ZPET140S-MM	FTGA0511-P	TW20	
	110-L125	1.102	1.250	4.70	11.80	1.0	ZPET140M-MM	ZPET140S-MM	FTGA0511-P	TW20	
	118-S125	1.181	1.250	2.70	6.30	1.0	ZPET150M-MM	ZPET150S-MM	FTGA0511-P	TW20-100	2
	118-L125	1.181	1.250	4.70	13.80	1.0	ZPET150M-MM	ZPET150S-MM	FTGA0511-P	TW20-100	
	126-S125	1.260	1.250	2.70	6.30	1.1	ZPET160M-MM	ZPET160S-MM	FTGA0511-P	TW20-100	
	126-L125	1.260	1.250	4.70	13.80	1.1	ZPET160M-MM	ZPET160S-MM	FTGA0511-P	TW20-100	
	157-S150	1.575	1.500	3.90	7.90	1.4	ZPET200M-MM	ZPET200S-MM	FTGA0614	TW20-100	
	157-L150	1.575	1.500	5.90	13.80	1.4	ZPET200M-MM	ZPET200S-MM	FTGA0614	TW20-100	
	197-S150	1.969	1.500	3.90	7.90	1.8	ZPET250M-MM	ZPET250S-MM	FTGA0818	TW25-100	3
	197-L150	1.969	1.500	3.90	13.80	1.8	ZPET250M-MM	ZPET250S-MM	FTGA0818	TW25-100	

Available inserts **E33**

GBEA-M (multi edge)



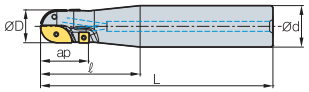


Fig. 1

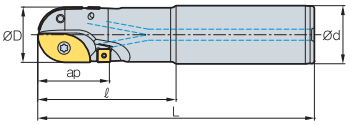


Fig. 2

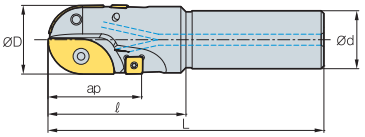


Fig. 3



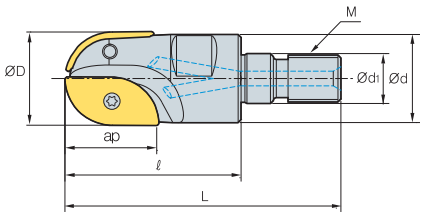
(inch)

Designation		Dimensions					Available insert			Part				Fig.
		ØD	Ød	ℓ	L	ap	Internal	External	Ext. main	Screw		Wrench		
										Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type	
GBEA	079M-S100	0.787	1.000	2.75	5.90	1.1	ZPET100M-MM	ZPET100S-MM	SPMT221	FTKA0307	ETNA02506	TW09S	TW07P	1
	079M-L100	0.787	1.000	2.75	9.80	1.1	ZPET100M-MM	ZPET100S-MM	SPMT221	FTKA0307	ETNA02506	TW09S	TW07P	
	086M-S100	0.866	1.000	3.15	5.90	1.2	ZPET110M-MM	ZPET110S-MM	SPMT060304	FTKA0408	ETNA02506	TW15S	TW07P	
	086M-L100	0.866	1.000	3.15	9.85	1.2	ZPET110M-MM	ZPET110S-MM	SPMT060304	FTKA0408	ETNA02506	TW15S	TW07P	
	098M-S125	0.984	1.250	3.10	7.10	1.3	ZPET125M-MM	ZPET125S-MM	SPMT221	FTKA0409	ETNA02506	TW15S	TW07P	
	098M-L125	0.984	1.250	3.10	11.80	1.3	ZPET125M-MM	ZPET125S-MM	SPMT221	FTKA0409	ETNA02506	TW15S	TW07P	
	102M-S125	1.024	1.250	3.15	7.10	1.5	ZPET130M-MM	ZPET130S-MM	SDMT090308-MM	FTKA0409	ETNA0408	TW15S	TW15S	
	102M-L125	1.024	1.250	3.15	11.80	1.5	ZPET130M-MM	ZPET130S-MM	SDMT090308-MM	FTKA0409	ETNA0408	TW15S	TW15S	
	110M-S125	1.102	1.250	3.15	7.10	1.6	ZPET140M-MM	ZPET140S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20	TW15S	
	110M-L125	1.102	1.250	3.15	11.80	1.6	ZPET140M-MM	ZPET140S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20	TW15S	
	118M-S125	1.181	1.250	3.90	7.90	1.6	ZPET150M-MM	ZPET150S-MM	SDMT322-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
	118M-L125	1.181	1.250	3.90	13.80	1.6	ZPET150M-MM	ZPET150S-MM	SDMT322-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
	126M-S125	1.260	1.250	3.90	7.90	1.6	ZPET160M-MM	ZPET160S-MM	SDMT322-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	2
	126M-L125	1.260	1.250	3.90	13.80	1.6	ZPET160M-MM	ZPET160S-MM	SDMT322-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
	157M-S150	1.575	1.500	3.90	7.90	2.2	ZPET200M-MM	ZPET200S-MM	SPMT432-MM	FTGA0614	ETNA0511	TW20-100	TW20S	
	157M-L150	1.575	1.500	3.90	13.80	2.2	ZPET200M-MM	ZPET200S-MM	SPMT432-MM	FTGA0614	ETNA0511	TW20-100	TW20S	
	197M-S150	1.969	1.500	3.90	7.90	2.6	ZPET250M-MM	ZPET250S-MM	SPMT432-MM	FTGA0818	ETNA0511	TW25-100	TW20S	3
	197M-L150	1.969	1.500	3.90	13.80	2.6	ZPET250M-MM	ZPET250S-MM	SPMT432-MM	FTGA0818	ETNA0511	TW25-100	TW20S	

Available inserts **E20, E27, E33**

GBEMA







(inch)

Designation		Dimensions							Available insert	
		ØD	Ød	Ød1	ℓ	L	M	ap	Internal	External
GBEMA	063-M08	0.630	0.591	0.335	1.2	1.9	M08	0.6	ZPET080M-MM	ZPET080S-MM
	079-M10	0.787	0.732	0.413	1.4	2.2	M10	0.7	ZPET100M-MM	ZPET100S-MM
	098-M12	0.984	0.913	0.492	1.8	2.7	M12	0.9	ZPET125M-MM	ZPET125S-MM
	118-M16	1.181	1.094	0.669	2.0	3.0	M16	1.0	ZPET150M-MM	ZPET150S-MM
	126-M16	1.260	1.173	0.669	2.0	3.0	M16	1.1	ZPET160M-MM	ZPET160S-MM

Available inserts

ZPET-MM Internal



ZPET-MM External



SPMT Ext. main



SPMT-MM Ext. main



Designation		Coated				page	Designation		Coated				page
		NCM325	PC2510	PC3700	PC5300				NCM325	PC2510	PC3700	PC5300	
SPMT	221	●				E27	ZPET	080S-MM					E33
	432-MM			●	●			090S-MM					
SDMT	322-MM			●	●	E20		100S-MM		●	●	●	
ZPET	080M-MM					E33		110S-MM					
	090M-MM							125S-MM		●	●	●	
	100M-MM		●	●	●			130S-MM					
	110M-MM							140S-MM					
	125M-MM		●	●	●			150S-MM			●	●	
	130M-MM							160S-MM		●	●	●	
	140M-MM							200S-MM			●		
	150M-MM			●	●			250S-MM					
	160M-MM		●	●	●								
	200M-MM			●									
	250M-MM												

Parts

Specification	Screw		Wrench	
	Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type
Ø0.630	FTKA02555S	-	TW08S	-
Ø0.787	FTKA0307	ETNA02506	TW09S	TW07P
Ø0.984	FTKA0409	ETNA02506	TW15S	TW07P
Ø1.181	FTGA0511-P	ETNA0408	TW20-100	TW15S
Ø1.260	FTGA0511-P	ETNA0408	TW20-100	TW15S

Designation: GBEMA118-M16
Modular head threading measure size (M16)

Adaptor spec.: MATA-M16-137-S125S
Adaptor threading measure (M16)

Available inserts E20, E27, E33 Available adaptors E365~E366

BREA



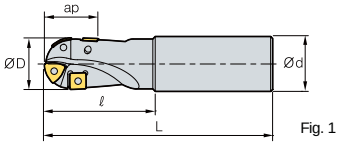


Fig. 1

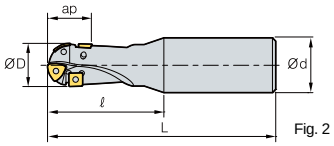


Fig. 2

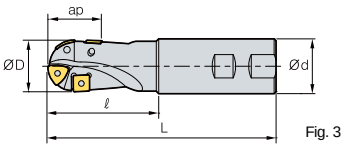


Fig. 3

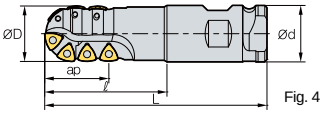


Fig. 4




• AR: 0°~10°
• RR: -3°~0°

(inch)

Designation		Dimension					Available insert		Part		lbs	Fig.
		ØD	Ød	ℓ	L	ap	Internal	External	Screw	Wrench		
BREA	079-S	0.787	3/4	0.787	4.921	0.03	ZDMT08T2-R10-MM	SPMT221	ETNA02506	TW07P	0.3	1
	079-M	0.787	3/4	0.787	5.906	0.03						2
	079-L	0.787	1	0.787	7.874	0.03						3
	079-SL	0.787	1	0.787	4.921	0.03						
	098-S	0.984	1	0.906	5.906	0.04	ZDMT110312.5R-MM	SPMT221	ETNA02506	TW07P	0.5	1
	098-M	0.984	1	0.906	6.890	0.04						
	098-L	0.984	1 1/4	0.906	7.874	0.04					0.4	2
	098-SL	0.984	1	0.906	5.315	0.04						3

Available inserts

SPMT



ZDMT-R-MM



Designation		Coated					page
		NCM325	PC3700	PC5300	PC5400	PC6510	
SPMT	221	●					E27
ZDMT	080310R-MM		●	●			E33
	110312.5R-MM			●			
	130416R-MM		●	●			

Parts

Specification	Screw	Wrench
Ø0.787~Ø0.984	ETNA02506	TW07P

Available inserts **E27, E33**

BREA



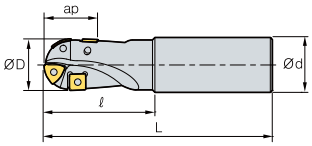


Fig. 1

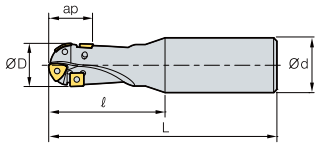


Fig. 2

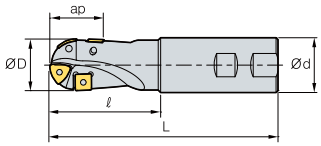


Fig. 3




• AR: 0°~10°
• RR: -3°~0°

(inch)

Designation		Dimension					Available insert		Part		lbs	Fig.
		ØD	Ød	ℓ	L	ap	Main	Ext. main	Screw	Wrench		
BREA	126-S	1.260	1 1/4	1.220	6.890	0.05	ZDMT130416R-MM	SDMT322-MM	ETNA0408	TW15S	0.9	1
	126-M	1.260	1 1/4	1.220	7.874	0.05					0.9	1
	126-L	1.260	1 1/4	1.220	9.843	0.05					0.7	1
	126-SL	1.260	1 1/4	1.220	5.906	0.05					0.7	3
	157-S	1.575	1 1/2	1.614	6.890	0.06	ZPMT160520R-MM	SPMT432-MM SPMT442-MMN	ETNA0511	TW20-100	1.3	1
	157-S-150	1.575	1 1/2	1.614	6.890	0.06					1.3	1
	157-M	1.575	1 1/2	1.614	7.874	0.06					1.3	1
	157-M-150	1.575	1 1/2	1.614	7.874	0.06					1.3	1
	157-L	1.575	1 1/2	1.614	9.843	0.06					1.3	1
	157-L-150	1.575	1 1/2	1.614	9.843	0.06					1.3	1
	157-SL	1.575	1 1/2	1.614	6.299	0.06					1.3	3
	157-SL-150	1.575	1 1/2	1.614	6.299	0.06					1.3	3

Available inserts

	SDMT-MM	SPMT-MM	ZPMT-R-MM	ZPMT-R-MR
				

Designation		Coated					page
		NCM325	PC3700	PC5300	PC5400	PC6510	
SDMT	322-MM		●	●			E20
SPMT	432-MM		●	●			E27
	442-MMN						
ZPMT	160520R-MM		●	●			E33
	160525R-MM		●	●			
	160525R-MR						
	160531.5R-MM			●			

Parts

Specification	Screw	Wrench
Ø1.260	ETNA0408	TW15S
Ø1.575	ETNA0511	TW20-100

Available inserts E20, E27, E33

All applications for chamfers

Chamfer Tool

- All chamfer applications
- Chamfer angles 15°, 30°, 45°, 60° for a variety of customer's needs
- The long cutting-edge provides a wide chamfering range



Back & Front Chamfer Tools



Long Chamfer Tools

Code system

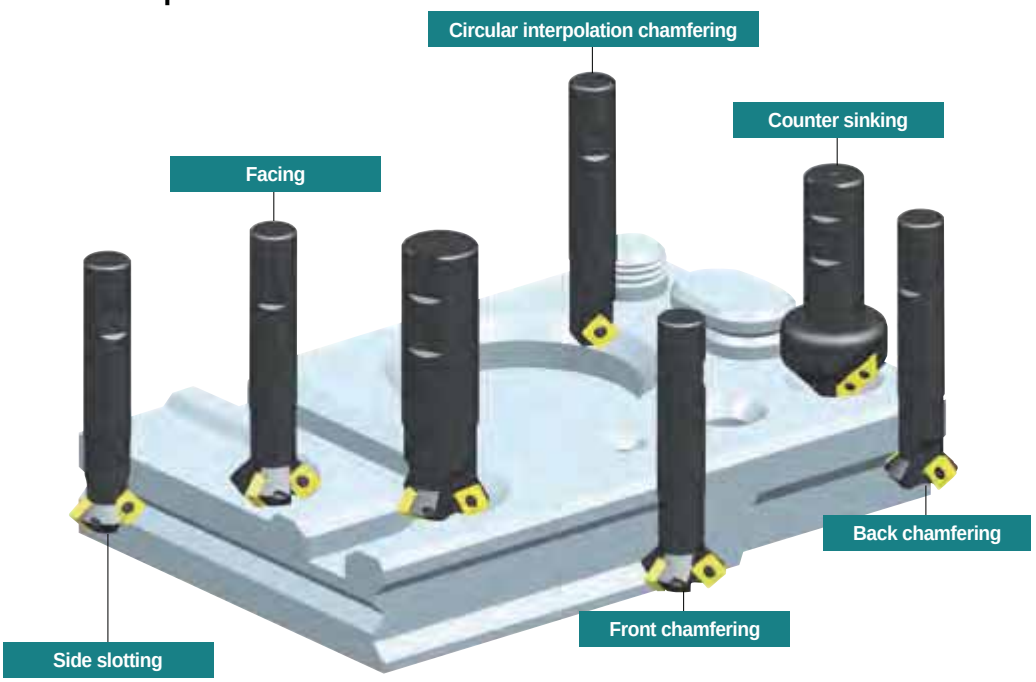
CEA 45 - 11 100 R - S 075

Chamfer Endmill	Chamfer angle	Inscribed circle of insert	Min. Cutting Dia.	Hand	Overall length	Shank Dia.
	45°	11: SPMT110408-KC 12: SPMN422 31: XCET310404ER-KC	Ø1 inch	R: Right L: Left	S: Standard M: Middle L: Long	Ø0.75 inch

Recommended cutting condition

Workpiece	Grade	ØD (Ø0.20~Ø0.79)		ØD (Ø0.10~Ø1.38)	
		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)
P	PC3700	520~880	0.010~0.002	520~880	0.010~0.002
	PC5300	620~1010		620~1010	
	ST30A	200~330		200~330	
M	PC5300	330~520	0.008~0.002	330~520	0.012~0.004
	PC5400	230~390		230~390	
K	PC5300	360~590	0.012~0.004	360~590	0.020~0.012
	G10	160~290		160~290	

Application example



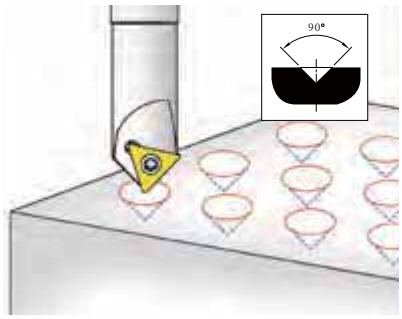
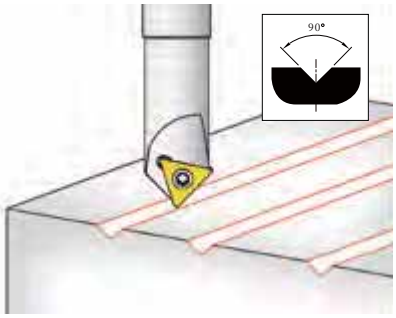
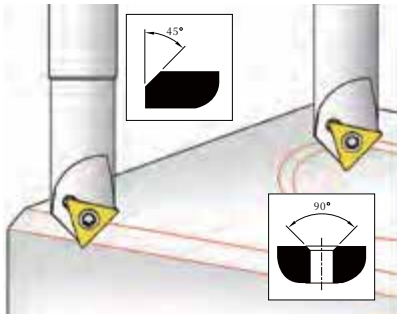
Multi Functional Chamfer Tool

Code system

CEA 45 - 16 00 R - S 075

Chamfer Endmill	Chamfer angle	Inscribed circle of insert	Min. Cutting Dia.	Hand	Overall length	Shank Dia.
	45°	16: TWX16R-KC 22: TWX22R-KC	Ø0	R: Right L: Left	S: 3.543, 4.330 L: 7.874	Ø0.75 inch

Application area and recommended cutting condition

Centering	Grooving	Chamfering
		

Workpiece	Hardness (HRC)	Centering, Grooving		Chamfering	
		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)
Mild steel, Carbon steel, Alloy steel	Under HRC 30	360~655	0.004~0.016	330~820	0.016~0.024
High Carbon steel, Alloy steel	HRC 30, 40	490~820	0.008~0.024	490~985	0.020~0.039
Aluminum, Copper	-	490~985	0.016~0.031	490~1,150	0.020~0.039
Cast iron	-	260~490	0.008~0.024	330~820	0.020~0.039
Stainless steel	-	195~395	0.004~0.012	195~490	0.012~0.024
HRSA		195~260	0.004~0.012	195~330	0.012~0.024

Note) Please keep fz. backtouch & chipping one caused by wrong fz

Machining example

Chamfering	Grooving	Centering
		

CEA (back & front)



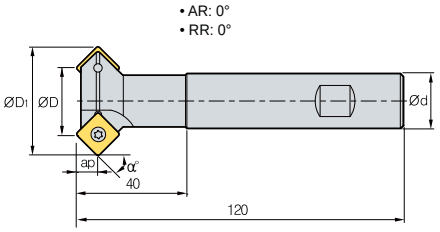


Fig. 1

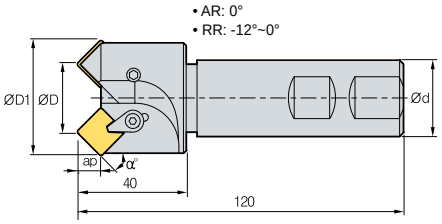


Fig. 2



(inch)

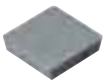
Designation		⊙	ØD	ØD1	Ød	ap	Fig.	Available insert	α° (Chamfer angle) Front	α° (Chamfer angle) Back	Machining range (Min~Max)	Uses
CEA	15-11100R-S075	2	1	1.204	3/4	0.376	1	SPMT110408-KC	15°	-	Ø1.00~Ø1.18	Front chamfering
	30-11100R-S075	2	1	1.398	3/4	0.337	1		30°	60°	Ø1.00~Ø1.37	Front, Back chamfering
	45-11028R-S075	1	9/32	0.850	3/4	0.275	1		45°	-	Ø0.28~Ø0.82	Front chamfering
	45-11075R-S075	2	3/4	1.319	3/4	0.275	1		45°	45°	Ø0.75~Ø1.29	Front, Back chamfering
	45-11100R-S075	3	1	1.569	3/4	0.275	1		45°	45°	Ø1.00~Ø1.53	Front, Back chamfering
	60-11100R-S125	3	1	1.706	1 1/4	0.194	1		60°	30°	Ø1.00~Ø1.65	Front, Back chamfering
	45-12028R-S125	1	9/32	0.916	1 1/4	0.309	2	SPMN422	45°	-	Ø0.28~Ø0.86	Front chamfering
	45-12075R-S125	2	3/4	1.386	1 1/4	0.309	2		45°	-	Ø0.75~Ø1.41	Front chamfering
	45-12100R-S125	2	1	1.636	1 1/4	0.309	2		45°	-	Ø1.00~Ø1.61	Front chamfering
	45-12137R-S125	2	1 3/8	2.052	1 1/4	0.309	2		45°	-	Ø1.37~Ø2.00	Front chamfering

Available inserts

SPMT-KC



SPMN



Designation		Cermet CN2500	Cermet CN30	Coated NC5330	Coated NCM325	Coated NCM335	Coated NCM535	Coated NCM545	Coated PC2505	Coated PC2510	Coated PC3700	Coated PC6510	Coated PC9530	Coated PC9540	Coated PC5300	Coated PC5400	Uncoated ST30A	Uncoated G10	Uncoated H01	page
SPMT	110408-KC										●						●	●		E27
SPMN	422																●			

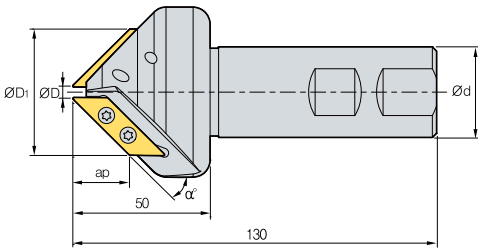
Parts

Specification	Screw	Clamp	C-Ring	Wrench	Wrench
Ø9/32~Ø1 (11□□□ type)	FTKA0408	-	-	TW15S	-
Ø9/32~Ø1 3/8 (12□□□ type)	CHX0617L	CH6R2	CR05	-	HW30L

Available inserts **E27**

CEA (long chamfer)







• AR: -5°~1°
• RR: 0°

(inch)

Designation			ØD	ØD1	Ød	ap	α° (Chamfer angle)	Machining range (Min~Max)	Uses
CEA	30-31020R-S125	1	13/64	1.384	1 1/4	1.039	30°	Ø0.20~Ø1.37	Front Chamfering
	45-31020R-S125	2	13/64	1.896	1 1/4	0.846	45°	Ø0.20~Ø1.89	Front Chamfering
	60-31020R-S125	2	13/64	2.278	1 1/4	0.598	60°	Ø0.20~Ø2.27	Front Chamfering

Available inserts

XCET-KC



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
XCET	310404ER-KC										●						●	●		E31

Parts

Specification	Screw	Wrench
Ø13/64	FTKA03510	TW15S

Available inserts E31

CEA (multi functional)



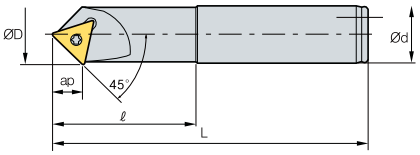


Fig. 1

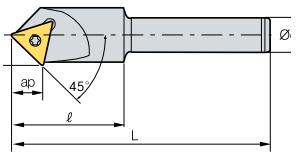


Fig. 2



• AR: -12°~15°
• RR: 0°

(inch)

Designation		ØD	Ød	ℓ	L	ap	Fig.	Available Inserts	Machining range (Min~Max)	Uses
CEA	45-1600R-S050	0.84	0.50	1.6	3.5	0.4	2	TWX16R-KC	Ø0.8	Centering Grooving Chamfering
	45-1600R-S075	0.84	0.75	2.0	4.3	0.4	1	TWX16R-KC	Ø0.8	
	45-1600R-L075	0.84	0.75	2.4	7.9	0.4	1	TWX16R-KC	Ø0.8	
	45-2200R-S050	1.13	0.50	1.6	3.5	0.6	2	TWX22R-KC	Ø1.1	
	45-2200R-S100	1.13	1.00	2.0	4.5	0.6	1	TWX22R-KC	Ø1.1	
	45-2200R-L100	1.13	1.00	2.4	8.0	0.6	1	TWX22R-KC	Ø1.1	

Available inserts

TWX-KC



Designation		Cermet		Coated											Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
TWX	16R-KC										●				●					E29
	22R-KC										●									

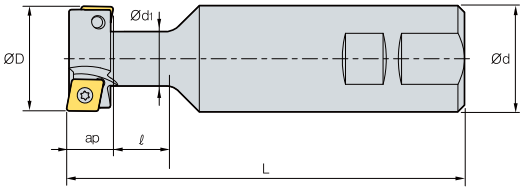
Parts

Specification	Screw	Wrench
Ø0.87~Ø1.14	FTNA0408	TW15L

Available inserts **E29**

TFEA







AA
0°

• AR: 5°
• RR: -5°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	ap	Available inserts
TFEA	083100R/L	2	0.83	1.00	0.41	0.79	4.25	0.35	CPMT21.51-MM
	098100R/L	2	0.98	1.00	0.49	0.83	4.50	0.43	CPMT21.51-MM
	126125R/L	2	1.26	1.25	0.65	1.02	5.00	0.55	CPMT2.522-MM
	157125R/L	2	1.57	1.25	0.81	1.26	5.25	0.71	CPMT32.52-MM
	197125R/L	4	1.97	1.25	1.00	1.50	5.50	1.30	CPMH432-MM

Available inserts

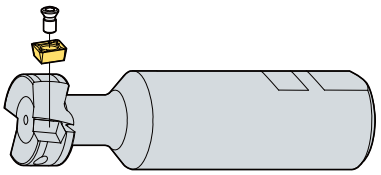
CPMT CPMH



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
CPMT	21.51-MM										●									E08
	2.522-MM										●									
	32.52-MM										●									
CPMH	432-MM										●									

Parts

Specification	Screw	Wrench
Ø0.83	FTNA02555	TW08S
Ø0.98	FTNA0306	TW09S
Ø1.26	FTNA0407	TW15S
Ø1.57	PTMA0511A	TW15S
Ø1.97		

Assembling	
	

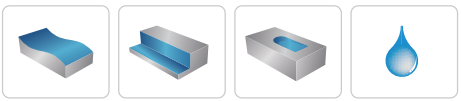
Available inserts E08

Inserts feature a buffed top surface ensuring better chip control and reducing built-up edge

Pro-A Mill

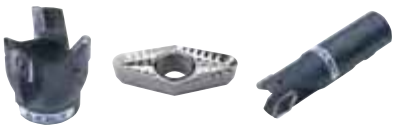
- Buffed top face of insert ensures good chip control and reduces built-up edge
- Small size modular type for aluminum machining
- Various line up of modular system for aluminum machining
- For shouldering, curved surface and ramping
- High rake angle chip breaker ensures excellent surface roughness, improved cooling effects, and chip control by through coolant system, even in deep pocket machining

Uses



Copying | Shouldering | Ramping | Through coolant system

Pro-A Mill

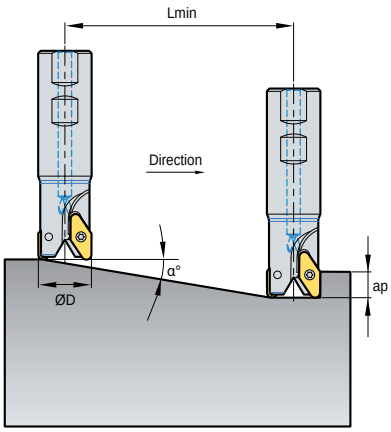
Type		Available inserts and tool holder	Through coolant system
Application of small-sized Aluminum machining	**Pro-A 2000**	 • Modular: Ø12~Ø42 • Shank: Ø12~Ø42 • Insert: VDKT11T210N-MA VDKT11T220N-MA	O
General application of Aluminum machining	**Pro-A 4000**	 • cutter: Ø40~Ø100 • Shank: Ø32~Ø40 • Insert: VCKT220530N-MA	O

Recommended cutting condition

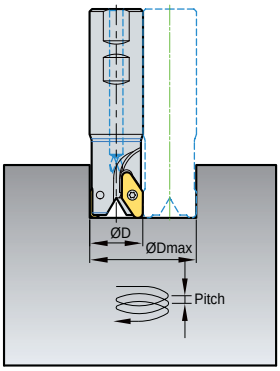
Workpiece		Cutting speed vc (sfm)
Aluminum alloy	Rm < 280 MPa	3300
	Rm > 280 MPa	2640
Copper alloy	Long chip	830
Thermo plastic	-	990
Aluminum alloy	Si < 12%	2640
Copper alloy	Short chip	1320
Magnesium alloy	-	1320
Duroplastics	-	500

Pro-A Mill ramping & helical cutting technical data

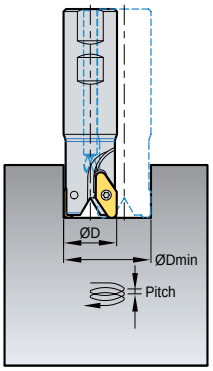
1. Ramping



2. Blind hole helical cutting



3. Thru hole helical cutting



(inch)

Designation	Tool Dia. ØD	1. Ramping		2. Helical cutting for blind hole				3. Helical cutting for through holes	
		Max. rake angle α°	Lmin	Min. machining Dia. Ø DHmin	Max. pitch	Max. machining Dia. Ø DHmax	Max. pitch	Min. machining Dia. Ø DHmin	Max. pitch
PASA2012HR	0.500	11.1	1.606	0.882	0.007	0.961	0.007	0.803	0.006
PASA2016HR	0.625	12.6	1.404	1.132	0.010	1.211	0.011	1.053	0.009
PASA2020HR	0.750	10.3	1.738	1.382	0.010	1.461	0.010	1.303	0.009
PASA2025HR	1.000	7.5	2.404	1.882	0.010	1.961	0.010	1.803	0.009
PASA2032HR	1.250	5.9	3.071	2.382	0.010	2.461	0.010	2.303	0.009
PASA2042HR	1.500	4.8	3.738	2.882	0.010	2.961	0.010	2.803	0.009
PASA4032HR	1.250	18.9	0.921	2.382	0.032	2.461	0.033	2.303	0.031
PASA4040HR	1.500	15.7	1.121	2.882	0.032	2.961	0.033	2.803	0.031
PASA4050HR	2.000	11.7	1.521	3.882	0.032	3.961	0.032	3.803	0.031
PASA4063HR	2.500	9.3	1.921	4.882	0.032	4.961	0.032	4.803	0.031
PACA4080HR	3.000	7.7	2.321	5.882	0.031	5.961	0.032	5.803	0.031
PACA4100HR	4.000	5.8	3.121	7.882	0.031	7.961	0.032	7.803	0.031

- Lmin: When ap = 0.315inch
- Lmin: Minimum inclination cutting length

$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (inch)}$$

α°: Max. rampig angle

ap: Depth of cut

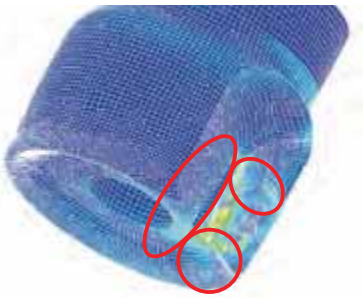
Features a strong clamping provided by the concave grooves on the back surface of the inserts

Pro-X Mill

- Inserts feature a buffed top surface ensuring a smoother chip evacuation and reducing built-up edge
- High rake angle of insert provides good surface finish and low cutting load
- Specially designed for high speed machining of aluminum
- Suitable for square shouldering and curved surface machining

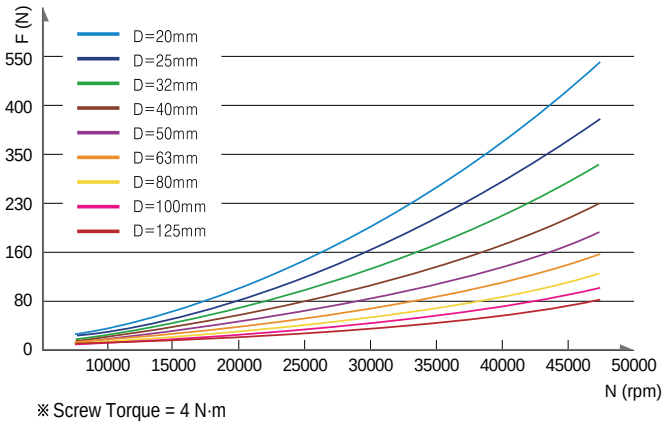
Clamping system for high speed





• Clamping design as per FEM analysis
• Strong clamping of insert

Centrifugal force as per RPM



※ Screw Torque = 4 N·m
※ Indexable insert: 6.8g

Marking [• Designation • Max. RPM]



Max. RPM as per cutting diameter

Cutting diameter ØD (inch)	5000 type		6000 type	
	n (min^{-1})	vc (sfm)	n (min^{-1})	vc (sfm)
3/4	14,000	2,883	-	-
1	28,000	7,215	15,000	3,865
1 1/4	25,000	8,245	23,000	7,585
1 1/2	22,000	9,068	20,000	8,245
2	20,000	10,305	18,000	9,275
2 1/2	18,000	11,686	16,000	10,387
3	16,000	13,192	14,000	11,542
4	14,000	14,429	13,000	13,399
5	13,000	16,749	11,000	14,170

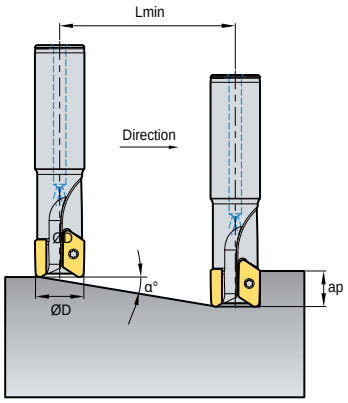
※ In case of actual machining accidental breakage of insert or tool could happen even under the written RPM special cover or door is necessary to prevent damage from broken insert or broken tool

Recommended cutting condition

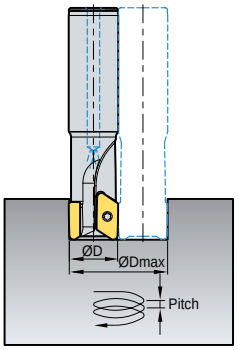
Workpiece		Cutting Speed vc (sfm)	Feed fz (ipt)
Aluminum alloy	Rm280 < MPa Rm280 > MPa	3960 3300	0.012 0.010
Copper alloy **Thermo plastic**	Long chipping -	1320 1150	0.008 0.006
Aluminum alloy	Si < 12% Si ≥ 12%	3300 990	0.010 0.009
Copper alloy	Short chipping	1650	0.008
Magnesium alloy	-	1480	0.008
Duroplastics	-	680	0.006

Pro-X Mill ramping & helical cutting technical data

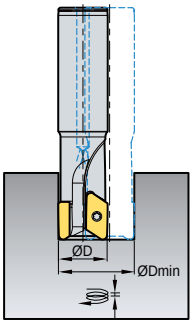
1. Ramping



2. Blind hole helical cutting



3. Thru hole helical cutting



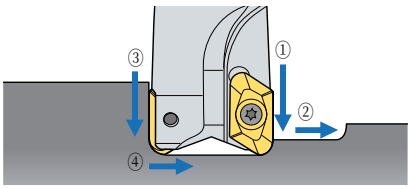
(inch)

Designation	Tool Dia. ØD	1. Ramping		2. Helical cutting for blind hole				3. Helical cutting for through holes	
		Max. rake angle α°	Lmin	Min. machining Dia. Ø DHmin	Max. pitch	Max. machining Dia. Ø DHmax	Max. pitch	Min. machining Dia. Ø DHmin	Max. pitch
PAXSA5075HR	0.75	9.1	2.47	1.185	0.007	1.264	0.008	0.988	0.006
PAXSA5100HR	1.00	11.9	1.86	1.685	0.014	1.764	0.015	1.488	0.012
PAXSA5125HR	1.25	9.0	2.49	2.185	0.014	2.264	0.014	1.988	0.012
PAXSA5150HR	1.50	7.2	3.11	2.685	0.013	2.764	0.014	2.488	0.012
PAXCA5200HR	2.00	5.2	4.36	3.685	0.013	3.764	0.013	3.488	0.012
PAXCA5250HR	2.50	4.0	5.61	4.685	0.013	4.764	0.013	4.488	0.012
PAXCA5300HR	3.00	3.3	6.86	5.685	0.013	5.764	0.013	5.488	0.012
PAXCA5400HR	4.00	2.4	9.36	7.685	0.013	7.764	0.013	7.488	0.012
PAXCA5500HR	5.00	1.9	11.86	9.685	0.013	9.764	0.013	9.488	0.012
PAXSA6100HR	1.00	9.0	2.48	1.685	0.011	1.764	0.011	1.488	0.009
PAXSA6125HR	1.25	6.8	3.31	2.185	0.010	2.264	0.011	1.988	0.009
PAXSA6150HR	1.50	10.8	2.07	2.685	0.020	2.764	0.021	2.488	0.019
PAXCA6200HR	2.00	7.7	2.91	3.685	0.020	3.764	0.020	3.488	0.019
PAXCA6250HR	2.50	6.0	3.74	4.685	0.019	4.764	0.020	4.488	0.019
PAXCA6300HR	3.00	4.9	4.57	5.685	0.019	5.764	0.020	5.488	0.019
PAXCA6400HR	4.00	3.6	6.24	7.685	0.019	7.764	0.019	7.488	0.019
PAXCA6500HR	5.00	2.9	7.91	9.685	0.019	9.764	0.019	9.488	0.019

- Lmin: When ap = 0.394 inch
- Lmin: Minimum inclination cutting length
  α°: Max. rampig angle
  ap: Depth of cut

$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (inch)}$$

Plunging, slotting, drilling technical data



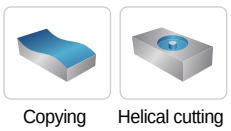
1. When drilling, grooving machining sequence is
   ① → ② → ③ → ④
2. When drilling, grooving, decrease the feed and cutting speed 30%~50% from the recommended data

• Cutting condition for drilling

Holder	ap (inch)	
	5000 type	6000 type
Ø3/4	0.315	-
Ø1	0.157	0.433
Ø1 1/4	0.157	0.236
Ø1 1/2~5	0.157	0.236

Insert	ap (inch)
XEKT19	0.157
XEKT25	0.236

Uses



Copying | Helical cutting



Slotting & Shouldering | Ramping

New indexable milling tool for the machining of high quality workpieces

Pro-L Mill

- Improved perpendicularity and lower cutting resistance due to the combined design of the clearance face and high helix edge of these inserts
- Productivity increase due to more than half as much of depth of cut comparing to existing product
- Strong clamping design by adaption of double screw on system
- Improved chip flow due to helical type design of chip pocket and application of coolant system

Uses



Facing | Shouldering | Slotting | Ramping | Helical cutting

Code system

• Cutter



Pro-L Mill	Tool type	Unit	Tool Dia.	Coolant type	Hand
	C: Cutter	A: inch M: Metric	250: Ø2.5	H : Thru-hole Unmarked : No Thru-hole	R: Right M: Multi edge

• Shank



Pro-L Mill	Tool type	Unit	Tool Dia.	Coolant type	Hand	No. of tooth	Tool length	Shank Dia.
	S: Shank	A: inch M: Metric	200: Ø2	Unmarked: None H: Thru-hole	R: Right L : Left M: Multi edge	3: 3 teeth	S: Standard type M: Middle type L: Long type	200: Ø2

Features



Strong clamping by 2 screw on system

Set of various Nose-R

Enhanced chip flow and increased tool life by inner coolant system

Improved perpendicularity and decreased cutting resistance due to application of high helix

Features of chip breakers

Insert		Cutting-edge	Uses	Features
MA			Al	Edge optimized for aluminum machining and buffed finish ensuring an excellent machining quality
ML			Hard-to-cut material	Design of low cutting resistance chip breaker ensures excellent machining quality for light cutting and hard-to-cut material

Selection of grades and chip breaker

Category	M (Stainless steel)	N (Aluminum alloy)	S (HRSA)
Grades	PC5300/PC5400	H01	PC5300/PC5400
MA	-	○	-
ML	○	-	○

Application examples

Al6061 (HRC30)

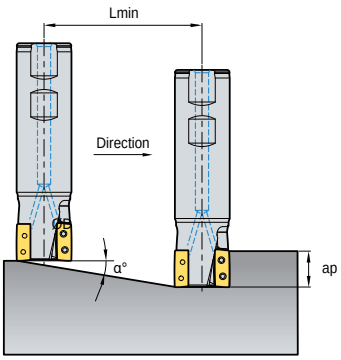


■Cutting condition

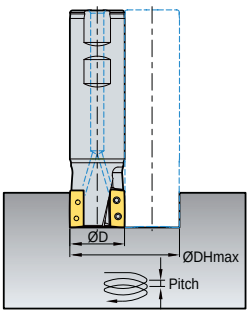
vc = 1640 sfm, fz = 0.007 ipt,
ap = 1.18~2.36 inch,
ae = 0.039~0.197 inch
z = 3

Pro-L Mill ramping & helical cutting technical data

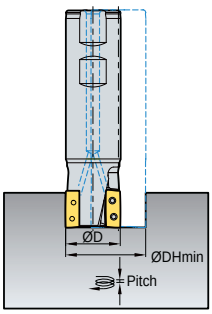
1. Ramping



2. Blind hole helical cutting



3. Thru hole helical cutting



(inch)

Designation	Tool diameter ØD	ap	Ramping		Blind hole Helical cutting			
			Maximum angle (α°)	Lmin	Max. Dia ØDHmax	Max. pitch dmax	Min. Dia ØDHmin	MAX. pitch dmax
PALSA125HR-□□□□	1.25	0.984	1.22	37.087	2.441	0.05	60	0.043
PALSA150HR-□□□□	1.5	0.984	0.88	51.142	3.071	0.05	76	0.043
PALSA200HR-□□□□	2	1.339	0.85	80.039	3.858	0.06	96	0.051
PALSA250HR-□□□□	2.5	1.339	0.64	105.71	4.882	0.06	122	0.051

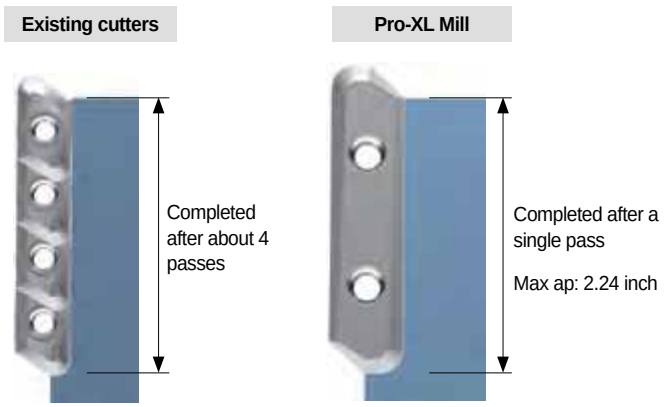
$$Lmin = \frac{ap}{\tan \alpha^{\circ}} \text{ (inch)}$$

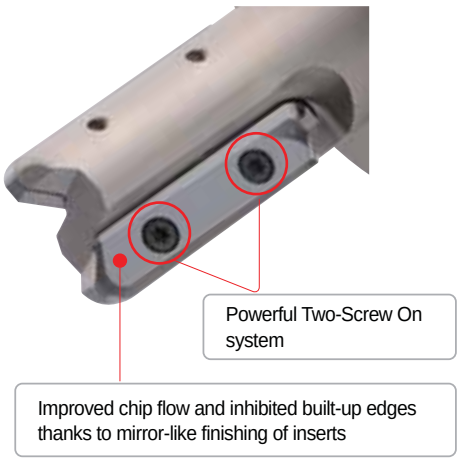
Deep cutting milling tools to maximize productivity in aluminum machining

Pro-XL Mill new

- **Productivity** - Cutting time is shortened by finishing the process with a single pass of deep shouldering in aluminum machining
- **High quality** - Shouldering within a single pass enables walls with perfect perpendicularity
- **Clamping stability** - Two-Screw On system secures clamping stability

Features of Pro-XL Mill





- 4 times shorter cutting time
- Satisfactory surface finish of side faces with no need for further processing

Application examples

Al7075

■Cutting condition

vc = 1640.42 sfm, fz = 0.01 ipt,
ap = 2.205 inch, ae = 0.039 inch
z = 2

■Tools

Insert LDET650550PPFR-MA
Grades H01
Holder BT50-PXLA150390HR-2F (ØD = 1.575 inch)





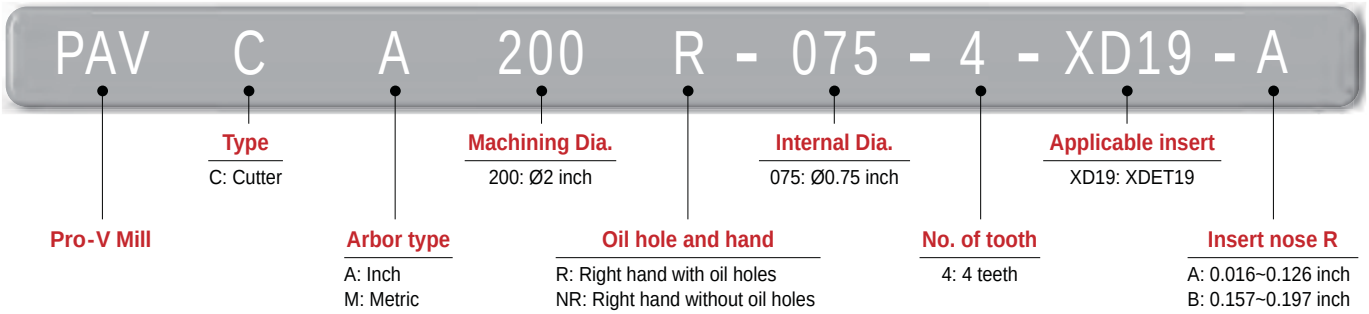
The Premium High-Speed Milling Tool for Aluminum

Pro-V Mill new

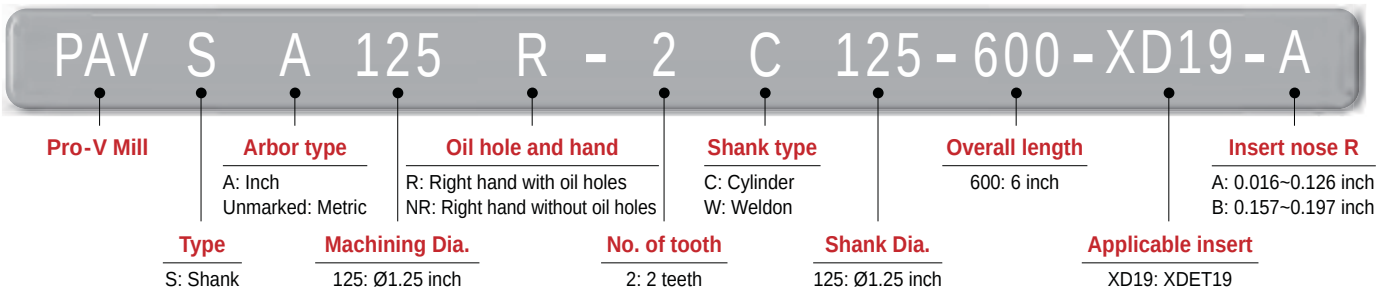
- **Enhanced productivity**- Increased productivity due to high speed capability
- **Improved surface finish**- Excellent surface finish and perpendicularity with high-precision products
- **Excellent clamping stability**- Satisfactory clamping force of inserts by the use of the key shape

Code system

• Cutter

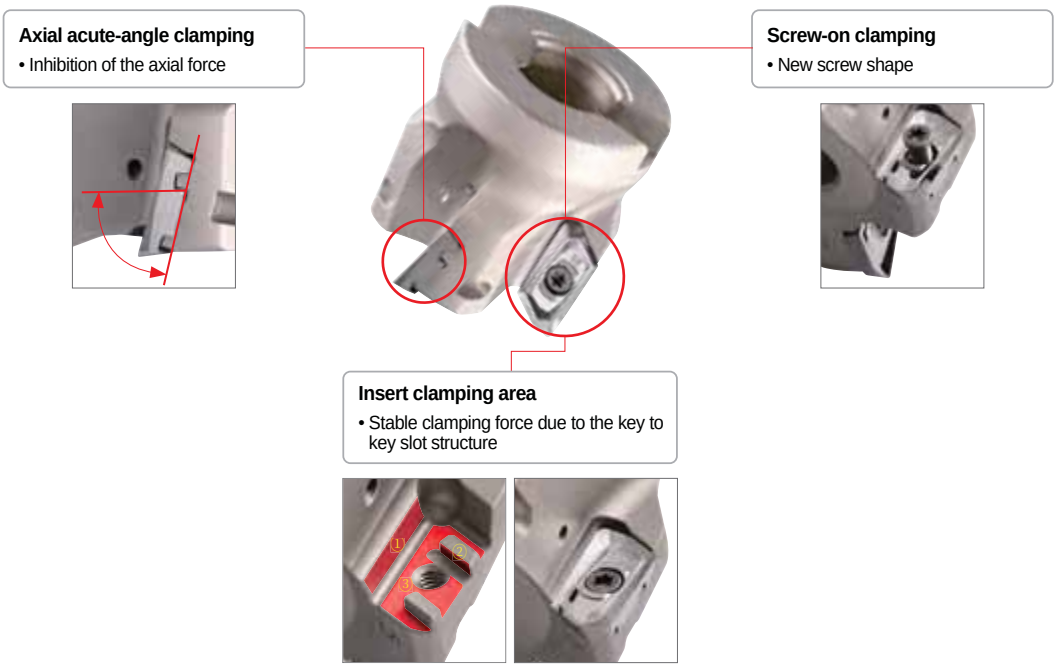


• Shank

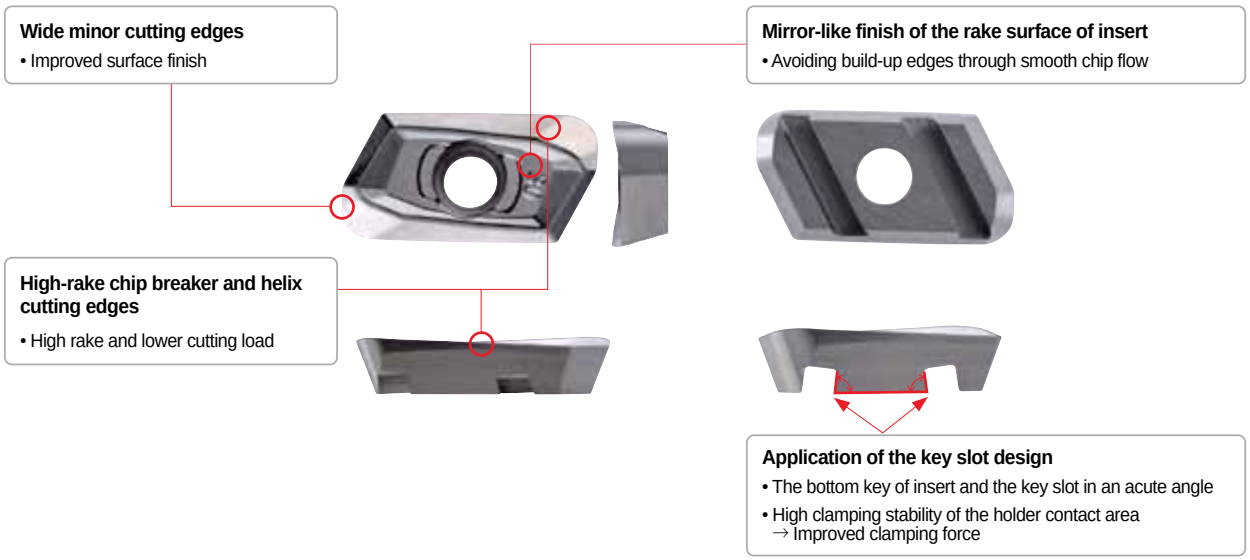


Cutter Features

- The combined clamping system of the key to key slot structure and simple screw-on type ensures strong clamping force
  - Stable machining / prevention of insert breakage
- Avoiding uplifting problems of insert due to axial acute-angle clamping of cutters
  - Reduced vibrations and excellent surface finish



Insert Features



Features of chip breaker

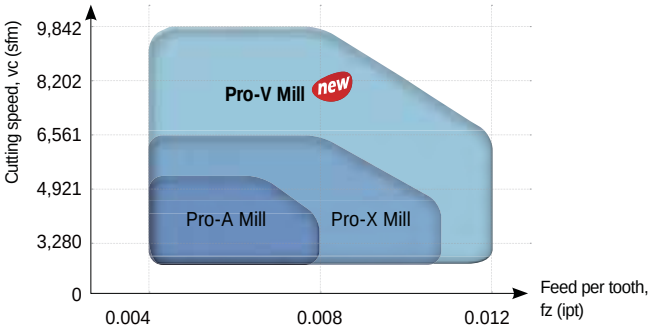
Insert		Cutting-edge	Uses	Features
MA			For non-ferrous metals	Ensuring satisfactory machining quality with the application of mirror-like cutting edges optimized for aluminum machining

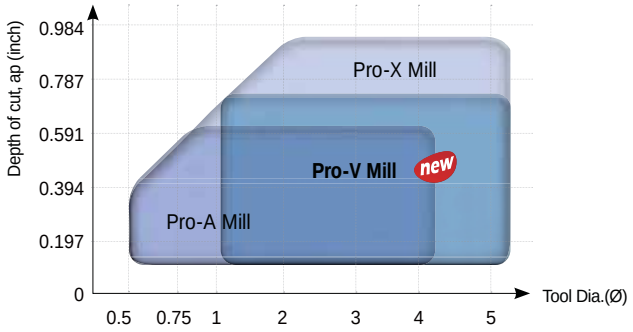
Recommended cutting condition

Workpiece			Grade	vc (sfm)	Max. ap (inch)
N	Aluminum	Si ≤ 5% (Si Lower than 5%)	H01	4,265 (1,640 - 7,217)	0.67
			H05	3,280 (984 - 5,577)	
			PD1005	4,921 (1,640 - 9,842)	
		Si ≤ 10% (Si Lower than 10%)	PD1010	3,937 (948 - 7,217)	

※ The recommended cutting conditions above are a general guideline. Their details may vary depending on the machining method of users and other conditions.

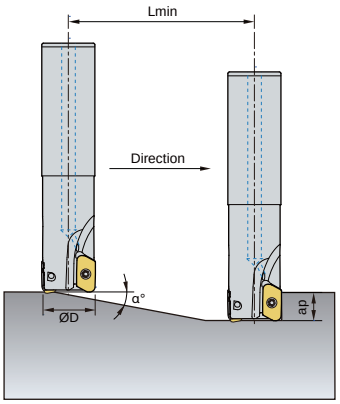
Application area



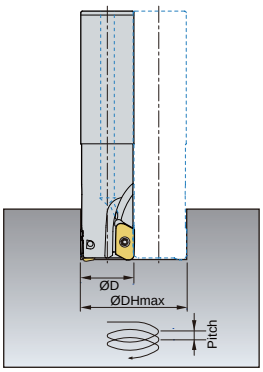


Pro-V Mill ramping & helical cutting technical data

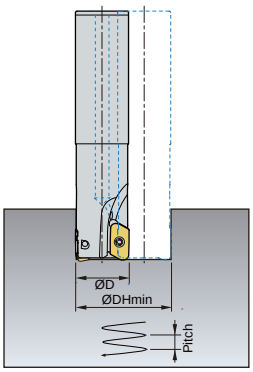
1. Ramping



2. Blind hole helical cutting



3. Thru hole helical cutting



(inch)

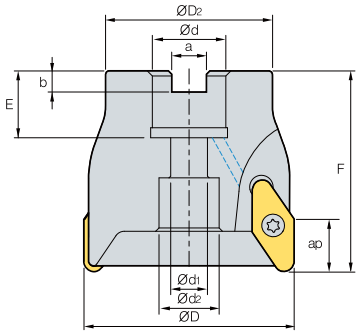
ØD	Ramping		Blind hole helical cutting				Thru hole helical cutting	
	α°	Lmin	ØDHmin	dmax	ØDHmax	dmax	ØDHmin	dmax
1.00	15.0	2.30	1.60	0.51	1.70	0.60	1.00	0.08
1.25	10.0	3.80	2.10	0.43	2.20	0.49	1.60	0.18
1.50	7.0	5.60	2.70	0.41	2.90	0.45	2.20	0.24
2.00	5.0	7.80	3.50	0.39	3.70	0.41	3.00	0.26
2.50	3.5	11.20	4.60	0.36	4.70	0.37	4.00	0.28
3.00	2.6	15.10	5.90	0.35	6.00	0.37	5.30	0.29
4.00	2.0	19.70	7.50	0.35	7.60	0.35	6.90	0.30
5.00	1.5	26.20	9.40	0.33	9.60	0.33	8.90	0.30

- When ramping and helical milling, table feed, vf (ipm) should be lower than 70% of the recommended cutting conditions.
- When helical milling, Max. pitch, DHmax should be lower than max. depth of cut, ap.
- When ramping, the depth of cut should be lower than max. depth of cut, ap.

- Lmin: ap/tan(α°) (inch)
- Lmin: Minimum inclination cutting length
  α° : Max. rampig angle
  ap : Depth of cut

PACA4000





AA 0°

- AR: 0°
- RR: -3°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs
PACA	4150HR	3	1.50	1.378	0.50	0.287	0.433	0.250	0.169	0.787	2.165	0.591	0.20
	4200HR	3	2.00	1.772	0.75	0.413	0.630	0.313	0.220	0.787	2.165	0.591	0.37
	4250HR	4	2.50	1.969	0.75	0.413	0.630	0.313	0.220	0.787	2.362	0.591	0.64
	4300HR	4	3.00	2.205	1.00	0.551	0.827	0.375	0.248	0.984	2.362	0.591	0.83
	4400HR	5	4.00	2.874	1.25	0.708	1.024	0.500	0.319	0.866	2.362	0.591	1.60

Available inserts

VCKT-MA



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
VCKT	220530N-MA																		●	

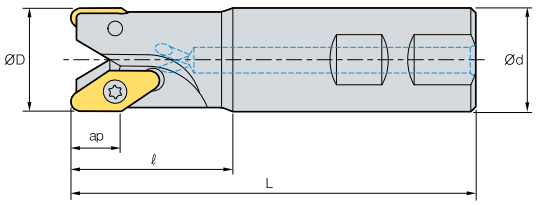
Parts

Specification	Screw	Wrench	Arbor Bolt
Ø1.50~Ø4.00	FTNC04509 (Ø1.50) FTNC04511	TW20S	PHMA0834 (Ø1.50)

Available inserts **E29**

PASA2000/4000







AA 0°

- AR: 0°~7°
- RR: -21°~-3°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
PASA	2050HR	1	0.500	0.625	0.984	3.346	0.315	0.22
	2062HR	2	0.625	0.625	0.984	3.543	0.315	0.23
	2075HR	2	0.750	0.750	0.181	3.937	0.315	0.42
	2100HR	3	1.000	1.000	0.378	4.528	0.315	0.84
	2125HR	4	1.250	1.250	1.575	4.921	0.315	1.42
	2150HR	5	1.500	1.250	1.654	5.118	0.315	1.67
PASA	4125HR	2	1.250	1.250	1.969	4.921	0.315	1.32
	4150HR	3	1.500	1.250	1.969	5.512	0.315	1.61

Available inserts

VDKT-MA VCKT-MA




Type	Designation		Cermet		Coated												Uncoated			page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
2000 type	VDKT	11T210N-MA																		●	E29
4000 type	VCKT	220530N-MA																		●	

Parts

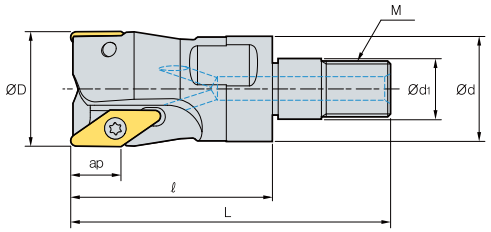
Specification	Screw	Wrench
Ø0.500~Ø1.500 (2000 type)	ETNA02505* / ETNA02506	TW07S
Ø1.250~Ø1.500 (4000 type)	FTNC04509	TW20S

* For PASA2050·2062

Available inserts E29

PAMA2000





AA 0°

- AR: 7°~10°
- RR: -21°~-9°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	lbs
PAMA	2050HR-M06	1	0.500	0.433	0.256	1.299	1.870	M06	0.315	0.02
	2062HR-M08	2	0.625	0.571	0.335	1.417	2.087	M08	0.315	0.04
	2075HR-M10	2	0.75	0.709	0.413	1.417	2.205	M10	0.315	0.06
	2100HR-M12	3	1.000	0.886	0.492	1.614	2.480	M12	0.315	0.10
	2125HR-M16	4	1.250	1.122	0.669	1.772	2.717	M16	0.315	0.18

Available inserts

VDKT-MA



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
VDKT	11T210N-MA																		●	E29

Available adaptors

Designation		Available adaptors
PAMA	2050HR-M06	MATA - M06
	2062HR-M08	MATA - M08
	2075HR-M10	MATA- M10
	2100HR-M12	MATA - M12
	2125HR-M16	MATA - M16

Designation: PAMA2050HR-M06
Modular head threading measure size (M06)

Adaptor spec.: MAT-M06-078-S038S
Adaptor threading measure (M06)

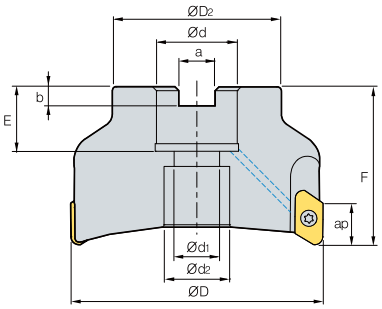
Parts

Specification	Screw	Wrench
Ø0.50~Ø1.250	ETNA02505* ETNA02506	TW07S

Available inserts **E29** Available adaptors **E365~E366** * For PAMA2050·2062

PAXCA5000













AA 0°

- AR: 8°~17.5°
- RR: -9.5°~-5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	Max rpm	ap	lbs
PAXCA	5150HR-A,B	3	1.5	1.417	0.50	0.287	0.433	0.252	0.169	0.630	1.50	25,800	0.67	0.35
	5200HR-A,B	4	2.0	1.772	0.75	0.433	0.630	0.321	0.220	0.827	1.75	23,000	0.67	0.81
	5250HR-A,B	A:5, B:4	2.5	1.772	0.75	0.433	0.630	0.321	0.220	0.827	1.75	20,500	0.67	1.21
	5300HR-A,B	5	3.0	2.205	1.00	0.551	0.827	0.384	0.248	0.866	2.00	18,200	0.67	2.01
	5400HR-A,B	6	4.0	3.386	1.50	0.787	1.142	0.636	0.394	1.181	2.50	16,300	0.67	5.29
	5500HR-A,B	7	5.0	3.386	1.50	0.827	1.142	0.636	0.394	1.181	2.50	14,600	0.67	8.38

• A type: Insert NoseR 0.016~0.126, B type: Insert NoseR 0.157~0.197

Available inserts

XEKT-MA



XEKT-ML



Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	G10	H01	H05	
XEKT	19M504FR-MA														●	●			●	●	E31
	19M508FR-MA														●	●			●	●	
	19M512FR-MA														●	●			●	●	
	19M516FR-MA														●				●	●	
	19M518FR-MA																				
	19M520FR-MA														●	●			●	●	
	19M530FR-MA														●				●	●	
	19M532FR-MA														●	●			●	●	
	19M540FR-MA														●	●			●	●	
	19M550FR-MA														●	●			●	●	

Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	G10	H01	H05	
XEKT	19M504ER-ML																				E31
	19M508ER-ML																				
	19M512ER-ML																				
	19M516ER-ML																				
	19M518ER-ML																				
	19M520ER-ML																				
	19M530ER-ML																				
	19M532ER-ML																				
	19M540ER-ML																				
	19M550ER-ML																				

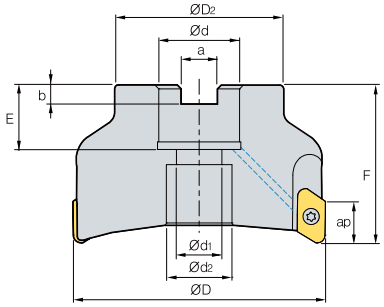
Parts

Specification	Screw	Wrench
Ø1.5~Ø5.0	PTKA0408	TW15S

Available inserts E31

PAXCA6000













AA 0°

- AR: 8°~17.5°
- RR: -9.5°~-5°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	Max rpm	ap	lbs
PAXCA	6200HR-A,B	2	2.0	1.772	0.75	0.416	0.433	0.315	0.220	0.787	1.75	23,000	0.91	0.720
	6250HR-A,B	3	2.5	1.772	0.75	0.416	0.630	0.315	0.220	0.787	1.75	20,500	0.91	1.190
	6300HR-A,B	4	3.0	2.205	1.00	0.551	0.866	0.374	0.248	0.768	2.00	18,200	0.91	1.560
	6400HR-A,B	5	4.0	2.874	1.25	0.689	1.024	0.500	0.319	0.787	2.50	16,300	0.91	4.030
	6500HR-A,B	6	5.0	3.386	1.50	0.827	1.220	0.626	0.394	1.181	2.50	14,600	0.91	6.860

• A type: Insert NoseR 0.016~0.126, B type: Insert NoseR 0.157~0.197

Available inserts

XEKT-MA



XEKT-ML



Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	H05	
XEKT	250604FR-MA																		●	●	E31
	250608FR-MA																		●	●	
	250612FR-MA																		●	●	
	250616FR-MA																				
	250620FR-MA																		●	●	
	250630FR-MA																				
	250632FR-MA																		●	●	
	250640FR-MA																				
	250650FR-MA																		●	●	

Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	H05	
XEKT	250604ER-ML																				E31
	250608ER-ML																				
	250612ER-ML																				
	250616ER-ML																				
	250620ER-ML																				
	250630ER-ML																				
	250632ER-ML																				
	250640ER-ML																				
	250650ER-ML																				

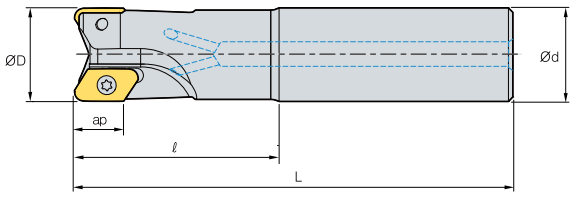
Parts

Specification	Screw	Wrench
Ø2.0~Ø5.0	FTGA0513-P	TW20-100

Available inserts **E31**

PAXSA5000







AA 0°

- AR: 5°~10°
- RR: -14°~-5°

(inch)

Designation			ØD	Ød	ℓ	L	Max rpm	ap	lbs
PAXSA	5075HR-A,B	1	0.75	0.75	2.36	5.12	15,000	0.67	0.480
	5100HR-A,B	2	1.00	1.00	2.36	5.51	32,600	0.67	0.950
	5125HR-A,B	2	1.25	1.25	2.76	5.91	28,800	0.67	1.630
	5150HR-A,B	3	1.50	1.50	2.76	6.30	25,800	0.67	1.510

• A type: Insert NoseR 0.016~0.126, B type: Insert NoseR 0.157~0.197

Available inserts

XEKT-MA



XEKT-ML



Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	G10	H01	H05	
XEKT	19M504FR-MA													●	●				●	●	E31
	19M508FR-MA													●	●				●	●	
	19M512FR-MA													●	●				●	●	
	19M516FR-MA														●				●	●	
	19M518FR-MA																				
	19M520FR-MA													●	●				●	●	
	19M530FR-MA														●				●	●	
	19M532FR-MA													●	●				●	●	
	19M540FR-MA													●	●				●	●	
	19M550FR-MA													●	●				●	●	

Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	G10	H01	H05	
XEKT	19M504ER-ML																				E31
	19M508ER-ML																				
	19M512ER-ML																				
	19M516ER-ML																				
	19M518ER-ML																				
	19M520ER-ML																				
	19M530ER-ML																				
	19M532ER-ML																				
	19M540ER-ML																				
	19M550ER-ML																				

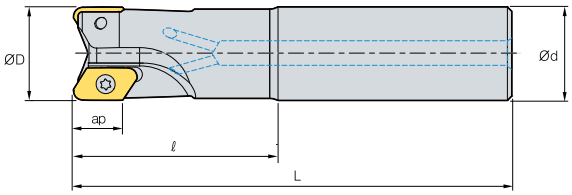
Parts

Specification	Screw	Wrench
Ø0.75	PTKA0407	TW15S
Ø1.00~Ø1.50	PTKA0408	

Available inserts E31

PAXSA6000













AA 0°

- AR: 5°~10°
- RR: -14°~-5°

(inch)

Designation		⦾	ØD	Ød	ℓ	L	Max rpm	ap	lbs
PAXSA	6100HR-A,B	1	1.00	1.00	2.36	5.51	32,600	0.91	0.93
	6125HR-A,B	1	1.25	1.25	2.76	5.91	28,800	0.91	1.68
	6150HR-A,B	2	1.50	1.50	2.76	6.30	25,800	0.91	2.65

• A type: Insert NoseR 0.016~0.126, B type: Insert NoseR 0.157~0.197

Available inserts

XEKT-MA



XEKT-ML



Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	H05	
XEKT	250604FR-MA																	●	●		
	250608FR-MA																	●	●		
	250612FR-MA																	●	●		
	250616FR-MA																				
	250620FR-MA																	●	●		E31
	250630FR-MA																				
	250632FR-MA																	●	●		
	250640FR-MA																				
	250650FR-MA																	●	●		

Designation		Cermet		Coated												Uncoated				page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	H05	
XEKT	250604ER-ML																				
	250608ER-ML																				
	250612ER-ML																				
	250616ER-ML																				
	250620ER-ML																				E31
	250630ER-ML																				
	250632ER-ML																				
	250640ER-ML																				
	250650ER-ML																				

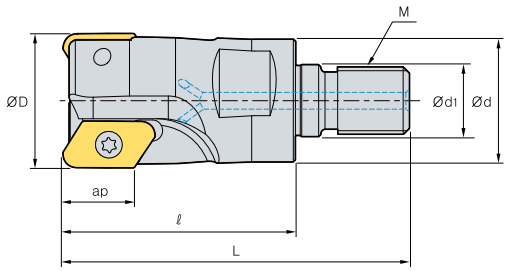
Parts

Specification	Screw	Wrench
Ø1.00~Ø1.25	FTGA0510-P	TW20-100
Ø1.50	FTGA0513-P	

Available inserts **E31**

PAXMA5000







AA 0°

- AR: 6°~8°
- RR: -7°~-5°

(inch)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	lbs
PAXMA	5100HR-A,B-M12	2	1.00	0.906	0.492	2.165	3.110	M12	0.67	0.12
	5125HR-A,B-M16	2	1.25	1.142	0.669	2.165	3.228	M16	0.67	0.24
	5150HR-A,B-M16	3	1.50	1.142	0.669	2.165	3.228	M16	0.67	0.32

• A type: Insert NoseR 0.016~0.126, B type: Insert NoseR 0.157~0.197

Available inserts

XEKT-MA



XEKT-ML



Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	G10	H01	H05	
XEKT	19M504FR-MA														●	●			●	●	E31
	19M508FR-MA														●	●			●	●	
	19M512FR-MA														●	●			●	●	
	19M516FR-MA														●				●	●	
	19M518FR-MA																				
	19M520FR-MA														●	●			●	●	
	19M530FR-MA														●				●	●	
	19M532FR-MA														●	●			●	●	
	19M540FR-MA														●	●			●	●	
	19M550FR-MA														●	●			●	●	

Designation		Cermet		Coated											Uncoated				page
		CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	G10	H01	H05	
XEKT	19M504ER-ML																				E31
	19M508ER-ML																				
	19M512ER-ML																				
	19M516ER-ML																				
	19M518ER-ML																				
	19M520ER-ML																				
	19M530ER-ML																				
	19M532ER-ML																				
	19M540ER-ML																				
	19M550ER-ML																				

Available adaptor

Designation		Available adaptor
PAXMA	5100HR-A,B-M12	MATA-M12
	5125HR-A,B-M16	MATA-M16
	5150HR-A,B-M16	

Designation: PAXMA5125HR-M16
Modular head threading measure size (M16)

II

Adaptor spec.: MATA-M16-354-S125S-C
Adaptor threading measure (M16)

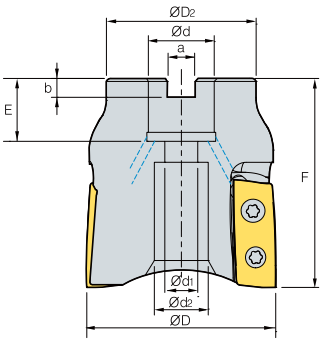
Parts

Specification	Screw	Wrench
Ø1.00~Ø1.50	PTKA0408	TW15S

Available inserts E31 Available adaptors E365~E366

PALCA











AA
0°

- AR: 16°
- RR: -8°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	ap	lbs
PALCA	250HR	4	2.5	1.77	0.75	0.413	0.827	0.314	0.22	0.787	1.75	1.339	0.57

Available inserts

LXET-MA LXET-ML




Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LXET	340504PEFR-250-MA																			E13
	3405PEFR-250-MA																		●	
	340512PEFR-250-MA																			
	340516PEFR-250-MA																			
	340504PEER-250-ML																			
	3405PEER-250-ML																			
	340512PEER-250-ML																			
	340516PEER-250-ML																			

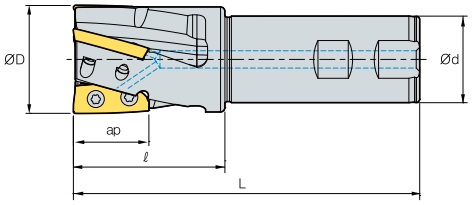
Parts

Specification	Screw	Wrench
Ø2.5	FTGA0511-P	TW20-100

Available inserts **E13**

PALSA (single edge)











AA 0°

- AR: 12°~16°
- RR: -5°~-9°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
PALSA	125HR-2S100	2	1.25	1.00	1.969	5.512	0.984	1.09
	125HR-2S125	2	1.25	1.25	1.969	5.512	0.984	1.54
	150HR-2S125	2	1.50	1.25	1.969	5.512	0.984	1.73
	150HR-2S150	2	1.50	1.50	1.969	5.512	0.984	2.27

Available inserts

LXET-MA LXET-ML




Type	Designation		Cermet		Coated												Uncoated			page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
Ø1.25	LXET	250404PEFR-125-MA																			E13
		2504PEFR-125-MA																		●	
		250412PEFR-125-MA																			
		250416PEFR-125-MA																			
		250404PEER-125-ML																			
		2504PEER-125-ML																			
		250412PEER-125-ML																			
		250416PEER-125-ML																			
Ø1.50	LXET	250404PEFR-150-MA																			
		2504PEFR-150-MA																			
		250412PEFR-150-MA																			
		250416PEFR-150-MA																			
		250404PEER-150-ML																			
		2504PEER-150-ML																			
		250412PEER-150-ML																			
		250416PEER-150-ML																			

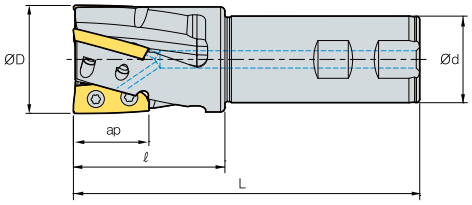
Parts

Specification	Screw	Wrench
Ø1.25	FTKA0408	TW15S
Ø1.50	FTKA0410	TW15S

Available inserts E13

PALSA (single edge)











AA
0°

- AR: 12°~16°
- RR: -5°~-9°

(inch)

Designation		⦾	ØD	Ød	ℓ	L	ap	lbs
PALSA	200HR-3S125	3	2.00	1.25	2.756	6.299	1.339	2.43
	200HR-3S150	3	2.00	1.50	2.756	6.299	1.339	2.97
	250HR-4S125	4	2.50	1.25	2.756	6.299	1.339	3.32
	250HR-4S150	4	2.50	1.50	2.756	6.299	1.339	3.86

Available inserts

LXET-MA LXET-ML




Type	Designation		Cermet		Coated													Uncoated			page
			CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
Ø2.00	LXET	340504PEFR-200-MA																		●	E13
		3405PEFR-200-MA																		●	
		340512PEFR-200-MA																			
		340516PEFR-200-MA																			
		340504PEER-200-ML																			
		3405PEER-200-ML														●					
		340512PEER-200-ML																			
		340516PEER-200-ML																			
Ø2.50	LXET	340504PEFR-250-MA																			
		3405PEFR-250-MA																		●	
		340512PEFR-250-MA																			
		340516PEFR-250-MA																			
		340504PEER-250-ML																			
		3405PEER-250-ML																			
		340512PEER-250-ML																			
		340516PEER-250-ML																			

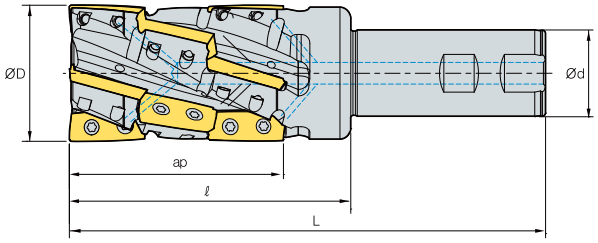
Parts

Specification	Screw	Wrench
Ø2.00	FTGA0510-P	TW20-100
Ø2.50	FTGA0511-P	TW20-100

Available inserts **E13**

PALSA (multi edge)











AA 0°

- AR: 16°
- RR: -8°

(inch)

Designation		⊚	Ød	Ød1	ℓ	L	ap	lbs
PALSA	250HM-4S125	12	2.5	1.25	5.118	8.661	3.78	4.97
	250HM-4S150	12	2.5	1.50	5.118	8.661	3.78	5.51

Available inserts

LXET-MA LXET-ML




Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LXET	340504PEFR-250-MA																			E13
	3405PEFR-250-MA																		●	
	340512PEFR-250-MA																			
	340516PEFR-250-MA																			
	340504PEER-250-ML																			
	3405PEER-250-ML																			
	340512PEER-250-ML																			
	340516PEER-250-ML																			

Parts

Specification	Screw	Wrench
Ø2.5	FTGA0511-P	TW20-100

Available inserts E13

PXLA new



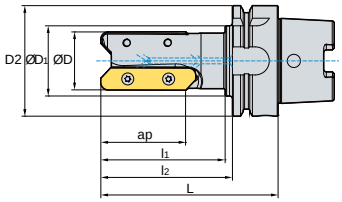


Fig. 1

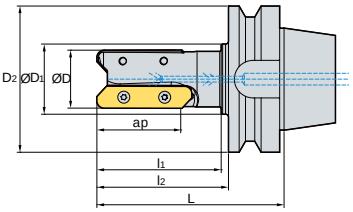


Fig. 2



AA 0°

- AR: 5°~17.5°
- RR: -14°~-5°

(inch)

Designation			ØD	ØD1	ØD2	l1	l2	L	ap	lbs	Fig.
HSK63A	PXLA150390HR-2F	2	1.5	2	2.48	3.5	3.9	4.223	2.24	4.923	1
HSK100A	PXLA150390HR-3F	3	1.5	2.5	3.937	3.5	3.9	5.041	2.24	5.58	1
	PXLA300350HR-5F	5	3	1.44	3.937	-	3.5	4.641	2.24	8.655	1
BT50	PXLA150390HR-2F	2	1.5	2	3.937	3.5	3.9	5.396	2.24	9.248	2

Available inserts

LDET-MA



Designation		Cermet		Coated												Uncoated			page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	
LDET	650540PPFR-MA																			E10
	650550PPFR-MA																			

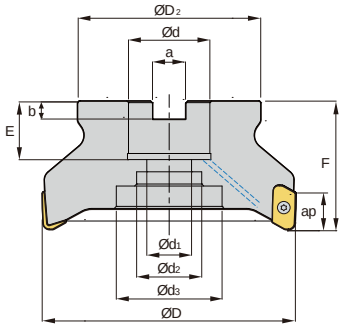
Parts

Specification	Screw	Wrench
Ø1.5~Ø3	FTGA0511-P	TW20-100

Available inserts **E10**

PAVCA-XD19 new





AA 0°

- AR: 11°~14°
- RR: -11°~-9°

(inch)

Designation			ØD	ØD2	Ød	Ød1	Ød2	Ød3	a	b	E	F	ap	lbs
PAVCA	150R-050-3-XD19-A,B	3	1.5	1.417	0.50	0.287	0.433	-	0.252	0.169	0.630	1.80	0.67	0.33
	200R-075-4-XD19-A,B	4	2.0	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.67	0.72
	250R-075-5-XD19-A,B	5	2.5	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.67	1.08
	300R-100-5-XD19-A,B	5	3.0	2.205	1.00	0.551	0.827	-	0.374	0.248	0.866	2.00	0.67	1.76
	400R-125-6-XD19-A,B	6	4.0	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.67	3.22
	500R-150-7-XD19-A,B	7	5.0	3.386	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.50	0.67	5.97

- Type A uses Insert Nose R 0.016~0.126, and Type B uses Nose R 0.157 ~ 0.197
- When using a spindle at high speed, please check the balance of tool and use it after replacing with the new screw.

Available inserts

XDET-MA



Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1005	PD1010	H01	H05	
XDET	190504PEFR-MA																●	●	E31
	190508PEFR-MA																●	●	
	190512PEFR-MA																●	●	
	190516PEFR-MA																●	●	
	190520PEFR-MA																●	●	

Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1005	PD1010	H01	H05	
XDET	190524PEFR-MA																●	●	E31
	190530PEFR-MA																●	●	
	190532PEFR-MA																●	●	
	190540PEFR-MA																●	●	
	190550PEFR-MA																●	●	

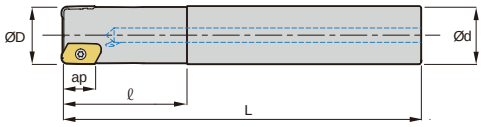
Parts

Specification	Screw	Wrench
Ø1.5 ~ Ø5.0	PTKA0408-A	TW15S

Available inserts E31

PAVSA-XD19 new













AA 0°

- AR: 8°~11°
- RR: -14°~-11°

(inch)

Designation		◎	ØD	Ød	ℓ	L	ap	lbs
PAVSA	100R-2C100-550-XD19-A,B	2	1.00	1.00	2.5	5.5	0.67	0.917
	125R-2C125-600-XD19-A,B	2	1.25	1.25	3.0	6.0	0.67	1.680
	125R-2C125-800-XD19-A,B	2	1.25	1.25	3.0	8.0	0.67	2.310
	150R-3C150-800-XD19-A,B	3	1.50	1.50	3.0	8.0	0.67	3.750

- Type A uses Insert Nose R 0.016~0.126, and Type B uses Nose R 0.157 ~ 0.197
- When using a spindle at high speed, please check the balance of tool and use it after replacing with the new screw.

Available inserts

XDET-MA



Designation		Cermet		Coated												Uncoated		page	Designation		Cermet		Coated												Uncoated		page
		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1005	PD1010	H01	H05				CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1005	PD1010	H01	H05	
XDET	190504PEFR-MA																●	●	E31	XDET	190524PEFR-MA															●	●	E31
	190508PEFR-MA																●	●			190530PEFR-MA															●	●	
	190512PEFR-MA																●	●			190532PEFR-MA															●	●	
	190516PEFR-MA																●	●			190540PEFR-MA															●	●	
	190520PEFR-MA																●	●			190550PEFR-MA															●	●	

Parts

Specification	Screw	Wrench
Ø1.00 ~ Ø1.50	PTKA0408-A	TW15S

Available inserts **E31**

MATA (steel shank type)



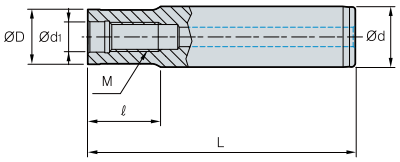


Fig. 1

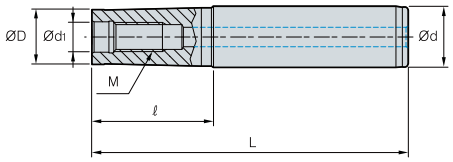


Fig. 2

(inch)

Designation		ØD	Ød	Ød1	ℓ	L	M	Fig.
MATA-	M06-078-S037S	0.354	3/8	0.256	0.787	2.756	M06	1
	M06-157-S050T	0.354	1/2	0.256	1.575	3.780	M06	1
	M06-255-S062T	0.354	5/8	0.256	2.559	4.921	M06	1
	M6B-078-S050S	0.433	1/2	0.256	0.787	2.992	M06	1
	M6B-157-S050S	0.433	1/2	0.256	1.575	3.780	M06	1
	M6B-255-S062T	0.433	5/8	0.256	2.559	4.921	M06	1
	M6B-315-S062T	0.433	5/8	0.256	3.150	5.512	M06	1
	M08-078-S062S	0.571	5/8	0.335	0.787	3.150	M08	2
	M08-157-S062T	0.571	5/8	0.335	1.575	3.937	M08	2
	M08-255-S062T	0.571	5/8	0.335	2.559	4.921	M08	2
	M08-315-S075T	0.571	3/4	0.335	3.150	5.906	M08	2
	M08-433-S100T	0.571	1	0.335	4.331	7.480	M08	2
	M10-118-S075S	0.689	3/4	0.413	1.181	3.937	M10	2
	M10-196-S075T	0.689	3/4	0.413	1.969	4.724	M10	2
	M10-275-S075T	0.689	3/4	0.413	2.756	5.512	M10	2
	M10-354-S100T	0.689	1	0.413	3.543	6.693	M10	2
	M10-433-S100T	0.689	1	0.413	4.331	7.480	M10	2
	M10-511-S125T	0.689	1 1/4	0.413	5.118	8.661	M10	2
	M12-118-S100S	0.906	1	0.492	1.181	4.331	M12	2
	M12-196-S100T	0.906	1	0.492	1.969	5.118	M12	2
	M12-275-S100T	0.906	1	0.492	2.756	5.906	M12	2
	M12-354-S100T	0.906	1	0.492	3.543	6.693	M12	2
	M12-433-S125T	0.906	1 1/4	0.492	4.331	7.874	M12	2
	M12-689-S150T	0.906	1 1/2	0.492	6.890	11.811	M12	2
	M16-137-S125S	1.142	1 1/4	0.669	1.378	4.921	M16	2
	M16-216-S125T	1.142	1 1/4	0.669	2.165	5.709	M16	2
	M16-315-S125T	1.142	1 1/4	0.669	3.150	6.693	M16	2
	M16-472-S125T	1.142	1 1/4	0.669	4.724	8.268	M16	2
	M16-689-S150T	1.142	1 1/2	0.669	6.890	11.811	M16	2

• S: straight neck adaptor • T: taper neck adaptor

FMRMA type



E236~239, E248~251

LBEA-MHD type



E328

PAMA/PAXMA type



E352, 357

AMMA type



E188~190

RM3PMA type



E102

RM4PMA/RM4ZMA type



E115, 117

RM6PMA type



E122, 123

HFMDMA type



E272~274

HFMMA type



E281

HRMMA type



E303, 304

HRMDMA type



E295~297

GBEMA type



E331

Applicable modular **E45, E46** (FMRM, LBE, PAM, AMM, RM4PM, HFMM, RM4ZM, HRMM, PAXM)

MATA-C (carbide shank type)



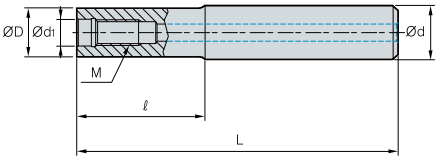


Fig. 1

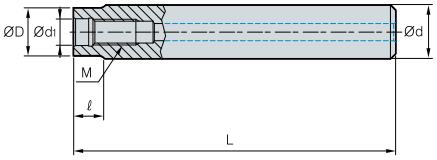


Fig. 2

	Designation	ØD	Ød	Ød1	ℓ	L	M	Fig.
MATA-	M06-118-S039S-C-315	0.374	0.394	0.256	1.181	3.150	M06	1
	M06-196-S039S-C-393	0.374	0.394	0.256	1.969	3.937	M06	1
	M06-315-S039S-C-511	0.374	0.394	0.256	3.150	5.118	M06	1
	M06B-118-S039S-C-315	0.433	0.394	0.256	1.181	3.150	M06	1
	M06B-196-S039S-C-393	0.433	0.394	0.256	1.969	3.937	M06	1
	M06B-315-S039S-C-511	0.433	0.394	0.256	3.150	5.118	M06	1
	M08-315-S062S-C	0.571	5/8	0.335	3.150	5.906	M08	1
	M08-433-S062S-C	0.571	5/8	0.335	4.331	7.087	M08	1
	M08-590-S062S-C	0.571	5/8	0.335	5.906	9.843	M08	1
	M08-039-S062S-C-590	0.571	5/8	0.335	0.394	5.906	M08	2
	M08-039-S062S-C-708	0.571	5/8	0.335	0.394	7.087	M08	2
	M08-039-S062S-C-984	0.571	5/8	0.335	0.394	9.843	M08	2
	M10-354-S075S-C	0.689	3/4	0.413	3.543	6.693	M10	1
	M10-433-S075S-C	0.689	3/4	0.413	4.331	7.874	M10	1
	M10-689-S075S-C	0.689	3/4	0.413	6.890	11.811	M10	1
	M10-039-S075S-C-669	0.689	3/4	0.413	0.394	6.693	M10	2
	M10-039-S075S-C-787	0.689	3/4	0.413	0.394	7.874	M10	2
	M10-039-S075S-C-1181	0.689	3/4	0.413	0.394	11.811	M10	2
	M12-354-S100S-C	0.906	1	0.492	3.543	6.693	M12	1
	M12-433-S100S-C	0.906	1	0.492	4.331	7.874	M12	1
	M12-689-S100S-C	0.906	1	0.492	6.890	11.811	M12	1
	M12-059-S100S-C-669	0.906	1	0.492	0.591	6.693	M12	2
	M12-059-S100S-C-787	0.906	1	0.492	0.591	7.874	M12	2
	M12-059-S100S-C-1181	0.906	1	0.492	0.591	11.811	M12	2
	M16-354-S125S-C	1.142	1 1/4	0.669	3.543	7.087	M16	1
	M16-472-S125S-C	1.142	1 1/4	0.669	4.824	8.268	M16	1
	M16-689-S125S-C	1.142	1 1/4	0.669	6.890	11.811	M16	1
	M16-078-S125S-C-708	1.142	1 1/4	0.669	0.787	7.087	M16	2
	M16-078-S125S-C-826	1.142	1 1/4	0.669	0.787	8.268	M16	2
	M16-078-S125S-C-1181	1.142	1 1/4	0.669	0.787	11.811	M16	2

FMRMA type



E236~239, E248~251

LBEA-MHD type



E328

PAMA/PAXMA type



E352, 357

AMMA type



E188~190

RM3PMA type



E102

RM4PMA/RM4ZMA type



E115, 117

RM6PMA type



E122, 123

HFMDMA type



E272~274

HFMMA type



E281

HRMMA type



E303, 304

HRMDMA type



E295~297

GBEMA type



E331

Applicable modular **E45, E46** (FMRM, LBE, PAM, AMM, RM4PM, HFMM, RM4ZM, HRMM, PAXM)

Adjusting Side Cutter

Code system

P: Plane type



B: Boss type



A: Adjusting side cutter

Adjusting

Cutter type

For half side cutter, minimum width of the cutter will be written only

Max. width of cutter

R A FC B A 500 055 071 - R

Insert clamping way



R: Radial type (Using SDXT)



T: Tangential type (Using CNHQ)

Insert configuration



FC Full side cutter



HC Half side cutter

inch type

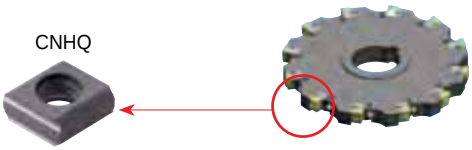
Cutter Dia.

Min. width of cutter

Hand

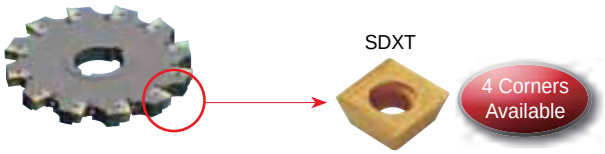
Unmarked	R	L
Neutral	Right	Left
Full side cutter (Plane type)	Half side cutter (Boss type)	

Tangential type (High rigidity)



- Medium/Roughing
- Excellent performance at medium to roughing range (0.551~1.181 inch) table operation due to the strong rigidity of the cutter
- Good performance in heavy interruption and deep depth of cut application

Radial type (Low cutting load)

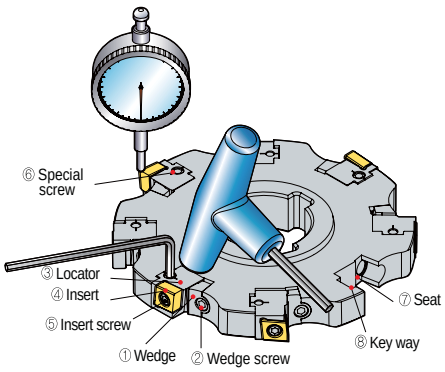


- Medium/Finishing
- Suitable for small width cutting operation (0.472~0.945 inch)
- 3 dimensional chip breaker provides smooth cutting operation
- Several chip breakers as per applications are available (MF, MM, FA)
- Economical insert using 4 cutting-edges per insert

Insert features

- Precise adjustable side cutter can control the width of the cutter by 5㎛ unit
- Since the width of the cutter is adjustable up to ±0.06 inch, single cutter can cover various cutting width
- Specially designed clamping system of the locator provides excellent rigidity by using elastic deformation of the locator
- Tangential type clamping system of insert provides enough strength can withstand large width cutting operations
- 3-dimensional chip breaker of insert provides smooth cutting with low cutting load at medium to finishing range

Operating manual



• How to assemble the adjusting side cutter

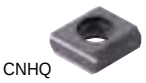
1. Clamp ①wedge slightly on ⑦locator-wedge pocket by using ②wedge screw
2. Put ③locator on ⑦locator-wedge pocket along with the ⑧key-way
3. Tighten the ⑥taper screw little bit to set proper position of locator
4. Tighten the ②wedge screw tightly by using 70~80N.m torque
5. After, put the ④insert on insert pocket of ③locator, clamp it with ⑤insert screw by using 40~50N.m torque

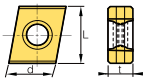
• How to adjust Run-out & cutting width

1. Settle the adjusting side cutter after cleaning to the jig for measurement
2. Un-screw the ②Wedge screw first, then tighten ①wedge slightly again by using 8N.m torque
3. Adjusting the height of cutting-edge by using a dial gauge to set the width of the cutter
4. Tighten the ②wedge screw tightly by using 70~80N.m torque
5. To finish the setting, tighten the ⑥taper screw for strong clamp

Tangential Type

Cutting width per insert & type of cutter





(inch)

Designation		Coated		Cutting width for half side cutter (ap)	Cutting width for full side cutter (ap)	L	d	t
		NCM535	PC6510					
CNHQ1005	- C0.5			0.354	0.551~0.709	0.394	0.394	0.213
	- R0.5							
	- C1.0			0.335	0.551~0.669			
	- R1.0							
CNHQ1305	- C0.5			0.472	0.709~0.827/0.827~0.945	0.500	0.394	0.213
	- R0.5							
	- C1.0			0.453	0.709~0.827 / 0.827~0.910			
	- R1.0							
	- C1.5			0.433	0.709~0.827 / 0.827~0.866			
	- R1.5							
CNHQ1606	- C0.5			0.591	0.945~1.063 / 1.063~1.181	0.630	0.472	0.252
	- R0.5							
	- C1.0			0.571	0.945~1.063 / 1.063~1.142			
	- R1.0							
	- C1.5			0.561	0.945~1.063 / 1.063~1.102			
	- R1.5							
	- C2.0			0.531	0.945~1.063			
	- R2.0							

Applicable cutter **E369, E370**

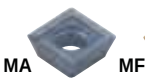
●: Stock item

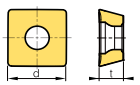
Recommended cutting condition

ISO	Grade	vc (sfm)	fz (ipt)
P	NCM535	490~990	0.012~0.004
	PC3700	330~990	
M	PC5300	330~590	0.012~0.004
	NCM335	400~660	
K	PC6510	490~990	0.012~0.004

Radial Type

Cutting width per insert & type of cutter





(inch)

Designation		Coated												Uncoated		Cutting width for half side cutter (ap)	Cutting width for full side cutter (ap)	d	t
		NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	H05			
SDXT	09M405R-MA														●	●	0.315	0.472~0.551 0.551~0.630	0.375	0.157
	09M405L-MA																			
	09M405R-MF		●							●	●		●	●						
	09M405L-MF																			
	09M405R-MM		●							●	●		●	●						
	09M405L-MM									●										
	130508R-MA														●	●	0.413	0.630~0.709 0.709~0.787 0.787~0.866 0.866~0.945	0.531	0.219
	130508L-MA																			
	130508R-MF		●							●	●		●	●						
	130508L-MF																			
	130508R-MM		●							●	●		●	●						
	130508L-MM																			

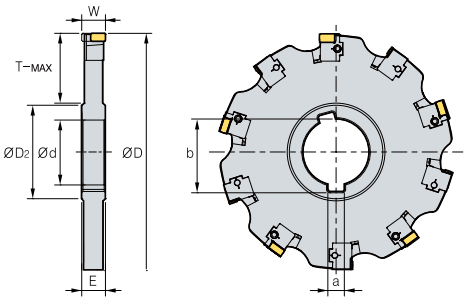
Applicable cutter **E371, E372**

●: Stock item

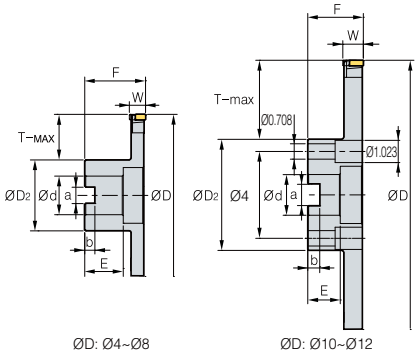
Recommended cutting condition

ISO	Grades	vc (sfm)	fz (ipt)
P	NCM325	623~1017	0.003~0.012
	NCM335	591~951	0.003~0.010
	PC3700	525~886	0.004~0.010
M	PC9530	295~492	0.004~0.010
	PC5300		
K	PC8110	459~755	0.004~0.010
	PC6510		

Tangential Type (full side cutter)



• TAFCPA



ØD: Ø4~Ø8 ØD: Ø10~Ø12

• TAFCBA

(inch)

Designation		Ød	E	ØD2	a	b	T-MAX
TAFCPA	400-055-071	1 1/4	0.551	1.890	5/16	1.386	0.976
	500-055-071	1 1/2	0.551	2.205	3/8	1.665	1.299
	600-055-071	1 1/2	0.551	2.205	3/8	1.665	1.819
	800-055-071	2	0.551	2.835	1/2	2.197	2.465
	1000-055-071	2	0.551	2.835	1/2	2.197	3.465
	1200-055-071	2	0.551	2.835	1/2	2.197	4.445
	400-071-082	1 1/4	0.709	1.890	5/16	1.386	0.976
	500-071-082	1 1/2	0.709	2.205	3/8	1.665	1.299
	600-071-082	1 1/2	0.709	2.205	3/8	1.665	1.819
	800-071-082	2	0.709	2.835	1/2	2.197	2.465
	1000-071-082	2	0.709	2.835	1/2	2.197	3.465
	1200-071-082	2	0.709	2.835	1/2	2.197	4.445
	400-082-094	1 1/4	0.827	1.890	5/16	1.386	0.976
	500-082-094	1 1/2	0.827	2.205	3/8	1.665	1.299
	600-082-094	1 1/2	0.827	2.205	3/8	1.665	1.819
	800-082-094	2	0.827	2.835	1/2	2.197	2.465
	1000-082-094	2	0.827	2.835	1/2	2.197	3.465
	1200-082-094	2	0.827	2.835	1/2	2.197	4.445
	500-094-106	1 1/2	0.945	2.205	3/8	1.665	1.299
	600-094-106	1 1/2	0.945	2.205	3/8	1.665	1.819
	800-094-106	2	0.945	2.835	1/2	2.197	2.465
	1000-094-106	2	0.945	2.835	1/2	2.197	3.465
	1200-094-106	2	0.945	2.835	1/2	2.197	4.445
	500-106-118	1 1/2	1.063	2.205	3/8	1.665	1.299
	600-106-118	1 1/2	1.063	2.205	3/8	1.665	1.819
	800-106-118	2	1.063	2.835	1/2	2.197	2.465
	1000-106-118	2	1.063	2.835	1/2	2.197	3.465
	1200-106-118	2	1.063	2.835	1/2	2.197	4.445

Designation		Ød	F	ØD2	a	b	E	T-MAX
TAFCBA	400-055-071R/L	1 1/4	1.969	2.126	1/2	0.315	1.260	0.858
	500-055-071R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-055-071R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-055-071R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-055-071R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-055-071R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	400-071-082R/L	1 1/4	1.969	2.126	1/2	0.315	1.260	0.858
	500-071-082R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-071-082R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-071-082R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-071-082R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-071-082R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	400-082-094R/L	1 1/4	1.969	2.126	1/2	0.315	1.260	0.858
	500-082-094R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-082-094R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-082-094R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-082-094R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-082-094R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-094-106R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-094-106R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-094-106R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-094-106R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-094-106R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-106-118R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-106-118R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-106-118R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-106-118R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-106-118R/L	2.5	2.559	5.118	1	0.551	1.496	3.343

Dimensions		
ØD	W	No. of tooth
4	0.551-0.708	6
5	0.551-0.708	8
6	0.551-0.708	10
8	0.551-0.708	12
10	0.551-0.708	16
12	0.551-0.708	20
4	0.708-0.826	6
5	0.708-0.826	8
6	0.708-0.826	10
8	0.708-0.826	12
10	0.708-0.826	16
12	0.708-0.826	20
4	0.826-0.944	6
5	0.826-0.944	8
6	0.826-0.944	10
8	0.826-0.944	12
10	0.826-0.944	16
12	0.826-0.944	20
5	0.944-1.062	8
6	0.944-1.062	10
8	0.944-1.062	12
10	0.944-1.062	16
12	0.944-1.062	20
5	1.062-1.181	8
6	1.062-1.181	10
8	1.062-1.181	12
10	1.062-1.181	16
12	1.062-1.181	20

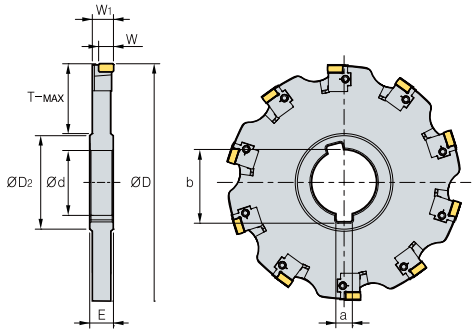
Available inserts and Recommended cutting condition **E368** • The ap (Maximum width of cutter) size written above is the number when using insert having corner size C0.02 or R0.02

Parts

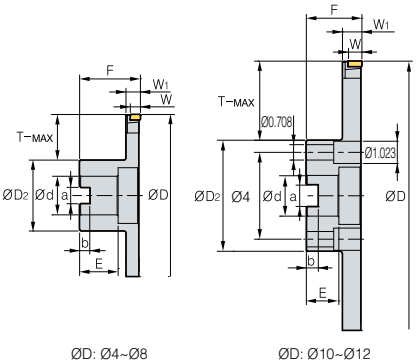
Specification Edge width (TAFCP(B)A)	Insert	Locator	Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge Wrench	Locator Wrench
□□□055-071R/L	CNHQ1005-□□□	LSA-CH10R/L	WSA10N	FTKA0410	DHA0617	SHGA0411	TW15S	HW30	-
□□□071-082R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	SHGA0411	TW15S	HW40	HW30L
□□□082-094R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	SHGA0411	TW15S	HW40	HW30L
□□□094-1067R/L	CNHQ1606-□□□	LSA-CH16R/L	WSA13N	FTGA0513-P	DHA0821F	SHGA0411	TW20S	HW40	HW30L
□□□106-118R/L	CNHQ1606-□□□	LSA-CH16R/L	WSA13N	FTGA0513-P	DHA0821F	SHGA0411	TW20S	HW40	HW30L

• Note) The Wedge screw for 1001821, 1002124 cutter is DHA0818F

Tangential Type (half side cutter)



• TAHCPA



ØD: Ø4~Ø8 ØD: Ø10~Ø12

• TAHCBA

(inch)

Designation		Ød	E	ØD2	a	b	T-MAX
TAHCPA	400-055R/L	1 1/4	0.551	1.890	5/16	1.386	0.976
	500-055R/L	1 1/2	0.551	2.205	3/8	1.665	1.299
	600-055R/L	1 1/2	0.551	2.205	3/8	1.665	1.819
	800-055R/L	2	0.551	2.835	1/2	2.197	2.465
	1000-055R/L	2	0.551	2.835	1/2	2.197	3.465
	1200-055R/L	2	0.551	2.835	1/2	2.197	4.445
	400-071R/L	1 1/4	0.709	1.890	5/16	1.386	0.976
	500-071R/L	1 1/2	0.709	2.205	3/8	1.665	1.299
	600-071R/L	1 1/2	0.709	2.205	3/8	1.665	1.819
	800-071R/L	2	0.709	2.835	1/2	2.197	2.465
	1000-071R/L	2	0.709	2.835	1/2	2.197	3.465
	1200-071R/L	2	0.709	2.835	1/2	2.197	4.445
	400-082R/L	1 1/4	0.827	1.890	5/16	1.386	0.976
	500-082R/L	1 1/2	0.827	2.205	3/8	1.665	1.299
	600-082R/L	1 1/2	0.827	2.205	3/8	1.665	1.819
	800-082R/L	2	0.827	2.835	1/2	2.197	2.465
	1000-082R/L	2	0.827	2.835	1/2	2.197	3.465
	1200-082R/L	2	0.827	2.835	1/2	2.197	4.445
	500-094R/L	1 1/2	0.945	2.205	3/8	1.665	1.299
	600-094R/L	1 1/2	0.945	2.205	3/8	1.665	1.819
	800-094R/L	2	0.945	2.835	1/2	2.197	2.465
	1000-094R/L	2	0.945	2.835	1/2	2.197	3.465
	1200-094R/L	2	0.945	2.835	1/2	2.197	4.445
	500-106R/L	1 1/2	1.063	2.205	3/8	1.665	1.299
	600-106R/L	1 1/2	1.063	2.205	3/8	1.665	1.819
	800-106R/L	2	1.063	2.835	1/2	2.197	2.465
	1000-106R/L	2	1.063	2.835	1/2	2.197	3.465
	1200-106R/L	2	1.063	2.835	1/2	2.197	4.445

Designation		Ød	F	ØD2	a	b	E	T-MAX
TAHCBA	400-055R/L	1 1/4	1.969	2.126	1/2	0.315	1.26	0.858
	500-055R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-055R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-055R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-055R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-055R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	400-071R/L	1 1/4	1.969	2.126	1/2	0.315	1.26	0.858
	500-071R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-071R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-071R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-071R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-071R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	400-082R/L	1 1/4	1.969	2.126	1/2	0.315	1.26	0.858
	500-082R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-082R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-082R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-082R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-082R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-094R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-094R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-094R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-094R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-094R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-106R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-106R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-106R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-106R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-106R/L	2.5	2.559	5.118	1	0.551	1.496	3.343

Dimensions			
ØD	W	W1	No. of tooth
4	0.354	0.522	6
5	0.354	0.522	8
6	0.354	0.522	10
8	0.354	0.522	12
10	0.354	0.522	16
12	0.354	0.522	20
4	0.472	0.659	6
5	0.472	0.659	8
6	0.472	0.659	10
8	0.472	0.659	12
10	0.472	0.659	16
12	0.472	0.659	20
4	0.472	0.778	6
5	0.472	0.778	8
6	0.472	0.778	10
8	0.472	0.778	12
10	0.472	0.778	16
12	0.472	0.778	20
5	0.591	0.896	8
6	0.591	0.896	10
8	0.591	0.896	12
10	0.591	0.896	16
12	0.591	0.896	20
5	0.591	1.014	8
6	0.591	1.014	10
8	0.591	1.014	12
10	0.591	1.014	16
12	0.591	1.014	20

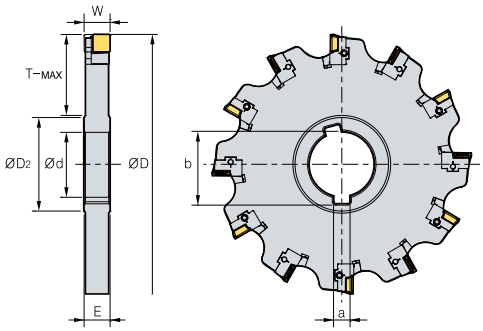
Available inserts and Recommended cutting condition **E368** • The ap (Maximum width of cutter) size written above is the number when using insert having corner size C0.02 or R0.02

Parts

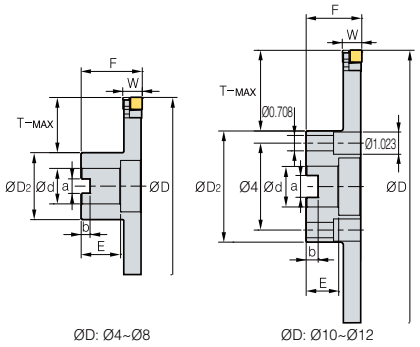
Specification Edge width (TAHCP(B)A)	Insert	Locator	Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge Wrench	Locator Wrench
□□□055R/L	CNHQ1005-□□□	LSA-CH10R/L	WSA10N	FTKA0410	DHA0617	SHGA0411	TW15S	HW30	-
□□□071R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	SHGA0411	TW15S	HW40	HW30L
□□□082R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	SHGA0411	TW15S	HW40	HW30L
□□□094R/L	CNHQ1606-□□□	LSA-CH16R/L	WSA13N	FTGA0513-P	DHA0821F	SHGA0411	TW20S	HW40	HW30L
□□□106R/L	CNHQ1606-□□□	LSA-CH16R/L	WSA13N	FTGA0513-P	DHA0821F	SHGA0411	TW20S	HW40	HW30L

• Note) The Wedge screw for 10018, 10021 cutter is DHA0818F

Radial Type (full side cutter)



• RAFCPA



• RAFCBA

(inch)

Designation		Ød	E	ØD2	a	b	T-MAX
RAFCPA	400-047-055	1 1/4	0.472	1.890	5/16	1.386	0.976
	500-047-055	1 1/2	0.472	2.205	3/8	1.665	1.299
	600-047-055	1 1/2	0.472	2.205	3/8	1.665	1.819
	800-047-055	2	0.472	2.835	1/2	2.197	2.465
	1000-047-055	2	0.472	2.835	1/2	2.197	3.465
	1200-047-055	2	0.472	2.835	1/2	2.197	4.445
	400-055-063	1 1/4	0.551	1.890	5/16	1.386	0.976
	500-055-063	1 1/2	0.551	2.205	3/8	1.665	1.299
	600-055-063	1 1/2	0.551	2.205	3/8	1.665	1.819
	800-055-063	2	0.551	2.835	1/2	2.197	2.465
	1000-055-063	2	0.551	2.835	1/2	2.197	3.465
	1200-055-063	2	0.551	2.835	1/2	2.197	4.445
	500-063-071	1 1/2	0.629	2.205	3/8	1.665	1.299
	600-063-071	1 1/2	0.629	2.205	3/8	1.665	1.819
	800-063-071	2	0.629	2.835	1/2	2.197	2.465
	1000-063-071	2	0.629	2.835	1/2	2.197	3.465
	1200-063-071	2	0.629	2.835	1/2	2.197	4.445
	500-071-079	1 1/2	0.708	2.205	3/8	1.665	1.299
	600-071-079	1 1/2	0.708	2.205	3/8	1.665	1.819
	800-071-079	2	0.708	2.835	1/2	2.197	2.465
	1000-071-079	2	0.708	2.835	1/2	2.197	3.465
	1200-071-079	2	0.708	2.835	1/2	2.197	4.445
	500-079-086	1 1/2	0.787	2.205	3/8	1.665	1.299
	600-079-086	1 1/2	0.787	2.205	3/8	1.665	1.819
	800-079-086	2	0.787	2.835	1/2	2.197	2.465
	1000-079-086	2	0.787	2.835	1/2	2.197	3.465
	1200-079-086	2	0.787	2.835	1/2	2.197	4.445
	500-086-094	1 1/2	0.866	2.205	3/8	1.665	1.299
	600-089-094	1 1/2	0.866	2.205	3/8	1.665	1.819
	800-089-094	2	0.866	2.835	1/2	2.197	2.465
	1000-089-094	2	0.866	2.835	1/2	2.197	3.465
	1200-089-094	2	0.866	2.835	1/2	2.197	4.445

Designation		Ød	F	ØD2	a	b	E	T-MAX
RAFCBA	400-047-055R/L	1 1/4	1.969	2.126	1/2	0.315	1.260	0.858
	500-047-055R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-047-055R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-047-055R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-047-055R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-047-055R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	400-055-063R/L	1 1/4	1.969	2.126	1/2	0.315	1.260	0.858
	500-055-063R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-055-063R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-055-063R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-055-063R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-055-063R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-063-071R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-063-071R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-063-071R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-063-071R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-063-071R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-071-079R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-071-079R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-071-079R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-071-079R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-071-079R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-079-086R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-079-086R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-079-086R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-079-086R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-079-086R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-086-094R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-089-094R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-089-094R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-089-094R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-089-094R/L	2.5	2.559	5.118	1	0.551	1.496	3.343

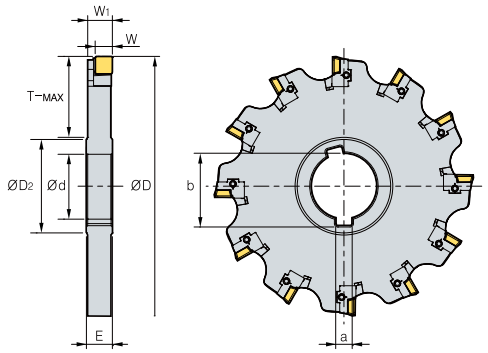
Dimensions		
ØD	W	No. of tooth
4	0.472-0.551	6
5	0.472-0.551	8
6	0.472-0.551	10
8	0.472-0.551	12
10	0.472-0.551	16
12	0.472-0.551	20
4	0.551-0.629	6
5	0.551-0.629	8
6	0.551-0.629	10
8	0.551-0.629	12
10	0.551-0.629	16
12	0.551-0.629	20
5	0.629-0.708	8
6	0.629-0.708	10
8	0.629-0.708	12
10	0.629-0.708	16
12	0.629-0.708	20
5	0.708-0.787	8
6	0.708-0.787	10
8	0.708-0.787	12
10	0.708-0.787	16
12	0.708-0.787	20
5	0.787-0.866	8
6	0.787-0.866	10
8	0.787-0.866	12
10	0.787-0.866	16
12	0.787-0.866	20
5	0.866-0.944	8
6	0.866-0.944	10
8	0.866-0.944	12
10	0.866-0.944	16
12	0.866-0.944	20

Available inserts and Recommended cutting condition **E368** • The ap (Maximum width of cutter) size written above is the number when using insert having corner size C0.02 or R0.02

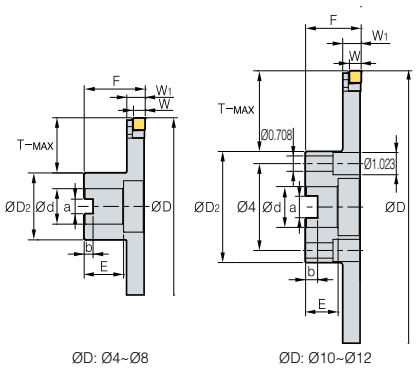
Parts

Specification Edge width (RAFCP(B)A)	Insert	Locator	Wedge (WSD09N / WSA10N)	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge, locator wrench
□□□047-055R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□055-063R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□063-071R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□071-079R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□079-086R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□086-094R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30

Radial Type (half side cutter)



• RAHCPA



ØD: Ø4~Ø8 ØD: Ø10~Ø12

• RAHCBA

(inch)

Designation		Ød	E	ØD2	a	b	T-MAX
RAHCPA	400-047R/L	1 1/4	0.472	1.890	5/16	1.386	0.976
	500-047R/L	1 1/2	0.472	2.205	3/8	1.665	1.299
	600-047R/L	1 1/2	0.472	2.205	3/8	1.665	1.819
	800-047R/L	2	0.472	2.835	1/2	2.197	2.465
	1000-047R/L	2	0.472	2.835	1/2	2.197	3.465
	1200-047R/L	2	0.472	2.835	1/2	2.197	4.445
	400-055R/L	1 1/4	0.551	1.890	5/16	1.386	0.976
	500-055R/L	1 1/2	0.551	2.205	3/8	1.665	1.299
	600-055R/L	1 1/2	0.551	2.205	3/8	1.665	1.819
	800-055R/L	2	0.551	2.835	1/2	2.197	2.465
	1000-055R/L	2	0.551	2.835	1/2	2.197	3.465
	1200-055R/L	2	0.551	2.835	1/2	2.197	4.445
	500-063R/L	1 1/2	0.629	2.205	3/8	1.665	1.299
	600-063R/L	1 1/2	0.629	2.205	3/8	1.665	1.819
	800-063R/L	2	0.629	2.835	1/2	2.197	2.465
	1000-063R/L	2	0.629	2.835	1/2	2.197	3.465
	1200-063R/L	2	0.629	2.835	1/2	2.197	4.445
	500-071R/L	1 1/2	0.708	2.205	3/8	1.665	1.299
	600-071R/L	1 1/2	0.708	2.205	3/8	1.665	1.819
	800-071R/L	2	0.708	2.835	1/2	2.197	2.465
	1000-071R/L	2	0.708	2.835	1/2	2.197	3.465
	1200-071R/L	2	0.708	2.835	1/2	2.197	4.445
	500-079R/L	1 1/2	0.787	2.205	3/8	1.665	1.299
	600-079R/L	1 1/2	0.787	2.205	3/8	1.665	1.819
	800-079R/L	2	0.787	2.835	1/2	2.197	2.465
	1000-079R/L	2	0.787	2.835	1/2	2.197	3.465
	1200-079R/L	2	0.787	2.835	1/2	2.197	4.445
	500-086R/L	1 1/2	0.866	2.205	3/8	1.665	1.299
	600-086R/L	1 1/2	0.866	2.205	3/8	1.665	1.819
	800-086R/L	2	0.866	2.835	1/2	2.197	2.465
	1000-086R/L	2	0.866	2.835	1/2	2.197	3.465
	1200-086R/L	2	0.866	2.835	1/2	2.197	4.445

Designation		Ød	F	ØD2	a	b	E	T-MAX
RAHCBA	400-047R/L	1 1/4	1.969	2.126	1/2	0.315	1.260	0.858
	500-047R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-047R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-047R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-047R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-047R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	400-055R/L	1 1/4	1.969	2.126	1/2	0.315	1.260	0.858
	500-055R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-055R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-055R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-055R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-055R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-063R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-063R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-063R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-063R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-063R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-071R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-071R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-071R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-071R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-071R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-079R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-079R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-079R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-079R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-079R/L	2.5	2.559	5.118	1	0.551	1.496	3.343
	500-086R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.024
	600-086R/L	1 1/2	2.362	2.756	5/8	0.394	1.496	1.543
	800-086R/L	2	2.559	3.543	3/4	0.433	1.496	2.150
	1000-086R/L	2.5	2.559	5.118	1	0.551	1.496	2.362
	1200-086R/L	2.5	2.559	5.118	1	0.551	1.496	3.343

Dimensions			
ØD	W	W1	No. of tooth
4	0.315	0.437	6
5	0.315	0.437	8
6	0.315	0.437	10
8	0.315	0.437	12
10	0.315	0.437	16
12	0.315	0.437	20
4	0.315	0.516	6
5	0.315	0.516	8
6	0.315	0.516	10
8	0.315	0.516	12
10	0.315	0.516	16
12	0.315	0.516	20
5	0.413	0.591	8
6	0.413	0.591	10
8	0.413	0.591	12
10	0.413	0.591	16
12	0.413	0.591	20
5	0.413	0.669	8
6	0.413	0.669	10
8	0.413	0.669	12
10	0.413	0.669	16
12	0.413	0.669	20
5	0.413	0.748	8
6	0.413	0.748	10
8	0.413	0.748	12
10	0.413	0.748	16
12	0.413	0.748	20
5	0.413	0.827	8
6	0.413	0.827	10
8	0.413	0.827	12
10	0.413	0.827	16
12	0.413	0.827	20

• The ap (Maximum width of cutter) size written above is the number when using insert having corner size R0.02. The ap is subject to change as per insert corner size
• The ap (Maximum width of cutter) size written above is the number when using SDXT09M405R-MM. The ap is subject to change as per insert corner size

Available inserts and Recommended cutting condition **E368**

Parts

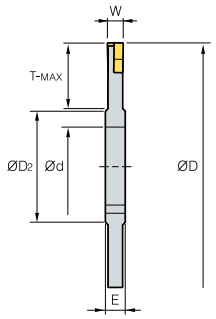
Specification Edge width (RAHCP(B)A)	Insert	Locator	Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge, locator wrench
			WSD09N / WSA10N					
□□□047R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□055R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□063R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□071R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□079R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□086R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30

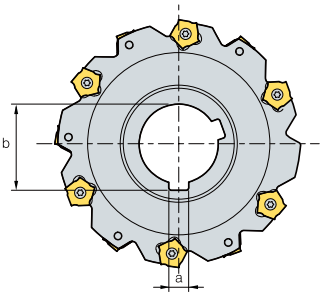
SPPA





• AR: -2°
• RR: -28°





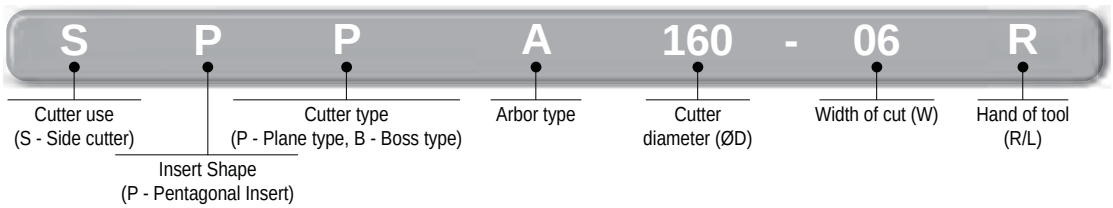
(inch)

Designation			ØD	W	T-MAX	Ød	a	b	E	ØD2	Insert	Screw	Wrench
SPPA	300-187	8	3.0	0.187	0.686	1	0.250	1.104	0.312	1.575	PNEJ1223N	PTMA0403F	TW15S
	300-218	8	3.0	0.218	0.702	1	0.250	1.104	0.312	1.575	PNEJ1230N	PTMA0404F	TW15S
	300-250	8	3.0	0.250	0.718	1	0.250	1.104	0.312	1.575	PNEJ1235N	PTMA0405F	TW15S
	400-187	10	4.0	0.187	0.938	1 1/4	0.313	1.385	0.312	1.850	PNEJ1223N	PTMA0403F	TW15S
	400-218	10	4.0	0.218	0.953	1 1/4	0.313	1.385	0.312	1.850	PNEJ1230N	PTMA0404F	TW15S
	400-250	10	4.0	0.250	0.969	1 1/4	0.313	1.385	0.312	1.850	PNEJ1235N	PTMA0405F	TW15S
	400-312	10	4.0	0.312	1.000	1 1/4	0.313	1.385	0.312	1.850	PNEJ1245N	PTKA0407F	TW15S
	400-375	10	4.0	0.375	0.938	1 1/4	0.313	1.385	0.500	1.850	PNEJ1250N	PTKA0408F	TW15S
	400-437	10	4.0	0.437	0.969	1 1/4	0.313	1.385	0.500	1.850	PNEJ1255N	PTKA0409F	TW15S
	500-187	12	5.0	0.187	1.188	1 1/2	0.375	1.666	0.312	2.205	PNEJ1223N	PTMA0403F	TW15S
	500-218	12	5.0	0.218	1.203	1 1/2	0.375	1.666	0.312	2.205	PNEJ1230N	PTMA0404F	TW15S
	500-250	12	5.0	0.250	1.219	1 1/2	0.375	1.666	0.312	2.205	PNEJ1235N	PTMA0405F	TW15S
	500-312	12	5.0	0.312	1.250	1 1/2	0.375	1.666	0.312	2.205	PNEJ1245N	PTKA0407F	TW15S
	500-375	12	5.0	0.375	1.188	1 1/2	0.375	1.666	0.500	2.205	PNEJ1250N	PTKA0408F	TW15S
	500-437	12	5.0	0.437	1.219	1 1/2	0.375	1.666	0.500	2.205	PNEJ1255N	PTKA0409F	TW15S
	600-187	16	6.0	0.187	1.688	1 1/2	0.375	1.666	0.312	2.598	PNEJ1223N	PTMA0403F	TW15S
	600-218	16	6.0	0.218	1.703	1 1/2	0.375	1.666	0.312	2.598	PNEJ1230N	PTMA0404F	TW15S
	600-250	16	6.0	0.250	1.719	1 1/2	0.375	1.666	0.312	2.598	PNEJ1235N	PTMA0405F	TW15S
	600-312	16	6.0	0.312	1.750	1 1/2	0.375	1.666	0.312	2.598	PNEJ1245N	PTKA0407F	TW15S
	600-375	16	6.0	0.375	1.688	1 1/2	0.375	1.666	0.500	2.598	PNEJ1250N	PTKA0408F	TW15S
	600-437	16	6.0	0.437	1.719	1 1/2	0.375	1.666	0.500	2.598	PNEJ1255N	PTKA0409F	TW15S
	600-500	16	6.0	0.500	1.750	1 1/2	0.375	1.666	0.500	2.598	PNEJ1265N	PTKA0411F	TW15S
	600-562	16	6.0	0.562	1.719	1 1/2	0.375	1.666	0.625	2.598	PNEJ1275N	PTKA0413F	TW15S
	800-250	18	8.0	0.250	2.385	2	0.500	2.198	0.312	2.756	PNEJ1235N	PTMA0405F	TW15S
	800-312	18	8.0	0.312	2.416	2	0.500	2.198	0.312	2.756	PNEJ1245N	PTKA0407F	TW15S
	800-375	18	8.0	0.375	2.353	2	0.500	2.198	0.500	2.756	PNEJ1250N	PTKA0408F	TW15S
	800-437	18	8.0	0.437	2.384	2	0.500	2.198	0.500	2.756	PNEJ1255N	PTKA0409F	TW15S
	800-500	18	8.0	0.500	2.416	2	0.500	2.198	0.500	2.756	PNEJ1265N	PTKA0411F	TW15S
	800-562	18	8.0	0.562	2.384	2	0.500	2.198	0.625	2.756	PNEJ1275N	PTKA0413F	TW15S

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	623~1017 525~886 197~328	0.010~0.004 0.012~0.004 0.010~0.004	**NCM325** **PC3700** **ST30A**
M	295~492 262~492	0.010~0.004 0.010~0.004	**PC9530** **ST30A**
K	459~755 164~295	0.014~0.004 0.016~0.004	**PC6510** **G10**

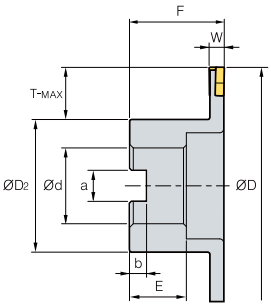
Code system

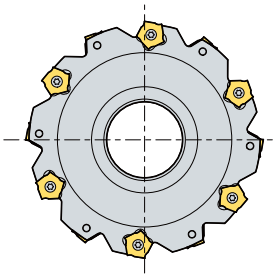


Available inserts **E16**

SPBA









• AR: -2°
• RR: 28°

(inch)

Designation			ØD	W	T-MAX	ØD2	Ød	a	b	F	E	Insert	Screw	Wrench
SPBA	300-187R/L	8	3.0	0.187	0.713	1.575	1	0.49	0.276	1.969	0.866	PNEJ1223N	PTMA0403F	TW15S
	300-218R/L	8	3.0	0.218	0.713	1.575	1	0.49	0.276	1.969	0.866	PNEJ1230N	PTMA0404F	TW15S
	300-250R/L	8	3.0	0.250	0.713	1.575	1	0.49	0.276	1.969	0.866	PNEJ1235N	PTMA0405F	TW15S
	400-187R/L	10	4.0	0.187	0.937	2.126	1 1/4	0.57	0.315	1.969	0.866	PNEJ1223N	PTMA0403F	TW15S
	400-218R/L	10	4.0	0.218	0.937	2.126	1 1/4	0.57	0.315	1.969	0.866	PNEJ1230N	PTMA0404F	TW15S
	400-250R/L	10	4.0	0.250	0.937	2.126	1 1/4	0.57	0.315	1.969	0.866	PNEJ1235N	PTMA0405F	TW15S
	400-312R/L	10	4.0	0.312	0.937	2.126	1 1/4	0.57	0.315	1.969	0.866	PNEJ1245N	PTMA0407F	TW15S
	400-437R/L	10	4.0	0.437	0.937	2.126	1 1/4	0.57	0.315	1.969	0.866	PNEJ1255N	PTMA0409F	TW15S
	500-250R/L	12	5.0	0.250	1.122	2.756	1 1/2	0.65	0.315	2.362	1.181	PNEJ1235N	PTMA0405F	TW15S
	500-312R/L	12	5.0	0.312	1.122	2.756	1 1/2	0.65	0.354	2.362	1.181	PNEJ1245N	PTKA0407F	TW15S
	500-375R/L	12	5.0	0.375	1.122	2.756	1 1/2	0.65	0.354	2.362	1.181	PNEJ1250N	PTKA0408F	TW15S
	600-187R/L	16	6.0	0.187	1.622	2.756	1 1/2	0.65	0.354	2.362	1.181	PNEJ1223N	PTMA0403F	TW15S
	600-250R/L	16	6.0	0.250	1.622	2.756	1 1/2	0.65	0.354	2.362	1.181	PNEJ1235N	PTMA0405F	TW15S
	600-375R/L	16	6.0	0.375	1.622	2.756	1 1/2	0.65	0.354	2.362	1.181	PNEJ1250N	PTKA0408F	TW15S
	600-437R/L	16	6.0	0.437	1.622	2.756	1 1/2	0.65	0.354	2.362	1.181	PNEJ1255N	PTKA0409F	TW15S
	600-500R/L	16	6.0	0.500	1.622	2.756	1 1/2	0.65	0.354	2.362	1.181	PNEJ1265N	PTKA0411F	TW15S
	600-562R/L	16	6.0	0.562	1.622	2.756	1 1/2	0.65	0.354	2.362	1.181	PNEJ1275N	PTKA0413F	TW15S
	800-250R/L	18	8.0	0.250	2.228	3.543	2	0.65	0.354	2.559	1.181	PNEJ1235N	PTMA0405F	TW15S
	800-437R/L	18	8.0	0.437	2.228	3.543	2	0.65	0.354	2.559	1.181	PNEJ1255N	PTKA0409F	TW15S
	800-500R/L	18	8.0	0.500	2.228	3.543	2	0.65	0.354	2.559	1.181	PNEJ1265N	PTKA0411F	TW15S

Notice (When mounting inserts)

- Insert chip breaker should face chip pocket of the cutter
- Fasten screw after insert contacts securely on its seat
- If there is a gap between insert and its seat after mounting it may cause tool troubles

Available inserts **E16**

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	623~1017 525~886 197~328	0.010~0.004 0.012~0.004 0.010~0.004	**NCM325** **PC3700** **ST30A**
M	295~492 262~492	0.010~0.004 0.010~0.004	**PC9530** **ST30A**
K	459~755	0.014~0.004	**PC6510** **G10**

SPSA



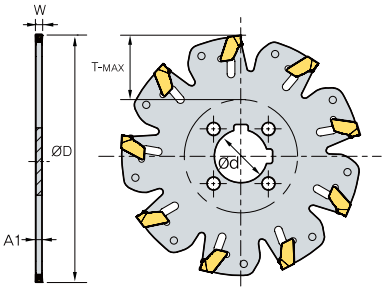


Fig. 1

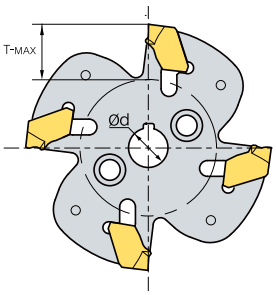


Fig. 2

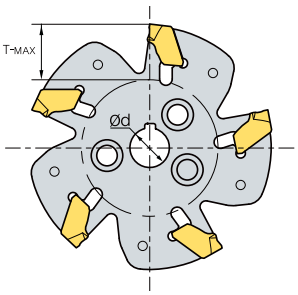


Fig. 3



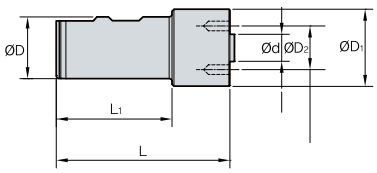


(inch)

Designation		⊙	ØD	W	T-MAX	Ød	A1	Fig.	Insert	Adaptor	
										WS	DF
SPSA	200-08704-0500R	4	2	0.087	0.449	0.5	0.071	2	SPFN200-N	WS2528-M4	-
	250-08705-0500R	5	2.5	0.087	0.62	0.5	0.071	3		WS2532-M5	-
	300-08707-0875R/F	7	3	0.087	0.713 (0.594)	0.875	0.071	1		WS3240-M5	DF22-46
	400-08709-0875R/F	9	4	0.087	1.213 (1.094)	0.875	0.071	1		WS3240-M5	DF22-26
	500-08711-1250F	11	5	0.087	1.417	1.25	0.071	1		-	DF32-55
	600-08714-1250F	14	6	0.087	1.917	1.25	0.071	3		-	DF32-55
	250-11805-0500R	5	2.5	0.118	0.62	0.5	0.1	3	SPFN300-N	WS2532-M5	-
	300-11807-0875R/F	7	3	0.118	0.713 (0.594)	0.875	0.1	1		WS3240-M5	-
	400-11809-0875R/F	9	4	0.118	1.213 (1.094)	0.875	0.1	1		WS3240-M5	DF22-46
	500-11811-1250F	11	5	0.118	1.417	1.25	0.1	1		-	DF22-26
	600-11814-1250F	14	6	0.118	1.917	1.25	0.1	1		-	DF32-55
	800-11818-1500F	18	8	0.118	2.425	1.5	0.1	1		-	DF32-55
	300-15706-0875R/F	6	3	0.157	0.713 (0.594)	0.875	0.134	1	SPFN400-N	WS3240-M5	-
	400-15708-0875R/F	8	4	0.157	1.213 (1.094)	0.875	0.134	1		WS3240-M5	DF22-46
	500-15710-1250F	10	5	0.157	1.417	1.25	0.134	1		-	DF22-26
	600-15713-1250F	13	6	0.157	1.917	1.25	0.134	1		-	DF32-55
	800-15717-1500F	17	8	0.157	2.425	1.5	0.134	1		-	DF32-55

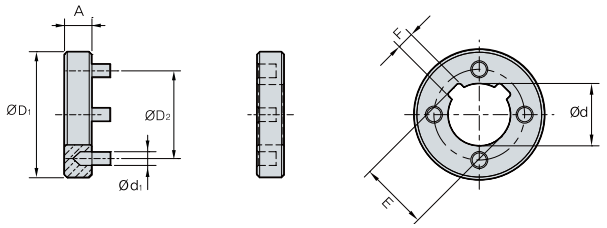
• Applicable wrench : SW17P (Separately sold) • T-max : ( )=> In use of DF adaptor

WS( )-( ) (Weldon Shank)



Designation	L	L1	D	D1	D2	d	Screw
WSA2528-M4	4.431	3.346	0.984	1.102	0.709	0.500	PTKA0408
WSA2532-M5	4.431	3.346	0.984	1.260	0.866	0.500	PTKA0515
WSA3240-M5	4.724	3.543	1.260	1.575	1.260	0.875	PTKA0515

DF( )-( ) (Drive Flange set)



Designation	D1	D2	d	d1	A	E	F
DFA22-46	1.811	1.260	0.875	0.197	0.394	0.948	0.125
DFA32-55	2.165	1.772	1.250	0.236	0.394	1.385	0.313
DFA40-80	3.150	2.480	1.500	0.433	0.472	1.666	0.375
DFA50-110	4.331	3.150	2.000	0.551	0.551	2.198	0.500

Recommended cutting condition

Workpiece	Cutting condition		Grade
	vc (sfm)	fz (ipt)	
P	525~886	0.010~0.005	PC3700
M	295~492	0.009~0.004	PC5300
K	361~591	0.010~0.004	PC6510

Available inserts E26

For slotting workpieces with corner radii of varying sizes and widths

Wind Mill

- Optimal machining for slotting applications
- A unique recess design on the minor cutting-edge reduces cutting load and improves tool life
- Special clamping system prevents incorrect clamping and fracture

Item description

• Insert



• Cutter



WFSPA - Plane type



WFSBA - Boss type

Code system

• Insert

S	N	H	T	12	045	08	R/L	-	WX
Insert shape	Relief angle of major cutting edge	tolerance	Shape of cross section	Ød	Height of cutting edge	Nose R	R/L		Chip breaker

• Cutter

W	FS	P(B)	A	300	-	156	R
Wind Mill	Insert arrangement	Cutter type	inch type	ØD		Width of cut(W)	BOSS type(R/L)

Insert arrangement
FS : Full side
HS : Half side

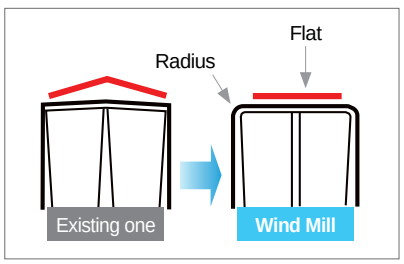
Cutter type
P : Plane type
B : Boss type

Features

• Ideal geometry for superior surface roughness and extended tool life



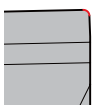
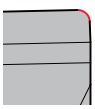
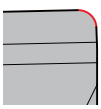
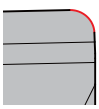
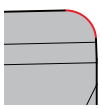
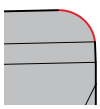
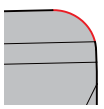
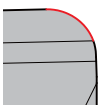
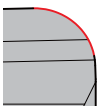
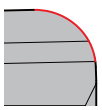
• Perpendicular slot



• Protruded part on tip seat prevents wrong clamping and fracture



• Workpieces with corner radii of varying size and width (R0.008~R0.079)

R0.008	R0.016	R0.023	R0.031	R0.039	R0.047	R0.055	R0.063	R0.07	R0.079
									

Application example

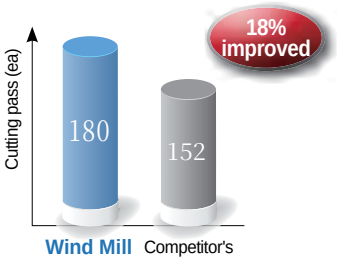
■**Use** Carriers for Motor Vehicles

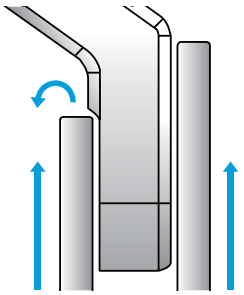
■**Workpiece** FCD500K

■**Cutting conditions** vc (sfm) = 656
fz (ipt) = 0.008
vf (ipm) = 23.6
ap (inch) = 0.08~0.12

■**Tool** KSF140R-T14-HM-2
SNHT1205408R/L-WX (PC5300)

■**Test result**





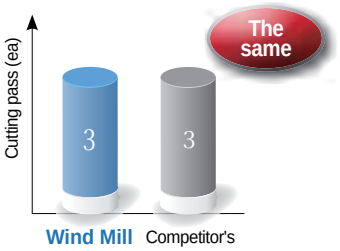
■**Use** Lug for Vessel

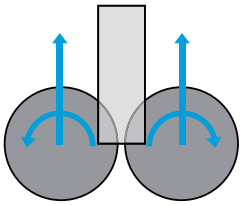
■**Workpiece** Mild steel

■**Cutting conditions** vc (sfm) = 1837
fz (ipt) = 0.0035
vf (ipm) = 29
ap (inch) = 0.24

■**Tool** WFSP178R/L-T06
SNHT1203508R/L-WX (PC5300)

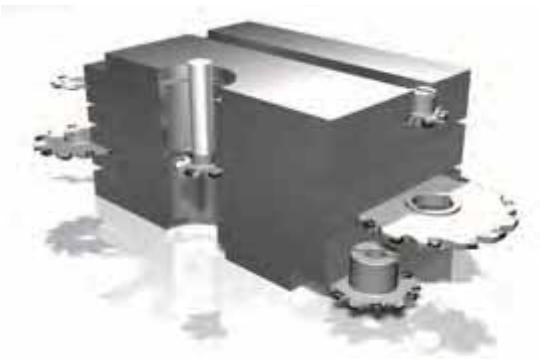
■**Test result**





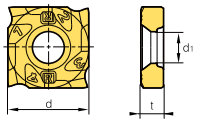
Recommended cutting condition

Workpiece	Cutting conditions		Grade
	vc (sfm)	fz (ipt)	
P	490~820	0.010~0.004	PC5300
M	390~655	0.012~0.004	PC5300
K	330~490	0.012~0.004	PC5300



Available inserts

Designation		Coated	Dimensions (inch)				Nose R	Configuration
		PC5300	Ød	Ød1	t	W		
SNHT	1102308R/L-WX	●	0.433	0.157	0.090	0.157	0.008 ~ 0.063	
	110308R/L-WX	●	0.433	0.157	0.120	0.197	0.008 ~ 0.063	
	1203508R/L-WX	●	0.500	0.197	0.140	0.236	0.008 ~ 0.079	
	120408R/L-WX		0.500	0.197	0.160	0.276	0.008 ~ 0.079	
	1204508R/L-WX	●	0.500	0.197	0.180	0.315	0.008 ~ 0.079	
	120508R/L-WX	●	0.500	0.197	0.196	0.354	0.008 ~ 0.079	
	1205408R/L-WX	●	0.500	0.197	0.215	0.394	0.008 ~ 0.079	
	120608R/L-WX		0.500	0.197	0.236	0.433	0.008 ~ 0.079	
	1206508R/L-WX		0.500	0.197	0.256	0.472	0.008 ~ 0.079	
	120708R/L-WX		0.500	0.197	0.276	0.512	0.008 ~ 0.079	
	1207508R/L-WX		0.500	0.197	0.295	0.551	0.008 ~ 0.079	



• Available cutter stock requires to be asked separately

WFSBA (boss type)



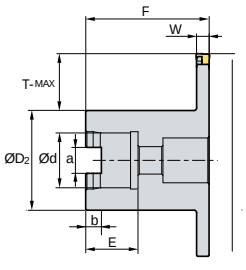


Fig. 1

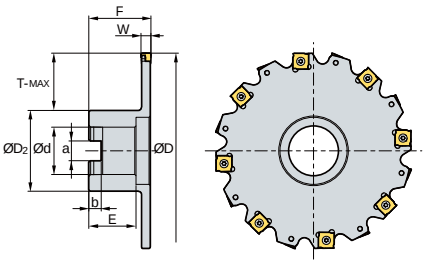


Fig. 2



• AR: -2°
• RR:-12°

(inch)

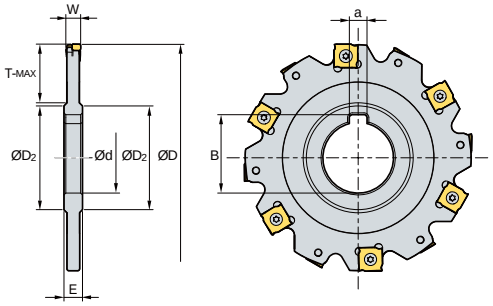
Designation			ØD	W	T-MAX	ØD2	Ød	a	b	F	E	Insert	Screw	Wrench
WFSBA	**300-156R/L**	8	3.0	0.156	0.7	1.58	3/4	0.315	0.220	1.50	0.787	SNHT11023R/L-WX	PTMA03503	TW09S
	300-187R/L	8	3.0	0.187	0.7	1.58	3/4	0.315	0.220	1.50	0.787	SNHT1103R/L-WX	PTMA03504	TW09S
	300-250R/L	8	3.0	0.250	0.7	1.58	3/4	0.315	0.220	1.50	0.787	SNHT12035R/L-WX	PTMA0405F	TW15S
	400-156R/L	10	4.0	0.156	0.9	1.89	1	0.374	0.250	1.50	0.866	SNHT11023R/L-WX	PTMA03503	TW09S
	400-187R/L	10	4.0	0.187	0.9	1.89	1	0.374	0.250	1.50	0.866	SNHT1103R/L-WX	PTMA03504	TW09S
	400-250R/L	10	4.0	0.250	0.9	1.89	1	0.374	0.250	1.50	0.866	SNHT12035R/L-WX	PTMA0405F	TW15S
	400-312R/L	10	4.0	0.312	0.9	1.89	1	0.374	0.250	1.50	0.866	SNHT12045R/L-WX	PTMA0406F	TW15S
	400-375R/L	10	4.0	0.375	0.9	1.89	1	0.374	0.250	1.50	0.866	SNHT1205R/L-WX	PTMA0408F	TW15S
	500-187R/L	12	5.0	0.187	1.1	2.75	1 1/4	0.500	0.320	1.75	0.866	SNHT1103R/L-WX	PTMA03504	TW09S
	500-250R/L	12	5.0	0.250	1.1	2.75	1 1/4	0.500	0.320	1.75	0.866	SNHT12035R/L-WX	PTMA0405F	TW15S
	500-312R/L	12	5.0	0.312	1.1	2.75	1 1/4	0.500	0.320	1.75	0.866	SNHT12045R/L-WX	PTMA0406F	TW15S
	500-375R/L	12	5.0	0.375	1.1	2.75	1 1/4	0.500	0.320	1.75	0.866	SNHT1205R/L-WX	PTMA0408F	TW15S
	600-187R/L	16	6.0	0.187	1.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT1103R/L-WX	PTMA03504	TW09S
	600-250R/L	16	6.0	0.250	1.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT12035R/L-WX	PTMA0405F	TW15S
	600-312R/L	16	6.0	0.312	1.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT12045R/L-WX	PTMA0406F	TW15S
	600-375R/L	16	6.0	0.375	1.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT1205R/L-WX	PTMA0408F	TW15S
	600-500R/L	16	6.0	0.500	1.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT1207R/L-WX	PTKA0411	TW15S
	800-250R/L	18	8.0	0.250	2.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT12035R/L-WX	PTMA0405F	TW15S
	800-312R/L	18	8.0	0.312	2.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT12045R/L-WX	PTMA0406F	TW15S
	800-375R/L	18	8.0	0.375	2.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT1205R/L-WX	PTMA0408F	TW15S
	800-500R/L	18	8.0	0.500	2.1	3.75	1 1/2	0.630	0.394	2.00	1.181	SNHT1207R/L-WX	PTKA0411	TW15S

Available inserts **E25**

• Ø3.0: Fig.1 , Ø4~Ø8: Fig.2

WFSPA (plane type)







• AR: -2°
• RR:-12°

(inch)

Designation			ØD	W	T-MAX	ØD2	Ød	a	b	F	E	Insert	Screw	Wrench
WFSPA	300-156	8	3.0	0.156	0.690	1.62	1	0.250	1.104	1.50	0.312	SNHT11023R/L-WX	PTMA03503	TW09S
	300-187	8	3.0	0.187	0.690	1.62	1	0.250	1.104	1.50	0.312	SNHT1103R/L-WX	PTMA03504	TW09S
	300-250	8	3.0	0.250	0.690	1.62	1	0.250	1.104	1.50	0.312	SNHT12035R/L-WX	PTMA0405F	TW15S
	400-156	10	4.0	0.156	1.125	1.75	1 1/4	0.312	1.385	1.50	0.312	SNHT11023R/L-WX	PTMA03503	TW09S
	400-187	10	4.0	0.187	1.125	1.75	1 1/4	0.312	1.385	1.50	0.312	SNHT1103R/L-WX	PTMA03504	TW09S
	400-250	10	4.0	0.250	1.125	1.75	1 1/4	0.312	1.385	1.50	0.312	SNHT12035R/L-WX	PTMA0405F	TW15S
	400-312	10	4.0	0.312	1.125	1.75	1 1/4	0.312	1.385	1.50	0.500	SNHT12045R/L-WX	PTMA0407F	TW15S
	400-375	10	4.0	0.375	1.125	1.75	1 1/4	0.312	1.385	1.50	0.500	SNHT1205R/L-WX	PTMA0408F	TW15S
	500-187	12	5.0	0.187	1.565	1.87	1 1/4	0.312	1.666	1.75	0.312	SNHT1103R/L-WX	PTMA03504	TW09S
	500-250	12	5.0	0.250	1.565	1.87	1 1/4	0.312	1.666	1.75	0.312	SNHT12035R/L-WX	PTMA0405F	TW15S
	500-312	12	5.0	0.312	1.565	1.87	1 1/4	0.312	1.666	1.75	0.500	SNHT12045R/L-WX	PTMA0407F	TW15S
	500-375	12	5.0	0.375	1.565	1.87	1 1/4	0.312	1.666	1.75	0.500	SNHT1205R/L-WX	PTMA0408F	TW15S
	600-187	16	6.0	0.187	1.875	2.25	1 1/2	0.375	1.666	2.00	0.312	SNHT1103R/L-WX	PTMA03504	TW09S
	600-250	16	6.0	0.250	1.875	2.25	1 1/2	0.375	1.666	2.00	0.312	SNHT12035R/L-WX	PTMA0405F	TW15S
	600-312	16	6.0	0.312	1.875	2.25	1 1/2	0.375	1.666	2.00	0.500	SNHT12045R/L-WX	PTMA0407F	TW15S
	600-375	16	6.0	0.375	1.875	2.25	1 1/2	0.375	1.666	2.00	0.500	SNHT1205R/L-WX	PTMA0408F	TW15S
	600-500	16	6.0	0.500	1.875	2.25	1 1/2	0.375	1.666	2.00	0.500	SNHT1207R/L-WX	PTKA0411	TW15S
	800-250	18	8.0	0.250	2.625	2.75	1 1/2	0.375	2.198	2.00	0.312	SNHT12035R/L-WX	PTMA0405F	TW15S
	800-312	18	8.0	0.312	2.625	2.75	1 1/2	0.375	2.198	2.00	0.500	SNHT12045R/L-WX	PTMA0407F	TW15S
	800-375	18	8.0	0.375	2.625	2.75	1 1/2	0.375	2.198	2.00	0.500	SNHT1205R/L-WX	PTMA0408F	TW15S
	800-500	18	8.0	0.500	2.625	2.75	1 1/2	0.375	2.198	2.00	0.500	SNHT1207R/L-WX	PTKA0411	TW15S

Available inserts **E25**

High feed cutter with extra pitch for cast iron and light alloy steels

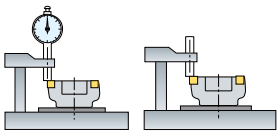
High Feed Cutter

- High feed cutter employs extra pitch for cast iron and light alloy steels
- Quick change type for reduction of cutter change time
- Cutting-edge chatter is controlled
- Quick change type for cutter size under Ø6.0, 2 piece types for cutter size over Ø8.0

Guide of insert setting

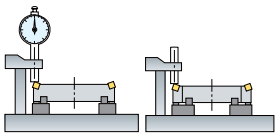
• Special equipment has to be used to get precise run out with high feed cutter.

Adaptor type



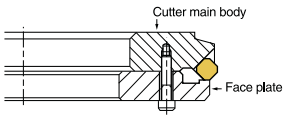
- Mainly under Ø6.0 diameter is used in 1 piece type
- Available for fixed size of cutter and assembling & checking can be done at the same time

Roller type



- Mainly over Ø8.0 diameter is used in 2 piece type
- Due to 3 adjustable guide rollers, variety size of cutter can be assembled

Plate type



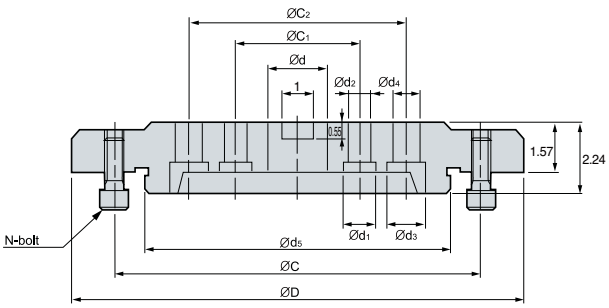
- Suitable for small size cutter due to the simple structure
- It is unnecessary to unclamp the cutter from the machine, it's possible to reassemble the cutter as it mounted on the machine
- You should make plate by yourself

• Guide of insert setting in adaptor/roller type

1. Clean the cutter and equipment
2. Pointer should be assembled with same height with cutter
3. Move to each insert on tip seat to end of pointer and tighten (torque 2 N.m) wedge
4. Exchange pointer to dial gauge
5. Measure the run-out totally
6. When a insert over run-out, loosen wedge and adjust run-out. (for roughing 10~20 μ, for finishing 5~10 μ)
7. Tighten (torque 7-8 N.m) wedge
8. Measure the final run-out by dial gauge

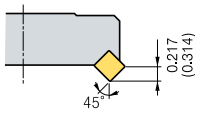
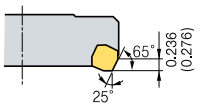
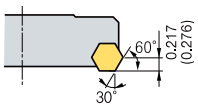
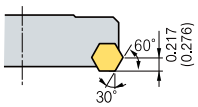
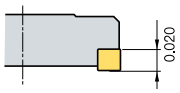
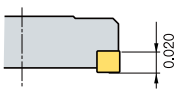
Note: When you clamp wedge too tightly, run-out will get worse due to cutter distortion.
When you clamp the wedge, use torque wrench to set precisely.

Adaptor (Ø7.874-Ø17.717)



Designation		ØD	Ød	Ød1	Ød2	Ød3	Ød4	Ød5	ØC	ØC1	ØC2	N	Cutter
APR	200	7.087	2.5	1.204	0.709	-	-	3.150	4.724	4.0	-	4	Ø7.874
	250	9.055	2.5	1.204	0.709	-	-	4.724	6.693	4.0	-	4	Ø9.842
	315	11.614	2.5	1.204	0.709	1.26	0.827	7.087	9.055	4.0	7.0	6	Ø12.402
	355	13.189	2.5	1.204	0.709	1.26	0.827	8.661	10.630	4.0	7.0	6	Ø13.976
	400	14.567	2.5	1.204	0.709	1.26	0.827	9.843	11.811	4.0	7.0	8	Ø15.748
	450	16.535	2.5	1.204	0.709	1.26	0.827	11.811	13.780	4.0	7.0	8	Ø17.716

High feed cutters type and features

Designation	Cutter diameter	Workpiece, Application range	Min. surface roughness	Approach angle and Max. cutting depth is for 5000 type	Axial rake angle	Radial rake angle	Available insert
ANH4000 ANH5000	Ø4.0~Ø18.0	Cast iron Roughing	25Z		-5°	-6°	SNCN43ENN SNCN53ENN
CDH4000 CDH5000	Ø4.0~Ø18.0	Cast iron Roughing Finishing	18Z		+10°	+5°	SDCN42R SDCN53R
DEH5000	Ø4.0~Ø18.0	Al alloy Roughing	20Z		+14°	+6°	HECN532FN
DPH5000	Ø4.0~Ø18.0	Cast iron Roughing Finishing	12Z		+5°	-3°	HPEN532FN/SN/EN HPEN532-WC
PNH4000 PNH5000	Ø5.0~Ø18.0	Cast iron Finishing	12Z		-5°	-6°	SNEF435 SNEF535
PPH4000	Ø5.0~Ø18.0	Cast iron Finishing	12Z		+5°	-5°	SPEN434-WC

Recommended cutting condition

Workpiece	Cutting condition		Grade	Remark
	vc (sfm)	fz (ipt)		
Cast iron	330~460	0.002~0.008	**PC6510**	PVD Coated
	260~490	0.002~0.008	**H01,G10**	Uncoated
Al alloy	1650~	0.002~0.008	**PC6510**	PVD Coated
	1650~	0.002~0.008	**H01,G10**	Uncoated

Special Korloy cutter for cast iron roughing

Cube Mill

- Special Korloy cutter for cast iron roughing
- 8-corner using insert (maximum 16-corner available with 2 cutter, R/L cutter)
- Excellent cutting performance with positive rake angle made by 3-dimensional chip breaker
- Excellent tool life by a wide combination of grade varieties and chip breakers to match most working conditions
- 2 different type of inserts (chamfer/nose R) are available with 1 type cutter



Roughing for cast iron

Code system

CBM	E	A	3	300	R	(2)	-	28Z

Cutter
CBM : CUBE MILL

AA
Q : 2°
C : 25°
F : 5°
A : 45°
E : 15°

Inch type

Inscreibed circle of Insert
3 : 9.525
4 : 12.7

Cutter Dia
Ø300

Hand
R : Right
L : Left

Cutter shape
Unmarked : Normal type
2 : Quick change type (2 pieces type)

No. of tooth(Z)

• Cube Mill and Cube Mill Couple are available by order made.

Insert (R/L type)

Chamfer type	Nose R type





Cutter body

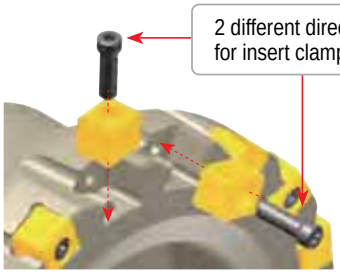
Cutter diameter (Ø)	General	Quick change
	3.0~12.0 inch	8.0~18.0 inch
AA: 2°, 5°, 15°, 25°, 45°		

Cutter



Special design to make actual positive rake angle

Simple screw on system



2 different direction for insert clamping

Screw on clamping system

Parts



Cube Mill 3000



Screw



Wrench

Screw	Wrench
FTGA0417CBM	TW15-100
ETGA0520CBM	TW20-100

Ideal combination of aluminum body with cast iron high feed cutter

Couple Mill

- Ideal combination of Aluminum body with cast iron high feed cutter
- Since the weight of the cutter has been reduced 50% vs. a steel cutter, it is very easy to handle and very effective in preventing loading accidents
- Applicable for Cube Mill, Storm Mill

Code system

• Cube-couple

CBM E A 3 1400 R 28Z - CP

Cutter	AA	Inch type	Inscreibed circle of Insert	Cutter Dia	Hand	No. of tooth(Z)	Couple Mill
CBM : CUBE MILL	Q : 2˚ C : 25˚ F : 5˚ A : 45˚ E : 15˚		3 : 3/8 inch 4 : 1/2 inch	ISO : mm ASA : inch	R : Right L : Left	28Z : 28	

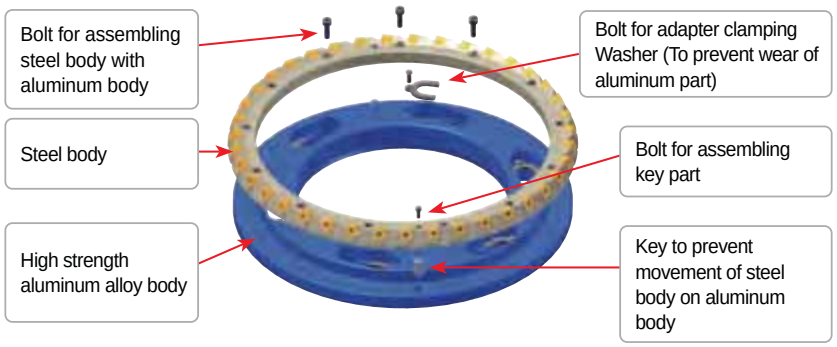
• Cube Mill and Cube Mill Couple are available by order made.

• Storm-couple

S Q N A 3 1400 R 28Z - CP

Cutter	AA	Relief angle of insert	Inch type	Inscreibed circle of Insert	Cutter Dia	Hand	No. of tooth(Z)	Couple Mill
S : STORM MILL	Q : 2˚ E : 15˚ F : 5˚ A : 45˚	N : Negative(0°)		3 : 3/8 inch 4 : 1/2 inch	ISO : mm ASA : inch	R : Right L : Left	28Z : 28	

Assembling structure



Cutter body

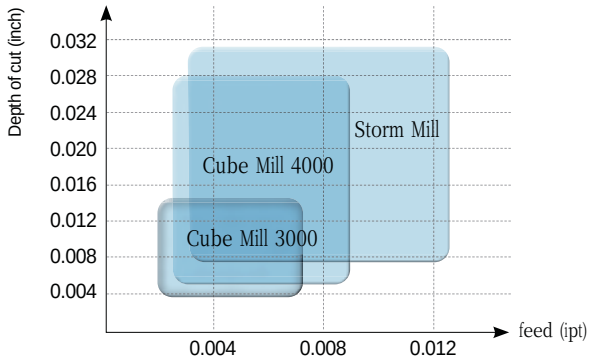
Cutter diameter (Ø)	Quick change
	14.0~18.0 inch

Parts



		Screw	Wrench	Wrench	Bolt for body	Bolt for key	Key for body
Cube-Couple	3000 type	FTGA0417CBM	TW15-100	-	BHA0616	MHBO410	PN1019-DRV
	4000 type	ETGA0520CBM	TW20-100		BHA0620		
Storm-Couple	3000 type	FTNA0513	-	TW15S	-	-	-

Application range of high feed cutters for cast iron



Recommended cutting condition

Cube Mill		Gray cast iron		Ductile cast iron	
		vc (sfm)	fz (ipt)	vc (sfm)	fz (ipt)
PVD	PC6510	490~990	0.007~0.003	330~660	0.007~0.003
Uncoated	G10	300~400	0.007~0.005	200~430	0.007~0.005

Optimal cutter for steel and cast iron machining with easily adjustable run-out

Shave Mill

- Adjustable Range (Adjustable range: 0.004 inch, Adjustable allowance: within 2 ㎛)
- Wiper crown type 8-cornered insert reduces machining cost and realizes excellent surface roughness
- Grades with high toughness and wear resistance ensures long tool life
- The cBN grade achieves superior surface finish

Code system

• Insert

■Carbide

Nose R type	SNEU120420-MF
Chamfer type	SNEU1204ANN-MF
Low cutting type	SNEU1204-WMF

■cBN

SNEU1204-TBW

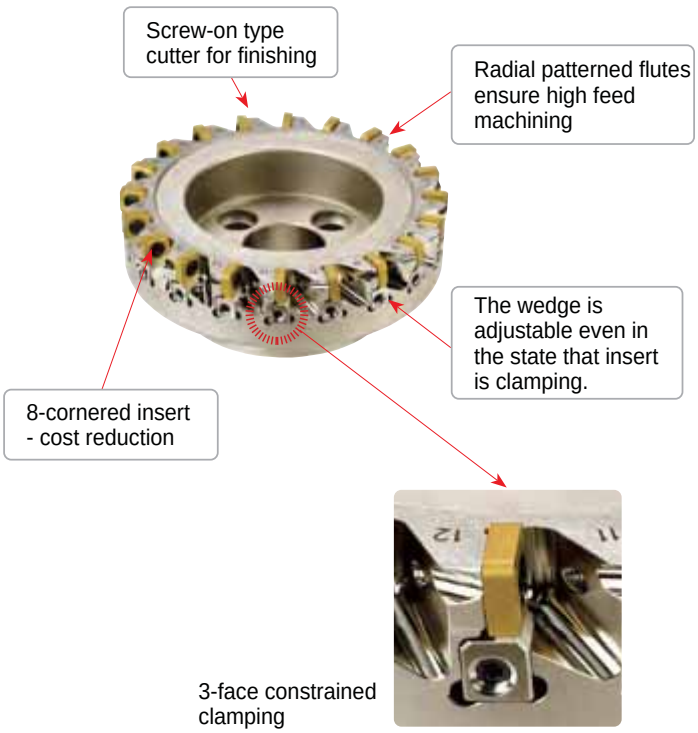
T: Nagaland
B: cBN
W: Wiper

• Cutter

SVM A 4 250 R Z6

SVM	A	4	250	R	Z6
Shave Mill	Inch Type	Inscribed Circle	Cutter Dia. (Ø)	Hand of tool	No. of tooth (Z)
		4: 0.5 inch	ISO: mm ASA: inch	R: right handed L: left handed	

Features

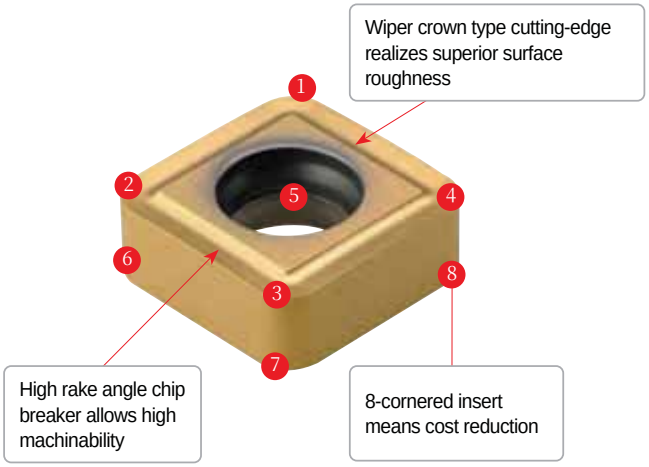




Adjustment

- Adjustable range: 2.54 inch
- Adjustability: below 2 μ
- Operation: easy and simple

Features of inserts



SNEU120420-MF



Nose R type

SNEU1204ANN-MF



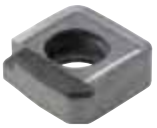
Chamfer type

SNEU1204-WMF



For low cutting load

SNEU1204-TBW



Wiper for high speed machining

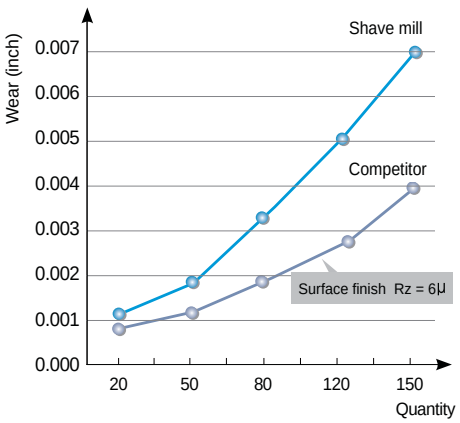
Recommended cutting condition

Workpiece	Cutting condition			Grade
	vc (sfm)	fz (ipt)	ap (inch)	
P	492~866	0.008~0.002	~0.02	**PC3700**
K	459~755 1969~3281	0.012~0.002 0.008~0.002	~0.02 ~0.02	**PC6510** **DBN920**

Application example

■**Work piece** Cylinder head (facing)
■**Cutting conditions** vc = 656, fz = 0.006, ap = 0.02, dry
■**Tools** **Cutter** SVMM4250R
Insert PC6510 SNEU120420-MF

■**Work piece** FC25 (HB250) Cylinder head (facing)
■**Cutting conditions** vc = 2296, fz = 0.004, ap = 0.02, dry
■**Tools** **Cutter** SVMM4160R
Insert DBN920 SNEU1204-cBN



• Results

	Tool life	Surface finish	Machinability
Shave Mill	250 pcs	Rz = 3μ	High
Competitor	180 pcs	Rz = 3.5μ	Normal

• KORLOY's Shave Mills ensure twice the machinability, adjustability, and surface roughness than competitor's, along with twice the tool life.

Better tool life with special grade which has both toughness and wear resistance

Shave Mill Ultra

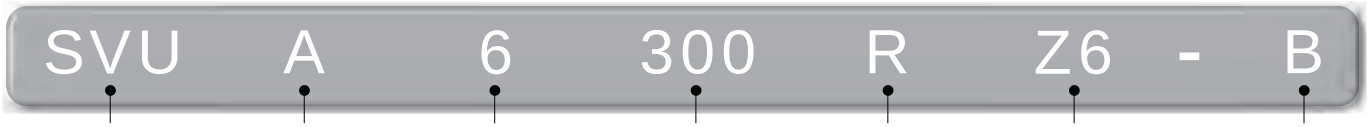
- Superior surface roughness for this Finishing cutter when applied to heavy work pieces
- Easy to handle and good rigidity with simple screw on system
- Superior surface finishes due to the wiper crown cutting-edge
- Better tool life with special grade which has both toughness and wear resistance
- Two different types: economical normal type and adjustable run-out type 'B'

Code system

• Insert



• Cutter



Features

Normal type



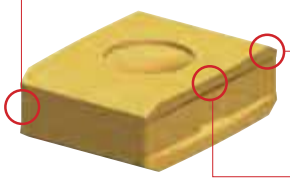
Good rigidity and economical due to simple screw on type

Better surface roughness when you use only 1 insert but adjust the 'ap' under 0.001 inch

Adjustable cutting-edge (Type B)



Easy to handle the run-out due to Korloy exclusive high toughness cutting-edge special parts



Good cutting performance & chip flow due to positive rake angle chip breaker

Economical 4 corner insert

Good surface roughness by wiper crown cutting-edge design

Adjustable Range	· Range: 0.039 inch · Allowance: Within 2μ

Recommended cutting condition

Workpiece	Cutting condition			Tooth	Grades
	vc (sfm)	fz (ipt)	ap (inch)		
P	492~820	0.008~0.002	~0.024	Full use	PC3700
	492~820	0.197~0.079	~0.001	1 use	
k	192~984	0.008~0.002	~0.024	Full use	PC6510
	192~984	0.197~0.079	~0.001	1 use	

Gear Cutter Applicable Example

Applicable example-external tooth gear

Finishing: M20



- **Cutter Dia**: Ø15.7
- **Tooth No**: 20 tooth
- **External tooth gear**: Formal cutter for gear processing which can be expected to KS 4 level accuracy
- Cutter can simultaneously chamfer while milling



M20XZ130-EX

Semi-finishing



- **Cutter Dia**: Ø11.02
- **Tooth No**: 48 tooth
- Designed for processing of external gear involute curve line shape
- Possible to work for gear root portion R with optimal insert R design



M20-M22-ROU

Roughing



- **Cutter Dia**: Ø22
- **Tooth No**: 140 tooth
- High feed rate with low cutting resistance due to V shape insert setting design



LNE333-02-1



LNE434-02-1



KEL1906-C0.6-MF

Applicable example-internal tooth gear

Finishing: M16



- **Cutter Dia**: Ø15.7
- **Tooth No**: 20 tooth
- **Internal tooth gear**: Formal cutter for gear processing which can be expected to KS 4 level accuracy
- Cutter can simultaneously chamfer while milling



M16XZ130

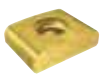
Semi-finishing



- **Cutter Dia**: Ø11.02
- **Tooth No**: 48 tooth
- The semi-finishing cutter was designed for processing of external gear involute curb line shape



M16-M18-ROU



LNE433-R60

Roughing



- **Cutter Dia**: Ø22
- **Tooth No**: 40 tooth
- Possible to use for gear processing of all module due to step type of insert setting design



KEL1906-C0.6-MF



LNE434-02-1

Gear cutter machining example

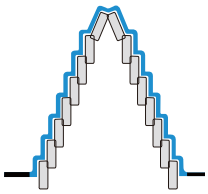
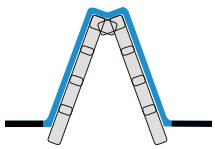
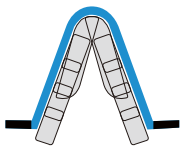
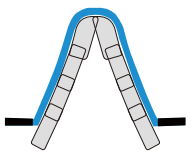
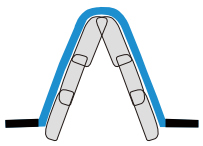
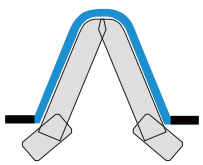
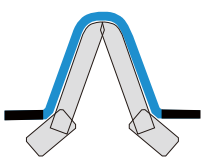
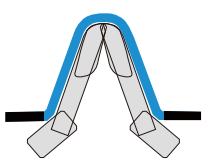


- **Machine**
  Gleason - PFAUTER CNC Hobbing Machine
  (Power: 52 kW)
- **Cutting condition**
  vc = 393.64 sfm, n = 86.8 rpm
  fz = 0.020 ipt, vf = 17.717 ipm
  ae = 1.417 inch
  Dry
- **Tools**
  M16-PT-RACK-KOR03 (Ø17.3 x W3.54)
- **Semi-finishing cutter (low cut, low resistance)**





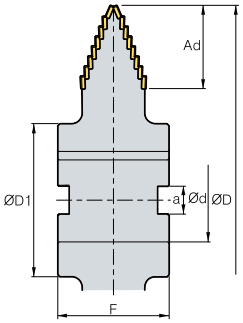
- **Machine**
  KARATS (30kw)
- **Cutting condition**
  vc = 492.13 sfm, n = 119 rpm
  fz = 0.004 ipt, vf = 3.213 ipm
  ae = 1.772 inch
  Dry
- **Tools**
  M24 Semi-finishing External type
  Applicable Insert
  M40-ROU (Main),
  KEL150708-MX (Flank)

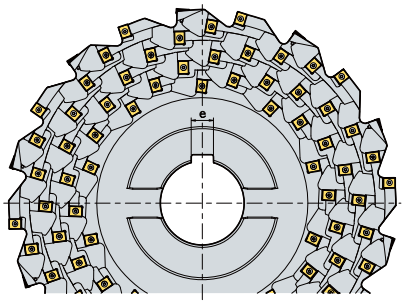
Type	Cutter shape	Cutting-edge shape	Type	Feature
Roughing			Step type	• Working for big sized gear tooth • Low cutting resistance with step type insert setting
			V shape type	• Low cutting resistance with V shape cutting insert setting • Optimal cutting-edge line setting according to Rach type & cutting-edge shape
Semi-finishing			Low cutting resistance type	• 4-Corner insert on Root portion • 3D chip breaker shape on flank • Optimal cutting-edge line setting for low cutting resistance
			External gear high rigidity type	• Optimal R type insert setting on Root portion • Superior Semi-finishing cutting with high rigidity shape of cutter & insert
			Internal gear high rigidity type	• Exclusive semi-finishing Internal Gear insert • Optimal cutting-edge line setting with Internal tooth shape
Finishing			External gear	• Concave shape of cutting-edge line according to external gear type • Optimal cutting insert setting design according to a customer conditions
			Internal gear	• 2-corner insert setting on right & left side and chamfering insert setting • Adjustable chamfering cartridge use for chamfering control
			2 STEP type	• Exclusive insert for machining the root part • 4-cornered insert

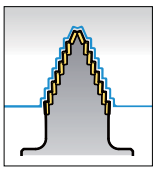
• Optimal cutting insert setting design according to customer condition

Gear Roughing Cutter (step type)







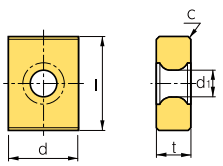
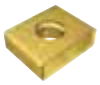


(inch)

m	⊚	ØD	Ad	Ød	ØD1	a	e	F
30	96	450	90	100	180	25	14	140
	108	500	90	100	180	25	14	140
	120	560	90	120	220	40	32	160
40	112	450	105	100	180	25	14	140
	126	500	105	100	180	25	14	140
	140	560	105	120	220	40	32	160
50	160	560	119	120	220	40	32	160

M This is metric size. We can also provide in inch type

Available inserts

Picture	Designation		Coated				Uncoated		Dimensions (mm)					Configuration
			NC5330	PC9530	PC3500	PC5300	H01	G10	l	d	t	d_1	c	
 Reinforced cutting-edge	LNE	434-02-1			○	轉			19.05	14.29	6.35	5.4	0.6	
 Low cutting resistance	KEL	1906-C0.6-MF			○	轉			19.05	14.29	6.35	5.4	0.6	
		190610-MR			○	轉			19.05	14.29	6.35	5.4	-	

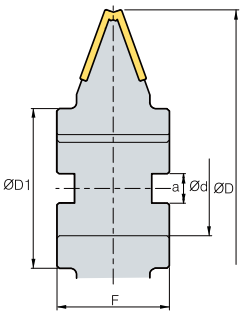
M This is metric size. We can also provide in inch type

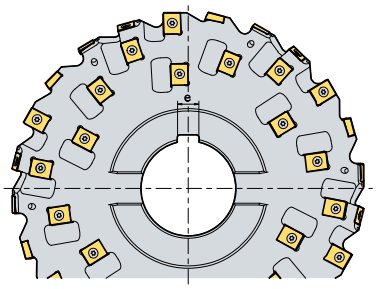
◎: 1st Rec ○: 2nd Rec

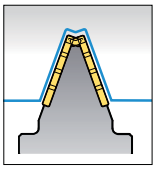
※ The above specification is subject to change according to customer related condition & Korloy technical condition

Gear Roughing Cutter (V shape type)







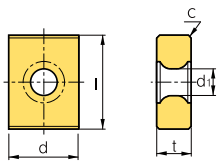
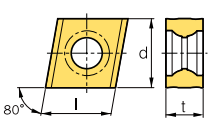


(inch)

m	Type	○	ØD	Ød	ØD1	a	e	F
20	rack	48	280	80	135	25	18	95
22	rack	48	280	80	135	25	18	95
24	rack	48	320	80	145	25	18	105
26	rack	60	320	80	145	25	18	105
28	rack	96	400	100	180	25	24	130
30	rack	96	400	100	180	25	24	130
32	rack	96	400	100	180	25	24	130
34	rack	112	400	100	180	25	24	130
36	rack	112	450	100	180	25	24	130
38	rack	112	450	100	180	25	24	130
40	rack	128	450	100	180	25	24	160
42	rack	128	450	100	180	25	24	160
44	rack	128	560	120	220	32	32	160
46	rack	144	560	120	220	32	32	160
48	rack	144	560	120	220	32	32	160
50	rack	144	560	120	220	32	32	160

M This is metric size. We can also provide in inch type

Available inserts

Picture	Designation		Coated				Uncoated		Dimensions (mm)					Configuration
			NC5330	PC9530	PC3500	PC5300	H01	G10	l	d	t	d_1	c	
 Reinforced cutting-edge	**LNE**	**434-02-1**			◦	轉			19.05	14.29	6.35	5.4	0.6	
 Low cutting resistance	**LNE**	**1906-C0.6-MF**			◦	轉			19.05	14.29	6.35	5.4	0.6	
		190610-MR							19.05	14.29	6.35	5.4	-	
 Reinforced cutting-edge	**KEL**	**333-02-1**			◦	轉			14.3	12.7	6.35	5.8	0.8	
	**CNHQ**	**1005-C0.5**							10	10	5.4	-	-	

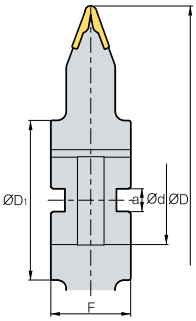
M This is metric size. We can also provide in inch type

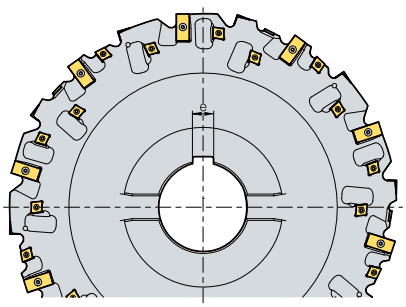
◎: 1st Rec ○: 2 nd Rec

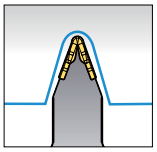
※ The above specification is subject to change according to customer related condition & Korloy technical condition

Gear Semi-finishing Cutter
(low cutting resistance type)







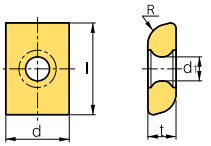
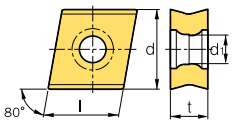


(inch)

m	No.of teeth	⦾	ØD	Ød	ØD1	a	e	F
6	30,60,120	18	250	60	100	25	18	70
8	30,60,120	18	250	60	100	25	18	80
10	30,60,120	24	250	60	100	25	18	80
12	30,60,120	24	250	60	100	25	18	90
14	30,60,120	24	280	80	135	25	24	95
16	30,60,120	32	280	80	135	25	24	100
18	30,60,120	32	320	80	145	25	24	105
20	30,60,120	64	400	100	180	25	24	110
22	30,60,120	64	400	100	180	25	24	110
24	30,60,120	64	400	100	180	25	24	120

M This is metric size. We can also provide in inch type

Available inserts

Picture	Designation		Coated				Uncoated		Dimensions (mm)					Configuration
			NC5330	PC9530	PC3500	PC5300	H01	G10	l	d	t	d1	c	
		**M6-2ST**			◦	韡			19.05	11.6	3.8	4.4	2.25	
		M8-2ST			◦	韡			19.05	11.6	4	4.4	3	
		M10-2ST			◦	韡			19.05	11.6	4.76	4.4	3.75	
		M12-2ST			◦	韡			19.05	14.3	6.35	5.5	4.5	
		M14-2ST			◦	韡			25.4	14.3	6.35	5.5	5.25	
		M16-2ST			◦	韡			31.8	14.3	7.14	5.5	6	
		M18-2ST			◦	韡			31.8	14.3	7.14	5.5	6.75	
		M20-2ST			◦	韡			31.8	14.3	9.52	5.5	7.5	
		M22-2ST			◦	韡			31.8	14.3	9.52	5.5	8.25	
		M24-2ST			◦	韡			31.8	14.3	9.52	5.5	9	
	KEC	**120606-MX**			◦	韡			12	12.7	6.35	4.5	-	
		150708-MX			◦	韡			15.15	15	7.6	5.8	-	

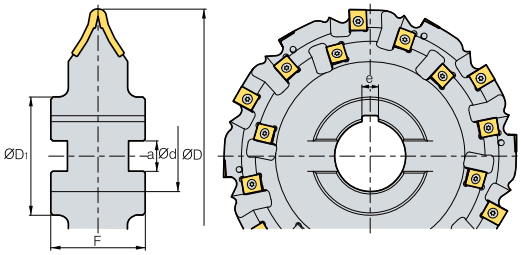
M This is metric size. We can also provide in inch type

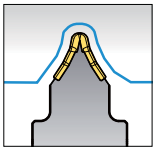
◎: 1st Rec ○: 2nd Rec

※ The above specification is subject to change according to customer related condition & Korloy technical condition

Gear Semi-finishing Cutter
(high rigid edge type, external gear)





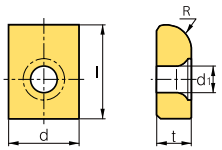
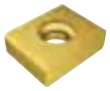
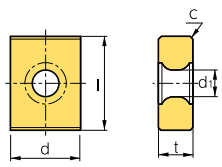
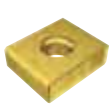


(inch)

m	No.of teeth	◎	ØD	Ød	ØD1	a	e	F
12	30,60,120	24	250	60	100	25	14	70
14	30,60,120	36	250	60	100	25	14	80
16	30,60,120	36	250	60	100	25	14	80
18	30,60,120	36	250	60	100	25	14	90
20	30,60,120	48	280	80	135	25	18	95
22	30,60,120	48	280	80	135	25	18	100
24	30,60,120	48	320	80	145	25	18	105
26	30,60,120	72	400	100	180	25	24	110
28	30,60,120	72	400	100	180	25	24	110
30	30,60,120	72	400	100	180	25	24	120
32	30,60,120	84	400	100	180	25	24	130
34	30,60,120	84	400	100	180	25	24	130

M This is metric size. We can also provide in inch type

Available inserts

Picture	Designation	Coated				Uncoated		Dimensions (mm)						Configuration
		NC5330	PC9530	PC3500	PC5300	H01	G10	l	d	t	d1	R	c	
	**M8-ROU**			○	轉			15.875	11	4.76	4.6	4.6	-	
	M12-M14-ROU			○	轉			19.05	14.29	6.35	5.4	5.4	-	
	M16-M18-ROU			○	轉			19.05	14.29	7	5.4	5.4	-	
	M20-M22-ROU			○	轉			19.05	14.29	7.94	5.4	5.4	-	
	M40-ROU			○	轉			25.4	14.29	9.52	5.4	5.4	-	
	**LNE 434-02-1**			○	轉			19.05	14.29	6.35	5.4	-	0.6	
	**KEL 1906-C0.6-MF**			○	轉			19.05	14.29	6.35	5.4	-	0.6	
	190610-MR			○	轉			19.05	14.29	6.35	5.4		-	

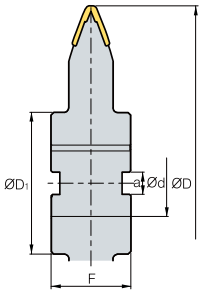
M This is metric size. We can also provide in inch type

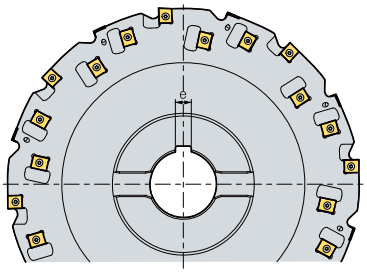
◎: 1st Rec ○: 2nd Rec

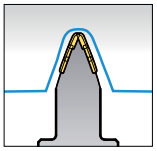
※The above specification is subject to change according to customer related condition & Korloy technical condition

Gear Semi-finishing Cutter
(high rigid edge type, internal gear)







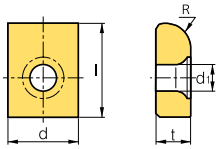
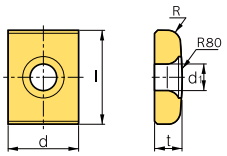


(inch)

m	No.of teeth		ØD	Ød	ØD1	a	e	F
12	30,60,120	24	250	60	100	25	14	70
14	30,60,120	36	250	60	100	25	14	80
16	30,60,120	36	250	60	100	25	14	80
18	30,60,120	36	250	60	100	25	14	90
20	30,60,120	48	280	80	135	25	18	95
22	30,60,120	48	280	80	135	25	18	100
24	30,60,120	48	320	80	145	25	18	105
26	30,60,120	72	400	100	180	25	24	110
28	30,60,120	72	400	100	180	25	24	110
30	30,60,120	72	400	100	180	25	24	120
32	30,60,120	84	400	100	180	25	24	130
34	30,60,120	84	400	100	180	25	24	130

M This is metric size. We can also provide in inch type

Available inserts

Picture	Designation	Coated				Uncoated		Dimensions (mm)					Configuration
		NC5330	PC9530	PC3500	PC5300	H01	G10	l	d	t	d1	c	
	**M8-ROU**			○	轉			15.875	11	4.76	4.6	2	
	M12-M14-ROU			○	轉			19.05	14.29	6.35	5.4	3	
	M16-M18-ROU			○	轉			19.05	14.29	7	5.4	5	
	M20-M22-ROU			○	轉			19.05	14.29	7.94	5.4	7	
	M40-ROU			○	轉			25.4	14.29	9.52	5.4	10	
	LNE **433-R80**			○	轉			19.05	14.29	5.56	5.4	2.5	

M This is metric size. We can also provide in inch type

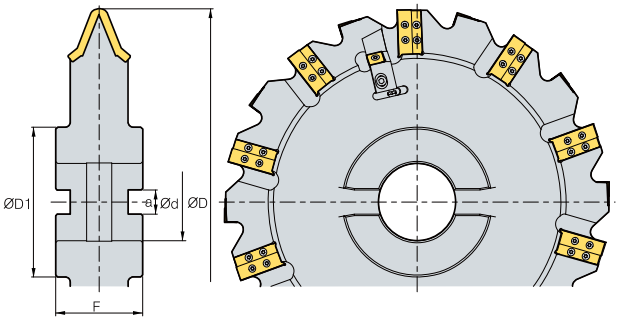
◎: 1st Rec ○: 2 nd Rec

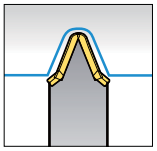
※The above specification is subject to change according to customer related condition & Korloy technical condition

Gear Finishing Cutter

(1 step type, external gear)





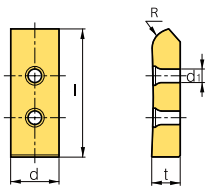
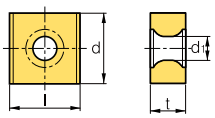


(inch)

m	⊙	ØD	Ød	ØD1	a	F
6	20	400	80	155	25	90
8	20	400	80	155	25	90
10	20	400	80	155	25	90
12	20	400	80	155	25	90
14	20	400	80	155	25	90
16	20	400	80	155	25	90
18	20	400	80	155	25	90
20	20	400	80	155	25	90
22	20	400	80	155	25	90
24	20	400	80	155	25	90

M This is metric size. We can also provide in inch type

Available inserts

Picture	Designation		Coated				Uncoated		Dimensions (mm)					Configuration
			NC5330	PC9530	PC3500	PC5300	H01	G10	l	d	t	d_1	R	
		**M6**			◦	◉			19	14.3	5	5.5	2.25	
		M8			◦	◉			27	14.3	5.4	5.5	3	
		M10			◦	◉			29	14.3	6.35	5.5	3.75	
		M12			◦	◉			33	14.3	6.35	5.5	4.5	
		M14			◦	◉			39	14.3	6.35	5.5	5.25	
		M16			◦	◉			43	14.3	7.94	5.5	6	
		M18			◦	◉			50	14.3	7.94	5.5	6.75	
		M20			◦	◉			54	14.3	9.53	5.5	7.5	
		M22			◦	◉			57	14.3	9.53	5.5	8.25	
		M24			◦	◉			64	14.3	9.53	5.5	9	
	**SNEQ**	**1507-C0.8**			◦	◉			15.875	15.875	7.94	-	-	

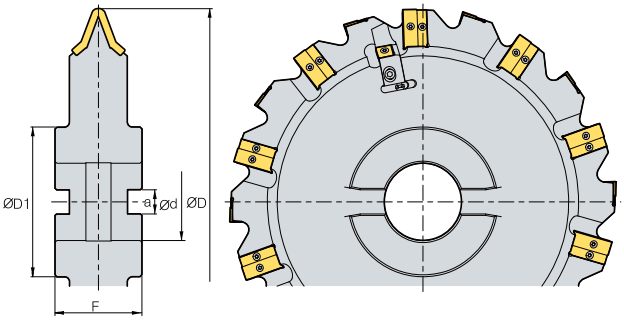
M This is metric size. We can also provide in inch type

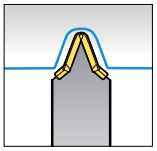
◎: 1st Rec ○: 2 nd Rec

※The above specification is subject to change according to customer related condition & Korloy technical condition

Gear Finishing Cutter
(1 step type, internal gear)





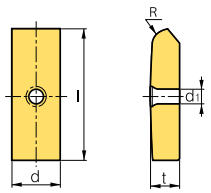
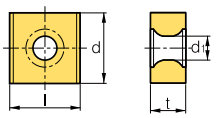


(inch)

m	⊙	ØD	Ød	ØD1	a	F
6	20	400	80	155	25	90
8	20	400	80	155	25	90
10	20	400	80	155	25	90
12	20	400	80	155	25	90
14	20	400	80	155	25	90
16	20	400	80	155	25	90
18	20	400	80	155	25	90
20	20	400	80	155	25	90
22	20	400	80	155	25	90
24	20	400	80	155	25	90

M This is metric size. We can also provide in inch type

Available inserts

Picture	Designation		Coated				Uncoated		Dimensions (mm)					Configuration
			NC5330	PC9530	PC3500	PC5300	H01	G10	l	d	t	d_1	R	
		**M6**			◦	鞭			19	14.3	5	5.5	2.25	
		M8			◦	鞭			27	14.3	5.4	5.5	3	
		M10			◦	鞭			29	14.3	6.35	5.5	3.75	
		M12			◦	鞭			33	14.3	6.35	5.5	4.5	
		M14			◦	鞭			39	14.3	6.35	5.5	5.25	
		M16			◦	鞭			43	14.3	7.94	5.5	6	
		M18			◦	鞭			50	14.3	7.94	5.5	6.75	
		M20			◦	鞭			54	14.3	9.53	5.5	7.5	
		M22			◦	鞭			57	14.3	9.53	5.5	8.25	
		M24			◦	鞭			64	14.3	9.53	5.5	9	
	**SNEQ**	**1507-C0.8**			◦	鞭			15.875	15.875	7.94	-	-	

M This is metric size. We can also provide in inch type

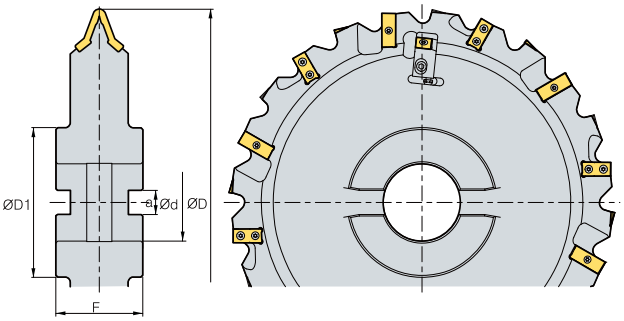
◎: 1st Rec ○: 2nd Rec

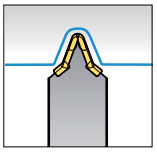
※The above specification is subject to change according to customer related condition & Korloy technical condition

Gear Finishing Cutter

(2 step type, internal/external gear)





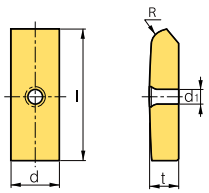
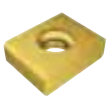
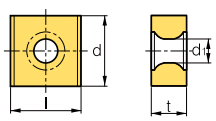
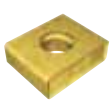
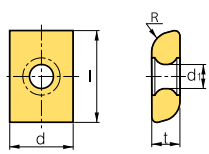


(inch)

m	◎	ØD	Ød	ØD1	a	F
6	24	400	80	155	25	90
8	24	400	80	155	25	90
10	24	400	80	155	25	90
12	24	400	80	155	25	90
14	24	400	80	155	25	90
16	24	400	80	155	25	90
18	24	400	80	155	25	90
20	24	400	80	155	25	90
22	24	400	80	155	25	90
24	24	400	80	155	25	90

M This is metric size. We can also provide in inch type

Available inserts

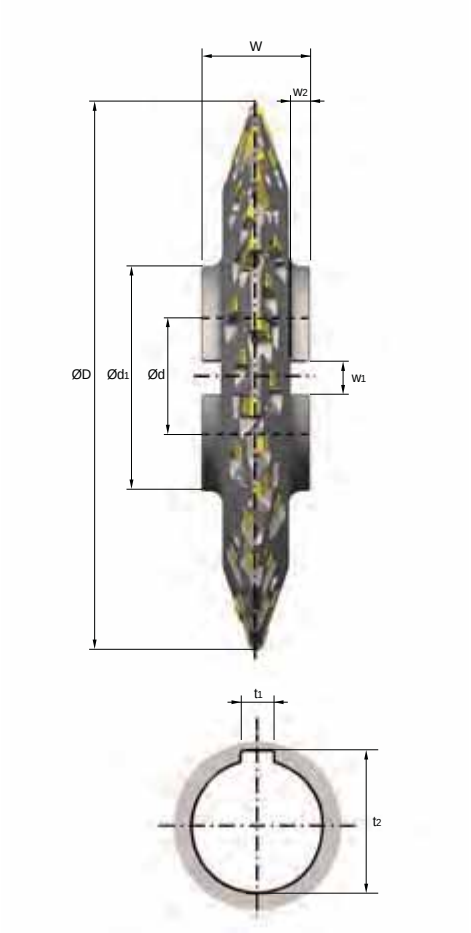
Picture	Designation		Coated				Uncoated		Dimensions (mm)					Configuration
			NC5330	PC9530	PC3500	PC5300	H01	G10	l	d	t	d_1	R	
		M6		○		◎			19	14.3	5	5.5	2.25	
		M8		○		◎			27	14.3	5.4	5.5	3	
		M10		○		◎			29	14.3	6.35	5.5	3.75	
		M12		○		◎			33	14.3	6.35	5.5	4.5	
		M14		○		◎			39	14.3	6.35	5.5	5.25	
		M16		○		◎			43	14.3	7.94	5.5	6	
		M18		○		◎			50	14.3	7.94	5.5	6.75	
		M20		○		◎			54	14.3	9.53	5.5	7.5	
		M22		○		◎			57	14.3	9.53	5.5	8.25	
		M24		○		◎			64	14.3	9.53	5.5	9	
	SNEQ	1507-C0.8		○		◎			15.875	15.875	7.94	-	-	
		M6-2ST							19.05	11.6	3.8	4.4	2.25	
		M8-2ST							19.05	11.6	4	4.4	3	
		M10-2ST							19.05	11.6	4.76	4.4	3.75	
		M12-2ST							19.05	14.3	6.35	5.5	4.5	
		M14-2ST							25.4	14.3	6.35	5.5	5.25	
		M16-2ST							31.8	14.3	7.14	5.5	6	
		M18-2ST							31.8	14.3	7.14	5.5	6.75	
		M20-2ST							31.8	14.3	9.52	5.5	7.5	
		M22-2ST							31.8	14.3	9.52	5.5	8.25	
		M24-2ST							31.8	14.3	9.52	5.5	9	

M This is metric size. We can also provide in inch type

◎: 1st Rec ○: 2nd Rec

※ The above specification is subject to change according to customer related condition & Korloy technical condition

Special Order Form for Gerar Cutters



Cutter type

☐ **Roughing** ☐ **Semi-finishing** ☐ **Finishing**

☐ Step ☐ Low cutting resistance ☐ 1 Step

☐ V shape ☐ High rigid edge ☐ 2 Step

■Stock for finishing (one side) (inch):

■Outside diameter D (inch):

■Bore diameter d (inch):

■Hub diameter d1 (inch):

■Cutter width W (inch):

■Radial keyway w1 (inch):

■Radial keyway w2 (inch):

■Axial keyway t1 (inch):

■Axial keyway t2 (inch):

Involute gear data

☐ **External gear** ☐ **Internal gear** ☐ **Rack gear**

■Diametral pitch DP:

■No.of teeth Z:

■Pressure angle α (°):

■Helix angle β (°):

■Addendum modification coefficient x:

■Tip diameter da (inch):

■Root diameter d_f (inch):

■Root radius ρ_{fp} (inch)

■Base tangent length W_k (inch)

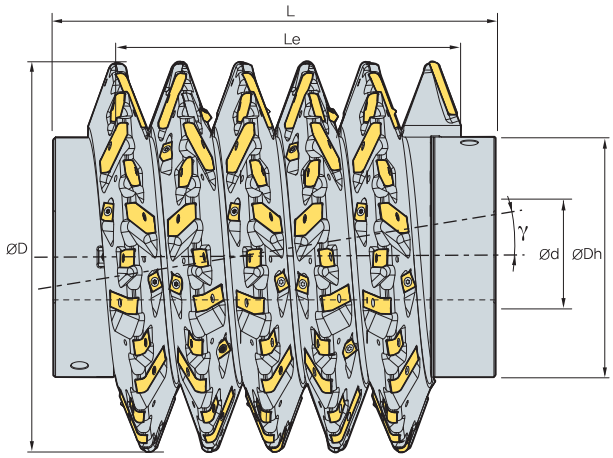
■No. of measuring teeth K:

■Dimensions/Dimension over balls M_d (inch):

■Ball diameter D_M (inch):

■Gear quality (DIN, AGMA):

Indexable HOB

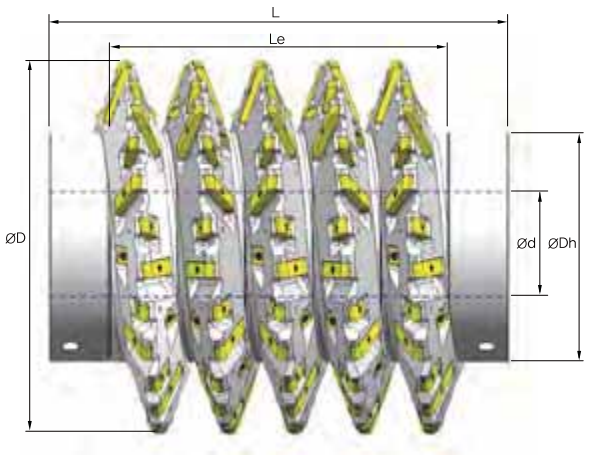


(inch)

Gear module	ØD	ØDh	Ød	No.Segm. (Pitch)	Le	Segment insert	Total insert	γ (Lead Ang.)
6	180	125	40	6	(113)	15	90	2.084
	210	125	50	6	(113)	17	102	1.763
	240	160	60	6	(113)	19	114	1.528
7	180	125	40	6	(132)	15	90	2.469
	210	125	50	6	(132)	17	102	2.084
	240	160	60	6	(132)	19	114	1.803
8	210	125	50	6	(151)	17	102	2.413
	240	160	60	6	(151)	19	114	2.084
	270	180	80	6	(151)	21	126	1.834
9	210	125	50	6	(169)	17	102	2.751
	240	160	60	6	(169)	19	114	2.372
	270	180	80	6	(169)	21	126	2.084
10	210	125	50	6	(189)	17	102	3.099
	240	160	60	6	(189)	19	114	2.666
	270	180	80	6	(189)	21	126	2.339
12	240	140	60	6	(226)	18	108	3.276
	270	180	80	6	(226)	22	132	2.866
	350	215	80	6	(226)	26	156	2.149
14	270	180	80	6	(264)	22	132	3.415
	350	215	80	6	(264)	26	156	2.547
16	270	160	80	6	(302)	22	132	3.989
	350	215	80	6	(302)	26	156	2.959
18	270	145	80	5	(283)	22	110	4.589
	350	215	80	5	(283)	26	130	3.383
20	350	215	80	5	(314)	26	130	3.823
	450	265	100	5	(314)	34	170	2.866

M This is metric size. We can also provide in inch type

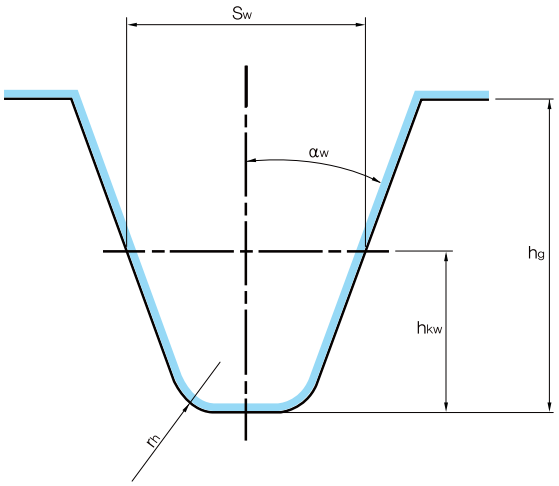
Indexable HOB Cutters



Tool SPEC.

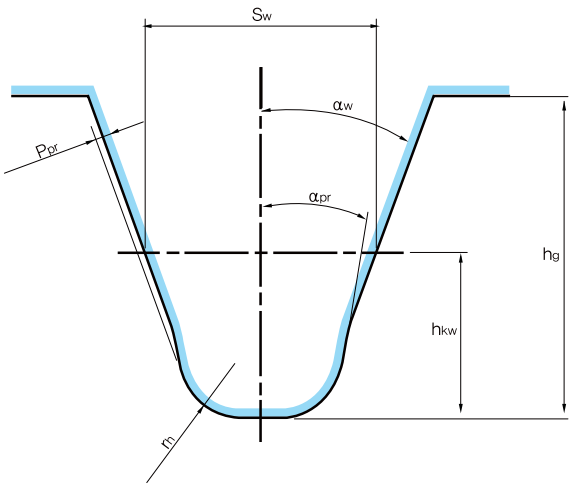
- Outside diameter ØD (inch):
- Bore diameter Ød (inch):
- Hub diameter ØDh (inch):
- Hob length L (inch):
- Cutting length Le (inch):
- Spiral direction RH/LH:
- Quality class acc. to DIN 3968:

Profile of hob [Module m6~]



- Module M:
- Addendum hkw (inch):
- Tooth thickness Sw (inch):
- Tooth depth hg (inch):

Profile of roughing hob [Module m8~]



- Pressure angle α_w (inch):
- Protuberance amount P_{pr} (inch):
- Protuberance angle α_{pr} (inch):
- Tip radius r_h (inch):

DRILL

Korloy drills provide a total solution for hole making,
based on tooling know-how
as well as extensive research and
development for our tools.



Technical Information for Drills

F02 KORLOY Drills
F03 Available Inserts

Indexable Drills

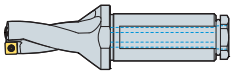
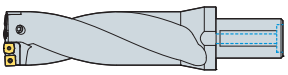
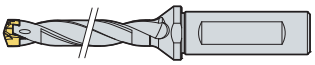
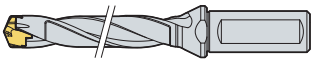
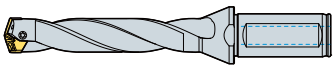
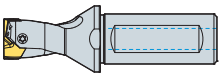
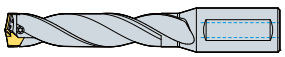
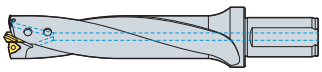
F05 Technical Information for KING Drill
F11 KING Drill
F15 KING Drill (through coolant system with a lathe)
F16 KING Drill (large diameter drilling)
F17 Technical Information for TPDC Plus Drill
F27 TPDC Plus Drill
F34 Technical Information for TPDB Plus Drill
F37 TPDB Plus Drill
F43 Technical Information for TPDB-F
F46 TPDB-F
F48 Technical Information for TPDB-H
F51 TPDB-H

Indexable Drills

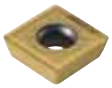
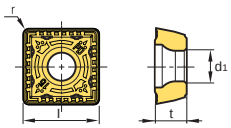
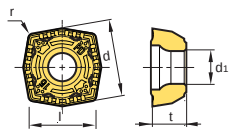
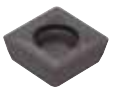
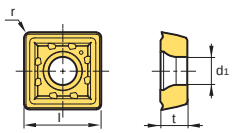
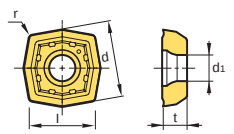
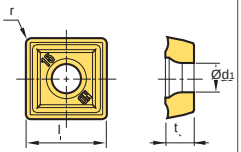
F55 Technical Information for WPDC
F58 Center Drill
F59 WPDC

Reamers

F62 Technical Information for Indexable Reamers
F66 Indexable Reamers

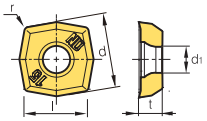
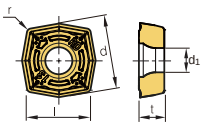
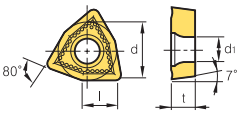
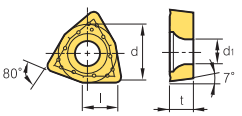
Type	Designation		Shape	Drills dia.	Aspect ratio	Page
Indexable Drills	KING Drill HP	K□DA..HP	 Available insert: SP▫T, XO▫T	Ø0.484~Ø2.375	2D~5D	F11~F14
	KING Drill (for large diameter drilling)	K□DA	 Available insert: SP▫T, XO▫T	Ø2.40~Ø3.94	2D~4D	F16
	TPDC Plus Drill new	TPDXA	 Available insert: TPD▫▫▫▫XAP	Ø0.315~Ø0.469	3D~8D	F30
		TPDCA	 Available insert: TPD▫▫▫▫CA▫	Ø0.472~Ø1.220	1.5D~12D	F31 ~F33
	TPDB Plus Drill new	TPDBA-P	 Available insert: TPD▫▫▫▫BA	Ø0.394~Ø1.298	3D~12D	F38~F42
		TPDBA-F	 Available insert: TPD▫▫▫▫BA-F	Ø0.551~Ø1.219	1.5D	F47
		TPDBA-H	 Available insert: TPD▫▫▫▫BA-H	Ø0.551~Ø1.219	3D~8D	F52~F54
	Indexable Drills & Drill with center	WPDCA	 Available insert: WC▫T	Ø1.000~Ø3.130	5D~8D	F59~F61
Reamer	Indexable Reamer	IRTA	 Available Insert: RI	Ø0.375~Ø1.250	3D~5D	F66
		IRBA	 Available Insert: RI	Ø0.375~Ø1.250	3D~5D	F67

Available inserts

Picture	Designation	Coated								Uncoated	Dimensions (inch)					Configuration	Page
		NC5330	NCM535	PC3700	PC6510	PC9530	PC9540	PC5335	PC5300	H01	l	d	t	r	d1		
[Peripheral] SPMT-PD  Universal	040204-PD	●	●	●	●		●		●		0.185	-	0.094	0.016	0.091		F11 ~ F16
	050204-PD	●	●	●	●		●		●		0.201	-	0.094	0.016	0.091		
	060205-PD	●	●	●	●		●		●		0.244	-	0.098	0.020	0.098		
	07T208-PD	●	●	●	●		●		●		0.295	-	0.110	0.028	0.110		
	090308-PD	●	●	●	●		●		●		0.362	-	0.130	0.031	0.134		
	11T308-PD	●	●	●	●		●		●		0.433	-	0.157	0.031	0.157		
	130410-PD	●	●	●	●		●		●		0.512	-	0.177	0.039	0.177		
	15M510-PD	●	●	●	●		●		●		0.598	-	0.197	0.039	0.217		
	180510-PD	●	●	●	●		●		●		0.717	-	0.217	0.039	0.236		
[Central] XOMT-PD  Universal	040204-PD						●		●		0.169	0.193	0.094	0.016	0.091		F11 ~ F16
	050204-PD						●		●		0.189	0.213	0.094	0.016	0.091		
	060204-PD						●		●		0.228	0.260	0.098	0.016	0.098		
	07T205-PD						●		●		0.272	0.307	0.110	0.020	0.110		
	090305-PD						●		●		0.331	0.378	0.130	0.020	0.134		
	11T306-PD						●		●		0.394	0.449	0.157	0.024	0.157		
	130406-PD						●		●		0.469	0.535	0.177	0.024	0.177		
	15M508-PD						●		●		0.547	0.626	0.197	0.031	0.217		
	180508-PD						●		●		0.650	0.744	0.217	0.031	0.236		
[Peripheral] SPMT-LD  Mild steel	060205-LD							●			0.244	-	0.098	0.020	0.098		F11 ~ F16
	07T208-LD							●			0.295	-	0.110	0.028	0.110		
	090308-LD							●			0.362	-	0.130	0.031	0.134		
	11T308-LD							●			0.433	-	0.157	0.031	0.157		
	130410-LD							●			0.512	-	0.177	0.039	0.177		
	15M510-LD							●			0.598	-	0.197	0.039	0.217		
	180510-LD							●			0.717	-	0.217	0.039	0.236		
[Central] XOMT-LD  Mild steel	060204-LD							●			0.228	0.260	0.098	0.016	0.098		F11 ~ F16
	07T205-LD							●			0.272	0.307	0.110	0.020	0.110		
	090305-LD							●			0.331	0.378	0.130	0.020	0.134		
	11T306-LD							●			0.394	0.449	0.157	0.024	0.157		
	130406-LD							●			0.469	0.535	0.177	0.024	0.177		
	15M508-LD							●			0.547	0.626	0.197	0.031	0.217		
	180508-LD							●			0.650	0.744	0.217	0.031	0.236		
[Peripheral] SPET-ND  Al	040204-ND									●	0.185	-	0.094	0.016	0.091		F11 ~ F16
	050204-ND									●	0.201	-	0.094	0.016	0.091		
	060205-ND									●	0.244	-	0.098	0.020	0.098		
	07T208-ND									●	0.295	-	0.110	0.028	0.110		
	090308-ND									●	0.362	-	0.130	0.031	0.134		
	11T308-ND									●	0.433	-	0.157	0.031	0.157		
	130410-ND									●	0.512	-	0.177	0.039	0.177		
	15M510-ND									●	0.598	-	0.197	0.039	0.217		
	180510-ND									●	0.717	-	0.217	0.039	0.236		

●: Korea Stock

Available inserts

Picture	Designation	Coated								Uncoated	Dimensions (inch)					Configuration	Page
		NC5330	NCM535	PC3700	PC6510	PC9530	PC9540	PC5335	PC5300	H01	l	d	t	r	d1		
[Central] XOET-ND  Al	040204-ND									●	0.169	0.193	0.094	0.016	0.091		F11 ~ F16
	050204-ND									●	0.189	0.213	0.094	0.016	0.091		
	060204-ND									●	0.228	0.260	0.098	0.016	0.098		
	07T205-ND									●	0.272	0.307	0.110	0.020	0.110		
	090305-ND									●	0.331	0.378	0.130	0.020	0.134		
	11T306-ND									●	0.394	0.449	0.157	0.024	0.157		
	130406-ND									●	0.469	0.535	0.177	0.024	0.177		
	15M508-ND									●	0.547	0.626	0.197	0.031	0.217		
	180508-ND									●	0.650	0.744	0.217	0.031	0.236		
[Central] XOMT-RD  Rein fored cutting-edge	07T207-RD								●		0.272	0.307	0.110	0.028	0.110		F11 ~ F16
	090308-RD								●		0.331	0.378	0.130	0.031	0.134		
	11T309-RD								●		0.394	0.449	0.157	0.035	0.157		
	130410-RD								●		0.469	0.535	0.177	0.039	0.177		
	15M511-RD								●		0.547	0.626	0.197	0.043	0.217		
	180512-RD								●		0.650	0.744	0.217	0.047	0.236		
WCMT-C20N 	030208-C20N							●			0.150	0.219	0.094	0.031	0.110		-
	040208-C20N							●			0.169	0.250	0.094	0.031	0.118		
	050308-C20N		●					●			0.213	0.313	0.125	0.031	0.134		
	06T308-C20N		●					●			0.256	0.375	0.156	0.031	0.146		
	080408-C20N							●			0.343	0.500	0.188	0.031	0.169		
	080412-C20N		●					●			0.343	0.500	0.188	0.047	0.169		
WCMT-C21N 	030204-C21N							●			0.150	0.219	0.094	0.016	0.100		F59 ~ F61
	040204-C21N							●			0.169	0.250	0.094	0.016	0.110		
	040208-C21N							●			0.169	0.250	0.094	0.031	0.110		
	050308-C21N							●			0.213	0.313	0.125	0.031	0.134		
	06T308-C21N							●			0.256	0.375	0.156	0.031	0.173		
	080408-C21N							●			0.343	0.500	0.188	0.031	0.217		

●: Korea Stock

Optimized insert design for maximum drilling efficiency

KING Drill

Code system

K 5D A 1000 125 □ – 07

KING/KORLOY

Aspect ratio (L/D)
2D, 3D, 4D, 5D

Type
A: Inch type
No mark: Metric type

Drill Dia.
Ø1.000
(Three decimal place marked)

Shank Dia.
Ø0.75, Ø1.00
Ø1.25, Ø1.50
Two decimal place marked

Shank shape
No mark: Flange Shank, Weldone
HP: Flange Shank, Weldon, NPT Tap
F1: Flange Shank, Whistle Notch
F2: Flange Shank, Without Side Lock
S: Straight Shank, Weldone
S1: Straight Shank, Whistle Notch
S2: Straight Shank, Without Side Lock
M0, M1, M2, M3...: MT0, MT1, MT2, MT3...
H63, H100: HSK63, HSK100
B30, B40, B50: BT30, BT40, BT50

Inscribed circle of insert
04, 05, 06, 07, 09, 11, 13, 15, 18

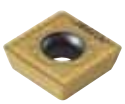
Features

- Optimized design of inserts for maximum drilling efficiency
- Excellent cutting performance and chip control due to the optimized geometry and chip breaker of both inserts, central & peripheral
- Different inserts, optimized for the central and peripheral insert locations in order to maximize cutting tool life



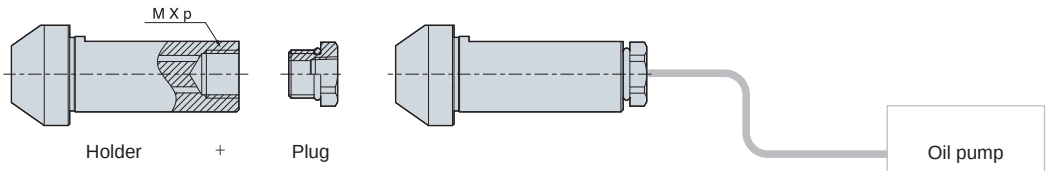
Optimized flute system - 2 coolant holes applied
The optimized shape of the flute increases the rigidity of the drill body and improves chip evacuation

Features of chip breaker

Chip breaker	PD		LD		ND		RD
Features	- Universal - At medium speed and medium feed		- Superior chip control for machining mild steel and stainless steel - Light cutting (at low~medium speed and low feed)		- Sharp cutting edge for aluminum machining - Insert surface buffed for high quality result - E Class tolerance		- Improved chipping resistance - Excellent performance in case of frequent fracture and chipping on the cutting edge
Insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Central insert
Shape							
Grades for workpiece	NC5330: P, M, K PC3700: P PC5300: P, M, K, S PC6510: K PC9540: P, M, S	PC5300: P, M, K, S PC9540: P, M, S	PC5335: P, M		H01: N		PC5300: P,M,K,S

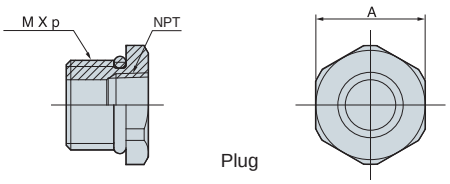
KING Drill - With through coolant system for lathe

- Through coolant system with drill holder, plug, oil-hole hose and oil-hole pump
- NPT TAP in the plug is combined to NPT TAP connected to oil hose
- Available to use the drill without a plug in milling machine



- Clamping oil hose to the bottom of plug and connect the oil pump to the holder

Tap type	Diameter	Shank dia.	M x p	Plug
K□DA0484075~0625075HP-□□	Ø0.484~Ø0.625	Ø0.75	M12 x 1.5	PLG12NPT18
K□DA0687100~0875100HP-□□	Ø0.687~Ø0.875	Ø1.00	M16 x 1.5	PLG16NPT18
K□DA0937125~1375125HP-□□	Ø0.937~Ø1.375	Ø1.25	M20 x 2.0	PLG20NPT14
K□DA1437150~2375150HP-□□	Ø1.437~Ø2.375	Ø1.50	M27 x 2.0	PLG27NPT38



- Plug is assembled

Plug type	M x p	NPT tap	A
PLG12NPT18	M12 x 1.5	1/8	5/8
PLG16NPT18	M16 x 1.5	1/8	7/8
PLG20NPT14	M20 x 2.0	1/4	9/8
PLG27NPT38	M27 x 2.0	3/8	11/8

Application examples

■ **Use** Track link bush

■ **Workpiece** AISI4140

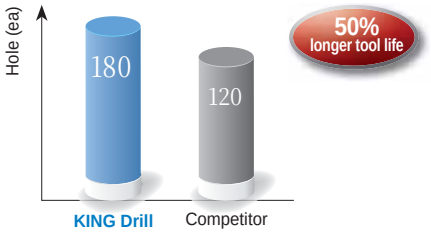
■ **Cutting conditions** vc (sfm) = 394, fn (ipr) = 0.0039
Through coolant system

■ **Tools** **Inserts** SPMT07T208-PD (PC3700)
XOMT07T205-PD (PC5300)
Holder K5DA0812100HP-07

■ **Machine** Drilling machine



■ **Test result**



• Superior surface finish and chip evacuation

■ **Use** Track link bush

■ **Workpiece** AISI4130

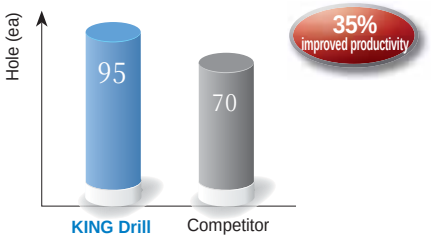
■ **Cutting conditions** Competitor: vc (sfm) = 459, fn (ipr) = 0.0039
KING Drill: vc (sfm) = 459, fn (ipr) = 0.0047

■ **Tools** **Inserts** SPMT090308–PD (PC3700)
XOMT090305–PD (PC5300)
Holder K3DA1062125HP-09

■ **Machine** MCT



■ **Test result**



• Increased productivity due to higher capabilities for cutting conditions compared to the competitor

Recommended cutting condition

Workpiece				Insert			vc (sfm)	Aspect ratio (L/D) = 2D, 3D, 4D					
ISO		Workpiece	Hardness (HB)	Chip breaker	Grade			Feed rate (ipr) per drill dia. (inch)					
					Central	Peripheral		Ø0.484~Ø0.63	Ø0.64~Ø0.91	Ø0.92~Ø1.14	Ø1.15~Ø1.65	Ø1.66~Ø2.375	Ø2.40~Ø3.94
P	Carbon steel	Low carbon steel	80~180	LD	PC5335	PC5335	394 (197~558)	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031
				PD/RD	PC5300	PC3700	492 (394~591)						
						NC5330	591 (459~722)						
		High carbon steel	180~280	PD	PC5300	PC3700	394 (295~492)	0.0016~0.0039	0.0016~0.0047	0.002~0.0063	0.0024~0.0063	0.0024~0.0071	0.0024~0.0071
						NC5330	492 (361~623)	0.0016~0.0024	0.0016~0.0028	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031
	Alloy steel	Low alloy steel	140~260	LD	PC5335	PC5335	394 (197~525)	0.0024~0.0039	0.0024~0.0039	0.0024~0.0047	0.0024~0.0055	0.0024~0.0055	0.0024~0.0055
				PD	PC5300	PC3700	492 (394~558)	0.0024~0.0047	0.0024~0.0047	0.0024~0.0055	0.0024~0.0063	0.0024~0.0063	0.0024~0.0063
						NC5330	591 (459~689)	0.0024~0.0031	0.0024~0.0031	0.0024~0.0039	0.0024~0.0047	0.0024~0.0047	0.0024~0.0047
		Low alloy heattreated steel	200~400	PD	PC5300	PC5300	328 (164~492)	0.0016~0.0039	0.0024~0.0039	0.0024~0.0047	0.0024~0.0055	0.0024~0.0055	0.0024~0.0055
		High alloy steel	260~320	PD	PC5300	PC3700	328 (164~525)	0.002~0.0043	0.002~0.0043	0.002~0.0051	0.002~0.0059	0.002~0.0059	0.002~0.0059
		High alloy heattreated steel	300~450	PD	PC5300	PC5300	230 (98~394)	0.0016~0.0031	0.0024~0.0031	0.0024~0.0039	0.0024~0.0047	0.0024~0.0047	0.0024~0.0047
M	Stainless steel	Stainless steel	135-275	LD	PC5335	PC5335	394 (262~459)	0.0016~0.0028	0.0016~0.0028	0.0016~0.0028	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031
				PD	PC5300	PC5300	427 (328~525)	0.0016~0.0028	0.0016~0.0028	0.0016~0.0028	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031
					PC9540	PC9540	295 (197~394)	0.0016~0.0028	0.0016~0.0028	0.0016~0.0028	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031
K	Cast iron	Gray cast iron	150~230	PD	PC5300	PC6510	623 (492~820)	0.0016~0.0047	0.002~0.0055	0.0024~0.0071	0.0039~0.0087	0.0039~0.0102	0.0039~0.0102
		Ductile cast iron	150~230	PD	PC5300	PC6510	427 (328~525)	0.0016~0.0028	0.0016~0.0031	0.0016~0.0039	0.002~0.0047	0.002~0.0047	0.002~0.0047
S	Heat resisting alloy	Ni-heat resisting alloy	130~400	PD	PC5300	PC5300	164 (98~328)	0.0016~0.0039	0.0016~0.0039	0.0016~0.0039	0.0016~0.0039	0.0016~0.0039	0.0016~0.0039
					PC9540	PC9540	131 (66~262)	0.0016~0.0039	0.0016~0.0039	0.0016~0.0039	0.0016~0.0039	0.0016~0.0039	0.0016~0.0039
		Ti-heat resisting alloy	130~400	LD	PC5335	PC5335	197 (131~262)	0.0016~0.0031	0.0016~0.0039	0.0024~0.0047	0.0024~0.0055	0.0024~0.0063	0.0024~0.0063
				PD	PC5300	PC5300	197 (131~262)	0.0016~0.0031	0.0016~0.0039	0.0024~0.0047	0.0024~0.0055	0.0024~0.0063	0.0024~0.0063
		High hardened steel	over 400	PD	PC5300	PC5300	131 (66~262)	0.0016~0.002	0.0016~0.0024	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031	0.0016~0.0031
N	Aluminium	Aluminium	30~150	ND	H01	H01	984 (820~1312)	0.0020~0.0055	0.0024~0.0063	0.0039~0.0079	0.0039~0.0087	0.0047~0.0098	0.0047~0.0098
		Alloyed copper	150-160	ND	H01	H01	820 (656~984)	0.0020~0.0055	0.0024~0.0063	0.0039~0.0079	0.0039~0.0087	0.0047~0.0098	0.0047~0.0098

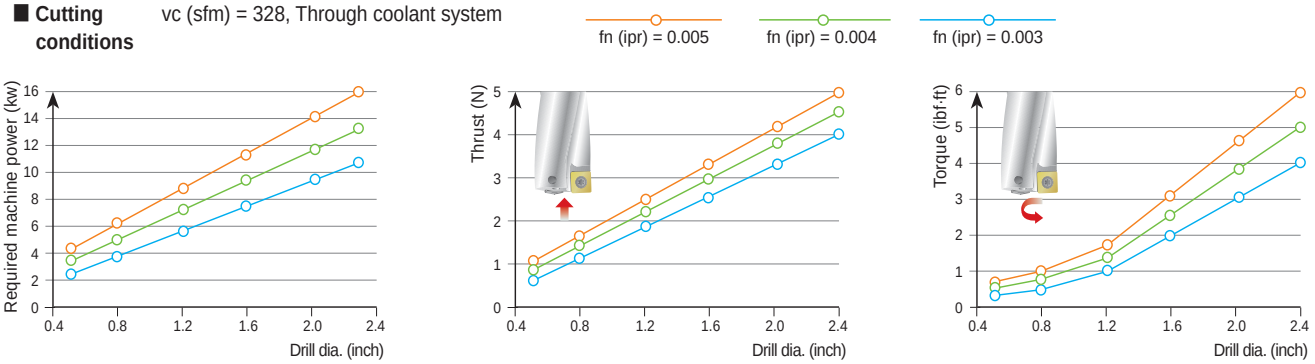
• The Max. feed of 5D holders is 70%~80% of the max. conditions of 2D/3D/4D holders
• In interrupted machining part, reduce 30~50% of feed from the above machining around interrupted part

Required cutting power

- The graphs below show the cutting force required in drilling
- Machining with the KING Drill and a machine with high rigidity and power

■ **Workpiece** AISI4140 (240HB)

■ **Cutting conditions** vc (sfm) = 328, Through coolant system

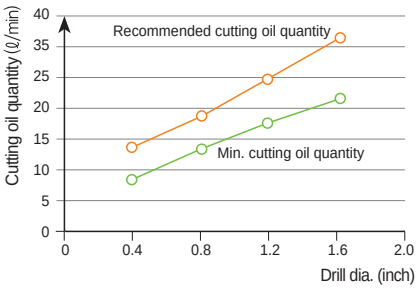


Cutting oil quantity

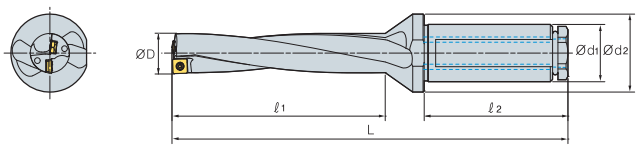
■ **Workpiece** AISI4140 (240HB)

■ **Cutting conditions** vc (sfm) = 328, Through coolant system

- The data of the graph above could be changed depending on workpiece and cutting condition



Drill tolerance and hole tolerance



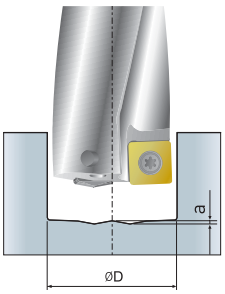
(inch)

Drill dia.		Ø0.484~Ø1.125	Ø1.187~Ø1.750	Ø1.812~Ø2.375
2D~3D	Drill tolerance (ØD)	-0.006~0	-0.006~0	-0.006~0
	Hole tolerance	-0.016~+0.008	-0.004~+0.010	-0.004~+0.011
4D~5D	Drill tolerance (ØD)	-0.006~0	-0.006~0	-0.006~0
	Hole tolerance	-0.002~+0.010	-0.002~+0.012	-0.002~+0.013

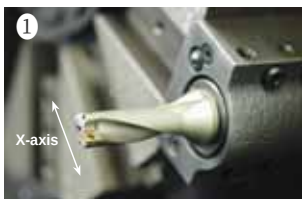
The shape of the bottom of blind hole

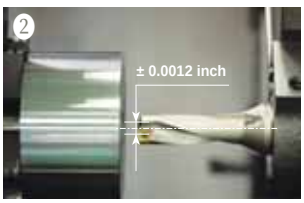
Drill diameter (inch)	Peripheral insert	Central insert	a (inch)
Ø0.484~Ø0.531	SP□T040204-□□	XO□T040204-□□	0.016
Ø0.562~Ø0.625	SP□T050204-□□	XO□T050204-□□	0.016
Ø0.687~Ø0.750	SP□T060205-□□	XO□T060204-□□	0.020
Ø0.812~Ø0.875	SP□T07T208-□□	XO□T07T205-□□	0.020
Ø0.937~Ø1.125	SP□T090308-□□	XO□T090305-□□	0.028
Ø1.187~Ø1.375	SP□T11T308-□□	XO□T11T306-□□	0.031
Ø1.437~Ø1.687	SP□T130410-□□	XO□T130406-□□	0.039
Ø1.750~Ø2.000	SP□T15M510-□□	XO□T15M508-□□	0.043
Ø2.062~Ø2.375	SP□T180510-□□	XO□T180508-□□	0.047

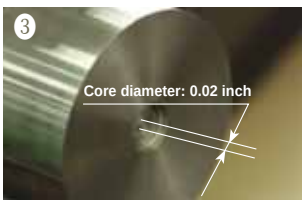




Notice for setting the drill in the lathe







- Set the peripheral insert parallel to the X axis (based on the side lock)
- If the machined core is 0.024 inch after machining 0.2 inch, that is the proper setting

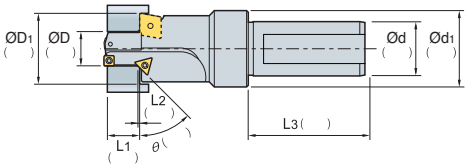
※ Please make sure that the location of the side lock could be different depending on manufacturers of machine

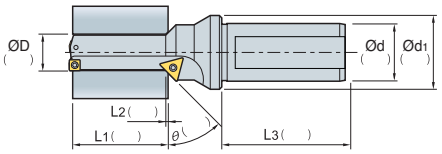
Insert and parts

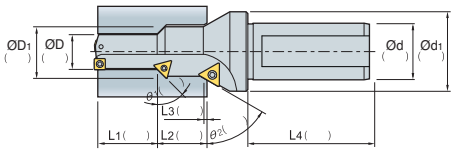
Drill dia. (inch)	Peripheral insert	Central insert	Screw	Wrench	Torque (ibf·ft)
Ø0.484~Ø0.531	SP□T040204-□□	XO□T040204-□□	FTNA0204	TW06P	0.295
Ø0.562~Ø0.625	SP□T050204-□□	XO□T050204-□□	FTNA0204	TW06P	0.295
Ø0.687~Ø0.750	SP□T060205-□□	XO□T060204-□□	FTKA02206S	TW07P	0.590
Ø0.812~Ø0.875	SP□T07T208-□□	XO□T07T205-□□	FTKA02565	TW07S	0.590
Ø0.937~Ø1.125	SP□T090308-□□	XO□T090305-□□	FTKA0307	TW09S	0.885
Ø1.187~Ø1.375	SP□T11T308-□□	XO□T11T306-□□	FTKA03508	TW15S	2.214
Ø1.437~Ø1.687	SP□T130410-□□	XO□T130406-□□	FTKA0410	TW15S	2.214
Ø1.750~Ø2.000	SP□T15M510-□□	XO□T15M508-□□	FTNC04511	TW20S	3.689
Ø2.062~Ø2.375	SP□T180510-□□	XO□T180508-□□	FTNA0511	TW20-100	3.689

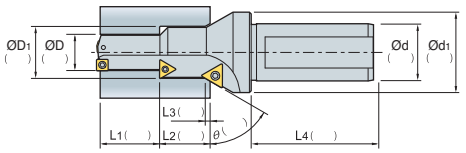
- In clamping an insert, please clean the tip seat and apply CASMOLY1000 on the screw
- Please make sure to use a Korloy-produced wrench and screw only

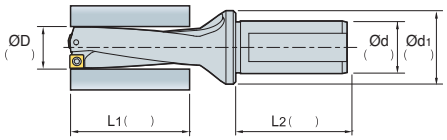
Special Drill Order Form

☐ 

☐ 

☐ 

☐ 

☐ 

■ Coolant type

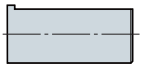
☐ Through coolant Plug Type (Standard) ☐ Through coolant Non Plug Type ☐ No coolant



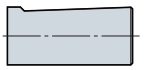
■ Hole type

☐ Blind hole ☐ Thru hole

■ Types of shank

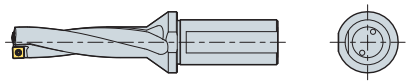
☐  Flat Type

☐  Weldon Type

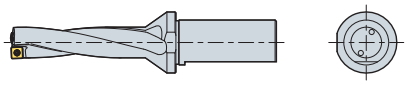
☐  Whistle Notch Type

■ Location of side lock

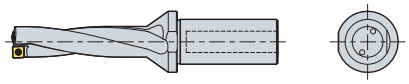
☐ Parallel to peripheral insert (standard)



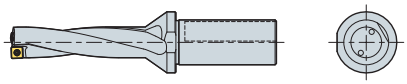
☐ 90°angle to peripheral insert (standard)



☐ 180°angle to peripheral insert (standard)



☐ 270° angle to peripheral insert (standard)



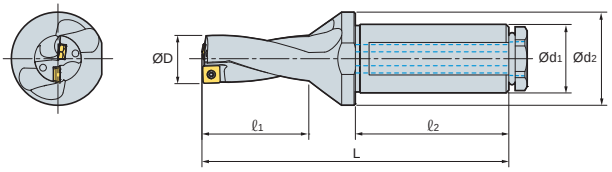
■ Note

- Currently using tool:
- Current cutting condition
  - RPM or vc (sfm):
  - vf (inch/min) or fn (ipr):
  - Depth of cut (inch):
- Standard of measuring tool life:
- Currently using machine
  - Machining center:
  - General lathe:
  - CNC lathe:

KING Drill (2D)

For through coolant system with a lathe





(inch)

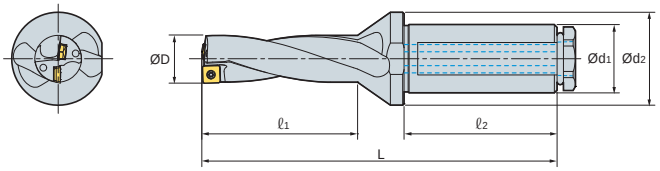
Designation		ØD		Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K2DA	0484075HP-04	0.484	31/64	0.75	0.98	1.06	1.97	3.58	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	0500075HP-04	0.500	1/2	0.75	0.98	1.14	1.97	3.66			
	0531075HP-04	0.531	17/32	0.75	0.98	1.14	1.97	3.66			
	0562075HP-05	0.562	9/16	0.75	0.98	1.22	1.97	3.78	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	0625075HP-05	0.625	5/8	0.75	0.98	1.38	1.97	3.98			
	0687100HP-06	0.687	11/16	1.00	1.34	1.46	2.20	4.29	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	0750100HP-06	0.750	3/4	1.00	1.34	1.61	2.20	4.49			
	0812100HP-07	0.812	13/16	1.00	1.34	1.77	2.20	4.72	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	0875100HP-07	0.875	7/8	1.00	1.34	1.85	2.20	4.80			
	0937125HP-09	0.937	15/16	1.25	1.73	2.01	2.36	5.24	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	1000125HP-09	1.000	1	1.25	1.73	2.09	2.36	5.31			
	1031125HP-09	1.031	1 1/32	1.25	1.73	2.17	2.36	5.39			
	1062125HP-09	1.062	1 1/16	1.25	1.73	2.24	2.36	5.51			
	1125125HP-09	1.125	1 1/8	1.25	1.73	2.40	2.36	5.71			
	1187125HP-11	1.187	1 3/16	1.25	1.73	2.48	2.36	5.91	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	1250125HP-11	1.250	1 1/4	1.25	1.73	2.64	2.36	6.06			
	1312125HP-11	1.312	1 5/16	1.25	1.73	2.72	2.36	6.18			
	1375125HP-11	1.375	1 3/8	1.25	1.73	2.87	2.36	6.34			
	1437150HP-13	1.437	1 7/16	1.50	1.89	2.99	2.76	6.93	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	1500150HP-13	1.500	1 1/2	1.50	1.89	3.15	2.76	7.13			
	1562150HP-13	1.562	1 9/16	1.50	1.89	3.31	2.76	7.32			
	1625150HP-13	1.625	1 5/8	1.50	1.89	3.39	2.76	7.40			
	1687150HP-13	1.687	1 11/16	1.50	2.28	3.58	2.76	7.72			
	1750150HP-15	1.750	1 3/4	1.50	2.28	3.66	2.76	7.80	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	1812150HP-15	1.812	1 13/16	1.50	2.28	3.82	2.76	7.99			
	1875150HP-15	1.875	1 7/8	1.50	2.28	3.98	2.76	8.19			
	1937150HP-15	1.937	1 15/16	1.50	2.28	4.06	2.76	8.27			
	2000150HP-15	2.000	2	1.50	2.68	4.25	2.76	8.58			
	2062150HP-18	2.062	2 1/16	1.50	2.68	4.33	2.76	8.66	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	2125150HP-18	2.125	2 1/8	1.50	2.68	4.49	2.76	8.82			
	2187150HP-18	2.187	2 3/16	1.50	2.68	4.65	2.76	9.06			
	2250150HP-18	2.250	2 1/4	1.50	2.68	4.76	2.76	9.17			
	2313150HP-18	2.313	2 5/16	1.50	2.68	5.00	2.76	9.41			
	2375150HP-18	2.375	2 3/8	1.50	2.68	5.12	2.76	9.53			

Applicable inserts **F03~04**

KING Drill (3D)

For through coolant system with a lathe





(inch)

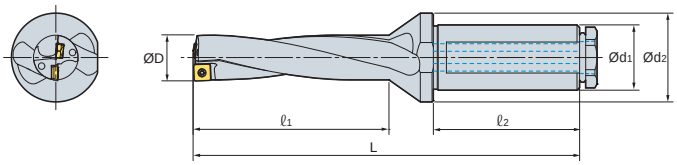
Designation		ØD		Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K3DA	0484075HP-04	0.484	31/64	0.75	0.98	1.54	1.97	4.06	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	0500075HP-04	0.500	1/2	0.75	0.98	1.65	1.97	4.17			
	0531075HP-04	0.531	17/32	0.75	0.98	1.65	1.97	4.17			
	0562075HP-05	0.562	9/16	0.75	0.98	1.77	1.97	4.33	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	0625075HP-05	0.625	5/8	0.75	0.98	2.01	1.97	4.61			
	0687100HP-06	0.687	11/16	1.00	1.34	2.13	2.20	4.96	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	0750100HP-06	0.750	3/4	1.00	1.34	2.36	2.20	5.24			
	0812100HP-07	0.812	13/16	1.00	1.34	2.60	2.20	5.55	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	0875100HP-07	0.875	7/8	1.00	1.34	2.72	2.20	5.67			
	0937125HP-09	0.937	15/16	1.25	1.73	2.95	2.36	6.18	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	1000125HP-09	1.000	1	1.25	1.73	3.07	2.36	6.30			
	1031125HP-09	1.031	1 1/32	1.25	1.73	3.19	2.36	6.42			
	1062125HP-09	1.062	1 1/16	1.25	1.73	3.31	2.36	6.57			
	1125125HP-09	1.125	1 1/8	1.25	1.73	3.54	2.36	6.85			
	1187125HP-11	1.187	1 3/16	1.25	1.73	3.66	2.36	7.09	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	1250125HP-11	1.250	1 1/4	1.25	1.73	3.90	2.36	7.32			
	1312125HP-11	1.312	1 5/16	1.25	1.73	4.02	2.36	7.48			
	1375125HP-11	1.375	1 3/8	1.25	1.73	4.25	2.36	7.72			
	1437150HP-13	1.437	1 7/16	1.50	1.89	4.41	2.76	8.35	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	1500150HP-13	1.500	1 1/2	1.50	1.89	4.65	2.76	8.62			
	1562150HP-13	1.562	1 9/16	1.50	1.89	4.88	2.76	8.90			
	1625150HP-13	1.625	1 5/8	1.50	1.89	5.00	2.76	9.02			
	1687150HP-13	1.687	1 11/16	1.50	2.28	5.28	2.76	9.41			
	1750150HP-15	1.750	1 3/4	1.50	2.28	5.39	2.76	9.53	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	1812150HP-15	1.812	1 13/16	1.50	2.28	5.63	2.76	9.80			
	1875150HP-15	1.875	1 7/8	1.50	2.28	5.87	2.76	10.08			
	1937150HP-15	1.937	1 15/16	1.50	2.28	5.98	2.76	10.20			
	2000150HP-15	2.000	2	1.50	2.68	6.26	2.76	10.59			
	2062150HP-18	2.062	2 1/16	1.50	2.68	6.38	2.76	10.71	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	2125150HP-18	2.125	2 1/8	1.50	2.68	6.61	2.76	10.94			
	2187150HP-18	2.187	2 3/16	1.50	2.68	6.85	2.76	11.26			
	2250150HP-18	2.250	2 1/4	1.50	2.68	7.01	2.76	11.42			
	2313150HP-18	2.313	2 5/16	1.50	2.68	7.32	2.76	11.73			
	2375150HP-18	2.375	2 3/8	1.50	2.68	7.48	2.76	11.89			

Applicable inserts **F03~04**

KING Drill (4D)

For through coolant system with a lathe





(inch)

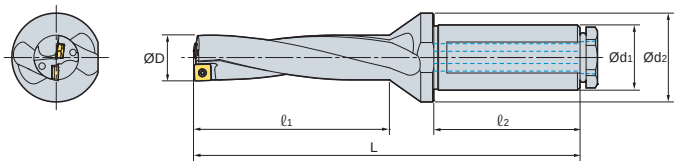
Designation		ØD		Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K4DA	0484075HP-04	0.484	31/64	0.75	0.98	2.01	1.97	4.53	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	0500075HP-04	0.500	1/2	0.75	0.98	2.17	1.97	4.69			
	0531075HP-04	0.531	17/32	0.75	0.98	2.17	1.97	4.69			
	0562075HP-05	0.562	9/16	0.75	0.98	2.32	1.97	4.88	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	0625075HP-05	0.625	5/8	0.75	0.98	2.64	1.97	5.24			
	0687100HP-06	0.687	11/16	1.00	1.34	2.80	2.20	5.63	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	0750100HP-06	0.750	3/4	1.00	1.34	3.11	2.20	5.98			
	0812100HP-07	0.812	13/16	1.00	1.34	3.43	2.20	6.38	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	0875100HP-07	0.875	7/8	1.00	1.34	3.58	2.20	6.54			
	0937125HP-09	0.937	15/16	1.25	1.73	3.90	2.36	7.13	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	1000125HP-09	1.000	1	1.25	1.73	4.06	2.36	7.28			
	1031125HP-09	1.031	1 1/32	1.25	1.73	4.21	2.36	7.44			
	1062125HP-09	1.062	1 1/16	1.25	1.73	4.37	2.36	7.64			
	1125125HP-09	1.125	1 1/8	1.25	1.73	4.69	2.36	7.99			
	1187125HP-11	1.187	1 3/16	1.25	1.73	4.84	2.36	8.27	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	1250125HP-11	1.250	1 1/4	1.25	1.73	5.16	2.36	8.58			
	1312125HP-11	1.312	1 5/16	1.25	1.73	5.31	2.36	8.78			
	1375125HP-11	1.375	1 3/8	1.25	1.73	5.63	2.36	9.09			
	1437150HP-13	1.437	1 7/16	1.50	1.89	5.83	2.76	9.76	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	1500150HP-13	1.500	1 1/2	1.50	1.89	6.14	2.76	10.12			
	1562150HP-13	1.562	1 9/16	1.50	1.89	6.46	2.76	10.47			
	1625150HP-13	1.625	1 5/8	1.50	1.89	6.61	2.76	10.63			
	1687150HP-13	1.687	1 11/16	1.50	2.28	6.97	2.76	11.10			
	1750150HP-15	1.750	1 3/4	1.50	2.28	7.13	2.76	11.26	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	1812150HP-15	1.812	1 13/16	1.50	2.28	7.44	2.76	11.61			
	1875150HP-15	1.875	1 7/8	1.50	2.28	7.76	2.76	11.97			
	1937150HP-15	1.937	1 15/16	1.50	2.28	7.91	2.76	12.13			
	2000150HP-15	2.000	2	1.50	2.68	8.27	2.76	12.60			
	2062150HP-18	2.062	2 1/16	1.50	2.68	8.43	2.76	12.76	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	2125150HP-18	2.125	2 1/8	1.50	2.68	8.74	2.76	13.07			
	2187150HP-18	2.187	2 3/16	1.50	2.68	9.06	2.76	13.46			
	2250150HP-18	2.250	2 1/4	1.50	2.68	9.25	2.76	13.66			
	2313150HP-18	2.313	2 5/16	1.50	2.68	9.65	2.76	14.06			
	2375150HP-18	2.375	2 3/8	1.50	2.68	9.84	2.76	14.25			

Applicable inserts **F03~04**

KING Drill (5D)

For through coolant system with a lathe





(inch)

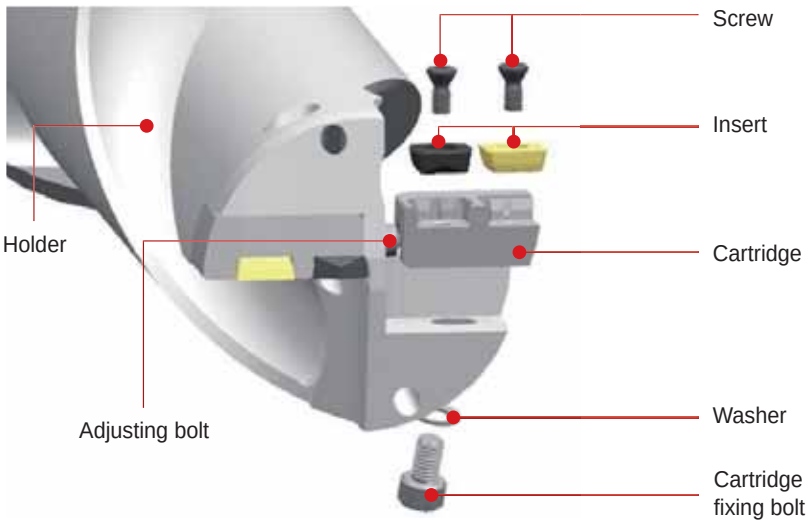
Designation		ØD		Ød1	Ød2	ℓ1	ℓ2	L	Insert	Screw	Wrench
K5DA	0484075HP-04	0.484	31/64	0.75	0.98	2.48	1.97	5.00	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	0500075HP-04	0.500	1/2	0.75	0.98	2.48	1.97	5.00			
	0531075HP-04	0.531	17/32	0.75	0.98	2.68	1.97	5.20			
	0562075HP-05	0.562	9/16	0.75	0.98	2.87	1.97	5.43	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	0625075HP-05	0.625	5/8	0.75	0.98	3.27	1.97	5.87			
	0687100HP-06	0.687	11/16	1.00	1.34	3.46	2.20	6.30	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	0750100HP-06	0.750	3/4	1.00	1.34	3.86	2.20	6.73			
	0812100HP-07	0.812	13/16	1.00	1.34	4.25	2.20	7.20	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	0875100HP-07	0.875	7/8	1.00	1.34	4.45	2.20	7.40			
	0937125HP-09	0.937	15/16	1.25	1.73	4.84	2.36	8.07	SP□T07T208-□□ XO□T07T205-□□	FTKA0307	TW09S
	1000125HP-09	1.000	1	1.25	1.73	5.04	2.36	8.27			
	1031125HP-09	1.031	1 1/32	1.25	1.73	5.24	2.36	8.46			
	1062125HP-09	1.062	1 1/16	1.25	1.73	5.43	2.36	8.70			
	1125125HP-09	1.125	1 1/8	1.25	1.73	5.83	2.36	9.13			
	1187125HP-11	1.187	1 3/16	1.25	1.73	6.02	2.36	9.45	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	1250125HP-11	1.250	1 1/4	1.25	1.73	6.42	2.36	9.84			
	1312125HP-11	1.312	1 5/16	1.25	1.73	6.61	2.36	10.08			
	1375125HP-11	1.375	1 3/8	1.25	1.73	7.01	2.36	10.47			
	1437150HP-13	1.437	1 7/16	1.50	1.89	7.24	2.76	11.18	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	1500150HP-13	1.500	1 1/2	1.50	1.89	7.64	2.76	11.61			
	1562150HP-13	1.562	1 9/16	1.50	1.89	8.03	2.76	12.05			
	1625150HP-13	1.625	1 5/8	1.50	1.89	8.23	2.76	12.24			
	1687150HP-13	1.687	1 11/16	1.50	2.28	8.66	2.76	12.80			
	1750150HP-15	1.750	1 3/4	1.50	2.28	8.86	2.76	12.99	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	1812150HP-15	1.812	1 13/16	1.50	2.28	9.25	2.76	13.43			
	1875150HP-15	1.875	1 7/8	1.50	2.28	9.65	2.76	13.86			
	1937150HP-15	1.937	1 15/16	1.50	2.28	9.84	2.76	14.06			
	2000150HP-15	2.000	2	1.50	2.68	10.28	2.76	14.61			
	2062150HP-18	2.062	2 1/16	1.50	2.68	10.47	2.76	14.80	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	2125150HP-18	2.125	2 1/8	1.50	2.68	10.87	2.76	15.20			
	2187150HP-18	2.187	2 3/16	1.50	2.68	11.26	2.76	15.67			
	2250150HP-18	2.250	2 1/4	1.50	2.68	11.50	2.76	15.91			
	2313150HP-18	2.313	2 5/16	1.50	2.68	11.97	2.76	16.38			
	2375150HP-18	2.375	2 3/8	1.50	2.68	12.20	2.76	16.61			

Applicable inserts **F03~04**

High rigidity drill produces cost efficiency due to cartridge replacement

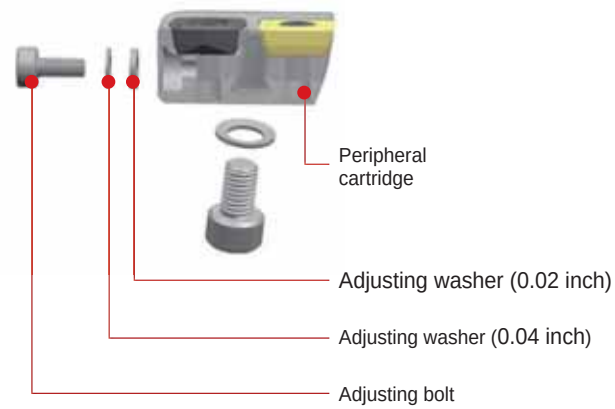
KING Drill (large diameter drilling)

- Cartridge type for Ø2.4~Ø3.94 drilling
- Peripheral cartridge can adjust the drilling diameter within 0.197 inch
- Easy to adjust drilling diameter with adjusting bolt





Adjustment of drill diameter

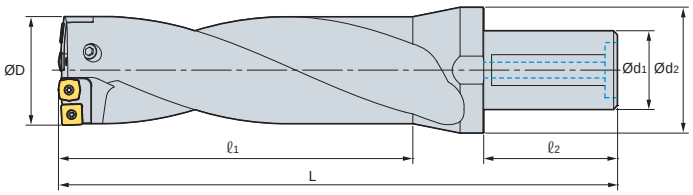


Adjustment Ø (inch)	Adjusting washer	
	Designation	Width (inch)
0.04	WA0305	0.020
0.08	WA0310	0.040
0.12	WA0305 + WA0310	0.059
0.16	WA0310 x 2	0.079
0.20	WA0305 + WA0310 x 2	0.098

※ Adjusting washer adjusts the drilling diameter within 0.197 inch

KING Drill

For large diameter drilling



(inch)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Cartridge		Screw	Wrench
								Internal	External		
K2DA	240256200HP-11	2.40~2.56	2.0	3.15	5.12	3.35	10.24	KDC240256C	KDC240256P	FTKA03508	TW15S
	256276200HP-13	2.56~2.76	2.0	3.46	5.51	3.35	10.63	KDC256276C	KDC256276P	FTKA0410	TW15S
	276295200HP-13	2.76~2.95	2.0	3.46	5.91	3.35	11.02	KDC276295C	KDC276295P	FTKA0410	TW15S
	295315200HP-13	2.95~3.15	2.0	3.46	6.30	3.35	11.42	KDC295315C	KDC295315P	FTKA0410	TW15S
	315335200HP-15	3.15~3.35	2.0	3.46	6.69	3.35	11.81	KDC315335C	KDC315335P	FTNC04511	TW20S
	335354200HP-15	3.35~3.54	2.0	3.74	7.09	3.35	12.20	KDC335354C	KDC335354P	FTNC04511	TW20S
	354374200HP-15	3.54~3.74	2.0	3.74	7.48	3.35	12.60	KDC354374C	KDC354374P	FTNC04511	TW20S
	374394200HP-18	3.74~3.94	2.0	3.74	7.87	3.35	12.99	KDC374394C	KDC374394P	FTNA0511	TW20-100
K3DA	240256200HP-11	2.40~2.56	2.0	3.15	7.68	3.35	12.80	KDC240256C	KDC240256P	FTKA03508	TW15S
	256276200HP-13	2.56~2.76	2.0	3.46	8.27	3.35	13.39	KDC256276C	KDC256276P	FTKA0410	TW15S
	276295200HP-13	2.76~2.95	2.0	3.46	8.86	3.35	13.98	KDC276295C	KDC276295P	FTKA0410	TW15S
	295315200HP-13	2.95~3.15	2.0	3.46	9.45	3.35	14.57	KDC295315C	KDC295315P	FTKA0410	TW15S
	315335200HP-15	3.15~3.35	2.0	3.46	10.04	3.35	15.16	KDC315335C	KDC315335P	FTNC04511	TW20S
	335354200HP-15	3.35~3.54	2.0	3.74	10.63	3.35	15.75	KDC335354C	KDC335354P	FTNC04511	TW20S
	354374200HP-15	3.54~3.74	2.0	3.74	11.22	3.35	16.34	KDC354374C	KDC354374P	FTNC04511	TW20S
	374394200HP-18	3.74~3.94	2.0	3.74	11.81	3.35	16.93	KDC374394C	KDC374394P	FTNA0511	TW20-100
K4DA	240256200HP-11	2.40~2.56	2.0	3.15	10.24	3.35	15.35	KDC240256C	KDC240256P	FTKA03508	TW15S
	256276200HP-13	2.56~2.76	2.0	3.46	11.02	3.35	16.14	KDC256276C	KDC256276P	FTKA0410	TW15S
	276295200HP-13	2.76~2.95	2.0	3.46	11.81	3.35	16.93	KDC276295C	KDC276295P	FTKA0410	TW15S
	295315200HP-13	2.95~3.15	2.0	3.46	12.60	3.35	17.72	KDC295315C	KDC295315P	FTKA0410	TW15S
	315335200HP-15	3.15~3.35	2.0	3.46	13.39	3.35	18.50	KDC315335C	KDC315335P	FTNC04511	TW20S
	335354200-HP15	3.35~3.54	2.0	3.74	14.17	3.35	19.29	KDC335354C	KDC335354P	FTNC04511	TW20S
	354374200HP-15	3.54~3.74	2.0	3.74	14.96	3.35	20.08	KDC354374C	KDC354374P	FTNC04511	TW20S
	374394200HP-18	3.74~3.94	2.0	3.74	15.75	3.35	20.87	KDC374394C	KDC374394P	FTNA0511	TW20-100

Applicable inserts **F03~04**

Parts

Cartridge		Range (Ø)	Insert				Screw	Wrench
Internal	External		Designation	Quantity	Designation	Quantity		
KDC240256C	KDC240256P	2.40~2.56	XOM□T11T306-□□	2	SPM□T11T308-□□	2	FTKA03508	TW15S
KDC256276C	KDC256276P	2.56~2.76	XOM□T130406-□□	2	SPM□T130410-□□	2	FTKA0410	TW15S
KDC276295C	KDC276295P	2.76~2.95	XOM□T130406-□□	2	SPM□T130410-□□	2	FTKA0410	TW15S
KDC295315C	KDC295315P	2.95~3.15	XOM□T130406-□□	2	SPM□T130410-□□	2	FTKA0410	TW15S
KDC315335C	KDC315335P	3.15~3.35	XOM□T15M508-□□	2	SPM□T15M510-□□	2	FTNC04511	TW20S
KDC335354C	KDC335354P	3.35~3.54	XOM□T15M508-□□	2	SPM□T15M510-□□	2	FTNC04511	TW20S
KDC354374C	KDC354374P	3.54~3.74	XOM□T15M508-□□	2	SPM□T15M510-□□	2	FTNC04511	TW20S
KDC374394C	KDC374394P	3.74~3.94	XOM□T180508-□□	2	SPM□T180510-□□	2	FTNA0511	TW20-100

High quality and high feed top solid indexable drill

TPDC Plus Drill new

(TPDC-XP, CP, CM, CN, CP-FC)

- The optimal tool shape for drilling realizing high precision and high feed machining as of carbide solid drill performance level
- Usable for various machining through enlarged line-up by workpieces, depth of cuts and workpiece shapes

Code system

· **Insert**

TPD 0591 C A P - □

Top solid Piercing Drill	Drill dia.	Insert type	Type	Machining area	Cutting edge
	0591: Ø0.591 inch	X, C: Cone type	A: Inch type No code: Metric type	P: Steel and general M: Stainless steel K: Cast iron N: Non-ferrous metal	No code: Standard F: Flat FC: Flat Candle

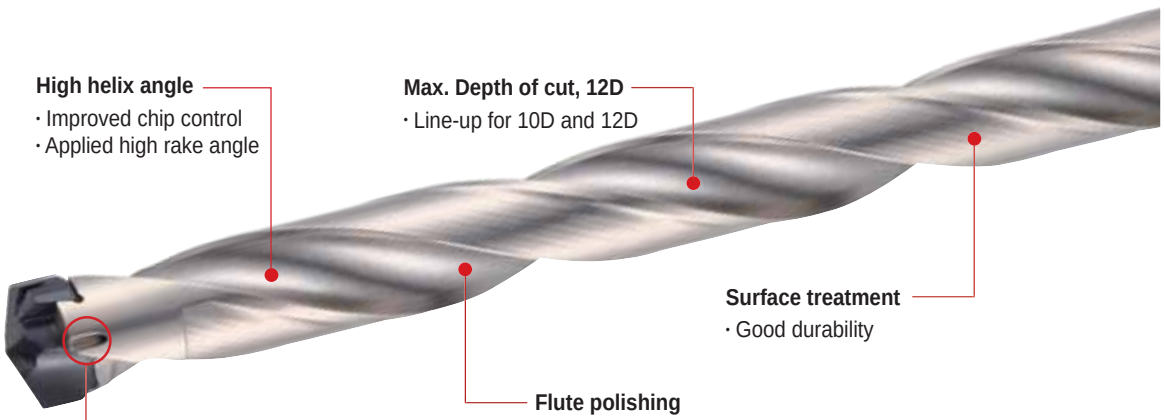
· **Holder**

TPD C A 5D – 0591 075 – 2953

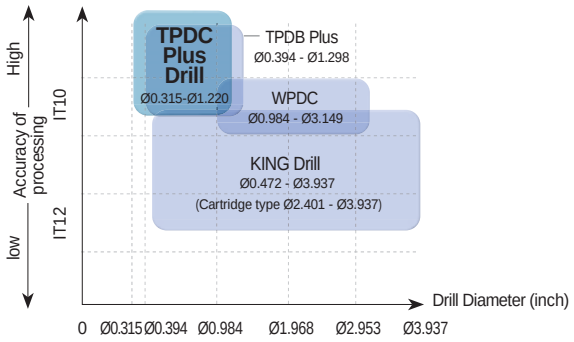
Top solid Piercing Drill	Insert type	Type	Aspect ratio (L/D)	Drill dia.	Shank dia.	Flute length
	X, C: Cone type	A: Inch type No code: Metric type	1.5D, 3D, 5D, 8D,10D, 12D	0591: Ø0.591 - Ø0.629 inch	075: Ø0.75 inch	2953: 2.953 inch

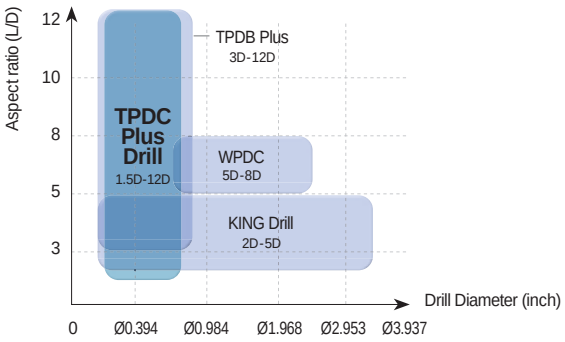
Features

- One step clamp system - Increased stability and shortened setting time
- High helix angle and flute polishing - Reduced cutting load and enhanced chip evacuation
- Various applications from enlarged line-up by depth of cuts and shapes of workpiece



Application range





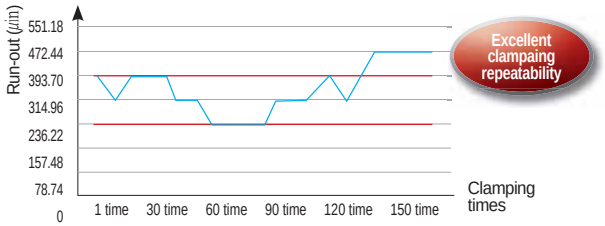
Run-out

Durability evaluation

- **Workpiece** Alloy steel (AISI4140, HRC22)
- **Cutting conditions** vc (sfm) = 295, fn (ipr) = 0.0098
  ap (inch) = 2.362, wet (10bar)
- **Tools** **Insert** TPD0591CAP (PC5335)
  Holder TPDCA5D-0591075-2953
  (Drill dia. = Ø0.591 inch)

Long tool life with the setting run-out, lower than 591.55 μin after using 40 inserts

Clamping repeatability evaluation



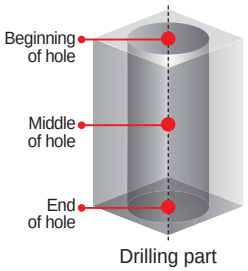
Excellent clamping system keeping the run-out, lower than 236.22 μin after clamping 150 times repeatedly

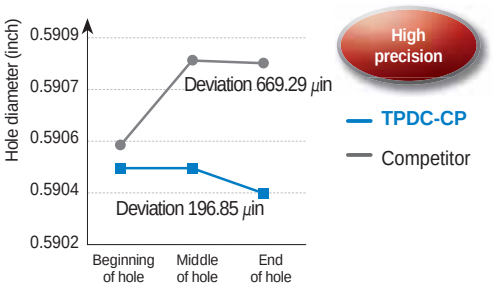
Performance evaluation

Precision

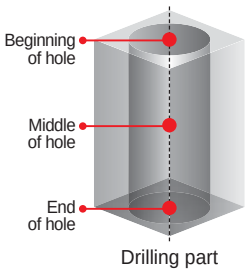
- **Workpiece** Carbon steel (1045, HRC19)
- **Cutting conditions** vc (sfm) = 197, fn (ipr) = 0.0079
  ap (inch) = 5.9055, wet (20bar)
- **Tools** **Insert** TPD0591CAP (PC5335)
  Holder TPDCA12D-0591075-6693
  (Drill dia. = Ø0.591 inch)

High precision in deep hole-making

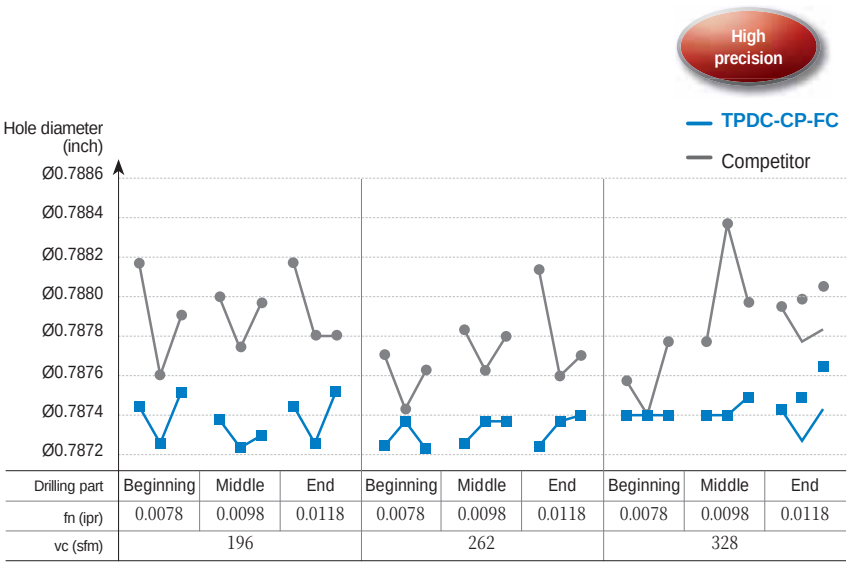




- **Workpiece** Carbon steel (1045, HRC18)
- **Cutting conditions** vc (sfm) = 196~328
  fn (ipr) = 0.0078~0.0118
  ap (inch) = 1.9685, wet (20 bar)
- **Tools** **Insert** TPD0787CAP-FC (PC5335)
  Holder TPDCA3D-0787100-2362
  (Drill dia. = Ø0.787 inch)



High precision and excellent centering due to profiled cutting edge



Drilling part	Beginning	Middle	End	Beginning	Middle	End	Beginning	Middle	End
fn (ipr)	0.0078	0.0098	0.0118	0.0078	0.0098	0.0118	0.0078	0.0098	0.0118
vc (sfm)	196			262			328		

Performance evaluation

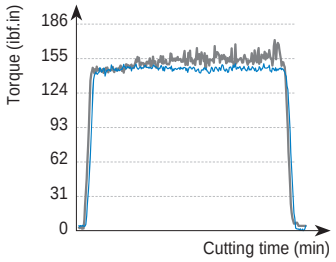
Cutting load

■ **Workpiece** Carbon steel (1045, HRC19)

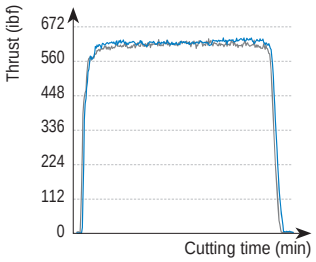
■ **Cutting conditions** vc (sfm) = 295
fn (ipr) = 0.0098
ap (inch) = 2.3622, wet (10bar)

■ **Tools** **Insert** TPD0591CAP (PC5335)
Holder TPDCA5D-0591075-2953
(Drill dia. = Ø0.591 inch)

Stable cutting load due to multi-cutting edge and good chip control



Torque



Thrust

Stable cutting load

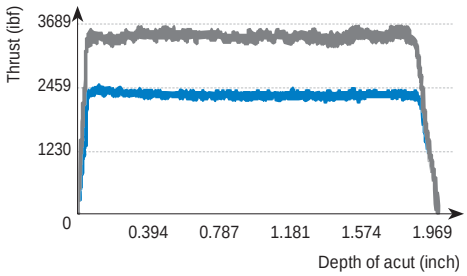
— TPDC-CP
— Competitor

■ **Workpiece** Carbon steel (1045, HRC18)

■ **Cutting conditions** vc (sfm) = 328
fn (ipr) = 0.0098
ap (inch) = 1.9685, wet (10bar)

■ **Tools** **Insert** TPD0787CAP-FC (PC5335)
Holder TPDCA3D-0787100-2362
(Drill dia. = Ø0.787 inch)

Low and stable cutting load due to profiled-cutting edge



Decreased 30% of cutting load

— TPDC-CP-FC
Average thrust 2705 ibf
— Competitor
Average thrust 4035 ibf

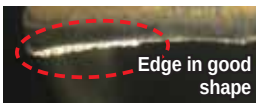
Application examples

■ **Use** Part of machine

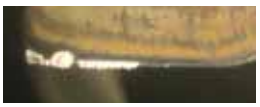
■ **Workpiece** Alloy steel (AISI4140, HRC22)

■ **Cutting conditions** vc (sfm) = 328.1
fn (ipr) = 0.012
ap (inch) = 3.543, wet

■ **Tools** **Insert** TPD0758CAP (PC5335)
Holder TPDCA5D-0748100-3740
(Drill dia. = Ø0.748 inch)

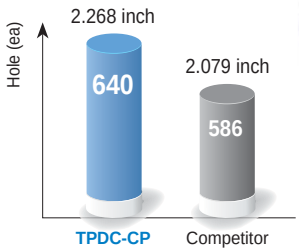


TPDC-CP



Competitor

■ **Test result**



1.1 times more

- Lubricative multi-layer coating prevents chipping on cutting edges

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■ **Use** Part of machine

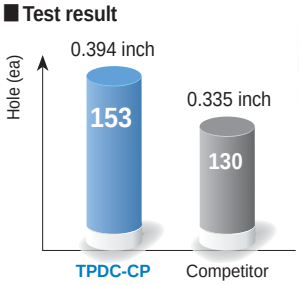
■ **Workpiece** Carbon steel (AISI1045, HRC40)

■ **Cutting conditions** vc (sfm) = 196.9
fn (ipr) = 0.006
ap (inch) = 2.559, wet

■ **Tools** **Inserts** TPD0709CAP (PC5335)
Holder TPDCA5D-0709100-3543
(Drill dia. = Ø0.709 inch)



■ **Test result**



1.2 times more

- Lubricative multi-layer coating enhances wear resistance

Application examples

■ **Use** Tube sheet

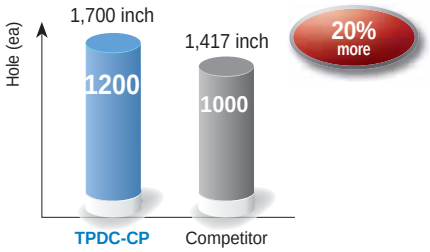
■ **Workpiece** Carbon steel (A512, HRC18)

■ **Cutting conditions**
vc (sfm) = 279
n (rpm) = 1381
fn (ipr) = 0.0106
ap (inch) = 0.4724 inch x 3Passes, wet

■ **Tools**
Insert TPD0772CAP (PC330P)
Holder TPDCA3D-0748100-2244



■ **Test result**



- Optimized cutting edge enhances wear resistance due to stable cutting load and lubricated multi-layer coating

■ **Use** Turret flange

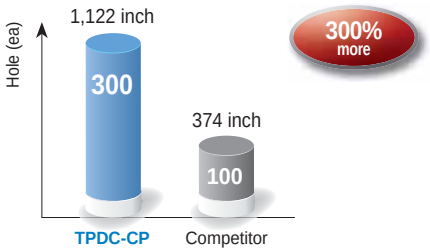
■ **Workpiece** Alloy steel (4140, HRC22)

■ **Cutting conditions**
vc (sfm = 269
n (rpm) = 2000
fn (ipr) = 0.0079
ap (inch) = 3.7402, wet

■ **Tools**
Insert TPD0512CAP (PC5335)
Holder TPDCA8D-0512063-4094



■ **Test result**



- Lubricated multi-layer coating improving chipping resistance prevents chipping on the cutting edge

Insert features

Shape	Application	Drill dia. (inch)	Features
 XP new	P	Ø0.315-Ø0.469	• High durability due to the strong clamping system • Excellent quality of machining and stable machining from high clamping force • Enhanced performance by high lubricated grade
 CP	P K	Ø0.472-Ø1.220	• High quality machining due to excellent centering: Good roundness and surface finish • Excellent chip control from exclusive edge design: Stable machining by good chip forming and chip evacuation
 CM new	M	Ø0.472-Ø1.220	• Ensuring strength of point and cutting edge: Stable machinability • Increased stability of machining due to low cutting load • Applied grade with high built up edge resistance and chipping resistance
 CN new	N	Ø0.472-Ø1.220	• Cutting edge with low cutting load: Excellent chip evacuation from increased surface finish of insert by special after treatment • Long tool life due to ultra-fine substrate application
 CP-FC new	P	Ø0.472-Ø1.220	• Cutting edge shape with excellent centering: Stable machinability from low cutting load • Available in various machining applications: Flat surface, angled surface, curved surface drilling, plunging and boring • Reduced cycle time by simplified tools: Endmill+drill machining → TPDC-CP-FC insert

How to clamp inserts

Using the improved wrench

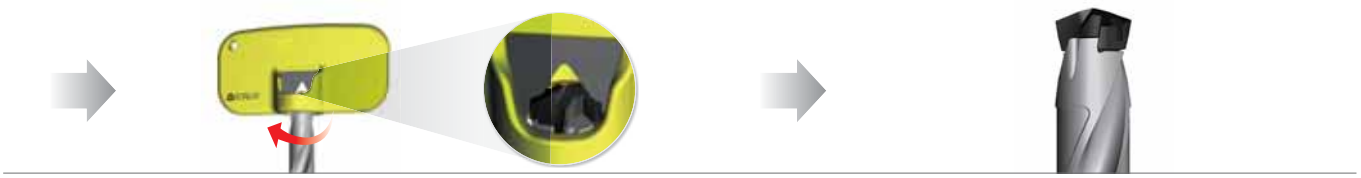
• Using the insert with slot on the top (Use the improved inserts only)



❶ Clean the mounting seat with air or cloth

❷ Put an insert on the holder

❸ Put the wrench in the slot parallel



❹ After fixing the wrench firmly, turn it clockwise and clamp the insert to the holder

Clamped state

Using the existing wrench

• Using any inserts (Use both existing inserts and improved inserts)

Use only the improved wrench later



❶ Clean the mounting seat with air or cloth

❷ Put an insert on the holder

❸ A part of wrench and B part of insert must beparallel to each other before clamp the insert
Turn the wrench clockwise to finish clamping

Clamped state

Recommended cutting conditions (TPDC-XP)

· 3D Drilling

Workpiece				Grade	vc (sfm)	Aspect ratio (L/D) = 3D	
						Feed rate (ipr) per drill dia. (inch)	
ISO		Workpiece	HB			Ø 0.315~Ø0.393	Ø 0.394~Ø0.472
P	Carbon steel	Low carbon steel	80~120	PC325U	360 (262~459)	0.005~0.009	0.006~0.011
		High carbon steel	180~280	PC325U	295 (229~360)		
P	Alloy steel	Low alloy steel	140~260	PC325U	295 (229~360)	0.005~0.008	0.006~0.010
		Low alloy heat-treated steel	200~400	PC325U	229 (164~295)		
		High alloy steel	260~320	PC325U	229 (164~295)	0.004~0.006	0.005~0.007
		High alloy heat-treated steel	300~450	PC325U	196 (131~262)		
K	Cast iron	Gray cast iron	150~230	PC325U	410 (295~525)	0.006~0.012	0.005~0.009
		Ductile cast iron	160~260	PC325U	360 (262~459)		

※ In interrupted machining, reduce the feed to 0.004-0.006 machining around the interrupted part

· 5D Drilling

Workpiece				Grade	vc (sfm)	Aspect ratio (L/D) = 5D	
						Feed rate (ipr) per drill dia. (inch)	
ISO		Workpiece	HB			Ø 0.315~Ø 0.393	Ø 0.394~Ø0.472
P	Carbon steel	Low carbon steel	80~120	PC325U	360 (262~459)	0.005~0.009	0.006~0.011
		High carbon steel	180~280	PC325U	295 (229~360)		
P	Alloy steel	Low alloy steel	140~260	PC325U	295 (229~360)	0.005~0.008	0.006~0.010
		Low alloy heat-treated steel	200~400	PC325U	229 (164~295)		
		High alloy steel	260~320	PC325U	229 (164~295)	0.004~0.006	0.005~0.007
		High alloy heat-treated steel	300~450	PC325U	196 (131~262)		
K	Cast iron	Gray cast iron	150~230	PC325U	410 (295~525)	0.006~0.012	0.005~0.009
		Ductile cast iron	160~260	PC325U	360 (262~459)		

※ In interrupted machining, reduce the feed to 0.004-0.006 machining around the interrupted part

· 8D Drilling

Workpiece				Grade	vc (sfm)	Aspect ratio (L/D) = 8D	
						Feed rate (ipr) per drill dia. (inch)	
ISO		Workpiece	HB			Ø 0.315~Ø 0.393	Ø 0.394~Ø0.472
P	Carbon steel	Low carbon steel	80~120	PC325U	328 (229~426)	0.004~0.008	0.005~0.010
		High carbon steel	180~280	PC325U	262 (196~328)		
P	Alloy steel	Low alloy steel	140~260	PC325U	262 (196~328)	0.004~0.007	0.005~0.008
		Low alloy heat-treated steel	200~400	PC325U	196 (131~262)		
		High alloy steel	260~320	PC325U	196 (131~262)	0.004~0.005	0.004~0.006
		High alloy heat-treated steel	300~450	PC325U	164 (98~229)		
K	Cast iron	Gray cast iron	150~230	PC325U	377 (262~492)	0.005~0.011	0.007~0.013
		Ductile cast iron	160~260	PC325U	328 (229~426)		

※ In interrupted machining, reduce the feed to 0.004-0.006 machining around the interrupted part
※ In case of 8D drilling, please use a Pilot Dirll

Recommended cutting conditions (TPDC-CP/CM/CN)

· 1.5D/3D Drilling

Workpiece				Insert	Grade	vc (sfm)	Aspect ratio (L/D) = 1.5D, 3D		
							Feed rate (ipr) per drill dia. (inch)		
ISO		Workpiece	HB				Ø0.472~Ø0.705	Ø0.708~Ø1.023	Ø1.024~Ø1.220
P	Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	393 (295~459)	0.010~0.014	0.012~0.016	0.014~0.018
		High carbon steel	180~280	CP	PC5335 PC330P	360 (262~426)	0.010~0.014	0.012~0.016	0.014~0.018
	Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	393 (295~459)	0.011~0.016	0.013~0.017	0.015~0.019
		Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	262 (197~328)	0.011~0.016	0.013~0.017	0.015~0.019
		High alloy steel	260~320	CP	PC5335 PC5300	246 (197~295)	0.008~0.014	0.009~0.016	0.010~0.018
		High alloy heat-treated steel	300~450	CP	PC5335 PC5300	213 (164~262)	0.008~0.014	0.009~0.016	0.010~0.018
M	Stainless steel	Austenitic	135~275	CM	PC330N	213 (164~262)	0.002~0.006	0.004~0.006	0.006~0.010
		Ferritic, martensitic	135~275	CM	PC330N	246 (197~295)	0.004~0.010	0.006~0.012	0.008~0.014
K	Cast iron	Gray cast iron	150~230	CP	PC5335 PC5300	426 (295~459)	0.014~0.018	0.016~0.020	0.018~0.022
		Ductile cast iron	160~260	CP	PC5335 PC5300	393 (262~426)	0.012~0.016	0.012~0.018	0.016~0.020
N	Non~ferrous metal	Aluminum	30~150	CN	H01	656 (293~721)	0.014~0.018	0.016~0.020	0.018~0.022
		Copper alloy	150~160	CN	H01	656 (293~721)	0.014~0.018	0.016~0.020	0.018~0.022

※ In interrupted machining, reduce the feed to 0.004-0.006 machining around the interrupted part
※ In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

· 5D Drilling

Workpiece				Insert	Grade	vc (sfm)	Aspect ratio (L/D) = 5D		
							Feed rate (ipr) per drill dia. (inch)		
ISO		Workpiece	HB				Ø0.472~Ø0.705	Ø0.708~Ø1.023	Ø1.024~Ø1.220
P	Carbon steel	Low carbon steel	80 ~120	CP	PC5335 PC330P	360 (262~459)	0.006~0.012	0.008~0.014	0.010~0.016
		High carbon steel	180~280	CP	PC5335 PC330P	328 (229~426)	0.006~0.012	0.008~0.014	0.010~0.016
	Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	360 (262~459)	0.007~0.014	0.009~0.015	0.011~0.017
		Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	246 (164~328)	0.007~0.014	0.009~0.015	0.011~0.017
		High alloy steel	260~320	CP	PC5335 PC5300	229 (164~295)	0.007~0.012	0.008~0.014	0.010~0.016
		High alloy heat-treated steel	300~450	CP	PC5335 PC5300	196 (131~262)	0.007~0.012	0.008~0.014	0.010~0.016
M	Stainless steel	Austenitic	135~275	CM	PC330N	196 (131~262)	0.002~0.006	0.004~0.008	0.006~0.010
		Ferritic, martensitic	135~275	CM	PC330N	229 (164~295)	0.004~0.008	0.006~0.012	0.008~0.014
K	Cast iron	Gray cast iron	150~230	CP	PC5335 PC5300	393 (262~459)	0.010~0.016	0.012~0.018	0.014~0.020
		Ductile cast iron	160~260	CP	PC5335 PC5300	360 (229~426)	0.008~0.014	0.010~0.016	0.012~0.018
N	Non~ferrous metal	Aluminum	30 ~150	CN	H01	656 (295~721)	0.014~0.018	0.016~0.022	0.018~0.022
		Copper alloy	150 ~160	CN	H01	656 (295~721)	0.014~0.018	0.016~0.022	0.018~0.022

※ In interrupted machining, reduce the feed to 0.004-0.006 machining around the interrupted part
※ In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

· 8D Drilling

Workpiece				Insert	Graade	vc (sfm)	Aspect ratio (L/D) = 8D		
							Feed rate (ipr) per drill dia. (inch)		
ISO		Workpiece	HB				Ø0.472~Ø0.705	Ø0.708~Ø1.023	Ø1.024~Ø1.220
P	Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	328 (229~426)	0.005~0.010	0.007~0.012	0.009~0.014
		High carbon steel	180~280	CP	PC5335 PC330P	295 (196~393)	0.005~0.010	0.007~0.012	0.009~0.014
	Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	328 (229~426)	0.006~0.012	0.008~0.013	0.010~0.015
		Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	213 (131~295)	0.006~0.012	0.008~0.013	0.010~0.015
		High alloy steel	260~320	CP	PC5335 PC5300	196 (131~262)	0.006~0.010	0.007~0.012	0.009~0.014
		High alloy heat-treated steel	300~450	CP	PC5335 PC5300	164 (98~229)	0.006~0.010	0.007~0.012	0.009~0.014
M	Stainless steel	Austenitic	135~275	CM	PC330N	164 (98~229)	0.002~0.004	0.002~0.006	0.004~0.008
		Ferritic, martensitic	135~275	CM	PC330N	196 (131~262)	0.002~0.006	0.004~0.010	0.006~0.012
K	Cast iron	Gray cast iron	150~230	CP	PC5335 PC5300	360 (229~426)	0.009~0.014	0.011~0.016	0.013~0.018
		Ductile cast iron	160~260	CP	PC5335 PC5300	328 (196~393)	0.007~0.012	0.009~0.014	0.011~0.016
N	Non~ferrous metal	Aluminum	30~150	CN	H01	623 (262~656)	0.012~0.016	0.014~0.018	0.016~0.020
		Copper alloy	150~160	CN	H01	623 (262~656)	0.012~0.016	0.014~0.018	0.016~0.020

※ In interrupted machining, reduce the feed to 0.004-0.006 machining around the interrupted part
※ In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

· 10D/12D Drilling

Workpiece				Insert	Grade	vc (sfm)	Aspect ratio (L/D) = 10D, 12D		
							Feed rate (ipr) per drill dia. (inch)		
ISO		Workpiece	HB				Ø0.472~Ø0.705	Ø0.708~Ø1.023	Ø1.024~Ø1.220
P	Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	295 (197~393)	0.004~0.008	0.006~0.010	0.008~0.012
		High carbon steel	180~280	CP	PC5335 PC330P	262 (164~360)	0.004~0.008	0.006~0.010	0.008~0.012
	Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	295 (196~393)	0.005~0.010	0.007~0.011	0.009~0.013
		Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	180 (131~262)	0.005~0.012	0.007~0.011	0.009~0.013
		High alloy steel	260~320	CP	PC5335 PC5300	164 (131~229)	0.005~0.010	0.006~0.010	0.008~0.012
		High alloy heat-treated steel	300~450	CP	PC5335 PC5300	131 (98~196)	0.005~0.010	0.006~0.010	0.008~0.012
M	Stainless steel	Austenitic	135~275	CM	PC330N	164 (98~196)	0.002~0.004	0.002~0.006	0.004~0.008
		Ferritic, martensitic	135~275	CM	PC330N	196 (131~229)	0.002~0.006	0.004~0.010	0.006~0.012
K	Cast iron	Gray cast iron	150~230	CP	PC5335 PC5300	328 (196~393)	0.008~0.012	0.010~0.014	0.012~0.016
		Ductile cast iron	160~260	CP	PC5335 PC5300	295 (164~360)	0.006~0.010	0.008~0.012	0.010~0.014
N	Non~ferrous metal	Aluminum	30~150	CN	H01	590 (229~623)	0.011~0.014	0.013~0.016	0.015~0.018
		Copper alloy	150~160	CN	H01	590 (229~623)	0.011~0.014	0.013~0.016	0.015~0.018

※ In interrupted machining, reduce the feed to 0.004-0.006 machining around the interrupted part
※ In case of 10D and 12D, apply the recommended cutting conditions in the other side
※ In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

Recommended cutting conditions (TPDC-CP-FC)

Workpiece				Graade	vc (sfm)	Aspect ratio (L/D) = 1.5D, 3D, 5D) Feed rate (ipr) per drill dia. (inch)		
ISO		Workpiece	HB			Ø0.472-Ø0.705	Ø0.708-Ø1.023	Ø1.024-Ø1.220
P	Carbon steel	Low carbon steel (1010, 1020 etc)	80~120	PC5335	395 (229~360)	0.007~0.011	0.008~0.012	0.009~0.013
		High carbon steel (1045, 1049 etc)	180~280		262 (196~328)	0.007~0.011	0.008~0.012	0.009~0.013
	Alloy steel	Low alloy steel (4140, 4142 etc)	140~260		295 (229~360)	0.007~0.011	0.008~0.012	0.009~0.013
		High alloy steel (4137, 4145 etc)	260~320		229 (164~295)	0.007~0.011	0.008~0.012	0.009~0.013

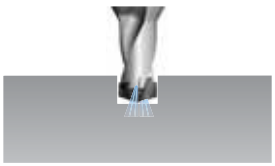
Machining	Flat surface drilling	Angled surface drilling	Curved surface drilling	Plunging	Boring
Pic.					
1.5D/3D	○	○	○	○	○
5D	○	X	X	X	X

※ Please refer to the precaution in drilling in case of angled surface drilling, curved surface drilling, plunging and boring

How to drill a deep hole (10D/12D)

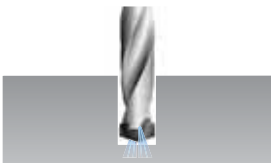
· Using a pilot drill (recommended)

1. Drilling a pilot hole (with a pilot drill)



· Drill a 0.5D pilot hole in 70% lower cutting speed with 1.5D drill or 3D drill

2. Start drilling



· Start drilling in recommended cutting conditions after replacing the drill

· Without pilot drill

1. Drilling a pilot hole (without a pilot drill)



· After drill 0.5D with 70% lower cutting speed, stop drilling for 2-3 seconds putting the drill in the hole

2. Stop drilling



· Stop supplying the coolant and take out the drill from the hole. Then, stop drilling for 2-3 seconds

3. Ready to drill



· After putting the drill in the hole to 2-3 mm upper than the bottom of the pilot hole, start supplying the coolant. Then, be ready to start drilling

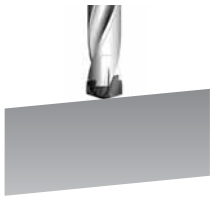
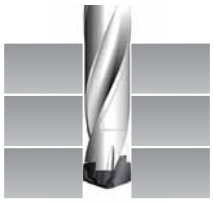
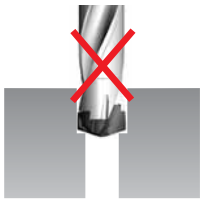
4. Stop drilling



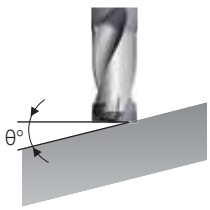
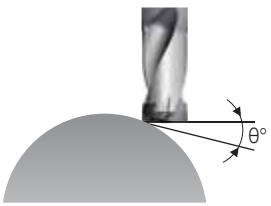
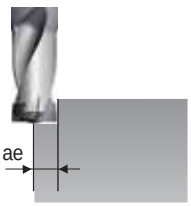
· Start drilling in recommended cutting conditions

Precaution in drilling

• TPDC-CP/CM/CN

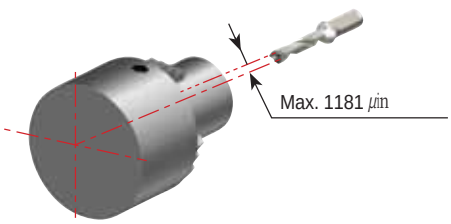
Angled surface drilling	Stacked plates drilling	Plunging	Boring
			
• The approach angle between drill and the workpiece at the beginning and the end should be less than 6° • Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface	• Gap between the plates could make wrong chip evacuation causing fracture of the drill • Place stacked plates without any gap between each	• Irregular cutting resistance in plunging could cause fracture and deformation of the drill	• Boring is not recommended due to wear and chipping in the corner of the insert

• TPDC-CP-FC

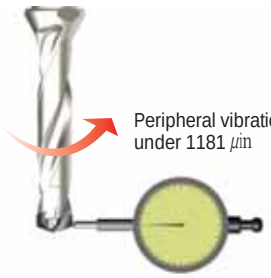
Angled surface drilling	Curved surface drilling	Plunging	Boring
			
• Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface (Recommended only in case of θ is less than 10°)	• Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface (In case, θ is over 30°, reduce it to 50%)	• Reduce the depth of cut (ae) to shorter than 1/2 of drill diameter • In case, the depth of cut is longe than drill diameter, plunge with divided depth of cut	• Reduce the feed (fn) to 30% than general cutting conditions at the beginning of boring • Start with 2 mm stepping before boring to prevent long chip

Check point in drilling

- Condition of the clamped workpiece
- Revolution of the main axis of the machine
- Condition of the holder
- Run-out of the clamped drill (Max. 1181 μin)
- Condition of supplying coolant (pressure, flow, concentration)
- Chip evacuation



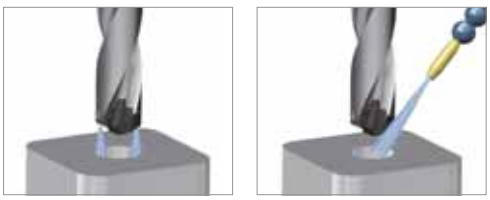
Setting of the horizontal equipment



Setting of the vertical equipment

Supply of coolant

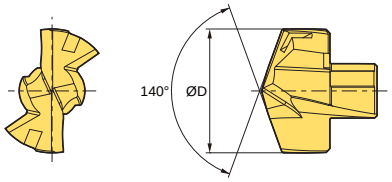
- Supply enough coolant to the beginning of the hole
- Minimum pressure of oil coolant: 5 bar
- Minimum flow of coolant: 1.321gal/min



Available inserts



XP



Drill dia. ØD (inch)	P type (XP)	Coated	Holder	Wrench
	TPDC-XP	PC325U		
0.315	TPD0315XAP		TPDXA□D-03150472-□	TPDC -W0811
0.319	TPD0319XAP			
0.323	TPD0323XAP			
0.327	TPD0327XAP			
0.331	TPD0331XAP			
0.335	TPD0335XAP		TPDXA□D-03350472-□	
0.339	TPD0339XAP			
0.343	TPD0343XAP			
0.346	TPD0346XAP			
0.350	TPD0350XAP			
0.354	TPD0354XAP		TPDXA□D-03540472-□	
0.358	TPD0358XAP			
0.362	TPD0362XAP			
0.366	TPD0366XAP			
0.370	TPD0370XAP			
0.374	TPD0374XAP		TPDXA□D-03740472-□	
0.378	TPD0378XAP			
0.382	TPD0382XAP			
0.386	TPD0386XAP			
0.390	TPD0390XAP			
0.394	TPD0394XAP		TPDXA□D-03940629-□	
0.398	TPD0398XAP			
0.402	TPD0402XAP			
0.406	TPD0406XAP			
0.409	TPD0409XAP			
0.413	TPD0413XAP		TPDXA□D-04130629-□	
0.417	TPD0417XAP			
0.421	TPD0421XAP			
0.425	TPD0425XAP			
0.429	TPD0429XAP			
0.433	TPD0433XAP		TPDXA□D-04330629-□	
0.437	TPD0437XAP			
0.441	TPD0441XAP			
0.445	TPD0445XAP			
0.449	TPD0449XAP			
0.453	TPD0453XAP		TPDXA□D-04530629-□	
0.457	TPD0457XAP			
0.461	TPD0461XAP			
0.465	TPD0465XAP			
0.469	TPD0469XAP			

※ We can provide if you order exact machining specification ●: Stock Item

Parts (applicable wrench)

Picture	Designation	Drill diameter ØD (inch)	Torque (ibf·ft)
	TPDC-W0811	Ø0.315-0.469	0.516-1.106

Available inserts



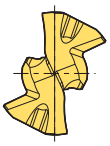
CP

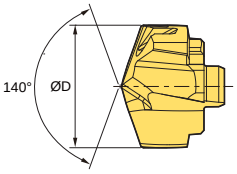


CM



CN





Drill dia. ØD (inch)	P type (CP)				M type (CM)		N type (CN)		Holder	Wrench
	TPDC-CP	Coated			TPDC-CM	Coated	TPDC-CN	Uncoated		
		PC5335	PC5300	PC330P		PC330N		H01		
0.472	TPD0472CAP				TPD0472CAM		TPD0472CAN		TPDCA□D-0472063-□	TPDC-W1216
0.480	TPD0480CAP				TPD0480CAM		TPD0480CAN			
0.492	TPD0492CAP				TPD0492CAM		TPD0492CAN		TPDCA□D-0492063-□	
0.496	TPD0496CAP				TPD0496CAM		TPD0496CAN			
0.512	TPD0512CAP				TPD0512CAM		TPD0512CAN		TPDCA□D-0512063-□	
0.531	TPD0531CAP				TPD0531CAM		TPD0531CAN		TPDCA□D-0532063-□	
0.551	TPD0551CAP				TPD0551CAM		TPD0551CAN		TPDCA□D-0551063-□	
0.559	TPD0559CAP				TPD0559CAM		TPD0559CAN			
0.563	TPD0563CAP				TPD0563CAM		TPD0563CAN			
0.571	TPD0571CAP				TPD0571CAM		TPD0571CAN		TPDCA□D-0571063-□	
0.591	TPD0591CAP				TPD0591CAM		TPD0591CAN		TPDCA□D-0591075-□	
0.610	TPD0610CAP				TPD0610CAM		TPD0610CAN			
0.630	TPD0630CAP				TPD0630CAM		TPD0630CAN		TPDCA□D-0630075-□	
0.642	TPD0642CAP				TPD0642CAM		TPD0642CAN			
0.650	TPD0650CAP				TPD0650CAM		TPD0650CAN			
0.657	TPD0657CAP				TPD0657CAM		TPD0657CAN			
0.669	TPD0669CAP				TPD0669CAM		TPD0669CAN		TPDCA□D-0669075-□	TPDC-W1721
0.689	TPD0689CAP				TPD0689CAM		TPD0689CAN			
0.697	TPD0697CAP				TPD0697CAM		TPD0697CAN			
0.709	TPD0709CAP				TPD0709CAM		TPD0709CAN		TPDCA□D-0709100-□	
0.713	TPD0713CAP				TPD0713CAM		TPD0713CAN			
0.728	TPD0728CAP				TPD0728CAM		TPD0728CAN			
0.732	TPD0732CAP				TPD0732CAM		TPD0732CAN			
0.736	TPD0736CAP				TPD0736CAM		TPD0736CAN			
0.748	TPD0748CAP				TPD0748CAM		TPD0748CAN		TPDCA□D-0748100-□	
0.756	TPD0756CAP				TPD0756CAM		TPD0756CAN			
0.768	TPD0768CAP				TPD0768CAM		TPD0768CAN			
0.776	TPD0776CAP				TPD0776CAM		TPD0776CAN			
0.787	TPD0787CAP				TPD0787CAM		TPD0787CAN		TPDCA□D-0787100-□	
0.807	TPD0807CAP				TPD0807CAM		TPD0807CAN			
0.827	TPD0827CAP				TPD0827CAM		TPD0827CAN		TPDCA□D-0827100-□	
0.846	TPD0846CAP				TPD0846CAM		TPD0846CAN			
0.866	TPD0866CAP				TPD0866CAM		TPD0866CAN		TPDCA□D-0866100-□	TPDC-W2225
0.886	TPD0886CAP				TPD0886CAM		TPD0886CAN			
0.890	TPD0890CAP				TPD0890CAM		TPD0890CAN			
0.894	TPD0894CAP				TPD0894CAM		TPD0894CAN			
0.906	TPD0906CAP				TPD0906CAM		TPD0906CAN		TPDCA□D-0906100-□	
0.925	TPD0925CAP				TPD0925CAM		TPD0925CAN			
0.945	TPD0945CAP				TPD0945CAM		TPD0945CAN		TPDCA□D-0945125-□	
0.965	TPD0965CAP				TPD0965CAM		TPD0965CAN			
0.984	TPD0984CAP				TPD0984CAM		TPD0984CAN		TPDCA□D-0984125-□	
0.996	TPD0996CAP				TPD0996CAM		TPD0996CAN			
1.004	TPD1004CAP				TPD1004CAM		TPD1004CAN			
1.016	TPD1016CAP				TPD1016CAM		TPD1016CAN			
1.020	TPD1020CAP				TPD1020CAM		TPD1020CAN			
1.024	TPD1024CAP				TPD1024CAM		TPD1024CAN		TPDCA□D-1024125-□	TPDC-W2630
1.043	TPD1043CAP				TPD1043CAM		TPD1043CAN			
1.063	TPD1063CAP				TPD1063CAM		TPD1063CAN		TPDCA□D-1063125-□	
1.083	TPD1083CAP				TPD1083CAM		TPD1083CAN			
1.102	TPD1102CAP				TPD1102CAM		TPD1102CAN		TPDCA□D-1102125-□	
1.122	TPD1122CAP				TPD1122CAM		TPD1122CAN			
1.142	TPD1142CAP				TPD1142CAM		TPD1142CAN		TPDCA□D-1142125-□	
1.161	TPD1161CAP				TPD1161CAM		TPD1161CAN			
1.181	TPD1181CAP				TPD1181CAM		TPD1181CAN		TPDCA□D-1181125-□	
1.201	TPD1201CAP				TPD1201CAM		TPD1201CAN			

※ We can provide if you order exact machining specification. Ex) Ø0.626, carbon steel machining → TPDC0626CAP/PC330P

●: Stock Item

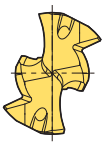
Parts (applicable wrench)

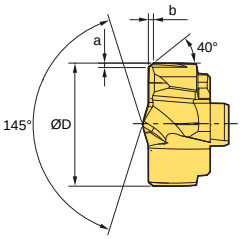
Picture	Designation		Drill diameter ØD (inch)	Torque (ibf·ft)
	TPDC-	W1216	0.472-0.668	1.475-2.213
		W1721	0.669-0.862	1.475-2.950
		W2225	0.866-1.023	2.214-2.950
		W2630	1.024-1.220	2.950-3.688

Available inserts



FC





Drill dia. ØD (inch)	FC type (CP-FC)		Holder	Chamfer (inch)		Wrench
	TPDC-CP-FC	Coated PC5335		a	b	
0.472	TPD0472CAP-FC		TPDCA□D-0472063-□	0.015	0.017	TPDC-W1216
0.480	TPD0480CAP-FC					
0.492	TPD0492CAP-FC		TPDCA□D-0492063-□			
0.496	TPD0496CAP-FC					
0.512	TPD0512CAP-FC		TPDCA□D-0512063-□			
0.531	TPD0531CAP-FC		TPDCA□D-0532063-□			
0.551	TPD0551CAP-FC		TPDCA□D-0551063-□			
0.559	TPD0559CAP-FC					
0.563	TPD0563CAP-FC					
0.571	TPD0571CAP-FC		TPDCA□D-0571063-□			
0.591	TPD0591CAP-FC		TPDCA□D-0591075-□			
0.610	TPD0610CAP-FC					
0.630	TPD0630CAP-FC		TPDCA□D-0630075-□			
0.642	TPD0642CAP-FC					
0.650	TPD0650CAP-FC					
0.657	TPD0657CAP-FC					
0.669	TPD0669CAP-FC		TPDCA□D-0669075-□	0.018	0.021	TPDC-W1721
0.689	TPD0689CAP-FC					
0.697	TPD0697CAP-FC					
0.709	TPD0709CAP-FC		TPDCA□D-0709100-□			
0.713	TPD0713CAP-FC					
0.728	TPD0728CAP-FC					
0.732	TPD0732CAP-FC					
0.736	TPD0736CAP-FC					
0.748	TPD0748CAP-FC		TPDCA□D-0748100-□			
0.756	TPD0756CAP-FC					
0.768	TPD0768CAP-FC					
0.776	TPD0776CAP-FC					
0.787	TPD0787CAP-FC		TPDCA□D-0787100-□			
0.807	TPD0807CAP-FC					
0.827	TPD0827CAP-FC		TPDCA□D-0827100-□			
0.846	TPD0846CAP-FC					
0.866	TPD0866CAP-FC		TPDCA□D-0866100-□			TPDC-W2225
0.886	TPD0886CAP-FC					
0.890	TPD0890CAP-FC					
0.894	TPD0894CAP-FC					
0.906	TPD0906CAP-FC		TPDCA□D-0906100-□			
0.925	TPD0925CAP-FC					
0.945	TPD0945CAP-FC		TPDCA□D-0945125-□			
0.965	TPD0965CAP-FC					
0.984	TPD0984CAP-FC		TPDCA□D-0984125-□			
0.996	TPD0996CAP-FC					
1.004	TPD1004CAP-FC					
1.016	TPD1016CAP-FC					
1.020	TPD1020CAP-FC					
1.024	TPD1024CAP-FC		TPDCA□D-1024125-□	0.022	0.026	TPDC-W2630
1.043	TPD1043CAP-FC					
1.063	TPD1063CAP-FC		TPDCA□D-1063125-□			
1.083	TPD1083CAP-FC					
1.102	TPD1102CAP-FC		TPDCA□D-1102125-□			
1.122	TPD1122CAP-FC					
1.142	TPD1142CAP-FC		TPDCA□D-1142125-□			
1.161	TPD1161CAP-FC					
1.181	TPD1181CAP-FC		TPDCA□D-1181125-□			
1.201	TPD1201CAP-FC					

※ We can provide if you order exact machining specification. Ex) Ø0.626 and carbon steel machining → TPDC0626CAP-FC/PC5335

●: Stock Item

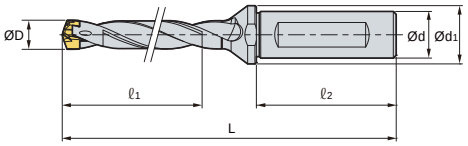
※ TPDC-CP-FC insert: impossible to be reground

Parts (applicable wrench)

Picture	Designation		Drill diameter ØD (inch)	Torque (ibf·ft)
	TPDC-	W1216	0.472-0.668	1.475-2.213
		W1721	0.669-0.862	1.475-2.950
		W2225	0.866-1.023	2.214-2.950
		W2630	1.024-1.220	2.950-3.688

TPDXA(3D/5D/8D)





(inch)

Designation		ØD	Ød	Ød1	ℓ1	ℓ2	L	Insert
TPDXA	3D-03150472-0945	0.315~0.331	0.472	0.630	0.945	1.772	3.236	TPD0315XAP-0331XAP
	3D-03350472-1024	0.335~0.350	0.472	0.630	1.024	1.772	3.311	TPD0335XAP-0350XAP
	3D-03540472-1063	0.354~0.370	0.472	0.630	1.063	1.772	3.382	TPD0354XAP-0370XAP
	3D-03740472-1142	0.374~0.390	0.472	0.630	1.142	1.772	3.453	TPD0374XAP-0390XAP
	3D-03940629-1181	0.394~0.409	0.630	0.787	1.181	1.890	3.724	TPD0394XAP-0409XAP
	3D-04130629-1260	0.413~0.429	0.630	0.787	1.260	1.890	3.799	TPD0413XAP-0429XAP
	3D-04330629-1299	0.433~0.449	0.630	0.787	1.299	1.890	3.866	TPD0433XAP-0449XAP
	3D-04530629-1378	0.453~0.469	0.630	0.787	1.378	1.890	3.941	TPD0453XAP-0469XAP
TPDXA	5D-03150472-1575	0.315~0.331	0.472	0.630	1.575	1.772	3.866	TPD0315XAP-0331XAP
	5D-03350472-1693	0.335~0.350	0.472	0.630	1.693	1.772	3.980	TPD0335XAP-0350XAP
	5D-03540472-1772	0.354~0.370	0.472	0.630	1.772	1.772	4.091	TPD0354XAP-0370XAP
	5D-03740472-1890	0.374~0.390	0.472	0.630	1.890	1.772	4.201	TPD0374XAP-0390XAP
	5D-03940629-1969	0.394~0.409	0.630	0.787	1.969	1.890	4.512	TPD0394XAP-0409XAP
	5D-04130629-2087	0.413~0.429	0.630	0.787	2.087	1.890	4.626	TPD0413XAP-0429XAP
	5D-04330629-2165	0.433~0.449	0.630	0.787	2.165	1.890	4.732	TPD0433XAP-0449XAP
	5D-04530629-2283	0.453~0.469	0.630	0.787	2.283	1.890	4.846	TPD0453XAP-0469XAP
TPDXA	8D-03150472-2520	0.315~0.331	0.472	0.630	2.520	1.772	4.811	TPD0315XAP-0331XAP
	8D-03350472-2677	0.335~0.350	0.472	0.630	2.677	1.772	4.984	TPD0335XAP-0350XAP
	8D-03540472-2835	0.354~0.370	0.472	0.630	2.835	1.772	5.154	TPD0354XAP-0370XAP
	8D-03740472-2992	0.374~0.390	0.472	0.630	2.992	1.772	5.323	TPD0374XAP-0390XAP
	8D-03940629-3150	0.394~0.409	0.630	0.787	3.150	1.890	5.693	TPD0394XAP-0409XAP
	8D-04130629-3307	0.413~0.429	0.630	0.787	3.307	1.890	5.866	TPD0413XAP-0429XAP
	8D-04330629-3465	0.433~0.449	0.630	0.787	3.465	1.890	6.031	TPD0433XAP-0449XAP
	8D-04530629-3622	0.453~0.469	0.630	0.787	3.622	1.890	6.205	TPD0453XAP-0469XAP

Applicable inserts **F27**

※ We can provide if you order exact machining specification. Ex) Ø0.394 and 2.362 inch depth of cut → TPDXA6D-03940630-2362

TPDCA (1.5D/3D)



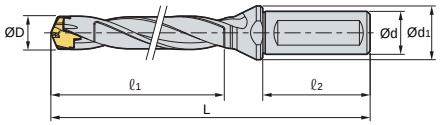


Fig.1

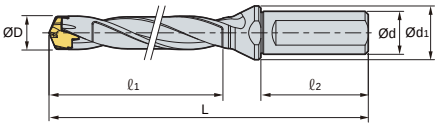


Fig.2

(inch)

Designation		ØD	Ød	Ød1	ℓ1	ℓ2	L	Insert	Fig.
TPDCA	1.5D-0472063-709	0.472~0.491	0.630	0.787	0.709	1.890	3.343	TPD0472CA□-0491CA□	1
	1.5D-0492063-738	0.492~0.511	0.630	0.787	0.738	1.890	3.382	TPD0492CA□-0511CA□	1
	1.5D-0512063-768	0.512~0.531	0.630	0.787	0.768	1.890	3.429	TPD0512CA□-0531CA□	1
	1.5D-0532063-797	0.532~0.550	0.630	0.787	0.797	1.890	3.469	TPD0532CA□-0550CA□	1
	1.5D-0551063-827	0.551~0.570	0.630	0.787	0.827	1.890	3.669	TPD0551CA□-0570CA□	1
	1.5D-0571063-856	0.571~0.590	0.630	0.787	0.856	1.890	3.709	TPD0571CA□-0590CA□	1
	1.5D-0591075-886	0.591~0.629	0.750	0.984	0.886	1.969	3.756	TPD0591CA□-0629CA□	2
	1.5D-0630075-945	0.630~0.668	0.750	0.984	0.945	1.969	3.843	TPD0630CA□-0668CA□	2
	1.5D-0669075-1004	0.669~0.708	0.750	0.984	1.004	1.969	3.925	TPD0669CA□-0708CA□	2
	1.5D-0709100-1063	0.709~0.747	1.000	1.299	1.063	2.205	4.327	TPD0709CA□-0747CA□	2
	1.5D-0748100-1122	0.748~0.786	1.000	1.299	1.122	2.205	4.409	TPD0748CA□-0786CA□	2
	1.5D-0787100-1181	0.787~0.826	1.000	1.299	1.181	2.205	4.496	TPD0787CA□-0826CA□	2
	1.5D-0827100-1240	0.827~0.865	1.000	1.299	1.240	2.205	4.583	TPD0827CA□-0865CA□	2
	1.5D-0866100-1299	0.866~0.905	1.000	1.299	1.299	2.205	4.665	TPD0866CA□-0905CA□	2
	1.5D-0906100-1358	0.906~0.944	1.000	1.299	1.358	2.205	4.752	TPD0906CA□-0944CA□	2
	1.5D-0945125-1417	0.945~0.983	1.250	1.693	1.417	2.362	5.110	TPD0945CA□-0983CA□	2
	1.5D-0984125-1476	0.984~1.023	1.250	1.693	1.476	2.362	5.197	TPD0984CA□-1023CA□	2
	1.5D-1024125-1535	1.024~1.062	1.250	1.693	1.535	2.362	5.283	TPD1024CA□-1062CA□	2
	1.5D-1063125-1594	1.063~1.101	1.250	1.693	1.594	2.362	5.366	TPD1063CA□-1101CA□	2
	1.5D-1102125-1654	1.102~1.141	1.250	1.693	1.654	2.362	5.449	TPD1102CA□-1141CA□	2
	1.5D-1142125-1713	1.142~1.180	1.250	1.693	1.713	2.362	5.539	TPD1142CA□-1180CA□	2
	1.5D-1181125-1772	1.181~1.220	1.250	1.693	1.772	2.362	5.622	TPD1181CA□-1220CA□	2
TPDCA	3D-0472063-1417	0.472~0.491	0.630	0.787	1.417	1.890	3.898	TPD0472CA□-0491CA□	1
	3D-0492063-1496	0.492~0.511	0.630	0.787	1.496	1.890	3.976	TPD0492CA□-0411CA□	1
	3D-0512063-1535	0.512~0.531	0.630	0.787	1.535	1.890	4.055	TPD0512CA□-0531CA□	1
	3D-0532063-1614	0.532~0.550	0.630	0.787	1.614	1.890	4.134	TPD0532CA□-0550CA□	1
	3D-0551063-1654	0.551~0.570	0.630	0.787	1.654	1.890	4.173	TPD0551CA□-0570CA□	1
	3D-0571063-1732	0.571~0.590	0.630	0.787	1.732	1.890	4.213	TPD0571CA□-0590CA□	1
	3D-0591075-1772	0.591~0.629	0.750	0.984	1.772	1.969	4.449	TPD0591CA□-0629CA□	2
	3D-0630075-1890	0.630~0.668	0.750	0.984	1.890	1.969	4.606	TPD0630CA□-0668CA□	2
	3D-0669075-2008	0.669~0.708	0.750	0.984	2.008	1.969	4.724	TPD0669CA□-0708CA□	2
	3D-0709100-2126	0.709~0.747	1.000	1.299	2.126	2.205	5.197	TPD0709CA□-0747CA□	2
	3D-0748100-2244	0.748~0.786	1.000	1.299	2.244	2.205	5.315	TPD0748CA□-0786CA□	2
	3D-0787100-2362	0.787~0.826	1.000	1.299	2.362	2.205	5.433	TPD0787CA□-0826CA□	2
	3D-0827100-2480	0.827~0.865	1.000	1.299	2.480	2.205	5.551	TPD0827CA□-0865CA□	2
	3D-0866100-2598	0.866~0.905	1.000	1.299	2.598	2.205	5.709	TPD0866CA□-0905CA□	2
	3D-0906100-2717	0.906~0.944	1.000	1.299	2.717	2.205	5.866	TPD0906CA□-0944CA□	2
	3D-0945125-2835	0.945~0.983	1.250	1.693	2.835	2.362	6.260	TPD0945CA□-0983CA□	2
	3D-0984125-2953	0.984~1.023	1.250	1.693	2.953	2.362	6.378	TPD0984CA□-1023CA□	2
	3D-1024125-3071	1.024~1.062	1.250	1.693	3.071	2.362	6.819	TPD1024CA□-1062CA□	2
	3D-1063125-3189	1.063~1.101	1.250	1.693	3.189	2.362	6.941	TPD1063CA□-1101CA□	2
	3D-1102125-3307	1.102~1.141	1.250	1.693	3.307	2.362	7.102	TPD1102CA□-1141CA□	2
	3D-1142125-3425	1.142~1.180	1.250	1.693	3.425	2.362	7.270	TPD1142CA□-1180CA□	2
	3D-1181125-3543	1.181~1.220	1.250	1.693	3.543	2.362	7.392	TPD1181CA□-1220CA□	2

Applicable inserts **F28~29**

※ We can provide if you order exact machining specification. Ex) Ø0.591 and 2.36 inch of cut → TPDCA4D-0591075-236

TPDCA (5D/8D)



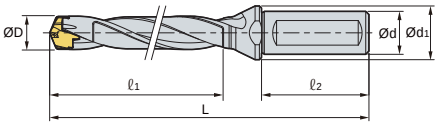


Fig.1

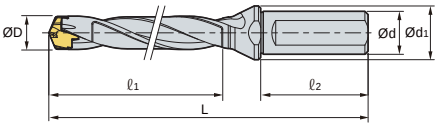


Fig.2

(inch)

Designation		ØD	Ød	Ød$_1$	ℓ$_1$	ℓ$_2$	L	Insert	Fig.
TPDCA	5D-0472063-2362	0.472~0.491	0.630	0.787	2.362	1.890	4.843	TPD0472CA□-0491CA□	1
	5D-0492063-2480	0.492~0.511	0.630	0.787	2.480	1.890	4.961	TPD0492CA□-0511CA□	1
	5D-0512063-2559	0.512~0.531	0.630	0.787	2.559	1.890	5.079	TPD0512CA□-0531CA□	1
	5D-0532063-2677	0.532~0.550	0.630	0.787	2.677	1.890	5.197	TPD0532CA□-0550CA□	1
	5D-0551063-2756	0.551~0.570	0.630	0.787	2.756	1.890	5.276	TPD0551CA□-0570CA□	1
	5D-0571063-2874	0.571~0.590	0.630	0.787	2.874	1.890	5.354	TPD0571CA□-0590CA□	1
	5D-0591075-2953	0.591~0.629	0.750	0.984	2.953	1.969	5.630	TPD0591CA□-0629CA□	2
	5D-0630075-3150	0.630~0.668	0.750	0.984	3.150	1.969	5.866	TPD0630CA□-0668CA□	2
	5D-0669075-3346	0.669~0.708	0.750	0.984	3.346	1.969	6.063	TPD0669CA□-0708CA□	2
	5D-0709100-3543	0.709~0.747	1.000	1.299	3.543	2.205	6.614	TPD0709CA□-0747CA□	2
	5D-0748100-3740	0.748~0.786	1.000	1.299	3.740	2.205	6.811	TPD0748CA□-0786CA□	2
	5D-0787100-3937	0.787~0.826	1.000	1.299	3.937	2.205	7.008	TPD0787CA□-0826CA□	2
	5D-0827100-4134	0.827~0.865	1.000	1.299	4.134	2.205	7.205	TPD0827CA□-0865CA□	2
	5D-0866100-4331	0.866~0.905	1.000	1.299	4.331	2.205	7.441	TPD0866CA□-0905CA□	2
	5D-0906100-4528	0.906~0.944	1.000	1.299	4.528	2.205	7.677	TPD0906CA□-0944CA□	2
	5D-0945125-4724	0.945~0.983	1.250	1.693	4.724	2.362	8.150	TPD0945CA□-0983CA□	2
	5D-0984125-4921	0.984~1.023	1.250	1.693	4.921	2.362	8.346	TPD0984CA□-1023CA□	2
	5D-1024125-5118	1.024~1.062	1.250	1.693	5.118	2.362	8.866	TPD1024CA□-1062CA□	2
	5D-1063125-5315	1.063~1.101	1.250	1.693	5.315	2.362	9.067	TPD1063CA□-1101CA□	2
	5D-1102125-5512	1.102~1.141	1.250	1.693	5.512	2.362	9.307	TPD1102CA□-1141CA□	2
	5D-1142125-5709	1.142~1.180	1.250	1.693	5.709	2.362	9.554	TPD1142CA□-1180CA□	2
	5D-1181125-5906	1.181~1.220	1.250	1.693	5.906	2.362	9.754	TPD1181CA□-1220CA□	2
TPDCA	8D-0472063-3780	0.472~0.491	0.630	0.787	3.780	1.890	6.260	TPD0472CA□-0491CA□	1
	8D-0492063-3937	0.492~0.511	0.630	0.787	3.937	1.890	6.417	TPD0492CA□-0511CA□	1
	8D-0512063-4094	0.512~0.531	0.630	0.787	4.094	1.890	6.614	TPD0512CA□-0531CA□	1
	8D-0532063-4252	0.532~0.550	0.630	0.787	4.252	1.890	6.811	TPD0532CA□-0550CA□	1
	8D-0551063-4409	0.551~0.570	0.630	0.787	4.409	1.890	6.929	TPD0551CA□-0570CA□	1
	8D-0571063-4567	0.571~0.590	0.630	0.787	4.567	1.890	7.087	TPD0571CA□-0590CA□	1
	8D-0591075-4724	0.591~0.629	0.750	0.984	4.724	1.969	7.402	TPD0591CA□-0629CA□	2
	8D-0630075-5039	0.630~0.668	0.750	0.984	5.039	1.969	7.756	TPD0630CA□-0668CA□	2
	8D-0669075-5354	0.669~0.708	0.750	0.984	5.354	1.969	8.071	TPD0669CA□-0708CA□	2
	8D-0709100-5669	0.709~0.747	1.000	1.299	5.669	2.205	8.740	TPD0709CA□-0747CA□	2
	8D-0748100-5984	0.748~0.786	1.000	1.299	5.984	2.205	9.055	TPD0748CA□-0786CA□	2
	8D-0787100-6299	0.787~0.826	1.000	1.299	6.299	2.205	9.370	TPD0787CA□-0826CA□	2
	8D-0827100-6614	0.827~0.865	1.000	1.299	6.614	2.205	9.685	TPD0827CA□-0865CA□	2
	8D-0866100-6929	0.866~0.905	1.000	1.299	6.929	2.205	10.039	TPD0866CA□-0905CA□	2
	8D-0906100-7244	0.906~0.944	1.000	1.299	7.244	2.205	10.394	TPD0906CA□-0944CA□	2
	8D-0945125-7559	0.945~0.983	1.250	1.693	7.559	2.362	10.984	TPD0945CA□-0983CA□	2
	8D-0984125-7874	0.984~1.023	1.250	1.693	7.874	2.362	11.299	TPD0984CA□-1023CA□	2
	8D-1024125-8189	1.024~1.062	1.250	1.693	8.189	2.362	11.937	TPD1024CA□-1062CA□	2
	8D-1063125-8504	1.063~1.101	1.250	1.693	8.504	2.362	12.256	TPD1063CA□-1101CA□	2
	8D-1102125-8819	1.102~1.141	1.250	1.693	8.819	2.362	12.614	TPD1102CA□-1141CA□	2
	8D-1142125-9134	1.142~1.180	1.250	1.693	9.134	2.362	12.979	TPD1142CA□-1180CA□	2
	8D-1181125-9449	1.181~1.220	1.250	1.693	9.449	2.362	13.297	TPD1181CA□-1220CA□	2

Applicable inserts **F28~29**

※ We can provide if you order exact machining specification. Ex) Ø0.591 and 2.36 inch depth of cut → TPDCA4D-0591075-236

TPDCA (10D/12D)



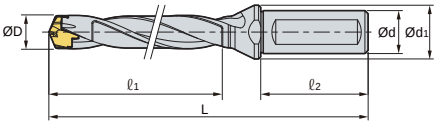


Fig.1

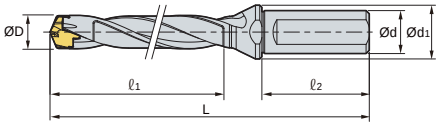


Fig.2

(inch)

Designation		ØD	Ød	Ød1	ℓ1	ℓ2	L	Insert	Fig.
TPDCA	10D-0472063-4724	0.472~0.491	0.630	0.787	4.724	1.890	7.205	TPD0472CA□-0491CA□	1
	10D-0492063-4921	0.492~0.511	0.630	0.787	4.921	1.890	7.441	TPD0492CA□-0411CA□	1
	10D-0512063-5118	0.512~0.531	0.630	0.787	5.118	1.890	7.638	TPD0512CA□-0531CA□	1
	10D-0532063-5315	0.532~0.550	0.630	0.787	5.315	1.890	7.835	TPD0532CA□-0550CA□	1
	10D-0551063-5512	0.551~0.570	0.630	0.787	5.512	1.890	8.031	TPD0551CA□-0570CA□	1
	10D-0571063-5709	0.571~0.590	0.630	0.787	5.709	1.890	8.228	TPD0571CA□-0590CA□	1
	10D-0591075-5906	0.591~0.629	0.750	0.984	5.906	1.969	8.583	TPD0591CA□-0629CA□	1
	10D-0630075-6299	0.630~0.668	0.750	0.984	6.299	1.969	9.016	TPD0630CA□-0668CA□	1
	10D-0669075-6693	0.669~0.708	0.750	0.984	6.693	1.969	9.409	TPD0669CA□-0708CA□	1
	10D-0709100-7087	0.709~0.747	1.000	1.299	7.087	2.205	10.157	TPD0709CA□-0747CA□	1
	10D-0748100-7480	0.748~0.786	1.000	1.299	7.480	2.205	10.551	TPD0748CA□-0786CA□	1
	10D-0787100-7874	0.787~0.826	1.000	1.299	7.874	2.205	10.945	TPD0787CA□-0826CA□	1
	10D-0827100-8268	0.827~0.865	1.000	1.299	8.268	2.205	11.339	TPD0827CA□-0865CA□	1
	10D-0866100-8661	0.866~0.905	1.000	1.299	8.661	2.205	11.772	TPD0866CA□-0905CA□	1
	10D-0906100-9055	0.906~0.944	1.000	1.299	9.055	2.205	12.205	TPD0906CA□-0944CA□	1
	10D-0945125-9449	0.945~0.983	1.250	1.693	9.449	2.362	12.874	TPD0945CA□-0983CA□	2
	10D-0984125-9843	0.984~1.023	1.250	1.693	9.843	2.362	13.268	TPD0984CA□-1023CA□	2
	10D-1024125-10236	1.024~1.062	1.250	1.693	10.236	2.362	13.984	TPD1024CA□-1062CA□	2
	10D-1063125-10630	1.063~1.101	1.250	1.693	10.630	2.362	14.382	TPD1063CA□-1101CA□	2
	10D-1102125-11024	1.102~1.141	1.250	1.693	11.024	2.362	14.819	TPD1102CA□-1141CA□	2
	10D-1142125-11417	1.142~1.180	1.250	1.693	11.417	2.362	15.263	TPD1142CA□-1180CA□	2
	10D-1181125-11811	1.181~1.220	1.250	1.693	11.811	2.362	15.659	TPD1181CA□-1220CA□	2
TPDCA	12D-0472063-5669	0.472~0.491	0.630	0.787	5.669	1.890	8.150	TPD0472CA□-0491CA□	1
	12D-0492063-5906	0.492~0.511	0.630	0.787	5.906	1.890	8.386	TPD0492CA□-0411CA□	1
	12D-0512063-6142	0.512~0.531	0.630	0.787	6.142	1.890	8.661	TPD0512CA□-0531CA□	1
	12D-0532063-6378	0.532~0.550	0.630	0.787	6.378	1.890	8.898	TPD0532CA□-0550CA□	1
	12D-0551063-6614	0.551~0.570	0.630	0.787	6.614	1.890	9.134	TPD0551CA□-0570CA□	1
	12D-0571063-6850	0.571~0.590	0.630	0.787	6.850	1.890	9.331	TPD0571CA□-0590CA□	1
	12D-0591075-7087	0.591~0.629	0.750	0.984	7.087	1.969	9.764	TPD0591CA□-0629CA□	1
	12D-0630075-7559	0.630~0.668	0.750	0.984	7.559	1.969	10.276	TPD0630CA□-0668CA□	1
	12D-0669075-8031	0.669~0.708	0.750	0.984	8.031	1.969	10.748	TPD0669CA□-0708CA□	1
	12D-0709100-8504	0.709~0.747	1.000	1.299	8.504	2.205	11.575	TPD0709CA□-0747CA□	1
	12D-0748100-8976	0.748~0.786	1.000	1.299	8.976	2.205	12.047	TPD0748CA□-0786CA□	1
	12D-0787100-9449	0.787~0.826	1.000	1.299	9.449	2.205	12.520	TPD0787CA□-0826CA□	1
	12D-0827100-9921	0.827~0.865	1.000	1.299	9.921	2.205	12.992	TPD0827CA□-0865CA□	1
	12D-0866100-10394	0.866~0.905	1.000	1.299	10.394	2.205	13.504	TPD0866CA□-0905CA□	1
	12D-0906100-10866	0.906~0.944	1.000	1.299	10.866	2.205	14.016	TPD0906CA□-0944CA□	1
	12D-0945125-11339	0.945~0.983	1.250	1.693	11.339	2.362	14.764	TPD0945CA□-0983CA□	2
	12D-0984125-11811	0.984~1.023	1.250	1.693	11.811	2.362	15.236	TPD0984CA□-1023CA□	2
	12D-1024125-12283	1.024~1.062	1.250	1.693	12.283	2.362	16.031	TPD1024CA□-1062CA□	2
	12D-1063125-12756	1.063~1.101	1.250	1.693	12.756	2.362	16.508	TPD1063CA□-1101CA□	2
	12D-1102125-13228	1.102~1.141	1.250	1.693	13.228	2.362	17.023	TPD1102CA□-1141CA□	2
	12D-1142125-13701	1.142~1.180	1.250	1.693	13.701	2.362	17.546	TPD1142CA□-1180CA□	2
	12D-1181125-14173	1.181~1.220	1.250	1.693	14.173	2.362	18.022	TPD1181CA□-1220CA□	2

Applicable inserts **F28~29**

We can provide if you order exact machining specification. Ex) Ø0.591 and 5.315 inch depth of cut → TPDCA9D-0591075-532

Highly precise and efficient top solid indexable drill

TPDB Plus Drill

(TPDB Plus/TPDB-F new/TPDB-H new)

- Highly precise clamping system - Superior clamping precision with auto-centering system and highly precise grinding clamping parts
- Screw on clamping system - Easy to replace inserts
- Sharp cutting edge - Low cutting load and good chip control
- Holder with excellent durability - Holder with high rigidity and excellent wear resistance due to special surface treatment
- Holder with excellent chip control - Low cutting resistance and outstanding chip evaluation applying high helix angle

Code system

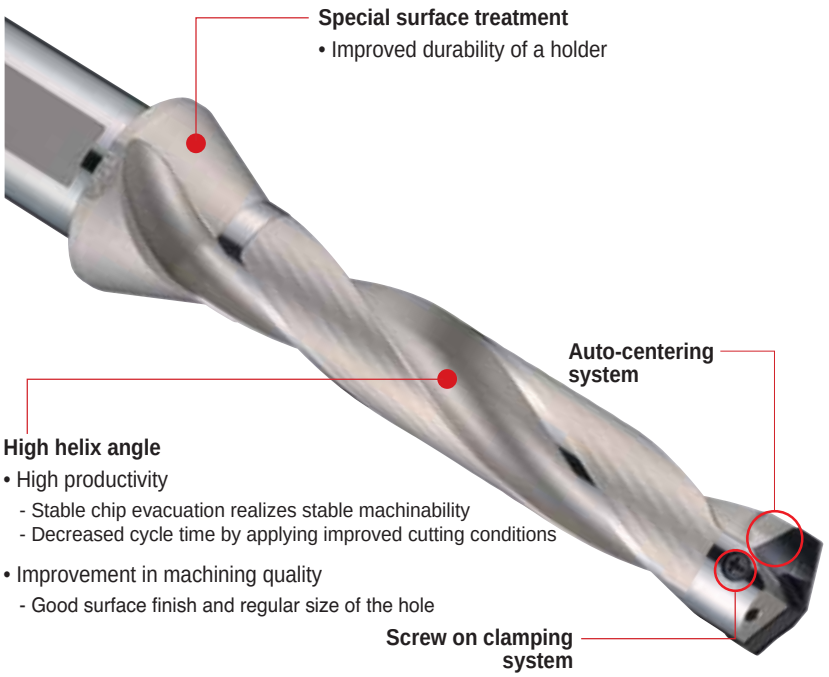
· **Insert**

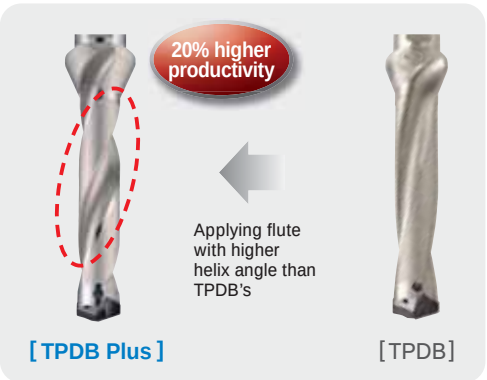
TPD	0610	B	A
Top solid Piercing Drill	Drill dia. 0610: Ø0.610 inch	Insert type B: Blade type	Type A: Inch type No code: Metric type

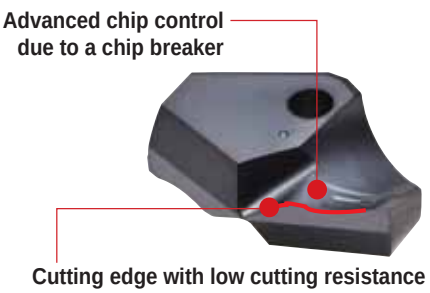
· **Holder**

TPD	B	A	0610	-	075	-	5	-	P
Top solid Piercing Drill	Insert type B: Blade type	Type A: Inch type No code: Metric type	Drill dia. 0610: Ø0.610 inch		Shank dia. 0.75: Ø0.75 inch		Aspect ratio (L/D) 3D, 5D, 8D, 10D, 12D		Plus

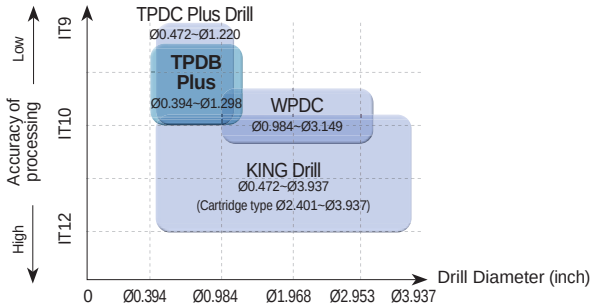
Features

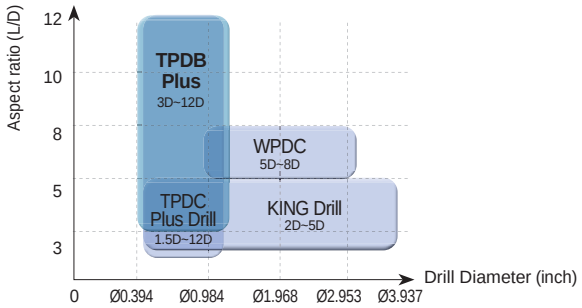






Application range





Tools	Application range					
	Drill diameter (Ø)	Aspect ratio (L/D)	Tolerance of drill dia.	Tolerance of hole	Surface finish of hole (Ra)	Workpiece material
TPDB Plus	0.394 - 1.298 inch	3, 5, 8, 10, 12	h7	IT10	≤ 78.74 μin	P, K

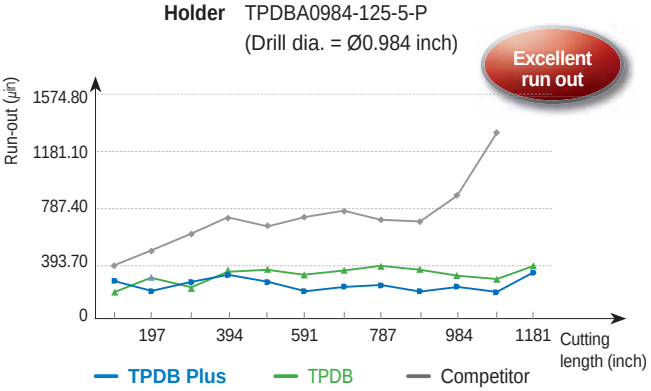
Performance evaluation

Run-out

■ **Workpiece** Alloy steel (4140)

■ **Cutting conditions** vc (sfm) = 295, fn (ipr) = 0.0098
ap (inch) = 4.7244, wet (20 bar)

■ **Tools** **Insert** TPD0984BA (PC5300)
Holder TPDBA0984-125-5-P
(Drill dia. = Ø0.984 inch)

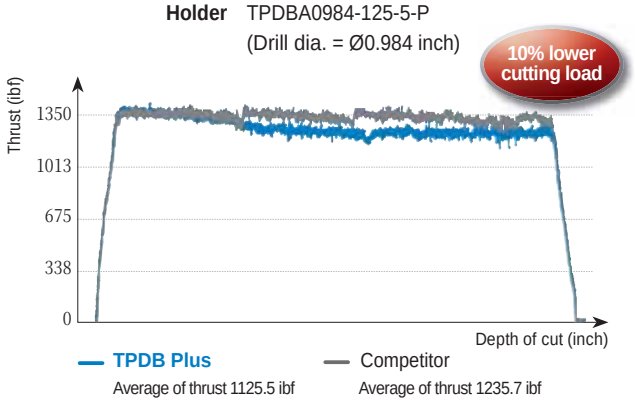


Cutting load

■ **Workpiece** Alloy steel (4140)

■ **Cutting conditions** vc (sfm) = 394, fn (ipr) = 0.0098
ap (inch) = 4.7244, wet (20 bar)

■ **Tools** **Insert** TPD0984BA (PC5300)
Holder TPDBA0984-125-5-P
(Drill dia. = Ø0.984 inch)

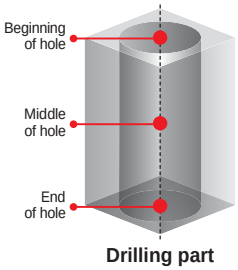


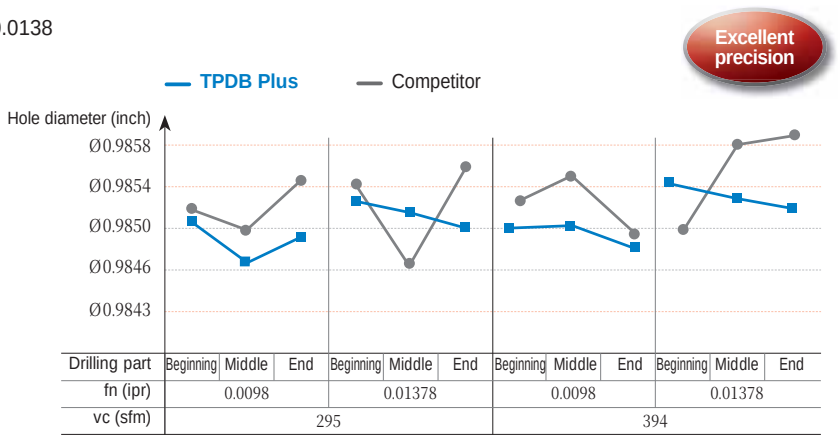
Precision

■ **Workpiece** Alloy steel (4140)

■ **Cutting conditions** vc (sfm) = 295/394, fn (ipr) = 0.0098/0.0138
ap (inch) = 4.7244, wet (20 bar)

■ **Tools** **Insert** TPD0984BA (PC5300)
Holder TPDBA0984-125-5-P
(Drill dia. = Ø0.984 inch)



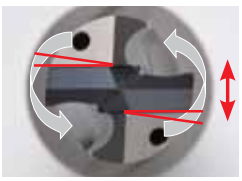
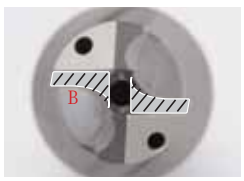
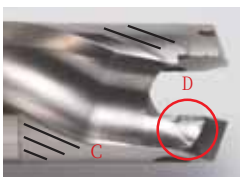


Recommended cutting conditions

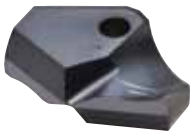
Workpiece				Grade	vc (sfm)	Aspect ratio (L/D) = 3D, 5D		
						Feed rate (ipr) per drill dia. (inch)		
ISO		Workpiece	HB			Ø0.3937~Ø0.6299	Ø0.6300~Ø0.9842	Ø0.9843~Ø1.1772
P	Carbon steel	Low carbon steel	80~120	PC5335 PC330P	365 (265~464)	0.0059~0.0118	0.0079~0.0138	0.0098~0.0157
		High carbon steel	180~280	PC5335 PC330P	332 (232~431)	0.0059~0.0118	0.0079~0.0138	0.0098~0.0157
	Alloy steel	Low alloy steel	140~260	PC5300	365 (265~464)	0.0071~0.0138	0.0091~0.0150	0.0110~0.0169
		Low alloy heat treated steel	200~400	PC5300	249 (166~332)	0.0071~0.0138	0.0091~0.0150	0.0110~0.0169
		High alloy steel	50~260	PC5300	232 (166~298)	0.0071~0.0118	0.0079~0.0138	0.0098~0.0157
		High alloy heat treated steel	220~450	PC5300	199 (133~265)	0.0071~0.0118	0.0079~0.0138	0.0098~0.0157
K	Cast iron	Gray cast iron	150~230	PC5300	365 (265~464)	0.0071~0.0138	0.0079~0.0157	0.0098~0.0177
		Ductile cast iron	160~260	PC5300	332 (232~431)	0.0071~0.0138	0.0079~0.0157	0.0098~0.0177

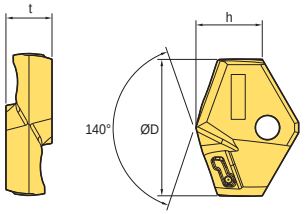
※ In case of 8D, machine in 20-30% lower cutting conditions than the mentioned above, or machine the beginning of hole (1.5D) before drilling
※ In interrupted machining, reduce the feed to 0.0039-0.0059 machining around the interrupted part
※ Refer to the 'Recommended drilling method' on the page 10 for drilling of 10D-12D

Replacement of holders and screws

Worn part	How to check	Description
[Pic.1] 	[Pic.2] Check the gap 	・In case of drilling for a long time as shown in the [Pic.1] the 'A' part is torn and twisted due to torque ・As shown in the [Pic.2] check the gap between the insert and the tip seat turning the clamped insert from side to side. If there is a gap between them, replace the used holder to a new one
[Pic.3] 	[Pic.4] Check the moving 	・The insert could move up or down due to the load on the Z-axis in drilling over an extended period of time which causes wear on the 'B' part as shown the [Pic.3] ・After clamping an insert, if the insert is moving or there is a gap between the insert and the tip seat as shown in the [Pic.4] replace the used holder to a new one
[Pic.5] 	Check the moving 	・After an extended period of use, the screw can be worn as shown in the 'E' part of [Pic.5] which could decrease the clamping force of the insert. When the screw is worn, replace the old screw to a new one among the enclosed extras ・Spreading the grease on the screw makes it last longer
[Pic.6] ① Check the 'C' and 'D' parts as shown in the [Pic.6] ② Check whether the chips are getting longer or not		・Winding or jamming of long and tiny chips in drilling causes wear or scratch on the 'C' part as shown in the [Pic.6] due to chattering from machining in improper cutting conditions. In that case, reset the cutting conditions and check the Run-out before machining ・The excessive wear of the part 'D' as shown in the [Pic.6] relating to chip curling might cause long chips

Available inserts





(inch)

Designation		Coated			ØD	h	t
		PC5300	PC5335	PC330P			
TPD	0394BA				0.394	0.217	0.138
	0413BA				0.413	0.217	0.138
	0433BA				0.433	0.228	0.138
	0453BA				0.453	0.228	0.138
	0472BA				0.472	0.248	0.138
	0492BA				0.492	0.248	0.138
	0512BA				0.512	0.256	0.157
	0531BA				0.531	0.256	0.157
	0551BA				0.551	0.268	0.157
	0571BA				0.571	0.268	0.157
	0591BA				0.591	0.276	0.157
	0610BA				0.610	0.276	0.157
	0630BA				0.630	0.303	0.217
	0650BA				0.650	0.303	0.217
	0669BA				0.669	0.311	0.217
	0689BA				0.689	0.311	0.217
	0709BA				0.709	0.319	0.236
	0728BA				0.728	0.319	0.236
	0748BA				0.748	0.327	0.236
	0768BA				0.768	0.327	0.236
	0787BA				0.787	0.382	0.256
	0807BA				0.807	0.382	0.256
	0827BA				0.827	0.370	0.256
	0846BA				0.846	0.370	0.256
	0866BA				0.866	0.378	0.276
	0886BA				0.886	0.378	0.276
	0906BA				0.906	0.386	0.276
	0925BA				0.925	0.386	0.276
	0945BA				0.945	0.421	0.295
	0965BA				0.965	0.421	0.295
	0984BA				0.984	0.429	0.295
	1004BA				1.004	0.429	0.295
	1024BA				1.024	0.433	0.335
	1043BA				1.043	0.433	0.335
	1063BA				1.063	0.465	0.335
	1083BA				1.083	0.465	0.335
	1102BA				1.102	0.496	0.374
	1122BA				1.122	0.496	0.374
	1142BA				1.142	0.508	0.374
	1161BA				1.161	0.508	0.374
	1181BA				1.181	0.512	0.394
	1201BA				1.201	0.512	0.394
	1220BA				1.220	0.520	0.394
	1240BA				1.240	0.520	0.394
	1260BA				1.260	0.528	0.394
	1280BA				1.280	0.528	0.394

※ We can provide nonstock items with Ø0.394 - Ø1.298 ●: Stock Item

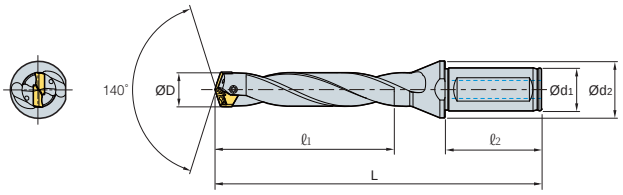
Parts

(inch)

Designation		Drill dia. (ØD)	Screw	Wrench	Torque (ibf·ft)
TPD	0394BA~0511BA	0.394~0.511	FTNB0209	TW06P	0.595
	0512BA~0590BA	0.512~0.590	FTNB02512	TW07S	1.191
	0591BA~0708BA	0.591~0.708	FTNB02514	TW07S	1.191
	0709BA~0786BA	0.709~0.786	FTNB0316	TW09S	1.786
	0787BA~0944BA	0.787~0.944	FTNB0319	TW09S	1.786
	0945BA~1023BA	0.945~1.023	FTNB03522	TW15S	4.464
	1024BA~1101BA	1.024~1.101	FTNB03524	TW15S	4.464
	1102BA~1180BA	1.102~1.180	FTNB0426	TW15S	4.464
	1181BA~1298BA	1.181~1.298	FTNB0528	TW20-100	5.952

TPDBA-P (3D)





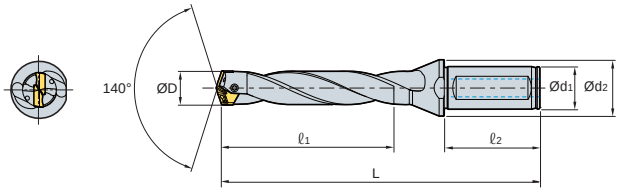
(inch)

Designation		ØD	Ød$_1$	Ød$_2$	ℓ$_1$	ℓ$_2$	L	Insert
TPDBA	0394-063-3-P	0.394~0.412	0.625	0.787	1.181	1.890	3.803	TPD0394BA~0412BA
	0413-063-3-P	0.413~0.432	0.625	0.787	1.240	1.890	3.843	TPD0413BA~0432BA
	0433-063-3-P	0.433~0.452	0.625	0.787	1.299	1.890	3.925	TPD0433BA~0452BA
	0453-063-3-P	0.453~0.471	0.625	0.787	1.358	1.890	3.965	TPD0453BA~0471BA
	0472-063-3-P	0.472~0.491	0.625	0.787	1.417	1.890	4.091	TPD0472BA~0491BA
	0492-063-3-P	0.492~0.511	0.625	0.787	1.476	1.890	4.169	TPD0492BA~0511BA
	0512-063-3-P	0.512~0.530	0.625	0.787	1.535	1.890	4.303	TPD0512BA~0530BA
	0531-063-3-P	0.531~0.550	0.625	0.787	1.594	1.890	4.382	TPD0531BA~0550BA
	0551-063-3-P	0.551~0.570	0.625	0.787	1.654	1.890	4.469	TPD0551BA~0570BA
	0571-063-3-P	0.571~0.590	0.625	0.787	1.713	1.890	4.587	TPD0571BA~0590BA
	0591-075-3-P	0.591~0.609	0.750	0.984	1.772	1.969	4.752	TPD0591BA~0609BA
	0610-075-3-P	0.610~0.629	0.750	0.984	1.831	1.969	4.831	TPD0610BA~0629BA
	0630-075-3-P	0.630~0.649	0.750	0.984	1.890	1.969	4.917	TPD0630BA~0649BA
	0650-075-3-P	0.650~0.668	0.750	0.984	1.949	1.969	4.996	TPD0650BA~0668BA
	0669-075-3-P	0.669~0.688	0.750	0.984	2.008	1.969	5.122	TPD0669BA~0688BA
	0689-075-3-P	0.689~0.708	0.750	0.984	2.067	1.969	5.201	TPD0689BA~0708BA
	0709-100-3-P	0.709~0.727	1.000	1.299	2.126	2.205	5.520	TPD0709BA~0727BA
	0728-100-3-P	0.728~0.747	1.000	1.299	2.185	2.205	5.598	TPD0728BA~0747BA
	0748-100-3-P	0.748~0.767	1.000	1.299	2.244	2.205	5.720	TPD0748BA~0767BA
	0768-100-3-P	0.768~0.786	1.000	1.299	2.303	2.205	5.799	TPD0768BA~0786BA
	0787-100-3-P	0.787~0.806	1.000	1.299	2.362	2.205	5.886	TPD0787BA~0806BA
	0807-100-3-P	0.807~0.826	1.000	1.299	2.421	2.205	5.965	TPD0807BA~0826BA
	0827-100-3-P	0.827~0.845	1.000	1.299	2.480	2.362	6.091	TPD0827BA~0845BA
	0846-100-3-P	0.846~0.865	1.000	1.299	2.539	2.362	6.169	TPD0846BA~0865BA
	0866-100-3-P	0.866~0.885	1.000	1.299	2.598	2.362	6.256	TPD0866BA~0885BA
	0886-100-3-P	0.886~0.905	1.000	1.299	2.657	2.362	6.335	TPD0886BA~0905BA
	0906-100-3-P	0.906~0.924	1.000	1.299	2.717	2.362	6.461	TPD0906BA~0924BA
	0925-100-3-P	0.925~0.944	1.000	1.299	2.776	2.362	6.539	TPD0925BA~0944BA
	0945-125-3-P	0.945~0.964	1.250	1.693	2.835	2.362	6.783	TPD0945BA~0964BA
	0965-125-3-P	0.965~0.983	1.250	1.693	2.894	2.362	6.862	TPD0965BA~0983BA
	0984-125-3-P	0.984~1.003	1.250	1.693	2.953	2.362	6.988	TPD0984BA~1003BA
	1004-125-3-P	1.004~1.023	1.250	1.693	3.012	2.362	7.067	TPD1004BA~1023BA
	1024-125-3-P	1.024~1.062	1.250	1.693	3.071	2.362	7.154	TPD1024BA~1062BA
	1063-125-3-P	1.063~1.101	1.250	1.693	3.189	2.362	7.358	TPD1063BA~1101BA
	1102-125-3-P	1.102~1.141	1.250	1.693	3.307	2.362	7.520	TPD1102BA~1141BA
	1142-125-3-P	1.142~1.180	1.250	1.693	3.425	2.362	7.724	TPD1142BA~1180BA
	1181-125-3-P	1.181~1.219	1.250	1.693	3.543	2.362	7.850	TPD1181BA~1219BA
	1220-125-3-P	1.220~1.259	1.250	1.693	3.661	2.362	8.055	TPD1220BA~1259BA
	1260-125-3-P	1.260~1.298	1.250	1.693	3.780	2.362	8.142	TPD1260BA~1299BA

Applicable inserts **F37**

TPDBA-P (5D)





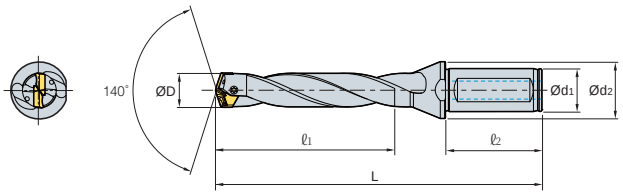
(inch)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDBA	0394-063-5-P	0.394~0.412	0.625	0.787	1.969	1.890	4.591	TPD0394BA~0412BA
	0413-063-5-P	0.413~0.432	0.625	0.787	2.067	1.890	4.669	TPD0413BA~0432BA
	0433-063-5-P	0.433~0.452	0.625	0.787	2.165	1.890	4.791	TPD0433BA~0452BA
	0453-063-5-P	0.453~0.471	0.625	0.787	2.264	1.890	4.909	TPD0453BA~0471BA
	0472-063-5-P	0.472~0.491	0.625	0.787	2.362	1.890	5.043	TPD0472BA~0491BA
	0492-063-5-P	0.492~0.511	0.625	0.787	2.461	1.890	5.165	TPD0492BA~0511BA
	0512-063-5-P	0.512~0.530	0.625	0.787	2.559	1.890	5.327	TPD0512BA~0530BA
	0531-063-5-P	0.531~0.550	0.625	0.787	2.657	1.890	5.449	TPD0531BA~0550BA
	0551-063-5-P	0.551~0.570	0.625	0.787	2.756	1.890	5.571	TPD0551BA~0570BA
	0571-063-5-P	0.571~0.590	0.625	0.787	2.854	1.890	5.732	TPD0571BA~0590BA
	0591-075-5-P	0.591~0.609	0.750	0.984	2.953	1.969	5.933	TPD0591BA~0609BA
	0610-075-5-P	0.610~0.629	0.750	0.984	3.051	1.969	6.051	TPD0610BA~0629BA
	0630-075-5-P	0.630~0.649	0.750	0.984	3.150	1.969	6.177	TPD0630BA~0649BA
	0650-075-5-P	0.650~0.668	0.750	0.984	3.248	1.969	6.295	TPD0650BA~0668BA
	0669-075-5-P	0.669~0.688	0.750	0.984	3.346	1.969	6.461	TPD0669BA~0688BA
	0689-075-5-P	0.689~0.708	0.750	0.984	3.445	1.969	6.579	TPD0689BA~0708BA
	0709-100-5-P	0.709~0.727	1.000	1.299	3.543	2.205	6.937	TPD0709BA~0727BA
	0728-100-5-P	0.728~0.747	1.000	1.299	3.642	2.205	7.055	TPD0728BA~0747BA
	0748-100-5-P	0.748~0.767	1.000	1.299	3.740	2.205	7.217	TPD0748BA~0767BA
	0768-100-5-P	0.768~0.786	1.000	1.299	3.839	2.205	7.335	TPD0768BA~0786BA
	0787-100-5-P	0.787~0.806	1.000	1.299	3.937	2.205	7.461	TPD0787BA~0806BA
	0807-100-5-P	0.807~0.826	1.000	1.299	4.035	2.205	7.579	TPD0807BA~0826BA
	0827-100-5-P	0.827~0.845	1.000	1.299	4.134	2.362	7.744	TPD0827BA~0845BA
	0846-100-5-P	0.846~0.865	1.000	1.299	4.232	2.362	7.862	TPD0846BA~0865BA
	0866-100-5-P	0.866~0.885	1.000	1.299	4.331	2.362	7.988	TPD0866BA~0885BA
	0886-100-5-P	0.886~0.905	1.000	1.299	4.429	2.362	8.106	TPD0886BA~0905BA
	0906-100-5-P	0.906~0.924	1.000	1.299	4.528	2.362	8.272	TPD0906BA~0924BA
	0925-100-5-P	0.925~0.944	1.000	1.299	4.626	2.362	8.390	TPD0925BA~0944BA
	0945-125-5-P	0.945~0.964	1.250	1.693	4.724	2.362	8.673	TPD0945BA~0964BA
	0965-125-5-P	0.965~0.983	1.250	1.693	4.823	2.362	8.791	TPD0965BA~0983BA
	0984-125-5-P	0.984~1.003	1.250	1.693	4.921	2.362	8.957	TPD0984BA~1003BA
	1004-125-5-P	1.004~1.023	1.250	1.693	5.020	2.362	9.075	TPD1004BA~1023BA
	1024-125-5-P	1.024~1.062	1.250	1.693	5.118	2.362	9.201	TPD1024BA~1062BA
	1063-125-5-P	1.063~1.101	1.250	1.693	5.315	2.362	9.484	TPD1063BA~1101BA
	1102-125-5-P	1.102~1.141	1.250	1.693	5.512	2.362	9.724	TPD1102BA~1141BA
	1142-125-5-P	1.142~1.180	1.250	1.693	5.709	2.362	10.008	TPD1142BA~1180BA
	1181-125-5-P	1.181~1.219	1.250	1.693	5.906	2.362	10.213	TPD1181BA~1219BA
	1220-125-5-P	1.220~1.259	1.250	1.693	6.102	2.362	10.496	TPD1220BA~1259BA
	1260-125-5-P	1.260~1.298	1.250	1.693	6.299	2.362	10.661	TPD1260BA~1299BA

Applicable inserts F37

TPDBA-P (8D)





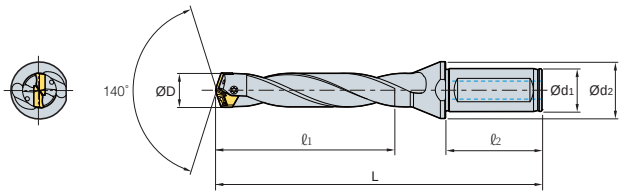
(inch)

Designation		ØD	Ød$_1$	Ød$_2$	ℓ$_1$	ℓ$_2$	L	Insert
TPDBA	0394-063-8-P	0.394~0.412	0.625	0.787	3.150	1.890	5.772	TPD0394BA~0412BA
	0413-063-8-P	0.413~0.432	0.625	0.787	3.307	1.890	5.929	TPD0413BA~0432BA
	0433-063-8-P	0.433~0.452	0.625	0.787	3.465	1.890	6.091	TPD0433BA~0452BA
	0453-063-8-P	0.453~0.471	0.625	0.787	3.622	1.890	6.248	TPD0453BA~0471BA
	0472-063-8-P	0.472~0.491	0.625	0.787	3.780	1.890	6.461	TPD0472BA~0491BA
	0492-063-8-P	0.492~0.511	0.625	0.787	3.937	1.890	6.642	TPD0492BA~0511BA
	0512-063-8-P	0.512~0.530	0.625	0.787	4.094	1.890	6.862	TPD0512BA~0530BA
	0531-063-8-P	0.531~0.550	0.625	0.787	4.252	1.890	7.043	TPD0531BA~0550BA
	0551-063-8-P	0.551~0.570	0.625	0.787	4.409	1.890	7.224	TPD0551BA~0570BA
	0571-063-8-P	0.571~0.590	0.625	0.787	4.567	1.890	7.445	TPD0571BA~0590BA
	0591-075-8-P	0.591~0.609	0.750	0.984	4.724	1.969	7.705	TPD0591BA~0609BA
	0610-075-8-P	0.610~0.629	0.750	0.984	4.882	1.969	7.882	TPD0610BA~0629BA
	0630-075-8-P	0.630~0.649	0.750	0.984	5.039	1.969	8.067	TPD0630BA~0649BA
	0650-075-8-P	0.650~0.668	0.750	0.984	5.197	1.969	8.244	TPD0650BA~0668BA
	0669-075-8-P	0.669~0.688	0.750	0.984	5.354	1.969	8.469	TPD0669BA~0688BA
	0689-075-8-P	0.689~0.708	0.750	0.984	5.512	1.969	8.646	TPD0689BA~0708BA
	0709-100-8-P	0.709~0.727	1.000	1.299	5.669	2.205	9.063	TPD0709BA~0727BA
	0728-100-8-P	0.728~0.747	1.000	1.299	5.827	2.205	9.240	TPD0728BA~0747BA
	0748-100-8-P	0.748~0.767	1.000	1.299	5.984	2.205	9.461	TPD0748BA~0767BA
	0768-100-8-P	0.768~0.786	1.000	1.299	6.142	2.205	9.638	TPD0768BA~0786BA
	0787-100-8-P	0.787~0.806	1.000	1.299	6.299	2.205	9.823	TPD0787BA~0806BA
	0807-100-8-P	0.807~0.826	1.000	1.299	6.457	2.205	10.000	TPD0807BA~0826BA
	0827-100-8-P	0.827~0.845	1.000	1.299	6.614	2.362	10.224	TPD0827BA~0845BA
	0846-100-8-P	0.846~0.865	1.000	1.299	6.772	2.362	10.402	TPD0846BA~0865BA
	0866-100-8-P	0.866~0.885	1.000	1.299	6.929	2.362	10.587	TPD0866BA~0885BA
	0886-100-8-P	0.886~0.905	1.000	1.299	7.087	2.362	10.772	TPD0886BA~0905BA
	0906-100-8-P	0.906~0.924	1.000	1.299	7.244	2.362	10.988	TPD0906BA~0924BA
	0925-100-8-P	0.925~0.944	1.000	1.299	7.402	2.362	11.165	TPD0925BA~0944BA
	0945-125-8-P	0.945~0.964	1.250	1.693	7.559	2.362	11.508	TPD0945BA~0964BA
	0965-125-8-P	0.965~0.983	1.250	1.693	7.717	2.362	11.685	TPD0965BA~0983BA
	0984-125-8-P	0.984~1.003	1.250	1.693	7.874	2.362	11.909	TPD0984BA~1003BA
	1004-125-8-P	1.004~1.023	1.250	1.693	8.031	2.362	12.087	TPD1004BA~1023BA
	1024-125-8-P	1.024~1.062	1.250	1.693	8.189	2.362	12.272	TPD1024BA~1062BA
	1063-125-8-P	1.063~1.101	1.250	1.693	8.504	2.362	12.673	TPD1063BA~1101BA
	1102-125-8-P	1.102~1.141	1.250	1.693	8.819	2.362	13.031	TPD1102BA~1141BA
	1142-125-8-P	1.142~1.180	1.250	1.693	9.134	2.362	13.433	TPD1142BA~1180BA
	1181-125-8-P	1.181~1.219	1.250	1.693	9.449	2.362	13.756	TPD1181BA~1219BA
	1220-125-8-P	1.220~1.259	1.250	1.693	9.764	2.362	14.157	TPD1220BA~1259BA
	1260-125-8-P	1.260~1.298	1.250	1.693	10.079	2.362	14.441	TPD1260BA~1299BA

Applicable inserts F37

TPDBA-P (10D)





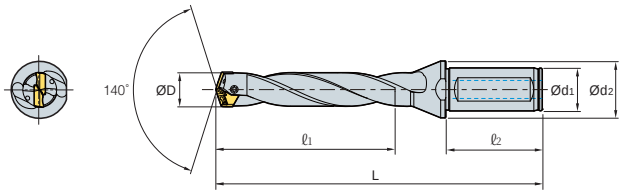
(inch)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDBA	0394-063-10-P	0.394~0.412	0.625	0.787	3.937	1.890	6.559	TPD0394BA~0412BA
	0413-063-10-P	0.413~0.432	0.625	0.787	4.134	1.890	6.756	TPD0413BA~0432BA
	0433-063-10-P	0.433~0.452	0.625	0.787	4.331	1.890	6.957	TPD0433BA~0452BA
	0453-063-10-P	0.453~0.471	0.625	0.787	4.528	1.890	7.154	TPD0453BA~0471BA
	0472-063-10-P	0.472~0.491	0.625	0.787	4.724	1.890	7.406	TPD0472BA~0491BA
	0492-063-10-P	0.492~0.511	0.625	0.787	4.921	1.890	7.626	TPD0492BA~0511BA
	0512-063-10-P	0.512~0.530	0.625	0.787	5.118	1.890	7.886	TPD0512BA~0530BA
	0531-063-10-P	0.531~0.550	0.625	0.787	5.315	1.890	8.106	TPD0531BA~0550BA
	0551-063-10-P	0.551~0.570	0.625	0.787	5.512	1.890	8.327	TPD0551BA~0570BA
	0571-063-10-P	0.571~0.590	0.625	0.787	5.709	1.890	8.587	TPD0571BA~0590BA
	0591-075-10-P	0.591~0.609	0.750	0.984	5.906	1.969	8.886	TPD0591BA~0609BA
	0610-075-10-P	0.610~0.629	0.750	0.984	6.102	1.969	9.102	TPD0610BA~0629BA
	0630-075-10-P	0.630~0.649	0.750	0.984	6.299	1.969	9.327	TPD0630BA~0649BA
	0650-075-10-P	0.650~0.668	0.750	0.984	6.496	1.969	9.543	TPD0650BA~0668BA
	0669-075-10-P	0.669~0.688	0.750	0.984	6.693	1.969	9.807	TPD0669BA~0688BA
	0689-075-10-P	0.689~0.708	0.750	0.984	6.890	1.969	10.024	TPD0689BA~0708BA
	0709-100-10-P	0.709~0.727	1.000	1.299	7.087	2.205	10.480	TPD0709BA~0727BA
	0728-100-10-P	0.728~0.747	1.000	1.299	7.283	2.205	10.697	TPD0728BA~0747BA
	0748-100-10-P	0.748~0.767	1.000	1.299	7.480	2.205	10.957	TPD0748BA~0767BA
	0768-100-10-P	0.768~0.786	1.000	1.299	7.677	2.205	11.173	TPD0768BA~0786BA
	0787-100-10-P	0.787~0.806	1.000	1.299	7.874	2.205	11.398	TPD0787BA~0806BA
	0807-100-10-P	0.807~0.826	1.000	1.299	8.071	2.205	11.614	TPD0807BA~0826BA
	0827-100-10-P	0.827~0.845	1.000	1.299	8.268	2.362	11.878	TPD0827BA~0845BA
	0846-100-10-P	0.846~0.865	1.000	1.299	8.465	2.362	12.094	TPD0846BA~0865BA
	0866-100-10-P	0.866~0.885	1.000	1.299	8.661	2.362	12.319	TPD0866BA~0885BA
	0886-100-10-P	0.886~0.905	1.000	1.299	8.858	2.362	12.543	TPD0886BA~0905BA
	0906-100-10-P	0.906~0.924	1.000	1.299	9.055	2.362	12.799	TPD0906BA~0924BA
	0925-100-10-P	0.925~0.944	1.000	1.299	9.252	2.362	13.016	TPD0925BA~0944BA
	0945-125-10-P	0.945~0.964	1.250	1.693	9.449	2.362	13.398	TPD0945BA~0964BA
	0965-125-10-P	0.965~0.983	1.250	1.693	9.646	2.362	13.614	TPD0965BA~0983BA
	0984-125-10-P	0.984~1.003	1.250	1.693	9.843	2.362	13.878	TPD0984BA~1003BA
	1004-125-10-P	1.004~1.023	1.250	1.693	10.039	2.362	14.094	TPD1004BA~1023BA
	1024-125-10-P	1.024~1.062	1.250	1.693	10.236	2.362	14.319	TPD1024BA~1062BA
	1063-125-10-P	1.063~1.101	1.250	1.693	10.640	2.362	14.799	TPD1063BA~1101BA
	1102-125-10-P	1.102~1.141	1.250	1.693	11.043	2.362	15.236	TPD1102BA~1141BA
	1142-125-10-P	1.142~1.180	1.250	1.693	11.447	2.362	15.717	TPD1142BA~1180BA
	1181-125-10-P	1.181~1.219	1.250	1.693	11.850	2.362	16.118	TPD1181BA~1219BA
	1220-125-10-P	1.220~1.259	1.250	1.693	12.254	2.362	16.598	TPD1220BA~1259BA
	1260-125-10-P	1.260~1.298	1.250	1.693	12.657	2.362	16.961	TPD1260BA~1299BA

Applicable inserts F37

TPDBA-P (12D)





(inch)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDBA	0394-063-12-P	0.394~0.412	0.625	0.787	4.724	1.890	7.346	TPD0394BA~0412BA
	0413-063-12-P	0.413~0.432	0.625	0.787	4.961	1.890	7.583	TPD0413BA~0432BA
	0433-063-12-P	0.433~0.452	0.625	0.787	5.197	1.890	7.823	TPD0433BA~0452BA
	0453-063-12-P	0.453~0.471	0.625	0.787	5.433	1.890	8.059	TPD0453BA~0471BA
	0472-063-12-P	0.472~0.491	0.625	0.787	5.669	1.890	8.350	TPD0472BA~0491BA
	0492-063-12-P	0.492~0.511	0.625	0.787	5.906	1.890	8.610	TPD0492BA~0511BA
	0512-063-12-P	0.512~0.530	0.625	0.787	6.142	1.890	8.909	TPD0512BA~0530BA
	0531-063-12-P	0.531~0.550	0.625	0.787	6.378	1.890	9.169	TPD0531BA~0550BA
	0551-063-12-P	0.551~0.570	0.625	0.787	6.614	1.890	9.429	TPD0551BA~0570BA
	0571-063-12-P	0.571~0.590	0.625	0.787	6.850	1.890	9.728	TPD0571BA~0590BA
	0591-075-12-P	0.591~0.609	0.750	0.984	7.087	1.969	10.067	TPD0591BA~0609BA
	0610-075-12-P	0.610~0.629	0.750	0.984	7.323	1.969	10.323	TPD0610BA~0629BA
	0630-075-12-P	0.630~0.649	0.750	0.984	7.559	1.969	10.587	TPD0630BA~0649BA
	0650-075-12-P	0.650~0.668	0.750	0.984	7.795	1.969	10.843	TPD0650BA~0668BA
	0669-075-12-P	0.669~0.688	0.750	0.984	8.031	1.969	11.146	TPD0669BA~0688BA
	0689-075-12-P	0.689~0.708	0.750	0.984	8.268	1.969	11.402	TPD0689BA~0708BA
	0709-100-12-P	0.709~0.727	1.000	1.299	8.504	2.205	11.898	TPD0709BA~0727BA
	0728-100-12-P	0.728~0.747	1.000	1.299	8.740	2.205	12.154	TPD0728BA~0747BA
	0748-100-12-P	0.748~0.767	1.000	1.299	8.976	2.205	12.453	TPD0748BA~0767BA
	0768-100-12-P	0.768~0.786	1.000	1.299	9.213	2.205	12.709	TPD0768BA~0786BA
	0787-100-12-P	0.787~0.806	1.000	1.299	9.449	2.205	12.972	TPD0787BA~0806BA
	0807-100-12-P	0.807~0.826	1.000	1.299	9.685	2.205	13.228	TPD0807BA~0826BA
	0827-100-12-P	0.827~0.845	1.000	1.299	9.921	2.362	13.531	TPD0827BA~0845BA
	0846-100-12-P	0.846~0.865	1.000	1.299	10.157	2.362	13.787	TPD0846BA~0865BA
	0866-100-12-P	0.866~0.885	1.000	1.299	10.394	2.362	14.051	TPD0866BA~0885BA
	0886-100-12-P	0.886~0.905	1.000	1.299	10.630	2.362	14.315	TPD0886BA~0905BA
	0906-100-12-P	0.906~0.924	1.000	1.299	10.866	2.362	14.610	TPD0906BA~0924BA
	0925-100-12-P	0.925~0.944	1.000	1.299	11.102	2.362	14.866	TPD0925BA~0944BA
	0945-125-12-P	0.945~0.964	1.250	1.693	11.339	2.362	15.287	TPD0945BA~0964BA
	0965-125-12-P	0.965~0.983	1.250	1.693	11.575	2.362	15.543	TPD0965BA~0983BA
	0984-125-12-P	0.984~1.003	1.250	1.693	11.811	2.362	15.846	TPD0984BA~1003BA
	1004-125-12-P	1.004~1.023	1.250	1.693	12.047	2.362	16.102	TPD1004BA~1023BA
	1024-125-12-P	1.024~1.062	1.250	1.693	12.283	2.362	16.366	TPD1024BA~1062BA
	1063-125-12-P	1.063~1.101	1.250	1.693	12.766	2.362	16.925	TPD1063BA~1101BA
	1102-125-12-P	1.102~1.141	1.250	1.693	13.248	2.362	17.441	TPD1102BA~1141BA
	1142-125-12-P	1.142~1.180	1.250	1.693	13.730	2.362	18.000	TPD1142BA~1180BA
	1181-125-12-P	1.181~1.219	1.250	1.693	14.213	2.362	18.480	TPD1181BA~1219BA
	1220-125-12-P	1.220~1.259	1.250	1.693	14.695	2.362	19.039	TPD1220BA~1259BA
	1260-125-12-P	1.260~1.298	1.250	1.693	15.177	2.362	19.480	TPD1260BA~1299BA

Applicable inserts **F37**

Cutting edge with 180° point angle - Flat bottom machining

TPDB-F new

- High precision clamping system - High precision clamping due to high precise grinding and auto-centering
- Screw on clamping system - Easy to replace insert
- Low cutting load cutting edge - Low cutting load and excellent chip cpntrol
- High durability holder - Improved wear resistance and durability with special surface treatment implementation
- Holder with good chip evacuation - Good chip evacuation and reduced cutting load with high helix angle

Code system

· Insert

TPD 0866 B A - F

TPD	0866	B	A	F
Top solid Piercing Drill	Drill dia. 0866: Ø0.866 inch	Insert type B: Blade type	Type A: Inch type No code: Metric type	Cutting edge F: Flat FC: Flat Candle

· Holder

TPD B A 0866 - 100 - 1.5 - F

TPD	B	A	0866	100	1.5	F
Top solid Piercing Drill	Insert type B: Blade type	Type A: Inch type No code: Metric type	Drill dia. 0866: Ø0.866 inch	Shank dia. 100: Ø1.00 inch	Aspect ratio (L/D) 1.5D	Flat

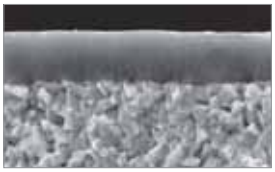
Features





[Endmill + Drill] [Endmill] [Drill]

Grade selection



PC5400

- PVD coating technology with high lubrication, built up edge resistance and chipping resistance
- Excellent chipping resistance due to high toughness coating with high adhesive strength
- Enhanced fracture resistance and stable machinability due to ultra-fine substrate with high toughness substrate

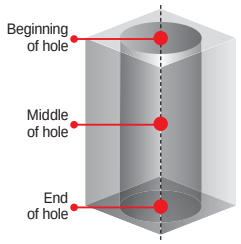
Performance evaluation

Precision

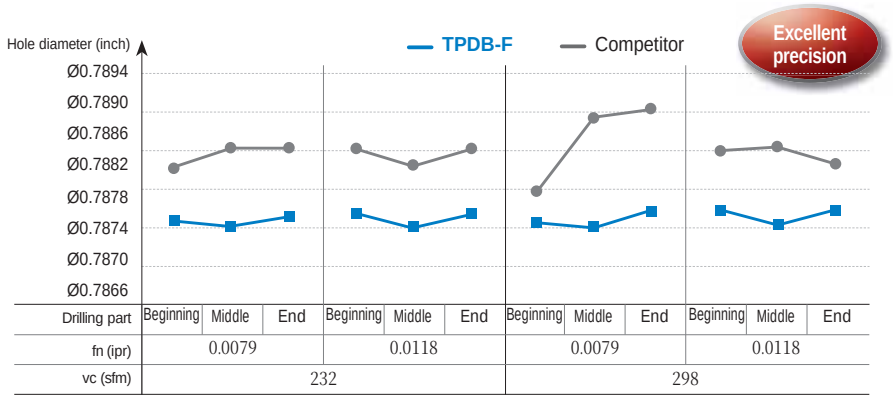
■ **Workpiece** Alloy steel (4140, HRC22)

■ **Cutting conditions** vc (sfm) = 232/298, fn (ipr) = 0.0079/0.0118, ap (inch) = 1.1811, wet (20 bar)

■ **Tools** **Insert** TPD0787BA-F (PC5400) **Holder** TPDBA0787-100-1.5-F (Drill dia. = Ø0.787 inch)



Drilling part



Cutting edge with low cutting load enhances high precision

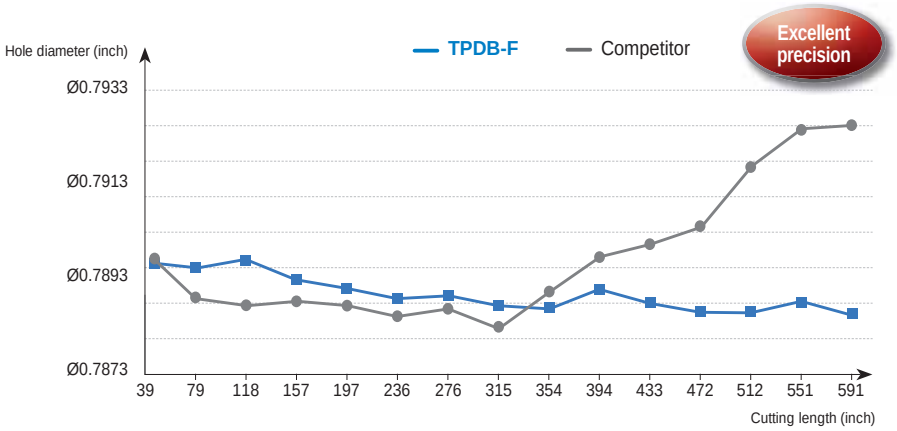
■ **Workpiece** Alloy steel (4140, HRC22), Angled surface 15°

■ **Cutting conditions** vc (sfm) = 232, fn (ipr) = 0.0083, ap (inch) = 0.7874, wet (20 bar)

■ **Tools** **Insert** TPD0787BA-F (PC5400) **Holder** TPDBA0787-100-1.5-F (Drill dia. = Ø0.787 inch)



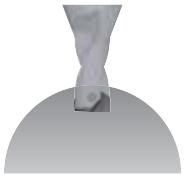
Angled surface drilling



Cutting edge with low cutting load enhances high precision

Recommended cutting condition (TPDB-F)

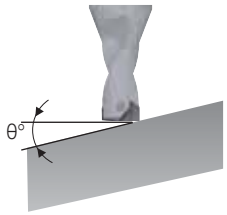
Workpiece				Grade	vc (sfm)	Aspect ratio (L/D) = 1.5D	
						Feed rate (ipr) per drill dia. (inch)	
ISO		Workpiece	HB			Ø0.551~Ø0.865	Ø0.866~Ø1.219
P	Carbon steel	Low carbon steel (1010, 1020 etc)	80~120	PC5400	265 (198~332)	0.0079~0.0118	0.0087~0.0126
		High carbon steel (1045, 1049 etc)	180~280		232 (166~298)	0.0079~0.0118	0.0087~0.0126
	Alloy steel	Low alloy steel (4140, 4142 etc)	140~260		232 (166~298)	0.0079~0.0118	0.0087~0.0126
		High alloy steel (4137, 4145 etc)	260~320		198 (131~265)	0.0079~0.0118	0.0087~0.0126

Machining	Flat surface drilling	Angled surface drilling	Curved surface drilling	Plunging	Boring
Pic.					
1.5D	○	○	○	○	○

※ Please refer to the precaution in drilling in case of angled surface, curved surface drilling, plunging and boring

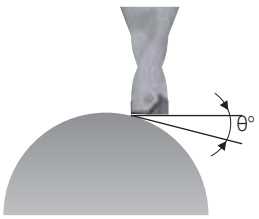
Precaution in drilling

Angled surface drilling



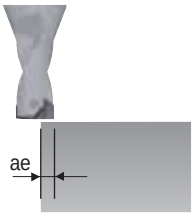
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface (In case, θ is over 30°, reduce it to 50%)

Curved surface drilling



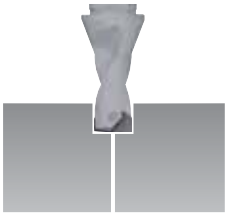
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface (In case, θ is over 30°, reduce it to 50%)

Plunging



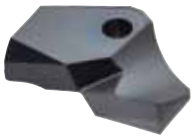
- Reduce the depth of cut (ae) to shorter than 1/2 of drill diameter
- In case, the depth of cut is longer than drill diameter, plunge with divided depth of cut

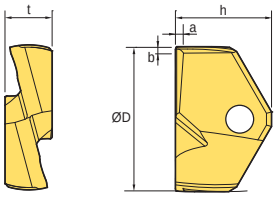
Boring



- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of boring
- Start with 0.078 inch stepping before boring to prevent long chip

Available insert





(inch)

Designation		Coated PC5400	ØD	h	t	a	b
TPD	0551BA-F		0.551	0.344	0.157	0.0026	0.0022
	0571BA-F		0.571	0.344	0.157	0.0026	0.0022
	0591BA-F		0.591	0.364	0.157	0.0026	0.0022
	0610BA-F		0.610	0.364	0.157	0.0026	0.0022
	0630BA-F		0.630	0.404	0.217	0.0026	0.0022
	0650BA-F		0.650	0.404	0.217	0.0026	0.0022
	0669BA-F		0.669	0.423	0.217	0.0026	0.0022
	0689BA-F		0.689	0.423	0.217	0.0026	0.0022
	0709BA-F		0.709	0.463	0.236	0.0026	0.0022
	0728BA-F		0.728	0.463	0.236	0.0026	0.0022
	0748BA-F		0.748	0.482	0.236	0.0026	0.0022
	0768BA-F		0.768	0.482	0.236	0.0026	0.0022
	0787BA-F		0.787	0.502	0.256	0.0026	0.0022
	0807BA-F		0.807	0.502	0.256	0.0026	0.0022
	0827BA-F		0.827	0.522	0.256	0.0026	0.0022
	0846BA-F		0.846	0.522	0.256	0.0026	0.0022
	0866BA-F		0.866	0.541	0.276	0.0026	0.0022
	0886BA-F		0.886	0.541	0.276	0.0026	0.0022
	0906BA-F		0.906	0.561	0.276	0.0026	0.0022
	0925BA-F		0.925	0.561	0.276	0.0026	0.0022
	0945BA-F		0.945	0.581	0.295	0.0026	0.0022
	0965BA-F		0.965	0.581	0.295	0.0026	0.0022
	0984BA-F		0.984	0.600	0.295	0.0026	0.0022
	1004BA-F		1.004	0.600	0.295	0.0026	0.0022
	1024BA-F		1.024	0.620	0.335	0.0026	0.0022
	1043BA-F		1.043	0.620	0.335	0.0026	0.0022
	1063BA-F		1.063	0.659	0.335	0.0026	0.0022
	1083BA-F		1.083	0.659	0.335	0.0026	0.0022
	1102BA-F		1.102	0.699	0.374	0.0026	0.0022
	1122BA-F		1.122	0.699	0.374	0.0026	0.0022
	1142BA-F		1.142	0.719	0.374	0.0026	0.0022
	1161BA-F		1.161	0.719	0.374	0.0026	0.0022
	1181BA-F		1.181	0.738	0.394	0.0026	0.0022
	1201BA-F		1.201	0.738	0.394	0.0026	0.0022

※ We can provide nonstock items with Ø0.551-Ø1.219

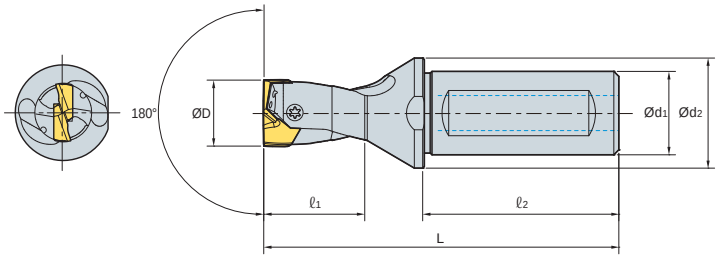
Parts

(inch)

Designation		Drill dia. (ØD)	Screw	Wrench	Torque (ibf·ft)
TPD	0551BA-F~0590BA-F	0.551-0.590	FTNB02512-P	TW07S	0.590
	0591BA-F~0708BA-F	0.591-0.708	FTNB02514-P	TW07S	0.590
	0709BA-F~0786BA-F	0.709-0.786	FTNB0316-P	TW09S	0.886
	0787BA-F~0944BA-F	0.787-0.944	FTNB0319	TW09S	0.886
	0945BA-F~1023BA-F	0.945-1.023	FTNB03522	TW15S	2.214
	1024BA-F~1101BA-F	1.024-1.101	FTNB03524	TW15S	2.214
	1102BA-F~1180BA-F	1.102-1.180	FTNB0426	TW15S	2.214
	1181BA-F~1219BA-F	1.181-1.219	FTNB0528	TW20-100	2.952

TPDB-F (1.5D)





(inch)

Designation		ØD	Ød1	Ød2	ℓ1	ℓ2	L	Insert
TPDBA	0551-063-1.5-F	0.551~0.570	0.625	0.787	1.102	1.890	3.386	TPD0551BA~F~TPD0570BA~F
	0571-063-1.5-F	0.571~0.590	0.625	0.787	1.142	1.890	3.425	TPD0571BA~F~TPD0590BA~F
	0591-075-1.5-F	0.591~0.609	0.750	0.984	1.181	1.969	3.661	TPD0591BA~F~TPD0609BA~F
	0610-075-1.5-F	0.610~0.629	0.750	0.984	1.220	1.969	3.701	TPD0610BA~F~TPD0629BA~F
	0630-075-1.5-F	0.630~0.649	0.750	0.984	1.260	1.969	3.740	TPD0630BA~F~TPD0649BA~F
	0650-075-1.5-F	0.650~0.668	0.750	0.984	1.300	1.969	3.780	TPD0650BA~F~TPD0668BA~F
	0669-075-1.5-F	0.669~0.688	0.750	0.984	1.339	1.969	3.819	TPD0669BA~F~TPD0688BA~F
	0689-075-1.5-F	0.689~0.708	0.750	0.984	1.378	1.969	3.858	TPD0689BA~F~TPD0708BA~F
	0709-075-1.5-F	0.709~0.727	0.750	0.984	1.417	1.969	3.898	TPD0709BA~F~TPD0727BA~F
	0728-075-1.5-F	0.728~0.747	0.750	0.984	1.457	1.969	3.937	TPD0728BA~F~TPD0747BA~F
	0748-100-1.5-F	0.748~0.767	1.000	1.299	1.496	2.205	3.976	TPD0748BA~F~TPD0767BA~F
	0768-100-1.5-F	0.768~0.786	1.000	1.299	1.535	2.205	4.016	TPD0768BA~F~TPD0786BA~F
	0787-100-1.5-F	0.787~0.806	1.000	1.299	1.575	2.205	4.567	TPD0787BA~F~TPD0806BA~F
	0807-100-1.5-F	0.807~0.826	1.000	1.299	1.614	2.205	4.606	TPD0807BA~F~TPD0826BA~F
	0827-100-1.5-F	0.827~0.845	1.000	1.299	1.654	2.205	4.646	TPD0827BA~F~TPD0845BA~F
	0846-100-1.5-F	0.846~0.865	1.000	1.299	1.693	2.205	4.685	TPD0846BA~F~TPD0865BA~F
	0866-100-1.5-F	0.866~0.885	1.000	1.299	1.732	2.205	4.724	TPD0866BA~F~TPD0885BA~F
	0886-100-1.5-F	0.886~0.905	1.000	1.299	1.772	2.205	4.764	TPD0886BA~F~TPD0905BA~F
	0906-100-1.5-F	0.906~0.924	1.000	1.299	1.811	2.205	4.803	TPD0906BA~F~TPD0924BA~F
	0925-100-1.5-F	0.925~0.944	1.000	1.299	1.850	2.205	4.843	TPD0925BA~F~TPD0944BA~F
	0945-125-1.5-F	0.945~0.964	1.250	1.693	1.890	2.362	5.059	TPD0945BA~F~TPD0964BA~F
	0965-125-1.5-F	0.965~0.983	1.250	1.693	1.929	2.362	5.098	TPD0965BA~F~TPD0983BA~F
	0984-125-1.5-F	0.984~1.003	1.250	1.693	1.969	2.362	5.138	TPD0984BA~F~TPD1003BA~F
	1004-125-1.5-F	1.004~1.023	1.250	1.693	2.008	2.362	5.177	TPD1004BA~F~TPD1023BA~F
	1024-125-1.5-F	1.024~1.042	1.250	1.693	2.047	2.362	5.217	TPD1024BA~F~TPD1042BA~F
	1043-125-1.5-F	1.043~1.062	1.250	1.693	2.087	2.362	5.256	TPD1043BA~F~TPD1062BA~F
	1063-125-1.5-F	1.063~1.082	1.250	1.693	2.126	2.362	5.295	TPD1063BA~F~TPD1082BA~F
	1083-125-1.5-F	1.083~1.101	1.250	1.693	2.165	2.362	5.335	TPD1083BA~F~TPD1101BA~F
	1102-125-1.5-F	1.102~1.121	1.250	1.693	2.205	2.362	5.374	TPD1102BA~F~TPD1121BA~F
	1122-125-1.5-F	1.122~1.141	1.250	1.693	2.244	2.362	5.413	TPD1122BA~F~TPD1141BA~F
	1142-125-1.5-F	1.142~1.160	1.250	1.693	2.283	2.362	5.423	TPD1142BA~F~TPD1160BA~F
	1161-125-1.5-F	1.161~1.180	1.250	1.693	2.323	2.362	5.492	TPD1161BA~F~TPD1180BA~F
	1181-125-1.5-F	1.181~1.200	1.250	1.693	2.362	2.362	5.531	TPD1181BA~F~TPD1200BA~F
	1201-125-1.5-F	1.201~1.219	1.250	1.693	2.402	2.362	5.571	TPD1201BA~F~TPD1219BA~F

Applicable inserts **F46**

The exclusive top solid indexable drill for steel-frame structure, H-Beam

TPDB-H new

- High precision clamping system - High precision clamping due highly precise grinding and auto-centering
- Screw on clamping system - Easy to replace insert
- Edge design with excellent centering - Low cutting load and good chip control
- High durability holder - Improved wear resistance and durability with special surface treatment implementation
- Holder with good chip evacuation - Good chip evacuation and reduced cutting load with high helix angle
- Optimally designed oil hole - Long tool life

Code system

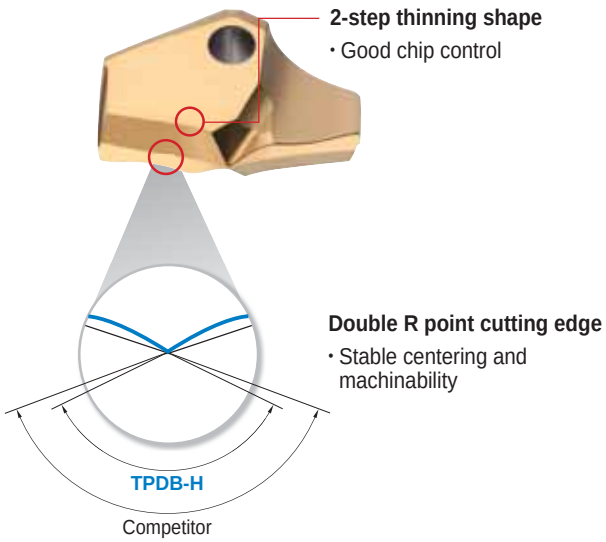
· Insert

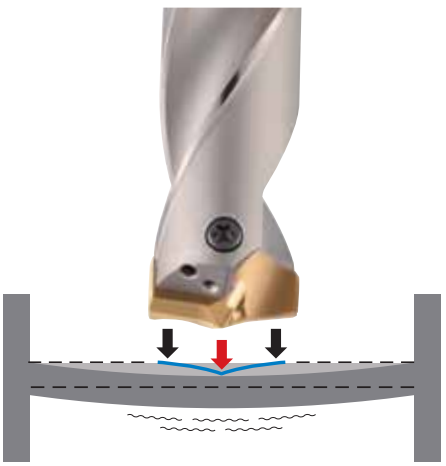
TPD	0945	B	A	-	H
Top solid Piercing Drill	Drill dia. 0945: Ø0.945 inch	Insert type B: Blade type	Type A: Inch type No code: Metric type		H-Beam

· Holder

TPD	B	A	0610	-	075	-	4	-	H
Top solid Piercing Drill	Insert type B: Blade type	Type A: Inch type No code: Metric type	Drill dia. 0610: Ø0.610 inch		Shank dia. 075: Ø0.75 inch		Aspect ratio (L/D) 3D, 4D, 8D ※ Flange shank (8F) for 8D		H-Beam

Features of insert

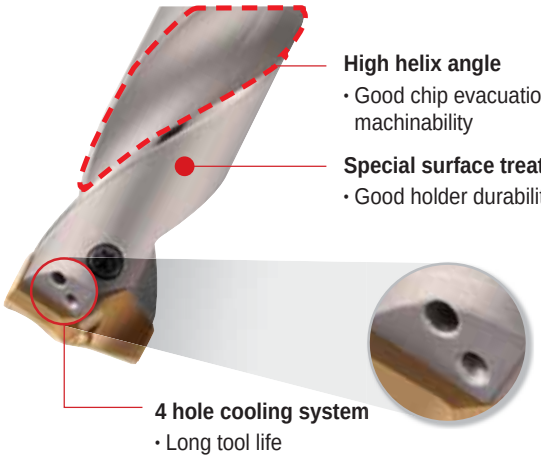




Applied Double R point edge design is optimized for excellent centering and stable machinability

Machinability and productivity are improved by minimizing both workpiece's bending and chipping at edge corner section

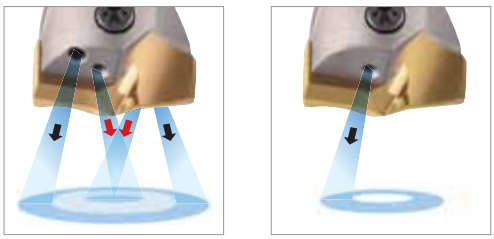
Features of holder



High helix angle
- Good chip evacuation and machinability

Special surface treatment
- Good holder durability

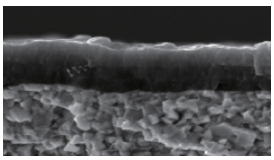
4 hole cooling system
- Long tool life



[TPDB-H] [Competitor]

Concentrated coolant injection on delicate cutting edge increases tool life

Grade selection



PC340Q new

- Application of high hardness lubricative PVD coating technology with excellent resistance on wear, welding, and chipping
- The special surface treatment improves chip evacuation and reduces wear on the rake surface and relief face
- High hardness ultra-fine substrate ensures high rigidity of cutting edge and good chipping resistance

Performance evaluation

Chip control

■ **Workpiece** Carbon steel (A36, A572)

■ **Cutting conditions** vc (sfm) = 263, fn (ipr) = 0.0079
ap (inch) = 1.1811, wet

■ **Tools** **Insert** TPD1063BA-H (PC340Q)
Holder TPDBA1063-125-4-H
(Drill dia. = Ø1.063 inch)



A36



A572

Good chip control

Wear resistance

■ **Workpiece** Carbon steel (A36)

■ **Cutting conditions** vc (sfm) = 213, fn (ipr) = 0.0098,
ap (inch) = 1.1811, wet

■ **Tools** **Insert** TPD0866BA-H (PC340Q)
Holder TPDBA0866-100-4-H
(Drill dia. = Ø0.866 inch)



A36

■ **Workpiece** Carbon steel (A572)

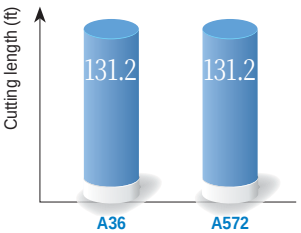
■ **Cutting conditions** vc (sfm) = 230, fn (ipr) = 0.0098
ap (inch) = 1.1811, wet

■ **Tools** **Insert** TPD1063BA-H (PC340Q)
Holder TPDBA1063-125-4-H
(Drill dia. = Ø1.063 inch)



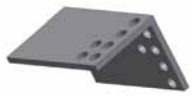
A572

■ **Test result**



- Normal wear and still usable

Workpiece and recommended cutting conditions

Workpiece					Grade	vc (sfm)	Aspect ratio (L/D) = 3D, 4D Feed rate (ipr) per drill dia. (inch)	
ISO		Workpiece		Worpiece materials			Ø0.551~Ø0.862	Ø0.886~Ø1.181
P	Carbon steel	H-Beam		A36 A572	PC340Q	213 (197~246)	0.0079~0.0098	0.0079~0.0118
		Angle						
		Plate						
		Plate (Stacked)				197 (180~213)	0.0059~0.0098	0.0059~0.0098

Precaution in drilling

Angled surface drilling



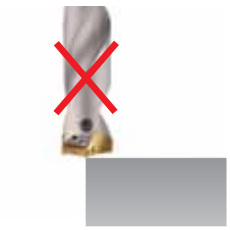
- The approach angle between drill and the workpiece at the beginning and the end should be less than 6°
- Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface

Stacked plates drilling



- Gap between the plates could make wrong chip evacuation causing fracture of the drill
- Place stacked plates without any gap between each

Plunging



- Irregular cutting resistance in plunging could cause fracture and deformation of the drill

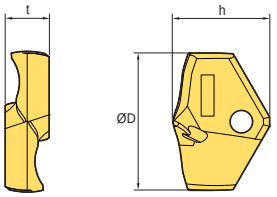
Boring



- Boring is not recommended due to wear and chipping in the corner of the insert

Available inserts





(inch)

Designation		Coated PC5300	ØD	h	t
TPD	0551BA-H		0.551	0.394	0.157
	0571BA-H		0.571	0.394	0.157
	0591BA-H		0.591	0.413	0.157
	0610BA-H		0.610	0.413	0.157
	0630BA-H		0.630	0.453	0.217
	0650BA-H		0.650	0.453	0.217
	0669BA-H		0.669	0.472	0.217
	0689BA-H		0.689	0.472	0.217
	0709BA-H		0.709	0.512	0.236
	0728BA-H		0.728	0.512	0.236
	0748BA-H		0.748	0.531	0.236
	0768BA-H		0.768	0.531	0.236
	0787BA-H		0.787	0.571	0.256
	0807BA-H		0.807	0.571	0.256
	0827BA-H		0.827	0.591	0.256
	0846BA-H		0.846	0.591	0.256
	0866BA-H		0.866	0.610	0.276
	0886BA-H		0.886	0.610	0.276
	0906BA-H		0.906	0.630	0.276
	0925BA-H		0.925	0.630	0.276
	0945BA-H		0.945	0.650	0.295
	0965BA-H		0.965	0.650	0.295
	0984BA-H		0.984	0.669	0.295
	1004BA-H		1.004	0.669	0.295
	1024BA-H		1.024	0.689	0.335
	1043BA-H		1.043	0.689	0.335
	1063BA-H		1.063	0.728	0.335
	1083BA-H		1.083	0.728	0.335
	1102BA-H		1.102	0.768	0.374
	1122BA-H		1.122	0.768	0.374
	1142BA-H		1.142	0.787	0.374
	1161BA-H		1.161	0.787	0.374
	1181BA-H		1.181	0.807	0.394
	1201BA-H		1.201	0.807	0.394

※ We can provide nonstock items with Ø0.551 - Ø1.219 ●: Stock Item

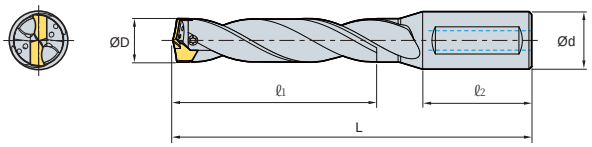
Parts

(inch)

Designation		Drill dia. (ØD)	Screw	Wrench	Torque (ibf·ft)
TPD	0551BA-H~0590BA-H	0.551~0.590	FTNB02512-P	TW07S	0.590
	0591BA-H~0708BA-H	0.591~0.708	FTNB02514-P	TW07S	0.590
	0709BA-H~0786BA-H	0.709~0.786	FTNB0316-P	TW09S	0.886
	0787BA-H~0944BA-H	0.787~0.944	FTNB0319	TW09S	0.886
	0945BA-H~1023BA-H	0.945~1.023	FTNB03522	TW15S	2.214
	1024BA-H~1101BA-H	1.024~1.101	FTNB03524	TW15S	2.214
	1102BA-H~1180BA-H	1.102~1.180	FTNB0426	TW15S	2.214
	1181BA-H~1219BA-H	1.181~1.219	FTNB0528	TW20-100	2.952

TPDBA-H (3D)





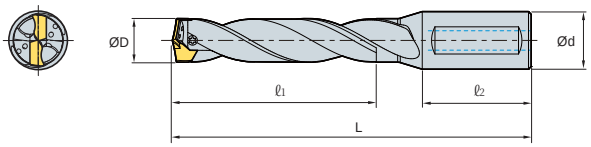
(inch)

Designation		ØD	Ød	ℓ_1	ℓ_2	L	Insert
TPDBA	0551-063-3-H	0.551~0.570	0.625	1.654	1.890	3.888	0551BA-H~0570BA-H
	0571-063-3-H	0.571~0.590	0.625	1.713	1.890	3.967	0571BA-H~0590BA-H
	0591-075-3-H	0.591~0.609	0.750	1.772	1.969	4.109	0591BA-H~0609BA-H
	0610-075-3-H	0.610~0.629	0.750	1.831	1.969	4.187	0610BA-H~0629BA-H
	0630-075-3-H	0.630~0.649	0.750	1.890	1.969	4.250	0630BA-H~0649BA-H
	0650-075-3-H	0.650~0.668	0.750	1.949	1.969	4.329	0650BA-H~0668BA-H
	0669-075-3-H	0.669~0.688	0.750	2.008	1.969	4.391	0669BA-H~0688BA-H
	0689-075-3-H	0.689~0.708	0.750	2.067	1.969	4.470	0689BA-H~0708BA-H
	0709-075-3-H	0.709~0.727	0.750	2.126	1.969	4.532	0709BA-H~0727BA-H
	0728-075-3-H	0.728~0.747	0.750	2.185	1.969	4.611	0728BA-H~0747BA-H
	0748-075-3-H	0.748~0.767	0.750	2.244	1.969	4.674	0748BA-H~0767BA-H
	0768-075-3-H	0.768~0.786	0.750	2.303	1.969	4.753	0768BA-H~0786BA-H
	0787-100-3-H	0.787~0.806	1.000	2.362	2.205	5.051	0787BA-H~0806BA-H
	0807-100-3-H	0.807~0.826	1.000	2.421	2.205	5.130	0807BA-H~0826BA-H
	0827-100-3-H	0.827~0.845	1.000	2.480	2.205	5.193	0827BA-H~0845BA-H
	0846-100-3-H	0.846~0.865	1.000	2.539	2.205	5.272	0846BA-H~0865BA-H
	0866-100-3-H	0.866~0.885	1.000	2.598	2.205	5.335	0866BA-H~0885BA-H
	0886-100-3-H	0.886~0.905	1.000	2.657	2.205	5.413	0886BA-H~0905BA-H
	0906-100-3-H	0.906~0.924	1.000	2.717	2.205	5.476	0906BA-H~0924BA-H
	0925-100-3-H	0.925~0.944	1.000	2.776	2.205	5.555	0925BA-H~0944BA-H
	0945-125-3-H	0.945~0.964	1.250	2.835	2.362	5.780	0945BA-H~0964BA-H
	0965-125-3-H	0.965~0.983	1.250	2.894	2.362	5.858	0965BA-H~0983BA-H
	0984-125-3-H	0.984~1.003	1.250	2.953	2.362	5.917	0984BA-H~1003BA-H
	1004-125-3-H	1.004~1.023	1.250	3.012	2.362	5.996	1004BA-H~1023BA-H
	1024-125-3-H	1.024~1.042	1.250	3.071	2.362	6.055	1024BA-H~1042BA-H
	1043-125-3-H	1.043~1.062	1.250	3.130	2.362	6.134	1043BA-H~1062BA-H
	1063-125-3-H	1.063~1.082	1.250	3.189	2.362	6.201	1063BA-H~1082BA-H
	1083-125-3-H	1.083~1.101	1.250	3.248	2.362	6.280	1083BA-H~1101BA-H
	1102-125-3-H	1.102~1.121	1.250	3.307	2.362	6.339	1102BA-H~1121BA-H
	1122-125-3-H	1.122~1.141	1.250	3.366	2.362	6.417	1122BA-H~1141BA-H
	1142-125-3-H	1.142~1.160	1.250	3.425	2.362	6.480	1142BA-H~1160BA-H
	1161-125-3-H	1.161~1.180	1.250	3.484	2.362	6.559	1161BA-H~1180BA-H
	1181-125-3-H	1.181~1.219	1.250	3.543	2.362	6.622	1181BA-H~1219BA-H

Applicable inserts **F51**

TPDBA-H (4D)





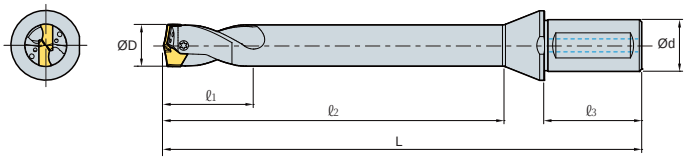
(inch)

Designation		ØD	Ød	ℓ_1	ℓ_2	L	Insert
TPDBA	0551-063-4-H	0.551~0.570	0.625	2.205	1.890	4.440	0551BA-H~0570BA-H
	0571-063-4-H	0.571~0.590	0.625	2.283	1.890	4.538	0571BA-H~0590BA-H
	0591-075-4-H	0.591~0.609	0.750	2.362	1.969	4.699	0591BA-H~0609BA-H
	0610-075-4-H	0.610~0.629	0.750	2.441	1.969	4.797	0610BA-H~0629BA-H
	0630-075-4-H	0.630~0.649	0.750	2.520	1.969	4.880	0630BA-H~0649BA-H
	0650-075-4-H	0.650~0.668	0.750	2.598	1.969	4.978	0650BA-H~0668BA-H
	0669-075-4-H	0.669~0.688	0.750	2.677	1.969	5.060	0669BA-H~0688BA-H
	0689-075-4-H	0.689~0.708	0.750	2.756	1.969	5.159	0689BA-H~0708BA-H
	0709-075-4-H	0.709~0.727	0.750	2.835	1.969	5.241	0709BA-H~0727BA-H
	0728-075-4-H	0.728~0.747	0.750	2.913	1.969	5.339	0728BA-H~0747BA-H
	0748-075-4-H	0.748~0.767	0.750	2.992	1.969	5.422	0748BA-H~0767BA-H
	0768-075-4-H	0.768~0.786	0.750	3.071	1.969	5.521	0768BA-H~0786BA-H
	0787-100-4-H	0.787~0.806	1.000	3.150	2.205	5.839	0787BA-H~0806BA-H
	0807-100-4-H	0.807~0.826	1.000	3.228	2.205	5.937	0807BA-H~0826BA-H
	0827-100-4-H	0.827~0.845	1.000	3.307	2.205	6.020	0827BA-H~0845BA-H
	0846-100-4-H	0.846~0.865	1.000	3.386	2.205	6.118	0846BA-H~0865BA-H
	0866-100-4-H	0.866~0.885	1.000	3.465	2.205	6.201	0866BA-H~0885BA-H
	0886-100-4-H	0.886~0.905	1.000	3.543	2.205	6.299	0886BA-H~0905BA-H
	0906-100-4-H	0.906~0.924	1.000	3.622	2.205	6.382	0906BA-H~0924BA-H
	0925-100-4-H	0.925~0.944	1.000	3.701	2.205	6.480	0925BA-H~0944BA-H
	0945-125-4-H	0.945~0.964	1.250	3.780	2.362	6.724	0945BA-H~0964BA-H
	0965-125-4-H	0.965~0.983	1.250	3.858	2.362	6.823	0965BA-H~0983BA-H
	0984-125-4-H	0.984~1.003	1.250	3.937	2.362	6.902	0984BA-H~1003BA-H
	1004-125-4-H	1.004~1.023	1.250	4.016	2.362	7.000	1004BA-H~1023BA-H
	1024-125-4-H	1.024~1.042	1.250	4.094	2.362	7.079	1024BA-H~1042BA-H
	1043-125-4-H	1.043~1.062	1.250	4.173	2.362	7.177	1043BA-H~1062BA-H
	1063-125-4-H	1.063~1.082	1.250	4.252	2.362	7.264	1063BA-H~1082BA-H
	1083-125-4-H	1.083~1.101	1.250	4.331	2.362	7.362	1083BA-H~1101BA-H
	1102-125-4-H	1.102~1.121	1.250	4.409	2.362	7.441	1102BA-H~1121BA-H
	1122-125-4-H	1.122~1.141	1.250	4.488	2.362	7.539	1122BA-H~1141BA-H
	1142-125-4-H	1.142~1.160	1.250	4.567	2.362	7.622	1142BA-H~1160BA-H
	1161-125-4-H	1.161~1.180	1.250	4.646	2.362	7.720	1161BA-H~1180BA-H
	1181-125-4-H	1.181~1.219	1.250	4.724	2.362	7.803	1181BA-H~1219BA-H

Applicable inserts **F51**

TPDBA-H (8D)





(inch)

Designation		ØD	Ød	ℓ_1	ℓ_2	ℓ_3	L	Insert
TPDBA	0551-063-8F-H	0.551~0.570	0.625	1.969	4.409	1.890	6.940	0551BA-H~0570BA-H
	0571-063-8F-H	0.571~0.590	0.625	1.969	4.567	1.890	7.097	0571BA-H~0590BA-H
	0591-075-8F-H	0.591~0.609	0.750	1.969	4.724	1.969	7.376	0591BA-H~0609BA-H
	0610-075-8F-H	0.610~0.629	0.750	1.969	4.882	1.969	7.534	0610BA-H~0629BA-H
	0630-075-8F-H	0.630~0.649	0.750	1.969	5.039	1.969	7.734	0630BA-H~0649BA-H
	0650-075-8F-H	0.650~0.668	0.750	1.969	5.197	1.969	7.892	0650BA-H~0668BA-H
	0669-075-8F-H	0.669~0.688	0.750	1.969	5.354	1.969	8.092	0669BA-H~0688BA-H
	0689-075-8F-H	0.689~0.708	0.750	1.969	5.512	1.969	8.249	0689BA-H~0708BA-H
	0709-075-8F-H	0.709~0.727	0.750	1.969	5.669	1.969	8.489	0709BA-H~0727BA-H
	0728-075-8F-H	0.728~0.747	0.750	1.969	5.827	1.969	8.647	0728BA-H~0747BA-H
	0748-075-8F-H	0.748~0.767	0.750	1.969	5.984	1.969	8.808	0748BA-H~0767BA-H
	0768-075-8F-H	0.768~0.786	0.750	1.969	6.142	1.969	8.966	0768BA-H~0786BA-H
	0787-100-8F-H	0.787~0.806	1.000	1.969	6.299	2.205	9.362	0787BA-H~0806BA-H
	0807-100-8F-H	0.807~0.826	1.000	1.969	6.457	2.205	9.520	0807BA-H~0826BA-H
	0827-100-8F-H	0.827~0.845	1.000	1.969	6.614	2.205	9.681	0827BA-H~0845BA-H
	0846-100-8F-H	0.846~0.865	1.000	1.969	6.772	2.205	9.839	0846BA-H~0865BA-H
	0866-100-8F-H	0.866~0.885	1.000	1.969	6.929	2.205	10.000	0866BA-H~0885BA-H
	0886-100-8F-H	0.886~0.905	1.000	1.969	7.087	2.205	10.354	0886BA-H~0905BA-H
	0906-100-8F-H	0.906~0.924	1.000	1.969	7.244	2.205	10.516	0906BA-H~0924BA-H
	0925-100-8F-H	0.925~0.944	1.000	1.969	7.402	2.205	10.673	0925BA-H~0944BA-H
	0945-125-8F-H	0.945~0.964	1.250	1.969	7.559	2.362	10.996	0945BA-H~0964BA-H
	0965-125-8F-H	0.965~0.983	1.250	1.969	7.717	2.362	11.154	0965BA-H~0983BA-H
	0984-125-8F-H	0.984~1.003	1.250	1.969	7.874	2.362	11.311	0984BA-H~1003BA-H
	1004-125-8F-H	1.004~1.023	1.250	1.969	8.031	2.362	11.469	1004BA-H~1023BA-H
	1024-125-8F-H	1.024~1.042	1.250	1.969	8.189	2.362	11.626	1024BA-H~1042BA-H
	1043-125-8F-H	1.043~1.062	1.250	1.969	8.346	2.362	11.783	1043BA-H~1062BA-H
	1063-125-8F-H	1.063~1.082	1.250	1.969	8.504	2.362	11.949	1063BA-H~1082BA-H
	1083-125-8F-H	1.083~1.101	1.250	1.969	8.661	2.362	12.106	1083BA-H~1101BA-H
	1102-125-8F-H	1.102~1.121	1.250	1.969	8.819	2.362	12.343	1102BA-H~1121BA-H
	1122-125-8F-H	1.122~1.141	1.250	1.969	8.976	2.362	12.500	1122BA-H~1141BA-H
	1142-125-8F-H	1.142~1.160	1.250	1.969	9.134	2.362	12.701	1142BA-H~1160BA-H
	1161-125-8F-H	1.161~1.180	1.250	1.969	9.291	2.362	12.858	1161BA-H~1180BA-H
	1181-125-8F-H	1.181~1.219	1.250	1.969	9.449	2.362	13.020	1181BA-H~1219BA-H

Applicable inserts **F51**

Convenient and quickly adjustable drill height

WPDC

Indexable drill clamped with center drill

Code system

· **Holder**



Type	Drill dia.	Shank dia.	Aspect ratio
WPDC: Using W-type I/S center drill NPDC: Using N-type I/S center drill	1250: Ø1.250 238256: Ø2.38~2.56	125: Ø1.25 150: Ø1.50	5: 5D 6.5: 6.5D 8: 8D

· **Cartridge**



Type	Drill dia.	Classification
CWP: Cartridge-WPDC	2125: Ø2.125 238256: Ø2.38~2.56	C: Central P: Peripheral

· **Center drill**



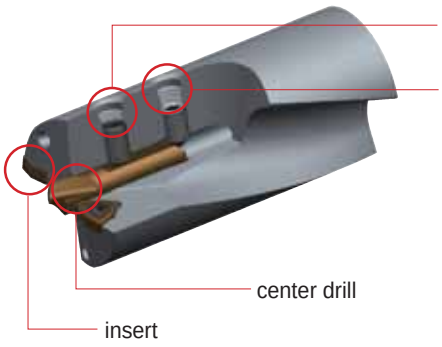
Type	Coolant	Diameter × length of tool
Center Dril	H: Coolant Unmarked: None	23612: Ø0.236 X 1.2 31514: Ø0.315 X 1.4 39414: Ø0.394 X 1.4 47215: Ø0.472 X 1.5 63018: Ø0.630 X 1.8

· **Grade**



Product name	Coating layer
PVD coating	40H: TiN coating

How to clamp the drills



Feature of corn-point system

- Convenient and quick adjustable heights when inserting the center drill
- In case the center drill brakes while in usage, it can be replaced with the bolt for adjusting cone point
- The bolt for adjusting cone point prevents chattering on the center drill

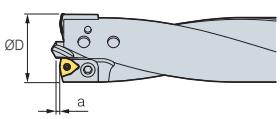
Clamping

❶	❷	❸	❹	❺
				
Place a center drill	Clamp insert and cartridge	Adjust the center drill with the bolt for adjusting cone point	Clamp the center drill firmly with fixing bolt	Reassure the clamp with bolt for adjusting cone point

※ Use safety covers for your safety when clamping the center drill and insert
※ When machining, be careful of the drill disk

Length of the ‘a’ part of center drill

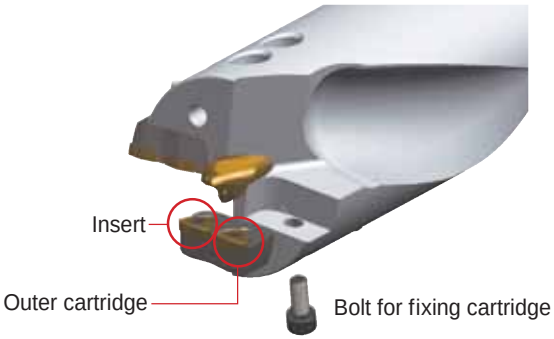
The length of ‘a’ being too short can cause bad surface finish or high cutting load
On the other hand, the length of ‘a’ being too long can make tool failure and chattering while drilling



Diameter (ØD)	Length of the ‘a’ part of center drill		
	Steel	Alloy steel	Non-ferrous metal
1.000~1.188	0.05	0.04	0.06
1.189~1.567	0.06	0.05	0.07
1.567~2.000	0.07	0.06	0.09
2.001~2.313	0.09	0.07	0.10
2.314~2.940	0.10	0.08	0.11
2.941~3.130	0.12	0.10	0.14

Adjusting diameter of cartridge type drill

1) Disassemble a cartridge from the holder by loosening the bolt fixed for outer cartridge
2) Machine after calculating the hole size on the side of the outer cartridge
3) Trim the sharp part after machining
4) Clamp the bolt for fixing cartridge without any gap in between the holder and the machined outer cartridge



- **Range of adjustable drill diameter**
  ① Single cartridge type (Drill diameter Ø1.625~Ø2.313) ···› 0.039 inch
  ② Dual cartridge type (Drill diameter Ø2.380~Ø3.310) ···› 0.197 inch

- **Diameter of the standard drills is provided with maximum size of standards**
  Ex) WPDCA256275-150-8 ···› Drill diameter 2.75 inch

Ex) How to adjust drill diameter to Ø2.60 machining with WPDCA256275-150-8
···› To make the drill diameter of outer cartridge to Ø2.60, machine 0.075 inch. (Ø2.75-Ø2.56 = 0.15 ···› 0.15 ÷ 2 = 0.075 (radius))

Recommended cutting condition

Workpiece				Chip breaker	Grade	vc (sfm)	Aspect ratio (L/D) = 5D, 6.5D, 8D					
							Feed rate (ipr) per drill dia. (inch)					
ISO		Workpiece	HB				~Ø1.188	Ø1.250~Ø1.563	Ø1.625~Ø1.938	Ø2.000~Ø2.313	Ø2.38~Ø2.94	Ø2.94~Ø3.13
P	Carbon steel	Low carbon steel (~0.25%)	80~180	C21N	PC5335	623 (524~722)	0.0028~0.0043	0.0031~0.0047	0.0039~0.0055	0.0047~0.0063	0.0047~0.0063	0.0047~0.0063
		High carbon steel (0.25%~)	180~280	C21N	PC5335	459 (361~558)	0.0028~0.0043	0.0031~0.0047	0.0039~0.0055	0.0047~0.0063	0.0047~0.0063	0.0047~0.0063
	Alloy steel	Low alloy steel	140~260	C21N	PC5335	426 (328~525)	0.0031~0.0047	0.0031~0.0047	0.0039~0.0055	0.0047~0.0071	0.0047~0.0071	0.0047~0.0071
		High alloy steel	50~260	C21N	PC5335	328 (230~426)	0.0024~0.0039	0.0031~0.0047	0.0031~0.0047	0.0039~0.0063	0.0039~0.0063	0.0039~0.0063
M	Stainless steel	Stainless steel	135~275	C21N	PC5335	328 (230~426)	0.0024~0.0039	0.0031~0.0047	0.0039~0.0047	0.0047~0.0055	0.0047~0.0055	0.0047~0.0055
K	Cast iron	Gray cast iron	150~220	C21N	PC5335	525 (426~623)	0.0035~0.0059	0.0039~0.0063	0.0047~0.0079	0.0055~0.0087	0.0055~0.0087	0.0055~0.0087
		Ductile cast iron	200~300	C21N	PC5335	459 (558~361)	0.0035~0.0059	0.0039~0.0063	0.0047~0.0079	0.0055~0.0087	0.0055~0.0087	0.0055~0.0087
		Malleable cast iron	130~230	C21N	PC5335	492 (591~394)	0.0035~0.0059	0.0039~0.0063	0.0047~0.0079	0.0055~0.0087	0.0055~0.0087	0.0055~0.0087
N	Aluminum	Aluminum	30~150	C21N	PC5335	984 (820~1148)	0.0031~0.0047	0.0039~0.0055	0.0047~0.0063	0.0055~0.0071	0.0055~0.0071	0.0055~0.0071
	Alloyed copper	Alloyed copper	150~160	C21N	PC5335	820 (656~984)	0.0031~0.0047	0.0039~0.0055	0.0047~0.0063	0.0055~0.0071	0.0055~0.0071	0.0055~0.0071
S	Heat resistant alloy	Heat resistant alloy	130~400	C21N	PC5335	164 (98~230)	0.0020~0.0031	0.0020~0.0031	0.0024~0.0039	0.0024~0.0039	0.0024~0.0039	0.0024~0.0039

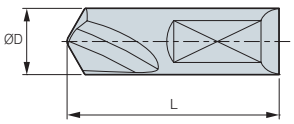
Parts of WPDC type indexable drills

Deaignation		machining hole	Insert			Center drill			Catridge		
			Insert	Screw	Wrench	Center drill	fixed bolt	cone point bolt	Inner	Outer	Fixed bolt
WPDCA	1000-125-□	1.000	WC□T030204-C21N	FTKA02206	TW06P	CDA23612	KHA0508	KHC0510			
	1063-125-□	1.063	WC□T040204-C21N	FTKA02565	TW07S						
	1125-125-□	1.125									
	1188-125-□	1.188					KHA0510				
	1250-125-□	1.250	WC□T050308-C21N	FTKA0307	TW09S	CDA31514	KHA0610	KHC0610			
	1313-125-□	1.313									
	1375-125-□	1.375									
	1438-125-□	1.438					KHA0612				
	1500-125-□	1.500									
	1563-125-□	1.563									
	1625-150-□	1.625	WC□T06T308-C21N	FTKA03508	TW15S	CDHA39414	KHA0812	KHC0812	CWP16251750C	CWP1625P	BHA0510
	1688-150-□	1.688								CWP1688P	
	1750-150-□	1.750								CWP1750P	
	1813-150-□	1.813					KHA0815		CWP18131938C	CWP1813P	BHA0512
	1875-150-□	1.875								CWP1875P	
	1938-150-□	1.938								CWP1938P	
	2000-150-□	2.000	WC□T080408-C21N	FTKA0411K	TW15S	CDHA47215	KHA1015	KHC1016	CWP20002125C	CWP2000P	BHA0612
	2063-150-□	2.063								CWP2063P	
	2125-150-□	2.125								CWP2125P	
	2188-150-□	2.188							CWP21882313C	CWP2188P	BHA0614
	2250-150-□	2.250								CWP2250P	
	2313-150-□	2.313								CWP2313P	
	238256-150-□	2.38~2.56	WC□T050308-C21N	FTKA0307	TW09S		KHA1020	KHC1020	CWP238256C	CWP238256P	BHA0510
	256275-150-□	2.56~2.75							CWP256275C	CWP256275P	
	275294-150-□	2.75~2.94							CWP275294C	CWP275294P	
	294313-150-□	2.94~3.13	WC□T06T308-C21N	FTKA03508	TW15S	CDHA63018			CWP294313C	CWP294313P	BHA0612

Applicable inserts **F04**

Center Drill





(inch)

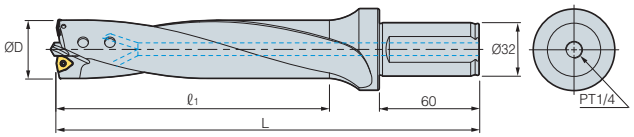
Designation	Grade	ØD	L	Oil-hole
CDA 23612	PC40H	0.236	1.2	×
CDA 31514	PC40H	0.315	1.4	×
CDHA 39414	PC40H	0.394	1.4	○
CDHA 47215	PC40H	0.472	1.5	○
CDHA 63018	PC40H	0.630	1.8	○

• This is HSS with Tin coating

WPDCA (5D/6.5D/8D)

Standard type





(inch)

Designation		ØD	5D		6.5D		8D		Insert	Center drill
			ℓ1	L	ℓ1	L	ℓ1	L		
WPDCA	1000-125-□	1.000	5.91	9.45	7.28	10.83	8.66	12.20	WC□T030204-C21N	CDA23612
	1063-125-□	1.063	5.91	9.45	7.28	10.83	8.66	12.20	WC□T040204-C21N	
	1125-125-□	1.125	5.91	9.45	7.28	10.83	8.66	12.20		
	1188-125-□	1.188	5.91	9.45	7.28	10.83	8.66	12.20		
	1250-125-□	1.250	6.89	10.43	8.58	12.13	10.24	13.78	WC□T050308-C21N	CDA31514
	1313-125-□	1.313	6.89	10.43	8.58	12.13	10.24	13.78		
	1375-125-□	1.375	6.89	10.43	8.58	12.13	10.24	13.78		
	1438-125-□	1.438	7.87	11.42	9.84	13.39	11.81	15.35		
	1500-125-□	1.500	7.87	11.42	9.84	13.39	11.81	15.35		
	1563-125-□	1.563	7.87	11.42	9.84	13.39	11.81	15.35		

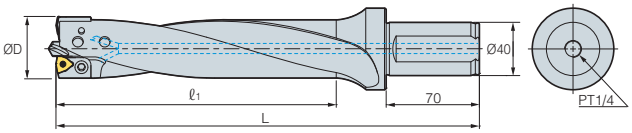
Applicable inserts **F04**

* We can provide if you order exact diameter
Ex) machining hole 1.225 inch * 6.5D ···› WPDCA1225-125-6.5

WPDCA (5D/6.5D/8D)

Single insert catridge type





(inch)

Designation		ØD	5D		6.5D		8D		Insert	Center drill	Cartridge	
			ℓ1	L	ℓ1	L	ℓ1	L			Inner	Outer
WPDCA	1625-150-□	1.625	8.86	12.99	11.14	15.28	13.39	17.52	WC□T06T308-C21N	CDHA39414	CWP16251750C	CWP1625P
	1688-150-□	1.688	8.86	12.99	11.14	15.28	13.39	17.52				CWP1688P
	1750-150-□	1.750	8.86	12.99	11.14	15.28	13.39	17.52				CWP1750P
	1813-150-□	1.813	9.84	13.98	12.4	16.54	14.96	19.09			CWP18131938C	CWP1813P
	1875-150-□	1.875	9.84	13.98	12.4	16.54	14.96	19.09				CWP1875P
	1938-150-□	1.938	9.84	13.98	12.4	16.54	14.96	19.09				CWP1938P
	2000-150-□	2.000	10.83	14.96	17.83	17.83	16.54	20.67	WC□T080408-C21N	CDHA7215	CWP20002125C	CWP2000P
	2063-150-□	2.063	10.83	14.96	17.83	17.83	16.54	20.67				CWP2063P
	2125-150-□	2.125	10.83	14.96	17.83	17.83	16.54	20.67				CWP2125P
	2188-150-□	2.188	11.81	15.94	14.96	19.09	18.11	22.24			CWP21882313C	CWP2188P
	2250-150-□	2.250	11.81	15.94	14.96	19.09	18.11	22.24				CWP2250P
	2313-150-□	2.313	11.81	15.94	14.96	19.09	18.11	22.24				CWP2313P

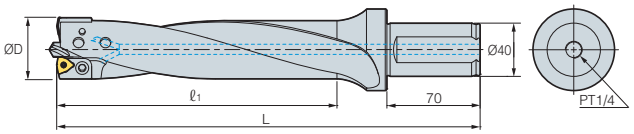
Applicable inserts **F04**

* We can provide if you order exact diameter
Ex) machining hole 1.800 inch * 5D -> WPDCA1800-150-5

WPDCA (5D/6.5D/8D)

Dual insert cartridge type





(inch)

Designation		ØD	5D		6.5D		8D		Insert	Center drill	Cartridge	
			ℓ1	L	ℓ1	L	ℓ1	L			Inner	Outer
WPDCA	238256-150-□	2.38~2.56	12.80	16.93	16.65	20.79	20.47	24.61	WC□T050308-C21N	CDHA47215	CWP238256C	CWP238256P
	256275-150-□	2.56~2.75	13.78	17.91	17.91	22.05	22.05	26.18			CWP256275C	CWP256275P
	275294-150-□	2.75~2.94	14.76	18.90	19.21	23.35	23.62	27.76			CWP275294C	CWP275294P
	294313-150-□	2.94~3.13	15.75	19.88	20.47	24.61	25.20	29.33	WC□T06T308-C21N	CDHA63018	CWP294313C	CWP294313P

Applicable inserts **F04**

* We can provide if you order exact diameter
Ex) machining hole 2.850 inch ×6.5D -> WPDCA2850-150-6.5

Mass production and High performance

Indexable Reamers

- Suitable for mass production and high performance
- Using PCD or coated insert for high speed machining
- Excellent high accuracy and adjustable machining hole
- Using accuracy chucking system (hydraulic, rotating type arbor)
- Using inner coolant type machine to evacuate chips
- Using suitable holder and insert
- As insert setting, using setting fixture (KIRSD-210)

Code system

• Insert

RI 15 – B 06

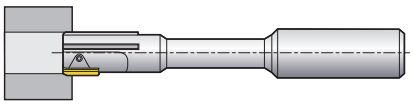
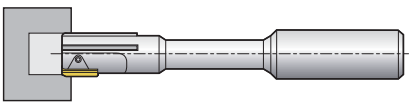
Type	Insert size	Insert reed type	Angle of C/B
Reamer Insert	15: 15.0 × 3.0 16: 16.0 × 3.5 17: 17.0 × 4.5 22: 22.0 × 6.5	A: Excellent surface finish, low cutting condition B: General surface finish, high cutting condition C: Aluminum and copper alloy D: Blind hole, low feed	00: 0°, Cast iron 06: 6°, General steel 12: 12°, Stainless, Al

• Holder

IR TA 0625 – 0750 60 – 16

Type	Application	Reamer dia.	Shank dia.	length	Insert size
Indexable Reamer	T: Throughout hole machining B: Blind hole machining	0625: Ø0.625	0750: Ø0.750	60: 6.0	15: 15.0 × 3.0 16: 16.0 × 3.5 17: 17.0 × 4.5 22: 22.0 × 6.5

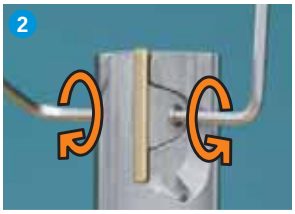
Application

Throughout hole machining (IRT type)	Stuffed hole machining (IRB type)
	

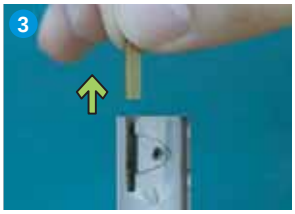
How to set an inserts



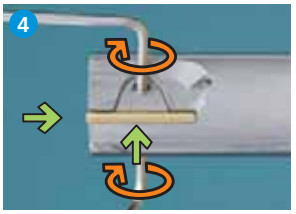
1. Screw the wedge screw counter clockwise with the exclusive wrench



2. Screw the clamp screw
   ① Top side: counter clockwise
   ② Lower side: clockwise



3. Remove the insert and clean the pocket



4. Put the insert up to the edge stopper and clamp the insert
   ① Top side: clockwise
   ② Lower side: counterclockwise

Exclusive fixture

- Designation: KIRSD-210
- Maximum diameter of reamer: Ø2.36 × 8.27 inch
- The fixture is also available for setting special reamer and mono tool
- Special reamers (out of maximum setting range) are available quotation



How to set an insert with fixture



1. Adjust the gauge to '0'



2. Rotate the reamer for the insert to touch the gauge



3. Set the back taper and adjust the insert height with screw the wedge screw
   ① Top side of insert: +0.0059~+0.0078 inch
   ② Bottom side of insert: +0.0019~+0.0039 inch
   ③ Back taper: 0.0039~0.0059 inch

Back taper

- Ensures low cutting load and excellent surface finish with good chip evacuation
- Inaccurate back taper could cause unstable machining with wear of insert
- The size of back taper of insert down side should be less to 0.0039~0.0059 inch than one of insert upper side

Insert setting with a micrometer





- Lathe with both centers or bench center are also available

Notice: The setting with a micrometer is not recommended due to chipping on the cutting edge

Recommended cutting condition

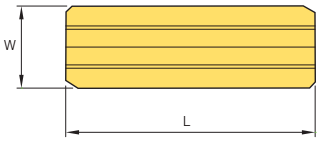
Workpiece	Insert type		Feed rate (ipr) per drill dia. (inch)	Cutting speed vc (sfm)		
	Rake angle	Lead type		Coated	Uncoated	Cermet
Carbon steel General steel	6	A	0.004~0.016	197~262	131~197	361~525
		B	0.004~0.012	262~394	197~262	
		D	0.002~0.008			
Mild steel Alloy steel	6	A	0.004~0.016	131~197	66~131	361~525
		B	0.004~0.012	262~394	197~262	
		D	0.002~0.008			
High alloy steel Tool steel	6	A	0.004~0.016	66~197	66~131	66~197
		B	0.004~0.012	131~262	131~197	131~262
		D	0.002~0.008			
Stainless steel	12	A	0.004~0.012	131~197	66~131	131~197
		B	0.004~0.008	197~262	66~131	197~262
		D	0.002~0.008			
Cast iron	0.6	A	0.004~0.012	197~328	131~197	-
		B	0.004~0.010	262~394	197~262	
		D	0.002~0.008			
Alloyed aluminum	12	B	0.004~0.012	-	525~626	-
		C	0.006~0.012		492~820	
		D	0.002~0.008		361~656	
Alloyed copper	0	B	0.004~0.008	-	262~328	-
		D	0.002~0.008			
Non-ferrous alloy	0	B	0.004~0.012	-	33~230	-

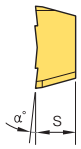
Parts

Reamer size	Clamp 	Wedge 	Clamp Screw 	Wedge Screw  (NYLOK)	Clamp Wrench 	Wedge Wrench 
0.375	CV15	AW2430	DHA0308	HS0306	HW15L	HW15L
0.500~0.625	CV16	AW2435				
0.750~1.000	CV17	AW3240	DHA0409	HS0406	HW20L	HW20L
1.125~1.250	CV22	AW3260				

Available inserts





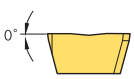
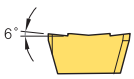
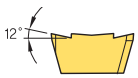


(inch)

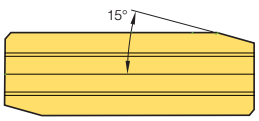
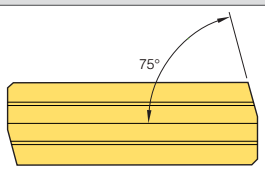
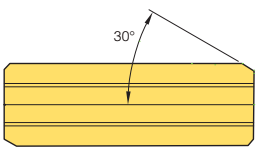
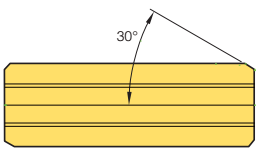
Designation		Grade			Dimension			Lead type	Rake angle (α°)
		K10 (Uncoated)	BPK110 (TiAlN)	BPK210 (TiN)	L	W	S		
RI	15-A06			○	0.591	0.118	0.059	A	6°
	15-A12	○			0.591	0.118	0.059	A	12°
	15-B06		○	○	0.591	0.118	0.059	B	6°
	15-B12		○		0.591	0.118	0.059	B	12°
	16-A06			○	0.630	0.138	0.059	A	6°
	16-A12	○			0.630	0.138	0.059	A	12°
	16-B06		○	○	0.630	0.138	0.059	B	6°
	16-B12		○		0.630	0.138	0.059	B	12°
	17-A06			○	0.669	0.177	0.079	A	6°
	17-A12	○			0.669	0.177	0.079	A	12°
	17-B06		○	○	0.669	0.177	0.079	B	6°
	17-B12		○		0.669	0.177	0.079	B	12°
	22-A06			○	0.866	0.256	0.118	A	6°
	22-A12	○			0.866	0.256	0.118	A	12°
	22-B06		○	○	0.866	0.256	0.118	B	6°
	22-B12		○		0.866	0.256	0.118	B	12°

※ ○This is recommended grade as for insert type

Angle of chip breaker

Division	00	06	12
Shape			
Application	For cast iron machining	For general machining	For stainless and aluminum machining

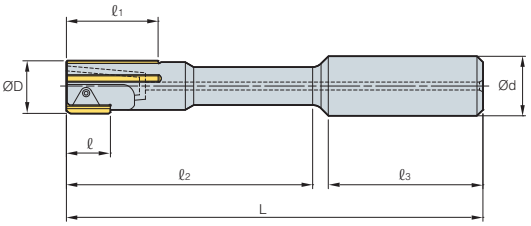
Insert lead type

Type	Shape	Working condition	Type	Shape	Working condition
A		For excellent surface, low cutting condition	C		For aluminum and copper alloy machining
B		For general application, high cutting condition	D		For blind hole machining, low feed

IRT

Throughout hole





(inch)

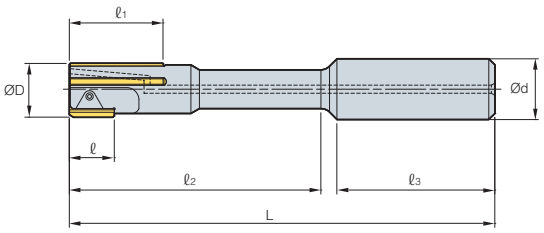
	Designation	ØD	ℓ	ℓ1	ℓ2	ℓ3	L	Ød	Insert
IRTA	**0375-062550-15**	0.375	0.591	1.2	3.0	1.8	5.0	0.625	RI 15
	0500-062553-16	0.500	0.630	1.2	3.3	1.8	5.5	0.625	RI 16
	0625-075061-16	0.625	0.630	1.2	4.0	4.0	6.0	0.750	RI 16
	0750-075061-17	0.750	0.669	1.2	4.0	4.0	6.0	0.750	RI 17
	0875-100065-17	0.875	0.669	1.2	4.3	4.3	6.5	1.000	RI 17
	1000-100065-17	1.000	0.669	1.2	4.3	4.3	6.5	1.000	RI 17
	1125-125065-22	1.125	0.816	1.2	4.3	4.3	6.5	1.250	RI 22
	1250-125065-22	1.250	0.816	1.2	4.3	4.3	6.5	1.250	RI 22

Applicable inserts **F65**

IRB

Stuffed hole





(inch)

	Designation	ØD	ℓ	ℓ1	ℓ2	ℓ3	L	Ød	Insert
IRBA	**0375-062550-15**	0.375	0.591	1.2	3.0	1.8	5.0	0.625	RI 15
	0500-062553-16	0.500	0.630	1.2	3.3	1.8	5.5	0.625	RI 16
	0625-075061-16	0.625	0.630	1.2	4.0	4.0	6.0	0.750	RI 16
	0750-075061-17	0.750	0.669	1.2	4.0	4.0	6.0	0.750	RI 17
	0875-100065-17	0.875	0.669	1.2	4.3	4.3	6.5	1.000	RI 17
	1000-100065-17	1.000	0.669	1.2	4.3	4.3	6.5	1.000	RI 17
	1125-125065-22	1.125	0.816	1.2	4.3	4.3	6.5	1.250	RI 22
	1250-125065-22	1.250	0.816	1.2	4.3	4.3	6.5	1.250	RI 22

Applicable inserts **F65**

TOOLING SYSTEM



G

Tooling System

G02 Tooling System Index
G04 DHE/S
G07 DHE
G11 DHC/DHJ Collet
G12 DSC
G20 NPM
G23 DCS/DC/TC
G24 Collet Chuck Series
G25 SDC/P
G30 DSK
G32 GSK
G34 GERC
G36 ER
G37 ER/L
G38 RTJW
G40 NPU
G41 DST
G43 TER Tap Collet
G44 DTN
G46 TCA Tap Adaptor
G47 SLA
G49 FMA
G50 FMC
G52 MD
G54 EXT Bar
G54 RDC Bar
G55 FBH/B
G62 DBCA
G66 DBC
G68 SMB
G70 KMB
G72 SMH
G74 TBCA
G79 TBC
G82 FBC
G85 SAH
G86 Angular Head
G94 DZC
G95 DCJ
G96 DCL
G97 Damping Pro
G102 Others

G Tooling System Index

DHE/S
Slim hydraulic expansion chuck

G5

DHE
Hydraulic expansion chuck

G8

DSC
Shrinking chuck

G14

NPM
New power milling chuck

G21

SDC/P
Precision collet chuck for multi purpose maching

G25

DSK
Slim type collet chuck

G30

GSK
Great speed slim type collet chuck

G32

HC Collet
HC slim collet

G33

GERC
GERC collet

G35

ER Collet
ER collet

G36

ER/L
Lock collet for ER collet chuck

G37

RTJW
Jet coolant disk

G39

NPU
Drill chuck

G40

DST
High speed synchro tapping chuck

G42

TER
TER collet ER tap collet

G43

DTN
Tapping holder

G45

TCA
Tap adapter

G46

SLA
Side lock arbor

G47

FMA
Face mill arbor

G49

FMC
Face mill arbor

G50

MD
Modular arbor

G52

EXT
Extension bar

G54

RDC
Reducer bar

G54

FBH/B
FBH Back boring & balanced type

G55

DBCA
New balance cut tool

G63

DBC
Balance cut tool (Rough boring)

G66

SMB
Small micro boring bar

G68

KMB
Micro boring

G70

SMH
Small micro boring bar
(precision type)

G72

TBCA
Wide diameter boring system

G75

TBC
Balance cut tool for Rough boring

G80

FBC
Balance cut tool for Fine boring

G83

SAH
Slim angular head

G85

MAH
MAH for mold (0˚-90˚)
Rigidity-reinforced angular head

G88

KHU
Collet type angular head (0˚- 90˚)

G89

HARG
HRAG (90˚ fixed)
Rigidity-reinforced angular head

G90

KAG
Attachment type KAG

G91

KAH
Modular type KAH (90˚ type)
Fixed angle-type angular head

G92

KAC
Modular type KAC (45˚ type)
Fixed angle-type angular head

G93

DZC
Zero fit collet

G94

DCJ
DINE Jetcoolant collet

G95

DCL
Lock collet for milling chuck

G96

FMA
Damping Pro

G99-101

Slim hydraulic expansion chuck

DHE/S



- Optimized chuck for machining that requires high-quality surface roughness and accuracy
- Suitable for challenging mold and automotive parts machining that involves complicated shapes and a lot of interferences
- Ideal for metal impeller machining, which requires deep penetration
- Enables easy tool connection without any additional connecting device
- Easy to perform fine boring operations (0.02-0.2 mm)
- Application scope: milling, drilling, reaming

Code system

BT30 - DHE 8 S - 115

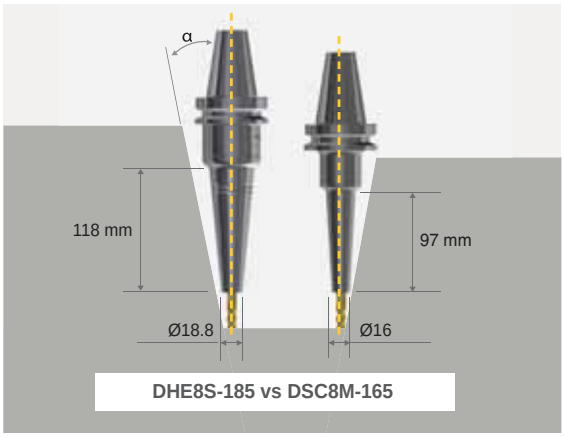
Spindle	Hydraulic expansion chuck	Tool Dia.	Type	Length
			S: Slim	

Recommended Machining Works



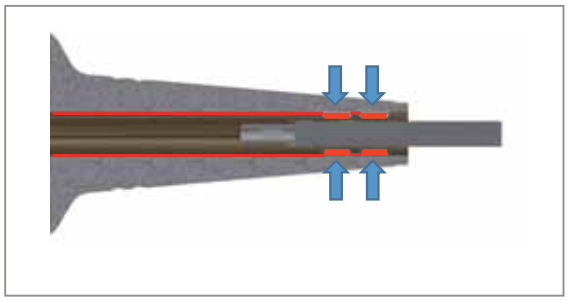
- Optimized for machining that requires high precision
- Enables challenging narrow and deep machining
- Products that require fine boring operations

Product Comparison



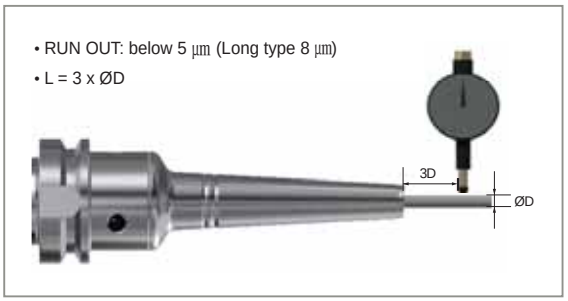
- Length and thickness are the same as those of DSC/M Type (if the tool projection length is 40 mm, difference of α = around 2°)
- Longer gauge line and higher rigidity (versus the DSC/M Type)
- Ideal for mold machining due to its 3-degree taper shape

Stable Clamping force



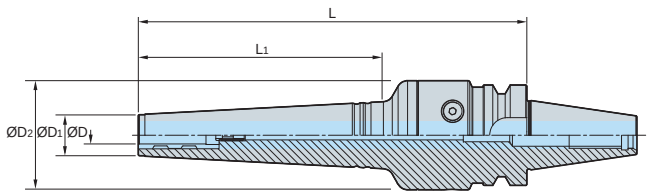
- Maintains high clamping force and good accuracy by holding the tool at two points

High-precision



BT-DHE/S





(mm)

Designation		ØD	ØD1	ØD2	L	L1	RPM	Run-out Based on 3D	kg
BT30 -	DHE6S-115	6	16.8	50	115	50	25,000	5 μm	1.1
	DHE6S-180	6	16.8	50	180	115	25,000	8 μm	1.4
	DHE8S-115	8	18.8	50	115	50	25,000	5 μm	1.1
	DHE8S-180	8	18.8	50	180	115	25,000	8 μm	1.4
	DHE10S-120	10	20.8	50	120	55	25,000	5 μm	1.4
	DHE10S-180	10	20.8	50	180	115	25,000	8 μm	1.9
	DHE12S-130	12	22.8	50	130	65	25,000	5 μm	1.2
	DHE12S-180	12	22.8	50	180	115	25,000	8 μm	1.6
BT40 -	DHE6S-120	6	16.8	50	120	50	15,000	5 μm	1.7
	DHE6S-185	6	16.8	50	185	115	15,000	8 μm	2.0
	DHE8S-120	8	18.8	50	120	50	15,000	5 μm	2.0
	DHE8S-185	8	18.8	50	185	115	15,000	8 μm	2.0
	DHE10S-125	10	20.8	50	125	55	15,000	5 μm	1.6
	DHE10S-185	10	20.8	50	185	115	15,000	8 μm	2.0
	DHE12S-135	12	22.8	50	135	65	15,000	5 μm	1.8
	DHE12S-185	12	22.8	50	185	115	15,000	8 μm	2.2

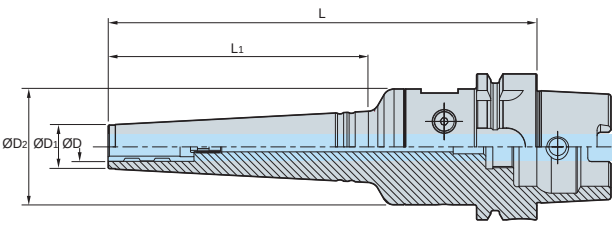
Spare Part **H06**

• Through coolant system installed

M This is metric size. We can also provide in inch type

HSK-DHE/S





(mm)

Designation		ØD	ØD1	ØD2	L	L1	RPM	Run-out Based on 3D	kg
HSK63A -	DHE6S-120	6	16.8	50	120	50	10,000	5 μm	1.4
	DHE6S-185	6	16.8	50	185	115	10,000	8 μm	1.7
	DHE8S-120	8	18.8	50	120	50	10,000	5 μm	1.4
	DHE8S-185	8	18.8	50	185	115	10,000	8 μm	1.8
	DHE10S-125	10	20.8	50	125	55	10,000	5 μm	1.5
	DHE10S-185	10	20.8	50	185	115	10,000	8 μm	1.8
	DHE12S-135	12	22.8	50	135	65	10,000	5 μm	1.8
	DHE12S-185	12	22.8	50	185	115	10,000	8 μm	1.8

• Through coolant system installed

M This is metric size. We can also provide in inch type

Parts

Basic					
Division		Clamp bolt	Wrench	Division	Adjust screw
Designation \ Parts				Designation \ Parts	
BT30	DHE/S 6, 8, 10, 12	BTF1010	DHETW-5	DHE/S 6, 8, 10	DHE-M5 (ADJ)
BT40/HSK63A	DHE/S 6, 8, 10, 12	BTF1010	DHETW-5	DHE/S 12	DHE-M10 (ADJ)

Hydraulic expansion chuck

DHE

- Ideal for mold making and machining automobile components & precise parts due to high precision machining
- Improved surface roughness due to vibration proof by hydraulic chamber
- Reduced replacement time and tiredness of worker with the use of T wrench for removal
- Applicable shank diameter: Ø6~32



Code system

BT40 - DHE 20 - 140

- BT40: Spindle
- DHE: Hydraulic expansion chuck
- 20: Max. Chucking dia.
- 140: Length

Features

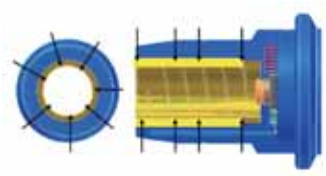
High accuracy provides long tool life due to reduced wear and hydraulic room enhances a surface roughness by lessening vibrations

- RUN OUT: under 5 μm
- L = 3 x ØD
- Shank: Tolerance of ØD: h6



Internal sealing structure (Durability)

- Internal sealing system protects the chuck against dust, cutting oil, lubricant and chips getting into it
  - Maintaining clamping force and accuracy for a long time



Shank	Grade	Max.rpm
BT50, HSK100A	G6.3	8,000
BT40, HSK63A		10,000
BT30, SK30		15,000



With simple t-wrench,very easy to change a tool

- Clamping structure for easy operation (Convenience)
  - Decrease of worker's fatigue
  - Improving machine capacity



Stable clamping

The clearance between holder and tool is fixed by hydraulic pressure



BT-DHE



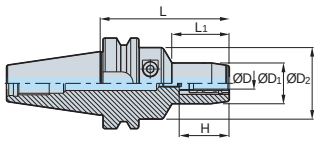


Fig. 1

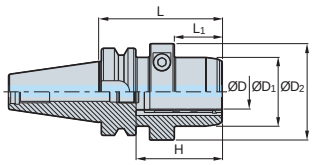


Fig. 2

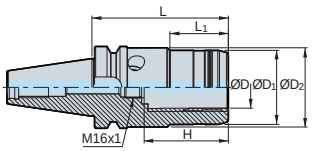


Fig. 3

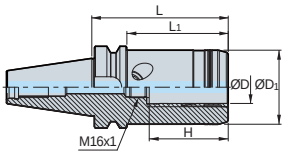


Fig. 4

(mm)

Designation		ØD	ØD1	ØD2	L	L1	H	Adjust screw	kg	Fig.
BT30 -	DHE6-65	6	29	46	65	33	30~39.8	M5	0.7	1
	DHE8-65	8	31	46	65	33	30~39.8	M5	0.7	1
	DHE10-65	10	32	46	65	34	35~44.8	M5	0.7	1
	DHE12-70	12	35	46	70	34	41~50.8	M5	0.8	1
	DHE14-90	14	36	46	90	40	43~52.8	M5	1.0	1
	DHE16-90	16	40	46	90	45	46~55.8	M5	1.0	1
	DHE18-90	18	42	46	90	40	49~58.8	M5	1.1	1
	DHE20-90	20	44	46	90	45	49~58.8	M5	1.1	1
BT40 -	DHE6-90	6	29	50	90	40	30~39.8	M5	1.4	1
	DHE6-140	6	29	50	140	40	30~39.8	M5	2.2	1
	DHE8-90	8	31	50	90	40	30~39.8	M5	1.4	1
	DHE8-140	8	31	50	140	40	30~39.8	M5	2.2	1
	DHE10-90	10	33	50	90	40	35~44.8	M5	1.5	1
	DHE10-140	10	33	50	140	40	35~44.8	M5	2.2	1
	DHE12-90	12	35	50	90	40	41~50.8	M10	1.5	1
	DHE12-140	12	35	50	140	40	41~50.8	M10	2.3	1
	DHE14-90	14	36	50	90	40	43~52.8	M10	1.5	1
	DHE14-140	14	36	50	140	40	43~52.8	M10	2.2	1
	DHE16-90	16	40	50	90	45	46~55.8	M10	1.5	1
	DHE16-140	16	40	50	140	45	46~55.8	M10	2.2	1
	DHE18-90	18	42	50	90	45	49~58.8	M10	1.5	1
	DHE18-140	18	42	50	140	45	49~58.8	M10	2.2	1
	DHE20-90	20	44	50	90	47	49~58.8	M10	1.5	1
	DHE20-140	20	44	50	140	50	49~58.8	M10	2.3	1
	DHE25-90	25	50	70	90	35	58~67.8	M16	2.0	2
	DHE25-105	25	57	-	105	78	51~61	M16	2.0	4
	DHE25-140	25	57	-	140	113	51~61	M16	2.6	4
	DHE32-90	32	63	75	90	35	58~67.8	M16	2.3	2
	DHE32-105	32	57	61	105	45	55~65	M16	2.4	3
	DHE32-140	32	57	61	140	45	55~65	M16	3.0	3

Spare Part **H10** Applicable collet **H11**

• H: Insertion depth of tool (Min.~max.) • Through coolant system installed

M This is metric size. We can also provide in inch type

BT-DHE



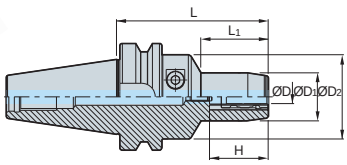


Fig. 1

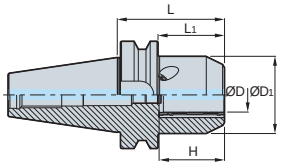


Fig. 2

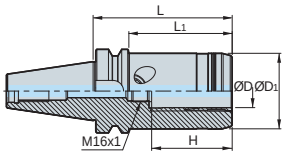


Fig. 3

(mm)

Designation		ØD	ØD1	ØD2	L	L1	H	Adjust screw	kg	Fig.
BT50 -	DHE6-90	6	29	50	90	34	30~39.8	M5	3.9	1
	DHE6-140	6	29	50	140	40	30~39.8	M5	4.4	1
	DHE8-90	8	31	50	90	34	30~39.8	M5	4.2	1
	DHE8-140	8	31	50	140	40	30~39.8	M5	4.6	1
	DHE10-90	10	33	50	90	34	35~44.8	M5	3.9	1
	DHE10-140	10	33	50	140	34	35~44.8	M5	4.5	1
	DHE12-90	12	35	50	90	34	41~50.8	M10	4.0	1
	DHE12-140	12	35	50	140	34	41~50.8	M10	4.6	1
	DHE14-90	14	36	50	90	34	43~52.8	M10	3.9	1
	DHE14-140	14	36	50	140	34	43~52.8	M10	4.5	1
	DHE16-90	16	40	50	90	34	46~55.8	M10	4.1	1
	DHE16-140	16	40	50	140	34	46~55.8	M10	4.7	1
	DHE18-90	18	42	50	90	40	49~58.8	M10	4.0	1
	DHE18-140	18	42	50	140	45	49~58.8	M10	4.5	1
	DHE20-90	20	44	50	90	34	49~58.8	M10	4.0	1
	DHE20-140	20	44	50	140	47	49~58.8	M10	4.5	1
	DHE25-90	25	66	-	90	52	58~67.8	M16	4.7	2
	DHE25-150	25	57	-	150	112	51~61	M16	4.5	3
	DHE32-90	32	72	-	90	52	58~67.8	M16	5.8	2

Spare Part **H10** Applicable collet **H11**

• H: Insertion depth of tool (Min.~max.) • Through coolant system installed

M This is metric size. We can also provide in inch type

HSK-DHE



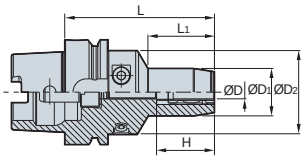


Fig. 1

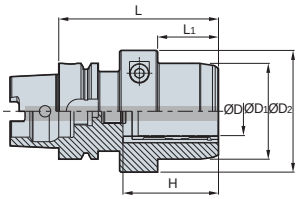


Fig. 2

(mm)

Designation		ØD	ØD1	ØD2	L	L1	H	Adjust Screw	RPM	kg	Fig.
HSK63A -	DHE6-75	6	29	50	75	34	30~39.8	M5	10,000	1.0	1
	DHE8-75	8	31	50	75	34	30~39.8	M5	10,000	1.0	1
	DHE10-85	10	33	50	85	40	35~44.8	M5	10,000	1.2	1
	DHE12-90	12	35	50	90	40	41~50.8	M5	10,000	1.2	1
	DHE16-95	16	40	50	95	45	46~55.8	M10	10,000	1.3	1
	DHE20-100	20	44	50	100	50	49~58.8	M10	10,000	1.4	1
	DHE20-150	20	44	50	150	50	49~58.8	M10	10,000	2.2	1
	DHE25-110	25	50	70	110	48	56~67.8	M16	10,000	2.0	2
	DHE32-110	32	63	80	110	48	56~67.8	M16	10,000	2.0	2
HSK100A -	DHE20-105	20	44	50	105	50	49~58.8	M10	8,000	2.9	1
	DHE25-115	25	50	63	115	62	58~67.8	M16	8,000	3.2	1
	DHE32-115	32	63	75	115	62	58~67.8	M16	8,000	3.8	1

Applicable collet **H11**

• H: Insertion depth of tool (Min.~max.) • Through coolant system is optional

M This is metric size. We can also provide in inch type

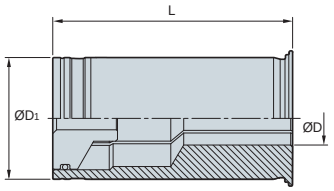
Parts

Basic					
Division		Clamp bolt	Wrench	Division	Adjust screw
Part / Designation				Part / Designation	
BT30/HSK50	DHE 6, 8, 10, 12	BTF1010	DHETW-5	DHE 6, 8, 10	DHE-M5 (ADJ)
	DHE 14, 16, 18, 20	BTF1010	DHETW-5		
BT40/BT50 HSK63A/HSK100A	DHE 6, 8, 10, 12, 14, 16, 18, 20	BTF1010	DHETW-5	DHE 12, 14, 16, 18, 20	DHE-M10 (ADJ)
	DHE 25, 32	BTF1212-1.5	DHETW-6	DHE 25, 32	DHE-M16 (ADJ)

DHC Collet

General type





(mm)

Designation	ØD	ØD1	L
DHC12- 3, 4, 5, 6, 8	3, 4, 5, 6, 8	12	47
DHC20- 3, 4, 5 , 6, 7, 8, 9, 10, 11, 12, 14, 16	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16	20	52
DHC32- 6, 8, 10, 12, 14, 16, 18, 19, 20, 25	6, 8, 10, 12, 14, 16, 18, 19, 20, 25	32	63

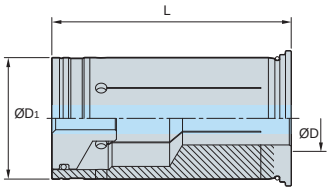
• Through coolant system not available

M This is metric size. We can also provide in inch type

DHC Collet

Accuracy type





(mm)

Designation	ØD	ØD1	L
DHC12- 3(P), 4(P), 5(P), 6(P), 8(P)	3, 4, 5, 6, 8	12	47
DHC20- 3(P), 4(P), 5(P), 6(P), 7(P), 8(P), 9(P), 10(P), 11(P), 12(P), 14(P), 16(P)	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16	20	52
DHC32- 6(P), 8(P), 10(P), 12(P), 14(P), 16(P), 18(P), 19(P), 20(P), 25(P)	6, 8, 10, 12, 14, 16, 18, 19, 20, 25	32	63

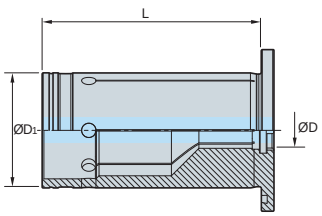
• Through coolant system installed

M This is metric size. We can also provide in inch type

DHJ Collet

Jet coolant





(mm)

Designation	ØD	ØD	L
DHJ20-6, 8, 10, 12, 14, 16	6, 8, 10, 12, 14, 16	20	50

• Through coolant system installed

M This is metric size. We can also provide in inch type

Shrinking chuck

DSC

- Use of specially heat-treated steel
- High precision machining and clamping
- Increased precision and longer tool life due to minimized overhang when machining deep grooves
- Applicable shank diameter: Ø3~32



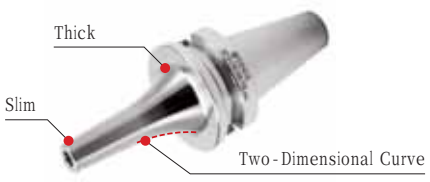
Code System

BT50 - DSC 6 - S - 165 - S

Shank type	Holder type	Tool Dia.	Type	Length	Special
BT, HSK, ST, CS, CM	DSC: Shrinking chuck SLK: 2piece holder Collet		S: Slim M: Middle Non: General		S: Curve type Non: General

Mono curve type

- Integral DSC with excellent precision and balancing
- Long but stable holder design

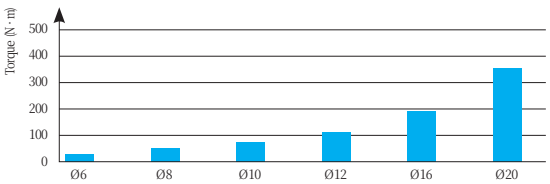


Symmetric design

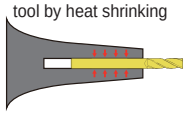
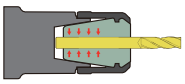
- High clamping force



High clamping force



- 30% stronger Clamping Force
- Run-Out (≤ 0.003 mm)
- Higher Power transmission Clamping Force by Inner-Size

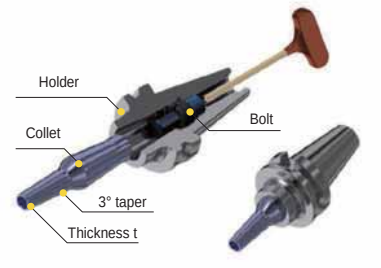
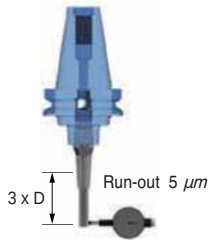
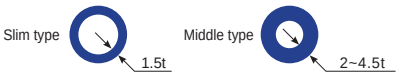
Shrinking chuck	Collet chuck
Fix the clearance between holder and tool by heat shrinking	Fix the tool by elasticity of collet
	
Thermal expansion ▶ Thermal shrinking	Elastic deformation
Highly strong clamping	Strong clamping

Slim type

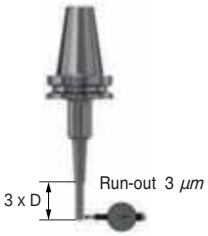
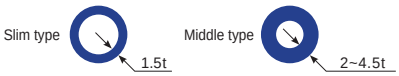
Straight type	Mono type	2piece type
		
Used by combining with various holders such as hydraulic expansion chuck, milling chuck, and collet chuck.	Used with high precision as integral types	Holder + collet connection shape Connecting the holder and collet by the bolt tightening method

2-pieces type

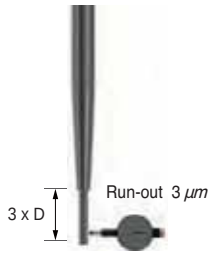
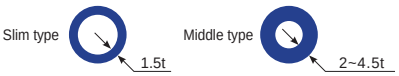
2Piece types enable various machining operations by collet replacement and provide convenience in tool management and use based on easy and fast assembly using tightening bolts

Figure	Accuracy	Type
		 Holder + collet connection shape Connecting the holder and collet by the bolt tightening method

Mono type

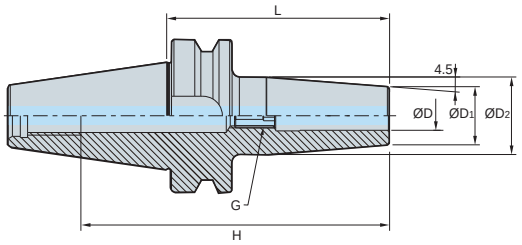
Figure	Accuracy	Type
		

Straight type

Figure	Accuracy	Type
		 Used by combining with various holders such as hydraulic expansion chuck, milling chuck, and collet chuck, etc.

BT-DSC





(mm)

Designation		ØD	ØD1	ØD2	L	H	G	RPM	kg
BT30 -	DSC3-60	3	11	18.5	60	82	-	25,000	0.4
	DSC4-60	4	13	20.5	60	82	-	25,000	0.4
BT40 -	DSC6-90	6	21	27	90	36	M5	20,000	1.1
	DSC6-120	6	21	27	120	36	M5	20,000	1.2
	DSC6-160	6	21	27	160	36	M5	20,000	1.4
	DSC8-90	8	21	27	90	36	M5	20,000	1.1
	DSC8-120	8	21	27	120	36	M5	20,000	1.2
	DSC8-160	8	21	27	160	36	M5	20,000	1.4
	DSC10-90	10	24	32	90	42	M8	20,000	1.1
	DSC10-120	10	24	32	120	42	M8	20,000	1.3
	DSC10-160	10	24	32	160	42	M8	20,000	1.6
	DSC12-90	12	24	32	90	47	M8	20,000	1.1
	DSC12-120	12	24	32	120	47	M8	20,000	1.3
	DSC12-160	12	24	32	160	47	M8	20,000	1.6
	DSC16-90	16	27	34	90	50	M12	20,000	1.2
	DSC16-120	16	27	34	120	50	M12	20,000	1.3
	DSC16-160	16	27	34	160	50	M12	20,000	1.7
	DSC20-90	20	33	42	90	52	M12	20,000	1.3
	DSC20-120	20	33	42	120	52	M12	20,000	1.5
	DSC20-160	20	33	42	160	52	M12	20,000	2.0

Adjust screw **H19**

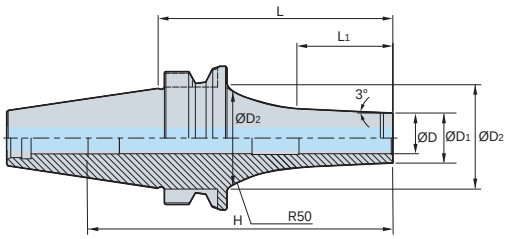
• H: Insertion depth of tool • Through coolant system installed

M This is metric size. We can also provide in inch type

BT-DSC/M

Mono Curve type





(mm)

Designation		ØD	ØD1	ØD2	L	L1	H	RPM	kg
BT30 -	DSC3M-75S	3	8	25	75	29.8	97	25,000	0.4
	DSC4M-75S	4	10	25	75	31.8	97	25,000	0.4
	DSC6M-75S	6	12	30	75	28.9	97	25,000	0.5
	DSC8M-75S	8	14	32	75	28.9	97	25,000	0.5
	DSC10M-75S	10	16	32	75	30.7	45	25,000	0.5
	DSC12M-75S	12	19	32	75	33.8	45	25,000	0.5

• H: Insertion depth of tool • Not able to use the adjust screw • Through coolant system installed

M This is metric size. We can also provide in inch type

BT-DSC/M

Mono type



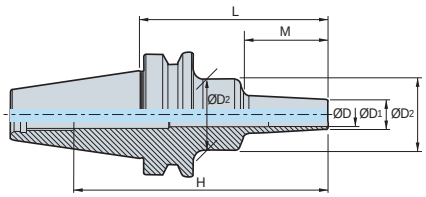


Fig. 1

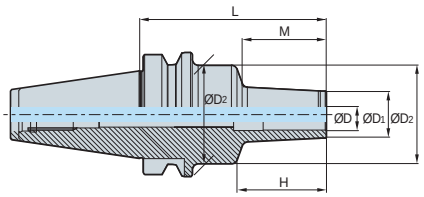


Fig. 2

(mm)

Designation		ØD	ØD1	ØD2	L	M	H	RPM	kg	Fig.
BT40 -	DSC3M-95	3	8	26	95	42	128	20,000	1.1	1
	DSC4M-95	4	8	26	95	42	128	20,000	1.1	1
	DSC6M-95	6	10	26	95	42	128	20,000	1.0	1
	DSC6M-120	6	10	26	120	67	153	20,000	1.0	1
	DSC6M-160	6	10	36	160	97	193	20,000	1.2	1
	DSC8M-95	8	13	36	95	42	128	20,000	1.3	1
	DSC8M-120	8	13	36	120	67	153	20,000	1.3	1
	DSC8M-160	8	13	36	160	97	193	20,000	1.3	1
	DSC10M-95	10	16	36	95	42	128	20,000	1.1	1
	DSC10M-120	10	16	36	120	67	153	20,000	1.1	1
	DSC10M-160	10	16	36	160	97	193	20,000	1.3	1
	DSC12M-95	12	19	36	95	42	128	20,000	1.1	1
	DSC12M-120	12	19	36	120	67	153	20,000	1.2	1
	DSC12M-160	12	19	36	160	97	193	20,000	1.4	1
	DSC16M-95	16	24	50	95	42	47	20,000	1.3	2
	DSC16M-120	16	24	50	120	67	47	20,000	1.4	2
	DSC16M-160	16	24	50	160	97	47	20,000	1.7	2
	DSC20M-95	20	29	50	95	42	55	20,000	1.3	2
	DSC20M-120	20	29	50	120	67	55	20,000	1.5	2
	DSC20M-160	20	29	50	160	97	55	20,000	1.9	2
BT50 -	DSC6M-110	6	10	26	110	42	163	15,000	3.5	1
	DSC6M-160	6	10	36	160	97	213	15,000	3.6	1
	DSC8M-110	8	13	36	110	42	163	15,000	3.7	1
	DSC8M-160	8	13	36	160	97	213	15,000	3.7	1
	DSC10M-110	10	16	36	110	42	163	15,000	3.7	1
	DSC10M-160	10	16	36	160	97	213	15,000	3.7	1
	DSC12M-110	12	19	36	110	42	163	15,000	3.7	1
	DSC12M-160	12	19	50	160	97	213	15,000	4.0	1
	DSC16M-110	16	24	50	110	42	163	15,000	3.9	1
	DSC16M-160	16	24	50	160	97	213	15,000	4.1	1
	DSC20M-110	20	29	50	110	42	55	15,000	3.9	2
	DSC20M-160	20	29	50	160	97	55	15,000	4.2	2

Adjust screw **H19**

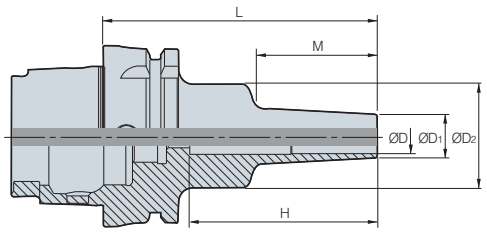
• H: Insertion depth of tool • Through coolant system installed

M This is metric size. We can also provide in inch type

HSK-DSC/M

Mono type





(mm)

Designation		ØD	ØD1	ØD2	L	M	H	RPM	kg
HSK63A -	DSC6M-95	6	10	26	95	42	73	20,000	0.7
	DSC8M-95	8	13	36	95	42	39	20,000	0.8
	DSC10M-120	10	16	36	120	67	45	20,000	0.8
	DSC12M-120	12	19	36	120	67	45	20,000	0.9
	DSC16M-120	16	24	50	120	67	47	20,000	1.1

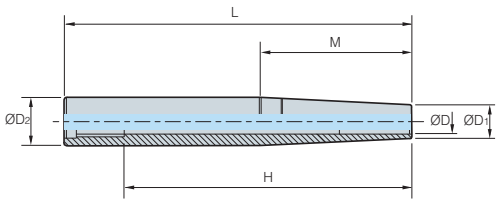
• H: Insertion depth of tool • Not able to use the adjust screw • Through coolant system is optional

M This is metric size. We can also provide in inch type

ST-DSC/M

Straight Shank Shrinking Chuck





(mm)

Designation		ØD	ØD1	ØD2	L	M	H	kg
ST16 -	DSC6M-115	6	10	16	115	50	95	0.1
	DSC6M-140	6	10	16	140	60	120	0.1
ST20 -	DSC6M-175	6	10	20	175	95	155	0.2
	DSC8M-145	8	13	20	145	70	125	0.2
	DSC10M-120	10	16	20	120	50	45	0.2
ST25 -	DSC8M-175	8	13	25	175	105	155	0.4
	DSC10M-145	10	16	25	145	75	45	0.4
	DSC10M-175	10	16	25	175	105	45	0.4
	DSC12M-120	12	19	25	120	50	45	0.3
	DSC12M-150	12	19	25	150	80	45	0.4
	DSC16M-175	16	24	25	175	50	47	0.5
ST32 -	DSC20M-175	20	29	32	175	50	55	0.8

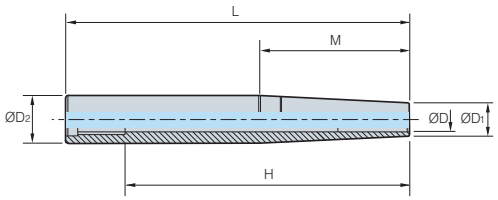
• H: Insertion depth of tool • Not able to use the adjust screw • Through coolant system installed

M This is metric size. We can also provide in inch type

ST-DSC/S

Straight Shank Shrinking Chuck





(mm)

Designation		ØD	ØD₁	ØD₂	L	M	H
ST16 -	DSC6S-115	6	9	16	115	55	95
	DSC6S-140	6	9	16	140	70	120
	DSC8S-115	8	11	16	115	50	95
ST20 -	DSC6S-175	6	9	20	175	105	155
	DSC8S-175	8	11	20	175	85	155
	DSC10S-145	10	13	20	145	75	77
	DSC12S-120	12	15	20	120	50	52
ST32 -	DSC12S-315	12	15	32	315	185	295

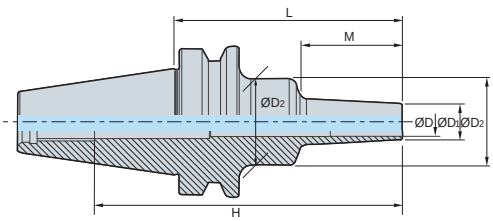
• H: Insertion depth of tool • Not able to use the adjust screw • Through coolant system installed

M This is metric size. We can also provide in inch type

BT-DSC/S

Mono slim type





(mm)

Designation		ØD	ØD₁	ØD₂	L	M	H	RPM	kg
BT30 -	DSC6S-60	6	9	20	60	22	82	25,000	0.4
	DSC6S-80	6	9	20	80	42	102	25,000	0.5
	DSC6S-120	6	9	25	120	67	142	25,000	0.5
BT40 -	DSC6S-95	6	9	26	95	42	128	20,000	1.0
	DSC6S-120	6	9	26	120	67	153	20,000	1.0
	DSC6S-160	6	9	36	160	97	193	20,000	1.2
	DSC8S-95	8	11	36	95	42	128	20,000	1.1
	DSC8S-120	8	11	36	120	67	153	20,000	1.1
	DSC8S-160	8	11	36	160	97	193	20,000	1.2
	DSC10S-95	10	13	36	95	42	128	20,000	1.0
	DSC10S-120	10	13	36	120	67	153	20,000	1.1
	DSC10S-160	10	13	36	160	97	193	20,000	1.2
	DSC12S-95	12	15	36	95	42	128	20,000	1.1
	DSC12S-120	12	15	36	120	67	153	20,000	1.1
	DSC12S-160	12	15	36	160	97	193	20,000	1.2
BT50 -	DSC6S-110	6	9	26	110	42	166	15,000	3.5
	DSC6S-160	6	9	36	160	97	216	15,000	3.6
	DSC8S-110	8	11	36	110	42	166	15,000	3.6
	DSC8S-160	8	11	36	160	97	216	15,000	3.6
	DSC10S-110	10	13	36	110	42	166	15,000	3.6
	DSC10S-160	10	13	36	160	97	216	15,000	3.6
	DSC12S-110	12	15	36	110	42	166	15,000	3.6
	DSC12S-160	12	15	36	160	97	216	15,000	3.7

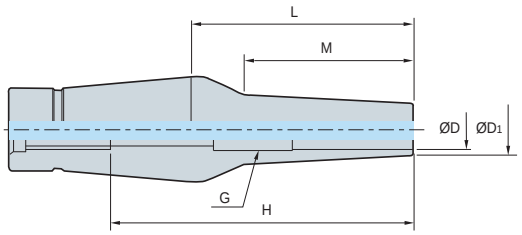
• H: Insertion depth of tool • Not able to use the adjust screw • Through coolant system installed

M This is metric size. We can also provide in inch type

CS/CM

2-pieces type





(mm)

	Designation	ØD	ØD1	L	M	H	kg
CS12	6-35	6	9	35	22	55	0.1
	6-80	6	9	80	67	100	0.2
	6-110	6	9	110	97	130	0.2
	8-35	8	11	35	22	55	0.1
	8-110	8	11	110	97	130	0.3
	10-35	10	13	35	22	45	0.1
	10-80	10	13	80	67	65	0.2
	10-110	10	13	110	97	65	0.3
	12-35	12	15	35	22	45	0.1
	12-55	12	15	55	42	49.5	0.2
	12-80	12	15	80	67	65	0.2
	12-110	12	15	110	97	65	0.3

• H: Insertion depth of tool • Not able to use the adjust screw • Through coolant system installed

M This is metric size. We can also provide in inch type

(mm)

	Designation	ØD	ØD1	L	M	H	G	kg
CM12	6-35	6	12	35	22	55	M5	0.2
	6-80	6	12	80	67	100	M5	0.2
	8-35	8	14	35	22	55	M5	0.2
	8-55	8	14	55	42	75	M5	0.2
	8-80	8	14	80	67	100	M5	0.3
	10-35	10	16	35	22	45	M8	0.2
	10-55	10	16	55	42	45	M8	0.2
	10-80	10	16	80	67	45	M8	0.3
	12-35	12	20	35	22	45	M8	0.2
	12-55	12	20	55	42	45	M8	0.3
	12-80	12	20	80	52	55	M8	0.3

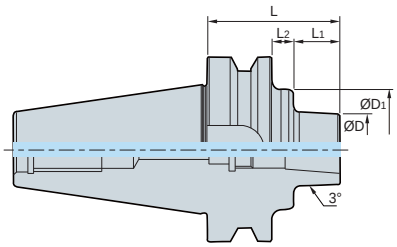
• H: Insertion depth of tool • Not able to use the adjust screw • Through coolant system installed

M This is metric size. We can also provide in inch type

BT-SLK

2-pieces type





(mm)

Designation		ØD	ØD1	L	L1	L2	kg
BT30 -	SLK12-35	38	-	35	13	-	0.4
	SLK12-45F	41	-	45	18	-	1.0
	SLK12-75F	41	-	75	48	-	1.3
	SLK12-135F	41	-	135	108	-	2.1
BT50 -	SLK12-75	38	65	75	25	12	4.1
	SLK12-75F	41	65	75	25	12	4.1
	SLK12-105F	41	65	105	55	12	4.5
	SLK12-135F	41	65	135	85	12	5.3
	SLK12-225	38	65	225	150	37	6.2
	SLK12-315	38	90	315	150	127	11.5

• Through coolant system installed • PULL STUD BOLT is needed for BT30-SLK12-35

M This is metric size. We can also provide in inch type

Parts

Basic											
Type		DSC6	DSC8	DSC10	DSC12	DSC14	DSC16	DSC18	DSC20	DSC25	DSC32
Adjust screw		M520C		M820C		M1230C					

New power milling chuck

NPM

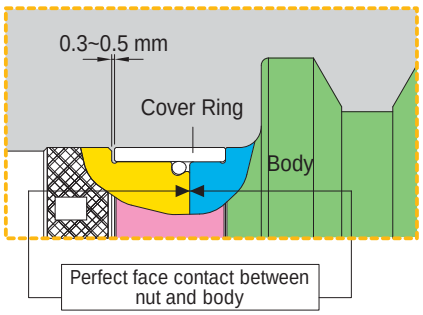


- Strong clamping over 500kgf·m (on NPM42 basis)
- DUST BLOCK functions for blocking foreign substance
- Jet coolant available
- High precision within 15 ㎛ at L/D = 3
- Boring range: Ø20~42

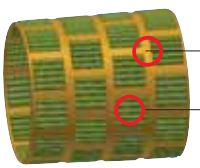
Code system

BT40	-	NPM	32	-	110
Spindle		New power milling chuck	Max. chucking dia.		Length

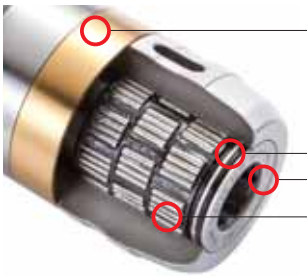
Improvement of durability by preventing minute dust, chips and coolant



- Adopted Stop Ring on Head parts
  - Preventing minute dust by Shim & O-Ring



- Specially designed Steel Bearing for prevention of damage
- Strong clamping by spreading the force

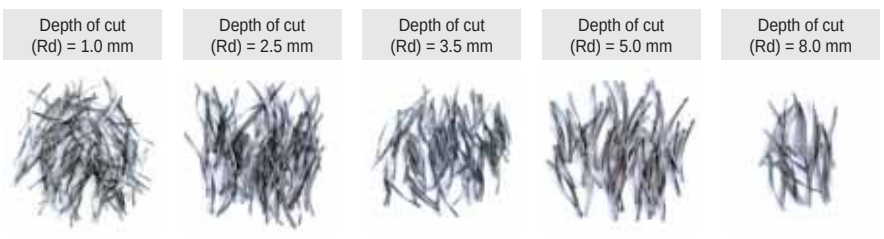


Needle Roller Bearing

Stable machining from heavy to fine

Perfect face contact and Powerful clamping force strengthen both Cutting force and Absorbtion of vibration.

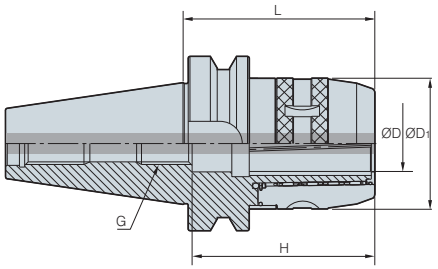




Possible machining from heavy milling to fine finishing

BT-NPM





(mm)

Designation		ØD	ØD1	L	H	G	Collet	kg
BT30 -	NPM20-85	20	54	85	85	M16	DC20, DCS20, DCJ20	1.2
BT40 -	NPM20-85	20	54	85	85	M16	DC20, DCS20, DCJ20	2.6
	NPM20-100	20	54	100	85	M16	DC20, DCS20, DCJ20	2.3
	NPM25-85	25	61	85	85	M16	DC25	1.7
	NPM32-90	32	75	90	87	M16	DC32, DCS32, DCJ32	2.3
	NPM32-110	32	75	110	95	M16	DC32, DCS32, DCJ32	2.8
	NPM32-135	32	75	135	95	M16	DC32, DCS32, DCJ32	3.5
BT50 -	NPM20-95	20	54	95	85	M16	DC20, DCS20, DCJ20	4.3
	NPM20-125	20	54	125	85	M16	DC20, DCS20, DCJ20	4.7
	NPM20-165	20	54	165	85	M16	DC20, DCS20, DCJ20	5.2
	NPM32-110	32	75	110	105	M24	DC32, DCS32, DCJ32	5.0
	NPM32-135	32	75	135	105	M24	DC32, DCS32, DCJ32	5.7
	NPM32-165	32	75	165	105	M24	DC32, DCS32, DCJ32	6.9
	NPM42-110	42	90	110	125	M24	DC42, DCS42	5.4
	NPM42-135	42	90	135	125	M24	DC42, DCS42	6.5
	NPM42-165	42	90	165	125	M24	DC42, DCS42	7.9

Applicable collet **H23**

• H: Insertion depth of tool • Through coolant system is optional

• In case of L ≤ 90, chucks with over 90mm are recommended for medium cutting by short cap

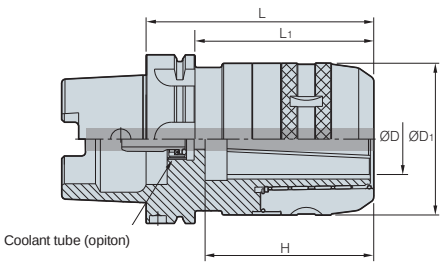
M This is metric size. We can also provide in inch type

Parts

For separate purchase			
Division	Collet	Spanner	Through coolant system
Parts / Designation			
NPM20	DC20, DCS20, DCJ20	57-60	CTC20-□□
NPM32	DC32, DCS32, DCJ20	75-79	CTC32-□□
NPM42	DC42, DCS42	92-96	CTC42-□□

HSK-NPM





(mm)

Designation		ØD	ØD1	L	L1	H	Collet	kg
HSK63A -	NPM20-100	20	54	100	74	75	DC20, DSC20, DCJ20	2.5
	NPM32-120	32	75	120	84	90	DC32, DCS32, DCJ32	2.9
HSK100A -	NPM32-130	32	75	130	101	90	DC32, DCS32, DCJ32	4.0

Spare Part **H21, H22** Applicable collet **H23**

• H: Insertion depth of tool • Through coolant system is optional

M This is metric size. We can also provide in inch type

Parts

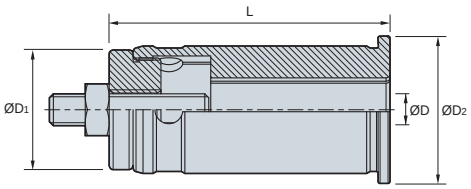
Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

DCS

Straight Collet





(mm)

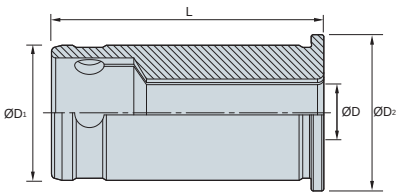
Designation	ØD	ØD1	ØD2	L	kg
DCS20-6, 8, 10, 12, 16	6, 8, 10, 12, 16	20	26	55	0.2
DCS32-6, 8, 10, 12, 14, 16, 19, 20, 25	6, 8, 10, 12, 14, 16, 19, 20, 25	32	38	70	0.4
DCS42-6, 8, 10, 12, 16, 20, 25, 32	6, 8, 10, 12, 16, 20, 25, 32	42	48	75	0.7

M This is metric size. We can also provide in inch type

DC

Straight Collet





(mm)

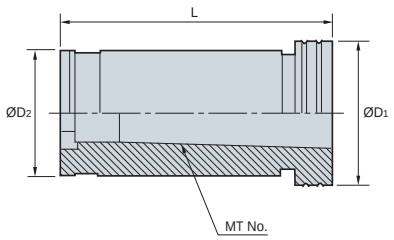
Designation	ØD	ØD1	ØD2	L	kg
DC20-6, 8, 10, 12, 14, 16	6, 8, 10, 12, 14, 16	20	26	53	0.1
DC25-6, 8, 10, 12, 16	6, 8, 10, 12, 16	25	29	61.5	0.2
DC32-6, 8, 10, 12, 14, 16, 19, 20, 25	6, 8, 10, 12, 14, 16, 19, 20, 25	32	38	64.5	0.2
DC42-6, 8, 10, 12, 16, 20, 25, 32	6, 8, 10, 12, 16, 20, 25, 32	42	48	73	0.5

M This is metric size. We can also provide in inch type

TC

Taper Collet





(mm)

Designation	ØD	ØD1	L	MT No.	Designation	ØD	ØD1	L	MT No.
TC20-1	26	20	60	MT1	**TC32-3**	38	32	90	MT3
TC20-2	26	20	72	MT2	**TC42-1**	48	42	60	MT1
TC25-1	32	25	60	MT1	**TC42-2**	48	42	72	MT2
TC25-2	32	25	72	MT2	**TC42-3**	48	42	90	MT3
TC32-1	38	32	60	MT1	**TC42-4**	48	42	112.5	MT4
TC32-2	38	32	72	MT2					

M This is metric size. We can also provide in inch type

Collet chuck

SDC/P



- Improved precision (higher than conventional SDC)
- Simpler model number management than conventional SDC due to its organized gauge line
- Collet chuck suitable for multi-purpose machining with SWISSMADE sleeve nut adopted
- Boring range: Ø1~Ø25

Best functional nut (SWISS Made)



General R/RU Nut
Before



Soft sleeve bearing RN Nut
After

High speed collet chuck

DSK



- Available for machining at max.15,000 RPM and balancing of G6.3
- Minimized tool vibration during operation by using collet 8°
- Swiss made high precision nut enhances stability
- Tool clamping range: Ø2~25

Standard type & Precision type	Designation	Max chucking	Run-out
	HC6-Ød	6.0	Standard type 5 μm Precision type 3 μm
	HC10-Ød	10.0	
	HC13-Ød	13.0	
	HC16-Ød	16.0	
	HC20-Ød	20.0	
	HC25-Ød	25.0	

8° HC collet

Minimized tool vibration during operation

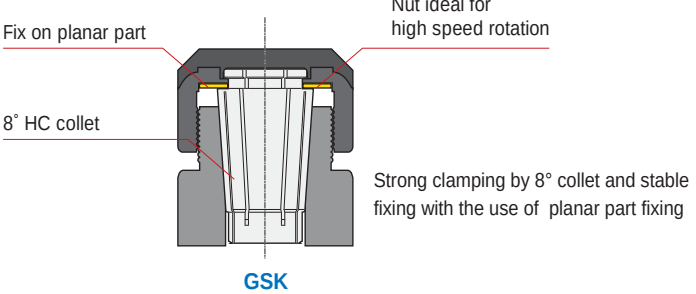
Great speed slim collet chuck

GSK

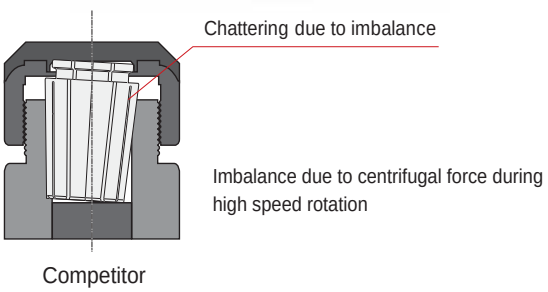


- Available for machining at max.25,000 RPM and balancing of G6.3
- Increased productivity due to high speed machining
- Minimized tool vibration during operation by using collet 8°
- Swiss made high precision nut enhances stability by pressing collet uniformly
- Tool clamping range: Ø2~25

Original design



GSK



Competitor

BT-SDC/P



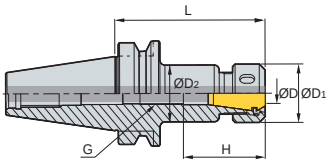


Fig. 1

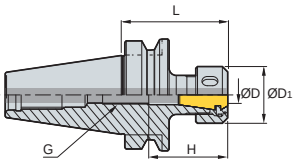


Fig. 2

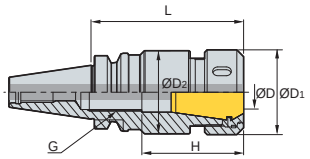


Fig. 3

(mm)

Designation		ØD	ØD₁	ØD₂	L	H	Collet	G	kg	Fig.
BT30 -	SDC7P-70	1.0~7.0	18	17	70	33	GERC11	M7	0.5	1
	SDC7P-100	1.0~7.0	18	17	100	33	GERC11	M7	0.5	1
	SDC10P-50	1.0~10.0	32	-	50	44.5	GERC16	M10	0.5	2
	SDC10P-70	1.0~10.0	32	31	70	44.5	GERC16	M10	0.6	1
	SDC10P-100	1.0~10.0	32	31	100	44.5	GERC16	M10	0.7	1
	SDC13P-50	1.0~13.0	35	-	50	49	GERC20	M7	0.5	2
	SDC13P-70	1.0~13.0	35	34	70	49	GERC20	M13	0.6	1
	SDC13P-100	1.0~13.0	35	34	100	49	GERC20	M13	0.8	1
	SDC16P-50	2.0~16.0	42	-	50	50	GERC25	M7	0.5	2
	SDC16P-70	2.0~16.0	42	41	70	50	GERC25	M18	0.7	1
	SDC16P-100	2.0~16.0	42	41	100	50	GERC25	M18	1.0	1
	SDC20P-60	2.0~20.0	50	-	60	60	GERC32	M7	0.6	2
	SDC20P-90	2.0~20.0	50	49	90	60	GERC32	M22	1.0	3
	SDC20P-120	2.0~20.0	50	49	120	60	GERC32	M22	1.4	3
BT40 -	SDC7P-70	1.0~7.0	18	17	70	33	GERC11	M7	0.9	1
	SDC7P-90	1.0~7.0	18	17	90	33	GERC11	M7	0.9	1
	SDC7P-130	1.0~7.0	18	17	130	33	GERC11	M7	1.0	1
	SDC10P-70	1.0~10.0	32	31	70	44.5	GERC16	M10	1.0	1
	SDC10P-90	1.0~10.0	32	31	90	44.5	GERC16	M10	1.2	1
	SDC10P-130	1.0~10.0	32	31	130	44.5	GERC16	M10	1.4	1
	SDC13P-70	1.0~13.0	35	34	70	49	GERC20	M13	1.1	1
	SDC13P-90	1.0~13.0	35	34	90	49	GERC20	M13	1.2	1
	SDC13P-130	1.0~13.0	35	34	130	49	GERC20	M13	1.4	1
	SDC13P-150	1.0~13.0	35	34	150	49	GERC20	M13	1.6	1
	SDC16P-70	2.0~16.0	42	41	70	50	GERC25	M18	1.1	1
	SDC16P-90	2.0~16.0	42	41	90	50	GERC25	M18	1.3	1
	SDC16P-130	2.0~16.0	42	41	130	50	GERC25	M18	1.7	1
	SDC20P-70	2.0~20.0	50	-	70	60	GERC32	M22	1.1	2
	SDC20P-90	2.0~20.0	50	49	90	60	GERC32	M22	1.4	1
	SDC20P-130	2.0~20.0	50	49	130	60	GERC32	M22	1.9	1
	SDC20P-150	2.0~20.0	50	49	150	60	GERC32	M22	2.2	1
	SDC26P-90	16.0~26.0	63	62	90	71	GERC40	M28	1.7	1

Spare Part **H26** Applicable collet **H33**

- H: Insertion depth of tool
- Through coolant system is optional
- Collets in the right size are recommended for oil hole type

M This is metric size. We can also provide in inch type

BT-SDC/P



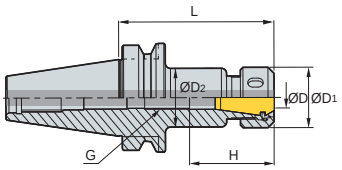


Fig. 1

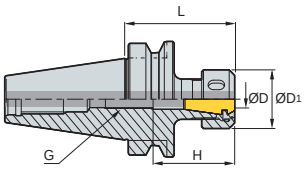


Fig. 2

(mm)

Designation		ØD	ØD1	ØD2	L	H	Collet	G	kg	Fig.
BT50 -	SDC10P-100	1.0~10.0	32	31	100	44.5	GERC16	M10	3.7	1
	SDC10P-120	1.0~10.0	32	31	120	44.5	GERC16	M10	3.7	1
	SDC10P-160	1.0~10.0	32	31	160	44.5	GERC16	M10	3.8	1
	SDC13P-100	1.0~13.0	35	34	100	49	GERC20	M13	3.8	1
	SDC13P-130	1.0~13.0	35	34	130	49	GERC20	M13	3.8	1
	SDC13P-160	1.0~13.0	35	34	160	49	GERC20	M13	4.1	1
	SDC13P-180	1.0~13.0	35	34	180	49	GERC20	M13	4.2	1
	SDC16P-100	2.0~16.0	42	41	100	50	GERC25	M18	3.9	1
	SDC16P-160	2.0~16.0	42	41	160	50	GERC25	M18	4.3	1
	SDC20P-70	2.0~20.0	50	-	70	60	GERC32	M22	1.7	2
	SDC20P-100	2.0~20.0	50	49	100	60	GERC32	M22	4.0	1
	SDC20P-130	2.0~20.0	50	49	130	60	GERC32	M22	4.3	1
	SDC20P-160	2.0~20.0	50	49	160	60	GERC32	M22	4.7	1
	SDC20P-180	2.0~20.0	50	49	180	60	GERC32	M22	5.0	1
	SDC26P-160	16.0~26.0	63	62	160	71	GERC40	M28	5.5	1

Spare Part **H26** Applicable collet **H33**

- H: Insertion depth of tool
- Through coolant system is optional
- Collets in the right size are recommended for oil hole type

M This is metric size. We can also provide in inch type

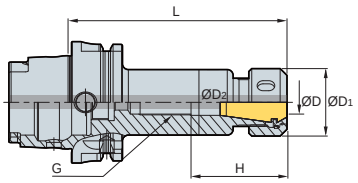
Parts

Basic			For separate purchase	
Division	Sleeve bearing nut	Adjust screw	Spanner	Collet
Part / Designation				
SDC7P	RN11	BN0716F	20-22	GERC/ER 11-ØD
SDC10P	RN16	BN1025F	32-35	GERC/ER 16-ØD
SDC13P	RN20	BN1325F	35-38	GERC/ER 20-ØD
SDC16P	RN25	BN1830F	42-46	GERC/ER 25-ØD
SDC20P	RN32	BN2230F	48-52	GERC/ER 32-ØD
SDC26P	RN40	BN2838F	62-65	GERC/ER 40-ØD

* NOTES: In case of the BT30-SDC13P-50/HSK63A-SDC13P-100, a BN0716F screw

HSK-SDC/P





(mm)

Designation		ØD	ØD₁	ØD₂	L	H	Collet	G	kg
HSK63A -	SDC10P-100	1.0~10.0	32	31	100	44.5	GER16	M10	1.0
	SDC13P-100	1.0~13.0	35	34	100	49	GER20	M7	1.1
	SDC16P-100	1.0~16.0	42	41	100	50	GER25	M7	1.2
	SDC20P-110	1.0~20.0	50	49	110	60	GER32	M7	1.5
HSK100A -	SDC16P-110	1.0~16.0	42	41	110	50	GER25	M13	2.6
	SDC20P-120	2.0~20.0	50	49	120	60	GER32	M10	2.9

Spare Part **H26, H27** Applicable collet **H33**

- H: Insertion depth of tool
- Through coolant system is optional
- Collets in the right size are recommended for oil hole type

M This is metric size. We can also provide in inch type

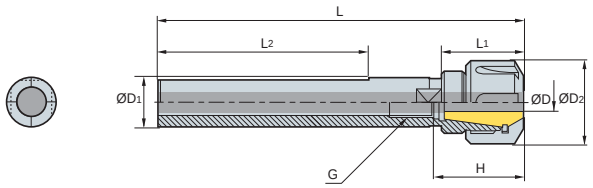
Parts

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

S-SDC





(mm)

	Designation	ØD	ØD1	ØD2	L	L1	L2	H	Collet	G	kg
S16 -	SDC7-120M	1.0~7.0	19	16	120	-	-	33	GERC11	M7	0.1
	SDC7-120T	1.0~7.0	19	16	120	-	73	33	GERC11	M7	0.1
	SDC10-150T	1.0~10.0	28	16	150	46.5	83	34.5	GERC16	M10	0.2
S20 -	SDC10-150M	1.0~10.0	28	20	150	26.5	-	34.5	GERC16	M10	0.3
	SDC10-150T	1.0~10.0	28	20	150	26.5	83	34.5	GERC16	M10	0.3
	SDC13-150M	1.0~13.0	35	20	150	50	-	49	GERC20	M13	0.3
	SDC13-150T	1.0~13.0	35	20	150	50	83	49	GERC20	M13	0.3
S25 -	SDC10-150M	1.0~10.0	28	25	150	-	-	34.5	GERC16	M10	0.4
	SDC10-150T	1.0~10.0	28	25	150	-	83	34.5	GERC16	M10	0.4
	SDC13-150M	1.0~13.0	35	25	150	-	-	49	GERC20	M13	0.4
	SDC13-150T	1.0~13.0	35	25	150	-	83	49	GERC20	M13	0.4
S32 -	SDC13-150M	1.0~13.0	35	32	150	-	-	49	GERC20	M13	0.7
	SDC13-150T	1.0~13.0	35	32	150	-	83	49	GERC20	M13	0.7
	SDC20-165M	2.0~20.0	50	32	165	-	-	60	GERC32	M22	0.9
	SDC20-165T	2.0~20.0	50	32	165	-	83	60	GERC32	M22	0.9

Applicable collet **H33**

- H: Insertion depth of tool
- Through coolant system is optional

M This is metric size. We can also provide in inch type

S-SDC/S



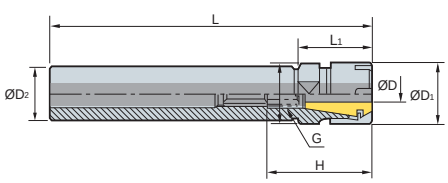


Fig. 1

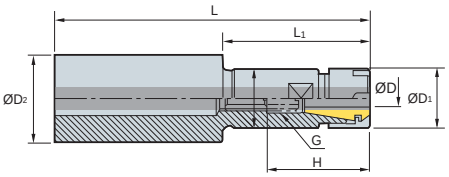


Fig. 2

(mm)

Designation		ØD	ØD1	ØD2	L	L1	H	Collet / Step	G	kg
S16 -	SDC7S-100M	1.0~7.0	16	16	100	21	33	GERC11/0.5	M7	0.1
	SDC7S-150M	1.0~7.0	16	16	150	21	33	GERC11/0.5	M7	0.1
	SDC10S-100M	1.0~10.0	22	16	100	50	44.5	GERC16/1.0	M10	0.1
	SDC10S-150M	1.0~10.0	22	16	150	50	44.5	GERC16/1.0	M10	0.1
S20 -	SDC7S-100M	1.0~7.0	16	20	100	30	35	GERC11/0.5	M7	0.1
	SDC7S-150M	1.0~7.0	16	20	150	80	35	GERC11/0.5	M7	0.2
	SDC10S-100M	1.0~10.0	22	20	100	50	44.5	GERC16/1.0	M10	0.1
	SDC10S-150M	1.0~10.0	22	20	150	50	44.5	GERC16/1.0	M10	0.2
	SDC10S-200M	1.0~10.0	22	20	200	50	44.5	GERC16/1.0	M10	0.3
	SDC13S-100M	1.0~13.0	28	20	100	50	49	GERC20/1.0	M13	0.1
	SDC13S-150M	1.0~13.0	28	20	150	50	49	GERC20/1.0	M13	0.2
S25 -	SDC7S-100M	1.0~7.0	16	25	100	30	33	GERC11/0.5	M7	0.2
	SDC7S-150M	1.0~7.0	16	25	150	80	33	GERC11/0.5	M7	0.2
	SDC10S-100M	1.0~10.0	22	25	100	30	44.5	GERC16/1.0	M10	0.2
	SDC10S-150M	1.0~10.0	22	25	150	80	44.5	GERC16/1.0	M10	0.3
	SDC13S-100M	1.0~13.0	28	25	100	50	49	GERC20/1.0	M13	0.2
	SDC13S-150M	1.0~13.0	28	25	150	50	49	GERC20/1.0	M13	0.4
	SDC16S-100M	1.0~16.0	35	25	100	50	50	GERC25/1.0	M18	0.3
	SDC16S-150M	1.0~16.0	35	25	150	50	50	GERC25/1.0	M18	0.4
	SDC16S-200M	1.0~16.0	35	25	200	50	50	GERC25/1.0	M18	0.6
S32 -	SDC16S-120M	1.0~16.0	35	32	120	50	50	GERC25/1.0	M18	0.5
	SDC16S-150M	1.0~16.0	35	32	150	50	50	GERC25/1.0	M18	0.6

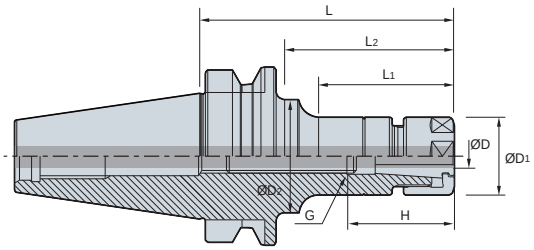
Applicable collet **H33**

• H: Insertion depth of tool • Through coolant system is optional

M This is metric size. We can also provide in inch type

BT-DSK





(mm)

Designation		ØD	ØD1	ØD2	L	L1	L2	H	Collet	G	RPM	kg
BT30 -	DSK6-60	3.0~6.0	19.5	19.5	60	33	33	31	HC6	M8	15,000	0.4
	DSK6-90	3.0~6.0	19.5	32	90	56	65	31	HC6	M8	15,000	0.5
	DSK10-60	2.0~10.0	27.5	27.5	60	35	35	38	HC10	M12	15,000	0.5
	DSK10-90	2.0~10.0	27.5	27.5	90	65	65	38	HC10	M12	15,000	0.6
	DSK13-60	3.0~13.0	33	33	60	36	36	43	HC13	M12	15,000	0.5
	DSK16-60	3.0~16.0	40	40	60	37	37	52	HC16	M12	15,000	0.6
	DSK16-90	3.0~16.0	40	40	90	67	67	52	HC16	M18	15,000	0.8
	DSK25-90	16.0~25.0	55	55	90	67.5	67.5	63.5	HC25	M12	15,000	0.9
BT40 -	DSK6-90	3.0~6.0	19.5	32	90	51	61	31	HC6	M8	10,000	1.1
	DSK6-120	3.0~6.0	19.5	32	120	60	90	31	HC6	M8	10,000	1.1
	DSK6-150	3.0~6.0	19.5	25	150	60	120	31	HC6	M8	10,000	1.1
	DSK10-90	2.0~10.0	27.5	40	90	48	60	38	HC10	M12	10,000	1.2
	DSK10-120	2.0~10.0	27.5	40	120	73	90	38	HC10	M12	10,000	1.2
	DSK10-150	2.0~10.0	27.5	34.5	150	73	118	38	HC10	M12	10,000	1.4
	DSK13-90	3.0~13.0	33	33	90	59	59	43	HC13	M15	10,000	1.3
	DSK16-90	3.0~16.0	40	40	90	58	58	52	HC16	M18	10,000	1.3
	DSK16-120	3.0~16.0	40	40	120	88	88	52	HC16	M18	10,000	1.5
	DSK16-150	3.0~16.0	40	40	150	118	118	52	HC16	M18	10,000	1.9
	DSK20-90	4.0~20.0	48.5	48.5	90	60	60	60	HC20	M22	10,000	1.5
	DSK20-120	4.0~20.0	48.5	48.5	120	90	90	60	HC20	M22	10,000	1.8
	DSK25-90	16.0~25.0	55	55	90	61	61	63.5	HC25	M28	10,000	1.6
	DSK25-120	16.0~25.0	55	55	120	91	91	85	HC25	M28	10,000	2.0

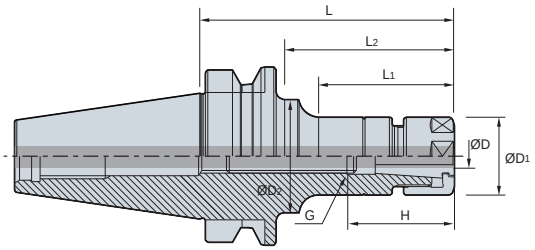
Spare Part **H31** Applicable collet **H33**

- H: Insertion depth of tool
- Through coolant system is optional
- Coolant collets are recommended when using the coolant system

M This is metric size. We can also provide in inch type

BT-DSK





(mm)

Designation		ØD	ØD1	ØD2	L	L1	L2	H	Collet	G	RPM	kg
BT50 -	DSK6-105	3.0~6.0	19.5	32	105	55	64	31	HC6	M8	8,000	3.6
	DSK6-135	3.0~6.0	19.5	32	135	60	92	31	HC6	M8	8,000	3.7
	DSK6-165	3.0~6.0	19.5	32	165	60	114	31	HC6	M8	8,000	4.1
	DSK10-105	2.0~10.0	27.5	27.5	105	57	57	38	HC10	M12	8,000	3.8
	DSK10-135	2.0~10.0	27.5	32	135	70	92	38	HC10	M12	8,000	3.9
	DSK10-165	2.0~10.0	27.5	36	165	75	114	38	HC10	M12	8,000	4.1
	DSK13-135	3.0~13.0	33	33	135	92	92	43	HC13	M15	8,000	3.8
	DSK16-105	3.0~16.0	40	40	105	62	62	52	HC16	M18	8,000	4.0
	DSK16-135	3.0~16.0	40	40	135	92	92	52	HC16	M18	8,000	4.2
	DSK16-165	3.0~16.0	40	50	165	40	122	52	HC16	M18	8,000	4.6
	DSK20-105	4.0~20.0	48	40	105	62	62	60	HC20	M22	8,000	4.2
	DSK20-135	4.0~20.0	48	40	135	92	92	60	HC20	M22	8,000	4.5
	DSK20-165	4.0~20.0	48	40	165	122	122	60	HC20	M22	8,000	4.9
	DSK25-105	16.0~25.0	55	55	105	62	62	63.5	HC25	M28	8,000	4.4
	DSK25-135	16.0~25.0	55	55	135	92	92	63.5	HC25	M28	8,000	4.5
	DSK25-165	16.0~25.0	55	55	165	122	122	63.5	HC25	M28	8,000	5.2

Applicable collet **H33**

- H: Insertion depth of tool
- Through coolant system is optional
- Coolant collets are recommended when using the coolant system

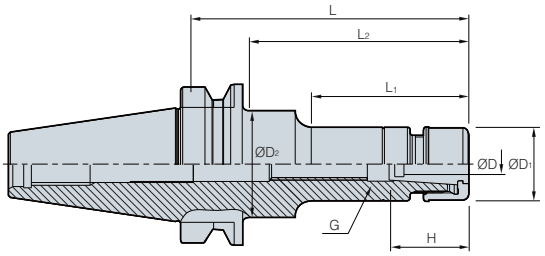
M This is metric size. We can also provide in inch type

Parts

Basic				For separate purchase
Division	Nut	Adjust screw	Extractor	Spanner
Part / Designation				
DSK6	DN6	BN0825F	DSK-6CE	DSS-6
DSK10	DN10	BN1225F	DSK-10CE	DSS-10
DSK13	DN13	BN1230 (BT30)/BN1524F (others)	DSK-13CE	DSS-13
DSK16	DN16	BN1830F	DSK-16CE	DSS-16
DSK20	DN20	BN2230F	DSK-20CE	DSS-20
DSK25	DN25	BN2838F	DSK-25CE	DSS-25

BT-GSK





(mm)

Designation		ØD	ØD1	ØD2	L	L1	L2	H	Collet / Step	G	RPM	kg
BT30 -	GSK13-60	3.0~13.0	35	35	60	36	36	43	HC13/1.0	M12	25,000	0.6
	GSK16-60	3.0~16.0	40	40	60	37	37	52	HC16/1.0	M12	25,000	0.6
	GSK16-90	3.0~16.0	40	40	90	67	67	52	HC16/1.0	M18	25,000	0.8
	GSK25-90	16.0~25.0	55	55	90	67.5	67.5	63.5	HC25/1.0	M12	25,000	1.0
BT40 -	GSK6-90	3.0~6.0	19.5	32	90	51	61	31	HC6/1.0	M8	20,000	1.0
	GSK6-120	3.0~6.0	19.5	32	120	60	90	31	HC6/1.0	M8	20,000	1.2
	GSK6-150	3.0~6.0	19.5	25	150	60	120	31	HC6/1.0	M8	20,000	1.2
	GSK10-90	2.0~10.0	27	40	90	48	60	38	HC10/1.0	M12	20,000	1.1
	GSK10-120	2.0~10.0	27	40	120	73	90	38	HC10/1.0	M12	20,000	1.3
	GSK10-150	2.0~10.0	27	34.5	150	73	118	38	HC10/1.0	M12	20,000	1.4
	GSK13-90	3.0~13.0	35	35	90	59	59	43	HC13/1.0	M15	20,000	1.2
	GSK16-90	3.0~16.0	40	40	90	58	58	52	HC16/1.0	M18	20,000	1.3
	GSK16-120	3.0~16.0	40	40	120	88	88	52	HC16/1.0	M18	20,000	1.5
	GSK16-150	3.0~16.0	40	40	150	118	118	52	HC16/1.0	M18	20,000	1.8
	GSK20-90	4.0~20.0	48	48	90	60	60	60	HC20/1.0	M22	20,000	1.4
	GSK20-120	4.0~20.0	48	48	120	90	90	60	HC20/1.0	M22	20,000	1.8
	GSK25-90	16.0~25.0	55	55	90	61	61	63.5	HC25/1.0	M28	20,000	1.6
	GSK25-120	16.0~25.0	55	55	120	91	91	63.5	HC25/1.0	M28	20,000	2.0
BT50 -	GSK6-105	3.0~6.0	19.5	32	105	55	64	31	HC6	M8	15,000	3.6
	GSK6-135	3.0~6.0	19.5	32	135	60	92	31	HC6	M8	15,000	3.6
	GSK6-165	3.0~6.0	19.5	32	165	60	114	31	HC6	M8	15,000	3.9
	GSK10-105	2.0~10.0	27	27	105	57	57	38	HC10	M12	15,000	3.7
	GSK10-135	2.0~10.0	27	32	135	70	92	38	HC10	M12	15,000	3.7
	GSK10-165	2.0~10.0	27	36	165	75	114	38	HC10	M12	15,000	4.0
	GSK13-135	3.0~13.0	35	35	135	92	92	43	HC13	M15	15,000	3.9
	GSK16-105	3.0~16.0	40	40	105	62	62	52	HC16	M18	15,000	3.9
	GSK16-135	3.0~16.0	40	40	135	92	92	52	HC16	M18	15,000	4.1
	GSK16-165	3.0~16.0	40	50	165	40	122	52	HC16	M18	15,000	4.3
	GSK20-105	4.0~20.0	48	-	105	62	62	60	HC20	M22	15,000	4.1
	GSK20-135	4.0~20.0	48	-	135	92	92	60	HC20	M22	15,000	4.4
	GSK20-165	4.0~20.0	48	-	165	122	122	60	HC20	M22	15,000	4.9
	GSK25-105	16.0~25.0	55	55	105	62	62	63.5	HC25	M28	15,000	4.2
	GSK25-135	16.0~25.0	55	55	135	92	92	63.5	HC25	M28	15,000	4.6
	GSK25-165	16.0~25.0	55	55	165	122	122	63.5	HC25	M28	15,000	5.1

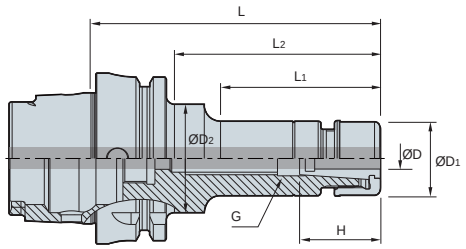
Spare Part **H33** Applicable collet **H33**

- H: Insertion depth of tool
- Through coolant system is optional
- Coolant collets are recommended when using the coolant system

M This is metric size. We can also provide in inch type

HSK-GSK





(mm)

Designation		ØD	ØD1	ØD2	L	L1	L2	H	Collet / Step	G	RPM	kg
HSK63A -	GSK6-100	3.0~6.0	19.5	32	100	51	61	35	HC6/0.5	M8	20,000	0.8
	GSK10-105	2.0~10.0	27	34.5	105	73	118	50	HC10/0.5	M12	20,000	0.9
	GSK16-120	3.0~16.0	40	40	120	58	58	60	HC16/0.5	M18	20,000	1.3
	GSK20-120	4.0~20.0	48	48	120	60	60	70	HC20/0.5	M22	20,000	1.6
HSK100A -	GSK6-120	3.0~6.0	19.5	32	120	55	64	35	HC6/0.5	M8	15,000	2.2
	GSK10-120	2.0~10.0	27	27	120	57	57	50	HC10/0.5	M12	15,000	2.3
	GSK16-140	3.0~16.0	40	40	140	62	62	60	HC16/0.5	M18	15,000	2.8
	GSK25-155	16.0~25.0	55	55	155	62	62	85	HC25/0.5	M28	15,000	3.6

• H: Insertion depth of tool

M This is metric size. We can also provide in inch type

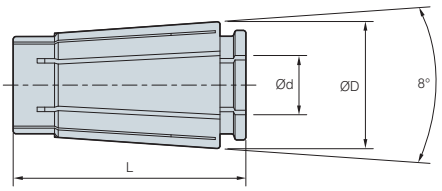
Parts

Basic				For separate purchase
Division	Nut	Adjust screw	Extractor	Spanner
Part / Designation				
GSK6	GN6	M820C	DSK-6CE	GSK-6
GSK10	GN10	M1230C	DSK-10CE	GSK-10
GSK13	GN13	BN1530F	DSK-13CE	GSK-13
GSK16	GN16	BN1830F	DSK-16CE	GSK-16
GSK20	GN20	BN2230F	DSK-20CE	GSK-20
GSK25	GN25	BN2838F	DSK-25CE	GSK-25

HC Slim Collet

General & precision type





(mm)

Designation		ØD	L	Ød (Max.)	Distance (mm)	Tolerance	
						Standard type	Precision type (P)
HC6 -	Ød(P)	10.5	25.0	6.0	1.0	5 ㎛	3 ㎛
HC10 -	Ød(P)	15.6	30.5	10.0	1.0		
HC13 -	Ød(P)	20.1	39.0	13.0	1.0		
HC16 -	Ød(P)	24.6	45.0	16.0	1.0		
HC20 -	Ød(P)	29.2	54.3	20.0	2.0		
HC25 -	Ød(P)	35.7	57.0	25.0	1.0		

M This is metric size. We can also provide in inch type

GERC Collet

GERC new

- Corrosion resistant collet to micro unit
- High tech coating for long lasting precision
- Longer tool life and higher productivity



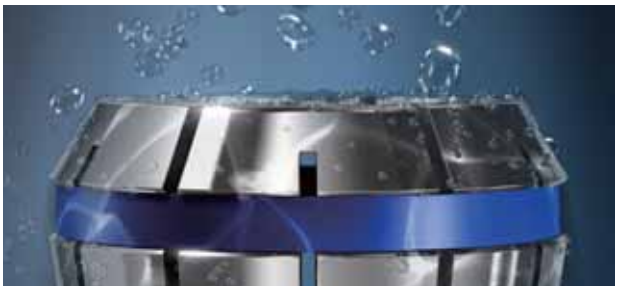
Code system

GERC - 16 4.0 - HP

Spindle GER Collet	Clamping range	Tool Dia.	HP: Precision Non: General

Special coating technology

Unlike GERC collets, Conventional non-coated collets have the following features:
Non-coated collets are affected by corrosion due to high humidity, cutting fluid, cleaner, salt, gas and many other factors, which in result deteriorates whole quality of machining



When a collet gets rusty, the tool life is shortened and precision considerably decreases. To prevent this problem, surface treatment by micro unit was applied to GERC collets for effective protection and long lasting precision



GERC Competitor

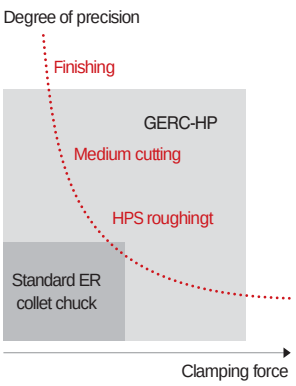
Two samples of collets after 4 months of use:
Left: GERC collet, Right: Non-coated

GERC-HP

A precision type collet chuck is expensive than standard one, but still it has more advantages in long term cost and efficiency. Using GERC-HP can minimize pricy reworking due to smaller tolerance with maximum precision

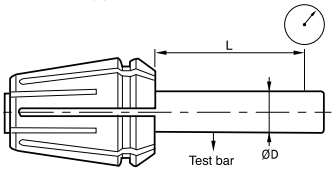


Precision type collet 2 ㎛



Precision (L/D = 3)

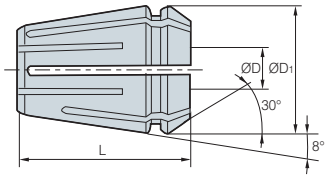
Standard type = 5 ㎛
Precision type = 2 ㎛



GERC Collet

General/Precision/Water proof type





(mm)

Designation	ER size	ØD (Max.)	ØD1	L	Min. pi of water proof type	Distance (mm)	Tolerance	
							Standard type	Precision type (HP)
GER11-Ød(HP)	11	7.0	11.5	18.0	-	0.5	5 μm	2 μm
GER16-Ød(HP, C)	16	10.0	17.0	27.5	5.0	1.0		
GER20-Ød(HP, C)	20	13.0	21.0	31.5	6.0	1.0		
GER25-Ød(HP, C)	25	16.0	26.0	34.0	6.0	1.0		
GER32-Ød(HP, C)	32	20.0	33.0	40.0	8.0	1.0		
GER40-Ød	40	26.0	41.0	46.0	10.0	1.0		

M This is metric size. We can also provide in inch type

GERC Collet

General type



(mm)

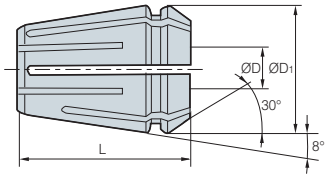
Designation	ØD	Distance	Collet amount	Tolerance	kg
GERC11 1.0-7.0 mm/0.5 mm	1.0-7.0	0.5	13 pcs	5 μm	0.1
GERC16 1.0-10.0 mm/1.0 mm	1.0-10.0	1.0	10 pcs	5 μm	0.2
GERC20 2.0-13.0 mm/1.0 mm	2.0-13.0	1.0	12 pcs	5 μm	0.5
GERC25 2.0-16.0 mm/1.0 mm	2.0-16.0	1.0	15 pcs	5 μm	1.1
GERC32 3.0-20.0 mm/1.0 mm	3.0-20.0	1.0	18 pcs	5 μm	2.6
GERC40 4.0-26.0 mm/1.0 mm	4.0-26.0	1.0	23 pcs	5 μm	5.8

M This is metric size. We can also provide in inch type

ER Collet

General/Water proof type





(mm)

Designation	ER size	ØD (Max.)	ØD1	L	Min. pi of water proof type	Distance (mm)	Tolerance
ER11-Ød	11	7.0	11.5	18.0	-	0.5	10 ㎛
ER16-Ød(C)	16	10.0	17.0	27.5	5.0	1.0	
ER20-Ød(C)	20	13.0	21.0	31.5	6.0	1.0	
ER25-Ød(C)	25	16.0	26.0	34.0	6.0	1.0	
ER32-Ød(C)	32	20.0	33.0	40.0	8.0	1.0	

M This is metric size. We can also provide in inch type

ER Collet

General type



(mm)

Designation	ØD	Distance	Collet amount	Tolerance
ER11(SET)	1.0-7.0	0.5	12 pcs	10 ㎛
ER16(SET)	1.0-10.0	1.0	10 pcs	10 ㎛
ER20(SET)	2.0-13.0	1.0	12 pcs	10 ㎛
ER25(SET)	2.0-16.0	1.0	15 pcs	10 ㎛
ER32(SET)	3.0-20.0	1.0	18 pcs	10 ㎛

M This is metric size. We can also provide in inch type

Lock collet for ER collet chuck

ER/L



- Designed to prevent the end mill from falling out
- Prevents tool fallout, slipping, or idle running
- Uses the Weldon flat (DIN 6535HB) end mill without any special endmill
- Useful for machining large-sized mold or difficult-to-cut materials

Structural Features

Designed to prevent fallout

- Tool fallout is prevented by a key inserted in the collet
- A key is inserted to prevent the tool from falling out

How to use

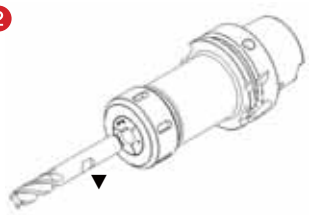
- Assemble the collet with nut (same for general ER collet in use)
- Assemble the end tool (in the direction of assembling notch with key)
- Tighten the nut with the body

1



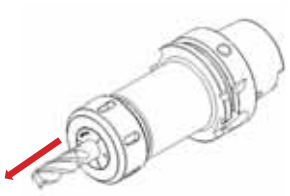
Combine the non-slip ER collet with nut.

2



Clamp the nut after inserting no. 1 into the collet chuck. After that, insert the end mill notch to be aligned with the part ▼ (steel ball position).

3



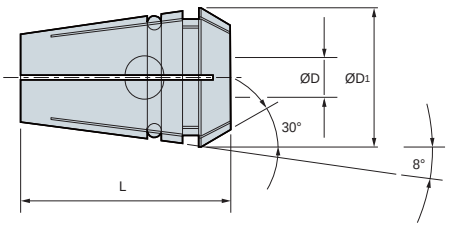
After checking that the steel ball in the collet is caught in the notched part, completely clamp the nut by pulling the end mill in the axial direction. (arrow direction)

Note If an auto clamp device is used, skip step 3. (Endmill rotation may cause injury)

ER/L Collet

Non-slip collet chuck collet





(mm)

Designation	ØD	ØD	ØD1	L
ER20-6L	20	6	20.7	31.5
ER20-8L	20	8	20.7	31.5
ER20-10L	20	10	20.7	31.5
ER20-12L	20	12	20.7	3 1.5
ER32-12L	32	12	32.7	40
ER32-16L	32	16	32.7	40
ER32-20L	32	20	32.7	40

M This is metric size. We can also provide in inch type

Jet coolant disk

RTJW

- Provides a longer cutting tool service life by preventing chips from adhering to the tool
- Improveds chip breakability/breaking strong jet injection
- Reduces equipment non-operation time as nozzle position change is not necessary



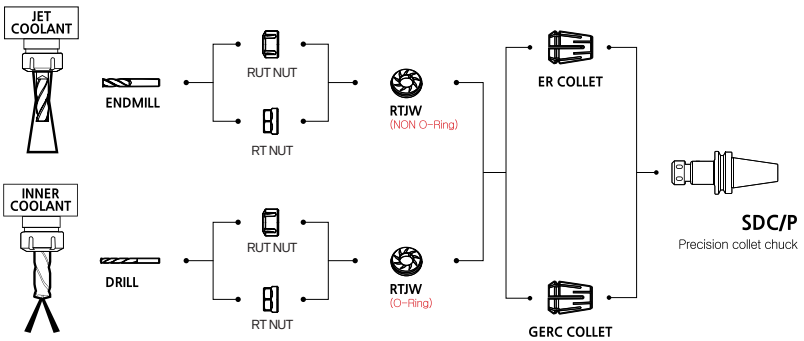
Code system

RTJW 16 - 6

- RTJW: Jet Coolant Disk
- 16: ER Collet Size
- 6: Tool Dia.

Application

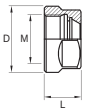
- With one waterproof type (RT, RUT) NUT, the inside jet coolant is simultaneously used
- Enables a fast change of the inside jet coolant only by disk replacement
- Strong jet injection with no scattering even in the high-speed rotation



RT NUT

Type	M	D	L
RT16	M22 x 1.50	28.0	22.5

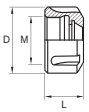




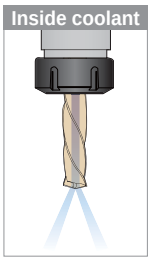
RUT NUT

Type	M	D	L
RUT20	M25 x 1.50	35.0	24.0
RUT25	M32 x 1.50	42.0	25.0
RUT32	M40 x 1.50	50.0	27.5
RUT40	M50 x 1.50	63.0	30.5



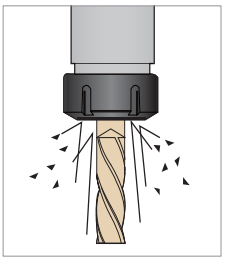


	Pocket machining	After	Remarks
Jet coolant			▶ The chips in the pocket completely are removed by a strong jet injection
Outside coolant			▶ The chips in the pocket are not removed ▶ Chips are accumulated in the collet and nut



Coolant method

According to use, inside coolant and jet coolant refueling can be used



Mixing prevention

Effective for vibration proof by preventing mixing of cutting chips by using RTJW

RTJW





(mm)

Designation		ER size	Inner diameter	Designation		ER size	Inner diameter
RTJW16 -	RTJW16-6	16	6	RTJW32 -	RTJW32-6	32	6
	RTJW16-7	16	7		RTJW32-7	32	7
	RTJW16-8	16	8		RTJW32-8	32	8
RTJW20 -	RTJW20-6	20	6		RTJW32-9	32	9
	RTJW20-7	20	7		RTJW32-10	32	10
	RTJW20-8	20	8		RTJW32-11	32	11
	RTJW20-9	20	9		RTJW32-12	32	12
	RTJW20-10	20	10		RTJW32-13	32	13
RTJW25 -	RTJW25-6	25	6		RTJW32-14	32	14
	RTJW25-7	25	7		RTJW32-15	32	15
	RTJW25-8	25	8		RTJW32-16	32	16
	RTJW25-9	25	9		RTJW32-17	32	17
	RTJW25-10	25	10		RTJW32-18	32	18
	RTJW25-11	25	11		RTJW32-20	32	20
	RTJW25-12	25	12	RTJW40 -	RTJW40-18	40	18
	RTJW25-13	25	13		RTJW40-19	40	19
	RTJW25-14	25	14		RTJW40-20	40	20
	RTJW25-15	25	15		RTJW40-21	40	21
	RTJW25-16	25	16		RTJW40-22	40	22
					RTJW40-24	40	24

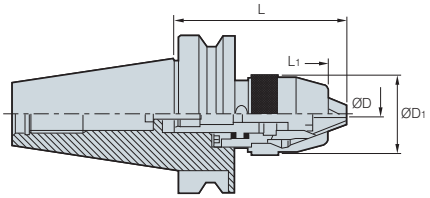
Clamping items: **H 25~H 27**

• Less than Ø5 cannot be used for production

M This is metric size. We can also provide in inch type

BT-NPU





(mm)

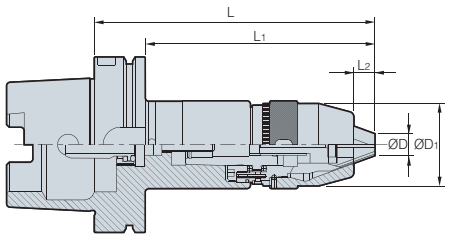
Designation		ØD	ØD1	L	L1	kg
BT30 -	NPU8-97	1~ 8	38	97	8.5	0.8
	NPU13-125	1~13	50	125	12.5	1.4
BT40 -	NPU8-87	1~8	38	87	8.5	1.2
	NPU13-105	1~13	50	105	12.5	1.6
	NPU13-130	1~13	50	130	12.5	1.9
BT50 -	NPU13-130	1~13	50	130	12.5	4.5
	NPU13-190	1~13	50	190	12.5	5.3

• Through coolant system not available

M This is metric size. We can also provide in inch type

HSK-NPU





(mm)

Designation		ØD	ØD1	L	L1	L2	kg
HSK63A -	NPU13-175	1~13	50	175	149	12.5	2.4
HSK100A -	NPU13-180	1~13	50	180	151	12.5	3.6

• Through coolant system not available

M This is metric size. We can also provide in inch type

Parts

Basic			For separate purchase
Division	Chuck	Bolt	Spanner
Parts / Designation			
NPU8	NPU08	BX0620	NPU0836
NPU13	NPU13	BX0825	NPU1348

High speed synchro tapping chuck

DST new

- Tapping chuck for high speed machining
- Specially designed structure for absorbing thrust load and preventing damage on the tap
- Through coolant system available
- Applicable range: M1~M22



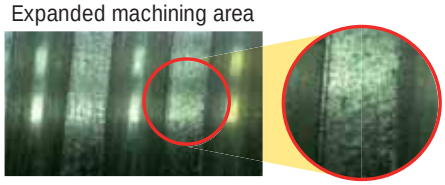
Code system

BT40 - DST 22 - 100

Spindle	Tapping holder	Max. Chucking dia.	Length

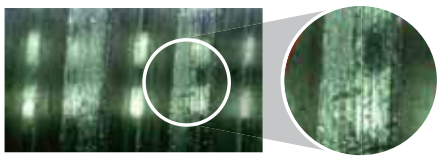
Excellent performance, precise machining

Expanded machining area



DST22
(vc = 100 m/min)

Excellent cutting face

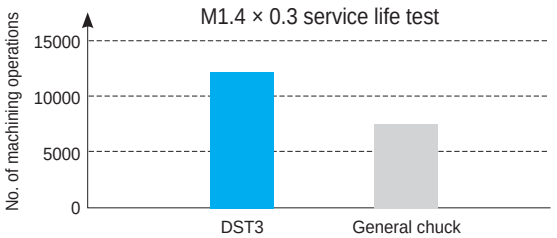


Conventional one



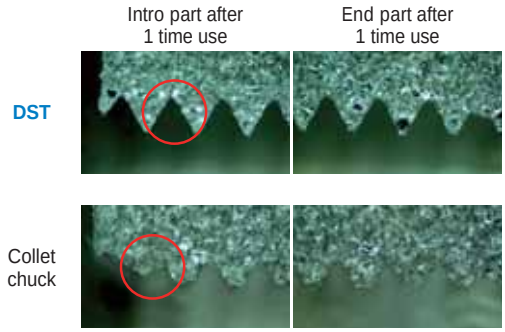
Exclusive collet for tapping

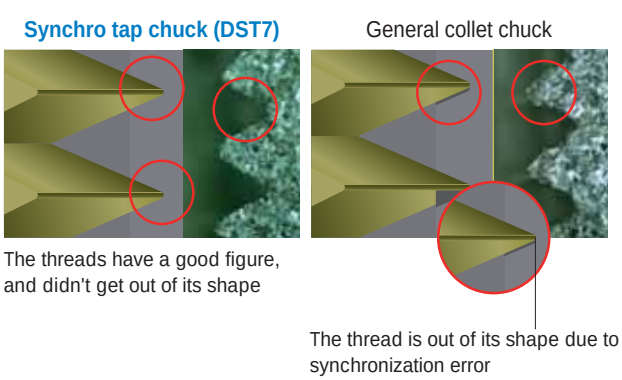
- At tapping work use of TER collet
- DST3: Use of ER11 collet



Increased tool service life versus collet chuck use

Comparison of thread figures



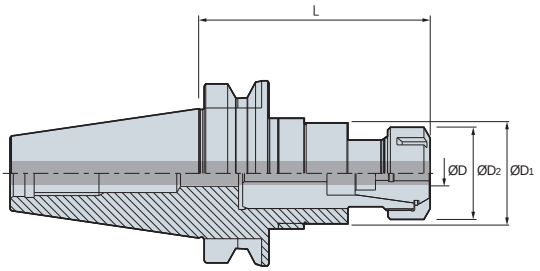


The threads have a good figure, and didn't get out of its shape

The thread is out of its shape due to synchronization error

BT-DST





(mm)

Designation		ØD	ØD1	ØD2	L	Collet	F-	F +	kg
BT30 -	DST3-70	M1~M3	20	19	70	ER11	0.5	0.5	0.5
	DST10-100	M3~M10	40.4	28	100	TER16	0.5	0.5	0.8
BT40 -	DST3-70	M1~M3	20	19	70	ER11	0.5	0.5	1.0
	DST10-100	M3~M10	40.4	28	100	TER16	0.5	0.5	1.3
	DST22-110	M6~M22	60	49.5	110	TER32	0.7	0.7	1.7
BT50 -	DST10-110	M3~M10	60	49.5	110	TER16	0.5	0.5	3.8
	DST22-130	M6~M22	60	49.5	130	TER32	0.7	0.7	4.5

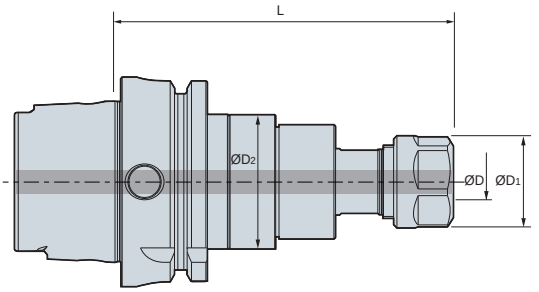
Applicable collet **H36, H43**

• Through coolant system is optional

M This is metric size. We can also provide in inch type

HSK-DST





(mm)

Designation		ØD	ØD1	ØD2	L	Collet	F-	F +	kg
HSK63A -	DST3-80	M1~M3	19	20	80	ER11	0.5	0.5	0.7
	DST10-100	M3~M10	28	40.4	100	TER16	0.5	0.5	0.9
	DST22 130	M6~M22	49.5	60	130	TER32	0.7	0.7	1.8

Applicable collet **H36, H43**

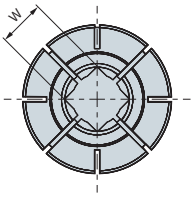
• Through coolant system is optional

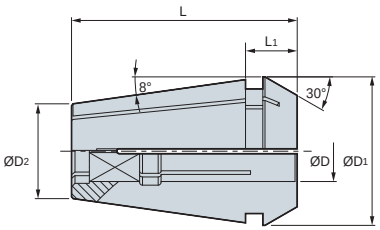
M This is metric size. We can also provide in inch type

TER

Tap Collet







(mm)

Designation		Tapping Range	ØD	ØD1	ØD2	L	L1	W	kg
TER16 -	4x3.2	M3	4	16.74	10.1	27.5	6.3	3.2	0.03
	5x4	M4	5	16.74	10.1	27.5	6.3	4	0.03
	5.5x4.5	M5	5.5	16.74	10.1	27.5	6.3	4.5	0.02
	6x4.5	M6,U1/4	6	16.74	10.1	27.5	6.3	4.5	0.02
	6.2x5	M7, M8	6.2	16.74	10.1	27.5	6.3	5	0.02
	7x5.5	M9, M10, U3/8	7	16.74	10.1	27.5	6.3	5.5	0.02
TER20 -	5x4	M4	5	20.74	13.2	31.5	7.2	4	0.05
	5.5x4.5	M5	5.5	20.74	13.2	31.5	7.2	4.5	0.05
	6x4.5	M6,U1/4	6	20.74	13.2	31.5	7.2	4.5	0.05
	6.2x5	M7, M8	6.2	20.74	13.2	31.5	7.2	5	0.04
	7x5.5	M9, M10, U3/8	7	20.74	13.2	31.5	7.2	5.5	0.05
	8x6	M11, U7/16, P1/8	8	20.74	-	-	-	6	0.04
	8.5x6.5	M12	8.5	20.74	13.2	31.5	7.2	6.5	0.04
TER25 -	5x4	M4	5	25.74	17.6	34	7.5	4	0.9
	5.5x4.5	M5	5.5	25.74	17.6	34	7.5	4.5	0.8
	6x4.5	M6	6	25.74	17.6	34	7.5	4.5	0.8
	6.2x5	M7, M8	6.2	25.74	17.6	34	7.5	5	0.1
	7x5.5	M9, M10, U3/8	7	25.74	17.6	34	7.5	5.5	0.8
	8.5x6.5	M12	8.5	25.74	17.6	34	7.5	6.5	0.8
TER32 -	6x4.5	M6,U1/4	6	32.74	23.1	40	8.2	4.5	0.2
	6.2x5	M7, M8	6.2	32.74	23.1	40	8.2	5	0.2
	7x5.5	M9, M10, U3/8	7	32.74	23.1	40	8.2	5.5	0.2
	8X6	M11, U7/16, P1/8	8	32.74	23.1	40	8.2	6	0.2
	8.5x6.5	M12	8.5	32.74	23.1	40	8.2	6.5	0.2
	10.5x8	M14, U9/16	10.5	32.74	23.1	40	8.2	8	0.2
	12.5x10	M16	12.5	32.74	23.1	40	8.2	10	0.2
	14x11	M18, P3/8	14	32.74	23.1	40	8.2	11	0.1
	15x12	M20	15	32.74	23.1	40	8.2	12	0.1
	17x13	M22, U7/8	17	32.74	23.1	40	8.2	13	0.1
	11x9	P1/4	11	32.74	23.1	40	8.2	9	0.2
	12x9	U5/8	12	32.74	23.1	40	8.2	9	0.2
	9x7	U1/2	9	32.74	23.1	40	8.2	7	0.2

• Water proof tapping is possible with the use of RTJW and nuts (limited to the right sizes)

M This is metric size. We can also provide in inch type

Tapping holder

DTN

- Compact design and slim type
- Improvement of tapping force
- Tapping range: M3~M38

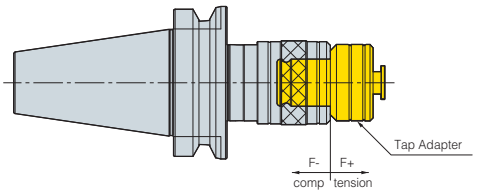


Code system

BT40	-	DTN	22	-	130
Spindle		Tapping holder	Max. chucking dia.		Length

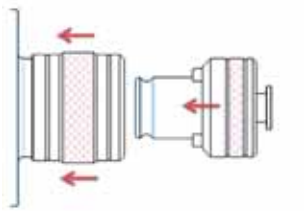
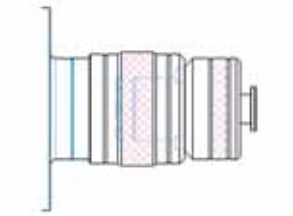
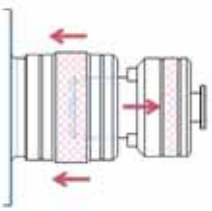
Easy exchange of TCA (Tap adaptor)

Convenient one-touch exchange type for high precision and longer tool life
Contraction of length is possible by axial floating way



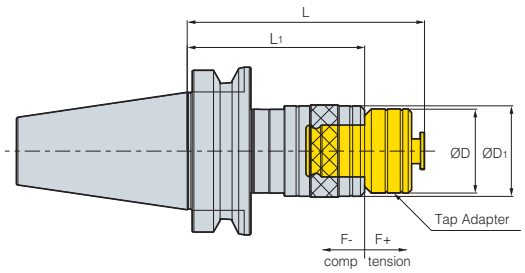


How to clamp TCA and a tap holder

Before installation	After installation	Disassembly
		
1. Insert TCA pushing the cover of tap holder 2. Clamp the TCA in the Key groove and firmly	1. The cover of tap holder is placed correctly	1. Seaparate the TCA pushing the cover of tap holder

BT-DTN





(mm)

	Designation	Tapping range	ØD	ØD1	L	L1	Adaptor	F-	F +	kg
BT30 -	DTN12-85	M3~M12	32	39	85	60	TCA1-M	4	10	0.5
BT40 -	DTN12-90	M3~M12	32	39	90	65	TCA1-M	4	10	1.2
	DTN12-120	M3~M12	32	39	120	95	TCA1-M	4	10	1.5
	DTN22-130	M8~M24	50	56	130	96	TCA2-M	12.5	12.5	1.7
	DTN22-160	M8~M24	50	56	160	126	TCA2-M	12.5	12.5	2.2
BT50 -	DTN12-100	M3~M12	32	39	100	75	TCA1-M	4	10	3.9
	DTN12-130	M3~M12	32	39	130	105	TCA1-M	4	10	3.9
	DTN22-140	M8~M24	50	56	140	106	TCA2-M	12.5	12.5	4.3
	DTN22-170	M8~M24	50	56	170	136	TCA2-M	12.5	12.5	4.7
	DTN38-185	M16~M38	72	81	185	140	TCA3-M	20	20	5.7
	DTN38-215	M16~M38	72	81	215	170	TCA3-M	20	20	6.7

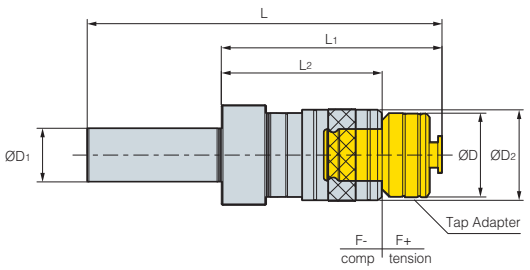
Tap Adapter (TCA) **H46**

• Through coolant system not available

M This is metric size. We can also provide in inch type

S-DTN





(mm)

	Designation	Tapping range	ØD	ØD1	ØD2	L	L1	L2	F-	F +	Adaptor	kg
S32 -	DTN12-90	M3-M12	32	32	39	170	90	65	4	10	TCA1	1.0
	DTN22-130	M8-M24	32	50	56	210	130	96	12.5	12.5	TCA2	1.8

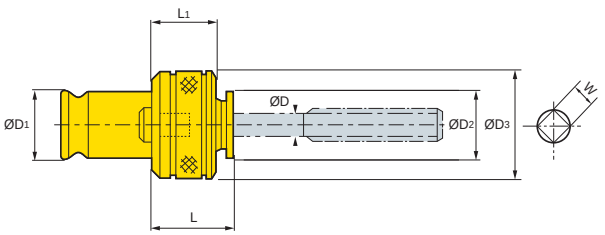
Tap Adapter (TCA) **H46**

• Through coolant system not available

M This is metric size. We can also provide in inch type

TCA Tap Adaptor





(mm)

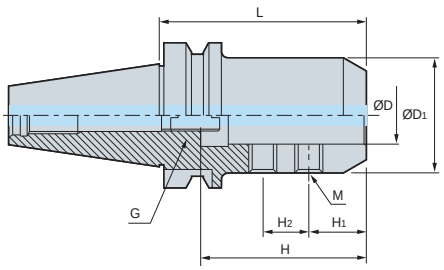
Designation		ØD	ØD1	ØD2	ØD3	L	L1	W	kg
TCA1 -	M3	4	19	18.5	32	26.5	24.5	3.2	0.2
	M4	5	19	18.5	32	26.5	24.5	4	0.2
	M5	5.5	19	18.5	32	26.5	24.5	4	0.2
	M6	6	19	18.5	32	26.5	24.5	4	0.2
	M8	6.2	19	18.5	32	26.5	24.5	5	0.2
	M10	7	19	18.5	32	26.5	24.5	5.5	0.2
	M11	8	19	18.5	32	26.5	24.5	6	0.2
	M12	8.5	19	18.5	32	26.5	24.5	6.5	0.2
TCA2 -	M8	6.2	31	29	50	34	30.5	5	0.5
	M10	7	31	29	50	34	30.5	5.5	0.5
	M12	8.5	31	29	50	34	30.5	6.5	0.5
	M14	10.5	31	29	50	34	30.5	8	0.5
	P(=1/4)	11	31	29	50	34	30.5	9	0.5
	M16	12.5	31	29	50	34	30.5	10	0.5
	M18	14	31	29	50	34	30.5	11	0.5
	M20	15	31	29	50	34	30.5	12	0.5
	M22	17	31	29	50	34	30.5	13	0.5
	P1/2	18	31	29	50	34	30.5	14	0.5
	M24	19	31	29	50	34	30.5	15	0.5
TCA3 -	M16	12.5	48	46	72	45	41	10	1.4
	M18	14	48	46	72	45	41	11	1.4
	M20	15	48	46	72	45	41	12	1.4
	M22	17	48	46	72	45	41	13	1.4
	M24	19	48	46	72	45	41	15	1.4
	M27	20	48	46	72	45	41	15	1.4
	M30	23	48	46	72	45	41	17	1.4
	M33	25	48	46	72	45	41	19	1.4
	M36	28	48	46	72	45	41	21	1.4

• Through coolant system not available

M This is metric size. We can also provide in inch type

BT-SLA





(mm)

Designation		ØD	ØD1	L	H	H1	H2	M	G	kg
BT30 -	SLA16-90	16	40	90	72	25	20	M10	M12	0.9
	SLA20-90	20	50	90	72	25	20	M12	M12	1.2
	SLA25-90	25	50	90	72	25	20	M12	M12	1.1
BT40 -	SLA16-90	16	40	90	72	25	20	M10	M12	1.4
	SLA20-90	20	50	90	72	25	20	M12	M12	1.8
	SLA25-90	25	50	90	72	25	20	M12	M12	1.6
	SLA32-90	32	60	90	82	25	25	M14	M12	1.8
	SLA32-105	32	60	105	82	25	25	M14	M12	2.0
	SLA40-105	40	80	105	82	25	25	M16	M12	2.9
BT50 -	SLA20-105	20	50	105	72	25	20	M12	M12	4.4
	SLA25-105	25	50	105	72	25	20	M12	M12	4.3
	SLA32-105	32	60	105	82	25	25	M14	M12	4.5
	SLA40-105	40	90	105	82	25	20	M16	M12	6.1
	SLA42-105	42	90	105	80	25	25	M16	M12	5.9

• H: Insertion depth of tool • Through coolant system installed

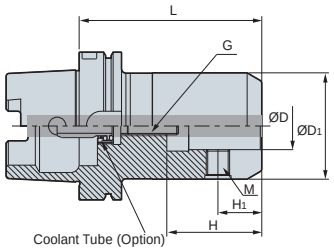
M This is metric size. We can also provide in inch type

Parts

Basic				For separate purchase	
Division	Set screw		Adjust screw	Wrench	
Part / Designation					
	BT type	HSK type		BT type	HSK type
SLA16	BTF1010	BTF1414-1.5	M1230C	LW-5	LW-6
SLA20	BTF1212-1.5	BTF1616-1.5		LW-6	LW-8
SLA25	BTF1212-1.5	BTF1818-1.5		LW-6	LW-8
SLA32	BTF1414-1.5	BTF2020-1.5		LW-6	LW-10
SLA40	BTF1624-1.5	BTF2020-1.5		LW-8	LW-10
SLA42	BTF1624-1.5	BTF2020-1.5		LW-8	LW-10

HSK-SLA





(mm)

Designation		ØD	ØD1	L	H	H1	M	G	kg
HSK63A -	SLA20-100	20	52	100	51	25	M8	M12	1.6
	SLA25-105	25	65	105	59	25	M8	M12	2.1
	SLA32-105	32	72	105	63	30	M5	M12	2.3
HSK100A -	SLA20-105	20	52	105	51	25	M16	M12	3.1
	SLA25-110	25	65	110	59	25	M18	M12	3.8
	SLA32-125	32	72	125	63	30	M20	M12	4.4

• H: Insertion depth of tool • Through coolant system is optional

M This is metric size. We can also provide in inch type

Parts

Basic				For separate purchase	
Division	Set screw		Adjust screw	Wrench	
Part / Designation					
	BT type	HSK type		BT type	HSK type
SLA20	BTF1212-1.5	BTF1616-1.5	M1230C	LW-6	LW-8
SLA25	BTF1212-1.5	BTF1818-1.5		LW-6	LW-8
SLA32	BTF1414-1.5	BTF2020-1.5		LW-6	LW-10

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

BT-FMA



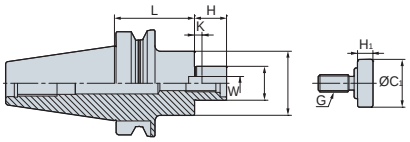


Fig. 1

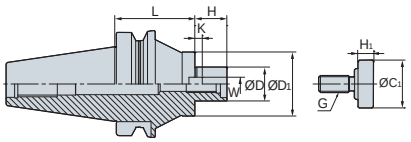


Fig. 2

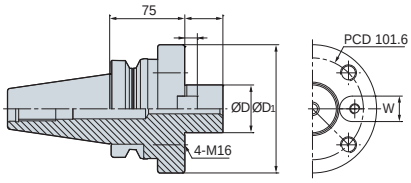


Fig. 3

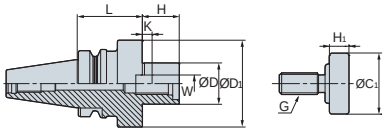


Fig. 4

(mm)

	Designation	Cutter dia.	ØD	ØD1	L	H	W	K	G	kg	Fig.
BT30 -	FMA25.4-45	80	25.4	50	45	22	9.5	5	M12	1.0	4
BT40 -	FMA25.4-45	80	25.4	50	45	22	9.5	5	M12	1.4	1
	FMA25.4-90	80	25.4	50	90	22	9.5	5	M12	2.2	1
	FMA31.75-45	100	31.75	60	45	30	12.7	7	M16	1.6	1
	FMA31.75-90	100	31.75	60	90	30	12.7	7	M16	2.5	1
	FMA38.1-60	125	38.1	80	60	34	15.87	9	M20	2.6	4
BT50 -	FMA25.4-45	80	25.4	50	45	22	9.5	5	M12	4.0	1
	FMA25.4-90	80	25.4	50	90	22	9.5	5	M12	4.7	1
	FMA25.4-150	80	25.4	50	150	22	9.5	5	M12	6.4	2
	FMA31.75-45	100	31.75	60	45	30	12.7	7	M16	4.1	1
	FMA31.75-75	100	31.75	60	75	30	12.7	7	M16	4.8	1
	FMA31.75-105	100	31.75	60	105	30	12.7	7	M16	5.6	2
	FMA38.1-45	125	38.1	80	45	34	15.87	9	M20	4.4	1
	FMA38.1-75	125	38.1	80	75	34	15.87	9	M20	5.6	1
	FMA50.8-45	160	50.8	100	45	36	19.05	10	M24	4.9	1
	FMA50.8-75	160	50.8	100	75	36	19.05	10	M24	6.8	1
	FMA47.625-75	200	47.625	128	75	38	25.4	12.5	-	8.3	3

• H: Insertion depth of tool • Through coolant system is optional • The weight above exclude the face cutter

M This is metric size. We can also provide in inch type

Parts

	Basic				For separate purchase
Division	Key	Key bolt	Mount bolt	Clamp bolt	Wrench
Part / Designation					
FMA25.4	K9.5	BX0412	MBA-M12	BX1230	LW-10
FMA31.75	K12.7	BX0515	MBA-M16	-	LW-14
FMA38.1	K15.87	BX0616	MBA-M20	-	LW-17
FMA50.8	K19.05	BX0820	MBA-M24	-	-
FMA47.625	K25.4	BX1020	-	BX1645	-

BT-FMC



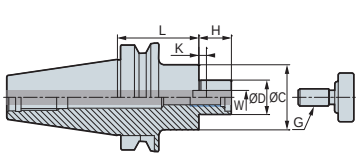


Fig. 1

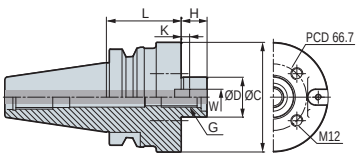


Fig. 2

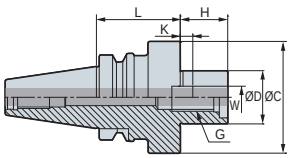


Fig. 3

(mm)

	Designation	Cutter dia.	ØD	ØD1	L	H	W	K	G	kg	Fig.
BT30 -	FMC16-45	40	16	38	45	17	8	5.0	M8	0.7	1
	FMC22-45	50/63	22	48	45	19	10	5.6	M10	0.8	2
	FMC27-50	80	27	60	50	21	12	6.3	M12	1.2	2
BT40 -	FMC16-60	40	16	38	60	17	8	5.0	M8	1.2	1
	FMC22-45	50/63	22	48	45	19	10	5.6	M10	1.2	1
	FMC22-90	50/63	22	48	90	19	10	5.6	M10	1.2	1
	FMC27-60	80	27	60	60	21	12	6.3	M12	1.8	1
	FMC27-90	80	27	60	90	21	12	6.3	M12	3.2	1
	FMC32-60	100	32	78	60	24	14	7.0	M16	2.3	2
	FMC40-50	125/160	40	89	50	27	15.87	8.0	M20	3.3	3
BT50 -	FMC16-60	40	16	38	60	17	8	5.0	M8	3.9	1
	FMC22-60	50/63	22	48	60	19	10	5.6	M10	4.1	1
	FMC27-40	80	27	60	40	21	12	6.3	M12	4.1	1
	FMC27-90	80	27	60	90	21	12	6.3	M12	5.5	1
	FMC27-150	80	27	60	150	21	12	6.3	M12	6.1	1
	FMC32-45	100	32	78	45	24	14	7.0	M16	4.2	1
	FMC32-75	100	32	78	75	24	14	7.0	M16	4.2	1
	FMC32-105	100	32	78	105	24	14	7.0	M16	4.2	1
	FMC40-50	125/160	40	89	50	27	15.87	8.0	M20	4.6	2

• H: Insertion depth of tool • Through coolant system is optional • The weight above exclude the face cutter

M This is metric size. We can also provide in inch type

Parts

	Basic				For separate purchase
Division	Key	Mount bolt	Key bolt	Clamp bolt	Wrench
Part / Designation					
FMC16	K8.0	-	BX0310	BX0830	LW-6
FMC22	K10.0	-	BX0412	BX1030	LW-8
FMC27	K12.0	MBA-M12	BX0616	BX1230	LW-10
FMC32	K14.0	MBA-M16	BX0616	-	LW-14
FMC40	K15.87	MBA-M20	BX0616	BX1030	LW-17

HSK-FMC



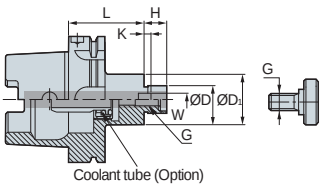


Fig. 1

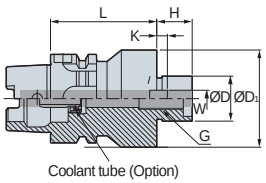


Fig. 2

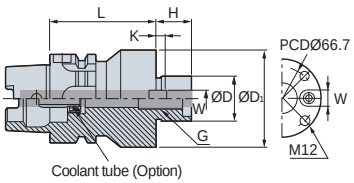


Fig. 3

(mm)

Designation		Cutter dia.	ØD	ØD1	L	H	W	K	G	kg	Fig.
HSK50A -	FMC16-40	40	16	38	40	17	8	5	M8	0.4	1
	FMC22-50	50/63	22	48	50	19	10	5.6	M10	0.8	1
HSK63A -	FMC16-50	40	16	38	50	17	8	5.0	M8	0.9	1
	FMC22-50	50/63	22	48	50	19	10	5.6	M10	1.1	1
	FMC27-60	80	27	60	60	21	12	6.3	M12	1.4	1
	FMC32-60	100	32	78	60	24	14	7.0	M16	1.7	2
	FMC40-60	125/160	40	89	60	27	15.87	8.0	M20	2.5	3

• H: Insertion depth of tool • Through coolant system is optional • The weight above exclude the face cutter

M This is metric size. We can also provide in inch type

Parts

Basic					For separate purchase
Division	Key	Mount bolt	Key bolt	Clamp bolt	Wrench
Part / Designation					
FMC16	K8.0	-	BX0310	BX0830	LW-6
FMC22	K10.0	-	BX0412	BX1030	LW-8
FMC27	K12.0	MBA-M12	BX0516	BX1230	LW-10
FMC32	K14.0	MBA-M16	BX0616	-	LW-14
FMC40	K15.87	MBA-M20	BX0616	BX1230	LW-17

BT-MD

Modular Arbor



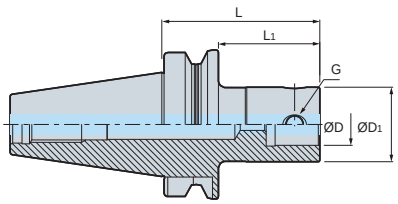


Fig. 1

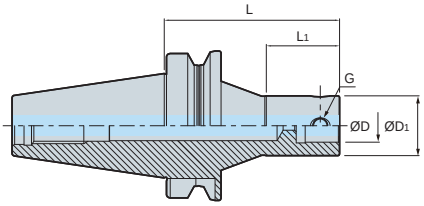


Fig. 2

(mm)

Designation		ØD	ØD1	L	L1	G	kg	Fig.
BT30 -	MD19F-70	11	19	70	45	M5	0.5	1
	MD25F-90	14	25	90	63	M6	0.6	1
	MD32F-80	18	32	80	55	M8	0.7	1
	MD40F-45	22	40	45	22	M10	0.5	1
	MD40F-60	22	40	60	36	M10	0.7	1
	MD40F-80	22	40	80	56	M10	0.9	1
	MD50F-70	28	50	70	48	M12	0.9	1
BT40 -	MD19F-70	11	19	70	40	M5	1.0	1
	MD25F-95	14	25	95	63	M6	1.1	1
	MD25F-105R	14	25	105	40	M6	1.2	2
	MD32F-100	18	32	100	70	M8	1.2	1
	MD32F-115R	18	32	115	45	M8	1.5	2
	MD40F-60	22	40	60	31	M10	1.1	1
	MD40F-110R	22	40	110	60	M10	1.6	2
	MD40F-115	22	40	115	83	M10	1.6	1
	MD50F-105	28	50	105	73	M12	1.8	1
	MD63F-64	36	63	64	37	M16	1.5	1
	MD63F-110	36	63	110	83	M16	2.4	1
	MD63F-135	36	63	135	108	M16	3.0	1
	MD80F-100	45	80	100	73	M16	2.9	1
BT50 -	MD19F-85	11	19	85	44	M5	3.7	1
	MD25F-105	14	25	105	62	M6	3.8	1
	MD25F-120R	14	25	120	40	M6	3.8	2
	MD32F-110	18	32	110	67	M8	4.0	1
	MD32F-115R	18	32	115	45	M8	4.1	2
	MD32F-235R	18	32	235	115	M8	5.5	2
	MD40F-60	22	40	60	22	M10	3.7	1
	MD40F-195	22	40	195	152	M10	4.8	1
	MD40F-230R	22	40	230	180	M10	5.0	2
	MD50F-125	28	50	125	82	M12	4.6	1
	MD50F-225	28	50	225	182	M12	6.0	1
	MD50F-250R	28	50	250	81	M12	7.0	2
	MD63F-75	36	63	75	35	M16	4.2	1
	MD63F-130	36	63	130	87	M16	5.3	1
	MD63F-195	36	63	195	152	M16	6.8	1
	MD63F-230	36	63	230	187	M16	7.5	1
	MD80F-75	45	80	75	36	M16	4.3	1
	MD80F-110	45	80	110	69	M16	5.7	1
	MD80F-175	45	80	175	134	M16	8.0	1
	MD90F-75	45	90	75	34	M16	4.8	1
	MD90F-145	45	90	145	104	M16	7.4	1
	MD90F-195	45	90	195	154	M16	9.4	1

Spare Part **H53**

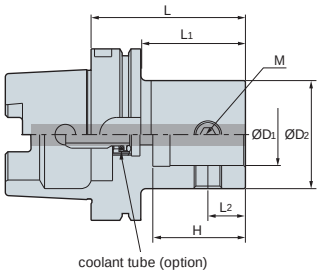
• Through coolant system installed

M This is metric size. We can also provide in inch type

HSK-MD

Modular Arbor





(mm)

Designation		ØD1	ØD2	L	L1	H	M	kg
HSK 63A -	MD19F-60	11	19	60	31	15.5	M5	0.7
	MD25F-60	14	25	60	31	18.5	M6	0.7
	MD32F-65	18	32	65	36	23.5	M8	0.8
	MD40F-70	22	40	70	41	29	M10	0.9
	MD50F-85	28	50	85	58	36	M12	1.3
	MD63F-95	36	63	95	69	46	M16	1.7

• Through coolant system is optional

M This is metric size. We can also provide in inch type

Parts

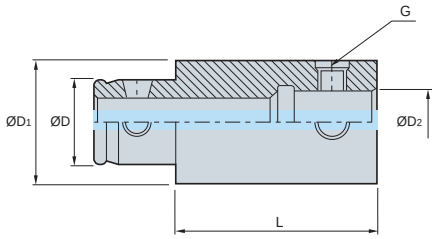
Basic		For separate purchase
Division	Taper screw	Wrench
Part / Designation		
MD19F	BTT0506F	LW-2.5
MD25F	BTT0608F	LW-3
MD32F	BTT0810F	LW-4
MD40F	BTT1013F	LW-5
MD50F	BTT1215F	LW-6
MD63F	BTT1620F	LW-8
MD80F	BTT1626F	LW-8
MD90F	BTT1631F	LW-8

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

EXT Extension Bar





(mm)

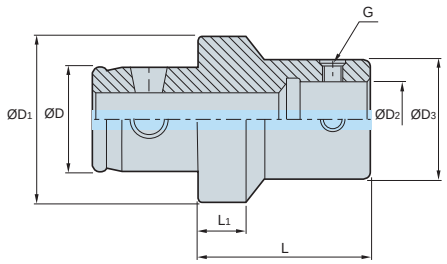
Designation		ØD	ØD1	ØD2	L	G	kg
EXT	1930F	11	19	11	30	M5	0.1
	1950F	11	19	11	50	M5	0.1
	2530F	14	25	14	30	M6	0.1
	2550F	14	25	14	50	M6	0.2
	3235F	18	32	18	35	M8	0.2
	3260F	18	32	18	60	M8	0.4
	4040F	22	40	22	40	M10	0.4
	4090F	22	40	22	90	M10	0.9
	5050F	28	50	28	50	M12	0.7
	50100F	28	50	28	100	M12	1.4
	6360F	36	63	36	60	M16	1.4
	63120F	36	63	36	120	M16	2.9
	8070F	45	80	45	70	M16	2.5
	80120F	45	80	45	120	M16	4.5
	9080F	45	90	45	80	M16	3.8
	90130F	45	90	45	130	M16	6.4

• Through coolant system installed

M This is metric size. We can also provide in inch type

RDC Reducer Bar





(mm)

Designation		ØD	ØD1	ØD2	ØD3	L	L1	G	kg
RDC	3225F	18	32	14	25	30	9	M6	0.1
	4025F	22	40	14	25	30	9	M6	0.3
	4032F	22	40	18	32	30	9	M8	0.2
	5025F	28	50	14	25	30	9	M6	0.3
	5032F	28	50	18	32	40	9	M8	0.3
	5040F	28	50	22	40	40	10	M10	0.5
	6325F	36	63	14	25	30	9	M6	0.6
	6332F	36	63	18	32	40	9	M8	0.6
	6340F	36	63	22	40	40	10	M10	0.7
	6350F	36	63	28	50	45	10	M12	0.9
	8040F	45	80	22	40	40	10	M10	1.2
	8050F	45	80	28	50	45	10	M12	1.3
	8063F	45	80	36	63	50	13	M16	1.6

• Through coolant system installed

M This is metric size. We can also provide in inch type

FBH back boring & balanced type

FBH/B

- High speed boring and back boring capability
- High precision balancing: G2.5, Head: G6.3
- Min. adjustment range: 2 ㎛



Code system

FBH 32 - 33 B

- FBH: Fine boring head
- 32: MD
- 33: Min. Boring dia.
- B: Balance type

Back boring range calculation



- A: Boring range (Ø)
- B: FBH/B body size (Ø)
- C: Diameter for pass (Ø)

Designation	Min. diameter for pass (Ø)
FBH1920B	≥Ø24
FBH2526B	≥Ø30.5
FBH3233B	≥Ø35
FBH4042B	≥Ø44
FBH5053B	≥Ø54
FBH6368B	≥Ø71.5
FBH6398B	≥Ø100
FBH8098B	≥Ø100

A	Max. range of back boring (Ø)	A Max. value = (2 x C) - B
B	B Max. FBH body size (Ø)	B Max. value = (2 x C) - A
C	C Min. diameter for pass (Ø)	C Min. value = (A + B) / 2

Boring range adjustment method

Fine adjustment: 2 ㎛ Boring range

Can be adjusted at a rate of 2 ㎛ by using the main scale and vernier scale

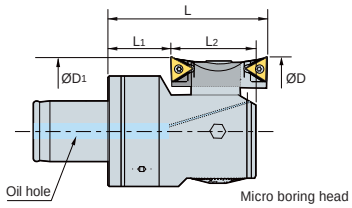


Initial position | 0.002 Adjusted location | 0.004 Adjusted location



0.006 Adjusted location | 0.008 Adjusted location | 0.010 Adjusted location

Boring range



1DIV = Ø 0.01mm

(mm)

Designation	Boring range ØD			Backboring Range ØD			
	Min	Max	L	Min	Max	L_1	L_2
FBH1920B	20	26 (30)	35.3	29	30	13.1	18.6
FBH2526B	26	34 (40)	40.9	36	40	15.1	21.9
FBH3233B	33	43 (50)	40.9	38	46 (50)	13.1	24.9
FBH4042B	42	54 (62)	50.4	48	54 (62)	15.2	31.4
FBH5053B	53	70 (82)	58.4	58	70 (82)	15.7	38.4
FBH6368B	68	100 (122)	80.6	78	100 (122)	27.4	48.6
FBH6398B	98	150 (172)	100.6	106	150 (172)	47.4	48.6
FBH8098B	98	150 (172)	100.6	106	150 (172)	47.4	48.6

M This is metric size. We can also provide in inch type

BT-FBH/B

Micro Boring Balance type



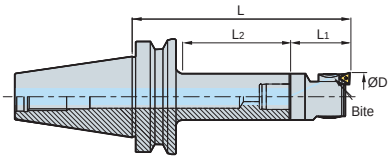
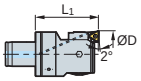


Fig. 1



Head

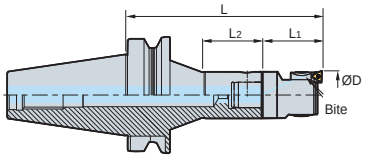


Fig. 2

(mm)

Designation			Boring range ØD		ØD	ØD1	L	L1	L2	kg	Fig.
Head	Bite	Arbor	Min	Max							
FBH1920B	**FBB20N-□-□□**	**BT30-MD19F-70**	20 (24)	26 (30)	19	11	105.2	35.2	45	0.2	1
FBH2526B	**FBB26N-□-□□**	**BT30-MD25F-90**	26 (32)	34 (40)	25	14	131	41	63	0.2	1
FBH3233B	**FBB33N-□-□□**	**BT30-MD32F-80**	33 (40)	43 (50)	32	18	121	41	55	0.3	1
FBH4042B	**FBB42N-□-□□**	**BT30-MD40F-45**	42 (50)	54 (62)	40	22	95.5	50.5	22	0.5	1
FBH4042B	**FBB42N-□-□□**	**BT30-MD40F-60**	42 (50)	54 (62)	40	22	110.5	50.5	36	0.5	1
FBH4042B	**FBB42N-□-□□**	**BT30-MD40F-80**	42 (50)	54 (62)	40	22	130.5	50.5	56	0.5	1
FBH5053B	**FBB53N-□-□□**	**BT30-MD50F-70**	53 (65)	70 (82)	50	28	128.4	58.5	48	0.8	1
FBH1920B	**FBB20N-□-□□**	**BT40-MD19F-70**	20 (24)	26 (30)	19	11	105.4	35.2	40	0.2	1
FBH2526B	**FBB26N-□-□□**	**BT40-MD25F-95**	26 (32)	34 (40)	25	14	135.9	41	63	0.2	1
FBH2526B	**FBB26N-□-□□**	**BT40-MD25F-105R**	26 (32)	34 (40)	25	14	146	41	40	0.2	2
FBH3233B	**FBB33N-□-□□**	**BT40-MD32F-100**	33 (40)	43 (50)	32	18	140.9	41	70	0.3	1
FBH3233B	**FBB33N-□-□□**	**BT40-MD32F-115R**	33 (40)	43 (50)	32	18	156	41	45	0.3	2
FBH4042B	**FBB42N-□-□□**	**BT40-MD40F-60**	42 (50)	54 (62)	40	22	165.5	50.5	31	0.5	1
FBH4042B	**FBB42N-□-□□**	**BT40-MD40F-110R**	42 (50)	54 (62)	40	22	160.5	50.5	60	0.5	2
FBH4042B	**FBB42N-□-□□**	**BT40-MD40F-15**	42 (50)	54 (62)	40	22	165.5	50.5	83	0.5	1
FBH5053B	**FBB53N-□-□□**	**BT40-MD50F-105**	53 (65)	70 (82)	50	28	163.4	58.5	73	0.8	1
FBH5053B	**FBB53N-□-□□**	**BT40-MD63F-64**	53 (65)	70 (82)	50	28	122.5	58.5	37	0.8	1
FBH6368B	**FBB68N-□-□□**	**BT40-MD63F-110**	68 (90)	100 (122)	63	36	190.6	80.6	83	2.1	1
FBH6398B	**FBB68N-□-□□**	**BT40-MD63F-135**	98 (120)	150 (172)	63	36	235.6	100.6	108	3.6	1
FBH8098B	**FBB68N-□-□□**	**BT40-MD80F-100**	98 (120)	150 (172)	80	45	200.6	100.6	73	4.8	1

Spare Part **H59** FBB Bite **H61**

• Head: Basic, Bite/Arbor: For separate purchase • Through coolant system installed

M This is metric size. We can also provide in inch type

* FBB bites are divided into two sorts Normal type: FBB□□N, Scalable type: FBB□□N-1
There are also the other options for your insert type: FBB□□N-□-C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

BT-FBH/B

Micro Boring Balance type



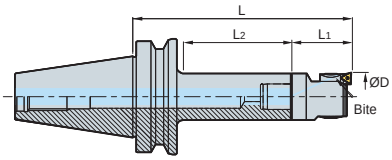
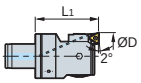


Fig. 1



Head

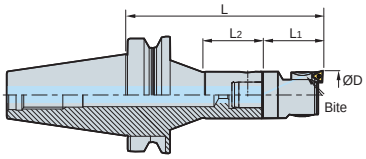


Fig. 2

(mm)

Designation			Boring range ØD		ØD	ØD1	L	L1	L2	kg	Fig.
Head	Bite	Arbor	Min	Max							
FBH1920B	FBB20N-□-□□	BT50-MD19F-85	20 (24)	26 (30)	19	11	120.2	35.2	44	0.2	1
FBH2526B	FBB26N-□-□□	BT50-MD25F-105	26 (32)	34 (40)	25	14	146	41	62	0.2	1
FBH2526B	FBB26N-□-□□	BT50-MD25F-120R	26 (32)	34 (40)	25	14	161	41	40	0.2	2
FBH3233B	FBB33N-□-□□	BT50-MD32F-110	33 (40)	43 (50)	32	18	151	41	67	0.3	1
FBH3233B	FBB33N-□-□□	BT50-MD32F-115R	33 (40)	43 (50)	32	18	156	41	45	0.3	2
FBH3233B	FBB33N-□-□□	BT50-MD32F-235R	33 (40)	43 (50)	32	18	276	41	115	0.3	2
FBH4042B	FBB42N-□-□□	BT50-MD40F-60	42 (50)	54 (62)	32	18	110.5	50.5	22	0.5	1
FBH4042B	FBB42N-□-□□	BT50-MD40F-195	42 (50)	54 (62)	40	22	245.5	50.5	152	0.5	1
FBH4042B	FBB42N-□-□□	BT50-MD40F-230R	42 (50)	54 (62)	40	22	280.5	50.5	180	0.5	2
FBH5053B	FBB53N-□-□□	BT50-MD50F-125	53 (65)	70 (82)	40	22	183.5	58.5	82	0.8	1
FBH5053B	FBB53N-□-□□	BT50-MD50F-225	53 (65)	70 (82)	50	28	283.5	58.5	182	0.8	1
FBH5053B	FBB53N-□-□□	BT50-MD50F-205R	53 (65)	70 (82)	50	28	263.5	58.5	81	0.8	2
FBH6368B	FBB68N-□-□□	BT50-MD63F-75	68 (90)	100 (122)	63	36	145.6	80.6	35	2.1	1
FBH6368B	FBB68N-□-□□	BT50-MD63F-130	68 (90)	100 (122)	63	36	210.6	80.6	87	2.1	1
FBH6368B	FBB68N-□-□□	BT50-MD63F-195	68 (90)	100 (122)	63	36	275.6	80.6	152	2.1	1
FBH6368B	FBB68N-□-□□	BT50-MD63F-230	68 (90)	100 (122)	63	36	310.6	80.6	187	2.1	1
FBH6398B	FBB68N-□-□□	BT50-MD63F-75	98 (120)	150 (172)	63	36	175.6	100.6	35	3.6	1
FBH6398B	FBB68N-□-□□	BT50-MD63F-130	98 (120)	150 (172)	63	36	230.6	100.6	87	3.6	1
FBH6398B	FBB68N-□-□□	BT50-MD63F-95	98 (120)	150 (172)	63	36	295.6	100.6	152	3.6	1
FBH6398B	FBB68N-□-□□	BT50-MD63F-230	98 (120)	150 (172)	63	36	330.6	100.6	187	3.6	1
FBH8098B	FBB68N-□-□□	BT50-MD80F-75	98 (120)	150 (172)	80	45	175.6	100.6	36	4.8	1
FBH8098B	FBB68N-□-□□	BT50-MD80F-110	98 (120)	150 (172)	80	45	215.6	100.6	69	4.8	1
FBH8098B	FBB68N-□-□□	BT50-MD80F-175	98 (120)	150 (172)	80	45	275.6	100.6	134	4.8	1

Spare Part **H59** FBB Bite **H61**

• Head: Basic, Bite/Arbor: For separate purchase • Through coolant system installed

M This is metric size. We can also provide in inch type

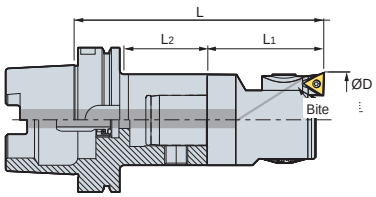
* FBB bites are divided into two sorts Normal type: FBB□□N, Scalable type: FBB□□N-1
There are also the other options for your insert type: FBB□□N-□-C09 or T11

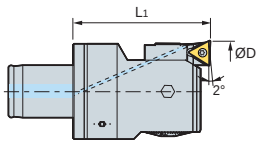
Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

HSK-FBH/B

Micro Boring Balance type







(mm)

Designation			Boring range ØD		ØD	ØD1	L	L1	L2	kg
Head	Bite	Arbor	Min	Max						
FBH1920B	**FBB20N-□-□□**	**HSK63A-MD19F 60**	20 (24)	26 (30)	19	11	95.2	35.2	31	0.2
FBH2526B	**FBB26N-□-□□**	**HSK63A-MD25F 60**	26 (32)	34 (40)	25	14	101	41	31	0.2
FBH3233B	**FBB33N-□-□□**	**HSK63A-MD32F 65**	33 (40)	43 (50)	32	18	106	41	36	0.3
FBH4042B	**FBB42N-□-□□**	**HSK63A-MD40F 70**	42 (50)	54 (62)	40	22	120.5	50.5	41	0.5
FBH5053B	**FBB53N-□-□□**	**HSK63A-MD50F 85**	53 (65)	70 (82)	50	28	143.5	58.5	58	0.9
FBH6368B	**FBB68N-□-□□**	**HSK63A-MD63F 95**	68 (90)	100 (122)	63	36	175.6	80.6	69	2.3
FBH6398B	**FBB68N-□-□□**	**HSK63A-MD63F 95**	98 (120)	150 (172)	63	36	195.6	100.6	69	3.8

Spare Part **H59** FBB Bite **H61**

• Head: Basic, Bite/Arbor: For separate purchase • Through coolant system is optional

M This is metric size. We can also provide in inch type

* FBB bites are divided into two sorts Normal type: FBB□□N, Scalable type: FBB□□N-1
There are also the other options for your insert type: FBB□□N-□-C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

Parts

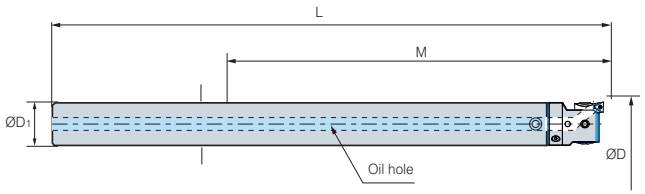
Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

S-FBH/B

Micro Boring Balance type





(mm)

Designation	Boring range ØD		ØD1	L	M	Main component			kg
	Min	Max				Basic shank	Boring head	Bite	
S19W-FBH20B-120	20	26	19	192.35	120	S19W-MD19F-157	FBH1920B	FBB20N	0.6
S19W-FBH20B-140	20	26	19	212.35	140	S19W-MD19F-177	FBH1920B	FBB20N	0.7
S19W-FBH20B-160	20	26	19	232.35	160	S19W-MD19F-197	FBH1920B	FBB20N	0.8
S25W-FBH26B-150	26	34	25	238.35	150	S25W-MD25F-197.5	FBH2526B	FBB26N	1.4
S25W-FBH26B-175	26	34	25	263.35	175	S25W-MD25F-222.5	FBH2526B	FBB26N	1.6
S25W-FBH26B-200	26	34	25	288.35	200	S25W-MD25F-247.5	FBH2526B	FBB26N	1.8
S32W-FBH33B-180	33	43	32	279.9	180	S32W-MD32F-239	FBH3233B	FBB33N	2.7
S32W-FBH33B-240	33	43	32	339.9	240	S32W-MD32F-299	FBH3233B	FBB33N	3.4
S19-FBH20B-40	20	26	19	112.35	40	S19-MD19F-77	FBH1920B	FBB20N	0.2
S19-FBH20B-80	20	26	19	152.35	80	S19-MD19F-117	FBH1920B	FBB20N	0.2
S25-FBH26B-50	26	34	25	138.35	50	S25-MD25F-97.5	FBH2526B	FBB26N	0.4
S25-FBH26B-100	26	34	25	188.35	100	S25-MD25F-147.5	FBH2526B	FBB26N	0.6
S32-FBH33B-90	33	43	32	189.9	90	S32-MD32F-149	FBH3233B	FBB33N	1.1
S32-FBH33B-120	33	43	32	219.9	120	S32-MD32F-179	FBH3233B	FBB33N	1.2

Spare Part **H59** FBB Bite **H61**

• S□□W: Cemented carbide shank, S□□: steel shank • Through coolant system installed

M This is metric size. We can also provide in inch type

* FBB bites are divided into two sorts Normal type: FBB□□N, Scalable type: FBB□□N-1
There are also the other options for your insert type: FBB□□N-□-C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

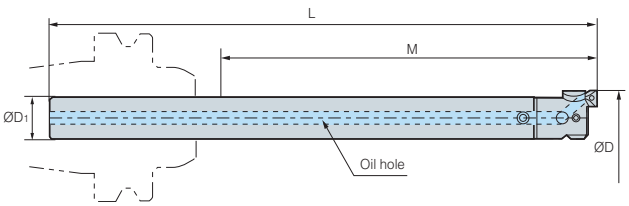
Parts

Basic			
Type(FBH/B)	Lock screw	Clamp screw	Wrench
			
FBH1920B	BTF0404	BXC0304	LW-2
FBH2526B	BTF0505	BXC0405	LW-2.5
FBH3233B	BTF0606	BXC0506	LW-3
FBH4042B	BTF0808	BXC0610	LW-4
FBH5053B	BTF0812	BXC0610	LW-4
FBH6368B	BTF1016	BXC0810	LW-5
FBH6398B	BTF1012	BXC0810	LW-5
FBH8098B	BTF1014	BXC0810	LW-5

S-FBH

Small Micro Boring





(mm)

Designation	Boring range ØD		ØD1	L	M	Designation			kg
	Min	Max				Basic shank	Boring head	Bite	
S14W-FBH15-85	15	18	14	155	85	S14W-M6-123	FBH15	FBB15-C	0.3
S14W-FBH15-110	15	18	14	180	110	S14W-M6-148	FBH15	FBB15-C	0.3
S16W-FBH18-95	18	22	16	165	95	S16W-M8-128	FBH18	FBB15-C	0.4
S16W-FBH18-125	18	22	16	195	125	S16W-M8-158	FBH18	FBB15-C	0.5
S14-FBH15-40	15	18	14	110	40	S14-M6-78	FBH15	FBB15-C	0.1
S16-FBH18-45	18	22	16	115	45	S16-M8-78	FBH18	FBB15-C	0.1

Spare Part **H59, H60** FBB Bite **H61**

• S□□W: Cemented carbide shank, S□□: steel shank • Through coolant system installed

M This is metric size. We can also provide in inch type

* FBB bites are divided into two sorts Normal type: FBB□□N, Scalable type: FBB□□N-1
There are also the other options for your insert type: FBB□□N-□-C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

Parts

Basic			
Type(FBH)	Lock screw	FBB	Clamp screw
			
FBH15	BT02503	FBB15-C	BFTX02505N
FBH18	BT02503	FBB15-C	BFTX02505N

FBB Bite

Designation	Boring range	Insert	Insert screw	Clamp bolt
FBB15-C	Ø15~Ø18 mm	CCET0301-□□L	BFTX01604N	BFTX02505N
	Ø18~Ø22 mm	CCET0301-□□L	BFTX01604N	BFTX02505N
FBB20N	Ø20~Ø26 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0304
FBB20N-C	Ø20~Ø26 mm	CCET0401□□L	FTNA0238	BXC0304
FBB20N-1	Ø24~Ø30 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0304
FBB20N-1-C	Ø24~Ø30 mm	CCET0401□□L	FTNA0238	BXC0304
FBB26N	Ø26~Ø34 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0405
FBB26N-C	Ø26~Ø34 mm	CCET0401□□L	FTNA0238	BXC0405
FBB26N-1	Ø32~Ø40 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0405
FBB26N-1-C	Ø32~Ø40 mm	CCET0401□□L	FTNA0238	BXC0405
FBB33N	Ø33~Ø43 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0506
FBB33N-C	Ø33~Ø43 mm	CCMT0602□□,CCGT0602□□	BFTX02506N	BXC0506
FBB33N-1	Ø41~Ø50 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0506
FBB33N-1-C	Ø41~Ø50 mm	CCMT0602□□,CCGT0602□□L	BFTX02506N	BXC0506
FBB42N	Ø42~Ø54 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0610
FBB42N-C	Ø42~Ø54 mm	CCMT0602□□CCGT0602□□L	BFTX02506N	BXC0610
FBB42N-11	Ø42~Ø54 mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB42N-1	Ø50~Ø62 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0610
FBB42N-1-C	Ø50~Ø62 mm	CCMT0602□□,CCGT0602□□L	BFTX02506N	BXC0610
FBB42N-1-T11	Ø50~Ø62 mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB53N	Ø53~Ø70 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0610
FBB53N-C	Ø53~Ø70 mm	CCMT0602□□,CCGT0602□□	BFTX02506N	BXC0610
FBB53N-11	Ø53~Ø70 mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB53N-1	Ø65~Ø82 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0610
FBB53N-1-C	Ø65~Ø82 mm	CCMT0602□□CCGT0602□□L	BFTX02506N	BXC0610
FBB53N-1-C09	Ø65~Ø82 mm	CCMT09T3□□,CCGT09T3□□L	BFTX0409N	BXC0610
FBB53N-1-T11	Ø65~Ø82 mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB68N	Ø68~Ø100 mm/Ø98~Ø150 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0810
FBB68N-C	Ø68~Ø100 mm/Ø98~Ø150 mm	CCMT09T3□□,CCGT09T3□□L	BFTX0409N	BXC0810
FBB68N-11	Ø68~Ø100 mm/Ø98~Ø150 mm	TPGT1103□□L	BFTX0307A	BXC0810
FBB68N-1	Ø90~Ø122 mm/Ø120~Ø172 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0810
FBB68N-1-C09	Ø90~Ø122 mm/Ø120~Ø172 mm	CCMT09T3□□,CCGT09T3□□L	BFTX0409N	BXC0810
FBB68N-1-T11	Ø90~Ø122 mm/Ø120~Ø172 mm	TPGT1103□□L	BFTX0307A	BXC0810

M This is metric size. We can also provide in inch type

New balance cut tool

DBCA new



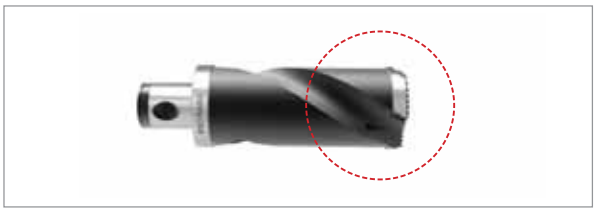
- Applied adjustment function simultaneously in Bi/Uni-direction of cartridge
- Improves the rigidity of cutting by applying cover for rotating type
- Increased machining area versus conventional own products
- Improved capacity to evacuate chips by unique design of helical type Head
- Boring range: Ø28~Ø136

Code system

DBCA	32	33	S	32
New balance cut tool	MD Arbor Size	Min. boring dia.	Straight type	H: Helical type, Non: Straight type

Main features

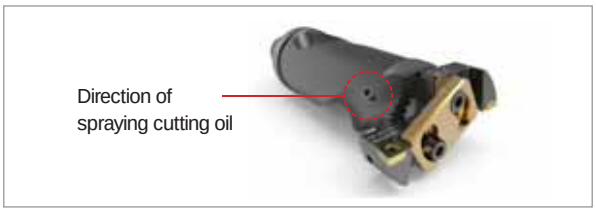
Helical Type



- Improved capacity to discharge chips from clogged and deep holes
- Minimized damage to tools and insert due to chip clogging

Extended head length	Deep hole machining implemented
Helical Type	Improved capacity to discharge chips from holes

Boring area optimization



- Max. diameter expanded owing to reinforced rigidity
- Boring range expanded per model no. versus conventional boring range of DINE

Coolant Hole (Direct spray to cutting edge)	• Improved capacity to discharge chips • Improved capacity of machining

Effect of improved rigidity for cartridge by cover

Clamps the top of the cartridge stably, minimizing the vibration of tools and improving the roughness of the working surface

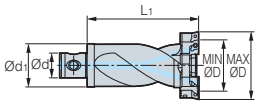




BT-DBC/A

Helical type





Head

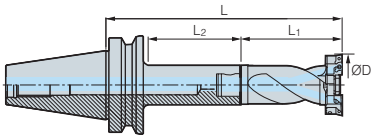


Fig. 1

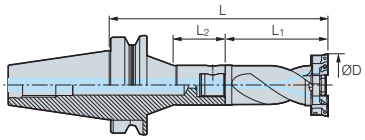


Fig. 2

(mm)

Designation		Boring range ØD		Ød	Ød1	L	L1	L2	kg	Fig.
Head	Arbor	Min	Max							
DBCA2528S-H	**BT30-MD25F-90**	28	38	14	25	193	103	63	0.3	1
DBCA3238S-H	**BT30-MD32F-80**	38	54	18	32	190	110	55	0.5	1
DBCA5054S-H	**BT30-MD50F-70**	54	74	28	50	215	145	48	1.8	1
DBCA2528S-H	**BT40-MD25F-95**	28	38	14	25	198	103	63	0.3	1
DBCA2528S-H	**BT40-MD25F-105R**	28	38	14	25	208	103	40	0.3	2
DBCA3238S-H	**BT40-MD32F-100**	38	54	18	32	210	110	70	0.5	1
DBCA3238S-H	**BT40-MD32F-115R**	38	54	18	32	225	110	45	0.5	2
DBCA5054S-H	**BT40-MD50F-105**	54	74	28	50	250	145	73	1.8	1
DBCA6374S-H	**BT40-MD63F-64**	74	100	36	63	244	180	37	3.3	1
DBCA6374S-H	**BT40-MD63F-110**	74	100	36	63	290	180	83	3.3	1
DBCA6374S-H	**BT40-MD63F-135**	74	100	36	63	315	180	108	3.3	1
DBCA80100S-H	**BT40-MD80F-100**	100	136	45	80	315	215	73	7.3	1
DBCA2528S-H	**BT50-MD25F-105**	28	38	14	25	208	103	62	0.3	1
DBCA2528S-H	**BT50-MD25F-120R**	28	38	14	25	223	103	40	0.3	2
DBCA3238S-H	**BT50-MD32F-110**	38	54	18	32	220	110	67	0.5	1
DBCA3238S-H	**BT50-MD32F-115R**	38	54	18	32	225	110	45	0.5	2
DBCA3238S-H	**BT50-MD32F-235R**	38	54	18	32	345	110	115	0.5	2
DBCA5054S-H	**BT50-MD50F-125**	54	74	28	50	270	145	82	1.8	1
DBCA5054S-H	**BT50-MD50F-225**	54	74	28	50	370	145	182	1.8	1
DBCA5054S-H	**BT50-MD50F-250R**	54	74	28	50	395	145	81	1.8	2
DBCA6374S-H	**BT50-MD63F-75**	74	100	36	63	255	180	35	3.3	1
DBCA6374S-H	**BT50-MD63F-130**	74	100	36	63	280	180	87	3.3	1
DBCA6374S-H	**BT50-MD63F-195**	74	100	36	63	375	180	152	3.3	1
DBCA6374S-H	**BT50-MD63F-230**	74	100	36	63	410	180	187	3.3	1
DBCA80100S-H	**BT50-MD80F-75**	100	136	45	80	290	215	36	7.3	1
DBCA80100S-H	**BT50-MD80F-110**	100	136	45	80	325	215	69	7.3	1
DBCA80100S-H	**BT50-MD80F-175**	100	136	45	80	390	215	134	7.3	1

Spare Part **H67**

• Head: Basic, Arbor: For separate purchase • Through coolant system installed

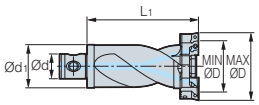
M This is metric size. We can also provide in inch type

* In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

BT-DBC/A

Straight type





Head

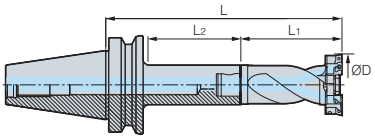


Fig. 1

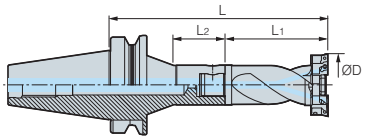


Fig. 2

(mm)

Designation		Boring range ØD		Ød	Ød1	L	L1	L2	kg	Fig.
Head	Arbor	Min	Max							
DBCA2528S	**BT30-MD25F-90**	28	38	14	25	193	103	63	0.2	1
DBCA3238S	**BT30-MD32F-80**	38	54	18	32	190	110	55	0.4	1
DBCA5054S	**BT30-MD50F-70**	54	74	28	50	215	145	48	1.1	1
DBCA2528S	**BT40-MD25F-95**	28	38	14	25	198	103	63	0.2	1
DBCA2528S	**BT40-MD25F-105R**	28	38	14	25	208	103	40	0.2	2
DBCA3238S	**BT40-MD32F-100**	38	54	18	32	210	110	70	0.4	1
DBCA3238S	**BT40-MD32F-115R**	38	54	18	32	225	110	45	0.4	2
DBCA5054S	**BT40-MD50F-105**	54	74	28	50	205	145	73	1.1	1
DBCA6374S	**BT40-MD63F-64**	74	100	36	63	244	180	37	1.9	1
DBCA6374S	**BT40-MD63F-135**	74	100	36	63	315	180	83	1.9	1
DBCA6374S	**BT40-MD80F-100**	74	100	36	63	280	180	108	1.9	1
DBCA80100S	**BT40-MD80F-100**	100	136	45	80	315	215	73	3.7	1
DBCA2528S	**BT50-MD25F-105**	28	38	14	25	208	103	62	0.2	1
DBCA2528S	**BT50-MD25F-120R**	28	38	14	25	223	103	40	0.2	2
DBCA3238S	**BT50-MD32F-110**	38	54	18	32	220	110	67	0.4	1
DBCA3238S	**BT50-MD32F-115R**	38	54	18	32	225	110	45	0.4	2
DBCA3238S	**BT50-MD32F-235R**	38	54	18	32	345	110	115	0.4	2
DBCA5054S	**BT50-MD50F-125**	54	74	28	50	270	145	82	1.1	1
DBCA5054S	**BT50-MD50F-225**	54	74	28	50	370	145	182	1.1	1
DBCA5054S	**BT50-MD50F-250R**	54	74	28	50	395	145	81	1.1	2
DBCA6374S	**BT50-MD63F-75**	74	100	36	63	255	180	35	1.9	1
DBCA6374S	**BT50-MD63F-130**	74	100	36	63	310	180	87	1.9	1
DBCA6374S	**BT50-MD63F-195**	74	100	36	63	375	180	152	1.9	1
DBCA6374S	**BT50-MD63F-230**	74	100	36	63	410	180	187	1.9	1
DBCA80100S	**BT50-MD80F-75**	100	136	45	80	290	215	36	3.7	1
DBCA80100S	**BT50-MD80F-110**	100	136	45	80	325	215	69	3.7	1
DBCA80100S	**BT50-MD80F-175**	100	136	45	80	390	215	134	3.7	1

Spare Part **H67**

• Head: Basic, Arbor: For separate purchase • Through coolant system installed

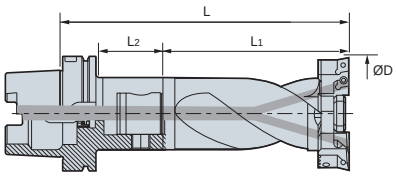
M This is metric size. We can also provide in inch type

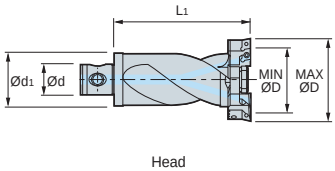
* In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

HSK-DBC/A

Helical type







Head

(mm)

Designation		Boring range ØD		Ød	Ød1	L	L1	L2	kg
Head	Arbor	Min	Max						
DBCA2528S-H	HSK63A-MD25F-60	38	54	14	25	163	103	31	0.3
DBCA3238S-H	HSK63A-MD32F-65	38	54	18	32	175	110	36	0.5
DBCA5054S-H	HSK63A-MD50F-85	54	74	28	50	230	145	58	1.8
DBCA6374S-H	HSK63A-MD63F-95	74	100	45	80	275	180	69	3.3

Spare Part **H67**

• Head: Basic, Arbor: For separate purchase • Through coolant system is optional

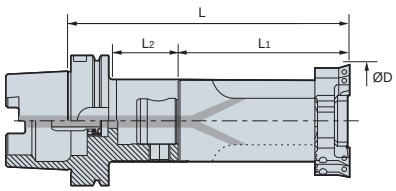
M This is metric size. We can also provide in inch type

* In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

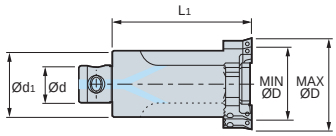
HSK-DBC/A

Straight type





1DIV. = 0.01mm



Head

(mm)

Designation		Boring range ØD		Ød	Ød1	L	L1	L2	kg
Head	Arbor	Min	Max						
DBCA2528S	HSK63A-MD25F-60	38	54	14	25	122	62	31	0.3
DBCA3238S	HSK63A-MD32F-65	38	54	18	32	134.5	69.5	36	0.5
DBCA5054S	HSK63A-MD50F-85	54	74	28	50	179	94	58	1.8
DBCA6374S	HSK63A-MD63F-95	74	100	45	80	100	106.5	69	3.3

Spare Part **H67**

• Head: Basic, Arbor: For separate purchase • Through coolant system is optional

M This is metric size. We can also provide in inch type

* In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

Parts

Designation	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

BT-DBC



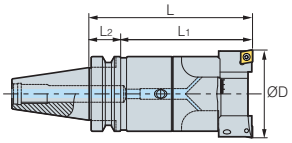


Fig. 1

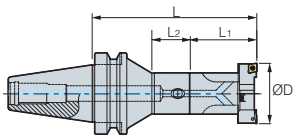
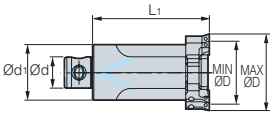


Fig. 2



Head

(mm)

Designation		Boring range ØD		Ød	Ød1	L	L1	L2	kg	Fig.
Head	Arbor	Min	Max							
DBC2528S	BT30-MD25F-90	28	35	14	25	150	60	63	0.3	1
DBC3235S	BT30-MD32F-80	35	46	18	32	145	65	55	0.4	1
DBC4046S	BT30-MD40F-45	46	58	22	40	115	70	22	0.6	1
DBC4046S	BT30-MD40F-60	46	58	22	40	130	70	36	0.6	1
DBC4046S	BT30-MD40F-80	46	58	22	40	140	70	56	0.6	1
DBC5058S	BT30-MD50F-70	58	74	28	50	150	80	48	1.1	1
DBC2528S	BT40-MD25F-95	28	35	14	25	155	60	63	0.3	1
DBC2528S	BT40-MD25F-105R	28	35	14	25	165	60	40	0.3	2
DBC3235S	BT40-MD32F-100	35	46	18	32	165	65	70	0.4	1
DBC3235S	BT40-MD32F-115R	35	46	18	32	180	65	45	0.4	2
DBC4046S	BT40-MD40F-60	46	58	22	40	130	70	31	0.6	1
DBC4046S	BT40-MD40F-110R	46	58	22	40	180	70	60	0.6	2
DBC4046S	BT40-MD40F-115	46	58	22	40	185	70	83	0.6	1
DBC5058S	BT40-MD50F-105	58	74	28	50	185	80	73	1.1	1
DBC6374S	BT40-MD63F-64	74	94	36	63	154	90	37	2.0	1
DBC6374S	BT40-MD63F-110	74	94	36	63	200	90	83	2.0	1
DBC6374S	BT40-MD63F-135	74	94	36	63	225	90	108	2.0	1
DBC8094S	BT40-MD80F-100	94	120	45	80	200	100	73	3.5	1
DBC2528S	BT50-MD25F-105	28	35	14	25	165	60	62	0.3	1
DBC2528S	BT50-MD25F-120R	28	35	14	25	185	60	40	0.3	2
DBC3235S	BT50-MD32F-110	35	46	18	32	175	65	67	0.4	1
DBC3235S	BT50-MD32F-115R	35	46	18	32	180	65	45	0.4	2
DBC3235S	BT50-MD32F-235R	35	46	18	32	300	65	115	0.4	2
DBC4046S	BT50-MD40F-60	46	58	22	40	130	70	22	0.6	1
DBC4046S	BT50-MD40F-195	46	58	22	40	265	70	152	0.6	1
DBC4046S	BT50-MD40F-230R	46	58	22	40	300	70	180	0.6	2
DBC5058S	BT50-MD50F-125	58	74	28	50	205	80	82	1.1	1
DBC5058S	BT50-MD50F-225	58	74	28	50	305	80	182	1.1	1
DBC5058S	BT50-MD50F-250R	58	74	28	50	330	80	81	1.1	2
DBC6374S	BT50-MD63F-75	74	94	36	63	165	90	35	2.0	1
DBC6374S	BT50-MD63F-130	74	94	36	63	220	90	87	2.0	1
DBC6374S	BT50-MD63F-195	74	94	36	63	285	90	152	2.0	1
DBC6374S	BT50-MD63F-230	74	94	36	80	320	90	187	2.0	1
DBC8094S	BT50-MD80F-75	94	120	36	80	175	100	36	3.5	1
DBC8094S	BT50-MD80F-110	94	120	45	80	210	100	69	3.5	1
DBC8094S	BT50-MD80F-175	94	120	45	80	275	100	134	4.5	1
DBC120S	BT50-MD80F-175	120	175	45	80	275	100	134	4.1	1

Spare Part **H67**

• Head: Basic, Arbor: For separate purchase • Through coolant system installed

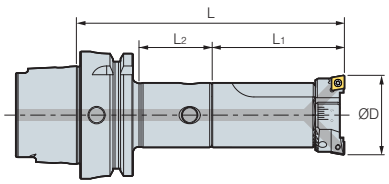
M This is metric size. We can also provide in inch type

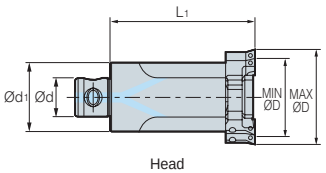
* In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

HSK-DBC

Modular type







(mm)

Designation		Boring range ØD		Ød	Ød1	L	L1	L2	kg
Head	Arbor	Min	Max						
DBC2528S	HSK63A-MD25F-60	28	35	14	25	120	60	31	0.3
DBC3235S	HSK63A-MD32F-65	35	46	18	32	130	65	36	0.4
DBC4046S	HSK63A-MD40F-70	46	58	22	40	140	70	41	0.6
DBC5058S	HSK63A-MD50F-85	58	74	28	50	165	80	58	1.1
DBC6374S	HSK63A-MD63F-95	74	94	36	63	185	90	69	2.0

Spare Part **H67**

• Head: Basic, Arbor: For separate purchase • Through coolant system is optional

M This is metric size. We can also provide in inch type

* In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

Parts

• DBCA

	Basic								
Division	Head	Spring pin	Wrench bolt	Wrench	Cartridge	Set screw	Wrench	Clamp screw	Torx wrench
Part / Designation									
DBCA2528S	DBCA2528	SP0308	BX0420	LW-3	BCC28-EC	BT0308	LW-1.5	BFTX02506N	TRX8
DBCA3238S	DBCA3238	SP0410	BX0525	LW-4	BCC38-EC	BT0310	LW-1.5	BFTX02506M	TRX8
DBCA5054S	DBCA5054	SP0616	BX0630	LW-5	BCC54-EC	BT0414	LW-2	BFTX0407N	TRX15
DBCA6374S	DBCA6374	SP1018	BX0635	LW-5	BCC74-EC	BT0520	LW-2.5	BFTX0511N	TRX20
DBCA80100S	DBCA80100	SP1020	BX0840	LW-6	BCC100-EC	BT0625	LW-3	BFTX0511N	TRX20

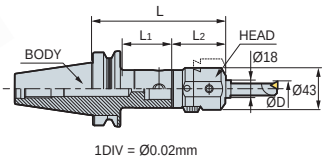
• DBC

	Basic								
Division	Head	Spring pin	Wrench bolt	Wrench	Cartridge	Set screw	Wrench	Clamp screw	Torx wrench
Part / Designation									
DBC2528S	DBC2528	SP0308	BX0415	LW-3	BCC28	BT0306	LW-1.5	FTKA02565	TRX7
DBC3235S	DBC3235	SP0410	BX0515	LW-4	BCC35	BT0308			
DBC4046S	DBC4046	SP0516	BX0620	LW-5	BCC46	BT0410	LW-2	FTNA0408	TRX15
DBC5058S	DBC5058	SP0616			BCC58	BT0412			
DBC6374S	DBC6374	SP1018	BX0830	LW-6	BCC74	BT0516	LW-2.5	BFTX0511N	TRX20
DBC8094S	DBC8094	SP1020	BX1035	LW-8	BCC94	BT0620	LW-3		
DBC120S	DBC120N	SP1020	BX0830	LW-6	BCC120	BT0830	LW-4	BFTX0511N	TRX20

BT-SMB

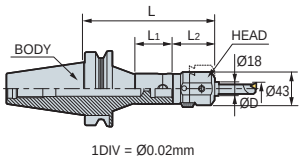
Small Micro Boring Bar





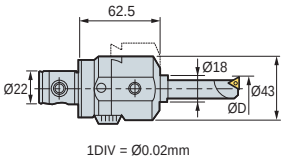
1DIV = Ø0.02mm

Fig. 1



1DIV = Ø0.02mm

Fig. 2



1DIV = Ø0.02mm

Head

(mm)

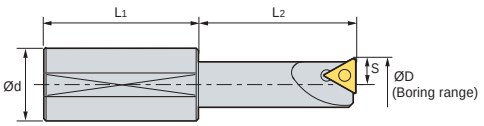
Designation			Boring range ØD	L	L1	L2	kg	Fig.
Head	Arbor	Bite						
SMB4022	BT30-MD40F-45	BB18-□(S)	Ø6.0~Ø34.0	107.5	22	62.5	0.6	1
SMB4022	BT30-MD40F-60	BB18-□(S)	Ø6.0~Ø34.0	122.5	36	62.5	0.6	1
SMB4022	BT30-MD40F-80	BB18-□(S)	Ø6.0~Ø34.0	142.5	56	62.5	0.6	1
SMB4022	BT40-MD40F-60	BB18-□(S)	Ø6.0~Ø34.0	122.5	31	62.5	0.6	1
SMB4022	BT40-MD40F-110R	BB18-□(S)	Ø6.0~Ø34.0	172.5	60	62.5	0.6	2
SMB4022	BT40-MD40F-115	BB18-□(S)	Ø6.0~Ø34.0	177.5	83	62.5	0.6	1
SMB4022	BT50-MD40F-60	BB18-□(S)	Ø6.0~Ø34.0	122.5	22	62.5	0.6	1
SMB4022	BT50-MD40F-195	BB18-□(S)	Ø6.0~Ø34.0	257.5	152	62.5	0.6	1
SMB4022	BT50-MD40F-230R	BB18-□(S)	Ø6.0~Ø34.0	292.5	180	62.5	0.6	2

* Adjustment length: 7 mm

• Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

M This is metric size. We can also provide in inch type

BB Bite (For SMB)



(mm)

Designation		Boring range		Ød	L1	L2	S	kg	Insert	Insert screw
		Min	Max							
BB	18-7(S)	7	27	18	30	30	3.5	0.1	TBGT0601□□L	BFTX0204A
	18-9(S)	9	29	18	30	40	4.5	0.1	TPGT0802□□L	BFTX0204A
	18-11(S)	11	31	18	30	45	5.5	0.1	TPGT1103□□L	BFTX0307A
	18-13(S)	13	33	18	40	45	6.5	0.1	TPGT1103□□L	BFTX0307A
	18-15(S)	15	35	18	40	50	7.5	0.2	TPGT1103□□L	BFTX0307A
	18-17(S)	17	37	18	40	50	8.5	0.2	TPGT1103□□L	BFTX0307A

M This is metric size. We can also provide in inch type

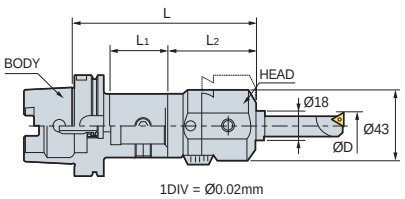
Parts

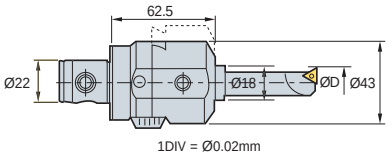
Basic				For separate purchase	
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Part / Designation					
SMB	SMB4022	BTT1013F	LW-2.5	BB18	MD40F

HSK-SMB

Small Micro Boring Bar







Head

(mm)

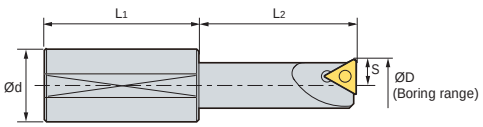
Designation			Boring range ØD	L	L_1	L_2	kg
Head	Arbor	Bite					
SMB4022	**HSK63A-MD40F - 70**	**BB18-□(S)**	Ø6.0~Ø34.0	132.5	41	62.5	0.6

* Adjustment length: 17 mm

• Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

M This is metric size. We can also provide in inch type

BB Bite (For SMB)



(mm)

Designation		Boring range		Ød	L_1	L_2	S	kg	Insert	Insert screw
		Min	Max							
BB	**18-7(S)**	7	27	18	30	30	3.5	0.1	TBGT0601□□L	BFTX0204A
	18-9(S)	9	29	18	30	40	4.5	0.1	TPGT0802□□L	BFTX0204A
	18-11(S)	11	31	18	30	45	5.5	0.1	TPGT1103□□L	BFTX0307A
	18-13(S)	13	33	18	40	45	6.5	0.1	TPGT1103□□L	BFTX0307A
	18-15(S)	15	35	18	40	50	7.5	0.2	TPGT1103□□L	BFTX0307A
	18-17(S)	17	37	18	40	50	8.5	0.2	TPGT1103□□L	BFTX0307A

M This is metric size. We can also provide in inch type

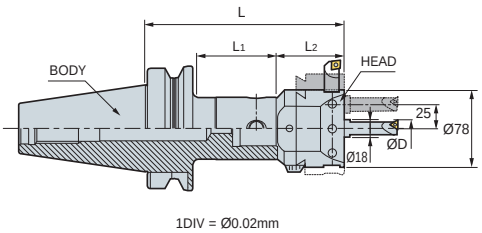
Parts

Basic				For separate purchase	
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Part / Designation					
SMB	SMB4022	BTT1013F	LW-2.5	BB18	MD40F

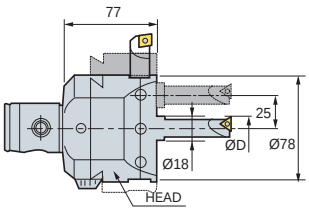
BT-KMB

Micro Boring





1DIV = Ø0.02mm



1DIV = Ø0.02mm

Head

(mm)

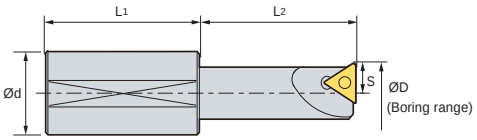
Designation			Boring range ØD		L	L1	L2	kg
Head	Arbor	Bite	Bite position	ØD				
KMB6336	BT40-MD63F-64	BB18-□(S)	Center Hole	Ø8.0~Ø38.0	141	37	77	2.2
KMB6336	BT40-MD63F-110	BB18-□(S)	Center Hole	Ø8.0~Ø38.0	187	83	77	2.2
KMB6336	BT40-MD63F-135	BB18-□(S)	Eccentric Hole	Ø41.0~101.0	212	108	77	2.2
KMB6336	BT50-MD63F-75	BB18-□(S)	Eccentric Hole	Ø41.0~101.0	152	35	77	2.2
KMB6336	BT50-MD63F-135	BB18-□(S)	Side Hole	Max.Ø165.0	207	87	77	2.2
KMB6336	BT50-MD63F-195	BB18-□(S)	Side Hole	Max.Ø165.0	272	152	77	2.2

* Adjustment length: 7 mm

• Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

M This is metric size. We can also provide in inch type

BB Bite (For KMB)



(mm)

Designation		Boring range (Center)				Ød	L1	L2	S	kg	Insert	Insert Screw
		Center		Eccentric								
BB	18-7(S)	7	40	27	91	18	30	30	3.5	0.1	TBGT0601□□L	BFTX0204A
	18-9(S)	9	42	29	93	18	30	40	4.5	0.1	TPGT0802□□L	BFTX0204A
	18-11(S)	11	44	31	95	18	30	45	5.5	0.1	TPGT1103□□L	BFTX0307A
	18-13(S)	13	46	33	97	18	40	45	6.5	0.1	TPGT1103□□L	BFTX0307A
	18-15(S)	15	48	35	99	18	40	50	7.5	0.2	TPGT1103□□L	BFTX0307A
	18-17(S)	17	50	37	101	18	40	50	8.5	0.2	TPGT1103□□L	BFTX0307A

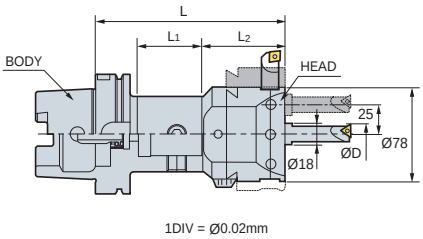
M This is metric size. We can also provide in inch type

Parts

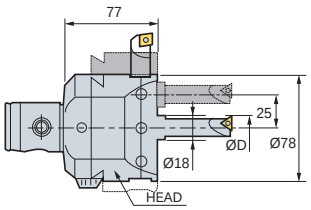
Basic				For separate purchase	
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Part / Designation					
KMB	KMB6336	BTT1620F	LW-4.0	BB18	MD63F

HSK-KMB





1DIV = Ø0.02mm



1DIV = Ø0.02mm

Head

(mm)

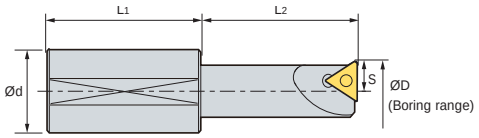
Designation			Boring range ØD		L	L_1	L_2	kg
Head	Arbor	Bite	Bite position	ØD				
KMB6336	HSK63A-MD63F-95	BB18-□(S)	Center Hole	Ø8.0~Ø38.0	172	69	77	2.2

* Adjustment length: 7 mm

• Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

M This is metric size. We can also provide in inch type

BB Bite (For KMB)



(mm)

Designation		Boring range (Center)				Ød	L_1	L_2	S	kg	Insert	Insert Screw
		Center		Eccentric								
BB	18-7(S)	7	40	27	91	18	30	30	3.5	0.1	TBGT0601□□L	BFTX0204A
	18-9(S)	9	42	29	93	18	30	40	4.5	0.1	TPGT0802□□L	BFTX0204A
	18-11(S)	11	44	31	95	18	30	45	5.5	0.1	TPGT1103□□L	BFTX0307A
	18-13(S)	13	46	33	97	18	40	45	6.5	0.1	TPGT1103□□L	BFTX0307A
	18-15(S)	15	48	35	99	18	40	50	7.5	0.2	TPGT1103□□L	BFTX0307A
	18-17(S)	17	50	37	101	18	40	50	8.5	0.2	TPGT1103□□L	BFTX0307A

M This is metric size. We can also provide in inch type

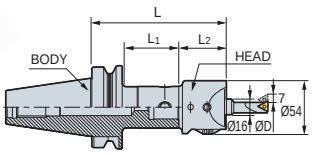
Parts

Basic				For separate purchase	
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Part / Designation					
KMB	KMB6336	BTT1620F	LW-4.0	BB18	MD63F

BT-SMH

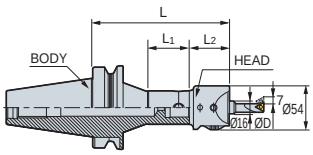
Small Micro Boring Bar (For High precision)





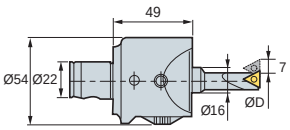
1DIV = Ø0.01mm

Fig. 1



1DIV = Ø0.01mm

Fig. 2



1DIV = Ø0.01mm

Head

(mm)

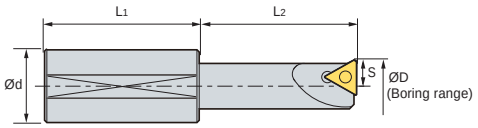
Designation			Boring range ØD	L	L_1	L_2	kg	Fig.
Head	Arbor	Bite						
SMH4022	BT30-MD40F-45	BB16-□(S)	Ø6.0~Ø34.0	94	22	49	0.6	1
SMH4022	BT30-MD40F-60	BB16-□(S)	Ø6.0~Ø34.0	109	36	49	0.6	1
SMH4022	BT30-MD40F-80	BB16-□(S)	Ø6.0~Ø34.0	129	56	49	0.6	1
SMH4022	BT40-MD40F-60	BB16-□(S)	Ø6.0~Ø34.0	109	31	49	0.6	1
SMH4022	BT40-MD40F-110R	BB16-□(S)	Ø6.0~Ø34.0	159	60	49	0.6	2
SMH4022	BT40-MD40F-115	BB16-□(S)	Ø6.0~Ø34.0	164	83	49	0.6	1
SMH4022	BT50-MD40F-60	BB16-□(S)	Ø6.0~Ø34.0	109	22	49	0.6	1
SMH4022	BT50-MD40F-195	BB16-□(S)	Ø6.0~Ø34.0	244	152	49	0.6	1
SMH4022	BT50-MD40F-230R	BB16-□(S)	Ø6.0~Ø34.0	279	180	49	0.6	2

* Adjustment length: 7 mm

• Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

M This is metric size. We can also provide in inch type

BB Bite (For SMH)



(mm)

Designation		Boring range ØD		Ød	L_1	L_2	S	Insert	Insert Screw	Wrench
		Min	Max							
BB	16-5(S)	5	19	16	34	20	2.75	WBGT0601□□L	BFTX0203A	TRX06
	16-7(S)	7	21	16	34	30	3.5	TBGT0601□□L	BFTX0204A	TRX06
	16-9(S)	9	23	16	34	40	4.5	TPGT0802□□L	BFTX0204A	TRX06
	16-11(S)	11	25	16	34	45	5.5	TPGT1103□□L	BFTX0307A	TRX10
	16-15(S)	15	29	16	34	50	7.5	TPGT1604□□L	BFTX0307A	TRX10
	16-19(S)	19	33	16	34	60	9.5	TPGT1604□□L	BFTX0410A	TRX15

M This is metric size. We can also provide in inch type

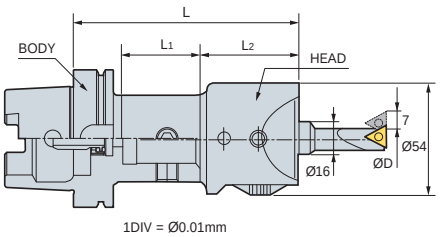
Parts

Basic				For separate purchase	
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Part / Designation					
SMH	SMH4022	BTT1013F	LW-3.0	BB16	MD40F

HSK-SMH

Small Micro Boring Bar (For High precision)





(mm)

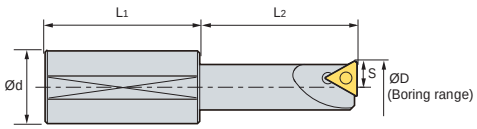
Designation			Boring range ØD	L	L_1	L_2	kg
Head	Arbor	Bite					
SMH4022	HSK63-MD40F-70	BB16-□(S)	Ø6.0~Ø34.0	132.5	41	49	0.6

* Adjustment length: 17 mm

• Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

M This is metric size. We can also provide in inch type

BB Bite (For SMH)



(mm)

Designation		Boring range ØD		Insert	Insert Screw	kg
		Min	Max			
BB	16-7(S)	8	28	TBGT0601□□L	BFTX0204A	0.1
	16-9(S)	10	30	TPGT0802□□L	BFTX0204A	0.1
	16-11(S)	12	32	TPGT1103□□L	BFTX0307A	0.1
	16-13(S)	14	34	TPGT1103□□L	BFTX0307A	0.1
	16-15(S)	16	36	TPGT1604□□L	BFTX0307A	0.2
	16-17(S)	18	38	TPGT1604□□L	BFTX0307A	0.2

M This is metric size. We can also provide in inch type

Parts

Basic				For separate purchase	
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Part / Designation					
SMH	SMH4022	BTT1013F	LW-3.0	BB16	MD40F

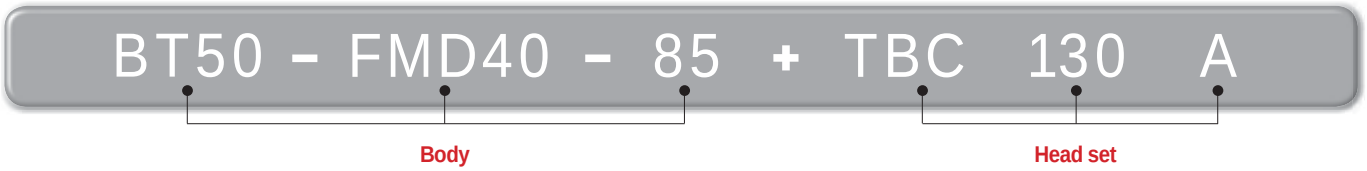
Wide diameter boring system

TBCA new

- Convenience in use simultaneously (available both inside and outside)
- Broad boring diameter and range
- Rough/Finishing boring with replaceable cartridge and common rail
- Boring range for outer diameter: Ø0~Ø395
- Boring range for inner diameter: Ø130~Ø631



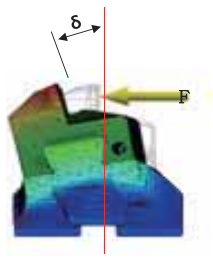
Code system



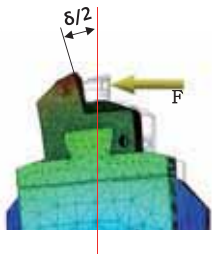
Features

Reinforced rigidity

• 50% less moment strain (versus the conventional product of DINE)



TBC460(old type)



TBC460A(new type)

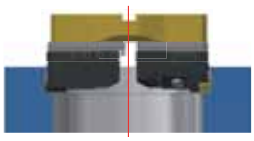
Lightweight design(Head set)

• BCC (Cartridge) + DBR (Bridge) + DBB (Rail)

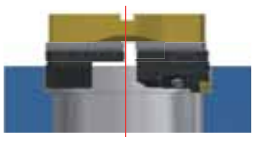


TBC130A	TBC175A	TBC220A	TBC265A
4.2Kg	5.6Kg	6.6Kg	7.5Kg
TBC310A	TBC385A	TBC460A	TBC535A
9.5Kg	11.6Kg	14Kg	16Kg

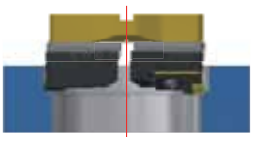
Application



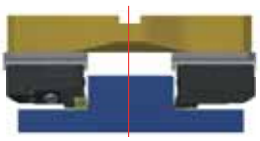
Twin edge boring



Single edge boring

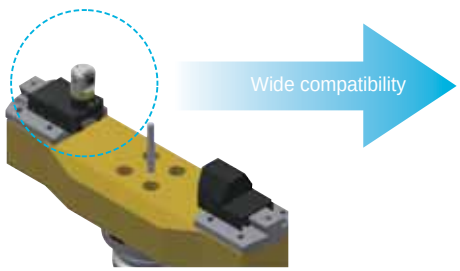


Step boring



Outside boring

Wide compatibility





Workpiece outer dia. boring



Workpiece outer dia. boring

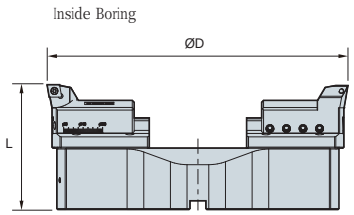
Image		List of clamping part	Cutting type
Outer dia. boring		FBH3233B + FCE310 + FCB310	Finishing boring
		DBCA3235S + FCE310 + FCB310	Rough boring
Inner dia. boring		DBS□□-□□CA + SCGCL16C-1A2	Rough boring
		FCC310	Finishing boring
		BCC1354	Rough boring

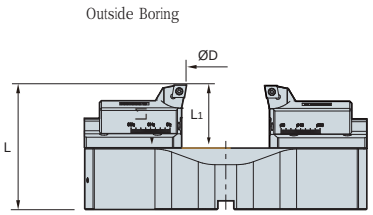
• TBC310A in case

TBCA

Wide diameter boring system







(mm)

FMC Arbor (Individual order)	kg	Twin Edge Boring for Roughing							
		TBC Head set (Rail + Cartridge (Main))	L	Boring range ØD					kg
				Inside Boring		Outside Boring			
				Min	Max	Min	Max	L1	
BT50-FMC40-50	4.6	TBC130A (DBR130 + BCC1348 + BCC1348)	108	130	180	0	35	65	3.8
BT50-FMC40-50	4.6	TBC175A (DBR175 + BCC1348 + BCC1348)	113	175	225	0	75	65	5.2
BT50-FMC40-50	4.6	TBC220A (DBR07015 + BCC1348 + BCC1348)	118	220	270	60	124	65	7.3
BT50-FMC40-50	4.6	TBC265A (DBR07015 + BCC1348 + BCC1348)	123	265	315	64	174	65	7.3
BT50-FMC40-50	4.6	TBC310A (DBR10015 + BCC1345 + BCC1345)	128	310	390	79	159	65	9.7
BT50-FMC40-50	4.6	TBC385A (DBR10015 + BCC1354 + BCC1345)	133	385	465	153	233	65	11.8
BT50-FMC40-50	4.6	TBC460A (DBR10015 + BCC1354 + BCC1345)	138	460	540	229	309	65	14.3
BT50-FMC40-50	4.6	TBC535A (DBR10015 + BCC1354 + BCC1345)	143	535	615	303	383	65	16.4

• TBC Head set: Basic, Arbor: For separate purchase • Through coolant system is optional

M This is metric size. We can also provide in inch type

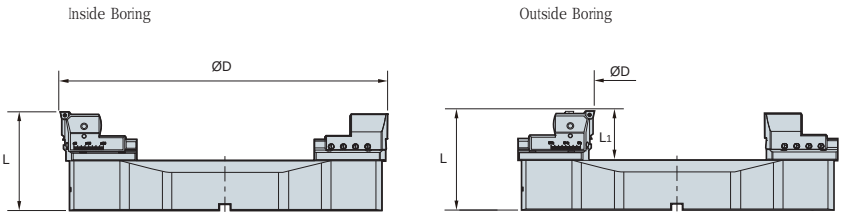
Parts

Basic			For separate purchase		
Head set	Bridge	Rail	Cartridge	Arbor	Pin
					
TBC130A	DBB130	DBR130	BCC1348S	BT50-FMC40-50	PN1080
TBC175A	DBB175	DBR175			
TBC220A	DBB220	DBR07015			
TBC265A	DBB265	DBR07015			
TBC310A	DBB310	DBR10015	BCC1354S		
TBC385A	DBB385	DBR10015			
TBC460A	DBB460	DBR10015			
TBC535A	DBB535	DBR10015			

TBCA

Wide diameter boring system





(mm)

FMC Arbor (Individual order)	kg	Single Edge Boring for Roughing							
		TBC Head set (Rail + Cartridge (Separate sale))	L	Boring range ØD					kg
				Inside Boring		Outside Boring			
				Min	Max	Min	Max	L1	
BT50-FMC40-50	4.6	TBC130A (DBR130 + FCC130 + FCB130 + FBB33N)	101	130	180	37	37	72	4.4
BT50-FMC40-50	4.6	TBC175A (DBR175 + FCC130 + FCB130 + FBB33N)	106	175	225	80	80	72	5.7
BT50-FMC40-50	4.6	TBC220A (DBR07015 + FCC130 + FCB130 + FBB33N)	111	220	270	173	173	72	7.8
BT50-FMC40-50	4.6	TBC265A (DBR07015 + FCC130 + FCB130 + FBB33N)	116	265	315	176	176	72	7.9
BT50-FMC40-50	4.6	TBC310A (DBR10015 + FCC310 + FCB310 + BB33N)	121	310	390	155.5	155.5	72	10.1
BT50-FMC40-50	4.6	TBC385A (DBR10015 + FCC310 + FCB310 + FBB33N)	126	385	465	229.5	229.5	72	12.2
BT50-FMC40-50	4.6	TBC460A (DBR10015 + FCC310 + FCB310 + FBB33N)	131	460	540	305.5	305.5	72	14.7
BT50-FMC40-50	4.6	TBC535A (DBR10015 + FCC310 + FCB310 + FBB33N)	136	535	615	379.5	379.5	72	16.7

• TBC Head set/Rail: Basic, Arbor/Cartridge: For separate purchase • Through coolant system is optional

M This is metric size. We can also provide in inch type

Parts

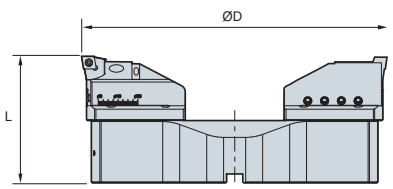
Basic			For separate purchase				
Head set	Bridge	Rail	Cartridge	Bite	Balance block	Arbor	Pin
							
TBC130A	DBB130	DBR130	FCC130	FBB130△□□	FCB130	BT50-FMC40-50	PN1080
TBC175A	DBB175	DBR175					
TBC220A	DBB220	DBR07015					
TBC265A	DBB265	DBR07015					
TBC310A	DBB310	DBR10015	FCC310		FCB310		
TBC385A	DBB385	DBR10015					
TBC460A	DBB460	DBR10015					
TBC535A	DBB535	DBR10015					

TBCA

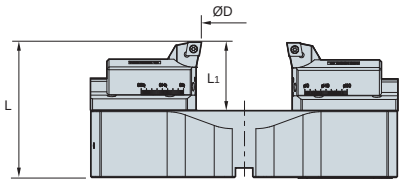
Wide diameter boring system



Inside Boring



Outside Boring



(mm)

FMC Arbor (Individual order)	kg	Step Boring for Roughing							
		TBC Head set (Rail + Cartridge (Separate sale))	L	Boring range ØD					kg
				Inside Boring		Outside Boring			
				Min	Max	Min	Max	L_1	
BT50-FMC40-50	4.6	TBC130A (DBR130 + DBS25-□□CA + SCGCL16CA-12)	108	130	180	0	13.5	65	4.3
BT50-FMC40-50	4.6	TBC175A (DBR175 + DBS25-□□CA + SCGCL16CA-12)	113	175	225	0	55	65	5.7
BT50-FMC40-50	4.6	TBC220A (DBR07015 + DBS25-□□CA + SCGCL16CA-12)	118	220	270	64	128	65	7.8
BT50-FMC40-50	4.6	TBC265A (DBR07015 + DBS25-□□CA + SCGCL16CA-12)	123	265	315	68	118	65	7.9
BT50-FMC40-50	4.6	TBC310A (DBR10015 + DBS40-□□CA + SCGCL16CA-12)	128	310	390	109	159	65	10.2
BT50-FMC40-50	4.6	TBC385A (DBR10015 + DBS40-□□CA + SCGCL16CA-12)	133	385	465	183	233	65	12.3
BT50-FMC40-50	4.6	TBC460A (DBR10015 + DBS40-□□CA + SCGCL16CA-12)	138	460	540	259	309	65	14.8
BT50-FMC40-50	4.6	TBC535A (DBR10015 + DBS40-□□CA + SCGCL16CA-12)	143	535	615	333	383	65	16.9

• TBC Head set/Rail: Basic, Arbor/Cartridge: For separate purchase • Through coolant system is optional

M This is metric size. We can also provide in inch type

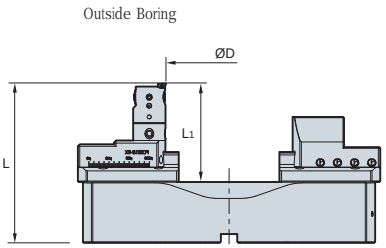
Parts

Basic				For separate purchase				
Head set	Bridge	Rail	Cartridge	Arbor	Slide	Cartridge	Plate	Pin
								
TBC130A	DBB130	DBR130	BCC1348S	BT50-FMC40-50	DBS25-16CA DBS25-20CA DBS25-25CA	ISO Cartridge	ISO Cartridge Plates	PN1080
TBC175A	DBB175	DBR175	BCC1348S					
TBC220A	DBB220	DBR07015	BCC1348S					
TBC265A	DBB265	DBR07015	BCC1348S					
TBC310A	DBB310	DBR10015	BCC1354S		DBS40-16CA DBS40-20CA DBS40-25CA			
TBC385A	DBB385	DBR10015	BCC1354S					
TBC460A	DBB460	DBR10015	BCC1354S					
TBC535A	DBB535	DBR10015	BCC1354S					

TBCA

Wide diameter boring system





(mm)

FMC Arbor (Individual order)	kg	Step Boring for Roughing						
		TBC Head set (Rail + Cartridge (Separate sale))	L	Boring range ØD			kg
				Outside Boring			
				Min	Max	L_1	
BT50-FMC40-50	4.6	TBC130A (DBR130 + FCB130 + FCE130 + FBH3233B + FBB33N)	145	0	39	102	5.2
BT50-FMC40-50	4.6	TBC175A (DBR175 + FCB130 + FCE130 + FBH3233B + FBB33N)	150	0	84	102	6.5
BT50-FMC40-50	4.6	TBC220A (DBR07015 + FCB130 + FCE130 + FBH3233B + FBB33N)	155	26	180	102	8.7
BT50-FMC40-50	4.6	TBC265A (DBR07015 + FCB130 + FCE130 + FBH3233B + FBB33N)	160	26	180	102	8.7
BT50-FMC40-50	4.6	TBC310A (DBR10015 + FCB310 + FCE310 + FBH3233B + FBB33N)	165	16	170	102	11
BT50-FMC40-50	4.6	TBC385A (DBR10015 + FCB310 + FCE310 + FBH3233B + FBB33N)	170	90	244	102	13.1
BT50-FMC40-50	4.6	TBC460A (DBR10015 + FCB310 + FCE310 + FBH3233B + FBB33N)	175	166	318	102	15.6
BT50-FMC40-50	4.6	TBC535A (DBR10015 + FCB310 + FCE310 + FBH3233B + FBB33N)	180	240	394	102	17.7

• TBC Head set/Rail: Basic, Arbor/Cartridge: For separate purchase • Through coolant system is optional

M This is metric size. We can also provide in inch type

Parts

Basic			For separate purchase				
Head set	Bridge	Rail	Arbor	Slide	B/B	Head	Pin
							
TBC130A	DBB130	DBR130	BT50-FMC40-50	FCE130	FCB130	FBH3233B	PN1080
TBC175A	DBB175	DBR175					
TBC220A	DBB220	DBR07015					
TBC265A	DBB265	DBR07015					
TBC310A	DBB310	DBR10015		FCE310	FCB310		
TBC385A	DBB385	DBR10015					
TBC460A	DBB460	DBR10015					
TBC535A	DBB535	DBR10015					

• B/B: Balance Block

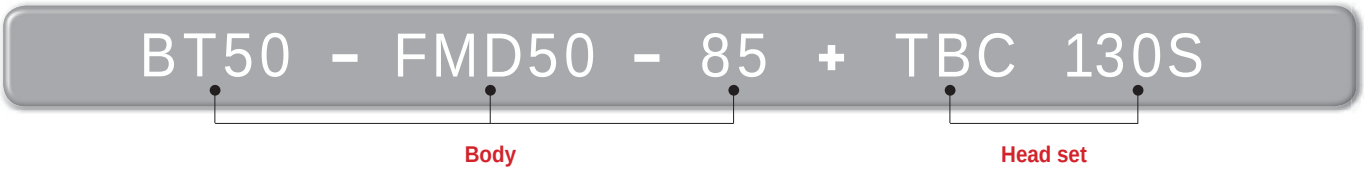
Balance cut tool for Rough boring

TBC

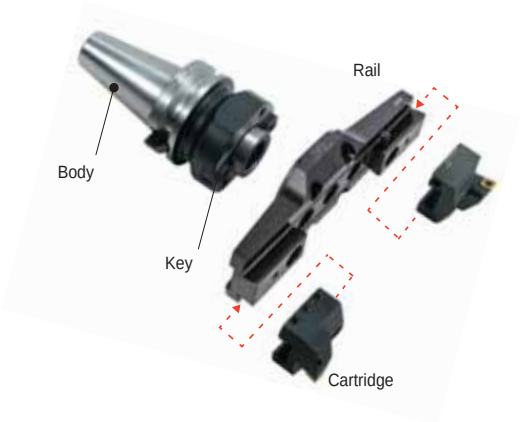
- Wide boring range for big diameters: Ø130~Ø540 mm
- Stable structure against for cutting load - Assembly by dove-tail structure
- Interconvert with FBC
  - Common boring head and rail adopted, different cartridge
- Light-weight (5%~20% reduced)
- Various cartridge approach angle: 15°, 45°



Code system



TBC boring tool structure & features





Cartridge: BCC1348
Incert: CCMT1204□□
CNMG1204□□



Rail: TBR□□
Weight reduced and space for chip discharge secured by removing the side part

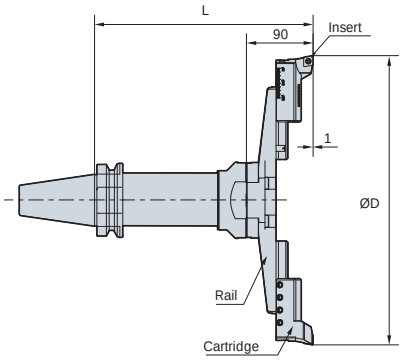
Boring range

Grade	Dia (Ø)		Head set	Insert
	Min	Max		
TBC130	130	180	TBC130 (TBR130 + BCC1348 + BCC1348)	CCMT1204□□
TBC175	175	225	TBC175 (TBR175 + BCC1348 + BCC1348)	CCMT1204□□
TBC220	220	270	TBC220 (TBR220 + BCC1348 + BCC1348)	CCMT1204□□
TBC265	265	315	TBC265 (TBR265 + BCC1348 + BCC1348)	CCMT1204□□
TBC310	310	390	TBC310 (TBR310 + BCC1348 + BCC1348)	CCMT1204□□
TBC385	385	465	TBC385 (TBR310 + BCC1348 + BCC1348)	CCMT1204□□
TBC460	460	540	TBC460 (TBR460 + BCC1348 + BCC1348)	CCMT1204□□

BT-TBC

Balance cut tool for rough boring





(mm)

FMC Arbor (Individual order)	kg	Rough boring (TBC)				
		TBC Head set (Rail + Cartridge)	L	Boring range ØD		kg
				Min	Max	
BT50-FMD50-85	5.9	TBC130 (TBR130 + BCC1348)	175	130	180	3.2
BT50-FMD50-155	7.9	TBC130 (TBR130 + BCC1348)	245	130	180	3.2
BT50-FMD50-205	9.7	TBC130 (TBR130 + BCC1348)	295	130	180	3.2
BT50-FMD50-255	13.4	TBC130 (TBR130 + BCC1348)	345	130	180	3.2
BT50-FMD50-85	5.9	TBC175 (TBR175 + BCC1348)	175	175	225	3.6
BT50-FMD50-155	7.9	TBC175 (TBR175 + BCC1348)	245	175	225	3.6
BT50-FMD50-205	9.7	TBC175 (TBR175 + BCC1348)	295	175	225	3.6
BT50-FMD50-255	13.4	TBC175 (TBR175 + BCC1348)	345	175	225	3.6
BT50-FMD50-85	5.9	TBC220 (TBR220 + BCC1348)	175	220	270	4
BT50-FMD50-155	7.9	TBC220 (TBR220 + BCC1348)	245	220	270	4
BT50-FMD50-205	9.7	TBC220 (TBR220 + BCC1348)	295	220	270	4
BT50-FMD50-255	13.4	TBC220 (TBR220 + BCC1348)	345	220	270	4
BT50-FMD50-85	5.9	TBC265 (TBR265 + BCC1348)	175	265	315	4.2
BT50-FMD50-155	7.9	TBC265 (TBR265 + BCC1348)	245	265	315	4.2
BT50-FMD50-205	9.7	TBC265 (TBR265 + BCC1348)	295	265	315	4.2
BT50-FMD50-255	13.4	TBC265 (TBR265 + BCC1348)	345	265	315	4.2
BT50-FMD50-85	5.9	TBC310 (TBR310 + BCC1354)	175	310	390	5.2
BT50-FMD50-155	7.9	TBC310 (TBR310 + BCC1354)	245	310	390	5.2
BT50-FMD50-205	9.7	TBC310 (TBR310 + BCC1354)	295	310	390	5.2
BT50-FMD50-255	13.4	TBC310 (TBR310 + BCC1354)	345	310	390	5.2
BT50-FMD50-85	5.9	TBC385 (TBR385 + BCC1354)	175	385	465	5.5
BT50-FMD50-155	7.9	TBC385 (TBR385 + BCC1354)	245	385	465	5.5
BT50-FMD50-205	9.7	TBC385 (TBR385 + BCC1354)	295	385	465	5.5
BT50-FMD50-255	13.4	TBC385 (TBR385 + BCC1354)	345	385	465	5.5
BT50-FMD50-85	5.9	TBC460 (TBR460 + BCC1354)	175	460	540	12.5
BT50-FMD50-155	7.9	TBC460 (TBR460 + BCC1354)	245	460	540	12.5
BT50-FMD50-205	9.7	TBC460 (TBR460 + BCC1354)	295	460	540	12.5
BT50-FMD50-255	13.4	TBC460 (TBR460 + BCC1354)	345	460	540	12.5

Spare Part **H81**

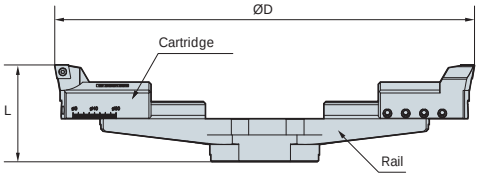
• TBC Head set: Basic, Arbor: For separate purchase • Through coolant system is not available

M This is metric size. We can also provide in inch type

TBC Head Set

Balance cut tool for rough boring





(mm)

Head set (Main component)			Boring range ØD		L	kg	For separate purchase
Designation	Rail	Cartridge	Min	Max			Insert
TBC130S	TBR130	BCC1348	130	180	90	3.5	CCMT1204□□
TBC175S	TBR175	BCC1348	175	225	90	3.9	CCMT1204□□
TBC220S	TBR220	BCC1348	220	270	90	4.3	CCMT1204□□
TBC265S	TBR265	BCC1348	265	315	90	4.5	CCMT1204□□
TBC310S	TBR310	BCC1354	310	390	90	5.5	CCMT1204□□
TBC385S	TBR385	BCC1354	385	465	90	5.8	CCMT1204□□
TBC460S	TBR460	BCC1354	460	540	90	12.8	CCMT1204□□

* If CNMG1204□□ insert is used, BCN1348, BCN1354 cartridges can be ordered.

M This is metric size. We can also provide in inch type

Parts

Basic							
Division	Rail	Cartridge	Clamp bolt	Clamp bolt	Hexagonal wrench	Clamp screw	Torx wrench
Part / Head set							
TBC130S	TBR130	BCC1348 (BCN1348)	BX0820	BT0645	LW-3 LW-4 LW-6	BFTX0511N	TRX20
TBC175S	TBR175						
TBC220S	TBR220						
TBC265S	TBR265						
TBC310S	TBR310	BCC1354 (BCN1354)		BT0660			
TBC385S	TBR385						
TBC460S	TBR460						

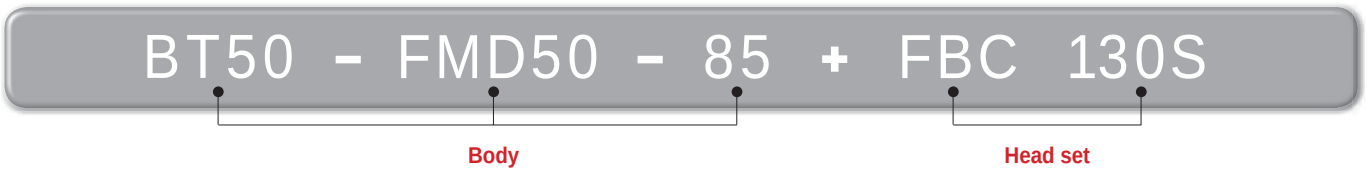
Balance cut tool for fine boring

FBC

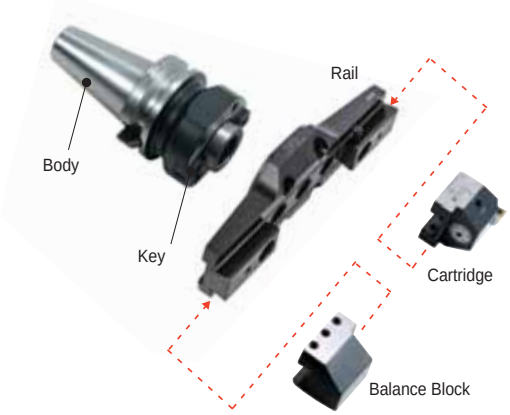
- Broad boring diameter and range
  - Wide Boring Range : Ø130~Ø540 mm
- Structurally stable enough to resist cutting load
  - Provides strong cutting performance based on the precision grinding dovetail method
- Can perform rough boring operation by changing boring head cartridges
  - Compatible boring head and rail as they are in the same structure
- Various cartridge tip angles
  - cartridge fore end angles 15° and 45° selectable



Code system



FBC boring tool structure & features





Cartridge:
FCC130



Balance Block:
FCB130

Insert:
CCGT09T3□□
CCMT1204□□
TPGT1103□□

M This is metric size. We can also provide in inch type

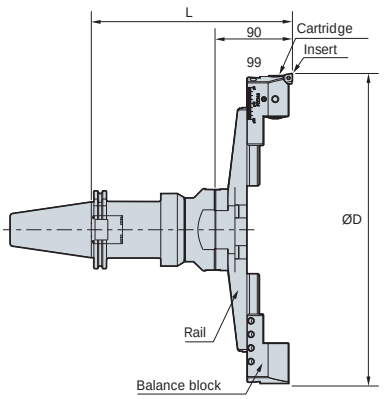
Boring range

Designation	Dia (Ø)		Head set	Insert
	Min	Max		
FBC130	130	180	FBC130S (TBR130 + FCC130 + FCB130)	FBB130-C09 (CCMT09T3□□, CCGT09T3□□ FBB130-C12 (CCMT1204□□) FBB130-T11 (TPMT1103□□,TPGT1103□□L)
FBC175	175	225	FBC175S (TBR175 + FCC130 + FCB130)	
FBC220	220	270	FBC220S (TBR220 + FCC130 + FCB130)	
FBC265	265	315	FBC265S (TBR265 + FCC130 + FCB130)	
FBC310	310	390	FBC310S (TBR310 + FCC310 + FCB310)	
FBC385	385	465	FBC385S (TBR385 + FCC310 + FCB310)	
FBC460	460	540	FBC460S (TBR460 + FCC310 + FCB310)	

BT-FBC

Balance cut tool for fine boring





(mm)

FMC Arbor (Individual order)	kg	Rough boring (TBC)				
		TBC Head set (Rail + Cartridge + Balance block)	L	Boring range (ØD)		kg
				Min	Max	
BT50-FMD50-85	5.9	FBC130S (TBR130 + FCC130 + FCB130)	182	130	180	3.7
BT50-FMD50-155	7.9	FBC130S (TBR130 + FCC130 + FCB130)	252	130	180	3.7
BT50-FMD50-205	9.7	FBC130S (TBR130 + FCC130 + FCB130)	302	130	180	3.7
BT50-FMD50-255	13.4	FBC130S (TBR130 + FCC130 + FCB130)	352	130	180	3.7
BT50-FMD50-85	5.9	FBC175S (TBR175 + FCC130 + FCB130)	182	175	225	4.1
BT50-FMD50-155	7.9	FBC175S (TBR175 + FCC130 + FCB130)	252	175	225	4.1
BT50-FMD50-205	9.7	FBC175S (TBR175 + FCC130 + FCB130)	302	175	225	4.1
BT50-FMD50-255	13.4	FBC175S (TBR175 + FCC130 + FCB130)	352	175	225	4.1
BT50-FMD50-85	5.9	FBC220S (TBR220 + FCC130 + FCB130)	182	220	270	4.5
BT50-FMD50-155	7.9	FBC220S (TBR220 + FCC130 + FCB130)	252	220	270	4.5
BT50-FMD50-205	9.7	FBC220S (TBR220 + FCC130 + FCB130)	302	220	270	4.5
BT50-FMD50-255	13.4	FBC220S (TBR220 + FCC130 + FCB130)	352	220	270	4.5
BT50-FMD50-85	5.9	FBC265S (TBR265 + FCC130 + FCB130)	182	265	315	4.7
BT50-FMD50-155	7.9	FBC265S (TBR265 + FCC130 + FCB130)	252	265	315	4.7
BT50-FMD50-205	9.7	FBC265S (TBR265 + FCC130 + FCB130)	302	265	315	4.7
BT50-FMD50-255	13.4	FBC265S (TBR265 + FCC130 + FCB130)	352	265	315	4.7
BT50-FMD50-85	5.9	FBC310S (TBR310 + FCC310 + FCB310)	182	310	390	5.5
BT50-FMD50-155	7.9	FBC310S (TBR310 + FCC310 + FCB310)	252	310	390	5.5
BT50-FMD50-205	9.7	FBC310S (TBR310 + FCC310 + FCB310)	302	310	390	5.5
BT50-FMD50-255	13.4	FBC310S (TBR310 + FCC310 + FCB310)	352	310	390	5.5
BT50-FMD50-85	5.9	FBC385S (TBR385 + FCC310 + FCB310)	182	385	465	5.8
BT50-FMD50-155	7.9	FBC385S (TBR385 + FCC310 + FCB310)	252	385	465	5.8
BT50-FMD50-205	9.7	FBC385S (TBR385 + FCC310 + FCB310)	302	385	465	5.8
BT50-FMD50-255	13.4	FBC385S (TBR385 + FCC310 + FCB310)	352	385	465	5.8
BT50-FMD50-85	5.9	FBC460S (TBR460 + FCC310 + FCB310)	182	460	540	12.8
BT50-FMD50-155	7.9	FBC460S (TBR460 + FCC310 + FCB310)	252	460	540	12.8
BT50-FMD50-205	9.7	FBC460S (TBR460 + FCC310 + FCB310)	302	460	540	12.8
BT50-FMD50-255	13.4	FBC460S (TBR460 + FCC310 + FCB310)	352	460	540	12.8

Spare Part **H84**

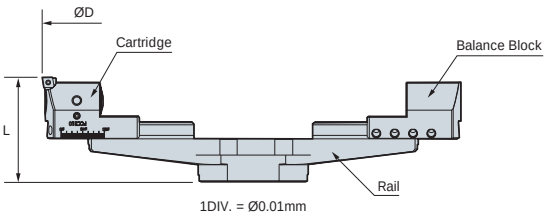
• TBC Head set: Basic, Arbor: For separate purchase • Through coolant system not available

M This is metric size. We can also provide in inch type

FBC Head Set

Balance cut tool for fine boring





(mm)

Head set (Main component)				Boring range ØD		L	kg	For separate purchase
Designation	Rail	Cartridge	Balance block	Min	Max			Bite
TBC130S	TBR130	FCC130	FCB130	130	180	97	3.8	FBB130-C09 FBB130-C12 FBB130-T11
TBC175S	TBR175	FCC130	FCB130	175	225	97	4.1	
TBC220S	TBR220	FCC130	FCB130	220	270	97	4.5	
TBC265S	TBR265	FCC130	FCB130	265	315	97	4.6	
TBC310S	TBR310	FCC310	FCB310	310	390	97	5.5	
TBC385S	TBR385	FCC310	FCB310	385	465	97	5.8	
TBC460S	TBR460	FCC310	FCB310	460	540	97	12.8	

M This is metric size. We can also provide in inch type

Parts

Basic							For separate purchase
Division	Rail	Cartridge	Balance block	Clamp bolt	Clamp bolt	Hexagonal wrench	Bite
Part / Head set							
FBC130S	TBR130	FCC130	FCB130	BTF0810 BTF0814	BT0645	LW-3 LW-4	FBB130-C09 FBB130-C12 FBB130-T11
FBC175S	TBR175						
FBC220S	TBR220						
FBC265S	TBR265						
FBC310S	TBR310	FCC310	FCB310		BT0660		
FBC385S	TBR385						
FBC460S	TBR460						

FBB Bite



Designation		Insert
FBB130 -	**C09**	CCMT09T3□□, CCGT09T3□□
	C12	CCMT1204□□
	T11	TPMT1103□□, TPGT1103□□

Slim Angular Head

BT-SAH



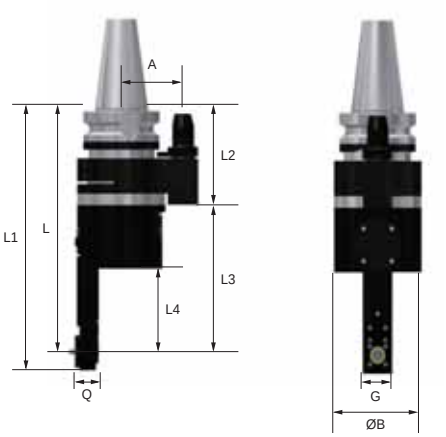
- Angular head for narrow inside boring
  (min. inner diameter of workpiece: Ø40, min. boring width: 32 mm)
- MAX 3,500 RPM, Spindle: applied rotation ratio = 1: 1.37
- Boring range: Ø3, Ø4, Ø6

Code system

BT50 - SAH 6 - 10

- BT50: Spindle
- SAH: Slim Angular head
- 6: Tool Dia.
- 10: Length

Details



Machining Features



Min. Ø40 Hole
(except tool projection)



Min.32 mm gap
(except tool projection)

Designation	L	L1	L2	L3	L4	A	Q	G	ØB	Rotation ratio (IN: OUT)	Rotation direction	MAX RPM	kg
BT50-SAH6-277	277	298	183.5	166.5	93.5	80 (110)	31.5	40	76	1: 1.37	CW: CW	3,500	14

Clamping Force

Division	Measurement	Measured value (N-m)			
Clamp torque	2	2.5	3	3.5	4
Clamping Force	Not measurable	5.5	6.5	7	7

※ The moderate clamp torque of collet is 3.5 N-m

How to clamp



1. Couple the tool with SAH dedicated collet
2. Insert the coupled tool into SAH and fix it with a dedicated tightening jig
3. Turn the bolt using a hexagonal wrench

Exclusive collet



Designation	Clamping range
SAH6-C3	3
SAH6-C4	4
SAH6-C6	6

M This is metric size. We can also provide in inch type

Angular Head

Angular Head

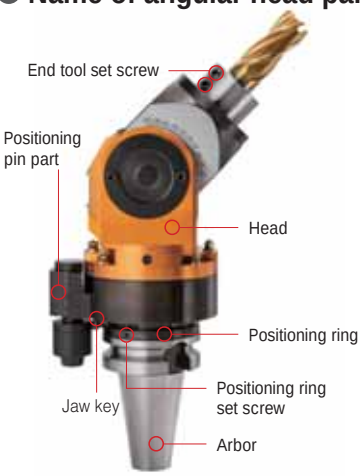
- Doubled effect by one equipment/Available for various angles
- Lighter aluminum body

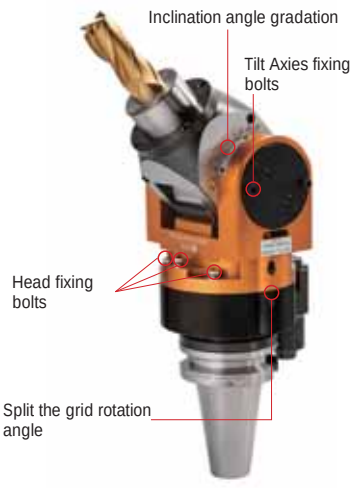


Code system

BT50	-	KHU	10	-	195
Spindle		Angular Head	Max. chucking dia.		Length

Name of angular head parts

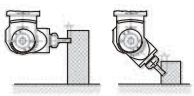
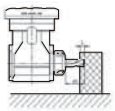
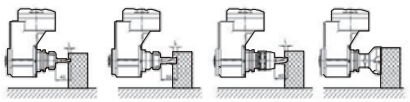




Positioning pin details



Various applications

			
0~90-degree rotating (MAH, KHU)	Fixed 90-degree type (KAH)	Fixed 45-degree type (KAC)	Attachment type (HRAG, KAG)

Components











MAH

Universal type MAH (Reinforced series)

- Reinforced type Better performance by improving existing universal Angular head
  - Stability on large mold machining
  - Use 32mm Ball Endmill

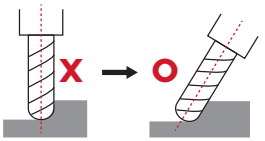


KHU

Universal type KHU (Free angle)

- Adjustable angle-type angular head that enables flexible machining
  - Wide vertical (0˚~90˚) and horizontal (0˚~360˚) machining angle range
  - To use Tap-exclusive collet, please contact us in advance
  - HSK and SK types are customizable





Be sure to give a slope to the cutting edge of a ball end mill when machining it as the ball end mill edge is worn out and the surface roughness of the workpiece becomes defective

HRAG

Attachment type HRAG (Reinforced type)

- HRAG: The reinforced bracket enhanced durability upto 200%
  - Stablility on face milling machining
  - Enhances compatibility with the machining device due to easy bracket disassembly/ assembly even on the BT50 shank
  - Improves product life cycle



KAG

Attachment type KAG

- Free 360° angle adjusting from side to side
  - Possible to use various tools of BT40 and BT30
  - HSK and SK type are order made
  - Coolant types are to be ordered separately



KAH

Modular type KAH (90° type)

- Adjustable angle-type angular head that enables flexible machining
  - Adjusting angle up to 360˚
  - To use Tap-exclusive Collet, please contact us in advance
  - HSK and SK type are order made

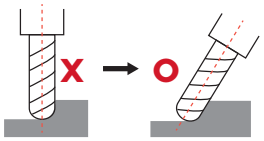


KAC

Modular type KAC (45° type)

- Fixed angle type angular head that enables flexible machining
  - Adjusting angle up to 360˚
  - To use Tap-exclusive Collet, please contact us in advance
  - 45-degree fixed type angular head
  - For BT40 types, please contact us separately

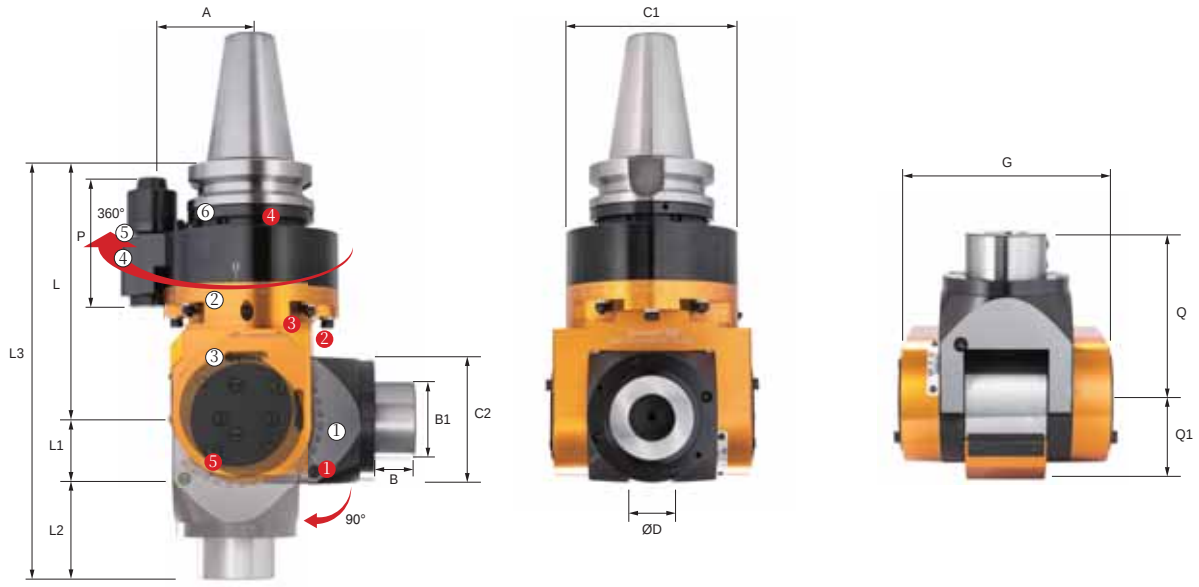




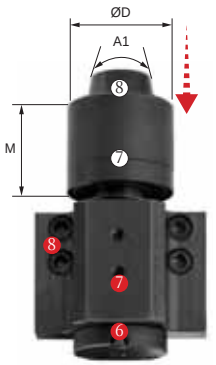
Be sure to give a slope to the cutting edge of a ball end mill when machining it as the ball end mill edge is worn out and the surface roughness of the workpiece becomes defective

MHA for mold (0°~90°)_Reinforced type

BT-MAH



Positioning pin



Shank size	M	A1	ØD
BT50	56.5	20°	Ø40

NO	Name
①	Inclination angle gradation (Axial positioning in 0°~90°)
②	Rotating angle graduation (Free radius position in 360°)
③	Head
④	Positioning pin part
⑤	Jaw key
⑥	Positioning ring
⑦	Positioning pin cover
⑧	Positioning pin

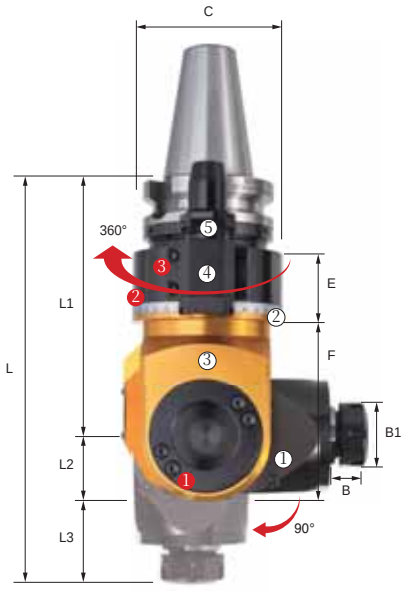
NO	Part name	Designation
❶	Inclination angle gradation screw	BT1216
❷	Head fixed bolts	BT0645
❸	Rotating angle graduation screw	BT0640
❹	Positioning ring set screw	MSST5-12
❺	Tilt Axies fixing bolt	BH0616
❻	Positioning pin height control bolt	BT0516
❼	Positioning pin set screw	BT0512
❽	Body position block set screw	BX0516

Designation	ØD	L	L1	L2	L3	C	C1	G	C2	Q	Q1	B	B1	P	A	Max RPM	Install tool	kg
BT50-MAH32-200	32	200	47	78	325	136	95	154	95	125	63	31	60	95	80	3,000	SIDE LOCK	19.6

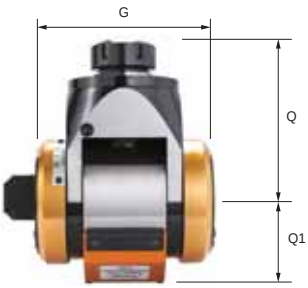
M This is metric size. We can also provide in inch type

KHU (0°~90°)_Collet type

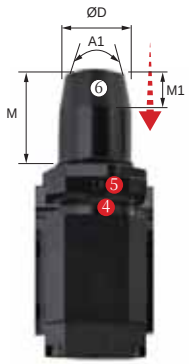
BT-KHU







Positioning pin



Shank size	M	M1	A	ØD
BT40	Max: 32 Min: 26	10	20°	Ø19.6

NO	Name
①	Inclination angle gradation (Axial positioning in 0°~90°)
②	Rotating angle graduation (Free radius position in 360°)
③	Head
④	Positioning pin part
⑤	Jaw key
⑥	Height control wrench hole

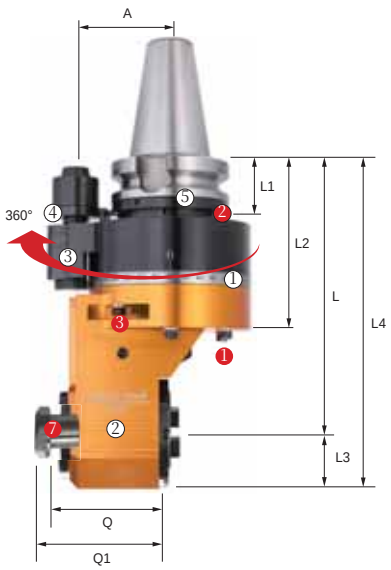
NO	Part name	Designation
1	Tilt Axies fixing bolt	BH0630
2	Bracket angle fixing bolt	BX0630
3	Position block fixing bolt	BX0512
4	Set screw	BT0404
5	Fixing bolts	BX05630

Designation	ØD	ØD1	L	L1	L2	L3	B	B1	E	F	C	A	G	Q	Q1	Torque rate (IN:OUT)	Direction of rotation (IN:OUT)	Max RPM	Collet	kg
BT40-KHU10-160	1.0~10.0	58	247	160	33	54	22	28	51	98	96	65	90	87	40	1:2	CW:CW	6,000	GER16	8.3
BT50-KHU10-180	1.0~10.0	84	267	180	33	54	22	28	53	103	114	80	90	87	40	1:2	CW:CW	6,000	GER16	11.5
BT50-KHU20-195	1.0~20.0	84	315	195	47	73	29	50	53	132	114	80	124	120	63	1:1	CW:CW	3,000	GER32	17.9

M This is metric size. We can also provide in inch type

HRAG (90° fixed)_Reinforced type

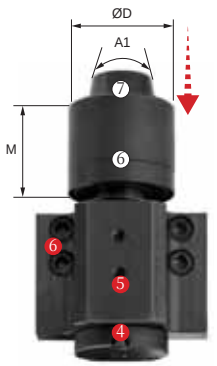
BT-HRAG







Positioning pin



Shank size	M	A1	ØD
BT50	56.5	20°	Ø40

NO	Name
①	Rotating angle graduation (Free radius position in 360°)
②	Head
③	Positioning pin part
④	Jaw key
⑤	Positioning ring
⑥	Positioning pin cover
⑦	Positioning pin

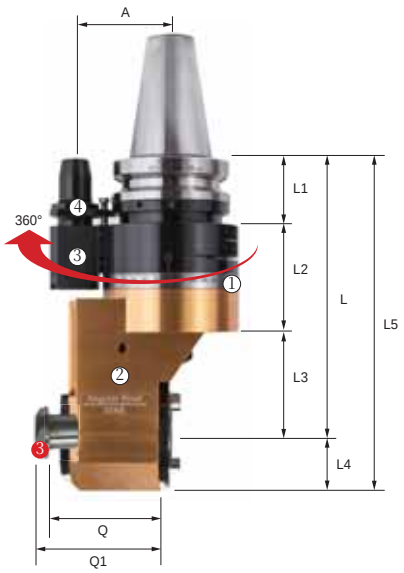
NO	Part name	Designation
❶	Head fixed bolts	BX0660
❷	Positioning ring set screw	MSST5-12
❸	Rotating angle graduation screw	BT0648
❹	Positioning pin height control bolt	BT0516
❺	Positioning pin set screw	BT0512
❻	Body position block set screw	BX0516
❼	BT/NT Bolt	

Designation	L	L1	L2	L3	L4	Q	Q1	A	G	G1	Max RPM	Tool shank	kg
BT50-HRAG40-230	230	56.5	145	46.5	276.5	89	101	80	93	136	3000	BT/NT40	18.2

M This is metric size. We can also provide in inch type

KAG (90° fixed type)

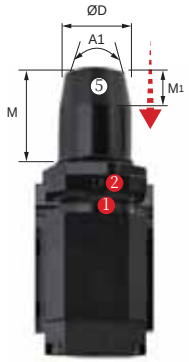
BT-KAG







Positioning pin



Shank size	M	M1	A1	ØD
BT40	Max: 32 Min: 26	10	20°	Ø19.6
BT50	Max: 35 Min: 29	15	20°	Ø28

NO	Name
①	Rotating angle graduation (Free radius position in 360°)
②	Head
③	Positioning pin part
④	Jaw key
⑤	Height control wrench hole

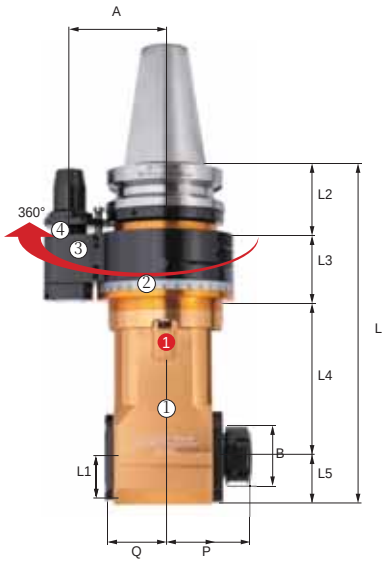
NO	Part name	Designation
1	Set screw	BT0404
2	Fixing bolts	BX50630
3	BT/NT Bolt	

Designation	L	L1	L2	L3	L4	L5	Q	Q1	A	C	G	Torque rate (IN:OUT)	Direction of rotation (IN:OUT)	MAX RPM	Holder shank	kg
BT40-KAG30-195	195	44	86	65	37.5	232.5	66	70	65	96	75	1:1	CW:CW	4,000	BT30/NT30	6.4
BT50-KAG40-230	230	57	88	85	46.5	276.5	89	94	80	114	93	1:1	CW: CW	3,000	BT40/NT40	15.8

M This is metric size. We can also provide in inch type

HRAG (90° fixed)_Collet type

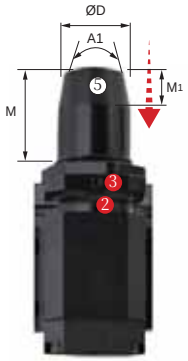
BT-KAH







Positioning pin



Shank size	M	M1	A1	ØD
BT40	Max: 32 Min: 26	10	20°	Ø19.6
BT50	Max: 35 Min: 29	15	20°	Ø28

NO	Name
①	Head
②	Rotating angle graduation (Free radius position in 360°)
③	Positioning pin part
④	Jaw key
⑤	Height control wrench hole

NO	Part name	Designation
❶	Head fixing bolts	BX0618
❷	Set screw	BT0404
❸	Fixing bolts	BX50630

Designation	ØD	L	L1	L2	L3	L4	L5	B	A	P	Q	G	G1	Torque rate (IN: OUT)	Max RPM	Collet	kg
BT40-KAH7-170	1.0~7.0	190	20	44	71	55	20	19	65	37	24.5	40	96	1: 1	5,000	GER11	4.6
BT40-KAH10-195	1.0~10.0	220	25	44	71	80	25	28	65	46	32	58	96	1: 1	5,000	GER16	5.8
BT40-KAH13-165	1.0~13.0	193	28	44	71	50	28	35	65	53	35	60	96	1: 1	5,000	GER20	5.7
BT40-KAH20-180	2.0~20.0	218	38	44	71	65	38	50	65	71	49	76	96	1: 1	3,500	GER32	6.7
BT50-KAH07-220	1.0~7.0	240	20	57	54	109	20	19	80	37	24.5	40	96	1: 1	5,000	GER11	9.8
BT50-KAH10-215	1.0~10.0	240	25	57	54	104	25	28	80	46	32	58	96	1: 1	5,000	GER16	10.7
BT50-KAH10-260	1.0~10.0	285	25	57	54	149	25	28	80	46	32	58	96	1: 1	5,000	GER16	11.0
BT50-KAH13-260	1.0~13.0	288	28	57	54	149	28	35	80	53	35	60	96	1: 1	5,000	GER20	11.2
BT50-KAH20-200	2.0~20.0	238	38	57	54	89	38	50	80	71	49	76	96	1: 1	3,500	GER32	11.6
BT50-KAH20-240	2.0~20.0	278	38	57	54	129	38	20	80	71	49	76	96	1: 1	3,500	GER32	12.4

M This is metric size. We can also provide in inch type

KAC (45° fixed)_Collet type

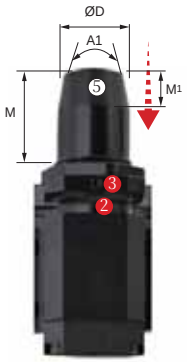
BT-KAC







Positioning pin



Shank size	M	M1	A1	ØD
BT40	Max: 32 Min: 26	10	20°	Ø19.6
BT50	Max: 35 Min: 29	15	20°	Ø28

NO	Name
①	Head
②	Rotating angle graduation (Free radius position in 360°)
③	Positioning pin part
④	Jaw key
⑤	Height control wrench hole

NO	Part name	Designation
❶	Head fixing bolts	BX0618
❷	Set screw	BT0404
❸	Fixing bolts	BXS0630

Designation	ØD	L	L1	L2	L3	B	G	G1	P	Q	A	Max RPM	Collet	kg
BT50-KAC10-240	1.0~10.0	240	57	54	129	28	60	96	25	54	80	5,000	GER16	9.7
BT50-KAC13-240	1.0~13.0	240	57	54	129	28	60	96	25	54	80	5,000	GER20	10.7
BT50-KAC20-250	2.0~20.0	240	57	54	139	50	72	96	30	60	80	3,500	GER32	11.7

M This is metric size. We can also provide in inch type

Zero fit collet

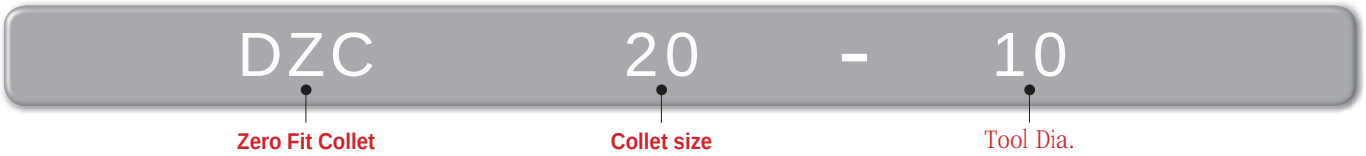
DZC

Correcting 10-20 *μm* runout generated at tool tip to 0-2 *μm*

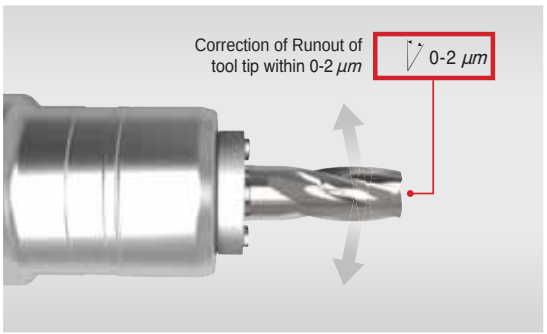
- Improves the runout and straightness of end tools
- Improves the surface roughness and quality of the machining area
- Improves the accuracy of boring hole dimension
- Improves the tool life of end tools

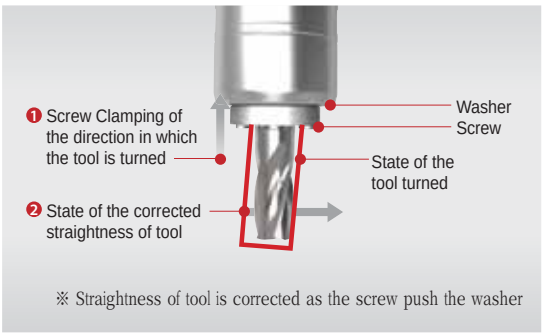


Code system



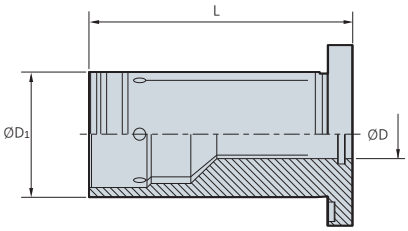
Features





DZC





(mm)

Designation	ØD	ØD1	L
DZC20-6	20	6	56.5
DZC20-8	20	8	56.5
DZC20-10	20	10	56.5
DZC20-12	20	12	56.5
DZC20-14	20	14	56.5
DZC20-16	20	16	56.5
DZC32-6	32	6	67.5
DZC32-8	32	8	67.5
DZC32-10	32	10	67.5
DZC32-12	32	12	67.5
DZC32-16	32	16	67.5
DZC32-20	32	20	67.5
DZC32-25	32	25	67.5

• Through coolant system not available

M This is metric size. We can also provide in inch type

Jetcoolant collet (for milling chuck)

DCJ

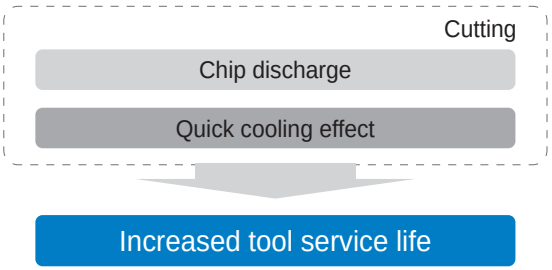
- Ensures a longer service life of cutting tools by preventing chips from adhering to tools
- Improveds chip breakability/breaking strong jet injection
- Maintains the performance of the conventional milling chuck
- Enables a fast change of the inside jet coolant by collet replacement
- Available an ultrahigh-pressure inside coolant



Designation	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
NPM20	●	●	●	●	●			
NPM32	●	●	●	●	●	●	●	
NPM42	●	●	●	●	●	●	●	●

• Can be used for an ultrahigh-pressure inside coolant

NPM + Jet coolant Collet



Easy assembly



※ Can be used by only combining a collet with the conventional chuck (NPM)

Coolant type

• Jet coolant



• Inside coolant



Chip evacuation





Coolant type

	Designation
DCJ20	DCJ20-6
	DCJ20-8
	DCJ20-10
	DCJ20-12
	DCJ20-16
DCJ32	DCJ32-6
	DCJ32-8
	DCJ32-10
	DCJ32-12
	DCJ32-16
	DCJ32-20
	DCJ32-25

Lock collet for milling chuck

DCL

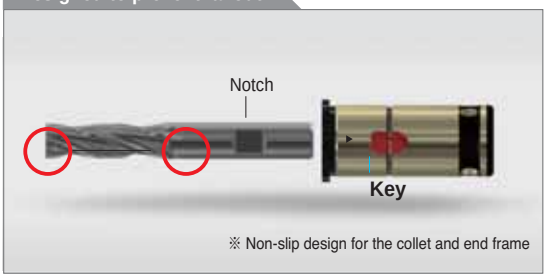


Milling chuck equipped with anti-fallout feature to prevent poor milling when machining a workpiece and improve tool service life (with DINE's milling chuck)

- Prevents the tool from falling out due to coolant pressure and vibration
- Useful for working with difficult-to-cut materials that require high workload
- Fit for difficult-to-cut materials with ultralight weight and high hardness in aerospace and automobile industries

Features

Designed to prevent fallout



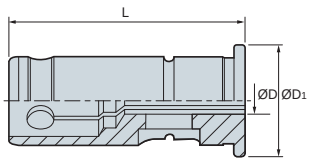
- Designed especially for extreme machining with a lot of mechanical actions, prevents the tool from deviating or falling out
- Weldon flat (DINE 6535HB) end mill used

Designed as non-slip



- Closely adhered to the grooves of the milling chuck - No slip occurring even under high torque

Detailed Specifications



(mm)

Designation	ØD	ØD1	L	Designation	ØD	ØD1	L
DCL20-6	6	20	53	**DCL32-10**	10	32	64.5
DCL20-8	8	20	53	**DCL32-12**	12	32	64.5
DCL20-10	10	20	53	**DCL32-14**	14	32	64.5
DCL20-12	12	20	53	**DCL32-16**	16	32	64.5
DCL20-14	14	20	53	**DCL32-18**	18	32	64.5
DCL20-16	16	20	53	**DCL32-20**	20	32	64.5
DCL32-6	6	32	64.5	**DCL32-25**	25	32	64.5
DCL32-8	8	32	64.5				

M This is metric size. We can also provide in inch type

Parts

Basic			Basic		
Division	Key	C-Grip	Division	Key	C-Grip
Part / Designation			Parts / Designation		
DCL20-6	DCL20-6K	DCL-CG20	**DCL32-10**	DCL32-10K	DCL-CG32
DCL20-8	DCL20-8K	DCL-CG20	**DCL32-12**	DCL32-12K	DCL-CG32
DCL20-10	DCL20-10K	DCL-CG20	**DCL32-14**	DCL32-14K	DCL-CG32
DCL20-12	DCL20-12K	DCL-CG20	**DCL32-16**	DCL32-16K	DCL-CG32
DCL20-14	DCL20-14K	DCL-CG20	**DCL32-18**	DCL32-18K	DCL-CG32
DCL20-16	DCL20-16K	DCL-CG20	**DCL32-20**	DCL32-20K	DCL-CG32
DCL32-6	DCL32-6K	DCL-CG32	**DCL32-25**	DCL32-25K	DCL-CG32
DCL32-8	DCL32-8K	DCL-CG32			

DAMPING PRO
Anti-Vibration Tool

KORLOY Anti-Vibration tool

KORLOY Damping Pro

- The application of a special design provides an excellent Anti-Vibration effect and is optimized for Overhang work
- Capable to elevate Feed comparing to standard arbor with stable machining
- Longer tool life and noise decrease
- Provides a solution for Mold, Deep Cavity machining, and Heavy-duty work

Code system

KDP - CAT50 - FMA25.4 - 260

KORLOY Damping Pro

Arbor taper
CAT type
BT type
HSK type

FMA: JIS B4113 Face milling
FMB: T-MAX Face milling/Shoulder Cutter
FMC: T-MAX Face milling/Shoulder Cutter

Length of gauge line

Features



- Anti-Vibration: Exclusively designed Anti-Vibration structure
- Material: Special alloy steel
- Anti-Vibration body: Application of high density damper
- Overhang: Capable for 2D~5D
- Coolant: Inner coolant is capable


BT type

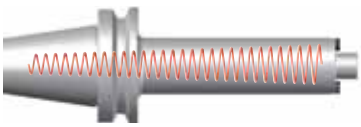

HSK type

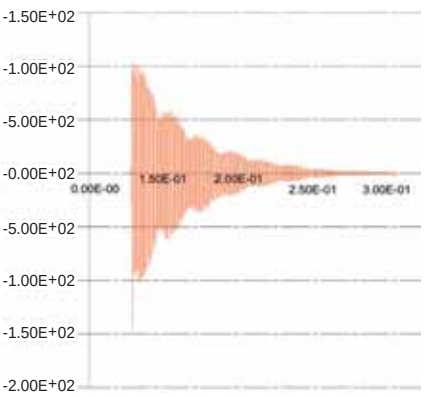

SK type

Various types and sizes are applicable

Comparison of vibration damping time

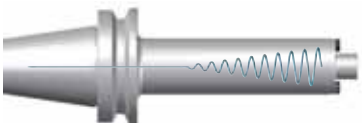
Standard arbor

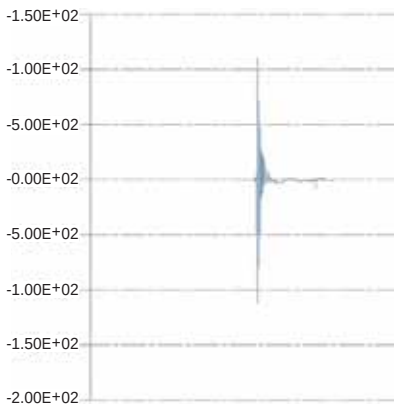




Longer Vibration damping time/
Chattering is caused while Overhang work

KORLOY DAMPIG PRO

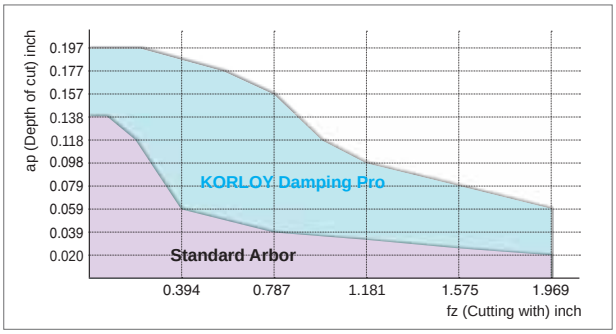




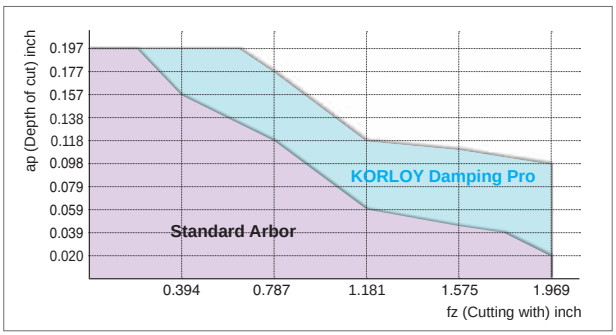
Short Vibration damping time/
Performance is 2~3 times better than standard arbor

Performance evaluation

- **Cutting condition:** fz (ipt) = 0.004
  vc (sfm) = 328
- **Cutter:** AMC4063HS 6flute
- **Arbor:** BT50-FMC22-210 (Standard arbor)
  KDP-BT50-FMC22-210 (Damping pro)



- **Cutting condition:** fz (ipt) = 0.004
  vc (sfm) = 328
- **Cutter:** FMRC3063HRD-H 6flute
- **Arbor:** BT50-FMC22-210 (Standard arbor)
  KDP-BT50-FMC22-210 (Damping pro)



Application examples

Mold machining	Side milling cutter machining	Facing for long depth	Deep-hole Boring machining
			
Better productivity than general arbor	Excellent performance in the deep grooving	Better productivity and surface roughness than general arbor	Better surface roughness and machinability than general arbor

Side milling cutter machining example

- Faulty occurrence on size and surface roughness by the vibration, when use the general arbor
- **Using Damping Pro, good size and surface roughness**



General arbor
Cutting condition:
vc (sfm) = 164
fz (ipt) = 0.039
ae (inch) = 0.787

Damping Pro
Cutting condition:
vc (sfm) = 328
fz (ipt) = 0.039
ae (inch) = 0.787

Big size Crankshaft machining example

- General arbor: ap = 0.079 inch
- KORLOY DAMPING PRO: ap = 0.157 inch available
- **2 times better productivity**



General arbor
Cutting condition:
vc (sfm) = 328
fz (ipt) = 0.045
ap (inch) = 0.079

Damping Pro
Cutting condition:
vc (sfm) = 328
fz (ipt) = 0.045
ap (inch) = 0.157

BT-FMA

ANSI/ASMEB5.50-1985



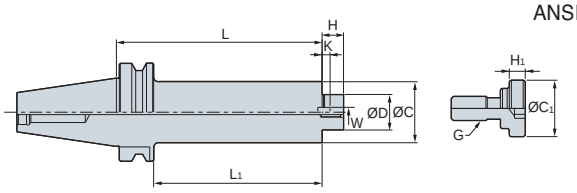


Fig. 1

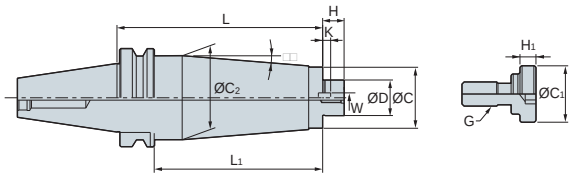


Fig. 2

(inch)

Designation		Cutter dia.	ØD	L	L_1	ØC	$ØC_2$	H	G	lbs	Fig.	α°
KDP-BT40 -	FMA1-8	3	1	8	6.937	2.25	-	0.69	1/2-20UNF	11.95	1	-
	FMA1-10	3	1	10	8.937	2.25	-	0.69	1/2-20UNF	14.33	2	-
KDP-BT50 -	FMA1-8	3	1	8	6.504	2.25	3	0.69	1/2-20UNF	21.23	2	4
	FMA1-10	3	1	10	8.504	2.25	3	0.69	1/2-20UNF	26.01	2	3
	FMA1.25-8	4	1.25	8	6.771	3	3.3	0.75	5/8-18UNF	28.00	2	1
	FMA1.25-10	4	1.25	10	8.504	3	3.3	0.75	5/8-18UNF	31.31	2	1

Parts

	Basic				For separate purchase
Division	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Part / Designation					
FMA25.4	K9.5 (B)	MBA-M12	BX0412	BX1225	LW-10
FMA31.75	K12.7 (D)	MBA-M16	BX0515	-	LW-14

CAT-FMA

ANSI/ASMEB5.50-1985



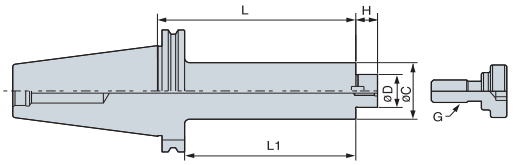


Fig. 1

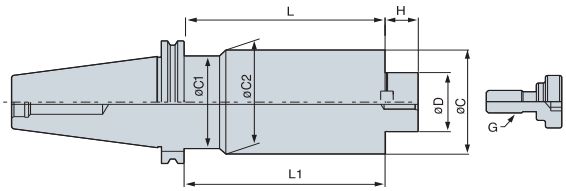


Fig. 2

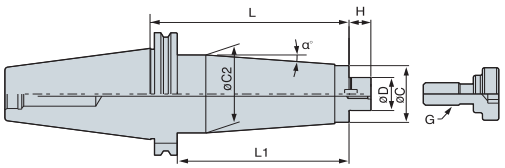


Fig. 3

(inch)

Designation		Cutter dia.	ØD	L	L_1	ØC	$ØC_1$	$ØC_2$	H	G	lbs	Fig.	α°
KDP-CAT40-	FMA0.75-8	2.5	0.75	8	7.25	1.75	-	-	0.69	3/8-24UNF	7.50	1	-
	FMA1-8	3	1	8	7.25	2.25	-	-	0.69	1/2-20UNF	10.54	2	-
KDP-CAT50-	FMA1-8	3	1	8	7.25	2.25	-	2.759	0.69	1/2-20UNF	18.30	3	2
	FMA1-10	3	1	10	9.25	2.25	-	2.759	0.69	1/2-20UNF	21.65	3	1
	FMA1.25-8	4	1.25	8	7.25	3	-	2.759	0.75	5/8-18UNF	20.72	3	1
	FMA1.25-10	4	1.25	10	9.25	3	-	2.759	0.75	5/8-18UNF	24.03	3	1

Parts

Basic					For separate purchase
Division	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Part					

HSK-FMA



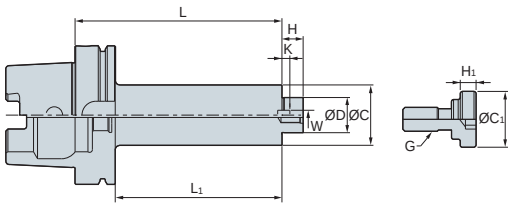


Fig. 1

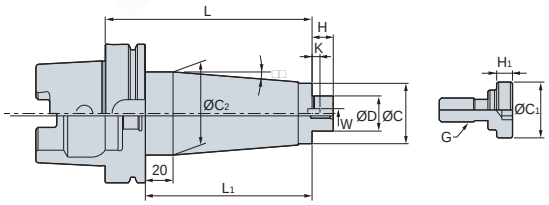


Fig. 2

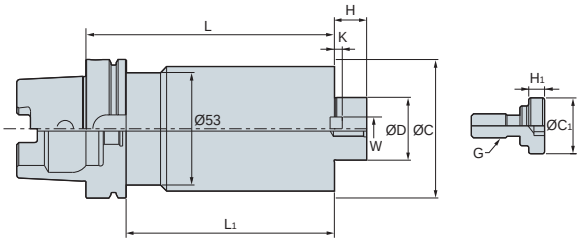


Fig. 3

(inch)

Designation		Cutter dia.	ØD	L	L_1	ØC	$ØC_1$	$ØC_2$	H	G	lbs	Fig.	α°
KDP-HSK63 -	**FMA1-8**	3	1	8	6.976	2.25	2.08	-	0.69	1/2-20UNF	10.80	1	0.1
	FMA1-10	3	1	10	5.791	2.25	2.08	-	0.69	1/2-20UNF	12.99	1	0.1
KDP-HSK100 -	**FMA1-8**	3	1	8	6.858	2.25	-	3	0.69	1/2-20UNF	18.34	2	3
	FMA1-10	3	1	10	8.858	2.25	-	3	0.69	1/2-20UNF	22.05	2	2
	FMA1.25-8	4	1.25	8	6.858	3	-	3.3	0.75	5/8-18UNF	24.87	2	1
	FMA1.25-10	4	1.25	10	8.858	3	-	3.3	0.75	5/8-18UNF	29.94	2	1

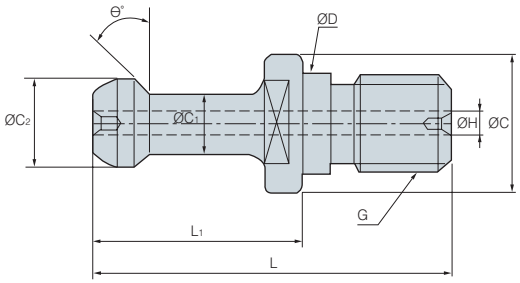
• Key and screw are clamped • Wrench is separately sold

Parts

	Basic				For separate purchase
Division	**Key**	**Clamp bolt**	**Wrench bolt**	**Wrench bolt**	**Wrench**
Part / **Designation**					
FMA25.4	K9.5 (B)	MBA-M12	BX0412	BX1230	LW-10
FMA31.75	K12.7 (D)	MBA-M16	BX0515	-	LW-14

Pull Stud Bolt





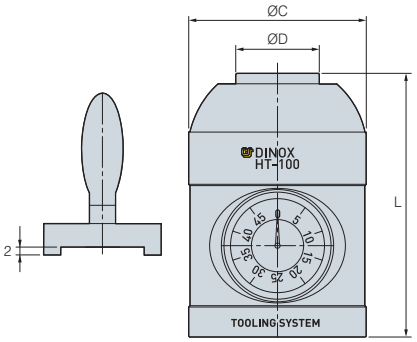
(mm)

Designation	ØD	ØC	ØC1	ØC2	L1	L	θ	G	ØH
P20T-1	8.5	12	6	8.5	17.5	31.5	15°	M8	
P30T-1	12.5	16.5	7	11	23	43	45°	M12	
P30T-1(Ø2.5)	12.5	16.5	7	11	23	43	45°	M12	Ø2.5
P30T-2	12.5	16.5	7	11	23	43	30°	M12	
P30T-2(Ø2.5)	12.5	16.5	7	11	23	43	30°	M12	Ø2.5
P40T-1	17	23	10	15	35	60	45°	M16	
P40T-1(3)	17	23	10	15	35	60	45°	M16	Ø3
P40T-2	17	23	10	15	35	60	30°	M16	
PS40-3F	17	23	10	15	35	60	0°	M16	
PS-G51	17	22	12.45	18.8	19.11	44.11	45°	M16	Ø7
DIN69872-A40	17	23	14	19	26	54	15°	M16	Ø7
DIN69872-B40	17	23	14	19	26	54	15°	M16	
JISB6339-A40(PS-806)	17	23	14	19	29	54	15°	M16	Ø7
JISB6339-B40(PS-805)	17	23	14	19	29	54	15°	M16	
P50T-1	25	38	17	23	45	85	45°	M24	
P50T-1(7)	25	38	17	23	45	85	45°	M24	Ø7
P50T-2	25	38	17	23	45	85	30°	M24	
PS50-1F	25	38	17	23	45	85	0°	M24	
PS50-1FH	25	38	17	23	45	85	0°	M24	Ø8
PS-G41	25	37	20.83	28.96	25.2	65.2	45°	M24	Ø10
DIN69872-A50	25	36	21	28	34	74	15°	M24	Ø11.5
P50T-1HS	25	38	17	23	45	85	45°	M24	Ø5.7

M This is metric size. We can also provide in inch type

HT





(mm)

Designation	ØD	ØC	L
HT-100	32	68	100

- Good for setting the Tool length at CNC machine
- No inturferance between height Touch setter and Tool makes safe work
- Location Accuracy: ±0.003 mm

M This is metric size. We can also provide in inch type

PARTS

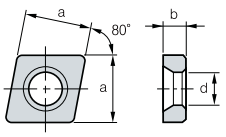
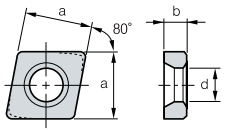
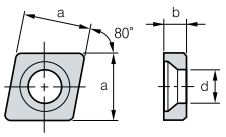
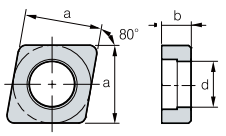
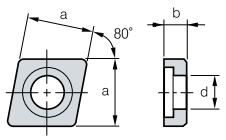
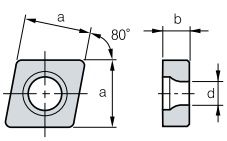
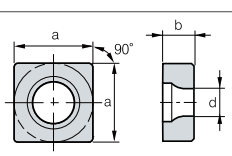
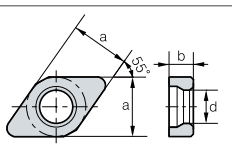
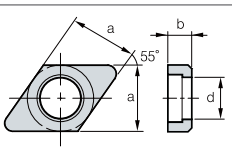
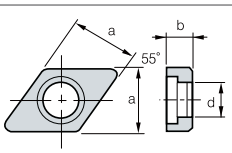
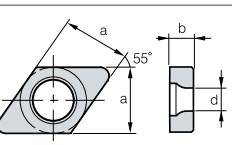


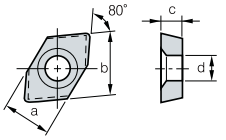
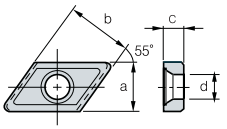
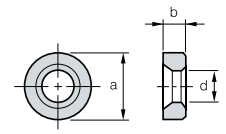
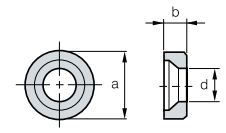
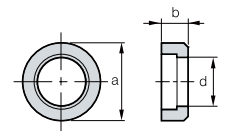
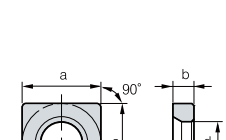
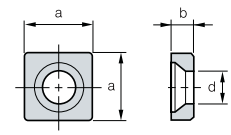
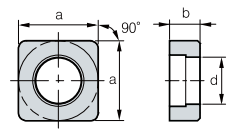
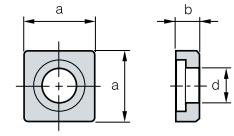
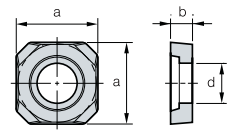
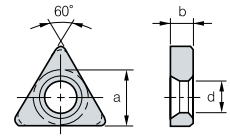
H

Parts

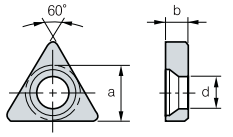
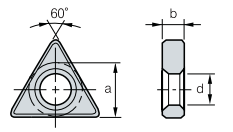
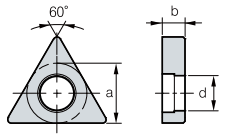
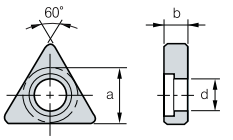
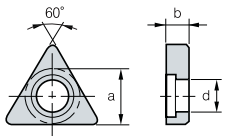
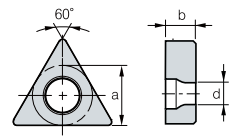
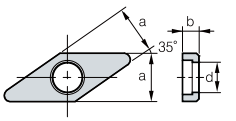
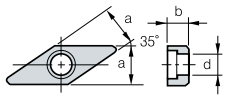
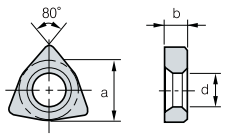
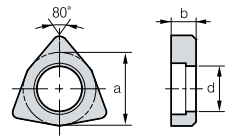
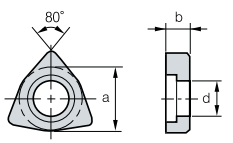
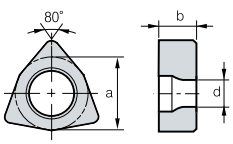
H02	Shim
H03	Cartridge
H03	Chip Breaker
H03	Chip Cover
H03	Clamp
H04	Coolant Bolt
H04	Wrench Bolt
H04	Lever
H05	Locator
H05	Nut
H05	Pin
H05	Screw
H06	Shim Pin
H07	Spring
H07	Wrench
H07	Stop Ring
H07	Washer
H07	Stopper
H07	Nozzle

Shim

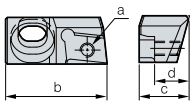
Geometry	Designation	Dimensions				
		a	b	c	d	angle
	SC32	0.335	0.125		0.193	
	SC32N	0.335	0.125		0.192	
	SC42	0.492	0.125		0.272	
	SC42N	0.457	0.125		0.256	
	SC53	0.618	0.187		0.311	
	SC53N	0.575	0.187		0.319	
	SC63	0.742	0.187		0.394	
	SC63N	0.701	0.187		0.378	
	SC83	0.961	0.187		0.504	
	SC84N	0.953	0.250		0.512	
	SC42B	0.492	0.125		0.272	
	SC42CC	0.492	0.125		0.138	
	SC32D	0.365	0.125		0.255	
	SC43D	0.490	0.187		0.289	
	SC53D	0.615	0.187		0.380	
	SC63D	0.740	0.187		0.443	
	SC84D	0.987	0.250		0.585	
	SC42S	0.453	0.125		0.252	
	SC32S	0.327	0.125		0.213	
	SC63V	0.722	0.187		0.217	
	SC83V	0.996	0.187		0.258	
	SC84V	0.996	0.250		0.250	
	SC32V	0.359	0.125		0.134	
	SC42V	0.496	0.125		0.177	
	SC44V	0.496	0.250		0.177	
	SC54V	0.620	0.250		0.217	
	SS32V	0.359	0.125		0.134	
	SS42V	0.496	0.125		0.177	
	SS54V	0.620	0.250		0.217	
	SS64V	0.744	0.250		0.217	
	SD317	0.368	0.106		0.205	
	SD32N	0.335	0.125		0.192	
	SD42	0.492	0.125		0.272	
	SD42N	0.457	0.125		0.256	
	SD43N	0.457	0.187		0.256	
	SD32D	0.362	0.125		0.228	
	SD43D	0.490	0.187		0.289	
	SD32S	0.335	0.125		0.213	
	SD42S	0.453	0.125		0.252	
	SD32V	0.359	0.125		0.134	
	SD43V	0.496	0.187		0.177	
	SD44V	0.496	0.250		0.177	

Geometry	Designation	Dimensions				
		a	b	c	d	angle
	SES33C	0.358	0.472	0.187	0.138	
	SK33C	0.367	0.579	0.189	0.138	
	SK33CL	0.367	0.579	0.189	0.138	
	SR10	0.331	0.125		0.185	
	SR12	0.394	0.125		0.185	
	SR16	0.533	0.187		0.272	
	SR20	0.673	0.191		0.311	
	SR25	0.866	0.250		0.378	
	SR32	1.094	0.250		0.512	
	SR42CC	0.495	0.125		0.138	
	SR10S	0.346	0.125		0.213	
	SR12S	0.415	0.125		0.213	
	SS32	0.335	0.125		0.193	
	SS32N	0.335	0.125		0.192	
	SS42	0.492	0.125		0.272	
	SS42B	0.492	0.125		0.272	
	SS42N	0.457	0.125		0.256	
	SS53	0.618	0.187		0.311	
	SS53N	0.575	0.187		0.319	
	SS63	0.742	0.187		0.394	
	SS63N	0.701	0.187		0.378	
	SS84	0.961	0.250		0.504	
	SS84N	0.953	0.250		0.512	
	SS42CC	0.492	0.125		0.138	
	SS32CC	0.366	0.125		0.138	
	SS32D	0.365	0.125		0.227	
	SS43D	0.490	0.187		0.289	
	SS53D	0.615	0.187		0.380	
	SS63D	0.740	0.187		0.443	
	SS84D	0.990	0.250		0.568	
	SS32S	0.327	0.125		0.213	
	SS42S	0.453	0.125		0.252	
	SS42SAF	0.441	0.118		0.217	
	ST317	0.368	0.106		0.197	
	ST317B	0.368	0.106		0.197	
	ST317N	0.335	0.106		0.192	
	ST42	0.492	0.125		0.272	
	ST42N	0.457	0.125		0.256	
	ST53	0.618	0.187		0.311	

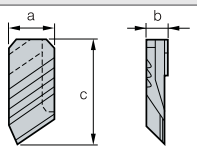
Shim

Geometry	Designation	Dimensions				
		a	b	c	d	angle
	ST32CC	0.368	0.125		0.138	
	ST32C1	0.359	0.125		0.195	
	ST42C1	0.484	0.125		0.195	
	ST32D	0.368	0.125		0.227	
	ST43D	0.493	0.187		0.289	
	ST53D	0.618	0.187		0.380	
	ST63D	0.743	0.187		0.443	
	ST32M	0.343	0.125		0.185	
	ST43M	0.492	0.187		0.248	
	ST32S	0.335	0.125		0.213	
	ST32V	0.359	0.125		0.134	
	ST44V	0.496	0.250		0.177	
	SV32D	0.362	0.125		0.228	
	SV43D	0.484	0.187		0.289	
	SV32D2	0.362	0.125		0.228	
	SV32S	0.331	0.125		0.213	
	SW317	0.368	0.106		0.197	
	SW317N	0.335	0.106		0.192	
	SW42	0.492	0.125		0.272	
	SW42N	0.457	0.125		0.256	
	SW32D	0.364	0.125		0.228	
	SW43D	0.490	0.187		0.289	
	SW53D	0.615	0.187		0.380	
	SW63D	0.740	0.187		0.443	
	SW84D	0.980	0.250		0.568	
	SW43M	0.492	0.187		0.244	
	SW32M	0.335	0.125		0.205	
	SW32V	0.359	0.125		0.134	
	SW44V	0.496	0.250		0.177	
	SW54V	0.620	0.187		0.217	

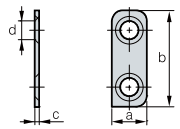
Cartridge

Geometry	Designation	Dimensions				
		a	b	c	d	angle
	LAPDR-AJ	M4×0.7	1.181	0.591	0.394	

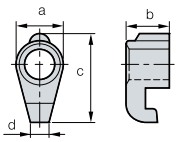
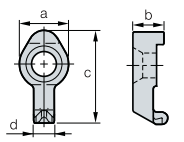
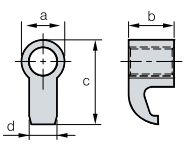
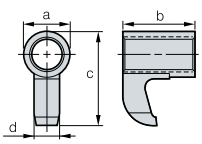
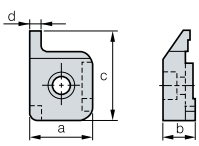
Chip breaker

Geometry	Designation	Dimensions				
		a	b	c	d	angle
	CB20	0.335	0.134	0.787		

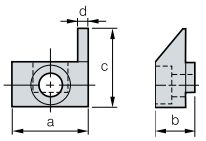
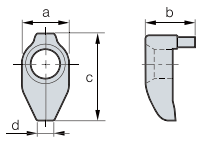
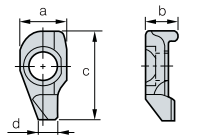
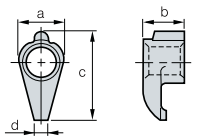
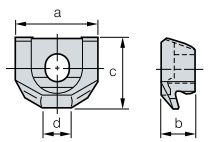
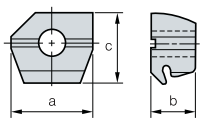
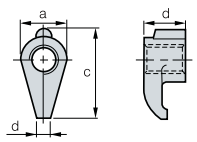
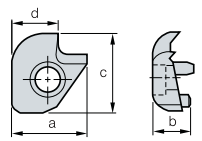
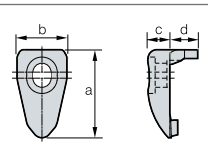
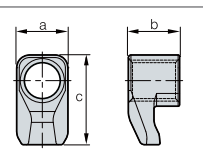
Chip cover

Geometry	Designation	Dimensions				
		a	b	c	d	angle
	CFMP3R14R1-A	0.413	0.787	0.039	(Ø0.169)	
	CFMP3R-A	0.315	0.709	0.039	(Ø0.169)	
	CFMP4R-A	0.315	0.866	0.039	(Ø0.169)	

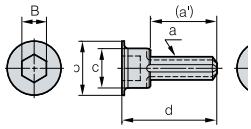
Clamp

Geometry	Designation	Dimensions				
		a	b	c	d	angle
	CA05R	0.350	0.217	0.693	0.130	
	CA06R	0.472	0.283	0.811	0.209	
	CH5R3	0.309	0.283	0.583	0.122	
	CH6R4	0.473	0.354	0.944	0.148	
	CBH4.5R1	0.315	0.226	0.697	0.157	
	CBH4.5R2	0.374	0.252	0.709	0.157	
	CBH5R1	0.394	0.307	0.839	0.197	
	CBH6R1	0.472	0.366	1.024	0.236	
	CDH6N	0.374	0.394	0.732	0.240	
	CDH7N	0.311	0.449	0.579	0.185	
	CDH8N	0.429	0.665	0.882	0.240	
	CDH8N1	0.429	0.665	0.752	0.240	
	CDH8N2	0.429	0.665	1.000	0.240	
	CDH8N3	0.492	0.780	1.000	0.362	
	CDS8N	0.425	0.669	0.874	0.197	
	CGH5R1	0.768	0.374	1.134	0.098	
	CGH5R2	0.807	0.374	1.134	0.138	
	CGH5R3	0.886	0.374	1.134	0.217	

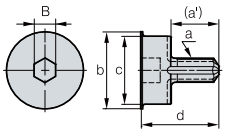
Clamp

Geometry	Designation	Dimensions				
		a	b	c	d	angle
	CGH6R1	0.878	0.469	0.913	0.098	
	CGH6R2	0.913	0.469	0.913	0.134	
	CGH6R3	0.945	0.469	0.913	0.165	
	CHH3.5R1	0.295	0.264	0.512	0.096	
	CHH4.5R1	0.311	0.309	0.555	0.100	
	CHH5.5R1	0.386	0.394	0.646	0.157	
	CH4R1	0.291	0.197	0.555	0.122	
	CH5R1	0.394	0.260	0.795	0.177	
	CH5R2	0.270	0.276	0.543	0.079	
	CH6R2	0.348	0.343	0.650	0.079	
	CH6R3	0.465	0.394	0.906	0.165	
	CMH5R1	0.728	0.311	0.630	0.246	
	CMH6R2	0.787	0.433	0.689	0.543	
	CMH6R6	0.728	0.311	0.630	0.246	
	CMH6R1	0.945	0.335	0.650	0.326	
	CMH6R3	0.787	0.433	0.689		
	CMH6L3	0.787	0.433	0.689		
	CS5R1	0.268	0.276	0.571	0.079	
	CS6R1	0.346	0.335	0.713	0.106	
	CS8R1	0.465	0.394	0.906	0.165	
	CTH6L1	0.925	0.472	1.000	0.565	
	CTH6R1	0.925	0.472	1.000	0.565	
	CTH6R2	0.857	0.508	1.229	0.682	
	CVH3	0.827	0.433	0.228	0.303	
	CVH3V	1.142	0.551	0.276	0.315	
	CVH4	1.004	0.571	0.236	0.276	
	CVH5	1.181	0.669	0.295	0.374	
	CVH6	1.319	0.728	0.315	0.394	
	CXH8N	0.398	0.394	0.689		

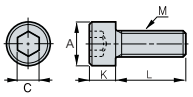
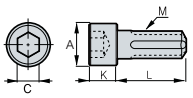
Coolant bolt

Geometry	Designation	Dimensions					
		a	b	c	d	B(T)	á
	CBA063-3IN/MM	M10	Ø0.984	Ø0.630	1.457	0.315	(1.063)
	CBA063-4IN/MM	M10	Ø0.984	Ø0.630	1.673	0.315	(1.063)
	CBA080-IN/MM	M12	Ø1.102	Ø0.709	1.791	0.394	(1.260)
	CBP063-IN/MM	M10	Ø0.866	Ø0.630	1.520	0.315	(1.063)
	CBP080-IN/MM	M12	Ø0.984	Ø0.709	1.913	0.394	(1.260)

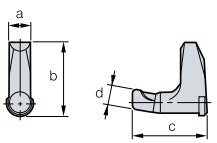
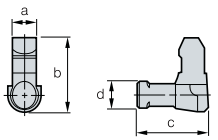
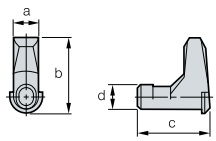
Coolant bolt

Geometry	Designation	Dimensions					
		a	b	c	d	B(T)	á
	CBA100-IN/MM	M16	Ø2.126	Ø1.693	1.850	0.551	(1.260)
	CBA100-IN-25.4	M12	Ø1.732	Ø1.417	1.634	0.394	(0.984)
	CBA125-IN	M20	Ø2.559	Ø2.126	2.205	0.669	(1.496)
	CBA125-IN-25.4	M12	Ø1.732	Ø1.417	1.713	0.394	(0.984)
	CBA125-MM	M20	Ø2.559	Ø2.126	2.244	0.669	(1.378)
	CBA160-IN	M24	Ø3.268	Ø2.874	2.205	0.748	(1.496)
	CBA160-MM	M20	Ø3.268	Ø2.874	2.087	0.669	(1.339)
	CBP100-IN	M16	Ø1.969	Ø1.693	1.913	0.551	(1.260)
	CBP100-IN-25.4	M12	Ø1.732	Ø1.417	1.831	0.394	(0.984)
	CBP100-MM-1	M16	Ø1.969	Ø1.693	1.913	0.551	(1.417)
	CBP125-IN	M20	Ø2.559	Ø2.126	2.205	0.669	(1.496)
	CBP125-IN-25.4	M12	Ø1.732	Ø1.417	2.165	0.394	(0.984)
	CBP125-MM	M20	Ø2.559	Ø2.126	2.244	0.669	(1.378)
	CBP125-MM-1	M20	Ø2.402	Ø2.126	2.583	0.551	(1.299)
	CBP160-IN	M24	Ø3.268	Ø2.874	2.205	0.748	(1.496)
	CBP160-MM	M20	Ø3.268	Ø2.874	2.087	0.669	(1.339)

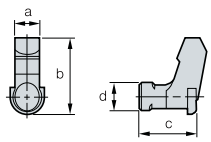
Wrench bolt

Geometry	Designation	Dimensions				
		A	C	K	L	M
	SB0825	0.512	0.236	0.315	0.984	M08×1.25
	SB1025	0.630	0.315	0.394	0.984	M10×1.50
	SB1035	0.630	0.315	0.394	1.378	M10×1.50
	SB1230	0.709	0.394	0.472	1.181	M12×1.75
	SB1630	0.945	0.551	0.630	1.181	M16×2.0
	SB1645	0.945	0.551	0.630	1.772	M6×2.0
	SB2040	1.181	0.669	0.787	1.575	M20×2.5
	CB1025	0.512	0.236	0.315	0.984	M08×1.25
	CB1025	0.630	0.315	0.394	0.984	M10×1.50
	CB1035	0.630	0.315	0.394	1.378	M10×1.50
	CB1230	0.709	0.394	0.472	1.181	M12×1.75
	CB1245	0.709	0.394	0.472	1.772	M12×1.75
	CB1630	0.945	0.551	0.630	1.181	M16×2.0
	CB1645	0.945	0.551	0.630	1.772	M16×2.0
	CB2040	1.181	0.669	0.787	1.575	M20×2.5

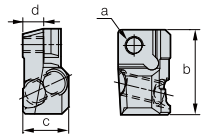
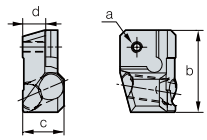
Lever

Geometry	Designation	Dimensions			
		a	b	c	d
	LR10	0.134	0.425	0.461	0.118
	LR12	0.146	0.531	0.528	0.138
	LR16	0.187	0.736	0.720	0.169
	LR20	0.232	0.807	0.736	0.219
	LR25	0.289	0.955	0.933	0.244
	LR32	0.333	1.169	1.061	0.311
	LV2	0.102	0.305	0.236	0.083
	LV3B	0.122	0.394	0.374	0.146
	LV4B	0.185	0.573	0.614	0.185
	LV4BN	0.185	0.630	0.587	0.184
	LV3	0.146	0.394	0.472	0.142
	LV3N	0.148	0.394	0.472	0.140
	LV3AN	0.148	0.476	0.449	0.183
	LV3C	0.122	0.394	0.309	0.142
	LV3CN	0.126	0.394	0.307	0.142
	LV3DN	0.126	0.459	0.374	0.140
	LV4	0.185	0.573	0.551	0.185
	LV4N	0.185	0.530	0.520	0.184
	LV5	0.236	0.673	0.669	0.236
	LV5N	0.236	0.646	0.672	0.234
	LV5AN	0.236	0.741	0.681	0.234
	LV6N	0.295	0.807	0.827	0.299
	LV8N	0.339	1.004	1.000	0.339

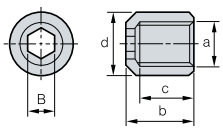
Lever

Geometry	Designation	Dimensions			
		a	b	c	d
	LV4A	0.181	0.521	0.392	0.185
	LV4AN	0.185	0.524	0.394	0.184

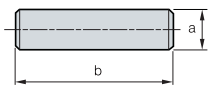
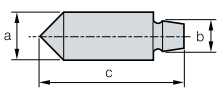
Locator

Geometry	Designation	Dimensions			
		a	b	c	d
	LFMP3R-A	M3.5	0.736	0.398	0.181
	LFMP4R1-A	M4.5	0.957	0.543	0.244
	LFMP4R-A	M4.5	1.035	0.543	0.244
	LFMA3R-A	M3	0.728	0.374	0.189
	LFMA4R-A	M3.5	1.024	0.516	0.287

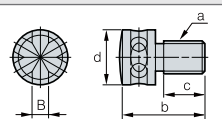
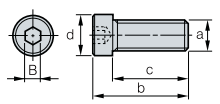
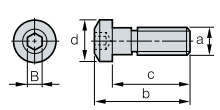
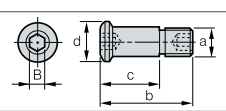
Nut

Geometry	Designation	Dimensions					
		a	b	c	d	B(T)	á
	N0407	M4 X 0.7	0.295	0.236	0.276	0.118	
	N0508	M5 X 0.8	0.327	0.260	0.276	0.118	

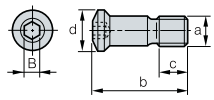
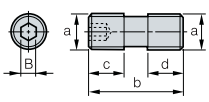
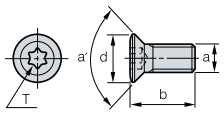
Pin

Geometry	Designation	Dimensions		
		a	b	c
	PN0308	0.118	0.315	
	PN0310	0.118	0.394	
	PN0312	0.118	0.472	
	PN0314	0.118	0.551	
	PN0515	0.189	0.130	0.571

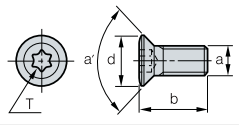
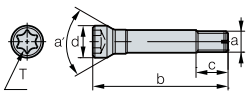
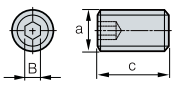
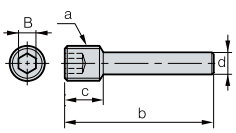
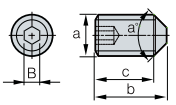
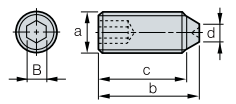
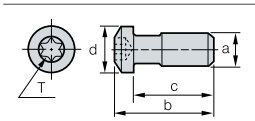
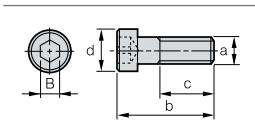
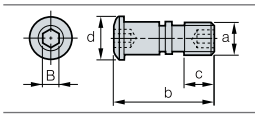
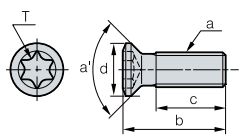
Screw

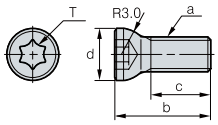
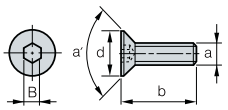
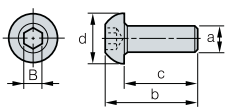
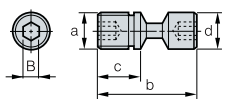
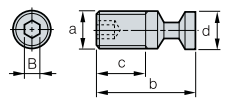
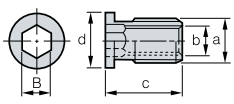
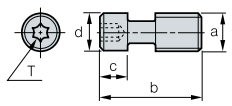
Geometry	Designation	Dimensions				
		a	b	c	d	B(T)
	AZ0508F	M5 X 0.5	0.512	0.315	0.354	Ø0.079
	AZ0514	M5 X 0.8	0.551	0.276	0.354	Ø0.098
	BHA0510	M5 X 0.8	0.591	0.394	0.335	0.157
	BHA0512	M5 X 0.8	0.669	0.472	0.335	0.157
	BHA0612	M6 X 1.0	0.709	0.472	0.394	0.197
	BHA0614	M6 X 1.0	0.787	0.551	0.394	0.197
	BHA0616	M6 X 1.0	0.866	0.630	0.394	0.197
	BHA0619-NYLOK	M6 X 1.0	0.984	0.748	0.394	0.197
	CHX0407	M4 X 0.7	0.374	0.290	0.224	0.098
	CHX0415	M4 X 0.7	0.689	0.591	0.213	0.098
	CHX0510	M5 X 0.8	0.516	0.398	0.303	0.118
	CHX0518	M5 X 0.8	0.846	0.709	0.315	0.118
	CHX0622	M6 X 1.0	1.043	0.866	0.394	0.157
	CHX0513	M5 X 0.8	0.512	0.315	0.252	0.098
	CHX0616	M6 x 1.0	0.638	0.398	0.335	0.118
	CHX0617L	M6 x 1.0(Left)	0.677	0.398	0.335	0.118
	CHX0621	M6 X 1.0	0.827	0.398	0.335	0.118

Screw

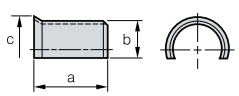
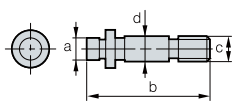
Geometry	Designation	Dimensions					
		a	b	c	d	B(T)	á
	CHX0625	1/4-20UNC	0.976	0.433	0.394	0.157	
	CTX03510	M3.5 X 0.6	0.394	0.185	0.209	0.591	
	CTX04513	M4.5 X 0.75	0.516	0.272	0.268	0.787	
	CTX04513H	M4.5 X 0.75	0.516	0.283	0.268	0.787	
	CTX0515	M5 X 0.8	0.591	0.315	0.276	0.787	
	CTX0517	M5 X 0.8	0.689	0.394	0.276	0.787	
	CTX0621	M6 X 1.0	0.835	0.488	0.354	0.984	
	DHA0514	M5 X 0.8	0.551	0.197	0.276	0.098	
	DHA0617	M6 x 1.0	0.669	0.276	0.295	0.118	
	DHA0620	M6 x 1.0	0.787	0.315	0.315	0.118	
	DHA0624	M6 x 1.0	0.945	0.472	0.335	0.118	
	DHA0815	M8 X 1.25	0.610	0.246	0.246	0.157	
	DHA0818F	M8 X 1.0	0.709	0.335	0.217	0.157	
	DHA0820	M8 X 1.25	0.787	0.315	0.354	0.157	
	DHA0821F	M8 X 1.0	0.827	0.335	0.335	0.157	
	DHA0825	M8 X 1.25	0.984	0.394	0.354	0.157	
	DHA0830	M8 X 1.25	1.181	0.453	0.453	0.157	
	ETGA0520CBM	M5 X 0.8	0.787		0.256	0.787	43°
	ETGD0825	M8 X 1.25	0.992		0.437	1.575	40°
	ETKA0523	M5 X 0.8	0.906		0.299	0.787	43°
	ETKA0625	M6 X 1.0	1.004		0.346	0.787	43°
	ETKD0516	M5 X 0.8	0.646		0.268	0.787	40°
	ETKD0620	M6 X 1.0	0.787		0.327	0.984	40°
	ETNA02506	M2.5 X 0.45	0.224		0.134	0.276	43°
	ETNA0408	M4 X 0.7	0.315		0.201	0.591	43°
	ETNA0412	M4 X 0.7	0.472		0.201	0.591	43°
	ETNA0511	M5 X 0.8	0.433		0.252	0.787	43°
	ETND02506F	M2.5 X 0.35	0.246		0.122	0.276	40°
	ETND0307F	M3 X 0.35	0.307		0.146	0.315	40°
	ETND03509	M3.5 X 0.6	0.378		0.185	0.394	40°
	FTGA03507	M3.5 X 0.6	0.276		0.209	0.591	60°
	FTGA03508	M3.5 X 0.6	0.315		0.209	0.591	60°
	FTGA03510	M3.5 X 0.6	0.394		0.209	0.591	60°
	FTGA03512	M3.5 X 0.6	0.472		0.197	0.591	60°
	FTGA0411F	M4 X 0.5	0.433		0.276	0.591	60°
	FTGA0417CBM	M4 X 0.7	0.669		0.217	0.591	62°
	FTGA0510-P	M5 X 0.8	0.394		0.276	0.787	63°
	FTGA0512-P	M5 X 0.8	0.472		0.276	0.787	63°
	FTGA0513	M5 X 0.8	0.520		0.276	0.787	61°
	FTGA0513-P	M5 X 0.8	0.512		0.276	0.787	63°
	FTGA0517	M5 X 0.8	0.669		0.295	0.787	61°
	FTGA0621	M6 X 1.0	0.846		0.354	0.787	61°
	FTGA0826	M8 X 1.25	1.024		0.457	0.984	61°
	FTKA02206	M2.2 X 0.45	0.217		0.118	0.236	60°
	FTKA02206S	M2.2 X 0.45	0.220		0.120	0.276	60°
	FTKA02555	M2.5 X 0.45	0.217		0.138	0.276	60°
	FTKA02565	M2.5 X 0.45	0.256		0.138	0.276	60°
	FTKA02565S	M2.5 X 0.45	0.256		0.150	0.315	60°
	FTKA0307	M3 X 0.5	0.283		0.165	0.354	60°
	FTKA03508	M3.5 X 0.6	0.331		0.217	0.591	60°
	FTKA03510	M3.5 X 0.6	0.409		0.217	0.591	60°
	FTKA03511A	M3.5 X 0.6	0.433		0.205	0.591	60°
	FTKA0408	M4 X 0.7	0.331		0.217	0.591	60°
	FTKA0410	M4 X 0.7	0.394		0.217	0.591	60°
	FTKA0411K	M4 X 0.7	0.433		0.268	0.591	60°
	FTKA0412B	M4 X 0.7	0.492		0.217	0.591	60°
	FTKA0413	M4 X 0.7	0.512		0.217	0.591	60°
	FTNA01633	M1.6 X 0.35	0.130		0.102	0.236	60°
	FTNA0203	M2 X 0.4	0.118		0.106	0.236	60°
	FTNA02033	M2 X 0.4	0.130		0.106	0.236	60°
	FTNA0204	M2 X 0.4	0.169		0.106	0.236	60°
	FTNA02205	M2.2 X 0.45	0.177		0.118	0.236	60°
	FTNA0238	M2 X 0.4	0.150		0.118	0.236	60°
	FTNA0305	M3 X 0.5	0.205		0.165	0.354	60°
	FTNA0306	M3 X 0.5	0.244		0.165	0.354	60°
	FTNA0307	M3 X 0.5	0.283		0.165	0.354	60°
	FTNA0408	M4 X 0.7	0.335		0.217	0.591	60°
	FTNA0411	M4 X 0.7	0.433		0.217	0.591	60°
	FTNA0511	M5 X 0.8	0.276		0.264	0.787	63°
	FTNA0513	M5 X 0.8	0.512		0.276	0.787	60°
	FTNA0516	M5 X 0.8	0.630		0.276	0.787	60°

Screw

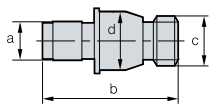
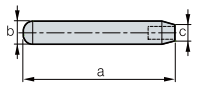
Geometry	Designation	Dimensions					
		a	b	c	d	B(T)	á
	FTNB0411	M4 X 0.7	0.425		0.224	0.591	60°
	FTNC04509	M4.5 X 0.75	0.374		0.268	0.787	55°
	FTNC04511	M4.5 X 0.75	0.453		0.268	0.787	55°
	FTNB0209	2 X 0.4	0.354	0.098	0.106		60°
	FTNB0209-P	2 X 0.4	0.354	0.098	0.106		60°
	FTNB02512	2.5 X 0.45	0.472	0.138	0.138		60°
	FTNB02512-P	2.5 X 0.45	0.472	0.138	0.138		60°
	FTNB02514	2.5 X 0.45	0.551	0.138	0.138		60°
	FTNB02514-P	2.5 X 0.45	0.551	0.138	0.138		60°
	FTNB0316	3 X 0.5	0.630	0.177	0.165		60°
	FTNB0316-P	3 X 0.5	0.630	0.177	0.165		60°
	FTNB0319	3 X 0.5	0.748	0.197	0.177		60°
	FTNB03522	3.5 X 0.6	0.866	0.220	0.217		60°
	FTNB03524	3.5 X 0.6	0.945	0.220	0.217		60°
	FTNB0426	4 X 0.7	1.024	0.264	0.217		60°
	FTNB0528	5 X 0.8	1.102	0.264	0.276		60°
	KHA0508	M5 X 0.8	0.315			0.098	
	KHA0510	M5 X 0.8	0.394			0.098	
	KHA0610	M6 X 1.0	0.394			0.118	
	KHA0612	M6 X 1.0	0.472			0.118	
	KHA0812	M8 X 1.25	0.472			0.157	
	KHA0815	M8 X 1.25	0.591			0.157	
	KHA1015	M10 X 1.5	0.591			0.197	
	KHA1020	M10 X 1.5	0.787			0.197	
	KHB0417	M4 X 0.7	0.677	0.177	0.098	0.079	
	KHB0406	M4 X 0.7	0.236	0.165	0.118	0.079	
	KHC0510	M5 X 0.8	0.394	0.319		0.098	90°
	KHC0610	M6 X 1.0	0.394	0.307		0.118	90°
	KHC0812	M8 X 1.25	0.472	0.354		0.157	90°
	KHC1016	M10 X 1.5	0.630	0.484		0.197	90°
	KHC1020	M10 X 1.5	0.787	0.642		0.197	90°
	KHD0510	M5 X 0.8	0.394	0.354	0.118	0.098	
	KHD0610	M6 X 1.0	0.394	0.394	0.157	0.118	
	KHD0810	M8 X 1.25	0.394	0.394	0.295	0.157	
	LTX0512	M5 X 0.8	0.594	0.472	0.287	0.787	
	LTX0514	M5 X 0.8	0.673	0.551	0.287	0.787	
	MHA0512	M5 X 0.8	0.669	0.425	0.315	0.157	
	MHB0310	M3 X 0.5	0.528	0.315	0.217	0.098	
	MHB0410	M4 X 0.7	0.551	0.315	0.276	0.118	
	MHB1055	M10 X 1.5	2.559	1.969	0.630	0.315	
	MHB1260	M12 X 1.75	2.835	2.165	0.709	0.394	
	MHB1680	M16 X 2.0	3.780	2.953	0.945	0.551	
	MHX0523	M5 X 0.8	0.925	0.382	0.394	0.098	
	MHX0626	M6 X 1.0	1.016	0.394	0.433	0.118	
	MHX0630	M6 X 1.0	1.181	0.492	0.413	0.157	
	PTKA02508	M2.5 X 0.45	0.315	0.197	0.150	0.315	92°
	PTKA03510	M3.5 X 0.6	0.394	0.197	0.197	0.591	92°
	PTKA0407	M4 X 0.7	0.276	0.181	0.217	0.591	86°
	PTKA0407F	M4 X 0.5	0.287	0.150	0.256	0.591	91°
	PTKA0408	M4 X 0.7	0.315	0.220	0.217	0.591	86°
	PTKA0408F	M4 X 0.5	0.327	0.224	0.256	0.591	91°
	PTKA0409F	M4 X 0.5	0.366	0.264	0.256	0.591	91°
	PTKA0410F	M4 X 0.5	0.406	0.303	0.256	0.591	91°
	PTKA0411F	M4 X 0.5	0.445	0.343	0.256	0.591	91°
	PTKA0412	M4 X 0.7	0.472	0.295	0.232	0.591	92°
	PTKA0412F	M4 X 0.5	0.484	0.382	0.256	0.591	91°
	PTKA0413F	M4 X 0.5	0.524	0.421	0.256	0.591	91°
	PTKA0512	M5 X 0.8	0.472	0.276	0.272	0.787	92°
	PTMA03508	M3.5 X 0.6	0.315	0.209	0.236	0.354	90°
	PTMA0403F	M4 X 0.5	0.130	0.067	0.256	0.591	91°
	PTMA0404F	M4 X 0.5	0.169	0.106	0.256	0.591	91°
	PTMA0405F	M4 X 0.5	0.209	0.146	0.256	0.591	91°
	PTMA0406F	M4 X 0.5	0.248	0.185	0.256	0.591	91°
	PTMA0411	M4 X 0.7	0.433	0.335	0.260	0.591	90°

Geometry	Designation	Dimensions					
		a	b	c	d	B(T)	á
	FHGA0618	M4 X 0.7	0.433	0.272	0.236	15	
	FHGA0618	M6 X 1.0	0.709		0.335	0.157	61°
	PXMA0306	M3 X 0.5	0.232		0.224	0.079	90°
	SHX0310	M3 X 0.5	0.394		0.232	0.079	91°
	RHA0510	M5 X 0.8		0.394		0.157	
	RHA0613	M6 X 1.0	0.642	0.512	0.413	0.157	
	RHA0620	M6 X 1.0	0.945	0.787	0.413	0.157	
	VHX0509B	M5 X 0.8	0.354	0.163	0.197	0.079	
	VHX0512B	M5 X 0.8	0.472	0.256	0.197	0.079	
	VHX0512BN	M5 X 0.8	0.472	0.258	0.197	0.079	
	VHX0514	M5 X 0.8	0.571	0.325	0.197	0.079	
	VHX0613N	M6 X 1.0	0.528	0.295	0.233	0.098	
	VHX0617	M6 X 1.0	0.669	0.394	0.236	0.098	
	VHX0617N	M6 X 1.0	0.659	0.328	0.232	0.098	
	VHX0621	M6 X 1.0	0.827	0.551	0.236	0.098	
	VHX0817N	M8 X 1.0	0.671	0.314	0.311	0.118	
	VHX0820N	M8 X 1.0	0.815	0.314	0.311	0.118	
	VHX0820AN	M8 X 1.0	0.807	0.408	0.311	0.118	
	VHX0821	M8 X 1.0	0.827	0.394	0.315	0.118	
	VHX0821N	M8 X 1.0	0.835	0.381	0.311	0.118	
	VHX0823N	M8 X 1.0	0.925	0.408	0.311	0.118	
	VHX0825	M8 X 1.0	0.984	0.472	0.315	0.118	
	VHX1027N	M10 X 1.0	1.071	0.567	0.386	0.197	
	VHX1236N	M12 X 1.0	1.417	0.720	0.465	0.197	
	VHX0613A	M6 X 1.0	0.528	0.358	0.236	0.098	
	SHXN0509F	M5 X 0.5	M3.5 X 0.6	0.341	0.248	0.138	
	SHXN0609F	M6 X 0.75	M4 X 0.7	0.354	0.307	0.157	
	SHXN0610F	M6 X0.75	M4 X 0.5	0.394	0.307	0.157	
	SHXN0712F	M7 X0.75	M5 X 0.8	0.472	0.335	0.197	
	WTX0813	M8 X 1.25	0.677	0.193	0.335	0.984	
	WTX0817	M8 X 1.25	0.866	0.193	0.335	0.984	

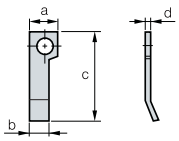
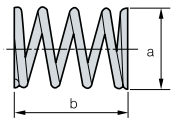
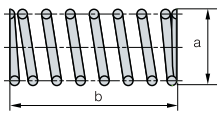
Shim pin

Geometry	Designation	Dimensions			
		a	b	c	d
	SP3	0.217	0.138	0.232	
	SP3N	0.270	0.130	0.219	
	SP4	0.276	0.157	0.299	
	SP4N	0.228	0.171	0.291	
	SP5	0.335	0.177	0.346	
	SP5N	0.335	0.224	0.354	
	SP6N	0.437	0.236	0.433	
	SP8N	0.472	0.394	0.604	
	SP2M	0.197	0.551	M5x0.8	0.236
	SP3M	0.138	0.768	M4x0.7	0.157
	SP3M-1	0.138	0.650	M4x0.7	0.157
	SP4M	0.197	0.748	M5x0.8	0.236

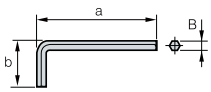
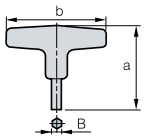
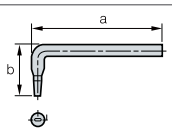
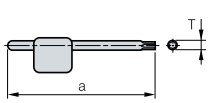
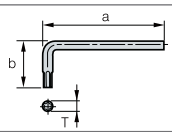
Shim pin

Geometry	Designation	Dimensions			
		a	b	c	d
	SP3D	0.146	0.516	UNF10-32	0.220
	SP3D2	0.142	0.472	UNF10-32	0.217
	SP3DS	0.146	0.454	UNF10-32	0.220
	SP4D	0.196	0.677	UNF1/4 28	0.280
	SP4DL	0.197	0.673	UNF1/4 28	0.276
	SP4DS	0.196	0.522	UNF1/4 28	0.000
	SP5D	0.244	0.862	UNF5/16-24	0.372
	SP6D	0.305	0.862	UNF3/8-24	0.434
	SP8D	0.355	1.167	UNF7/16-20	0.559
	LSPS3	2.362	0.323	0.219	
	LSPS4	2.559	0.394	0.276	
	LSPS5	2.717	0.449	0.348	
	LSPS6	2.717	0.512	0.433	
	LSPS8	2.874	0.650	0.598	

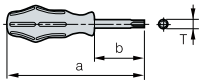
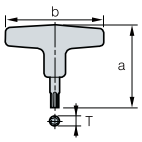
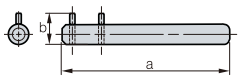
Spring

Geometry	Designation	Dimensions			
		a	b	c	d
	SR2	0.157	0.110	0.496	0.016
	SPR0315	0.118	0.591		
	SPR0415	0.157	0.591		
	SR3	0.362	0.492		
	SR4	0.157	0.433		
	SPR0714	0.276	0.551		
	SPR0510	0.197	0.394		
	SPR0714	0.276	0.551		
	SPR0811	0.315	0.433		

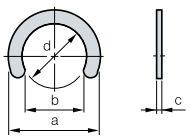
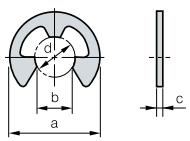
Wrench

Geometry	Designation	Dimensions		
		a	b	B (T)
	HW20L	2.047	0.709	0.079
	HW25L	2.303	0.807	0.098
	HW30L	2.598	0.906	0.118
	HW35L	2.835	0.984	0.138
	HW40L	2.913	1.142	0.157
	HW50L	3.346	1.299	0.197
	HW40	3.228	3.150	0.157
	HW50	3.780	3.543	0.197
	SW50L	2.756	1.083	
	TW06P	2.480		0.236
	TW07P	2.480		0.276
	TW08P	2.795		0.315
	TW09P	2.953		0.354
	TW10P	3.071		0.394
	TW15P	3.228		0.591
	TW20P	3.386		0.787
	TW15L	2.362	0.827	0.591
	TW20L	2.362	0.827	0.787

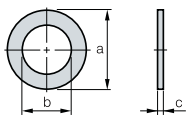
Wrench

Geometry	Designation	Dimensions		
		a	b	B (T)
	TW07S	5.512	2.362	0.276
	TW08S	5.906	2.992	0.315
	TW09S	6.496	2.756	0.354
	TW15S	7.480	3.543	0.591
	TW20S	7.677	3.583	0.787
	TW20	2.953	3.150	0.787
	TW25	2.913	3.150	0.984
	TW15-100	5.000	3.150	0.591
	TW20-100	5.000	3.150	0.787
	SW15S	5.906	0.512	

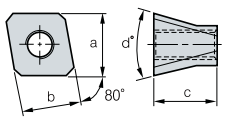
Stop ring

Geometry	Designation	Dimensions			
		a	b	c	d
	CR03	0.189	0.102	0.016	0.118
	CR04	0.260	0.142	0.016	0.157
	CR05	0.299	0.181	0.016	0.197
	ER03	0.276	0.102	0.024	0.118
	ER04	0.354	0.138	0.024	0.157
	ER05	0.039	0.169	0.024	0.197

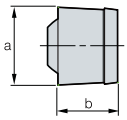
Washer

Geometry	Designation	Dimensions		
		a	b	c
	WA3	0.433	0.268	0.02~0.039
	WA4	0.394	0.209	0.02~0.039

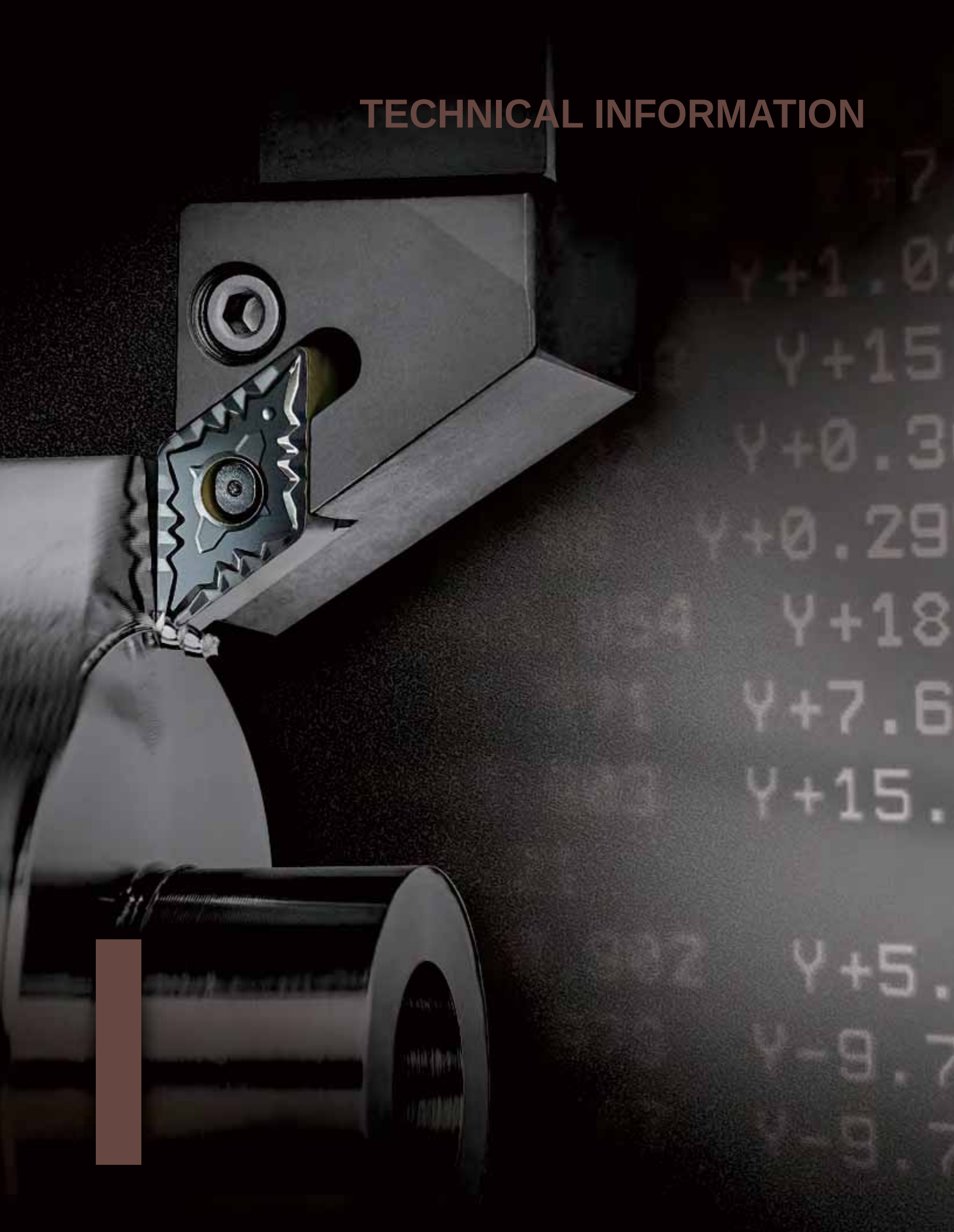
Stopper

Geometry	Designation	Dimensions			
		a	b	c	d°
	STP5	0.433	0.402	0.433	30°

Nozzle

Geometry	Designation	Dimensions			
		a	b	c	d°
	CN0605	0.433	0.402		

TECHNICAL INFORMATION



General Information I

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Technical Information

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I 20 Technical Information for Milling

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I 27 Technical Information for Endmills

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I 37 KORLOY Grades

I 40 The Comparision of Grades for Turning/Milling

Carbon steel and alloy steel for structural use

Type		U.S.A	Korea	ISO	Japan	Great Britain	Germany	France	Russia
		AISI SAE	KS	ISO	JIS	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Carbon steel		1010	SM10C	C10	S10C	040A10 045A10 045M10	C10E C10R	XC10	-
		1015	SM15C	C15E4 C15M2	S15C	055M15	C15E C15R	-	-
		1020	SM20C	-	S20C	070M20 C22, C22E C22R	C22 C22E C22R	C22 C22E C22R	-
		1025	SM25C	C25 C25E4 C25M2	S25C	C25 C25E C25R	C25 C25E C25R	C25 C25E C25R	-
		1030	SM30C	C30 C30E4 C30M2	S30C	080A30 080M30 CC30 C30E C30R	C30 C30E C30R	C30 C30E C30R	30Г
		1035	SM35C	C35 C35E4 C35M2	S35C	C35 C35E C35R	C35 C35E C35R	C35 C35E C35R	35Г
		1039 1040	SM40C	C40 C40E4 C40M2	S40C	080M40 C40 C40E C40R	C40 C40E C40R	C40 C40E C40R	40Г
		1042 1043	SM43C	-	S43C	080A42	-	-	40Г
		1045 1046	SM45C	C45 C45E4 C45M2	S45C	C45 C45E C45R	C45 C45E C45R	C45 C45E C45R	45Г
		-	SM48C	-	S48C	080A47	-	-	45Г
		1049	SM50C	C50 C50E4 C50M2	S50C	080M50 C50 C50E C50R	C50 C50E C50R	C50 C50E C50R	50Г
		1050 1053	SM53C	-	S53C	-	-	-	50Г
		1055	SM55C	C55 C55E4 C55M2	S55C	070M55 C55 C55E C55R	C55 C55E C55R	C55 C55E C55R	-
		1059 1060	SM58C	C60 C60E4 C60M2	S58C	C60 C60E C60R	C60 C60E C60R	C60 C60E C60R	60Г
Alloy steel	Nickel chromium steel	- - - - -	SNC236 SNC415(H) SNC631(H) SNC815(H) SNC836	- - - 15NiCr13 -	SNC236 SNC415(H) SNC631(H) SNC815(H) SNC836	- - - 655M13(655H13) -	- - - 15NiCr13 -	- - - - -	40XH - 30XH3A - -
	Nickel chromium molybdenum steel	8615 8617(H) 8620(H) 8622(H)	SNCM220	20NiCrMo2 20NiCrMoS2	SNCM220	805A20 805M20 805A22 805M22	20NiCrMo2 20NiCrMoS2	20NCD2	-
		8637 8640	SNCM240	41CrNiMo2 41CrNiMoS2	SNCM240	-	-	-	-
		- 4320(H) - 4340 - - - - -	SNCM415 SNCM420(H) SNCM431 SNCM439 SNCM447 SNCM616 SNCM625 SNCM630 SNCM815	- - - - - - - - -	SNCM415 SNCM420(H) SNCM431 SNCM439 SNCM447 SNCM616 SNCM625 SNCM630 SNCM815	- - - - - - - - -	- - - - - - - - -	- - - - - - - - -	- 20XH2M(20XHM) - - - - - - -
	Chromium steel	-	SCr415(H)	-	SCr415(H)	-	17Cr3 17CrS3	-	15X 15XA
		5120(H)	SCr420(H)	20Cr4(H) 20CrS4	SCr420(H)	-	-	-	20X
		5130(H) 5132(H)	SCr430(H)	34Cr4 34CrS4	SCr430(H)	34Cr4 34CrS4	34Cr4 34CrS4	34Cr4 34CrS4	30X
		5135(H)	SCr435(H)	34Cr4 34CrS4 37Cr4 37CrS4	SCr435(H)	37Cr4 37CrS4	37Cr4 37CrS4	37Cr4 37CrS4	35X
		5140(H)	SCr440(H)	37Cr4 37CrS4 41Cr4 41CrS4	SCr440(H)	530M40 41Cr4 41CrS4	41Cr4 41CrS4	41Cr4 41CrS4	40X
			SCr445(H)		SCr445(H)				45X

• The above Alloy steel can supplied by domestic manufacturing

Type		U.S.A	Korea	ISO	Japan	Great Britain	Germany	France	Russia
		AISI SAE	KS	ISO	JIS	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Alloy steel	Chromium molybdenum steel	-	SCM415(H)	-	SCM415(H)	-	-	-	-
		-	SCM418(H)	18CrMo4 18CrMoS4	SCM418(H)	-	18CrMo4 18CrMoS4	-	20XM
		-	SCM420(H)	-	SCM420(H)	708M20(708H20)	-	-	20XM
		4130	SCM430	-	SCM430	-	-	-	30XM 30XMA
		-	SCM432	-	SCM432	-		-	-
		(4135H) 4137(H)	SCM435(H)	34CrMo4 34CrMoS4	SCM435(H)	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	35XM
		4140(H) 4142(H)	SCM440(H)	42CrMo4 42CrMoS4	SCM440(H)	708M70 709M40 42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	-
		4145(H) 4147(H)	SCM445(H)	-	SCM445(H)	-	-	-	-
	Manganese steel and Manganese chromium steel	1522(H) 1534 1541(H) 1541(H) - -	SMn420(H) SMn433(H) SMn438(H) SMn443(H) SMnC420(H) SMnC443(H)	22Mn6(H) - 36Mn6(H) 42Mn6(H) - -	SMn420(H) SMn433(H) SMn438(H) SMn443(H) SMnC420(H) SMnC443(H)	150M19 150M36 150M36 - - -	- - - -	- - - -	- 30Г2 35Г2 35Г2 40Г2 40Г2 45Г2 - -
	Aluminum chromium molybdenum steel	-	SACM645	41CrAlMo74	SACM645	-	-	-	-

• The above Alloy steel can supplied by domestic manufacturing

Tool steel

Type	U.S.A	Korea	ISO	Japan	Great Britain	Germany	France	Russia
	AISI SAE	KS	ISO	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
High speed steel	T1 T4 T5 T15 M2 M3-1 M3-2 M4 M 35 M36 - M7 M42	SKH2 SKH3 SKH4 SKH10 SKH51 SKH52 SKH53 SKH54 SKH55 SKH56 SKH57 SKH58 SKH59	HS18-0-1 - - - HS6-5-2 HS6-6-2 HS6-5-3 HS6-5-4 HS6-5-2-5 - HS10-4-3-10 HS2-9-2 HS2-9-1-8	SKH2 SKH3 SKH4 SKH10 SKH51 SKH52 SKH53 SKH54 SKH55 SKH56 SKH57 SKH58 SKH59	 BM 2 BM 35 	 S6/5/2 S6/5/2/5 S2/9/2 	 Z 85 WDCV 6-5-2-5 	
Alloy tool steel	F2 - - - L6 - - - - W2-9 1/ W2-8 1-2 - - - - - D3 D2 A2 - H21 H11 H13 H12 H10 H19 - L6	STS11 STS2 STS21 STS5 STS51 STS7 STS8 STS4 STS41 STS43 STS44 STS3 STS31 STS93 STS94 STS95 STD1 STD11 STD12 STD4 STD5 STD6 STD61 STD62 STD7 STD8 STF3 STF4	- - - - - - - - - 105V - - 105WCr1 - - - 210Cr12 - 100CrMoV5 - X30WCrV9-3 X37CrMoV5-1 X40CrMoV5-1 X35CrWMoV5 32CrMoV12-28 - - 55NiCrMoV7	SKS11 SKS2 SKS21 SKS5 SKS51 SKS7 SKS8 SKS4 SKS41 SKS43 SKS44 SKS3 SKS31 SKS93 SKS94 SKS95 SKD1 SKD11 SKD12 SKD4 SKD5 SKD6 SKD61 SKD62 SKD7 SKD8 SKT3 SKT4	 BD3 BA2 BH21 BH13 	 105WCr6 X210Cr12 X100CrMoV5 1 X30WCrV9 3 X40CrMoV5 1 55NiCrMoV6	 105WC13 Z200C12 Z100CDV5 Z30WCV9 Z40CDV5 55NCDV7	

• The above Alloy steel can supplied by domestic manufacturing

Type	U.S.A	Korea	ISO	Japan	Great Britain	Germany	France	Russia
	AISI SAE	KS	ISO	JIS	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Free cutting carbon steel	1110	SUM11	-	SUM11				
	1109	SUM12	-	SUM12				
	1212	SUM21	9S20	SUM21				
	1213	SUM22	11SMn28	SUM22	230M07	9SMn28	S250	
	12L13	SUM22L	11SMnPb28	SUM22L		9SMnPb28	S250Pb	
	1215	SUM23	-	SUM23	240M07	9SMn36	S 300	
	-	SUM23L	-	SUM23L				
	12L14	SUM24L	11SMnPb28	SUM24L		9SMnPb36	S300Pb	
	-	SUM25	12SMn35	SUM25				
	1117	SUM31	-	SUM31				
	-	SUM31L	-	SUM31L				
	-	SUM32	-	SUM32				
	1137	SUM41	-	SUM41				
	1141	SUM42	-	SUM42				
	1144	SUM43	44SMn28	SUM43				
High carbon chromiom	-	STB1	-	SUJ1				
	52100	STB2	B1	SUJ2	534A99	100Cr6	100Cr6	
	ASTM A 485 Grade 1	STB3	B2	SUJ3				
	-	STB4	-	SUJ4				
	-	STB5	-	SUJ5				

• The above Special speed steel can supplied by domestic manufacturing

Stainless steel

Type		U.S.A		Korea	ISO	Japan	Great Britain	Germany	France	Russia
		UNS	AISI SAE	KS	ISO	JIS	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Stainless steel	Austenitic	S20100	201	STS201	X12CrMnNiN17-7-5	SUS201	284S16	X12CrNi17-7	Z12CMN17-07Az	12Х17ЭАН4
		S20200	202	STS202	X12CrMnNiN18-9-5	SUS202	301S21	X2CrNiN18-7		07X16H6
		S30100	301	STS301	X10CrNi18-8	SUS301		X12CrNi17-7	Z11CN17-08	
				STS301L	X2CrNiN18-7	SUS301L				
				STS301J1		SUS301J1	302S25			12X18H9
		S30200	302	STS302		SUS302		X10CrNiS18-9	Z12CN18-09	
		S30215	302B	STS302B	X12CrNiSi18-9-3	SUS302B	303S21			
		S30300	303	STS303	X10CrNiS18-9	SUS303	303S41		Z8CNF18-09	12X18H10E
		S30323	303Se	STS303Se		SUS303Se		X5CrNi18-10		
				STS303Cu		SUS303Cu	304S31			08X18H10
		S30400	304	STS304	X5CrNi18-9 X2CrNi18-9	SUS304	304S11	X2CrNi19-11	Z7CN18-09	03X18H11
		S30403	304L	STS304L	X2CrNi19-11	SUS304L		X2CrNiN18-10	Z3CN19-11	
		S30451	304N	STS304N1	X5CrNiN18-8	SUS304N1			Z6CN19-09Az	
		S30453	304LN	STS304LN	X2CrNiN18-8	SUS304LN		X5CrNi18-12	Z3CN18-10Az	
				STS304J1		SUS304J1	305S19			06X18H11
		S30500	305	STS305	X6CrNi18-12	SUS305			Z8CN18-12	
		S30908	309S	STS309S		SUS309S	310S31	X5CrNiMo27-12-2	Z10CN24-13	10X23H18
		S31008	310S	STS310S	X6CrNi25-20	SUS310S	316S31	X5CrNiMo27-13-3	Z8CN25-20	
		S31600	316	STS316	X5CrNiMo17-12-2 X3CrNiMo17-12-3	SUS316	316S11	X2CrNiMo17-13-2 X2CrNiMo17-14-3	Z7CND17-12-02 Z6CND18-12-03	03X17H14M3
		S31603	316L	STS316L	X2CrNiMo17-12-2 X2CrNiMo17-12-3 X2CrNiMo18-14-3	SUS316L			Z3CND17-12-02 Z3CND17-12-03	
		S31651	316N	STS316N		SUS316N	317S16	X6CrNiTi18-10		
		S31700	317	STS317		SUS317	321S31	X6CrNiNb18-10		08X18H10T
		S32100	321	STS321	X6CrNiTi18-10	SUS321	347S31		Z6CNT18-10	08X18H12
		S34700	347	STS347	X6CrNiNb18-10	SUS347		X6CrAl13	Z6CNNb18-10	
		S38400	384	STS384	X3NiCr18-16	SUS384	405S17		Z6CN18-16	
	Ferritic	S40500	405	STS405	X6CrAl13	SUS405			Z8CA12	
				STS410L		SUS410L		X6Cr17	Z3C14	
		S42900	429	STS429		SUS429	430S17	X7CrS18		12X17
		S43000	430	STS430	X6Cr17	SUS430		X6CrMo17-1	Z8C17	
		S43020	430F	STS430F	X7CrS17	SUS430F	434S17		Z8CF17	
		S43400	434	STS434	X6CrMo17-1	SUS434			Z8CD17-01	
		S44400	444	STS444	X2CrMoTi18-2	SUS444			Z3CDT18-02	
		S44627		STSXM27		SUSXM27		X10Cr13	Z1CD26-01	
	Martensitic	S40300	403	STS403		SUS403	410S21			
		S41000	410	STS410	X12Cr13	SUS410	416S21	X20Cr13	Z13C13	
		S41600	416	STS416	X12CrS13	SUS416	420S29	X20CrNi17-2	Z11CF13	20X13
		S42000	420	STS420J1	X20Cr13	SUS420J1	431S29		Z20C13	20X17H2
		S43100	431	STS431	X19CrNi16-2	SUS431			Z15CN16-02	
		S44002	440A	STS440A	X70CrMo15	SUS440A		X7CrNiAl17-7	Z70C15	
	Precipitation hardening type	S17400	S17400	STS630	X5CrNiCuNb16-4	SUS630			Z6CNU17-04	09Х17Н7ІО
		S17700	S17700	STS631	X7CrNiAl17-7	SUS631			Z9CNA17-07	
				STS631J1		SUS631J1				

• The above Stainless steel can supplied by domestic manufacturing

Casting or forging steel

Type		U.S.A	Korea	ISO	Japan	Great Britain	Germany	France	Russia
		AISI SAE	KS	ISO	JIS	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Casting Iron	Grey iron casting	No 20 B No 25 B No 30 B No 35 B No 45 B No 50 B No 55 B	GC100 GC150 GC200 GC250 GC300 GC350	100,150, 200, 250, 300, 350	FC100 FC150 FC200 FC250 FC300 FC350	 Grade 150 Grade 220 Grade 260 Grade 300 Grade 350 Grade 400	GG 10 GG 15 GG 20 GG 25 GG 30 GG 35 GG 40	Ft 10 D Ft 15 D Ft 20 D Ft 25 D Ft 30 D Ft 35 D Ft 40 D	
	Spheroidal graphite iron casting	60-40-18 65-45-12 80-55-06 100-70-03	GCD400-15, GCD400-18 GCD450-10, GCD500-7 GCD600-3 GCD700-2	400-15, 400-18 450-10, 500-7 600-3 700-2	FCD400 FCD500 FCD600 FCD700	SNG 420/12 SNG 370/17 SNG 500/7 SNG 600/3 SNG 700/2	GGG 40 GGG 40.3 GGG 50 GGG 60 GGG 70	FCS 400-12 FGS 370-17 FGS 500-7 FGS 600-3 FGS 700-2	
	Austempered Spheroidal graphite iron casting	-	FCAD	-	FCAD	EN-GJS-	EN-GJS-	EN-GJS-	
	Austenitic iron casting	Type 1, 2, Type D-2, D-3A Class 1, 2	FCA- FCDA-	L-, S-	FCA- FCDA-	F1, F2, S2W, S5S	GGL-, GGG-	L-, S-	

Non-ferrous alloy

Type		U.S.A	Korea	ISO	Japan	Great Britain	Germany	France	Russia
		AISI SAE	KS	ISO	JIS	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Aluminum alloy	Aluminum alloy ingots for casting	204.0 - 319.0 - - - 356.0 A356.0 355.0 242.0 514.0 - - - - -	AC1B AC2A AC2B AC3A AC4A AC4B AC4C AC4CH AC4D AC5A AC7A AC8A AC8B AC8C AC9A AC9B	Al-Cu4MgTi - - - - - Al-Si7Mg(Fe) Al-Si7Mg Al-Si5Cu1Mg Al-Cu4Ni2Mg2 - - - - - -	AC1B AC2A AC2B AC3A AC4A AC4B AC4C AC4CH AC4D AC5A AC7A AC8A AC8B AC8C AC9A AC9B	- - - LM-6 - - LM-25 - LM-16 - LM-5 LM-13 LM-26 - LM-29 -	- - - - G(GK)-AlSi9Cu3 - G(GK)-AlSi7MG - - G(GK)-AlMg5 - - - - - GD-AlSi12 (Cu)	A-U5GT - - - - - A-S7G - - A-U4NT - A-S12UNG A-S10UG A-S10UG - A-S18UNG	
	Aluminum alloy die casting	A413.0 A360.0 518.0 - A380.0 A380.0 383.0 383.0 B390.0	ALDC1 ALDC2 ALDC3 ALDC4 ALDC7 ALDC7Z ALDC8 ALDC8Z ALDC9	Al-Si12CuFe - - - Al-Si8Cu3Fe Al-Si8Cu3Fe - - -	ADC1 ADC3 ADC5 ADC6 ADC10 ADC10Z ADC12 ADC12Z ADC14	LM20 - - - - LM24 LM2 LM2 LM30	GD-AlSi10Mg GD-AlMg9 - GD-AlSi9Cu3 GD-AlSi9Cu3 - - - EN AW-5052	A-S13 A-S9G A-G6 A-G3T - - - - -	
	Aluminum alloy extruded shapes	5052 5454 5083 5086 6061 6063 - - 7075	A5052S A5454S A5083S A5086S A6061S A6063S A7003S A7N01S A7075S	- - AlMg4.5Mn0.7 - AlMg1SiCu AlMg0.7Si - - AlZn5.5MgCu	A5052S A5454S A5083S A5086S A6061S A6063S A7003S A7N01S A7075S	EN AW-5052 EN AW-5454 EN AW-5083 EN AW-5086 EN AW-6061 EN AW-6063 EN AW-7003 - EN AW-7075	EN AW-5454 EN AW-5083 EN AW-5086 EN AW-6061 EN AW-6063 EN AW-7003 - EN AW-7075	EN AW-5052 EN AW-5454 EN AW-5083 EN AW-5086 EN AW-6061 EN AW-6063 EN AW-7003 - EN AW-7075	

Heat resistant steel

Type		U.S.A		Korea	ISO	Japan	Great Britain	Germany	France	Russia
		UNS	AISI SAE	KS	ISO	JIS	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Heat resistant steel	Austenitic	 S63008 S63017 S30900 S31000 N08330 S66286	 309 310 N08330	STR31 STR35 STR36 STR37 STR38 STR309 STR310 STR330 STR660 STR661	 	SUH31 SUH35 SUH36 SUH37 SUH38 SUH309 SUH310 SUH330 SUH660 SUH661	331S42 349S52 349S54 381S34 309S24 310S24 	 X53CrMnNi21-9 CrNi2520 CrAl1205	Z35CNWS14-14 Z52CMN21-09-Az Z55CMN21-09-Az Z15CN24-13 Z15CN25-20 Z12NCS35-16 Z6NCTV25-20	
	Ferritic	R30155 S40900 	 409	STR21 STR409 STR409L STR446	 X6CrTi12 X2CrTi12 	SUH21 SUH409 SUH409L SUH446	 409S19 	X6CrTi12 X45CrSi9-3	 Z6CT12 Z3CT12 Z12C25	
	Martensitic	S44600 S65007 S42200	 446 	STR1 STR3 STR4 STR11 STR600 STR616	 	SUH1 SUH3 SUH4 SUH11 SUH600 SUH616	401S45 443S65 	 	Z45CS9 Z40CSD10 Z80CSN20-02 	

• The above Heat resistant steel can supplied by domestic manufacturing

Steel, Non-ferrous Metal Symbol List

Comparison of workpiece material standards

Group		Standard term	Code
Structural Steel		Rolled Steel for Welded Suructure	SWS
		Rerolled Steel	SBR
		Rolled Steel for General Structure	SB
		Light Gauge Steel for General Structure	SBC
		Hot- rolled Steel Plate, Sheet/ Strip for Automobile Structural Use	SAPH
Steel Plate		Cold-rolled Steel Sheet/Strip	SBC
		Hot-rolled Soft Steel Sheet/Strip	SHP
Steel Pipe		Carbon Steel Pipe for Ordinary Piping	SPP
		Carbon Steel Pipe for Boiler and Heat Exchanger	STH
		Seamless Steel Pipe for High Pressure Gas Cylinder	STHG
		Carbon Steel Pipe for General Structural Use	SPS
		Carbon Steel Pipe for Machine Structural Use	STST
		Alloy Steel Pipe for Structural Use	STA
		Stainless Steel Pipe for Machine and Structural Use	STS-TK
		Carbon Steel Square Pipe for General Structural Use	SPSR
		Alloy Steel Pipe	SPA
		Carbon Steel Pipe for Pressure Service	SPPS
		Carbon Steel Pipe for High Temperature Service	SPSR
		Carbon Steel Pipe for High Pressure Service	SPPH
		Stainless Steel Pipe	STSxT
Iron and Steel		Carbon Steel for Machine Structural Use	SMxxC, SMxxCK
		Aluminum Chromium Molybdenum Steel	SACM
		Chromium Molybdenum Steel	SCM
		Chromium Steel	SCr
		Nickel Chromium Steel	SNC
		Nickel Chromium Molybdenum Steel	SNCM
		Manganese Steel and manganese Chromium Steel for Machine Structural Use	SMn, SMnC
Special steel	Tool steel	Carbon Tool Steel	STC
		Hollow Drill Steel	SKC
		Alloy Tool Steel	STS, STD, STF
		High Speed Tool Steel	SKH
	Stainless steel	Stainless Steel Bar	STS
	Heat resisting steel	Heat Resisting Steel	STR
		Heat Resisting Steel Bar	STR
		Heat Resisting Steel Sheet	STR
	Free cutting carbon steel		SUM
	Special steel		STB
	Spring steel		SPS

Group	Standard term	Code
Forged steel	Carbon Steel Forging	SF
	Chromium Molybdenum Steel Forging	SFCM
	Nickel Chromium Molybdenum Steel Forging	SFNCM
Cast iron	Gray Cast iron	GC
	Spheroidal Graphite Cast iron	GCD
	Blackheart Malleable Cast iron	BMC
	Whiteheat Malleable Cast iron	WMC
	Pearlitic Malleable Cast iron	PMC
Cast steel	Carbon Cast Steel	SC
	High Tensile Strength Carbon Cast Steel & Low Alloy Cast Steel	HSC
	Stainless Cast Steel	SSC
	Heat Resisting Cast Steel	HRSC
	High Manganese Cast Steel	HMnSC
	Cast Steel for High Temperature and High Pressure Service	SCPH
Casting	Brass Casting	BsC
	High Strength Brass Casting	HBsC
	Bronze Casting	BrC
	Phosphoric Bronze Casting	PCB
	Aluminum Bronze Casting	AlBC
	Aluminum Alloy Casting	ACxA
	Magnesium Alloy Casting	MgC
	Zinc Alloy Die Casting	ZnDC
	Aluminum Alloy Die Casting	Aℓ DC
	Magnesium Alloy Die Casting	MgDC
	White Metal	WM
	Aluminum Alloy Casting for Bearing	AM
	Brass Alloy Casting for Bearing	KM

SI Unit Conversion Table

Major SI unit conversion table

Force

N	kgf	dyn
1	1.01972×10^{-1}	1×10^{-5}
9.80665	1	9.80665×10^{5}
1×10^{-5}	1.01972×10^{-6}	1

Stress

Pa or N/m²	MPa or N/mm²	kgf/mm²	kgf/cm²	kgf/m²
1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}	1.01972×10^{-1}
1×10^{6}	1	1.01972×10^{-1}	1.01972×10	1.01972×10^{5}
9.80665×10^{6}	9.80665	1	1×10^{2}	1×10^{6}
9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1	1×10^{4}
9.80665	9.80665×10^{-6}	1×10^{-6}	1×10^{-4}	1

Pressure

Pa	kPa	MPa	bar	kgf/cm²
1	1×10^{-3}	1×10^{-6}	1×10^{-5}	1.01972×10^{-5}
1×10^{3}	1	1×10^{-3}	1×10^{-2}	1.01972×10^{-2}
1×10^{6}	1×10^{3}	1	1×10	1.01972×10
1×10^{5}	1×10^{2}	1×10^{-1}	1	1.01972
9.80665×10^{4}	9.80665×10	9.80665×10^{-2}	9.80665×10^{-1}	1

Work, Energy, Calorie

J	kW·h	kgf·m	kcal
1	2.77778×10^{-7}	1.01972×10^{-1}	2.38889×10^{-4}
3.60000×10^{6}	1	3.67098×10^{5}	8.60000×10^{2}
9.80665	2.72407×10^{-6}	1	2.34270×10^{-3}
4.18605×10^{3}	1.16279×10^{-3}	4.26858×10^{2}	1

Power

W	kW	kgf·m/s	PS	kcal/h
1	1×10^{-3}	1.01972×10^{-1}	1.35962×10^{-3}	0.860
1×10^{3}	1	1.01972×10^{2}	1.359 62	8.60000×10^{2}
9.81 65	9.80665×10^{-3}	1	1.33333×10^{-2}	8.433 71
7.355×10^{2}	7.355×10^{-1}	7.5×10	1	6.32529×10^{2}
1.16279	1.16279×10^{-3}	1.18572×10^{-1}	1.58095×10^{-3}	1

Specific heat

J/(kg·K)	kcal/(kg·℃) cal/(g·℃)
1	2.38889×10^{-4}
4.18605×10^{3}	1

Thermal conductivity

W/(m·k)	kcal/(h·m·℃)
1	8.6000×10^{-1}
1.16279	1

Revolution per minute

min⁻¹	s⁻¹	r.p.m.
1	0.0167	1
60	1	60

Hardness Calculating Table

Work piece hardness calculating table

Vickers 50kgf HV	Brinell 3000kgf HB		Rockwell				Shore HS	Tensile strength (approximate value) MPa (1)
	Standard ball 10㎜	Cemented carbide ball 10㎜	A scale 60kgf Diamond particle HRA	B scale 100kgf 1/16in ball HRB	C scale 150kgf Diamond particle HRC	D scale 100kgf Diamond particle HRD		
940	-	-	85.6	-	68.0	76.9	97	-
920	-	-	85.3	-	67.5	76.5	96	-
900	-	-	85.0	-	67.0	76.1	95	-
880	-	(767)	84.7	-	66.4	75.7	93	-
860	-	(757)	84.4	-	65.9	75.3	92	-
840	-	(745)	84.1	-	65.3	74.8	91	-
820	-	(733)	83.8	-	64.7	74.3	90	-
800	-	(722)	83.4	-	64.0	74.8	88	-
780	-	(710)	83.0	-	63.3	73.3	87	-
760	-	(698)	82.6	-	62.5	72.6	86	-
740	-	(684)	82.2	-	61.8	72.1	84	-
720	-	(670)	81.8	-	61.0	71.5	83	-
700	-	(656)	81.3	-	60.1	70.8	81	-
690	-	(647)	81.1	-	59.7	70.5	-	-
680	-	(638)	80.8	-	59.2	70.1	80	-
670	-	630	80.6	-	58.8	69.8	-	-
660	-	620	80.3	-	58.3	69.4	79	-
650	-	611	80.0	-	57.8	69.0	-	-
640	-	601	79.8	-	57.3	68.7	77	-
630	-	591	79.5	-	56.8	68.3	-	-
620	-	582	79.2	-	56.3	67.9	75	-
610	-	573	78.9	-	55.7	67.5	-	-
600	-	564	78.6	-	55.2	67.0	74	-
590	-	554	78.4	-	54.7	66.7	-	2055
580	-	545	78.0	-	54.1	66.2	72	2020
570	-	535	77.8	-	53.6	65.8	-	1985
560	-	525	77.4	-	53.0	65.4	71	1950
550	(505)	517	77.0	-	52.3	64.8	-	1905
540	(496)	507	76.7	-	51.7	64.4	69	1860
530	(488)	497	76.4	-	51.1	63.9	-	1825
520	(480)	488	76.1	-	50.5	63.5	67	1795
510	(473)	479	75.7	-	49.8	62.9	-	1750
500	(465)	471	75.3	-	49.1	62.2	66	1705
490	(456)	460	74.9	-	48.4	61.6	-	1660
480	488	452	74.5	-	47.7	61.3	64	1620
470	441	442	74.1	-	46.9	60.7	-	1570
460	433	433	73.6	-	46.1	60.1	62	1530
450	425	425	73.3	-	45.3	59.4	-	1495
440	415	415	72.8	-	44.5	58.8	59	1460
430	405	405	72.3	-	43.6	58.2	-	1410
420	397	397	71.8	-	42.7	57.5	57	1370
410	388	388	71.4	-	41.8	56.8	-	1330
100	379	379	70.8	-	40.8	56.0	55	1290
390	369	369	70.3	-	39.8	55.2	-	1240
380	360	360	69.8	(100.0)	38.8	54.4	52	1205
370	350	350	69.2	-	39.9	53.6	-	1170
360	341	341	68.7	(109.0)	36.6	52.8	50	1130
350	331	331	68.1	-	35.5	51.9	-	1095
340	322	322	67.6	(108.0)	34.4	51.1	47	1070
330	313	313	67.0	-	33.3	50.2	-	1035
320	303	303	66.4	(107.0)	32.2	49.4	45	1005
310	294	294	65.8	-	31.0	48.4	-	980
300	284	284	65.2	(105.5)	29.8	47.5	42	950
295	280	280	64.8	-	29.2	47.1	-	935
290	275	275	64.5	(104.5)	28.5	46.5	41	915
285	270	270	64.2	-	27.8	46.0	-	905
280	265	265	63.8	(103.5)	27.1	45.3	40	890
275	261	261	63.5	-	26.4	44.9	-	875
270	256	256	63.1	(102.0)	25.6	44.3	38	855
265	252	252	62.7	-	24.8	43.7	-	840
260	247	247	62.4	(101.0)	24.0	43.1	37	825
255	243	243	62.0	-	23.1	42.2	-	805
250	238	238	61.6	99.5	22.2	41.7	36	795
245	233	233	61.2	-	21.3	41.1	-	780
240	228	228	60.7	98.1	20.3	40.3	34	765
230	219	219	-	96.7	(18.0)	-	33	730
220	209	209	-	95.0	(15.7)	-	32	695
210	200	200	-	93.4	(13.4)	-	30	670
200	190	190	-	91.5	(11.0)	-	29	635
190	181	181	-	89.5	(8.5)	-	28	605
180	171	171	-	87.1	(6.0)	-	26	580
170	162	162	-	85.0	(3.0)	-	25	545
160	152	152	-	81.7	(0.0)	-	24	515
150	143	143	-	78.7	-	-	22	490
140	133	133	-	75.0	-	-	21	455
130	124	124	-	71.2	-	-	20	425
120	114	114	-	66.7	-	-	-	390
110	105	105	-	62.3	-	-	-	-
100	95	95	-	56.2	-	-	-	-
95	90	90	-	52.0	-	-	-	-
90	86	86	-	48.0	-	-	-	-
85	81	81	-	41.0	-	-	-	-

Note) 1. 1MPa = 1N/㎟
2. The number In the blank is not generally used ranges

Properties of KORLOY Grades

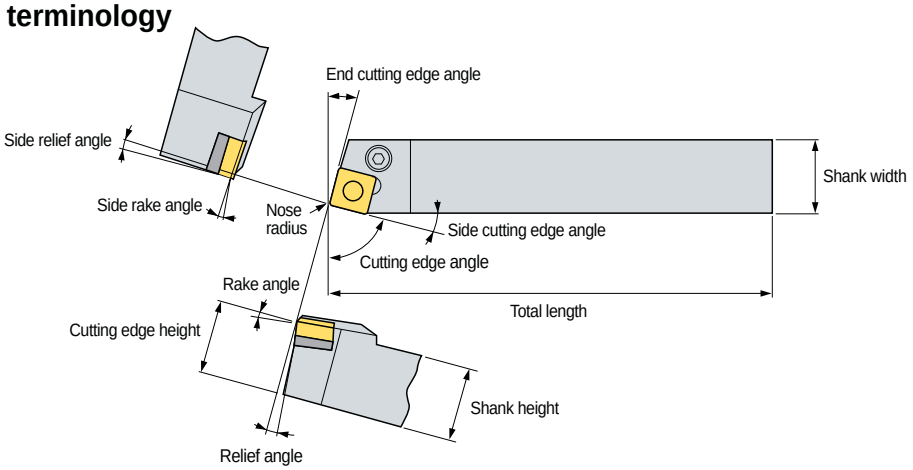
Physical properties of KORLOY grades

Application	ISO Classification symbol		KORLOY grades	Specific gravity (g/㎤)	Hardness (HRA)	TRS (kgf/㎟)	Compressive strength (kg/㎟)	Young's modulus (10^3kgf/㎟)	Thermal expansion coefficient (10^{-6}/°C)	Thermal conductivity (cal/㎝sec°C)
Grades for cutting tools	P	P01	ST05	10.6	92.7	140	440	-	-	-
		P10	ST10	10.0	92.1	175	460	48	6.2	25
		P20	ST20	11.8	91.9	200	480	56	5.2	42
		P30	ST30A	12.2	91.3	230	500	53	5.2	-
	M	M10	U10	12.9	92.4	170	500	47	-	-
		M20	U20	13.1	91.1	210	500	-	-	88
		M30	ST30A	12.2	91.3	230	500	53	5.2	-
		M40	U40	13.3	89.2	270	440	-	-	-
	K	K01	H02	14.8	93.2	185	-	61	4.4	105
		K10	H01	13.0	92.9	210	570	66	4.7	109
		K20	G10	14.7	90.9	250	500	63	-	105
Ultra fine grain alloy	Z	Z10	FA1	14.1	91.4	290	-	58	5.7	-
		Z20	FCC	12.5	91.3	235	-	-	-	-
Grade for tungsten carbide wear parts	V	V1	D1	15.0	92.3	205	520	-	-	-
		V2	D2	14.8	90.9	250	150	-	-	-
		V3	D3	14.6	89.7	310	410	-	-	-
		V4	G5	14.3	89.0	320	380	-	-	-
		V5	G6	14.0	87.7	350	330	-	-	-
Grade for mining and civil engineering tools	E	E1	GR10	14.8	90.9	220	-	-	-	-
		E2	GR20	14.8	90.3	240	-	-	-	-
		E3	GR30	14.8	89.0	270	-	-	-	-
		E4	GR35	14.8	88.2	270	-	-	-	-
		E5	GR50	14.5	87.0	300	-	-	-	-

The physical properties of element

Element	Specific gravity (g/㎤)	Hardness (Hv)	Young's modulus (×10^3kgf/㎟)	Thermal conductivity (cal/㎝·sec·°C)	Thermal expansion coefficient (×10^{-6}/°C)	Melting point (°C)
WC	15.60	2,150	70	0.30	5.1	5,252
TiC	4.94	3,200	45	0.04	7.6	5,792
TaC	14.50	1,800	29	0.05	6.6	6,872
NbC	8.20	2,050	35	0.04	6.8	6,332
TiN	5.43	2,000	26	0.07	9.2	5,342
Al_2O_3	3.98	3,000	42	0.07	8.5	3,722
cBN	3.48	4,500	71	3.10	4.7	-
Diamond	3.52	9,000	99	5.00	3.1	-
Co	8.90	-	10~18	0.165	12.3	2,723
Ni	8.90	-	20	0.22	13.3	2,651

Insert shape and terminology

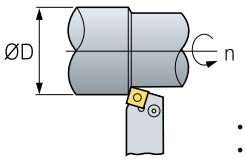


Relating angles between tool and workpiece

Cutting edge inclination	Terminology	Function	Effect
Rake angle	Side rake angle Rake angle	• Cutting force, Cutting heat, The effects of chip control on tool life	• (+): Excellent machine-ability(reducing cutting force, weakening cutting edge strength) • (+): When machining excellent machine-ability or thin workpiece • (-): When strong cutting edge is needed at interrupted condition or mill scale
Relief angle	Relief angle Side relief angle	• Only cutting edge contact with cutting face	• (-): Cutting edge is strong but has short tool life to make bad influence on flank wear
Cutting edge angle	Cutting edge angle	• Affects chip control and cutting force direction	• (+): Improved chip control because chip thickness is big
	Side cutting edge angle	• Affects chip control and cutting force direction	• (+): Strong cutting edge due to distributed cutting force but chip control is bad by thin chip thickness • (-): Improved chip performance
	End cutting edge angle	• Prevent friction between cutting edge and cutting face	• (-): Cutting edge is strong but has short tool life to make bad influence on flank wear

Calculation formulas for machining

Cutting speed



$$vc = \frac{\pi \times D \times n}{12} \text{ (sfm)}$$

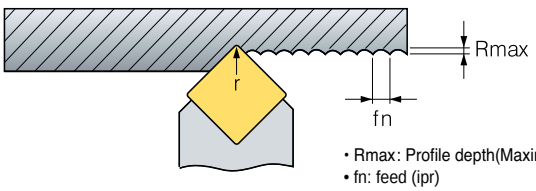
- vc: Cutting speed (sfm)
- D: Diameter (inch)
- n: Revolution per minute (min^{-1})
- π: Circular constant (3.14)

Feed

$$fn = \frac{vf}{n} \text{ (ipr)}$$

- fn: Feed per revolution (ipr)
- vf: Table feed (sfm)
- n: Revolution per minute (min^{-1})

Surface finish



- Rmax: Profile depth(Maximum height roughness) (μ)
- fn: feed (ipr)
- r : nose radius

- Theoretical surface roughness

$$Rmax = \frac{fn^2}{8r} 1000(\mu m)$$

- Practical surface roughness

Steel: Rmax × (1.5~3)
Cast iron: Rmax × (3~5)

Power requirement

$$P_{HP} = \frac{kc \times W \times ap \times fn}{4500 \times \eta}$$

$$P_{KW} = \frac{kc \times W \times ap \times fn}{6120 \times \eta}$$

- P_{KW}: Power requirement [kW]
- P_{HP}: Power requirement (horse power) [HP]
- vc: Cutting speed [sfm]
- ap: Depth of cut [inch]
- fn: Feed per revolution [ipr]
- kc: Specific cutting resistance [kg/mm^2]
- η: Machine efficiency rate (0.7~0.8)

Rough Kc	
Mild steel	190
Medium carbon steel	210
High carbon steel	240
Low alloy steel	190
High alloy steel	245
Cast iron	93
Malleable cast iron	120
Bronze, Brass	70

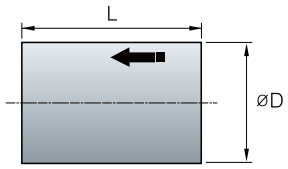
Material removal rate

$$Q\ (cm^3/min) = vc \times ap \times fn$$

- Q: Material removal rate [cm^3/min]
- ap: Depth of cut [sfm]
- vc: Cutting speed [inch]
- fn: Feed per revolution [ipr]

● Machining time

External face machining 1



Constant revolution per minute

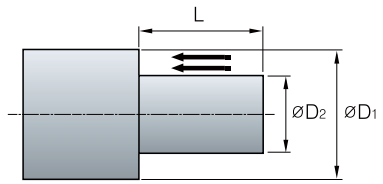
$$T = \frac{60 \times L}{fn \times n}$$

Constant cutting speed

$$T = \frac{60 \times \pi \times L \times D}{1000 \times fn \times vc}$$

T: Machining time [sec]
L: Cutting length [inch]
fn: Feed per revolution [ipr]
n: Revolution per minute [inch]
D: Diameter of workpiece [inch]
vc: Cutting speed [sfm]

External face machining 2



Constant revolution per minute

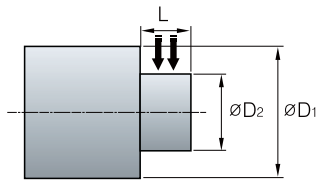
$$T = \frac{60 \times L}{fn \times n} \times N$$

Constant cutting speed

$$T = \frac{60 \times \pi \times L \times (D_1 + D_2)}{2 \times 1000 \times fn \times vc} \times N$$

T: Machining time [sec]
L: Cutting length [inch]
fn: Feed per revolution [ipr]
n: Revolution per minute [min]
D1: Maximum diameter of workpiece [inch]
D2: Minimum diameter of workpiece [inch]
vc: Cutting speed [sfm]
N: The number of pass = (D1-D2)/d/2

Facing



Constant revolution per minute

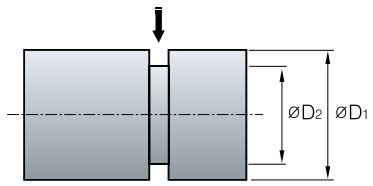
$$T = \frac{60 \times (D_1 - D_2)}{2 \times fn \times n} \times N$$

Constant cutting speed

$$T_1 = \frac{60 \times \pi \times (D_1 + D_2) \times (D_1 - D_2)}{4000 \times fn \times vc} \times N$$

T: Machining time [sec]
T1: Machining time before the maximum rpm[sec]
L: Width of machining [inch]
fn: Feed per revolution [ipr]
n: Revolution per minute [min^{-1}]
D1: Maximum diameter of workpiece [inch]
D2: Minimum diameter of workpiece [inch]
vc: Cutting speed [sfm]
N: The number of pass = (D1-D2)/d/2

Grooving



Constant revolution per minute

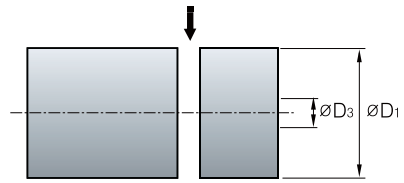
$$T = \frac{60 \times (D_1 - D_2)}{2 \times fn \times n}$$

Constant cutting speed

$$T_1 = \frac{60 \times \pi \times (D_1 + D_2) \times (D_1 - D_2)}{4000 \times fn \times vc}$$

T: Machining time [sec]
T1: Machining time before the maximum rpm[sec]
L: Width of machining [inch]
fn: Feed per revolution [ipr]
n: Revolution per minute [min^{-1}]
D1: Maximum diameter of workpiece [inch]
D2: Minimum diameter of workpiece [inch]
vc: Cutting speed [sfm]

Parting



Constant revolution per minute

$$T = \frac{60 \times D_1}{2 \times fn \times n}$$

Constant cutting speed

$$T_1 = \frac{60 \times \pi \times (D_1 + D_3)\ (D_1 - D_3)}{4000 \times fn \times vc}$$

$$T_3 = T_1 + \frac{60 \times D_3}{2 \times fn \times n_{max}}$$

T: Machining time [sec]
T1: Machining time before the maximum rpm[sec]
T3: Machining time till maximum RPM[sec]
fn: Feed per revolution [ipr]
n: Revolution per minute [min^{-1}]
nmax: Maximum revolution per minute [min^{-1}]
D1: Maximum diameter of workpiece [inch]
D3: Maximum diameter at maximum RPM [inch]
vc: Cutting speed [sfm]

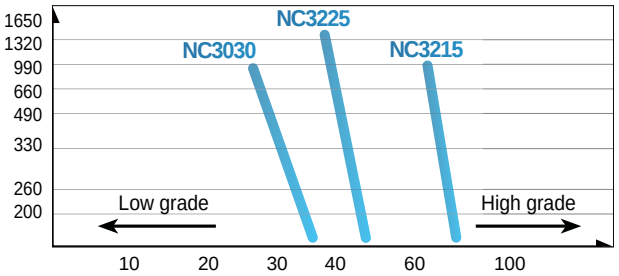
The affects of cutting condition

• The most desirable machining means short machining time, long tool life and good precision
This is the reason that proper cutting condition for each tools should be selected according to material's properties, hardness, shapes, the efficiency of machine

Cutting speed

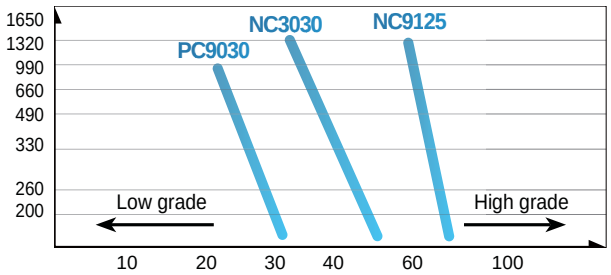
• **Workpiece:** S45C (180HB)
• **Tool life criterion:** V_B = 0.008 inch
• **Depth of cut:** 0.060 inch
• **Feed:** 0.012 ipr
• **Holder:** PCLNR16-3D
• **Insert:** CNMG431, Dry cutting

(The tool life feature of P grade)



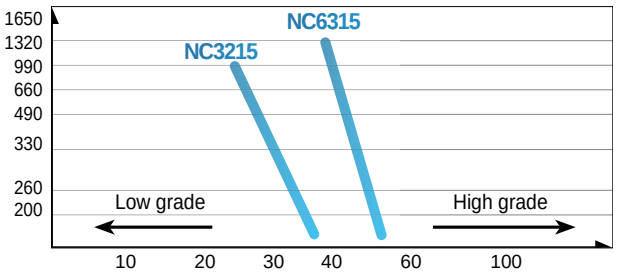
• **Workpiece:** STS304 (200HB)
• **Tool life criterion:** V_B = 0.008 inch
• **Depth of cut:** 0.060 inch
• **Feed:** 0.012 ipr
• **Holder:** PCLNR16-3D
• **Insert:** CNMG431, Dry cutting

(The tool life feature of M grade)



• **Workpiece:** GC300 (180HB)
• **Tool life criterion:** V_B = 0.008 inch
• **Depth of cut:** 0.060 inch
• **Feed:** 0.012 ipr
• **Holder:** PCLNR16-3D
• **Insert:** CNMG431, Dry cutting

(The tool life feature of K grade)



Cutting Speed's effects

• When the cutting speed increases up to 20% in an application, the tool life respectively decreases down 50%
Although inversely, if the cutting speed increases up to 50% the tool life decreases 20%. On the other hand if cutting speed is too low (66~131 sfm) Tool life shortens due to vibration

Feed

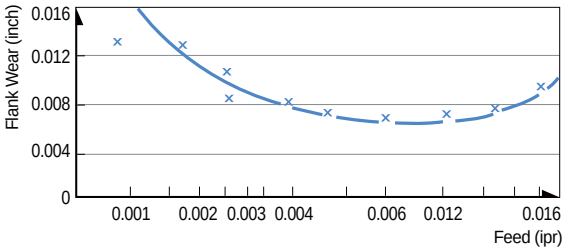
- The feed rate in turning means the progressed interval of a distance in a work piece within 1 revolution
  The feed rate in a milling application means the table feed divided by number of teeth of cutter (feed rate per tooth)

The effects of feed

- When the feed rate decreases the flank wear is increased. When the feed rate is too low, the tool life shortens radically
- When the feed rate increases, the flank wear increases due to high temperatures, however the feed rates effects tool life less than the cutting speed. And higher feed rates improve machining efficiency

(Relationship between feed and flank wear in steel turning)

- **Workpiece:** SNCN431
- **Grade:** ST20
- **Cutting speed:** 656 sfm
- **Depth of cut:** 0.039 inch
- **Cutting time:** 10 min

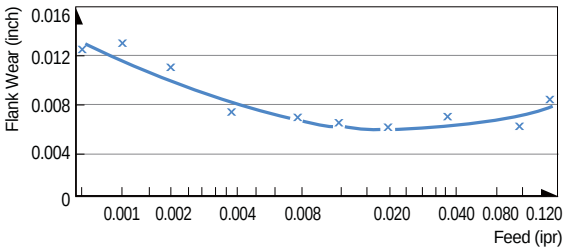


Depth of cut

- Determined by the required allowances in machining a material and the capacity the machine can tolerate
  There are cutting limits according to the different shapes and sizes of the insert

(Relationship between depth of cut and flank wear in steel turning)

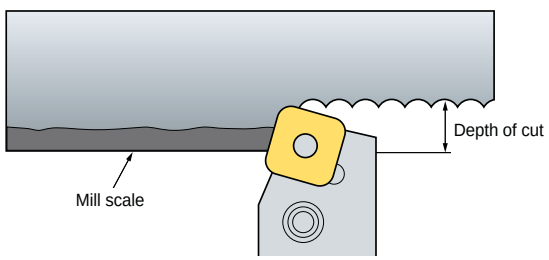
- **Workpiece:** SNCN431
- **Grade:** ST20
- **Cutting speed:** 656 sfm
- **Feed:** 0.008 ipr
- **Cutting time:** 10 min



The effect of a depth of cut

- The depth of cut does not have a big influence on tool life
- When the depth of cut is small the work piece is not cut but rather rubbed. In these cases, machine off the work hardened parts that decrease tool life
- When machining a cast skin or milling scale smaller depth of cuts usually cause chipping and abnormal wear because of hard impurities in the surface of the work piece

(Surface parts including mill scale Roughing)



Relief angle

• Relief angle avoids the friction between workpiece and relief face and makes cutting edge move along workpiece easily

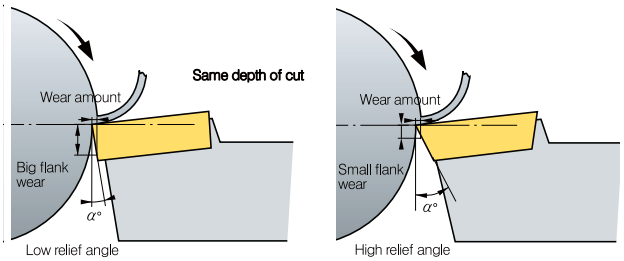
● Relationship between various relief angle and flank wear

Affects

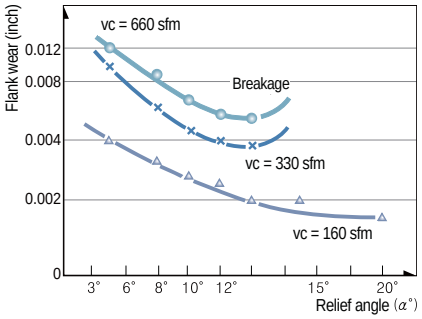
1. If relief angle is big Flank wear decreases
2. If relief angle is big Cutting edge strength weakens
3. If relief angle is small Chattering occurs

Selection system

1. Hard workpiece/When strong cutting edge is needed
   - Low relief angle
2. Soft workpiece/Workpiece turning to work hardening easily
   - High relief angle



- **Workpiece:** 4320 (H)
- **Grade:** P20
- **Depth of cut:** 0.04 inch
- **Feed:** 0.013 ipr
- **Cutting time:** 20 min



Side cutting edge angle

• Side cutting edge angle has big influence on chip flow and cutting force therefore proper Side cutting edge angle is very important

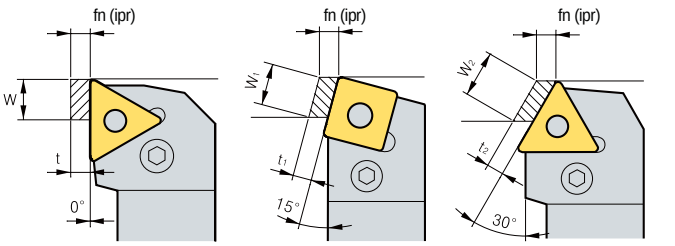
● Side cutting edge angle and chip thickness

• As side cutting edge angle is getting bigger chips are getting thinner and wider (refer to left picture)

• At the same feed and depth of cut with approach angle 0˚ Chip thickness is the same as feed (t = fn) and chip width is equal to depth of cut (W=ap)

$t_1 = 0.97t$, $W_1 = 1.04W$

$t_2 = 0.87t$, $W_2 = 1.15W$



① Approach angle 0˚ ② Approach angle 15˚ ③ Approach angle 30˚

● Side cutting edge angle and 3 cutting forces

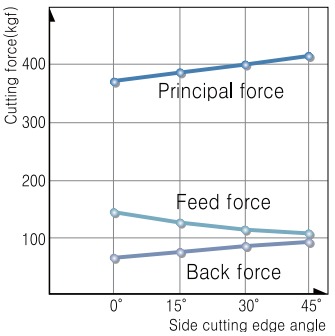
Affects

1. Big side cutting edge angle with the same feed makes chip attaching length longer and chip thickness thinner. So that cutting forces scatter to long cutting edge therefore tool life gets longer
2. Big side cutting edge angle for machining long bars can cause bending

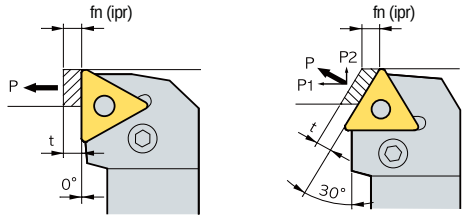
Selection system

1. Deep depth of cut finishing/Long thin workpiece/Low machine rigidity
   - Side cutting edge angle
2. Hard and high calorific power workpiece/Roughing big workpiece/ High machine rigidity - Side cutting edge angle

- **Workpiece:** 4140
- **Grade:** TNGA433
- **vc:** 330 sfm
- **ap:** 0.16 inch
- **fn:** 0.018 ipr



● Side cutting edge angle and cutting load

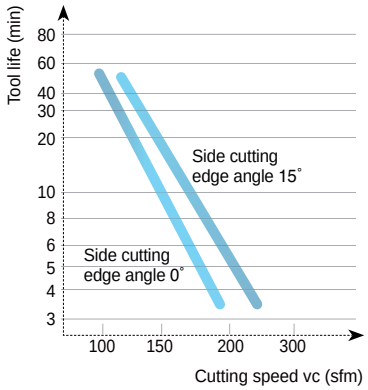


① "Force P is loaded." ② "Force P is scattered to P1, P2."

As approach angle gets bigger Back force gets bigger and feed force gets smaller

● Side cutting edge angle and tool life

- **Workpiece:** 4130
- **Grade:** P20
- **Depth of cut:** 0.12 inch
- **Feed:** 0.008 ipr



● Side cutting edge angle and cutting performance

Specification	Low ← Approach angle → High
Wear rate	High ⋯ Low
Workpiece	Easy to cut material ⋯ Difficult to cut material
Machining power	Small ⋯ Big
Chatter	Hard to occur ⋯ Easy to occur
How to machine	Finishing ⋯ Roughing
Workpiece rigidity	Long thin workpiece ⋯ Thick workpiece
Machine rigidity	In case of low rigidity ⋯ In case of high rigidity

End cutting edge angle

- It affects machined surface to prevent interference between surface of workpiece and insert

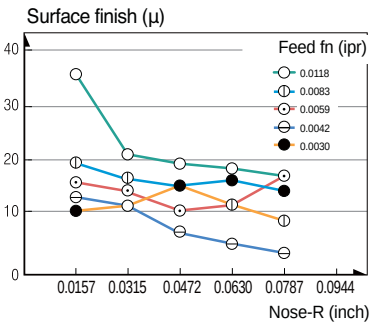
Affects

1. If end cutting edge angle reduces cutting edge get stronger but cutting heat generated by machining increases
2. Small end cutting edge angle can cause chattering due to the increases cutting force

Nose-R

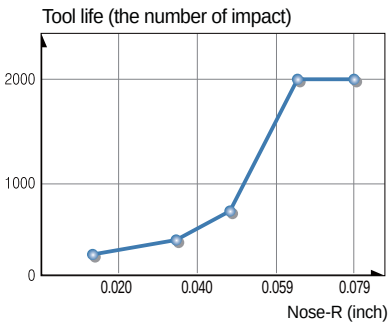
- Nose-R affects not only surface roughness but strength of cutting edge
- In general, It's desirable that Nose-R is 2~3 times bigger than feed

● Nose R and surface finish



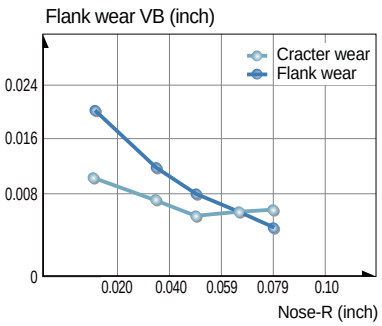
- **Workpiece:** 4340, HB200
- **Grade:** P20
- **vc:** 400 sfm
- **ap:** 0.020 inch

● Nose R and tool life



- **Workpiece:** 4140, HB280
- **Grade:** P10
- **vc:** 330 sfm, **ap:** 0.02 inch
- **fn:** 0.012 ipr

● Nose R and wear of tool

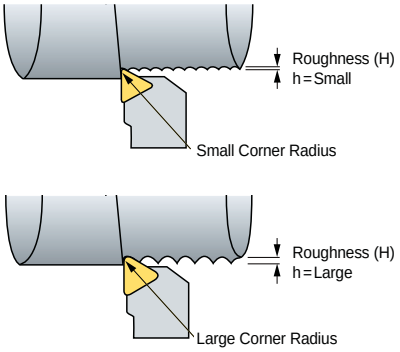


- **Workpiece:** 4340, HB200
- **Grade:** P10
- **vc:** 460 sfm, **ap:** 0.08 inch
- **fn:** 0.008 ipr, **T:** 10 min

Nose-R

Affects

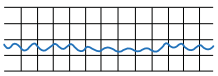
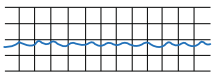
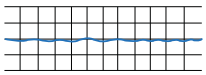
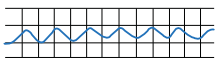
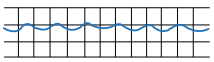
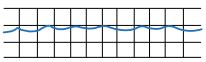
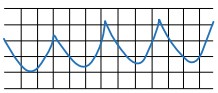
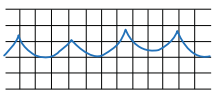
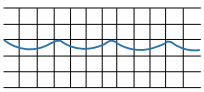
1. Big Nose-R improves surface finish
2. Big Nose-R improves cutting edge strength
3. Big Nose-R reduces flank wear and crater wear
4. Too big Nose-R causes chattering due to increased cutting force



Selection system

1. For finishing with small depth of cut/long and thin workpiece/ When machine power is low - Small Nose-R
2. For applications that need strong cutting edge such as intermittent and machining mill scale/For roughing of big workpiece/ When the machine power is strong eough - Big Nose-R

● Relationship between nose radius, feed and various surface roughness

Feed (ipr) \ Nose R	0.016	0.031	0.047
0.006			
0.010			
0.018			

Cutting edge shape and the affects

● Rake angle (α)

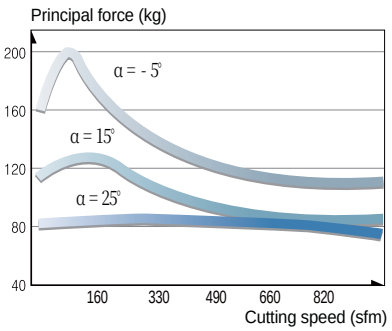
Rake angle has big influence on cutting force, chip flow and tool life

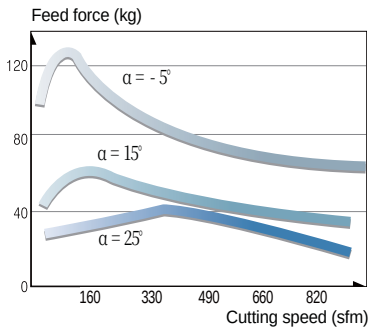
Affects

1. High rake angle results in good suface finish
2. As the rake angle increases by 1° Machining power decreases by 1%.
3. High rake angle weakens cutting edge

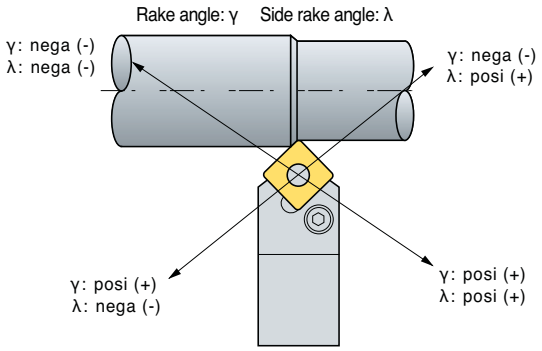
Selection system

1. For hard workpiece/For applications that need strong cutting edge such as interrupted and machining mill scale - Low rake angle
2. For soft workpiece/Easy to cut material/When the rigidity of machine power and workpiece is low - High rake angle

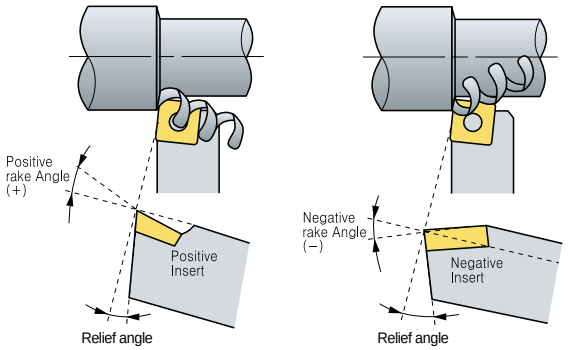




● Rake angle and the direction of chip flow



In order to prevent machined surface from damages Avoid nega, posi combination. γ: nega (-) λ: posi (+)



Selecting proper tools

• Nowadays, It's very difficult to select the best tools in complicating tooling system and various cutting conditions However, It can be simplified by classifying basic factors below

● Selection of inserts and tool holder

Listed below is the basic factors and choose B according to A

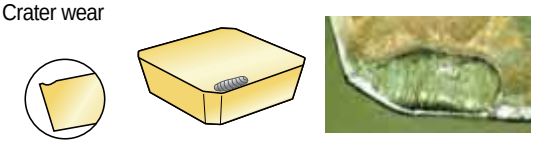
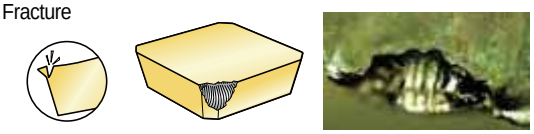
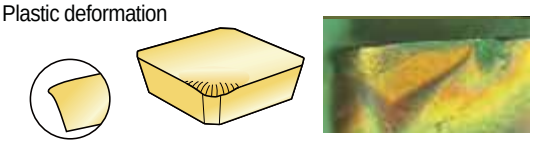
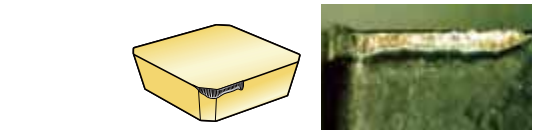
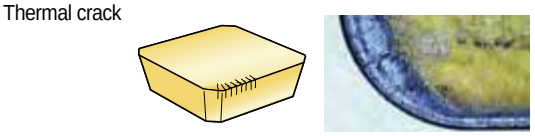
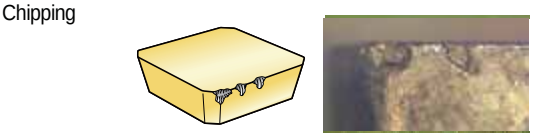
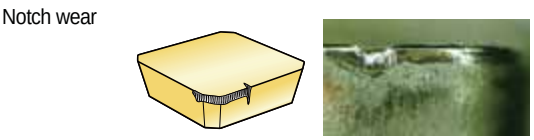
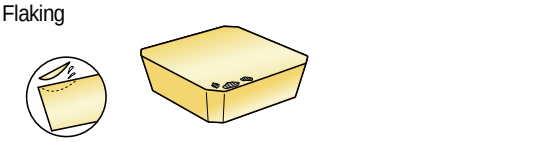
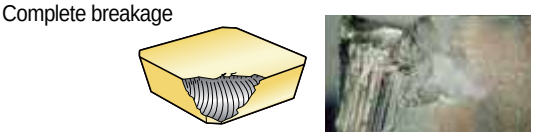
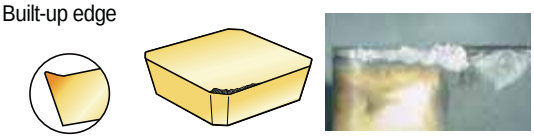
A : Basic factors

· Workpiece material
· Workpiece shape
· Workpiece size
· Hardness of workpiece
· Surface roughness of workpiece (before machining)
· Surface finish required
· Type of lathe machine
· Condition of lathe machine (rigidity, power etc)
· Horse power of machine
· Clamping method of workpiece

B : Selection system

① Select as big approach angle as possible
② Select as big shank as possible
③ Select as strong cutting edge of insert as possible
④ Select as big nose radius as possible
⑤ In finishing, Select the insert using many corners
⑥ Select as small insert as possible
⑦ Cutting speed should be determined carefully according to cutting conditions
⑧ Select as deep depth of cut as possible
⑨ Select as fast feed as possible
⑩ Cutting condition should be determined within chip breaker application ranges

Trouble shooting

Tool failure	Cause	Solution
Crater wear 	• Improper grade • Excessive cutting condition	• Choose harder grade • Decrease cutting condition
Fracture 	• Improper grade • Excessive feed • Shorten cutting edge strength • Insufficient rigidity of holder	• Choose tougher grade • Decrease feed • Apply to large honed or chamfered edge • Choose bigger size holder
Plastic deformation 	• Improper grade • Excessive cutting condition • High cutting temperature	• Choose harder grade • Decrease cutting condition • Choose grade wich heat conductivity are big
Wear on nose radius (Flank wear) 	• When the hardness of workpiece is too high compare with tool • When machinig surface hardened workpiece • Improper grade • Excessive cutting speed • Too small relief angle • Too low feed	• Choose harder grade • Decrease cutting speed • Choose lager relief angle • Increase feed
Thermal crack 	• Expansion and shrinking by cutting temperature • Improper grade (*Specially milling operation)	• Apply to dry cutting (In case of wet cutting, use enough coolant) • Choose tougher grade
Chipping 	• Improper grade • Excessive feed • Shorten cutting edge strength • Insufficient rigidity of holder	• Choose tougher grade • Decrease feed • Apply to large honing or chamfer edge • Choose bigger size holder
Notch wear 	• Surface hardened workpiece • Friction due to bad chip geometry (Generate vibration)	• Choose harder grade • Improve chip control form large rake angle
Flaking 	• Deposition on cutting edge • Bad chip control	• Improve cutting performance fromd large rake angle • Apply to chip pocket with big size
Complete breakage 	• Unusable condition due to wear off the most parts of cutting edge by progress of wear	• Reduce the feed rate. • Reduce the depth of cut. • Select a tougher grade. • Select a stronger chipbreaker. • Select a thicker insert.
Built-up edge 	• Slow cutting speed • Sticky materials	• Increase cutting speed. • Use more positive rake geometry. • Use tougher grade

Types of tool failure and trouble shooting

Troubles	Causes	Solution																	
		Cutting conditions				Selecting insert grade				Tool shape							Machine clamping		
		Cutting speed	Feed	Depth of cut	Coolant	Select harder grade	Select tougher grade	Select better heat-impact resistance grade	Select better adhesion resistance grade	Chip breaker valuation	Rake angle	Nose radius	Side cutting edge angle	Cutting edge strength Honing	Improving insert precision M class → G class	Improving holder rigidity	Clamping workpiece	Holder overhang	Machine vibration
Poor precision Unstable machining size	Insert precision is variable														●				
	Workpiece, Separation of tool									●	⬆	⬇				●	●	●	●
Cutting edge back thrust is big It's necessary to adjust because machining precision changes during operation.	Flank wear increase					●						⬆							
	Cutting condition is improper	⬇	⬆			●													
Poor surface roughness for finishing Criterion of tool life	Weakened cutting force by increasing wear of tool	⬇			Wet cutting				●	●	⬆	⬆		⬇	●				
	Cutting edge chipping		⬇	⬇			●			●		⬆		⬆			●	●	●
	Adhesion, built-up edge	⬆	⬆		Wet cutting				●	●	⬆			⬇	●				
	Improper cutting conditions	⬆	⬇	⬇	Wet cutting														
	Improper tool and shape of cutting edge									●		⬆		⬇	●				
	Vibration, chattering	⬇	⬇	⬇	Wet cutting		●			●	⬆	⬇		⬇		●	●	●	●
Cutting heat generation Poor machining precision and short tool life by cutting heat	Improper cutting conditions	⬇	⬇	⬇		●													
	Improper tool and shape of cutting edge									●	⬆			⬇					
Burr, chipping, nap steel, aluminum (burr)	Improper cutting conditions	⬇	⬆		Wet cutting	●													
	Wear on the tool, improper shape of cutting edge								◉	●	⬆	⬇		⬇					
Cast iron (Weak chipping)	Improper cutting conditions		⬇	⬇		●													
	Wear on the tool, improper shape of cutting edge		⬍							●	⬆	⬆		⬇		●	●	●	●
Soft steel (nap)	Improper cutting conditions	⬆			Wet cutting	●													
	Wear on the tool, improper shape of cutting edge								◉	●	⬆			⬇					

⬆: Increase ⬇: Decrease ●: Use ◉: Correct use

Tool life criterion

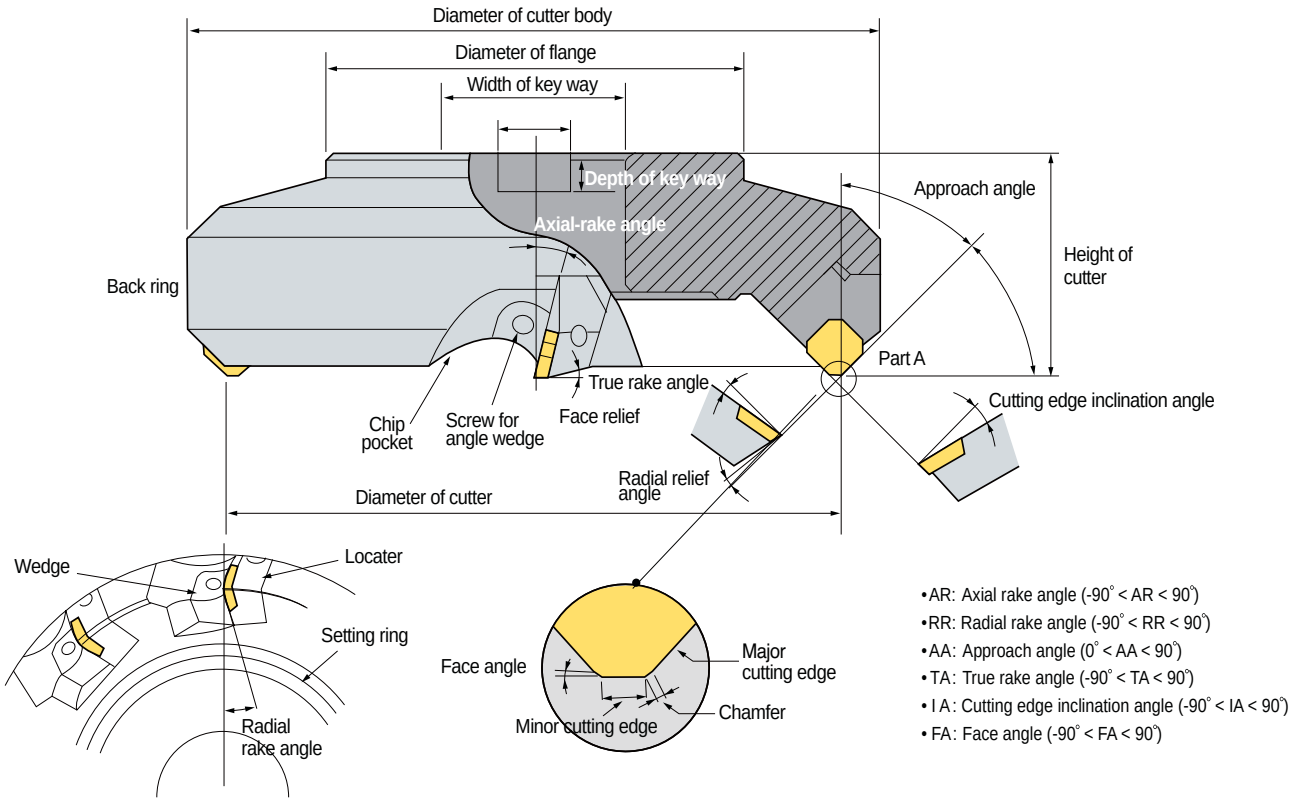
● KS B0813

Flank wear width	0.008 inch	Precision light cutting , Finishing in nonferrous alloy
	0.016 inch	Machining special steel
	0.028 inch	General cutting in cast iron, steel etc
	0.040~0.050 inch	General cutting in cast iron, steel etc
Depth of crater wear	In general 0.002~0.004 inch	

● ISO (B8688)

Tool life criterion	Application
Complete breakage	Machining special steel
Flank wear width V_B = 0.012 inch	Even flank wear of cemented carbides, Ceramic tool
V_B max = 0.020 inch	Uneven flank wear
Crater wear width KT = 0.06+0.3 fmm (f: mm/ipr)	Cemented carbides tool
Criterion by surface roughness 1, 1.6, 2.5, 4, 6.3, 10㎛Ra	When surface roughness is important

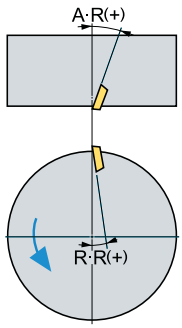
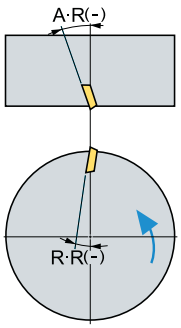
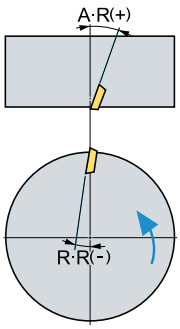
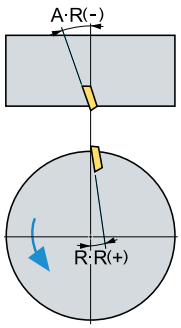
Milling cutter shape and designation



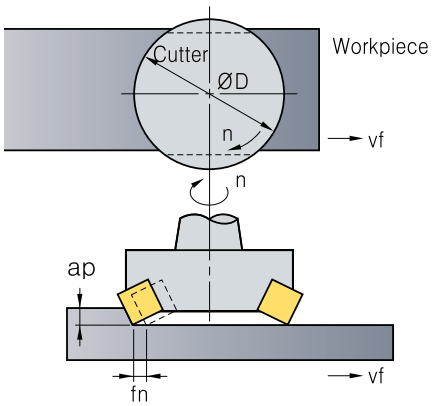
● The terminology and functions of cutting edge angle

No.	Tool failure	Symbol	Function	Effects
1	Axial rake angle	A.R	Chip flow direction, Adhesion	Positive: Excellent cutting, built-up edge prevented
2	Radial rake angle	R.R	Affecting on thrust	Negative: Excellent chip control
3	Approach angle	A.A	Chip thickness, Determines flow direction	(+): Chip thickness become thinner, cutting force could be reduced
4	True rake angle	T.A	Effective rake angle	(+): Better cutting. Preventing adhesion, Weakening cutting edge strength (–): Cutting edge strength increases, easy to adhere
5	Cutting edge inclination angle	I.A	Determines chip flow direction	(+): Good chip flow, cutting force could decreases, Comer edge strength weakens
6	Relief angle	F.A	Controlling cutting edge strenght, tool life and chattering	Surface roughness increases as F.A gets close to 0 degree

Features by combination of rake angle

	Double positive angle	Double negative angle	Posi - Negative angle	Nega - Positive angle
Division				
Use	• General machining of steel, cast iron, stainless steel • Machining soft steel that brings about built-up edge easily • Machining material having tendency to poor surface roughness	• Under interrupted cutting condition • Roughing of cast iron and steel	• Machining difficult to cut material • Roughing with deep depth of cut and wide width of cut in steel and cast iron	• Chip flows to center of cutter body
Advantages	• As for tough workpiece material It prevents built-up edge to improve surface roughness • Low cutting load and better machinability	• Strong cutting edge • Roughing of workpiece that has bad surface condition containing sand, mill scale • Double sided inserts can be applied (Economical) • Good chip control	• Good chip flow and machinability. • Suitable for machining of difficult-to-cut material	-
Disadvantages	• Weak cutting edge strength • Only single sided inserts are available (No economical) • Machine and cutter need enough power and rigidity	• Machine and cutter need enough power and rigidity	• Only single sided inserts are available (No economical)	• Since the chips flows toward the center of cutter. Chips scratch on machined surface • Bad chip flow • No economical

Major cutting formulas



Cutting speed

$$vc = \frac{\pi \cdot D \cdot n}{1000} \text{ (sfm)}$$

- vc: Cutting speed (sfm)
- D: Diameter of tool (inch)
- n: Revolution per minute (min^{-1})
- π: Circular constant (3.14)

Feed

$$fz = \frac{vf}{z \cdot n} \text{ (ipt)}$$

- fz: Feed per tooth (ipt)
- vf: Feed per minute (ipm)
- n: Revolution per minute (min^{-1})
- z: Number of tooth

Chip removal amount

$$Q = \frac{L \times vf \times ap}{1000} \text{ } (cm^3/min)$$

- Q: Chip removal amount (cm^3/min)
- L: Width of cut (inch)
- vf: Table feed (ipm)
- ap: Depth of cut (inch)

Power requirement

$$P_{kw} = \frac{Q \times kc}{60 \times 102 \times \eta} \qquad P_{hp} = \frac{P_{kw}}{0.75} \text{ (hp)}$$

- Pc: Power requirement (kW)
- H: Horse power requirement (hp) (mm/min)
- Q: Chip removal amount (cm^3/min)
- kc: Specific cutting resistance (kgf/mm^3)
- η: Machine efficiency rate (0.7~0.8)

Machining time

$$T = \frac{60 \times Lt}{vf} \text{ (sec)}$$

- T: Machining time (sec)
- Lt: Total length of table feed (inch) (= Lw+D+2R)
- Lw: The length of workpiece (inch)
- D: The diameter of cutter body (inch)
- vf: Table feed (ipm)
- R: Relief length (inch)

True rake angle/Cutting edge inclination angle

True rake angle	tan (T) = tan (R) x cos (AA) + tan (A) x sin (C)
Cutting edge inclination angle	tan (I) = tan (A) x cos (AA) - tan (R) x sin (C)

Values of specific cutting resistance

Workpiece	Tensile strength (kg/mm²) and hardness	Specific cutting resistance according to various feed kc(MPa)				
		0.004 (ipt)	0.008 (ipt)	0.012 (ipt)	0.016 (ipt)	0.024 (ipt)
Soft steel	52	220	195	182	170	158
Medium carbon steel	62	198	180	173	160	157
High carbon steel	72	252	220	204	185	174
Tool steel	67	198	180	173	170	160
Tool steel	77	203	180	175	170	158
Chrome manganese steel	77	230	200	188	175	166
Chrome manganese steel	63	275	230	206	180	178
Chrome molybdenum steel	73	254	225	214	200	180
Chrome molybdenum steel	60	218	200	186	180	167
Nickel Chrome molybdenum steel	94	200	180	168	160	150
Nickel Chrome molybdenum steel	HB352	210	190	176	170	153
Cast steel	52	280	250	232	220	204
Hardened cast iron	HRC46	300	270	250	240	220
Meehanite cast iron	36	218	200	175	160	147
Gray cast iron	HB200	175	140	124	105	97
Brass	50	115	95	80	70	63
Light alloy (Al - Mg)	16	58	48	40	35	32
Light alloy (Al - Si)	20	70	60	52	45	39

Chip removal amount (cm³/min) per rated horse power

Workpiece	Rated horse power	5Hp	10Hp	20Hp	30Hp	40Hp	50Hp
Steel	Soft	32	75	163	295	425	570
	Medium	26	55	127	212	310	425
	hard	18	41	93	163	228	310
Cast iron	Soft	52	116	260	455	670	880
	Medium	32	75	163	295	425	570
	hard	26	55	127	212	310	425
Bronze Brass	Soft	77	163	390	670	980	1,280
	Medium	54	118	275	490	700	910
	hard	26	55	127	245	325	425
Aluminum		90	195	440	780	1,110	1,500

Selection of Mill Max diameter (D)

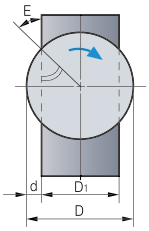
Selection by machine rigidity

Machine horse power (PS)	10~15	15~20	Over 20
Proper cutter body specification (inch)	Ø3.15~Ø3.94	Ø4.92~Ø6.30	Ø6.30~Ø7.87

Selection by machine rigidity

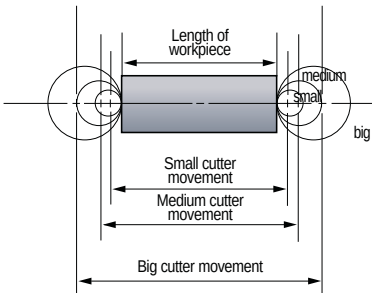
Workpiece	E	δ
Steel	+20°~-10°	3 : 2
Cast iron	Under +50°	5 : 4
Light alloy	Under +40°	5 : 3

D: External diameter of cutter body
D1: Width of workpiece
d: Projected part of cutter body
E: Engage angle
δ: Ratio of cutter body and width of workpiece (D: D1)



Selection by machining time

The bigger size cutter the longer machining time

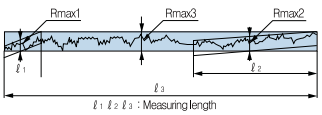
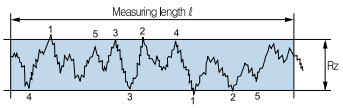
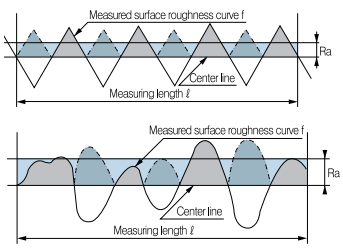


Selection by number of tooth

Workpiece	Steel	Cast iron	Light alloy
Number of tooth	D× (1~1.5)	D× (1~4)	D×1+α

ex) D = ø100 ⇒ 4" x(1~1.5) = 4~6 D is the size of cutter body converted into inch size

Classification of surface roughness

Type	Symbol	How to calculate	Measured value
Maximum height	Rmax	• The distance between the top of profile peak line and the bottom of profile valley line on this sampled portion is measured in the longitudinal magnification direction of roughness curve (Expressed by unit: μ) • Exclude extraordinary values (too small or big) that look like grooves or mountains	
+10 point mean roughness	Rz	• Sampled from the roughness curve in the direction of its mean line, the sum of the average value of absolute value of the highest profile peaks and the depths of five deepest profile valleys measured in the vertical magnification is expressed by micro meter (μ)	
Arithmetic mean roughness	Ra	• Sampling only the reference length from the roughness curve in the direction of mean line , taking X-axis in the direction of mean line and Y-axis in the direction of longitudinal magnification of this sampled part and is expressed by micro meter (μ) • Generally, Read measured value by Ra measurer	

Finish mark		▽▽▽	▽▽	▽	~	
Surface roughness	Rmax	0.8s	6.3s	25s	100s	Unspecified
	Rz	0.8z	6.3z	25z	100z	
	Ra	0.2a	1.6a	6.3a	25a	

Trouble shooting for milling

Trouble	Causes	Solutions										
		Cutting conditions				Tool shape					Insert grade	
		Cutting speed	Depth of cut	Feed	Coolant	Rake angle	Relief angle	Approach angle	Chattering at cutting edge	Nose radius	Toughness	Hardness
Flank wear	• Improper insert grade • Improper cutting conditions • Chattering	⬇		⬆			⬆	⬇		⬆		⬆
Crater wear	• Improper cutting conditions • Improper insert grade	⬇	⬇	⬇	●	⬆	⬆			⬇		⬆
Chipping	• Lack of insert toughness • Excessive feed • Excessive cutting load			⬇		⬇	⬇	⬇		⬆	⬆	
Built-up edge	• Improper cutting conditions • Improper cutting edge shape • Improper insert grade	⬆	⬇			⬆				⬇		
Chattering	• Improper cutting conditions • Lack of number of cutting teeth • Improper cutting edge shape • Bad chip flow • Unstable workpiece clamping		⬇	⬇	●	⬆		⬆	⬇	⬇		
Poor surface finish	• Built-up edge • Improper cutting conditions • Chattering • Bad chip flow	⬆	⬇	⬇	●	⬆			⬇	⬆		
Thermal crack	• Improper cutting conditions • Improper insert grade	⬇	⬇	⬇	◉	⬆				⬆	⬆	
Fracture	• Improper insert grade • Excessive cutting load • Bad chip flow • Chattering • Excessive overhang		⬇	⬇	●						⬆	

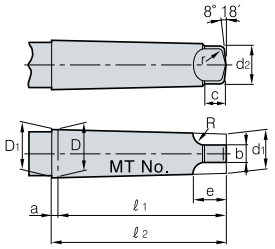
⬆: Increase ⬇: Decrease ●: Use ◉: Correct use

General formulas for milling

● Machine efficiency rate (η)

Power transmission mode	Efficiency rate (E)	Reference
Principal axis direct connection driving	0.90	
Belt driving	0.85	Double connection: 0.85 × 0.85 ≒ 0.70
Starting driving	0.75	
Oil pressure driving	0.60~0.90	

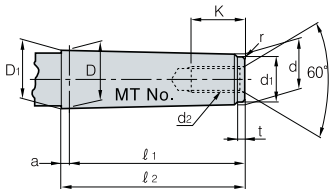
Morse taper (tang type)



(inch)

MT No.	Taper	Taper angle(α)	D	a	D1	d1	ℓ1	ℓ2	d2	b	c	e	R	r
0	1/19.212	1°29′27″	9.045	3.0	9.201	6.104	56.5	59.5	6.0	3.9	6.5	10.5	4	1.0
1	1/20.047	1°25′43″	12.065	3.5	12.240	8.972	62.0	65.5	8.7	5.2	8.5	13.5	5	1.2
2	1/20.020	1°25′50″	17.780	5.0	18.030	14.034	75.0	80.0	13.5	6.3	10.0	16.0	6	1.6
3	1/19.922	1°26′16″	23.825	5.0	24.076	19.107	94.0	99.0	18.5	7.9	13.0	20.0	7	2.0
4	1/19.254	1°29′15″	31.267	6.5	31.605	25.164	117.5	124.0	24.5	11.9	16.0	24.0	8	2.5
5	1/19.002	1°30′26″	44.399	6.5	4.741	36.531	149.5	156.0	35.7	15.9	19.0	29.0	10	3.0
6	1/19.180	1°29′36″	63.348	8.0	63.765	52.399	210.0	218.0	51.0	19.0	27.0	40.0	13	4.0
7	1/19.231	1°29′22″	83.058	10.0	83.578	68.186	286.0	296.0	66.8	28.6	35.0	54.0	19	5.0

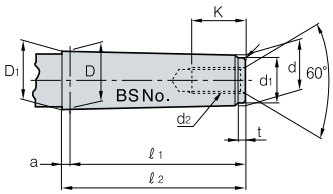
Morse taper (screw type)



(inch)

MT No.	Taper	Taper angle(α)	D	a	D1	d	ℓ1	ℓ2	d1	d2	k	t	r
0	1/19.212	1°29′27″	9.045	3.0	9.201	6.442	50.0	53	6.0	-		4	0.2
1	1/20.047	1°25′43″	12.065	3.5	12.230	9.396	53.5	57	9.0	M6	16	5	0.2
2	1/20.020	1°25′50″	17.780	5.0	18.030	14.583	64.0	69	14.0	M10	24	5	0.2
3	1/19.922	1°26′16″	23.825	5.0	24.076	19.759	81.0	86	19.0	M12	28	7	0.6
4	1/19.254	1°29′15″	31.267	6.5	31.605	25.943	102.5	109	25.0	M16	32	9	1.0
5	1/19.002	1°30′26″	44.399	6.5	4.741	37.584	129.5	136	35.7	M20	40	9	2.5
6	1/19.180	1°29′36″	63.348	8.0	63.765	53.859	182.0	190	51.0	M24	50	12	4.0
7	1/19.231	1°29′22″	83.058	10.0	83.578	70.058	250.0	260	65.0	M33	80	18.5	5.0

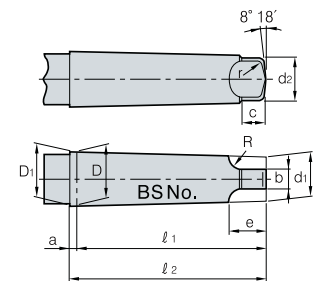
Brown sharp taper (screw type)



(inch)

B&S No.	D	a	D1	d	d1	ℓ1	ℓ2	t	r	d2	K
4	10.221	2.4	10.321	8.890	8.0	31.0	34.2	2	0.2	-	-
5	13.286	2.4	13.386	11.430	10.0	44.4	46.8	3	0.2	-	-
6	15.229	2.4	15.330	12.700	11.0	60.0	62.7	3	0.2	M8(1/4)	20
7	18.424	2.4	18.524	15.240	14.0	76.2	78.6	4	0.2	M10(3/8)	24
8	22.828	3.2	22.962	19.090	17.0	90.5	93.7	4	0.6	M12(1/2)	28
9	27.104	3.2	27.238	22.863	21.0	101.6	104.8	4	0.6	M12(1/2)	28
10	32.749	3.2	32.887	26.534	24.0	144.5	147.7	5	1.0	M16(5/8)	32
11	38.905	3.2	39.039	31.749	29.0	171.4	174.6	5	1.0	M16(5/8)	32
12	45.641	3.2	45.774	38.103	35.0	181.0	184.2	6	2.5	M20(3/4)	40
13	52.654	3.2	52.787	44.451	41.0	196.8	200.0	6	3.0	M20(3/4)	40
14	59.533	3.2	59.666	50.800	47.0	209.6	212.8	7	4.0	M24(1)	40
15	66.408	3.2	66.541	57.150	53.0	222.2	225.4	7	4.0	M24(1)	50
16	73.292	3.2	73.425	63.500	59.0	35.0	238.2	8	5.0	M30(11/8)	60

Brown sharp taper (tang type)

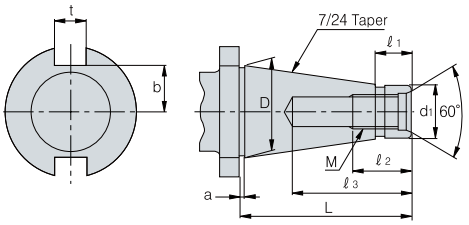


(inch)

B&S No.	D	a	D1	d1	d2	ℓ1	ℓ2	b	c	e	R	r
4	10.221	2.4	10.321	8.458	8.1	42.1	44.5	5.5	8.7	14.4	7.9	1.3
5	13.286	2.4	13.386	10.962	10.7	55.6	58.0	6.3	9.5	16.2	7.9	1.5
6	15.229	2.4	15.330	12.167	11.7	73.0	75.4	7.1	11.1	18.0	7.9	1.5
7	18.424	2.4	18.524	14.675	14.2	89.7	92.1	7.9	11.9	20.3	9.5	1.8
8	22.828	3.2	22.962	18.453.	18.0	104.8	108.0	8.7	12.7	22.0	9.5	2.0
9	27.104	3.2	27.238	22.200	21.8	117.5	120.7	9.5	14.3	25.4	11.1	2.5
10	32.749	3.2	32.887	25.751	25.7	162.7	165.9	11.1	16.7	28.1	11.1	2.8
11	38.905	3.2	39.039	30.985	30.7	189.7	192.9	11.1	16.7	30.0	12.7	3.3
12	45.641	3.2	45.774	37.246	37.1	201.6	204.8	12.7	190	32.5	12.7	3.8
13	52.654	3.2	52.787	43.589	43.4	217.5	220.7	12.7	19.0	35.7	15.9	4.3
14	59.533	3.2	59.666	49.841	49.8	232.6	235.8	14.2	21.4	41.2	19.0	4.8
15	66.408	3.2	66.541	56.186	56.1	245.3	248.5	14.2	21.4	44.4	22.2	5.3
16	73.292	3.2	73.425	62.441	62.2	260.4	263.6	15.8	23.8	50.0	25.4	5.8

M This is metric size. We can also provide in inch type

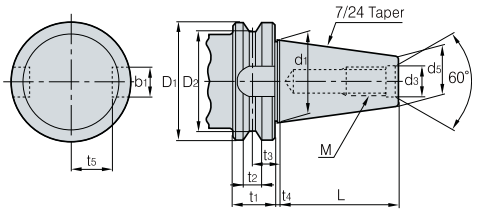
Standard taper of american milling machine



(inch)

NT No.	Dimensions	D	D1		L	ℓ1	M	ℓ2	ℓ3	a	t	b
30	$1\frac{1}{4}$	31.750	17.40	$^{-0.29}_{-0.36}$	70	20	UNC $\frac{1}{2}''$	24	50	1.6	15.9	6.0
40	$1\frac{3}{4}$	44.450	25.32	$^{-0.30}_{-0.384}$	95	25	UNC $\frac{5}{8}''$	30	60	1.6	15.9	22.5
50	$2\frac{3}{4}$	69.850	39.60	$^{-0.31}_{-0.41}$	130	25	UNC $1''$	45	90	3.2	25.4	35.0
60	$4\frac{1}{4}$	107.950	60.20	$^{-0.34}_{-0.46}$	210	45	UNC $1\frac{1}{4}''$	56	110	3.2	25.4	60.0

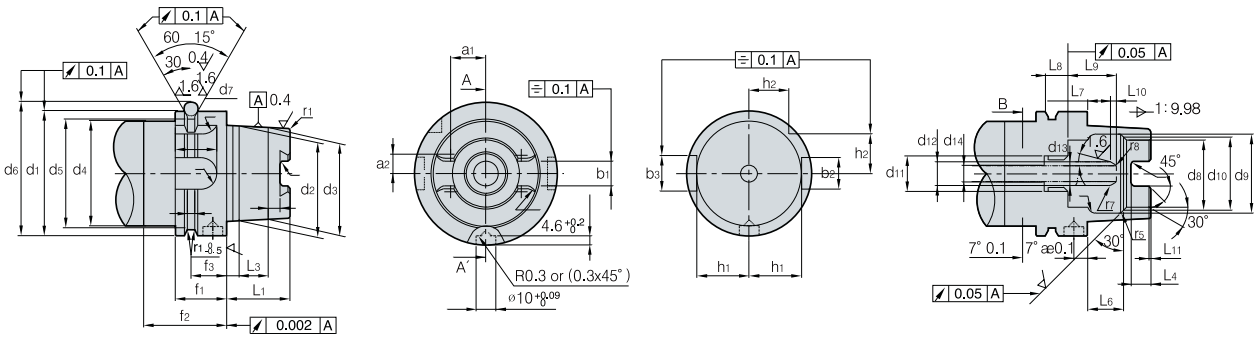
Bottle grip taper



(inch)

BT No.	D1	D2	t1	t2	t3	t4	d1	d3	L	M	b1	t5	d5
35	53	43	22	10	14.6	2	38.1	13	56.5	M12×1.75	16.1	19.6	21.62
40	63	52	25	10	16.6	2	44.45	17	65.4	M16×2	16.1	22.6	25.3
45	85	73	30	12	21.2	3	57.15	21	82.8	M20×25	19.3	29.1	33.1
50	100	85	35	15	23.2	3	69.85	25	101.8	M24×3	25.7	35.4	40.1
60	155	135	45	20	28.2	3	107.95	31	161.8	M30×3.5	25.7	60.1	60.7

HSK shank (DIN 69893)



(inch)

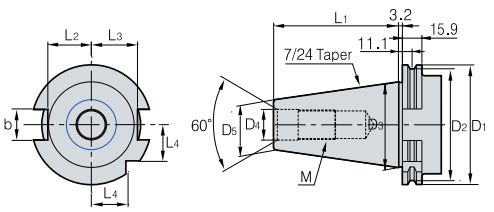
HSK No.	b1	b2	b3	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12	d13	d14	a1	a2
50	10.54	12	14	50	38	36.90	42	43	59.30	7	26	32	29	M16X1	10	6.8	6.8	13.997	7.648
63	12.50	16	14	63	48	46.53	53	55	72.30	7	34	40	37	M18X1	12	8.0	8.4	17.862	9.250
100	20.00	20	14	100	75	72,80	85	92	109.75	7	53	63	58	M24X1.5	16	12.0	12.0	27.329	15.000

(inch)

HSK No.	f1	f2	f3	f4	b1	b2	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	r1	r2	r3	r4	r5	r6	r7	r8
50	26	42	18	3.75	2.0	15.5	25	5.0	11.0	7.5	4.5	14.13	10.0	10	23.0	3	1	19	1	1.5	2.38	6	0.5	1.0	2	6
63	26	42	18	3.75	28.5	20.0	32	6.3	14.7	10.0	6.0	18.13	10.0	12	24.5	3	1	21	1.2	1.5	3.00	8	0.6	1.5	3	8
100	29	45	20	3.75	44.0	31.5	50	10.0	24.0	15.0	10.0	28.56	12.5	16	28.0	3	1.5	24	2	2.0	3.00	12	1.0	1.5	3	10

M This is metric size. We can also provide in inch type

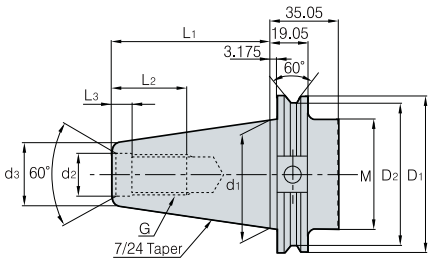
DIN 69871



(inch)

Shank No	D1	D2	D3	D4	D5	L1	L2	L3	L	b	M
30	50.0	44.3	31.75	13	17.8	47.8	16.4	19.0	33.5	16.0	M12×1.75
40	63.5	56.2	44.45	17	24.5	68.4	22.8	25.0	42.5	16.1	M16×2
45	82.5	57.2	57.15	21	33.0	82.7	29.1	31.3	52.5	19.3	M20×2.5
50	97.5	91.2	68.85	25	40.1	101.7	35.5	37.7	61.5	25.7	M24×3

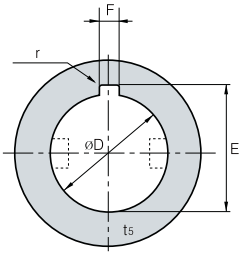
CAT shank



(inch)

Shank No	D1	D2	M	d1	d2	d3	L1	L2	L3	G
CAT40	63.5	56.36	M16×2	44.45	16.28	21.84	68.25	28.45	4.78	5/8-11
CAT45	82.55	75.41	M20×25	57.15	19.46	27.69	82.55	38.1	4.78	3/4-10
CAT50	98.43	91.29	M24×3	69.85	26.19	35.05	101.6	44.45	6.35	1-8

Standard of milling cutter hole (KSB3203)

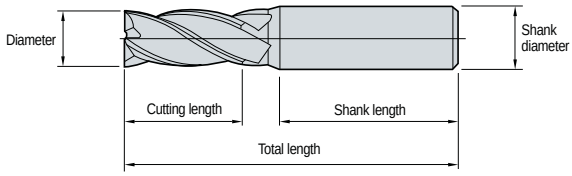


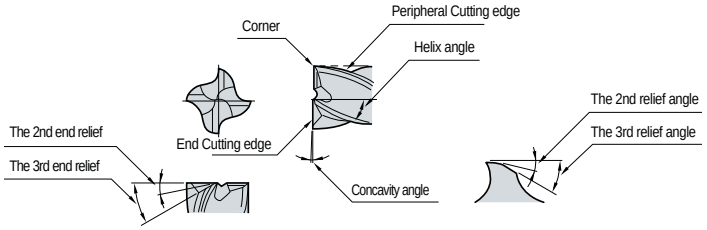
● **Type B**

Diameter	øDH7	E	F	r
1/2	12.70 $^{+0.018}_{0}$	14.17 $^{+0.25}_{0}$	2.38 $^{+0.31}_{+0.13}$	0.5
5/8	15.875 $^{+0.018}_{0}$	17.74 $^{+0.25}_{0}$	3.18 $^{+0.31}_{+0.13}$	0.8
3/4	19.050 $^{+0.021}_{0}$	20.89 $^{+0.25}_{0}$	3.18 $^{+0.31}_{+0.13}$	0.8
7/8	22.225 $^{+0.021}_{0}$	24.07 $^{+0.25}_{0}$	3.18 $^{+0.31}_{+0.13}$	0.8
1	25.40 $^{+0.021}_{0}$	28.04 $^{+0.25}_{0}$	6.35 $^{+0.31}_{+0.13}$	1.2
1 1/4	31.750 $^{+0.025}_{0}$	35.18 $^{+0.25}_{0}$	7.94 $^{+0.32}_{+0.14}$	1.6
1 1/2	38.10 $^{+0.025}_{0}$	42.32 $^{+0.25}_{0}$	9.53 $^{+0.89}_{+0.25}$	1.6
1 3/4	44.450 $^{+0.025}_{0}$	49.48 $^{+0.25}_{0}$	11.11 $^{+0.89}_{+0.25}$	1.6
2	50.80 $^{+0.03}_{0}$	55.83 $^{+0.25}_{0}$	12.7 $^{+0.89}_{+0.25}$	1.6
2 1/2	63.50 $^{+0.03}_{0}$	69.42 $^{+0.25}_{0}$	15.81 $^{+0.89}_{+0.25}$	1.6
3	76.20 $^{+0.03}_{0}$	82.93 $^{+0.25}_{0}$	19.05 $^{+0.89}_{+0.25}$	2.4
3 1/2	88.90 $^{+0.035}_{0}$	98.81 $^{+0.25}_{0}$	22.23 $^{+0.89}_{+0.25}$	2.4
4	101.60 $^{+0.035}_{0}$	111.51 $^{+0.25}_{0}$	25.4 $^{+0.89}_{+0.25}$	2.4
4 1/2	114.30 $^{+0.035}_{0}$	125.81 $^{+0.25}_{0}$	25.58 $^{+0.89}_{+0.25}$	3.2
5	127.0 $^{+0.04}_{0}$	140.08 $^{+0.25}_{0}$	31.75 $^{+0.89}_{+0.25}$	3.2

M This is metric size. We can also provide in inch type

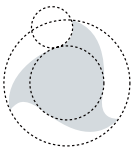
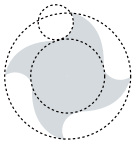
Endmill's shape and names





The comparison according to number of flute

● Features of number of flute

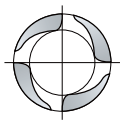
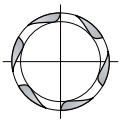
Ø10 mm	2 flutes	3 flutes	4 flutes
Shape			
Cross section	44 mm²	46 mm²	48 mm²
Ratio	56%	58%	61%
Advantages	Good chip flow	Good chip flow	High rigidity
Disadvantages	Weak rigidity	Difficult to measure external diameter	Bad chip flow
Usages	Side facing, Grooving	Side facing, Grooving	Side cutting
	Multi-functional	Medium, finishing	Finishing

● Affection of number of flute

Specification	Major features	2 flutes	4 flutes
Tool rigidity	Torsional rigidity	○	◎
	Bending rigidity	○	◎
Surface finish	Surface roughness	○	◎
	Machining precision	○	◎
Chip control	Chip clogging	◎	○
	Chip evacuation	◎	○
Grooving	Chip evacuation	◎	○
	Grooving	◎	○
Side facing	Surface finish	○	◎
	Vibration	◎	○

◎: Excellent ○: Good

The differences between general endmills and high speed endmills

General endmills		High speed endmills	
Cross section shape	Features	Cross section shape	Features
	- Applied for Low speed, High depth of cut, Low feed - Low hardness workpiece(general steel, cast iron)		- Applied for high speed, low depth of cut, high feed - Useful for hardened workpiece such as die steel

Calculations of cutting condition

● Calculations of Cutting speed

$$vc = \frac{\pi \times D \times n}{12} \qquad n = \frac{12 \times vc}{\pi \times D}$$

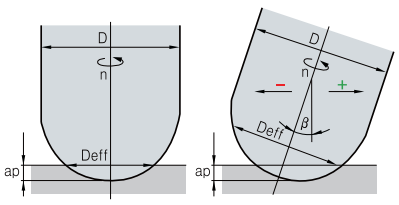
● Calculations of feed speed

$vf = n \times fn$ or $n \times fz \times z$

$$fn = \frac{vf}{n} \qquad fz = \frac{fn}{z} \text{ or } \frac{vf}{n \times z}$$

vc: Cutting speed (sfm)
π: Circular constant (3.141592)
D: Endmill diameter (inch)
n: Revolution per minute (min^{-1})
vf: Feed speed (ipm)
fn: Feed per revolution (ipr)
fz: Feed per flute (ipt)
z: Number of flute

Ball endmills cutting speed calculation formulas

Revolution per minute	$n = \frac{vc \times 12}{D \times \pi}$
Cutting speed	$vc = \frac{D \times \pi \times n}{12}$
Feed per tooth	$fz = \frac{vf}{z \times n}$
Feed per revolution	$fn = fz \times z$
Feed speed	$vf = fz \times z \times n$
Chip removal rate	$Q = ae \times ap \times vf$
Effective diameter of Ball Endmill	$D_{eff} = 2 \times \sqrt{D \times ap - ap^2}$ Calculation Table
	$D_{eff} = D \times \sin\left[\beta \pm \arccos\left(\frac{D-2ap}{D}\right)\right]$

The affection of flute length

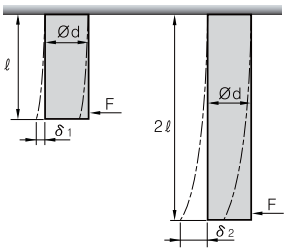
Expression of aspect ratio

- Aspect ratio
- ℓ/d
- Ex) 3d, 15d, 22d

Deformation rate according to length

- Deformation rate is reaction force against external force
- Proportional to the cube of length
- Set flute length and overall length as short as possible
- The more flute the better rigidity
- When flute width rate is narrower drill's rigidity is higher

$$\delta = \frac{P\ell^3}{3EI}$$



δ = Deformation volume **ℓ** = Length of cut

P = Cutting force **E** = Elasticity coefficient

I = Inertia moment ($I = \frac{\pi d^4}{64}$)

- ℓ: 2ℓ
- δ1: δ1 = 8δ1 = δ2

Spindle revolution conversion table (RPM) - external diameter

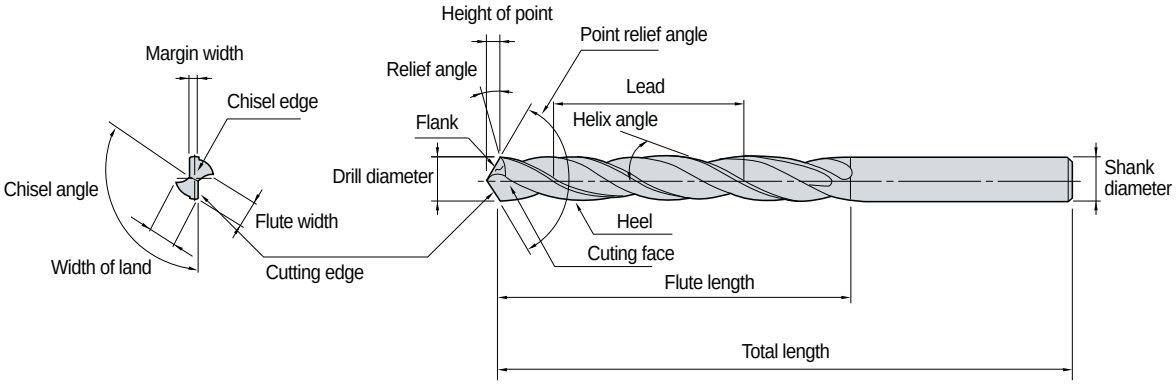
vc / External	Cutting speed, vc (sfm)															
	20	30	130	160	190	230	260	300	330	400	460	490	590	660	820	990
0.008	31,831	47,746	63,662	79,577	95,493	111,408	127,324	143,239	159,155	190,986	222,817	238,720	286,479	318,310	397,887	477,465
0.012	21,221	31,831	42,441	53,052	63,662	74,272	84,883	95,493	106,103	127,324	148,545	159,155	190,986	212,207	265,258	318,310
0.016	15,915	23,873	31,831	39,789	47,746	55,704	63,662	71,620	79,577	95,493	111,408	119,366	143,239	159,155	198,944	238,732
0.020	12,732	19,099	25,465	31,831	38,197	44,563	50,930	57,296	63,662	76,394	89,127	95,493	114,592	127,324	159,155	190,986
0.024	10,610	15,915	21,221	26,526	31,831	37,136	42,441	47,746	53,052	63,662	74,272	79,577	95,493	106,103	132,629	159,155
0028	9,095	13,642	18,189	22,736	27,284	31,831	36,378	40,926	45,473	54,567	63,662	68,209	81,851	90,946	113,682	136,419
0.032	7,958	11,937	15,915	19,894	23,873	27,852	31,831	35,810	39,789	47,746	55,704	59,683	71,620	79,577	99,472	119,366
0.036	7,074	10,610	14,147	17,684	21,221	24,757	28,294	31,831	35,368	42,441	49,515	53,052	63,662	70,736	88,419	106,103
0.040	6,366	9,549	12,732	15,915	19,009	22,282	25,465	28,648	31,831	38,197	44,563	47,746	57,296	63,662	79,577	95,793
0.059	4,244	6,366	8,488	10,610	12,732	14,854	16,977	19,099	21,221	25,465	29,709	31,831	38,197	42,441	53,052	63,662
0.079	3,183	4,775	6,366	7,958	9,549	11,141	12,732	14,324	15,915	19,099	22,282	23,873	28,648	31,831	39,789	47,746
0.098	2,546	3,820	5,093	6,366	7,639	8,913	10,186	11,459	12,732	15,279	17,825	19,099	22,918	25,465	31,831	38,197
0.118	2,122	3,183	4,244	5,305	6,366	7,427	8,488	9,549	10,610	12,732	14,854	15,915	19,099	21,221	26,526	31,831
0.138	1,819	2,728	3,638	4,547	5,457	6,366	7,276	8,185	9,095	10,913	12,732	13,642	16,370	18,189	22,736	27,284
0.158	1,592	2,387	3,183	3,979	4,775	5,570	6,366	7,162	7,958	9,549	11,141	11,937	14,324	15,915	19,894	23,873
0.177	1,415	2,122	2,829	3,537	4,244	4,951	5,659	6,366	7,074	8,488	9,903	10,610	12,732	14,147	17,684	21,221
0.197	1,273	1,910	2,546	3,183	3,820	4,456	5,093	5,730	6,366	7,639	8,913	9,549	11,459	12,732	15,915	19,099
0.217	1,157	1,736	2,315	2,894	3,472	4,051	4,630	5,209	5,787	6,945	8,102	8,681	10,417	11,575	14,469	17,362
0.236	1,061	1,592	2,122	2,653	3,183	3,714	4,244	4,775	5,305	6,366	7,427	7,958	9,549	10,610	13,263	15,915
0.256	979	1,469	1,959	2,449	2,938	3,428	3,918	4,407	4,897	5,876	6,856	7,346	8,815	9,794	12,243	14,691
0.276	909	1,364	1,819	2,274	2,728	3,183	3,638	4,093	4,547	5,457	6,366	6,821	8,185	9,095	11,368	13,642
0.295	849	1,273	1,698	2,122	2,546	2,971	3,395	3,820	4,244	5,093	5,942	6,366	7,639	8,488	10,610	12,732
0.315	796	1,194	1,592	1,989	2,387	2,785	3,183	3,581	3,979	4,775	5,570	5,968	7,162	7,958	9,947	11,937
0.335	749	1,123	1,498	1,872	2,247	2,621	2,996	3,370	3,745	4,494	5,243	5,617	6,741	7,490	9,362	11,234
0.354	707	1,061	1,415	1,768	2,122	2,476	2,829	3,183	3,537	4,244	4,951	5,305	6,366	7,074	8,842	10,610
0.374	670	1,005	1,340	1,675	2,010	2,345	2,681	3,016	3,351	4,021	4,691	5,026	6,031	6,701	9,377	10,052
0.394	637	955	1,273	1,592	1,910	2,228	2,546	2,865	3,183	3,820	4,456	4,775	5,730	6,366	7,958	9,549
0.433	579	868	1,157	1,447	1,736	2,026	2,315	2,604	2,894	3,472	4,051	4,341	5,209	5,787	7,234	8,681
0.472	531	796	1,061	1,326	1,592	1,857	2,122	2,387	2,653	3,183	3,714	3,979	4,775	5,305	6,631	7,958
0.512	490	735	979	1,224	1,469	1,714	1,959	2,204	2,449	2,938	3,428	3,673	4,407	4,897	6,121	7,346
0.551	455	682	909	1,137	1,364	1,592	1,819	2,046	2,274	2,728	3,183	3,410	4,093	4,547	5,684	6,821
0.591	424	637	849	1,061	1,273	1,485	1,698	1,910	2,122	2,546	2,971	3,183	3,820	4,244	5,305	6,366
0.630	398	597	796	995	1,194	1,393	1,592	1,790	1,989	2,387	2,785	2,984	3,581	3,979	4,974	5,968
0.669	374	562	749	969	1,123	1,311	1,498	1,685	1,872	2,247	2,621	2,809	3,370	3,745	4,681	5,617
0.709	354	531	707	884	1,061	1,238	1,415	1,592	1,768	2,122	2,476	2,653	3,183	3,537	4,421	5,305
0.748	335	503	670	838	1,005	1,173	1,340	1,508	1,675	2,010	2,345	2,513	3,016	3,351	4,188	5,026
0.787	318	477	637	796	955	1,114	1,273	1,432	1,592	1,910	2,228	2,387	2,865	3,183	3,979	4,775
0.827	303	455	606	758	909	1,061	1,213	1,364	1,516	1,819	2,122	2,274	2,728	3,032	9,789	4,547
0.866	289	434	579	723	868	1,013	1,157	1,302	1,447	1,736	2,026	2,170	2,604	2,894	3,617	4,341
0.906	277	415	554	692	830	969	1,107	1,246	1,384	1,661	1,938	2,076	2,491	2,768	3,460	4,152
0.945	265	398	531	663	796	928	1,061	1,194	1,326	1,592	1,857	1,989	2,387	2,653	3,316	3,979
0.984	255	382	509	637	764	891	1,019	1,146	1,273	1,528	1,783	1,910	2,292	2,546	3,183	3,820

Tool failure and trouble shooting

Trouble		Causes	Solutions																	
			Cutting condition					Tool shape						Grade		etc.				
			Cutting speed	Feed	Depth of cut	Coolant	Up cut·down cut	Relief angle	Lead angle	Length of flute	Number of flute	Honing	Chip pocket	Toughness	Hardness	Machine rigidity	Machine vibration	Workpiece fixing	Overhang
Damage at cutting edge	Excessive periphery cutting edge	Improper cutting condition	⬇	⬆		◉											⬆		
	Chipping	Improper cutting condition Generating built up edge Weak tool rigidity Improper grade		⬇			⬇	⬇				◉		⬆			⬇	⬆	⬇
	Fracture during operation	Improper cutting conditions Excessive cutting load Excessive overhang		⬇	⬇					⬇			⬆			⬆		⬆	⬇
Poor surface finish		Generating built-up edge	⬆	⬆		◉			⬆			◉							
		Chattering	⬇				⬇			⬇						⬆	⬇	⬆	⬇
		Poor straightness		⬇	⬇		⬆		⬆	⬇									⬇
Poor machining precision (Machined size, perpendicularity)		Improper cutting conditions Improper tool shape	⬆	⬇			⬇			⬇	⬆					⬆	⬇		⬇
Bad chip evacuation		Excessive cutting volume Improper chip pocket Improper cutting conditions		⬇	⬇						⬇		⬆						

⬆: Increase ⬇: Decrease ●: Use ◉: Correct use

The shape of drills and the names



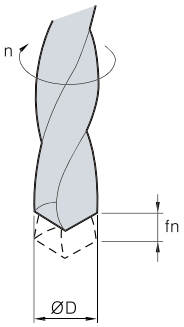
Shape and the feature of cutting

Helix angle	Plays rake angle of cutting edge's role. If helix angle increases Cutting force decreases. On the other hand If helix angle is too big Drill rigidity decreases Poor machinability ◀ low - Helix angle - high ▶ Smooth chip evacuation Hard workpiece (hardened steel) ◀ low - Helix angle - high ▶ Soft material (aluminum etc)
Length of flute	The path of both chip evacuation and cooling lubricant Too big length of flute weakens drill rigidity and too small length of flute worsens chip evacuation to breakage
Point angle	Point angle has big influence on cutting performance. It mainly depends on workpiece. In case of standard drills Point angle is generally 118 thrust resistance decrease ◀ low - Point angle - high ▶ thrust resistance increase Torque increase, Burr on exit increase ◀ low - Point angle - high ▶ Torque decrease, Burr on exit decrease Soft material (aluminum etc) ◀ low - Point angle - high ▶ Hard workpiece (hardened steel)
Margin	While machining Margin is the part of contact between workpiece and drill's external. It prevents bending and plays guide's role It depends on drill size Cutting force decrease ◀ small - Margin - big ▶ Cutting force increase Poor guide ◀ small - Margin - big ▶ Good guide
Web thickness	Web is the part of center of drill and drill's rigidity depends on the web. Drill needs cutting edge, chisel edge, at the tip of drill because drill makes a hole at the beginning of drilling . When web thickness is big Thinning is needed to reduce cutting force Cutting force decrease ◀ small - Web thickness - big ▶ Cutting force increase Rigidity decrease ◀ small - Web thickness - big ▶ Rigidity increase Good chip evacuation ◀ small - Web thickness - big ▶ Bad chip evacuation Soft material (aluminum etc) ◀ small - Web thickness - big ▶ Hard workpiece (hardened steel)
Back taper	Drill diameter size is getting smaller from point to shank in order to avoid the friction between drill periphery and workpiece. The decrease of diameter divided by flute length 100mm generally becomes 0.0015~0.0394 inch. As for high performance drills and drills for hole shrinkage workpiece during operation have big back taper
Thinning	In general drills Thrust effects on chisel over 50%. Chisel edge length depends on web thickness and chisel angle. But if web is thin Drill rigidity weaken. Therefore without web thickness change Thinning makes chisel edge short or gives rake angle. In other words, Thinning makes rake angle at chisel and improves chip evacuation and decrease thrust

Types of	Edge shape	Feature	Korloy's drills
X type		Good centering High central thickness Crank shaft	Mach solid drill (MSD) Vulcan drill (VZD)
S type		For wide use For general Easy regrinding	Solid drill (SSD)

Major cutting formulas

Cutting speed	Feed	Helix angle	Machining time
$vc = \frac{\pi \cdot D \cdot n}{1000}$ (sfm)	$fn = \frac{vf}{n}$ (ipr)	$\delta = \tan^{-1}\left(\frac{\pi D}{L}\right)$	$tc = \frac{Id}{n \cdot fn}$ (min)
• vc: Cutting speed (sfm) • D: Drill diameter (inch) • n: Revolution per minute (min^{-1}) • π: Circular constant (3.14)	• fn: Feed per revolution (ipr) • vf: Feed per minute (ipm) • n: Revolution per minute (min^{-1})	• δ: Helix angle • D: Drill diameter (inch) • L: Lead (inch) • π: Circular constant (3.14)	• tc: Machining time (min) • n: Revolution per minute (min^{-1}) • Id: Drilling time (inch) • fn: Feed (ipr)



Cutting torque and thrust (calculation formulas)

$Md = KD^2 \times (0.0631 + 1.686 \times fn)$ (kg·cm)

$T = 57.95KDfn^{0.85}$ (kg)

• Md: Cutting torque (kg·cm)
• T: Cutting thrust (kg)
• D: Drill diameter (inch)
• fn: Feed per revolution (ipr)
• K: Material coefficient

Workpiece material (SAE/AISI)		Tensile strength (kgf)	Hardness (HB)	Material coefficient K
Cast iron	Cast iron (Gray)	21	177	1.00
	Cast iron	28	198	1.39
	Cast iron (Ductile)	35	224	1.88
General steel	1020(carbon steel C 0.2%)	55	160	2.22
	1112(C 0.12, S 0.2%)	62	183	1.42
	1335(Mn 1.75%)	63	197	1.45
Nickel Chrome steel	3115 (Ni 1.25, Cr 0.6, Mn 0.5)	53	163	1.56
	3120 (Ni 1.25, Cr 0.6, Mn 0.7)	69	174	2.02
	3140	88	241	2.32
Chrome molybdenum steel	4115 (Cr 0.5, Mo 0.11, Mn 0.8)	63	167	1.62
	4130 (Cr 0.95, Mo 0.2, Mn 0.5)	77	229	2.10
	4140 (Cr 0.95, Mo 0.2, Mn 0.85)	94	269	2.41
Nickel molybdenum steel	4615 (Ni 1.8, Mo 0.25, Mn 0.5)	75	212	2.12
	4820 (Ni 3.5, Mo 0.25, Mn 0.6)	140	390	3.44
Chrome steel	5150 (Cr 0.8, Mn 0.8)	95	277	2.46
Chrome vanadium steel	6115 (Cr 0.6, Mn 0.6, V 0.12)	58	174	2.08
	6120 (Cr 0.8, Mn 0.8, V 0.1)	80	255	2.22

Cutting torque and thrust (empirical formula)

$Md = K_1 d^2 \cdot fn^m$

$T = K_2 d \cdot fn^n$

• Md: Cutting torque (kg·cm)
• T: Thrust (kg)
• fn: Feed (ipr)
• d: Drill diameter (inch)
• K_1, K_2, m, n: Experimental Data Characteristic value

Workpiece	K_1	m	K_2	n
Soft steel	5.9	1.00	125.0	0.88
Rolled steel	3.5	1.00	55.0	0.88
7-3 brass	2.5	0.94	44.4	0.87
Aluminum	1.5	0.90	33.3	0.78
Zinc	1.4	0.88	27.0	0.74
Gun metal	2.0	0.94	21.6	0.75
Galvanized iron	0.3	0.57	6.4	0.55

Tool failures and solutions

Trouble		Causes	Solutions																	
			Cutting condition					Tool shape						Grade		etc				
			Cutting speed	Feed	Step feed	Initial feed	Coolant	Relief angle	Point angle	Thinning angle	Honing	Flute width rate	Thinning	Toughness	Hardness	Machine rigidity	Machine vibration	Guide bush	Clamping workpiece
Chipping		• Too sharp cutting edge (too big relief angle) (thinning edge is too sharp)						⬇		⬇	⬆			⬆					
		• Excessive cutting speed	⬇				●												
		• Built-up edge					●	⬇		⬇	⬆			⬆					
		• Vibration and chattering	⬇													⬆	⬇		●
Wear		• Excessive cutting speed (Abnormal wear at margin)	⬇				●												
		• Insufficient cutting speed (Abnormal wear at center)	⬆				●												
Chip		• Long chip	⬆	⬆			●				⬇								
		• Over lap	⬆	⬆															
		• Chip burning	⬆				●												
Hole precision burr, poor surface finish		• Tool clamping precision				⬇			⬇		⬇					⬆	⬇		●
		• Excessive feed, sharp point angle		⬇					⬆		⬇								
		• Excessive cutting speed (Considered tool grade)	⬆				●	⬇	◉						⬆				
Fracture	Breakage on contact	• Poor surface finish			●	⬇												●	
		• Insufficient machine rigidity														⬆			●
		• Improper cutting condition	⬆	⬇															
	Breakage at hole bottom	• Crooked hole	⬆						⬆				●				⬇	●	
		• Chip clogging		⬇	●							⬆							

⬆: Increase ⬇: Decrease ●: Use ◉: Correct use

Hole size for threading

Metric coarse screw threads

Specification	Hole diameter
M1 X 0.25	0.75
M1.1 X 0.25	0.85
M1.2 X 0.25	0.95
M1.4 X 0.3	1.1
M1.6 X 0.35	1.25
M1.7 X 0.35	1.35
M1.8 X 0.35	1.45
M2 X 0.4	1.6
M2.2 X 0.45	1.75
M2.3 X 0.4	1.9
M2.5 X 0.45	2.1
M2.6 X 0.45	2.2
M3 X 0.6	2.4
M3 X 0.5	2.5
M3.5 X 0.6	2.9
M4 X 0.75	3.25
M4 X 0.7	3.3
M4.5 X 0.75	3.8
M5 X 0.9	4.1
M5 X 0.8	4.2
M5.5 X 0.9	4.6
M6 X 1	5
M7 X 1	6
M8 X 1.25	6.8
M9 X 1.25	7.8
M10 X 1.5	8.5
M11 X 1.5	9.5
M12 X 1.75	10.3
M14 X 2	12
M16 X 2	14
M18 X 2.5	15.5
M20 X 2.5	17.5
M22 X 2.5	19.5
M24 X 3	21
M27 X 3	24
M30 X 3.5	26.5
M33 X 3.5	29.5
M36 X 4	32
M39 X 4	35
M42 X 4.5	37.5
M45 X 4.5	40.5
M48 X 5	43

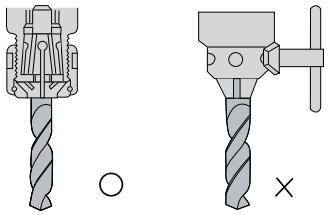
Metric coarse screw threads

Specification	Hole diameter
M2.5 X 0.35	2.2
M3 X 0.35	2.7
M3.5 X 0.35	3.2
M4 X 0.5	3.5
M4.5 X 0.5	4
M5 X 0.5	4.5
M5.5 X 0.5	5
M6 X 0.75	5.3
M7 X 0.75	6.3
M8 X 1	7
M8 X 0.75	7.3
M9 X 1	8
M9 X 0.75	8.3
M10 X 1.25	8.8
M10 X 1	9
M10 X 0.75	9.3
M11 X 1	10
M11 X 0.75	10.3
M12 X 1.5	10.5
M12 X 1.25	10.8
M12 X 1	11
M14 X 1.5	12.5
M14 X 1	13
M15 X 1.5	13.5
M15 X 1	14
M16 X 1.5	14.5
M16 X 1	15
M17 X 1.5	15.5
M17 X 1	16
M18 X 2	16
M18 X 1.5	16.5
M18 X 1	17
M20 X 2	18
M20 X 1.5	18.5
M20 X 1	19
M22 X 2	20
M22 X 1.5	20.5
M22 X 1	21
M24 X 2	22
M24 X 1.5	22.5
M24 X 1	23
M25 X 2	23
M25 X 1.5	23.5
M25 X 1	24
M26 X 1.5	24.5
M27 X 2	25

Cautions

● Selection of drill chuck

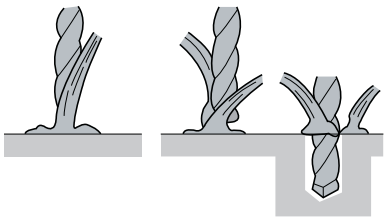
• Collect chuck is favorable Because it has strong grip power
(General drill-chuck and Keyless chuck don't have enough grip power.)



• Collect chuck • General drill-chuck

● Coolant supply

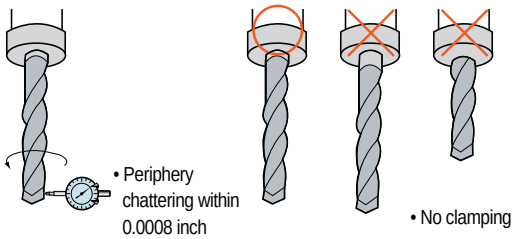
• Supply enough coolant around hole entrance
• Standard cutting oil pressure: 3~5 kg/㎠, Flux: 2~5 l/min



• Supply much coolant at hole entrance

● Mounting drill

• When mounting drill Periphery chattering should be within 0.0008 inch
• Flute should not be clamped

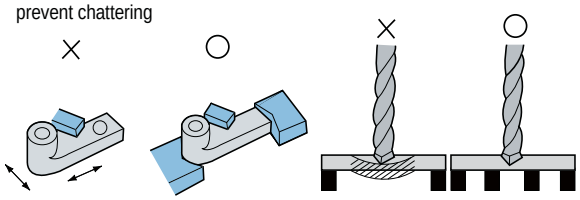


• Periphery chattering within 0.0008 inch

• No clamping flute

● How to clamp workpiece

• At high performance drilling High thrust, torque and horizontal cutting force work at the same time so that workpiece should be clamped strongly to prevent chattering



• Uniformed and strong clamping is needed (Right and left, up and down)

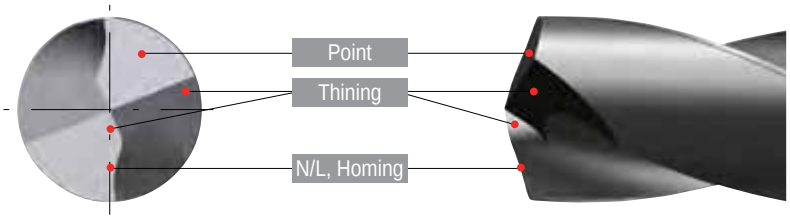
• Strong clamping is needed because bending causes chipping

Notice

1) For better drill's life, small damage and wear are favorable to be regrinding
2) Damage and wear size should be within 0.06 inch for regrinding
3) If drill has crack, regrinding is impossible
4) Ordering for regrinding is acceptable or purchase regrinding machine

Regrinding procedures

● Regrinding mathod (Mach Drill)



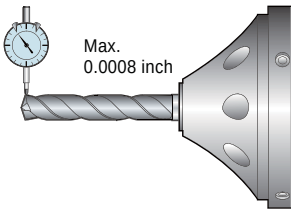
1) Preparation Determination of regrinding areas

- Check the cutting edge for damage and wear If large fracture is found, remove it by rough grinding



2) Grinding operation Drills setting

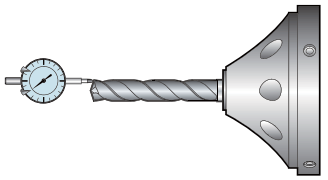
- Drill is clamped to collet chuck Chattering is kept within 0.0008 inch

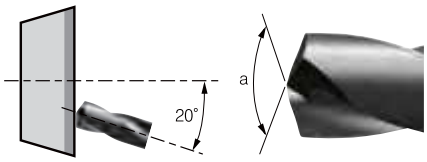


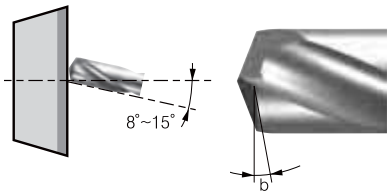
3) Grinding operation-Grinding point

- Check damage and wear at the point and remove it completely
- The difference of the lip height is kept within 0.0008 inch

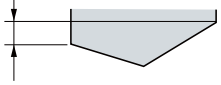
Point angle (a): 140°
Point relief angle (b)t: 8°~15°







The difference of the lip height Max. 0.0008 inch

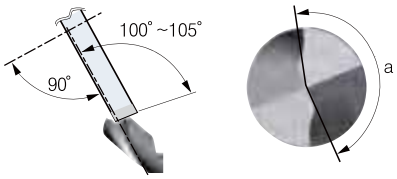


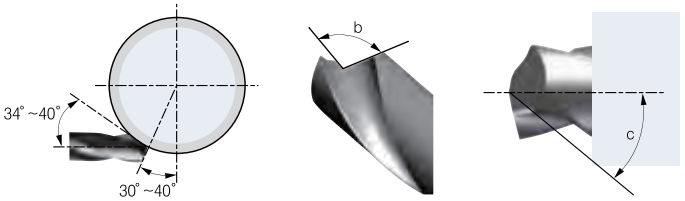
4) Grinding operation-Thinning grinding

- Considering N/L width Cutting edge length from the center of drill axis should be 0.0012~0.0032 inch for balancing

- Set the wheel to tilt drill axis by 34°~40°.

Thinning angle (a)°: 155°~160° Thining open angle (b): 100°~105°
Thinning relief angle (c): 34°~40°

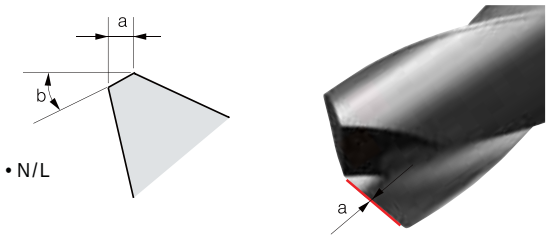




5) Grinding-N/L grinding and honing

- Using diamond chisel Grinds the width flat along point cutting edge
- After negaland operation Finishes with brush or handstone

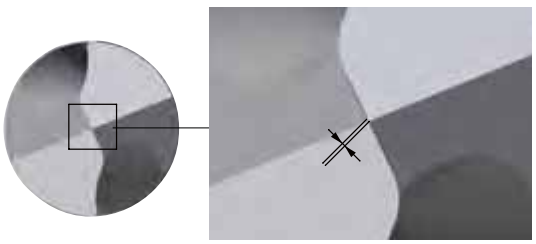
N/L width (a): 0.0020~0.0063 inch /N/L angle (b): 24°~26°



● TIP

· Making point
- Without center drill, the point width should be below 0.004 inch

· Recommended grinding condition
- Diamond wheel: 240~400 mesh
- Diamond chisel: 400~600 mesh
- Diamond hand stone: 800~1500 mesh

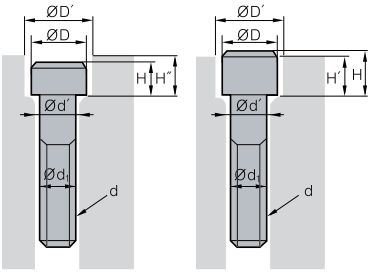


Hexagonal socket bolt (clamping screw) size

● Counter boring and size of bolt hole for hexagonal socket bolt

(inch)

ISO (d)	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30
Ød₁	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
Ød′	3.4	4.5	5.5	6.5	8.5	11	14	16	18	20	22	24	26	30	33
ØD	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45
ØD′	5	8	9.5	11	14	17.5	20	23	26	29	32	35	39	43	48
H	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
H′	2.7	3.6	4.6	5.5	7.4	9.2	11.0	12.8	14.5	16.5	18.5	20.5	22.5	25	28
H″	3.3	4.4	5.4	6.5	8.6	10.8	13.0	15.2	17.5	19.5	21.5	23.5	25.5	29	32



M This is metric size. We can also provide in inch type

The Comparision of Chip Breakers

Application				KORLOY	KYOCERA	TAEGUTEC	SUMITOMO	SANDVIK	KENNAMETAL	ISCAR	WLATER	MITSUBISHI	SECO	TUNGALLOY
Negative	P	Application	Ultra-Finishing	-	DP (G-class)	-	FA	PMC	FF (G-class)	SF	-	PK (G-class), FY	FF1	TF
				VL	GP	FA	FL, FB	QF	UF	PF	NF3	FH, FS, SY	FF2	NS, ZF
			Finishing	VF, VB	PP	FG	LU, FE	PF, XF	FN	NF, SM	NF4	FP		NM, NS, SS
				-	-	SF	SU	61	K	F3P	FP5	LP, SH, SA	MF2	TS, TSF
			Medium to finishing	VC	HQ, CQ	MC	SE	HM	LF, CT	TF	NS6	C (Cermet)		AS
				LP, CP	PQ, CJ	FC	SX	PMC	-	-	MP3	MV	MF5	ZM, AM
			Medium machining	VM, HM	HK, GS, HS, PS	MP, MT	GU (UG)	QM, SM	MP, MN	PP, TF	NM4, NP5	MA, MH	M3, M5	TQ, TM
				MP	PG	PC	GE, UX	PM, XM	-	M3P	MP5	MP	-	DM, None C/B
			Roughing	B25				-	RP, MR	GN	-	GM, None C/B	M5	TH
				GR	PT, GT, HT, PH	RT	MU, ME, MX	PR, WR	RN, None C/B	R3P	RP5, NM9	GH, RP	MR5, MR6, MR7	THS
			Heavy duty machining	GH	PX	HB, RH, RX	HG, MP	PR, XMR	RH	NR, HT	RP7, NR4, NRF	HZ	R4, R5	CH
				VH	-	HZ, EH	HP	QR	RM	HR	NRR, NR8	HX	R6, R7, R8, PR6	THS, TRS
				VT	-	HT, HY, HD	HU, HW, HF	HR	MM	T3P	-	HV	PR9, R56, R57, R68	65, TUS
		Low carbon steel	Soft steel	VL	XF, XP, XP-T	SF	FL	LC	-	-	-	FY	-	-
				-	XQ, XS	-	-	-	-	-	-	SY	-	-
		High feed	Wiper	VW	WP, WF	WS	LUW, SEW	WF, WL	FW	WF	NF	SW	FF2, MF2	AFW, FW
				LW	WQ, WE	WT	GUW	WM, WMX	MW	WG	NM	MW	MF5, M3	ASW, SW
				-	-	-	-	WR	RW	-	-	-	R4, R7	-
		Application	Shaft (long bar)	SH	CJ, ST	FS, VF, FX	HM	K	-	-	-	ES	UX	P, S
				KNUX-	KNMX-	KNUX-	-	KNUX-71	-	-	-	KNMX-19	-	KNMX
	M	Stainless steel	Finishing	VP2, MP	MQ, GU, SK	EA, SF	SU, EF	MF, XF	FP, FF	SF, VL, F3M	NF4, FM5	SH, LM	FF1, MF1	SS, SF, SA
			Medium cutting	MM	HU, TK, MS	MP, EM	EX, EG, GU	MM,XM,QM,MMC	MP, UP, MS	PP, TF, M3M	NM4, NR4	MS, GM, MM	MF3, MF4	SM
			Roughing	RM	MU	ET	MU, HM, EM	MR, XMR, MRR	RP, P	MR, R3M	RM5, NRS	MA, ES	MF5, M5	S, SH
	K	Cast iron	Finishing	MP	None C/B, C, KQ	MT	UZ	KF, PMC, XF	T-20, FN	TF	NM, MK5	LK, MA	M4	CF
			Medium cutting	B25, MK	ZS, KG	RT, KT	UX, GZ	KM, XM	UN, RP	GN	NM5, RK5	MK, GK, None C/B	M5	CM, None C/B
			Roughing	-MA, RK	-MA, GC, KH	-MA	-MA	KR, XMR, KRR	MR, S-20, -MA	-MA, NR	-MA, RK7	RK, -MA	MR7	CH
	S	HRSA	Ultra-finishing	VP1	MQ, SK	EA	EF	SF, SGF	FS (G-class) LF (G-class)	SF, PF	NF4	FJ(G-class)	M1	SF
			Finishing	VP2	TK	ML	UP, EG	23.SR, XF, SMC	UP	PP	NFT	LS	MF1	HMM
			Medium cutting	VP3	MS	EM	EX	SM, SMR, XM	MS, GP, P, UN	TF	NMS, NMT	MS	MF4, MR3	HRF
			Roughing	VP4	MU	ET	MU	XMR	RP	MR	NRS, NRT	RS, GJ	MR4	HRM
	N	Aluminium alloy		HA	AH	ML	AX	23	GP, MS	NF, PP	FN2, PF2, MN2, PM2	MJ	MF1	P
Positive	P M K	Application	Finishing	FP	XP, PP	FA, FX	FC	PF, XF	11	PF	FP4	SMG (G-class), FV	FF1	01
				VL, VF	GP	-	FB, LU (FP, FK)	UF	UF	F3P	FK6	SV, FP	F1	PSF, PF
			Medium cutting	HMP	XQ	FG	LB, NF	PM, XM	LF, FP	14	MP4,FM2,FM4,MK4	LP	MF2	PSS
				MP	HQ, GK	PC, FM	SU, SC	UM, PMC	MP, T-20	SM	FP6,MM4,FM6,RK4	MV	F2, M3	PS
			Roughing	C25	None C/B	MT	MU	PR, UR, XR	MF, GM, -C	19	RP4, RM4, RK6	None C/B, MP	M5	PM
			Wiper	-	WP	-	LUW	WL, WF	FW	WF	PM	SW	-	-
				-	-	WT	SDW	WM, WMX	MW	WG	-	MW	-	-
	M S	Stainless steel For HRSA	Finishing	FS, MS, VP1	CF, GF, GQ	FG	FC, FM	MF, MM, MMC	11, UF, LF	PF	FM4, NM4	FJ (G-class), FM, LM	F1, MF2	PSF, PSS
			Medium to finish cutting	FP, VL, LU	MQ	SA	LB, SI	MR, XR	MF	SM	RM4	MM	M3	PS
			Medium cutting	MU	MF	-	-	SMC	-	M3M	-	None C/B	M5	CM
	K	Cast iron	Medium cutting	MP	HQ	PC	MU	KF, KM	LF	17	FK6	MK	M3	CM
			Roughing	C25	GK	MT	None C/B	KR	MF, UF	19	MK4, RK6	None C/B, -MW	M5	None C/B
	N	Aluminium alloy		AK, AR	AH	FL	AW, AG, AY	AL	HP, LF	AS, AF	PM2	AZ, FS	AL	AL
High precision bar turning (tolerance class G&E)				KF, KM	FSF, USF, J, A3	GF, FF, GW	FY, FX, FZ	K, F, UM	GH	LF, RF, XL	-	F, SR, SS, SM	UX	JS, J10, JRP, JPP

Cat.		Grade	ISO						Turning	Multi functional tools	Threading	Milling	Endmill	Index drill	Solid drill	Brazed tools	Coating layer
			P	M	K	S	N	H									
Coating	CVD	NC3215	P10-P15						●								TiN / Al2O3 / MT-TiCN
	CVD	NC3225	P20-P25						●	●							TiN / Al2O3 / MT-TiCN
	CVD	NC3120	P20-P25						●	●							Al2O3 / TiC / MT-TiCN
	CVD	NC3030	P25-P35						●	●							TiN / Al2O3 / TiC / MT-TiCN
	PVD	PC3030T	P35-P45	M25-M35							●						TiAlN
	PVD	PC3035	P30-P40							●							★ New TiAlN film (High hardness/ Oxidation resistance)
	CVD	NC6310 (new)			K01-K10				●								TiN / Al2O3 / MT-TiCN
	CVD	NC6315 (new)			K10-K20				●	●							Al2O3 / MT-TiCN
	PVD	PC8105		M05-M15		S01-S10			●								TiAlN
	PVD	PC8110		M10-M20		S05-S15			●	●							★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	PC8115		M15-M25		S10-S20			●								TiAlN
	PVD	PC8120				S15-S25			●								★ New Al2O3 film / TiAlN
	CVD	NC9115 (new)		M10-M20					●								TiN / Al2O3 / MT-TiCN
	CVD	NC9125 (new)		M20-M30		S10-S20			●								TiN / Al2O3 / MT-TiCN
	CVD	NC9135 (new)		M30-M40		S15-S25			●								TiN / Al2O3 / MT-TiCN
	PVD	PC9030		M25-M35					●	●							TiAlN
	PVD	PC9070T		M25-M35							●						TiAlN
	PVD	PC2005						H01-H10				●					TiMeN / TiAlN
	PVD	PC2010						H05-H15				●					TiMeN / TiAlN
	PVD	PC2015						H10-H20				●					AlCrN
	PVD	PC2505 (new)						H01-H10				●					★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	PC2510 (new)						H05-H15				●	●				★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	PC210F						H10-H20				●					★ New TiAlN film (High hardness/ Oxidation resistance)
	CVD	NCM325	P30-P40									●		●			TiN / Al2O3 / MT-TiCN
	CVD	NCM335	P35-P45									●					TiN / Al2O3 / MT-TiCN
	PVD	PC3700	P25-P40									●		●			TiN / TiAlCrN
	CVD	NC5330	P30-P35	M25-M35	K15-K25				●	●		●		●			TiN / Al2O3 / MT-TiCN
	CVD	NCM535 (new)	P30-P40		K20-K30					●		●		●			TiN / Al2O3 / MT-TiCN
	CVD	NCM545 (new)	P40-P50		K30-K40							●					TiN / Al2O3 / MT-TiCN

KORLOY Grades

Cat.		Grade	ISO						Turning	Multi functional tools	Threading	Milling	Endmill	Index drill	Solid drill	Brazed tools	Coating layer
			P	M	K	S	N	H									
Coating	PVD	PC5300	P30-P40	M20-M30	K20-K30	S15-S25			●	●	●	●		●			★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	PC5335	P30-P40	M20-M30										●			★ TiAlCrN film (Lubricative)
	PVD	PC5400	P35-P45	M30-M40	K25-K35	S25-S35			●			●					★ TiAlCrN film (Lubricative)
	PVD	PC6510			K05-K15							●		●			TiN / TiAlN
	PVD	PC9530		M25-M35								●					TiAlN
	PVD	PC9540		M35-M45		S30-S40						●					Al_2O_3 / TiAlN
Cermet	PVD	CC1500 (new)	P10-P20		K05-K15				●								★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	CC2500 (new)	P20-P30		K10-K15				●								★ New TiAlN film (High hardness/ Oxidation resistance)
		CN1500	P10-P20		K10-K20				●								
		CN2500	P15-P30		K15-K25				●								
		CN30	P25-P35									●					
Uncoated		ST10	P10-P15								●					●	
		ST20	P15-P20							●						●	
		ST30A	P25-P35							●		●					
		U20		M25-M30												●	
		H01			K05-K10	S01-S10	N10-N20	H05-H10	●	●		●	●	●		●	
		H05			K10-K15	S05-S15	N15-N25		●			●					
		G10				K15-K20			●			●				●	
Coating	PVD	PC203F						H05-H15					●				★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	PC210C					N10-N20						●				CrN
	PVD	PC215F	P20-P35										●				★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	PC215G	P15-P30		K15-K30										●		TiAlN
	PVD	PC221F	P35-P45		K35*K45								●				★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	PC230F	P05-P15	M05-M15	K05-K15											●	★ New TiAlN film (High hardness/ Oxidation resistance)
	PVD	PC303S	P05-P15		K05-K15			H05-H15					●				TiMeN / TiAlN
	PVD	PC310U	P10-P20		K10-K20			H10-H20					●				TiMeN / TiAlN
	PVD	PC315E	P20-P35		K20-K35								●				AlCrN
	PVD	PC315G	P15-P30		K15-K30										●		TiAlCrN
	PVD	PC320	P20-P35		K20-K35								●				TiAlN

KORLOY Grades

Cat.		Grade	ISO						Turning	Multi functional tools	Threading	Milling	Endmill	Index drill	Solid drill	Brazed tools	Coating layer
			P	M	K	S	N	H									
Coating	PVD	PC320S		M20-M30		S20-S30							●				TiMeN / TiAlN
	PVD	PC320U	P01-P10		K05-K10								●				AlCrN
	PVD	SL				S25-S35							●				TiAlN
	PVD	PC325T (new)				S20-S30									●		TiMeN / TiAlN
	PVD	PC325U	P20-P35	M20-M30	K20-K35										●		TiAlCrN
Uncoated		H01					N10-N20						●				
		H05S					N10-N20						●				
		FCC			N15-N35								●				
		FG2	P05-P25				N05-N25								●		
		FA1	P05-P25				N05-N25								●		
cBN		DBN500			K05-K15				●								
		DBN700A			K01-K10				●								
		DB7000	S01-S10						●								
		DB1000						H01-H10	●								
		DB2000						H05-H15	●								
		DBNX20						H15-H25	●								
		DBN250						H15-H25	●								
		DBN400						H15-H25	●								
	PVD	DNC100						H01-H10	●								★ New TiAlN film (High hardness)
	PVD	DNC250						H05-H15	●								TiN / TiAlN
	PVD	DNC350						H25-H35	●								★ New TiAlN film (High hardness)
	PVD	DNC400 (new)						H15-H25	●								TiN / TiAlN
PCD		DP90					N01-N20					●					
		DP150					N05-N25					●					
		DP200					N10-N30					●					
DIA	CVD	ND2100 (new)					N2.5-N7.5		●			●	●		●		Dia Coating
	CVD	ND3000 (new)					N01-N05		●			●	●				Dia Coating
DLC	PVD	PD1005					N05-N10		●			●	●				
	PVD	PD1010					N10-N15		●			●	●				

The Comparision of Grades for Turning

WC

ISO		KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
Turning	P	ST10 ST20 ST30A	ST10 ST20 ST30A ST40E	PW30	IC50M IC54	S1P SM30 S30T S6	TTX TTM TTR	K45 KM K420	TX10S TX20 TX30 TX40	STi10T STi20T UTi20T	SRN5 WS20B EX35 EX40 EX45	S1F VC6 VC5 VC56		P10 P20 P30 P40		
	M	U20	U10E U20 ST30A A40			H13A H10F	AT10 AT15 TTR	K2885 K2S	TU10 TU20 TU40	UTi20T	WAM10B EX35	VC27 VC28		M10 M20 M40		
	K	H01 H05 G10	H1 G10	KW10H	IC4 IC20 IC28	H1P H10F	THM THR	K68 K8735	TH03 TH10 KS20	HTi10T HTi20T	WH05 W10 WH20	VC3 VC2 VC1		K10 K20 K20M K30		

CVD coated

ISO		KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
Turning	P	NC3215★ NC3225★ NC3120 NC3030 NC5330	AC805P AC810P AC700G AC900G AC820P AC2000 AC8025P AC830P	CA5505 CA510 CA515 VP5115 CA5515 CA525 VP5125 CA5525 CR9025 CA5535 CA530	IC8150 IC8250 IC8350	GC4305 GC4205 GC4315 GC4215 GC4325 GC4225 GC4335 GC4235	TP0500 TP0501 TP1500 TP1501 TGP25 TP2500 TP2501 TGP35 TP3501 TP3500 TGP45	KCP05 KCP05B KCP10 KCP10B KCP25 KCP25B KCP30 KCP30B KCP40 KCP40B	T9105 T9115 T9125 T9135	UE6105 UE6110 MY5015 MC6025 UE6020 MC6035 UE6035 UH6400	HG8010 HG8025 GM8035	VP5515 VP5525 VP5535	WPP10S WKP13S WPP20S WKP23S WPP30S WKP33S	TT8105 TT8110 LC215P TT8115 TT8120 LC225P TT8125 TT5100 TT8135 TT7100	CP5	JC110V JC215V JC325V JC450
	M	NC9115★ NC9125★ NC9135★	AC610M AC630M AC6030M	CA6515 CA6525	IC6015 IC6025	S05F GC2015 GC2220 GC2025	TM2000 TM4000	KCM15 KCM15M KCM25 KCM25B KCM35 KCM35B	T6120 T6130	MC7015 MC7025 US7020 US735	GM25 GX30	VP8515 VP8525	WAM10 WMP20S WAM20 WAM30	TT9215 TT9225 TT9235		
	K	NC6310★ NC6315	AC405K AC415K AC420K	CA4505 CA4010 CA4515 CA4115 CA4120	IC5005 IC5015	GC3205 GC3210 GC3215 GC3225	TK1001 TK2001 TGK1500	KCK05 KCK05B KCK15 KCK15B KCK20 KCK20B	T5105 T5115 T5125	MC5005 UC5105 MC5015 UC5115	HG3505 HG3515	VP1505 VP1510 VP1515	WKK10S WKK20S WAK30	TT7005 TT7505 TT7310 TT7015 TT7025	CP2 CP5	JC105V JC110V JC215V

PVD coated

ISO		KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
Turning	P	PC8105★ PC8110 PC8115★ PC3035 PC5300		PR1005 PR915 PR1115 PR930 PR1025 PR630 PR660	IC507 IC808 IC830 IC908 IC3028 IC330	GC1025 GC4125	CP200 CP250 CP500	KU10T KU25T	AH710 GH730 AH330 AH740 AH120 GH330	VP15TF VP20MF	IP2000 IP3000	VC907 VC927 VC905	WTA43 WTA41	TT5030		JC5003 JC5015
	M	PC8105★ PC8110 PC8115★ PC8120★ PC5300★ PC9030 PC5400★	AC510U EH510Z AC520U EH520Z AC530U	PR915 PR930 PR1125 PR630 PR660	IC808 IC907 IC3028 IC830 IC330	GC1005 GC1105 GC1020 GC1025 GC4125 GC2035	CP200 CP250 CP500	KC5010 KC5510 KC5025 KC5525	AH330 GH330 AH120 GH730 AH140 AH630 AH645	MP9005 VP10RT VP15TF VP20MF MP7035	IP50S IP100S	VC929 VC927 VC902 VC901 VC905	WSM10S WSM20S WSM30S WSM40S	TT5030 TT8020	ZM3 QM3 VM1 TAS	JC5003 JC5015
	K	PC5300	EH510Z EH520Z		IC5100 IC810 IC220 IC908 IC228		CP200 CP250 CP500		AH110 GH110 AH120		CY110H	VC929 VC903 VC927 VC902 VC901 VC907		TT5030		
	S	PC8105 PC8110 PC8115★ PC8120★ PC5300 PC5400★	AC510U AC520U	PR915 PR660 PR1325	IC808 IC907 IC3028 IC328	GC1105 GC1025 GC2035	TS2000 CP500 TS2500	KC5010 KC5025	AH110 AH120	VP05RT VP10RT VP15TF MP7035			WSM10 WSM20 WSM30	TT5030		

CERMET

ISO		KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
Turning	P	CC1500★ CN1500★ CC2500★ CN2000 CN2500★	T110A T2000Z★ T1500A T3000Z★	PV30★ TN30 PV7020★ TN60 TN620 TN6020 TN90 PV90★	IC20N IC520N IC30N IC530N	CT5015 CT525 GC1525★	CM C15M TP1020 TP1030★	HT2 KT125 HT5 KT175 KT195M	NS520 GT530★ NS530 NS9530 GT9530★ NS540 NS730	NX2525 NX3035 UP35N★ AP25N★ NX335 MP3025★	CH350 CZ25★ CH530 CH550 CH570	VC83	WTA43★ WTA41★	PV3010★ CT3000	T3N T15 N20 C30 N40	LN10 CX50 CX75 CX90 CX99
	M															
	K	CN1500★ CN2500★	T110A							NX2525				CT3000	T15	LN10 CX75

★ : PVD Coating cermet ★ : New Grade

The Comparision of Grades for Milling

CVD coated

ISO		KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
Milling	P	NC5330 NCM325 NCM535★ NCM335 NCM545★	ACP100		IC5100 IC5400	GC4210 GC4220 GC4230	MP1500 MS2500 MP2500 MS2500 T350M MM4500	KCPM20 KCMP30 KC927M	T3130	FH7020 F7030		SM245	WKP25S WKP25S WKP35S WKP35G	TT8525 TT7800		
	M	NC5330 NC5340★ NC5350★	ACP400			GC2040	MP2500 MS2500 MM4500		T3130	F7030						
	K	NC5330 NCM535★ NCM545★	ACK200		IC5100	GC3330 GC3040	MK1500 MK2000 MS2500 T350M MK3000	KC907M KCK15 KC914M KCPK30 KC917M KC924M	T1115 T1015	MC5020			WAK15 WKK25 WKP25S WKP35S WKP35G	TT7515 TT6800		

PVD coated

ISO		KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
Milling	P	PC2005★ PC2010★ PC2015★ PC2505★ PC2510★ PC3600 PC3700★ PC210F PC5300 PC5400★	ACZ310 ACP200 ACZ330 ACP300 ACZ350	PR730 PR830 PR630 PR660	IC903 IC908 IC950 IC1008 IC928	P20A GC1010 GC1025 GC1030 GC1030	MP3000 F25M F30M F40M T60M	KC522M KUC20M KC525M KUC30M KC935M KC7140 KC720	GH330 AH120 AH3135	AP20M GP20M MP6120 VP15TF UP20M MP6130 VP30RT	ATH80D PCA08M ACS05E PCA12M PC20M JX1005 TB6005 JX1020 CY9020 TB6045 CY250 PTH30E JP4160 JM4160 PTH40H	VC935	WKP25 WKP35 WKP45	TT2510 TT7070 TT7080 TT7030 TT8020	QM3 ZM3	DH102 JC5003 JC5015 JC5030 JC5040
	M	PC210F PC5300 PC9530 PC5400★ PC9540★	ACM100 ACP200 ACM300 ACP300 ACZ350	PR730 PR1025 PR630 PR660 PR1535 PR660	IC903 IC900 IC250 IC928 IC328	GC1125 GC1025 GC2030 GC1030	F25M F30M F40M	KC5510 KC7020 KC522M KC725M KC735M KC7030 KC722	AH120 AH140 AH3135	MP7130 MP7140	JX1020 CY9020 JX1015 TB6020 CY250 JX1045 TB6045 JX1060 TB6060	VC928 VC902 VC901	WQM35 WSM35S WSP45 WSM45S	TT9030 TT9080 TT8020	QM3 ZM3	JC5003 JC5015 JC5030 JC5040
	K	PC6510 PC5300		PR510 PR905	DT7150 IC900 IC910 IC950 IC350		MK2050	KC510M KC915M KC520M	AH120	VP10MF VP15TF VP20RT		VC903 VC928 VC902 VC901		TT6290 TT6030 TT6060		JC5003 JC5015
	S	PC5300 PC5400★ PC9540★	AC520U	PR620 PR660 PR1535	IC328 IC408	GC1025 GC1040 S40T	F40M MS2050	KC510M KCU30M		VP15TF VP30RT MP9130	ACS05E		WSM35S WSM45S	TT9030 TT8020 TT8080		

CERMET

ISO		KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
Milling	P	CN2000 CN30	T250A	TN100M TC60M	IC30N			KT195M	NS540 NS740	NX2525 NX4545	CH550 CH570			CT3000 CT7000	C50	
	M		T250A			CT530										
	K									NX2525						

★ : PVD Coating cermet ★ : New Grade

OLD-FASHIONED PRODUCT INFORMATION



J

J

Old Fashioned Product Information

J02 Grades
J02 External Holders
J02 Fine Tools
J03 Threading Tools
J03 Mill Max
J04 Cen-Mill
J04 Jip Drill
J04 LPD/SPD/NPD

Grades

ISO material code		Old grade	New grade
Coating grade	P	NC5340	NCM535
		NCM325	
		NCM335	NCM545
		NC5350	
		PC3530, PC3525, PC3535, PC3500, PC3600	PC3700
	K	NC6215	NC6315
		NC6110, NC6210, NC6205	NC6310
	S	PC8010	PC8110
	P, M, K, S	PC8520, PC215K	PC5300
		PC225F	PC205F
Cermet		CN1000	CN1500
		CT10, CN200	CN2500

• KORLOY always study and develops cutting-edge technology tools and grades which covers higher speed and feed conditions
• KORLOY guarantees better performance and wide stock-management range for the new grade

External Holders

Designation	Insert	Old parts name				New holder	Page
		Wedge clamp	Screw	Washer	Others		
WTENN□□-3□ (Old Type: MTEEN)	TN□□33□	CMH5R1	MHX0523	WA4	Same as before	WTEEN□□□□-□16	**B179**
WTJNR□□-3□ (Old Type: MTJNR)	TN□□33□	CMH5R1	MHX0523	WA4	Same as before	WTJNR□□□□-□16	**B179**
WTXNR□□-3□ (Old Type: MTXNR)	TN□□33□	CMH5R1	MHX0523	WA4	Same as before	WTXNR□□□□-□16	**B179**

• Old parts are not interchangeable with new type holder part
• Good performance and convenient use of New type holder gives customer best quality of service

Fine Tools

Designation	Insert		Old parts name		New holder	Page
			Screw	Wrench		
FTIH	FTIHA31	FTG08, FTT08, FTF08	PTKA02508	TW08P	NFTIHA	**C69**
	FTIHA43	FTG11, FTT11, FTF11	PTKA03510	TW15P		
	FTIHA55	FTG14, FTT14, FTF14	PTKA0412	TW15P		
	FTIHA63	FTG16, FTT16, FTF16	PTKA0512	TW20P		

• Old inserts and parts are not interchangeable with new fine tool
• Good performance and convenient use of new fine tool gives customer best quality of service

Threading Tools

Designation	Insert		Old parts name						New holder	Page
			Clamp	Clamp screw	Shim	Screw	C-ring	Wrench		
ETH	~ ETH3**R	ECTR3***	CH5R3	CHX0513	ST32C1	SHX0310	CR04	HW20L, HW25L	ER(L)H-*	D31
	~ ETH4**R	ECTR4***	CH6R4	CHX0621	ST42C1	SHX0310	CR05	HW20L, HW30L		
ITH	~ ITH2**R	ICTR2***	CH5R3	CHX0513	ST32C1	FTKA02565	CR04	TW07P	IR(L)H-*	D32
	~ ITH3**R	ICTR3***	CH5R3	CHX0513	ST32C1	SHX0310	CR04	TW15P, HW20L, HW25L		
	~ ITH4**R	ICTR4***	CH6R4	CHX0621	ST42C1	SHX0310	CR05	HW20L, HW30L		

• Old inserts and parts are not interchangeable with threading holders
• Good performance and convenient use of new fine tool gives customer best quality of service

Mill Max

Designation	Insert	Old parts name					New holder	Page
		Locator	Wedge	Wedge screw	Locator screw	Wrench		
AD(ADM)4000	SD**1203	LAS4R/L	WASR/L	WTX0817	LTX0512	TW25	ADN(ADNM)4000	E47
AD(ADM)5000	SD**1504	LAS5R/L	WASR/L	WTX0817	LTX0512	TW25	ADN(ADNM)5000+	E48
ADN(ADNM)5000	SD**1504	LADN5R/L	WEPN5R/L	DHA0821F	LTX0514	HW40		
EP(EPM)4000	SP**1203	LES4R/L LES4R1/L1 (Ø80 ~ Ø100)	WESR/L	WTX0817 WTX0813 (Ø80 ~ Ø100)	LTX0512	TW25	EPN(EPNM)4000	E53
EP(EPM)5000	SP**1504	LES5R/L LES5R1/L1 (Ø80 ~ Ø100)	WESR/L	WTX0817 WTX0813 (Ø80 ~ Ø100)	LTX0512	TW25	EPN(EPNM)5000+	E54
EPN(EPNM)5000	SP**1504	LEPN5R/L LEPN5R1/L1 (Ø80 ~ Ø100)	WEPN5R/L	DHA0821F DHA0817F (Ø80 ~ Ø100)	LTX0514	HW40		
PP(PPM)4000	TP**2204	LPT4R/L LPT4R1/L1 (Ø80 ~ Ø100)	WESR/L	WTX0817 WTX0813 (Ø80 ~ Ø100)	LTX0512	TW25	PPN(PPNM)4000	E56

• Parts are not interchangeable with new Mill Max cutters
• Good performance and convenient use of new Mill Max gives customer best quality of service

Cen-Mill

Designation	Insert		Old parts name		New product	Page
			Screw	Wrench		
HEA	Ø1	MCMT080308EN ZCMT080308ER	FTNA0307	TW09P	AMSA□□□□M	E185~E187
	Ø1.25, Ø1.5, Ø2.0	MCMT09T308EN ZCMT09T308ER	FTNA0408	TW15P		
LE (LEA)	LOCX1205ZZ		FTNB0411	TW15P	AMCA□□□□M	E172~E174
SEA	Ø1	MPMT090308	FTNA0408	TW15L	AMSA□□□□MH	E188~E189
	Ø1.25, Ø1.5	MPMT120408	FTNA0513	TW20L		
TM	MIT100 MET150, 200, 300, 400		FTNA0408 FTNA0513 (TM950)	TW15L TW20L (TM950)	TMS(I)	D49
PM	EDCW1604ZDF/TR		FTNA0513	TW20L	RM4Z	E118~E119
CEA (Code changed)	SPG(M)N1203□□				CE45-□□□□R-S125 (New code)	E369~E371

• Old inserts and parts are not interchangeable with new milling product
• New product : Alpha mill which has unique alpha-curve edge guarantees wide range machining and good performance.
• Good performance and convenient use of new milling tool gives customer best quality of service

Jip Drill

Designation	Insert		Old parts name		New product	Page
			Screw	Wrench		
JDA	~ JD200	WCMT030208-C20	FTNA02565	TW07P	K□DA (KING Drill)	F13~F27
	~ JD250	WCMT040208-C20				
	~ JD300	WCMT050308-C20	FTNA0307	TW09P		
	~ JD410	WCMT06T308-C20	FTGA03508			
	~ JD580	WCMT080408-C20	FTNA0408	TW15P		

• Old inserts and parts are not interchangeable with new indexable drill
• Good performance and convenient use of new indexable drill gives customer best quality of service

LPD/SPD/NPD

Designation	Insert		Old parts name		New product	Page
			Screw	Wrench		
LPD	~ LPD135	LPMT040203-DF	FTNA0204	TW06P	K□DA (KING Drill)	F13~F27
SPD	~ SPD155	SPM(E)T050203-DM, DF, DS, DA	FTNA0204	TW06P		
	~ SPD195	SPM(E)T060204-DM, DS, DR, DA	FTKA02206S	TW07S		
	~ SPD225	SPM(E)T070204-DM, DS, DR, DA	FTKA02565	TW07S		
NPD	~ NPD245	NPM(E)T222408-DM, DS, DR, DA	FTKA02565	TW07S		
	~ NPD285	NPM(E)T252808-DM, DS, DR, DA	FTKA0307	TW09S		
	~ NPD325	NPM(E)T293208-DM, DS, DR, DA	FTKA0307	TW09S		
	~ NPD405	NPM(E)T334008-DM, DS, DR, DA	FTKA03508	TW15S		
	~ NPD505	NPM(E)T415008-DM, DS, DR, DA	FTKA0410	TW15S		
	~ NPD605	NPM(E)T516012-DM, DS, DR, DA	FTNC04511	TW20S		

• Old inserts and parts are not interchangeable with new indexable drill
• Good performance and convenient use of new indexable drill gives customer best quality of service



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DNMG-MP	Turning Insert_Save Turn	B115
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DSSNR/L	Holder (Double clamp system)	**B169**
DST	Tooling System (DST)	**G42**
DTFNR/L	Holder (Double clamp system)	**B170**
DTFNR/L	Boring Bar (Double clamp system)	**B209**
DTGNR/L	Holder (Double clamp system)	**B170**
DTN	Tooling System (DTN)	**G45**
DVJNR/L	Holder (Double clamp system)	**B170**
DVVNN	Holder (Double clamp system)	**B171**
DWLNR/L	Holder (Double clamp system)	**B171**
DWLNR/L	Boring Bar (Double clamp system)	**B209**
DZC	Tooling System (Jero fit collet)	**G94**

E

EFA4000	Mill Max	**E51**
ENA4000	Mill Max	**E52**
EPNA4000	Mill Max	**E53**
EPNA5000+	Mill Max Plus	**E54**
ER	Tooling System (ER Collet)	**G36**
ER(L)	Thread Insert	**D10~30**
ER(L)H	Thread External Holder (Screw on System)	**D31**
ER(L)H-C	Thread External Holder (Clamp on System)	**D31**
ER/L	Tooling System (ER/L Collet)	**G37**
ERM	Thread Insert	**D10~19**
EXT	Tooling System (Extension Bar)	**G54**

F

FBC	Tooling System (FBC)	**G83~84**
FBH/B	Tooling System (FBH/B)	**G56~61**
FGD	MGT Insert	**C28**
FGHH	MGT Holder (Face Grooving)	**C37**
FGM	MGT Insert	**C28**
FGVH	MGT Holder (Face Grooving)	**C38**
FMA	Tooling System (FMA series)	**G49**
FMACA3000	Future Mill	**E214**
FMACA3000-A	Future Mill (Aluminum body)	**E216**
FMACA4000	Future Mill	**E215**
FMACA4000-A	Future Mill (Aluminum body)	**E217**

F

FMASA3000	Future Mill	**E218**
FMASA4000	Future Mill	**E219**
FMC	Tooling System (FMC)	**G50~51**
FMM	MGT Insert	**C28**
FMPCA3000	Future Mill	**E220**
FMPCA3000-A	Future Mill (Aluminum body)	**E222**
FMPCA4000	Future Mill	**E221**
FMPCA4000-A	Future Mill (Aluminum body)	**E223**
FMPSA3000	Future Mill	**E224**
FMPSA4000	Future Mill	**E225**
FMRCA3000	Future Mill	**E226**
FMRCA3000	Future Mill P-Positive	**E240**
FMRCA4000	Future Mill	**E227**
FMRCA4000	Future Mill P-Positive	**E241**
FMRCA5000	Future Mill	**E228**
FMRCA5000	Future Mill P-Positive	**E242**
FMRCA6000	Future Mill	**E229**
FMRCA6000	Future Mill P-Positive	**E243**
FMRMA1000	Future Mill	**E236**
FMRMA1500	Future Mill	**E236**
FMRMA2000	Future Mill	**E237**
FMRMA2500	Future Mill	**E237**
FMRMA2500	Future Mill P-Positive	**E248**
FMRMA3000	Future Mill	**E238**
FMRMA3000	Future Mill P-Positive	**E249**
FMRMA4000	Future Mill	**E239**
FMRMA4000	Future Mill P-Positive	**E250**
FMRMA5000	Future Mill	**E239**
FMRMA5000	Future Mill P-Positive	**E251**
FMRSA1000	Future Mill	**E230**
FMRSA1500	Future Mill	**E230**
FMRSA2000	Future Mill	**E231**
FMRSA2500	Future Mill	**E231**
FMRSA2500	Future Mill P-Positive	**E244**
FMRSA3000	Future Mill	**E232**
FMRSA3000	Future Mill P-Positive	**E245**
FMRSA4000	Future Mill	**E233**
FMRSA4000	Future Mill P-Positive	**E246**
FMRSA5000	Future Mill	**E234**
FMRSA5000	Future Mill P-Positive	**E247**
FMRSA6000	Future Mill	**E235**
FMRSA6000	Future Mill P-Positive	**E247**
FP Chip Breaker	Turning Chip Breaker	**B17**
FS Chip Breaker	Turning Chip Breaker	**B18**

G

GBEA	GBEA (single edge)	**E329**
GBEA-M	GBEA (multi edge)	**E330**
GBEMA	GBEA (Modular)	**E331**
GERC	Tooling System (GERC Collet)	**G35**
GSK	Tooling System (GSK)	**G32~33**

H

HECN	Milling Insert (High feed Cutter)	**E08**
HFMDCA-LN06	HFMD (Cutter)	**E270**
HFMDCA-LN10	HFMD (Cutter)	**E271**
HFMDMA-LN04	HFMD (Modular)	**E272**
HFMDMA-LN06	HFMD (Modular)	**E273**
HFMDMA-LN10	HFMD (Modular)	**E274**
HFMDSA-LN04	HFMD (Shank)	**E265**
HFMDSA-LN06	HFMD (Shank)	**E267**
HFMDSA-LN10	HFMD (Shank)	**E269**
HFMMA	HFMD (Modular)	**E281**
HFMSA1000	HFMD (Shank)	**E279**
HPEN	Milling Insert (High Feed Cutter)	**E08**
HPEN-WC	Milling Insert (High Feed Cutter)	**E08**
HRAG	Tooling System (Angular Head Series)	**G90**
HRMCA13	HRM	**E298**
HRMCA15	HRM	**E299**
HRMDCA09	HRMD	**E287**
HRMDCA13	HRMD	**E288**
HRMDCA16	HRMD	**E289**
HRMDMA06	HRMD	**E295**
HRMDMA09	HRMD	**E296**
HRMDMA13	HRMD	**E297**
HRMDSA06	HRMD	**E290**
HRMDSA09	HRMD	**E291**
HRMDSA13	HRMD	**E293**
HRMMA08	HRM	**E303**
HRMMA10	HRM	**E304**
HRMMA13	HRM	**E304**
HRMSA08	HRM	**E300**
HRMSA10	HRM	**E300**
HRMSA13	HRM	**E301**
HRMSA15	HRM	**E302**
HSK-FMA	Tooling System (Damping Pro)	**G101**
HT	Tooling System (Others)	**G103**

I

IR(L)	Thread Insert	**D10~30**
IR(L)H	Thread Internal Holder (Screw on System)	**D32**
IR(L)H-C	Thread Internal Holder (Clamp on System)	**D32**
IRBA	Indexable Reamer (Stuffed hole)	**F67**
IRM	Thread Insert	**D10~21**
IRTA	Indexable Reamer (Throughout hole)	**F66**

K

K2DA	KING Drill (through coolant system with a lathe)	**F11**
K2DA	KING Drill (large diameter drilling)	**F16**
K3DA	KING Drill (through coolant system with a lathe)	**F12**
K3DA	KING Drill (large diameter drilling)	**F16**
K4DA	KING Drill (through coolant system with a lathe)	**F13**
K4DA	KING Drill (large diameter drilling)	**F16**
K5DA	KING Drill (through coolant system with a lathe)	**F14**
KAC	Tooling System (Angular Head)	**G93**
KAG	Tooling System (Angular Head)	**G91**
KAH	Tooling System (Angular Head)	**G92**
KCER/L	Multi functional (KGT Cartridge)	**C41**
KCFR/L	Multi functional (KGT Cartridge)	**C41**
KEL-ANN	Milling insert (Storm Mill)	**E08**
KEL-MF	Milling insert (Gear cutter)	**E08**
KEL-QNN	Milling insert (Storm Mill)	**E08**
KGEHR/L	Multi functional (KGT Holder)	**C15**
KGEHR/L-D00A	Multi functional (Auto Tool Holder)	**C17**
KGEHR/L-D00B	Multi functional (Auto Tool Holder)	**C17**
KGEHR/L-DOOA	Auto tools (KGT)	**B143**
KGEHR/L-DOOB	Auto tools (KGT)	**B143**
KGEHR/L-T00	Multi functional (KGT Holder)	**C18**
KGEUR/L	Multi functional (KGT Holder)	**C20**
KGEVR/L-T00	Multi functional (KGT Holder)	**C19**
KGFHR/L	Multi functional (KGT Holder)	**C22**
KGFVR/L	Multi functional (KGT Holder)	**C21**
KGGN-A	Multi functional Insert (KGT)	**C14**
KGGN-B	Multi functional Insert (KGT)	**C13**
KGGN-R	Multi functional Insert (KGT)	**C14**
KGIUR/L	Multi functional (KGT Holder)	**C23**
KGIVR/L	Multi functional (KGT Holder)	**C24**
KGMI-T	Multi functional Insert (KGT)	**C13**
KGML-LP	Auto tools Insert (KGT type)	**B144**
KGML-LP	Multi functional Insert (KGT)	**C13**
KGML-RP	Auto tools Insert (KGT type)	**B144**
KGML-RP	Multi functional Insert (KGT)	**C13**

K

KGMN-L	Auto tools Insert (KGT)	B143
KGMN-L	Multi functional Insert (KGT)	C12
KGMN-R	Auto tools Insert (KGT)	B143
KGMN-R	Multi functional Insert (KGT)	C12
KGMN-T	Auto tools Insert (KGT)	B143
KGMN-T	Multi functional Insert (KGT)	C12
KGMR-LP	Auto tools Insert (KGT)	B144
KGMR-LP	Multi functional Insert (KGT)	C13
KGMR-RP	Auto tools Insert (KGT)	B144
KGMR-RP	Multi functional Insert (KGT)	C13
KGTBA	KGT Blade for Parting off	C25
KHU	Tooling System (Angular Head)	G89
KMB	Tooling System (KMB)	G70~71
KNB	Multi functional Insert (K-Notch, Metric)	C57
KNG	Multi functional Insert (K-Notch, Metric)	C57
KNG	Multi functional Insert (K-Notch, Inch)	C58
KNGP	Multi functional Insert (K-Notch, Metric)	C57
KNGP	Multi functional Insert (K-Notch, Inch)	C58
KNR	Multi functional Insert (K-Notch, Inch)	C58
KNRP	Multi functional Insert (K-Notch, Inch)	C58
KNSR	Multi functional (K-Notch Holder)	C59
KNT	Multi functional Insert (K-Notch, Threading)	C57
KNUX-11	Turning Insert_Negative (Clamp on System)	B49
KNUX-12	Turning Insert_Negative (Clamp on System)	B49
KRGN-A	Multi functional Insert (KGT)	C14
KRMI-C	Multi functional Insert (KGT)	C12
KRMN-C	Auto tools Insert (KGT)	B144
KRMN-C	Multi functional Insert (KGT)	C12
KSPBA	Multi functional (Saw Man-X, Blade)	C65
KSPHA	Multi functional(Saw Man-X_Shank)	C66

L

LBEA031/037/050/062/075/100/125	Laser Mill (Steel Shank-Ball, Taper type)	E325
LBEA031-C/037-C/050-C/062-C/075-C/100-C/125-C	Laser Mill (Carbide Shank-Ball, Straight type)	E324
LBEA050/062/075/100/125	Laser Mill (Steel Shank-Ball, Straight type)	E325
LBEA-MHD	Laser Mill (Modular type)	E328
LBH	Milling Insert (Laser Mill)	E08
LBH-KF	Milling Insert (Laser Mill)	E08
LBH-KH	Milling Insert (Laser Mill)	E09
LBS	Milling Insert (Laser Mill)	E09
LCF	Milling Insert (Laser Mill)	E09
LDET-MA	Milling Insert (Pro-XL Mill)	E10
LFH	Milling Insert (Laser Mill)	E09

L

LNCS	Milling Insert (Rich Mill)	E10
LNE	Milling Insert (Gear cutter)	E10
LNEX-MA	Milling Insert (Rich Mill)	E11
LNEX-MF	Milling Insert (Rich Mill)	E11
LNEX-MM	Milling Insert (Rich Mill)	E11
LNKT-MA	Milling Insert (TP2P)	E10
LNKT-ML	Milling Insert (TP2P)	E10
LNKT-MM	Milling Insert (TP2P)	E11
LNMX-MF	Milling Insert (Rich Mill)	E11
LNMX-MF	Milling Insert (HFMD)	E12
LNMX-ML	Milling Insert (HFMD)	E12
LNMX-MM	Milling Insert (Rich Mill)	E11
LNMX-MM	Milling Insert (HFMD)	E12
LP Chip Breaker	Turning Chip Breaker	B20
LPEW	Milling Insert (HFM)	E12
LPMT-MF	Milling Insert (HFM)	E12
LPMW	Milling Insert (HFM)	E13
LR	Milling Insert (Laser Mill)	E09
LREA037/050	Laser Mill (Steel Shank-Corner R, Taper type)	E327
LREA050/062/075/100/125	Laser Mill (Steel Shank-Corner R, Straight type)	E327
LREA-C/037-C/050-C/062-C/075-C/100-C/125-C	Laser Mill (Carbide Shank-Corner R, Straight type)	E326
LRH	Milling Insert (Laser Mill)	E09
LW Chip Breaker	Turning Chip Breaker	B32
LXET-MA	Milling Insert (Pro-L Mill)	E13
LXET-ML	Milling Insert (Pro-L Mill)	E13

M

MAH	Tooling System (Angular Head)	G88
MAPDA000HR/L-Z0	Aero Mill Mini	E153
MAPDSA000HR/L-Z0	Aero Mill Mini	E152
MATA	Modular Adaptor (Steel Shank)	E365
MAT-C	Modular Adaptor (Carbide Shank)	E366
MBBR	Auto tools (MSB Tool_Back Boring)	B148
MBCR	Auto tools (MSB Tool_Copying)	B147
MBFR	Auto tools ((MSB Tool_Chamfering)	B148
MBR	Auto tools ((MSB Tool_Boring)	B147
MC	Multi functional Insert (Bearing Solution)	B156
MCER/L	Multi functional (MGT Cartridge)	C42
MCFR/L	Multi functional (MGT Cartridge)	C42
MCHR/L	Multi functional (MGT Cartridge Holder)	C40
MCKNR/L	Holder (Multi Lock System)	B183
MCLNR/L	Holder (Multi Lock System)	B183
MCLNR/L	Boring Bar (Multi Lock System)	B213

M

MCMNN	Holder (Multi Lock System)	**B183**
MCRNR/L	Holder (Multi Lock System)	**B184**
MCVR/L	Multi functional (MGT Cartridge Holder)	**C40**
MD	Tooling System (Modular Arbor)	**G52~53**
MDJNR/L	Holder (Multi Lock System)	**B184**
MDNNN	Holder (Multi Lock System)	**B184**
MDQNR/L	Holder (Multi Lock System)	**B185**
MDUNR/L	Boring Bar (Multi Lock System)	**B213**
MFMN	Multi functional Insert (MGT Cartridge, MGT)	**C28**
MGEHR/L	Auto tools (MGT)	**B144**
MGEHR/L	Multi functional (MGT Holder)	**C31**
MGEHR/L	Multi functional (MGT for Aluminum Wheel)	**C45**
MGEHR/L-15	Multi functional (MGT for Aluminum Wheel)	**C45**
MGEUR/L	Multi functional (MGT Holder)	**C32**
MGEVR/L	Multi functional (MGT Holder)	**C33**
MGEXR/L	Multi functional (MGT for Aluminum Wheel)	**C46**
MGFHR/L	Multi functional (MGT Holder)	**C36**
MGFR	Auto tools (MSB Tool_Face Grooving)	**B150**
MGFVR/L	Multi functional (MGT Holder)	**C36**
MGGN-A	Multi functional Insert (MGT Cartridge, MGT)	**C29**
MGGN-M	Multi functional Insert (MGT Cartridge, MGT)	**C28**
MGIUR/L	Multi functional (MGT Holder)	**C34**
MGIUR/L-MR	Multi functional (MGT for Aluminum Wheel)	**C45**
MGIUR/L-MV	Multi functional (MGT for Aluminum Wheel)	**C46**
MGIVR/L	Multi functional (MGT Holder)	**C35**
MGIXR/L-MR	Multi functional (MGT for Aluminum Wheel)	**C46**
MGML-PS	Multi functional Insert (MGT Cartridge, MGT)	**C30**
MGML-PT	Multi functional Insert (MGT Cartridge, MGT)	**C30**
MGMN-G	Auto tools Insert (MGT)	**B144**
MGMN-G	Multi functional Insert (MGT Cartridge, MGT)	**C28**
MGMN-L	Multi functional Insert (MGT Cartridge, MGT)	**C29**
MGMN-M	Auto tools Insert (MGT)	**B144**
MGMN-M	Multi functional Insert (MGT Cartridge, MGT)	**C28**
MGMN-R	Multi functional Insert (MGT Cartridge, MGT)	**C29**
MGMN-T	Multi functional Insert (MGT Cartridge, MGT)	**C29**
MGMR-PS	Multi functional Insert (MGT Cartridge, MGT)	**C30**
MGMR-PT	Multi functional Insert (MGT Cartridge, MGT)	**C30**
MGR	Auto tools (MSB Tool_Square Grooving)	**B149**
MGRR	Auto tools (MSB Tool_Round Grooving)	**B150**
MK Chip Breaker	Turning Chip Breaker	**B24**
MM Chip Breaker	Turning Chip Breaker	**B22**
MP Chip Breaker	Turning Chip Breaker	**B21**
MPMT	Milling Insert	**E14**
MRGN-A	Multi functional Insert (MGT Cartridge, MGT)	**C30**

M

MRGN-A	Multi functional Insert (MGT for Aluminum Wheel)	**C44**
MRMN-M	Multi functional Insert (MGT Cartridge, MGT)	**C30**
MS Chip Breaker	Turning Chip Breaker	**B19**
MSBNR/L	Holder (Multi Lock System)	**B185**
MSDNN	Holder (Multi Lock System)	**B185**
MSKNR/L	Holder (Multi Lock System)	**B186**
MSKNR/L	Boring Bar (Multi Lock System)	**B213**
MSRNR/L	Holder (Multi Lock System)	**B186**
MSSNR/L	Holder (Multi Lock System)	**B187**
MT	Multi functional (Multi Turn)	**B154**
MTENN	Holder (Multi Lock System)	**B187**
MTFNR/L	Holder (Multi Lock System)	**B187**
MTFNR/L	Boring Bar (Multi Lock System)	**B214**
MTGNR/L	Holder (Multi Lock System)	**B188**
MTJNR/L	Holder (Multi Lock System)	**B188**
MTR	Auto tools (MSB Tool_Threading)	**B151**
MVGN	Multi functional Insert (MGT for Aluminum Wheel)	**C44**
MVJNR/L	Holder (Multi Lock System)	**B188**
MVQNR/L	Holder (Multi Lock System)	**B189**
MVUNR/L	Boring Bar (Multi Lock System)	**B214**
MVVNN	Holder (Multi Lock System)	**B189**
MWLNR/L	Holder (Multi Lock System)	**B189**
MWLNR/L	Boring Bar (Multi Lock System)	**B214**

N

NFTFR/L	Multi functional Insert (Fine Tools)	**C69**
NFTGR/L	Multi functional Insert (Fine Tools)	**C68**
NFTIHA	Multi functional (Fine Tools Holder)	**C69**
NFTTR/L	Multi functional Insert (Fine Tools)	**C68**
NPM	Tooling System (NPM)	**G21-22**
NPU	Tooling System (NPU)	**G40**
NS-CNGA	cBN Insert_Negative (Multi-Corner Type)	**B110**
NS-DNGA	cBN Insert_Negative (Multi-Corner Type)	**B110**
NU-CCGW	cBN Insert_Positive (Multi-Corner Type)	**B111**
NU-CNGA	cBN Insert_Negative (Multi-Corner Type)	**B110**
NU-DCGW	cBN Insert_Positive (Multi-Corner Type)	**B111**
NU-DNGA	cBN Insert_Negative (Multi-Corner Type)	**B110**
NU-SNGA	cBN Insert_Negative (Multi-Corner Type)	**B110**
NU-TCGW	cBN Insert_Positive (Multi-Corner Type)	**B111**
NU-TNGA	cBN Insert_Negative (Multi-Corner Type)	**B110**
NU-TPGB	cBN Insert_Positive (Multi-Corner Type)	**B111**
NU-TPGN	cBN Insert_Positive (Multi-Corner Type)	**B111**

N

NU-TPGW	cBN Insert_Positive (Multi-Corner Type)	**B111**
NU-VBGW	cBN Insert_Positive (Multi-Corner Type)	**B111**
NU-VCGW	cBN Insert_Positive (Multi-Corner Type)	**B111**
NU-VNGA	cBN Insert_Negative (Multi-Corner Type)	**B110**

O

OFCN	Milling Insert (Double Mill)	**E14**
OFCW	Milling Insert (Double Mill)	**E14**
OFKR-MA	Milling Insert (Double Mill)	**E14**
OFKR-MF	Milling Insert (Double Mill)	**E14**
OFKR-MM	Milling Insert (Double Mill)	**E14**
OFKT-MA	Milling Insert (Double Mill)	**E14**
OFKT-MF	Milling Insert (Double Mill)	**E14**
OFKT-MM	Milling Insert (Double Mill)	**E15**
ONHX-MA	Milling Insert (Rich Mill)	**E15**
ONHX-MF	Milling Insert (Rich Mill)	**E15**
ONHX-ML	Milling Insert (Rich Mill)	**E15**
ONHX-MM	Milling Insert (Rich Mill)	**E15**
ONHX-W	Milling Insert (Rich Mill)	**E15**
ONMX-MF	Milling Insert (Rich Mill)	**E15**
ONMX-MM	Milling Insert (Rich Mill)	**E15**

P

PACA4000	Pro-A Mill	**E350**
PALCA	Pro-L Mill	**E358**
PALSA(Multi edge)	Pro-L Mill	**E361**
PALSA(Single edge)	Pro-L Mill	**E359**
PAMA2000	Pro-A Mill	**E352**
PASA2000	Pro-A Mill	**E351**
PASA4000	Pro-A Mill	**E351**
PAVCA-XD19	Pro-V Mill	**E363**
PAVSA-XD19	Pro-V Mill	**E364**
PAXCA5000	Pro-X Mill	**E353**
PAXCA6000	Pro-X Mill	**E354**
PAXMA5000	Pro-X Mill	**E357**
PAXSA5000	Pro-X Mill	**E355**
PAXSA6000	Pro-X Mill	**E356**
PBACA5000	Power Buster	**E66**
PBPCA6000	Power Buster	**E68**
PBZCA5000	Power Buster	**E67**

P

PCBNR/L	Holder (Save Turn)	**B116**
PCBNR/L	Holder (Lever Lock System)	**B172**
PCKNR/L	Holder (Lever Lock System)	**B172**
PCLNR	Holder (KHP)	**B202**
PCLNR/L	Holder (Save Turn)	**B116**
PCLNR/L	Boring Bar (Save Turn)	**B119**
PCLNR/L	Holder (Lever Lock System)	**B173**
PCLNR/L	Boring Bar (Lever Lock System)	**B210**
PDFA	PCD Face Cutter	**E154**
PDJNR	Holder (KHP)	**B202**
PDJNR/L	Holder (Save Turn)	**B116**
PDJNR/L	Holder (Lever Lock System)	**B173**
PDNNR/L	Holder (Save Turn)	**B117**
PDNNR/L	Holder (Lever Lock System)	**B174**
PDQNR/L	Holder (Save Turn)	**B117**
PDSNR/L	Boring Bar (Lever Lock System)	**B210**
PDUNR/L	Boring Bar (Save Turn)	**B119**
PDUNR/L	Boring Bar (Lever Lock System)	**B210**
PDZNR/L	Boring Bar (Save Turn)	**B120**
PESA2000	Turbo Mill	**E59**
PESA3000	Turbo Mill	**E59**
PESA4000	Turbo Mill	**E59**
PFA4000	Mill Max	**E55**
PNEJ	Milling Insert (Side Cutter)	**E16**
PNEJ-C	Milling Insert (Side Cutter)	**E16**
PPNA4000	Mill Max	**E56**
PRDCN	Holder (Lever Lock System)	**B174**
PRGCR/L	Holder (Lever Lock System)	**B175**
PSBNR/L	Holder (Save Turn)	**B117**
PSBNR/L	Holder (Lever Lock System)	**B175**
PSDNN	Holder (Save Turn)	**B118**
PSDNN	Holder (Lever Lock System)	**B176**
PSKNR/L	Holder (Save Turn)	**B118**
PSKNR/L	Boring Bar (Save Turn)	**B120**
PSKNR/L	Holder (Lever Lock System)	**B176**
PSKNR/L	Boring Bar (Lever Lock System)	**B211**
PSSNR	Holder (KHP)	**B202**
PSSNR/L	Holder (Save Turn)	**B118**
PSSNR/L	Holder (Lever Lock System)	**B177**
PTFNR/L	Holder (Lever Lock System)	**B177**
PTFNR/L	Boring Bar (Lever Lock System)	**B211**
PTGNR/L	Holder (Lever Lock System)	**B178**
PTTNR/L	Holder (Lever Lock System)	**B178**
Pull Stud Bolt	Tooling System (Others)	**G102**

P

PWLNR	Holder (KHP)	**B203**
PWLNR/L	Holder (Save Turn)	**B119**
PWLNR/L	Boring Bar (Save Turn)	**B120**
PWLNR/L	Holder (Lever Lock System)	**B178**
PWLNR/L	Boring Bar (Lever Lock System)	**B211**
PXLA	Pro-XL Mill	**E362**

Q

QCGT	Multi functional Insert (Multi Turn)	**B154**
QCMT	Multi functional Insert (Multi Turn)	**B154**

R

RAFCBA	Side Milling Cutter (Radial type-Full side cutter)	**E371**
RAFCPA	Side Milling Cutter (Radial type-Full side cutter)	**E371**
RAHCBA	Side Milling Cutter (Radial type-Half side cutter)	**E372**
RAHCPA	Side Milling Cutter (Radial type-Half side cutter)	**E372**
RC	Milling Insert (BFE)	**E16**
RCGT-AK	Aluminum Insert_Positive (Screw on System)	**B105**
RCGT-AR	Aluminum Insert_Positive (Screw on System)	**B105**
RCMT-VM	Turning Insert_Positive (Screw on System)	**B83**
RCMX	Turning Insert_Positive (Screw on System)	**B83**
RDC	Tooling System (Reducer Bar)	**G54**
RDCT-MA	Milling Insert (Future Mill)	**E16**
RDHW	Milling Insert (Future Mill)	**E16**
RDKT-MF	Milling Insert (Future Mill)	**E17**
RDKT-ML	Milling Insert (Future Mill)	**E17**
RDKT-MM	Milling Insert (Future Mill)	**E17**
RDKW	Milling Insert (Future Mill)	**E17**
REKR-MM	Milling Insert (Double Mill)	**E17**
RI	Drill Insert (Indexable Reamer)	**F65**
RK Chip Breaker	Turning Chip Breaker	**B25**
RM Chip Breaker	Turning Chip Breaker	**B23**
RM14XCA-XN06	Rich Mill	**E140**
RM16ACA6000	Rich Mill	**E141**
RM16ACA8000	Rich Mill	**E142**
RM3PCA3000	Rich Mill	**E97**
RM3PCA4000	Rich Mill	**E98**
RM3PCA5000	Rich Mill	**E99**
RM3PMA3000	Rich Mill	**E102**
RM3PMA4000	Rich Mill	**E102**
RM3PSA3000	Rich Mill	**E100**
RM3PSA4000	Rich Mill	**E101**

R

RM4PCA3000	Rich Mill	**E103**
RM4PCA4000	Rich Mill	**E104**
RM4PFCBA3000	Rich Mill	**E105**
RM4PFCBA4000	Rich Mill	**E106**
RM4PFCPA3000	Rich Mill	**E109**
RM4PFCPA4000	Rich Mill	**E110**
RM4PHCBA3000	Rich Mill	**E107**
RM4PHCBA4000	Rich Mill	**E108**
RM4PHCPA3000	Rich Mill	**E111**
RM4PHCPA4000	Rich Mill	**E112**
RM4PMA3000	Rich Mill	**E115**
RM4PSA3000	Rich Mill	**E113**
RM4PSA4000	Rich Mill	**E114**
RM4ZCA3000	Rich Mill	**E116**
RM4ZCA4000	Rich Mill	**E116**
RM4ZMA3000	Rich Mill	**E117**
RM4ZSA3000	Rich Mill	**E117**
RM6PCA-WN04	Rich Mill	**E118**
RM6PCA-WN08	Rich Mill	**E119**
RM6PMA-WN04	Rich Mill	**E122**
RM6PMA-WN08	Rich Mill	**E123**
RM6PSA-WN04	Rich Mill	**E120**
RM6PSA-WN08	Rich Mill	**E121**
RM8ACA4000	Rich Mill	**E124**
RM8ACA5000	Rich Mill	**E126**
RM8ECA4000	Rich Mill	**E128**
RM8ECA5000	Rich Mill	**E130**
RM8QCA4000	Rich Mill	**E132**
RMH8ACA4000	Rich Mill	**E125**
RMH8ACA5000	Rich Mill	**E127**
RMH8ECA4000	Rich Mill	**E129**
RMH8ECA5000	Rich Mill	**E131**
RMH8QCA4000	Rich Mill	**E133**
RMRCA-RN12	Rich Mill	**E143**
RMRSA-RN12	Rich Mill	**E144**
RMT8AA4000	Rich Mill	**E134**
RMT8AA5000	Rich Mill	**E135**
RMT8EA4000	Rich Mill	**E136**
RMT8EA5000	Rich Mill	**E137**
RMT8QA4000	Rich Mill	**E138**
RMX8ACA-SA14	Rich Mill	**E139**
RNMG-B25	Turning Insert_Negative	**B49**
RNMX-ML	Milling Insert (Rich Mill)	**E17**
RPCT-MA	Milling Insert (Future Mill P-Positive)	**E17**

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RPET-ML	Milling Insert (Future Mill P-Positive)	**E18**
RPGT	Multi functional Insert (Bearing Solution)	**B158**
RPMT-MF	Milling Insert (Future Mill P-Positive)	**E18**
RPMT-MM	Milling Insert (Future Mill P-Positive)	**E18**
RPMW	Milling Insert (Future Mill P-Positive)	**E18**
RTJW	Tooling System (Jet coolant disk)	**G39**

S

SAGX-ML	Milling Insert (Alpha Mill)	**E18**
SAGX-MM	Milling Insert (Alpha Mill)	**E18**
SAH	Tooling System (Slim Angular Head)	**G85**
SBBR/L	Auto Tools Insert (Blade)	**B137**
SBCR/L	Auto Tools Insert (Blade)	**B138**
SBGR/L	Auto Tools Insert (Blade)	**B137**
SBHR/L	Holder (Auto Tools_Blade)	**B137**
SBHR/L-X	Holder (Auto Tools_Blade)	**B137**
SBR/L	Auto Tools Insert (multi utility)	**B140**
SBTR/L	Auto Tools Insert (Blade)	**B137**
SCACR/L	Holder (Auto Tools_ISO)	**B123**
SCACR/L	Holder (Screw on System)	**B190**
SCGT-AK	Aluminum Insert_Positive (Screw on System)	**B106**
SCGT-AR	Aluminum Insert_Positive (Screw on System)	**B106**
SCLCR/L	Holder (Auto Tools_ISO)	**B123**
SCLCR/L	Holder (Auto Tools_KHP)	**B129**
SCLCR/L	Holder (Screw on System)	**B190**
SCLCR/L	Boring Bar (Screw on System)	**B215**
SCLCR/L	Compact Mini	**B225**
SCLPR/L	Boring Bar (Screw on System)	**B216**
SCMT-C25	Turning Insert_Positive (Screw on System)	**B84**
SCMT-FP	Turning Insert_Positive (Screw on System)	**B84**
SCMT-HMP	Turning Insert_Positive (Screw on System)	**B84**
SCMT-MP	Turning Insert_Positive (Screw on System)	**B84**
SCMT-VF	Turning Insert_Positive (Screw on System)	**B84**
SCMT-VL	Turning Insert_Positive (Screw on System)	**B84**
SCR/L	Auto Tools Insert (multi utility)	**B140**
SDACR/L	Holder (Screw on System)	**B190**
SDC/P	Tooling System (SDC/P)	**G25~29**
SDCN	Milling Insert (Mill Max, High feed Cutter)	**E19**
SDET-MA	Milling Insert (Future Mill)	**E19**
SDET-MF	Milling Insert (Future Mill)	**E19**
SDET-MM	Milling Insert (Future Mill)	**E19**
SDJCR/L	Holder (Auto Tools-ISO)	**B123**
SDJCR/L	Holder (Auto Tools_KHP)	**B129**

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SDJCR/L	Holder (Screw on System)	**B191**
SDKN-CM	Milling Insert	**E19**
SDKN-MU	Milling Insert (Mill Max)	**E20**
SDKN-SU	Milling Insert (Mill Max, Turbo Mill)	**E20**
SDKR-MX	Milling Insert (Mill Max, Turbo Mill)	**E20**
SDMT-MM	Milling Insert (Tank Mill, GBE)	**E20**
SDNCN	Holder (Auto Tools-ISO)	**B124**
SDNCN	Holder (Screw on System)	**B191**
SDQCR/L	Boring Bar (Screw on System)	**B217**
SDUCR/L	Boring Bar (Screw on System)	**B218**
SDXT-MA	Milling Insert (Future Mill)	**E20**
SDXT-MF	Milling Insert (Future Mill)	**E20**
SDXT-MM	Milling Insert (Future Mill)	**E20**
SDZCR/L	Boring Bar (Screw on System)	**B219**
SECA	Milling Insert	**E20**
SECN	Milling Insert (Mill Max)	**E21**
SEET-MA	Milling Insert (Future Mill)	**E21**
SEET-MF	Milling Insert (Future Mill)	**E21**
SEET-MM	Milling Insert (Future Mill)	**E21**
SEEW	Milling Insert (Future Mill)	**E21**
SEEW-W	Milling Insert (Future Mill)	**E21**
SEKN-SU	Milling Insert (Mill Max)	**E21**
SEKR-MX	Milling Insert (Mill Max)	**E22**
SEMN	Milling Insert	**E22**
SEXT-MF	Milling Insert (Future Mill)	**E22**
SEXT-MM	Milling Insert (Future Mill)	**E22**
SEXT-MR	Milling Insert (Future Mill)	**E22**
SFCN	Milling Insert (Mill Max)	**E22**
SGBR/L	Auto Tools Insert (multi utility)	**B141**
SGR/L	Auto Tools Insert (multi utility)	**B141**
SH Chip Breaker	Turning Chip Breaker	**B33**
SL	Sleeve	**B151**
SLA	Tooling System (SLA)	**G47~48**
SMB	Tooling System (SMB)	**G68~69**
SMBBA	Multi functional(Saw Man_Block)	**C61**
SMBBA	Multi functional(Saw Man-X_Block)	**C65**
SMH	Tooling System (SMH)	**G72~73**
SNCF-MF	Milling Insert (Rich Mill)	**E22**
SNCF-MM	Milling Insert (Rich Mill)	**E23**
SNCN	Milling Insert (Mill Max)	**E23**
SNEF	Milling Insert (High feed Cutter)	**E23**
SNEU-MF	Milling Insert (Shave Mill)	**E23**
SNEU-TBW	Milling Insert (Shave Mill)	**E24**
SNEU-WMF	Milling Insert (Shave Mill)	**E24**

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SNEW	Milling Insert (Aero Mill Mini)	**E24**
SNEW-NAF	Milling Insert (Aero Mill Mini)	**E24**
SNEW-XAF	Milling Insert (Aero Mill Mini)	**E24**
SNEX	Milling Insert (Cube Mill)	**E24**
SNEX-CU1	Milling Insert (Cube Mill)	**E24**
SNEX-MA	Milling Insert (Rich Mill)	**E24**
SNEX-MF	Milling Insert (Rich Mill)	**E25**
SNEX-ML	Milling Insert (Rich Mill)	**E24**
SNEX-MM	Milling Insert (Rich Mill)	**E25**
SNEX-W	Milling Insert (Rich Mill)	**E26**
SNGA	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B54**
SNGG	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B53**
SNGG-VP3	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B55**
SNGN	Turning Insert_Negative (Lever Lock System/Ceramic Holder)	**B56**
SNGX	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B57**
SNHT-WX	Milling Insert (Wind Mill)	**E25**
SNKN	Milling Insert (Mill Max)	**E25**
SNMA	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B53**
SNMF-MF	Milling Insert (Rich Mill)	**E22**
SNMF-MM	Milling Insert (Rich Mill)	**E23**
SNMG-B25	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B52**
SNMG-CP	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B50**
SNMG-GR	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B52**
SNMG-HA	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B56**
SNMG-HM	Turning Insert_Negative	**B51**
SNMG-LP	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B50**
SNMG-MK	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B53**
SNMG-MM	Turning Insert (Save Turn)	**B115**
SNMG-MM	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B54**
SNMG-MP	Turning Insert (Save Turn)	**B115**
SNMG-MP	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B51**
SNMG-RK	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B54**
SNMG-RM	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B55**
SNMG-VB	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B50**
SNMG-VC	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B50**
SNMG-VF	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B50**
SNMG-VL	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B50**
SNMG-VM	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B51**
SNMG-VP2	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B55**
SNMG-VP3	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B55**
SNMG-VP4	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B55**
SNMG-VQ	Turning Insert (Save Turn)	**B115**
SNMG-VQ	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B52**
SNMG-VR	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B54**

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SNMM-GH	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B57**
SNMM-GR	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B57**
SNMM-VH	Turning Insert_Negative (Lever Lock System)	**B57**
SNMM-VT	Turning Insert_Negative (Lever Lock System)	**B57**
SNMX	Turning Insert_Negative (Multi Lock/Lever Lock System)	**B56**
SNMX-MF	Milling Insert (Rich Mill)	**E25**
SNMX-MM	Milling Insert (Alpha Mill)	**E18**
SNMX-MM	Milling Insert (Rich Mill)	**E25**
SNUN	Turning Insert_Negative (Ceramic Holder)	**B56**
SP	Multi functional Insert (Saw Man)	**C60**
SPBA	Multi functional (Saw Man_Blades)	**C61**
SPBA	Side Cutter	**E374**
SPBA-S	Multi functional (Saw Man_Blades)	**C61**
SPCN	Milling Insert (Mill Max)	**E26**
SPEN-WC	Milling Insert (High feed Cutter)	**E26**
SPET-ND	Drill Insert (KING Drill)	**F03**
SPEX	Milling Insert (Mill Max)	**E26**
SPFN	Milling Insert (Side Cutter)	**E26**
SPGA	Turning Insert_Positive	**B86**
SPGH	Multi functional Insert (Bearing Solution)	**B158**
SPGN	PCD Insert_Positive	**B113**
SPGN	Turning Insert_Positive	**B86**
SPGR	Multi functional Insert (Bearing Solution)	**B158**
SPGR-F	Turning Insert_Positive (Clamp on System)	**B85**
SPGR-M	Turning Insert_Positive (Clamp on System)	**B85**
SPGT	Turning Insert_Positive (Screw on System)	**B86**
SPHA	Multi functional (Saw Man_Holder)	**C62**
SPHA-S	Multi functional (Saw Man_Holder)	**C62**
SPKN-MU	Milling Insert (Mill Max)	**E27**
SPKN-SU	Milling Insert (Mill Max)	**E27**
SPKR-MX	Milling Insert (Mill Max)	**E27**
SPMN	Milling Insert (Chamfer tools)	**E27**
SPMR-F	Turning Insert_Positive (Clamp on System)	**B85**
SPMR-M	Turning Insert_Positive (Clamp on System)	**B85**
SPMT	Milling Insert (Tank Mill, GBE, BT Tooling System)	**E27**
SPMT-KC	Milling Insert (Chamfer tools)	**E27**
SPMT-LD	Drill Insert (KING Drill)	**F03**
SPMT-MM	Milling Insert (Tank Mill, GBE)	**E27**
SPMT-PD	Drill Insert (KING Drill)	**F03**
SPMT-VF	Turning Insert_Positive (Clamp on System)	**B85**
SPMT-VL	Turning Insert_Positive	**B85**
SPPA	Side Cutter	**E373**
SPSA	Side Cutter	**E375**
SPUN	Turning Insert_Positive	**B85**

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SR Chip Breaker	Turning Chip Breaker	**B33**
SRCPR/L…B	Bearing Solution	**B157**
SRDCN	Holder (Screw on System)	**B191**
SRGCR	Holder (KHP)	**B203**
SRGCR/L	Holder (Screw on System)	**B192**
SRGPR/L…E	Bearing Solution	**B157**
SRGPR/L…F	Bearing Solution	**B157**
SSBCR/L	Holder (Screw on System)	**B192**
SSDCN	Holder (Screw on System)	**B192**
SSKCR/L	Holder (Screw on System)	**B193**
SSKCR/L	Boring Bar (Screw on System)	**B219**
SSKCR/L	Cartridge (Screw on System)	**B232**
SSKPR/L	Boring Bar (Screw on System)	**B219**
SSKPR/L…B	Bearing Solution	**B158**
SSSCR/L	Holder (Screw on System)	**B193**
SSSCR/L	Cartridge (Screw on System)	**B232**
STACR/L	Holder (Auto Tools-ISO)	**B124**
STACR/L	Holder (Screw on System)	**B193**
STFCR/L	Holder (Screw on System)	**B194**
STFCR/L	Boring Bar (Screw on System)	**B220**
STFCR/L	Cartridge (Screw on System)	**B233**
STFPR/L	Boring Bar (Screw on System)	**B221**
STGCR/L	Holder (Screw on System)	**B194**
STLBR/L	Compact Mini	**B225**
STR/L	Auto Tools Insert (multi utility)	**B141**
STTCR/L	Holder (Screw on System)	**B194**
STTCR/L	Cartridge (Screw on System)	**B233**
STUBR/L	Compact Mini	**B225**
STUPR/L	Compact Mini	**B226**
STWCR/L	Cartridge (Screw on System)	**B233**
STWPR/L	Boring Bar (Screw on System)	**B222**
SVABR/L	Holder (Screw on System)	**B195**
SVACR/L	Holder (Auto Tools-ISO)	**B124**
SVAPR/L	Holder (Auto Tools-ISO)	**B125**
SVHBR/L	Holder (Screw on System)	**B195**
SVJBR	Holder (KHP)	**B203**
SVJBR/L	Holder (Auto Tools-ISO)	**B125**
SVJBR/L	Holder (Screw on System)	**B195**
SVJCR/L	Holder (Auto Tools-ISO)	**B125**
SVJCR/L	Holder (Auto Tools_KHP)	**B129**
SVJCR/L	Holder (Screw on System)	**B196**
SVJCR/L	Boring Bar (Screw on System)	**B222**
SVJPR/L	Holder (Auto Tools-ISO)	**B126**
SVQBR/L	Boring Bar (Screw on System)	**B222**

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SVQCR/L	Boring Bar (Screw on System)	**B223**
SVUBR/L	Boring Bar (Screw on System)	**B223**
SVUCR/L	Boring Bar (Screw on System)	**B223**
SVVBN	Holder (Screw on System)	**B196**
SVVCN	Holder (Screw on System)	**B196**
SVVPN	Holder (Auto Tools-ISO)	**B126**
SWLCR/L	Boring Bar (Screw on System)	**B224**
SWUBR/L	Compact Mini	**B227**
SXGNR/L	Holder (Auto Tools_multi utility)	**B140**

T

TAFCBA	Side Milling Cutter (Tangential type-Full side cutter)	**E369**
TAFCPA	Side Milling Cutter (Tangential type-Full side cutter)	**E369**
TAHCBA	Side Milling Cutter (Tangential type-Half side cutter)	**E370**
TAHCPA	Side Milling Cutter (Tangential type-Half side cutter)	**E370**
TB	Multi functional Insert (Grooving Tools)	**C51**
TBC	Tooling System (TBC)	**G80-81**
TBCA	Tooling System (TBCA)	**G75~78**
TBGT	Turning Insert_Positive (Compact Mini)	**B87**
TBH	Multi functional (Grooving Tools)	**C54**
TB-M	Multi functional Insert (Grooving Tools)	**C52**
TBMT-VL	Turning Insert_Positive (Screw on System)	**B87**
TB-P	Multi functional Insert (Grooving Tools)	**C53**
TC	Tooling System	**G23**
TCA	Tooling System (TCA Tap Adaptor)	**G46**
TCGT-AK	Aluminum Insert_Positive (Screw on System)	**B107**
TCGT-AR	Aluminum Insert_Positive (Screw on System)	**B107**
TCGT-FS	Auto Tools Insert (ISO)	**B133**
TCGT-FS	Turning Insert_Positive (Screw on System)	**B89**
TCGT-KF	Auto Tools Insert (ISO)	**B133**
TCGT-KF	Turning Insert_Positive (Screw on System)	**B89**
TCGT-VP1	Turning Insert_Positive (Screw on System)	**B89**
TCMT-C25	Turning Insert_Positive (Screw on System)	**B89**
TCMT-FP	Turning Insert_Positive (Screw on System)	**B88**
TCMT-HMP	Turning Insert_Positive (Screw on System)	**B88**
TCMT-MP	Turning Insert_Positive (Screw on System)	**B88**
TCMT-VF	Turning Insert_Positive (Screw on System)	**B88**
TCMT-VL	Turning Insert_Positive (Screw on System)	**B88**
TCMT-VP1	Turning Insert_Positive (Screw on System)	**B89**
T-CNMA	cBN Insert_Negative(Regrinding)	**B112**
T-DCGW	cBN Insert_Positive(Regrinding)	**B112**
TEC(E)N	Milling Insert (Turbo Mill)	**E27**
TEEN	Milling Insert (Turbo Mill)	**E27**

T

TER	Tooling System (TER Tap Collet)	**G43**
TFCN	Milling Insert (Mill Max)	**E28**
TFEA	T-Cutter	**E339**
THEA	Tank Mill	**E305**
TM	Thread Milling Inserts (ISO Metric)	**D44~49**
TNGA	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B62**
TNGG	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B61**
TNGG-SC	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B60**
TNGG-VP3	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B63**
TNGN	Turning Insert_Negative (Ceramic Holder)	**B64**
TNKT-ML	Milling Insert (Triple Mill)	**E28**
TNKT-MM	Milling Insert (Triple Mill)	**E28**
TNMA	cBN Insert_Negative(Regrinding)	**B112**
TNMA	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B61**
TNMG-B25	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B60**
TNMG-CP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B58**
TNMG-GR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B60**
TNMG-HA	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B63**
TNMG-HM	Turning Insert_Negative	**B59**
TNMG-LP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B58**
TNMG-LW	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B64**
TNMG-MK	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B61**
TNMG-MM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B62**
TNMG-MP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B59**
TNMG-RK	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B62**
TNMG-RM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B63**
TNMG-VB	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B58**
TNMG-VC	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B59**
TNMG-VF	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B58**
TNMG-VL	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B58**
TNMG-VM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B59**
TNMG-VP2	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B63**
TNMG-VP3	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B63**
TNMG-VP4	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B63**
TNMG-VQ	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B60**
TNMG-VR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B62**
TNMG-VW	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B64**
TNMM-GH	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B65**
TNMM-GR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B65**
TNMX	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B65**
TNMX-NM	Milling Insert (Power Buster)	**E28**
TNMX-SH	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B64**
TNMX-SR	Turning Insert_Negative	**B64**
TOEH	Turning Insert_Positive	**B90**

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TP2PCA-LN08	TP2P	**E309**
TP2PCA-LN14	TP2P	**E310**
TP2PCA-LN17	TP2P	**E311**
TP2PSA-LN08	TP2P	**E312**
TP2PSA-LN14	TP2P	**E313**
TP2PSA-LN17	TP2P	**E314**
TPCN	Milling Insert (Mill Max, Side cutter)	**E28**
TPD	Drill Insert (TPDC Plus Drill)	**F27~29**
TPD	Drill Insert (TPDB Plus Drill)	**F37**
TPD	Drill Insert (TPDB-F)	**F46**
TPD	Drill Insert (TPDB-H)	**F51**
TPDAC(12D)	Drill (TPDC Plus)	**F33**
TPDBA-F(1.5D)	Drill (TPDB-F)	**F47**
TPDBA-H(3D)	Drill (TPDB-H)	**F52**
TPDBA-H(4D)	Drill (TPDB-H)	**F53**
TPDBA-H(8D)	Drill (TPDB-H)	**F54**
TPDBA-P(10D)	Drill (TPDB Plus)	**F41**
TPDBA-P(12D)	Drill (TPDB Plus)	**F42**
TPDBA-P(3D)	Drill (TPDB Plus)	**F38**
TPDBA-P(5D)	Drill (TPDB Plus)	**F39**
TPDBA-P(8D)	Drill (TPDB Plus)	**F40**
TPDCA(1.5D)	Drill (TPDC Plus)	**F31**
TPDCA(10D)	Drill (TPDC Plus)	**F33**
TPDCA(3D)	Drill (TPDC Plus)	**F31**
TPDCA(5D)	Drill (TPDC Plus)	**F32**
TPDCA(8D)	Drill (TPDC Plus)	**F32**
TPDXA(3D)	Drill (TPDC Plus)	**F30**
TPDXA(5D)	Drill (TPDC Plus)	**F30**
TPDXA(8D)	Drill (TPDC Plus)	**F30**
TPGB	cBN Insert_Positive(Regrinding)	**B112**
TPGH	Turning Insert_Positive	**B93**
TPGN	PCD Insert_Positive	**B113**
TPGN	Turning Insert_Positive	**B92**
TPGR-F	Turning Insert_Positive (Clamp on System)	**B91**
TPGR-M	Turning Insert_Positive (Clamp on System)	**B92**
TPGT	Turning Insert_Positive (Screw on System)	**B93**
TPGW	PCD Insert_Positive	**B113**
TPGX	Turning Insert_Positive (Screw on System)	**B93**
TPKN-MU	Milling Insert (Mill Max)	**E29**
TPKN-SU	Milling Insert (Mill Max)	**E29**
TPKR-MX	Milling Insert (Mill Max)	**E29**
TPMCA-TN16	Triple Mill	**E256**
TPMCA-TN20	Triple Mill	**E257**
TPMR-F	Turning Insert_Positive (Clamp on System)	**B91**

T

TPMR-M	Turning Insert_Positive (Clamp on System)	**B91**
TPMSA-TN11	Triple Mill	**E258**
TPMSA-TN16	Triple Mill	**E259**
TPMT-FP	Turning Insert_Positive (Screw on System)	**B90**
TPMT-MP	Turning Insert_Positive (Screw on System)	**B91**
TPMT-VF	Turning Insert_Positive (Screw on System)	**B91**
TPMT-VL	Turning Insert_Positive (Screw on System)	**B91**
TPUN	Turning Insert_Positive	**B92**
T-TPGB	cBN Insert_Negative(Regrinding)	**B112**
T-VNMA	cBN Insert_Negative(Regrinding)	**B112**
TWX-KC	Milling Insert (Multi functional Chamfer Tool)	**E29**

V

VB Chip Breaker	Turning Chip Breaker	**B29**
VBGT	Turning Insert_Positive (Screw on System)	**B95**
VBGT-AK	Aluminum Insert_Positive (Screw on System)	**B108**
VBGT-AR	Turning Insert_Positive (Screw on System)	**B108**
VBGT-FS	Auto Tools Insert (ISO)	**B133**
VBGT-FS	Turning Insert_Positive (Screw on System)	**B95**
VBGT-KF	Auto Tools Insert (ISO)	**B133**
VBGT-KF	Turning Insert_Positive (Screw on System)	**B96**
VBGT-KM	Auto Tools Insert (ISO)	**B133**
VBGT-KM	Turning Insert_Positive (Screw on System)	**B96**
VBGT-VP1	Turning Insert_Positive (Screw on System)	**B95**
VBGW	PCD Insert_Positive	**B113**
VBMT	PCD Insert_Positive	**B113**
VBMT	Turning Insert_Positive (Screw on System)	**B95**
VBMT-FP	Turning Insert_Positive (Screw on System)	**B94**
VBMT-HMP	Turning Insert_Positive (Screw on System)	**B94**
VBMT-MP	Turning Insert_Positive (Screw on System)	**B94**
VBMT-VB	Turning Insert_Positive (Screw on System)	**B94**
VBMT-VF	Turning Insert_Positive (Screw on System)	**B94**
VBMT-VL	Turning Insert_Positive (Screw on System)	**B94**
VBMT-VP1	Turning Insert_Positive (Screw on System)	**B95**
VBMW	cBN Insert_Positive(Regrinding)	**B112**
VC Chip Breaker	Turning Chip Breaker	**B30**
VCET-KF	Auto Tools Insert (ISO)	**B134**
VCET-KF	Turning Insert_Positive (Screw on System)	**B99**
VCET-KM	Auto Tools Insert (ISO)	**B134**
VCET-KM	Turning Insert_Positive (Screw on System)	**B99**
VCGT-AK	Aluminum Insert_Positive (Screw on System)	**B109**
VCGT-AR	Aluminum Insert_Positive (Screw on System)	**B109**
VCGT-FS	Auto Tools Insert (ISO)	**B134**
VCGT-FS	Turning Insert_Positive (Screw on System)	**B98**
VCGT-KF	Auto Tools Insert (ISO)	**B133**
VCGT-KF	Turning Insert_Positive (Screw on System)	**B99**
VCGT-KM	Auto Tools Insert (ISO)	**B134**
VCGT-KM	Turning Insert_Positive (Screw on System)	**B99**
VCGT-MS	Auto Tools Insert (ISO)	**B134**
VCGT-MS	Turning Insert_Positive (Screw on System)	**B98**
VCGT-VP1	Auto Tools Insert (ISO)	**B134**
VCGT-VP1	Turning Insert_Positive (Screw on System)	**B98**
VCGX-VP1	Auto Tools Insert (ISO)	**B134**
VCGX-VP1	Turning Insert_Positive (Screw on System)	**B99**
VCKT-MA	Milling Insert (Pro-A Mill)	**E29**
VCMT	PCD Insert_Positive	**B113**
VCMT-FP	Turning Insert_Positive (Screw on System)	**B97**
VCMT-HMP	Turning Insert_Positive (Screw on System)	**B97**
VCMT-MP	Turning Insert_Positive (Screw on System)	**B97**
VCMT-VF	Turning Insert_Positive (Screw on System)	**B97**
VCMT-VL	Turning Insert_Positive (Screw on System)	**B97**
VCMT-VP1	Turning Insert_Positive (Screw on System)	**B97**
VDKT-MA	Milling Insert (Pro-A Mill)	**E29**
VETR	Thread Insert (Vertical)	**D33**
VH Chip Breaker	Turning Chip Breaker	**B31**
VL Chip Breaker	Turning Chip Breaker	**B29**
VNGG-HA	Turning Insert_Negative (Multi Lock System)	**B67**
VNGG-VP3	Turning Insert_Negative (Multi Lock System)	**B67**
VNMA	cBN Insert_Negative (Regrinding)	**B112**
VNMG-CP	Turning Insert_Negative (Multi Lock System)	**B66**
VNMG-HM	Turning Insert_Negative	**B66**
VNMG-LP	Turning Insert_Negative (Multi Lock System)	**B66**
VNMG-MK	Turning Insert_Negative (Multi Lock System)	**B67**
VNMG-MM	Turning Insert_Negative (Multi Lock System)	**B67**
VNMG-MP	Turning Insert_Negative (Multi Lock System)	**B66**
VNMG-RM	Turning Insert_Negative (Multi Lock System)	**B67**
VNMG-VB	Turning Insert_Negative (Multi Lock System)	**B66**
VNMG-VC	Turning Insert_Negative (Multi Lock System)	**B66**
VNMG-VF	Turning Insert_Negative (Multi Lock System)	**B66**
VNMG-VL	Turning Insert_Negative (Multi Lock System)	**B66**
VNMG-VM	Turning Insert_Negative (Multi Lock System)	**B67**
VNMG-VP3	Turning Insert_Negative (Multi Lock System)	**B67**
VNMG-VQ	Turning Insert_Negative (Multi Lock System)	**B67**
VP1 Chip Breaker	Turning Chip Breaker	**B26**
VP2 Chip Breaker	Turning Chip Breaker	**B26**
VP3 Chip Breaker	Turning Chip Breaker	**B27**
VP4 Chip Breaker	Turning Chip Breaker	**B27**

V

VPET-KF	Turning Insert_Positive (Screw on System)	**B100**
VPET-KF	Auto Tools Insert (ISO)	**B135**
VPET-KM	Turning Insert_Positive (Screw on System)	**B100**
VPET-KM	Auto Tools Insert (ISO)	**B135**
VPGT-KF	Auto Tools Insert (ISO)	**B135**
VPGT-KM	Auto Tools Insert (ISO)	**B135**
VPGT-VP1	Turning Insert_Positive (Screw on System)	**B100**
VPGT-VP1	Auto Tools Insert (ISO)	**B135**
VQ Chip Breaker	Turning Chip Breaker	**B30**
VT Chip Breaker	Turning Chip Breaker	**B31**
VTH	Vertical Type Holder	**D33**
VW Chip Breaker	Turning Chip Breaker	**B32**

W

WBGT	Turning Insert_Positive (Compact Mini)	**B101**
WCMT-C20N	Drill Insert (WPDC)	**F04**
WCMT-C21N	Drill Insert (WPDC)	**F04**
WDKT-MH	Milling Insert (HRM)	**E29**
WFSBA	Wind Mill (Boss)	**E378**
WFSPA	Wind Mill (Plane)	**E379**
WNGG-VP3	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B71**
WNGX-MA	Milling Insert (Rich Mill)	**E30**
WNGX-ML	Milling Insert (Rich Mill)	**E30**
WNGX-MM	Milling Insert (Rich Mill)	**E30**
WNMA	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B70**
WNMG-B25	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B69**
WNMG-CP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B68**
WNMG-GR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B69**
WNMG-HA	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B72**
WNMG-HM	Turning Insert_Negative	**B69**
WNMG-LP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B68**
WNMG-LW	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B72**
WNMG-MK	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B70**
WNMG-MM	Turning Insert (Save Turn)	**B115**
WNMG-MM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B71**
WNMG-MP	Turning Insert (Save Turn)	**B115**
WNMG-MP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B69**
WNMG-RK	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B70**
WNMG-RM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B71**
WNMG-VB	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B68**
WNMG-VC	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B68**
WNMG-VF	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B68**

W

WNMG-VL	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B68**
WNMG-VM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B69**
WNMG-VP2	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B71**
WNMG-VP3	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B71**
WNMG-VP4	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B71**
WNMG-VQ	Turning Insert (Save Turn)	**B115**
WNMG-VQ	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B70**
WNMG-VR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B70**
WNMG-VW	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B72**
WNMM-B25	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B72**
WNMX-MF	Milling Insert (HRMD)	**E30**
WNMX-ML	Milling Insert (HRMD)	**E30**
WNMX-MM	Milling Insert (HRMD)	**E30**
WNMX-SH	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	**B72**
WNMX-SR	Turning Insert_Negative	**B72**
WPDCA-5D	Drill (WPDC Standard type)	**F59**
WPDCA-5D	Drill (WPDC Single insert catridge type)	**F60**
WPDCA-5D	Drill (WPDC Dual insert cartridge type)	**F61**
WPDCA-6.5D	Drill (WPDC Standard type)	**F59**
WPDCA-6.5D	Drill (WPDC Single insert catridge type)	**F60**
WPDCA-6.5D	Drill (WPDC Dual insert cartridge type)	**F61**
WPDCA-8D	Drill (WPDC Standard type)	**F59**
WPDCA-8D	Drill (WPDC Single insert catridge type)	**F60**
WPDCA-8D	Drill (WPDC Dual insert cartridge type)	**F61**
WSA	Side Cutter	**E375**
WTENN	Holder (Wedge Clamp System)	**B179**
WTJNR/L	Holder (Wedge Clamp System)	**B179**
WTXNR/L	Holder (Wedge Clamp System)	**B179**
WWLNR/L	Holder (Wedge Clamp System)	**B180**

X

XCET-KC	Milling Insert (Chamfer Tool)	**E31**
XDET-MA	Milling Insert (Pro-V Mill)	**E31**
XEKT-MA	Milling Insert (Pro-X Mill)	**E31**
XEKT-ML	Milling Insert (Pro-X Mill)	**E31**
XNCT-MA	Milling Insert (Rich Mill)	**E31**
XNKT-ML	Milling Insert (Rich Mill)	**E32**
XNKT-MM	Milling Insert (Rich Mill)	**E32**
XNMX-ML	Milling Insert (Rich Mill)	**E32**
XOET-ND	Drill Insert (KING Drill)	**F04**
XOMT-LD	Drill Insert (KING Drill)	**F03**
XOMT-PD	Drill Insert (KING Drill)	**F03**
XOMT-RD	Drill Insert (KING Drill)	**F04**

Z

ZDMT-R-MM	Milling Insert (BRE)	**E32**
ZPET-MM	Milling Insert (GBE)	**E33**
ZPMT-MM	Milling Insert (BT Tooling System, Tank Mill)	**E33**
ZPMT-R-MM	Milling Insert (BRE)	**E33**
ZPMT-R-MR	Milling Insert (BRE)	**E33**

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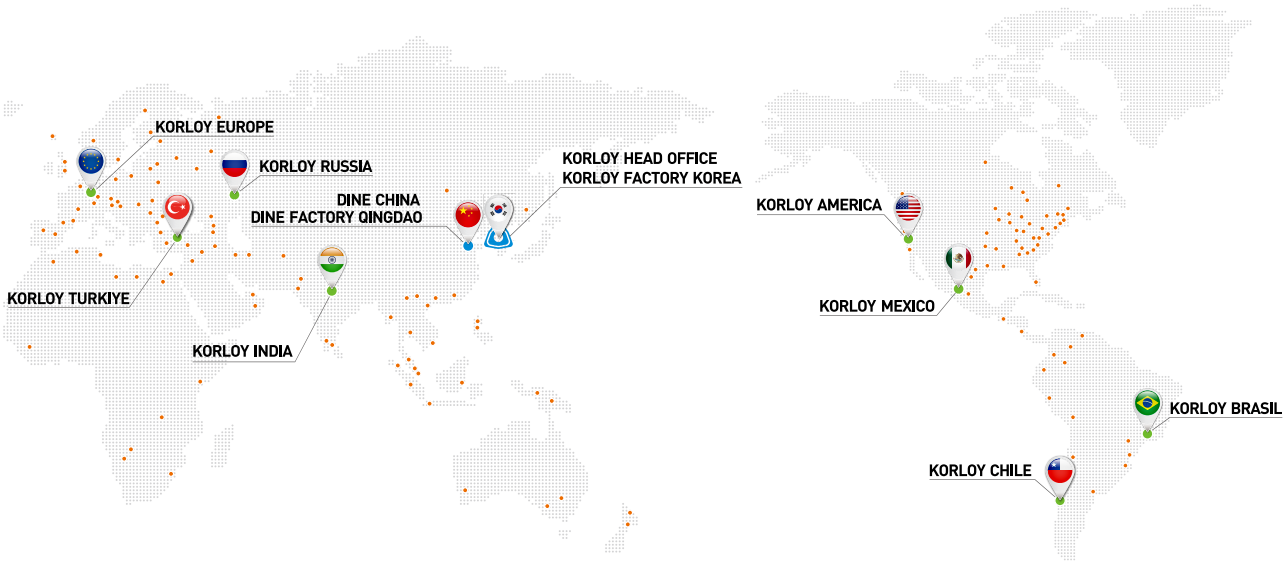

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