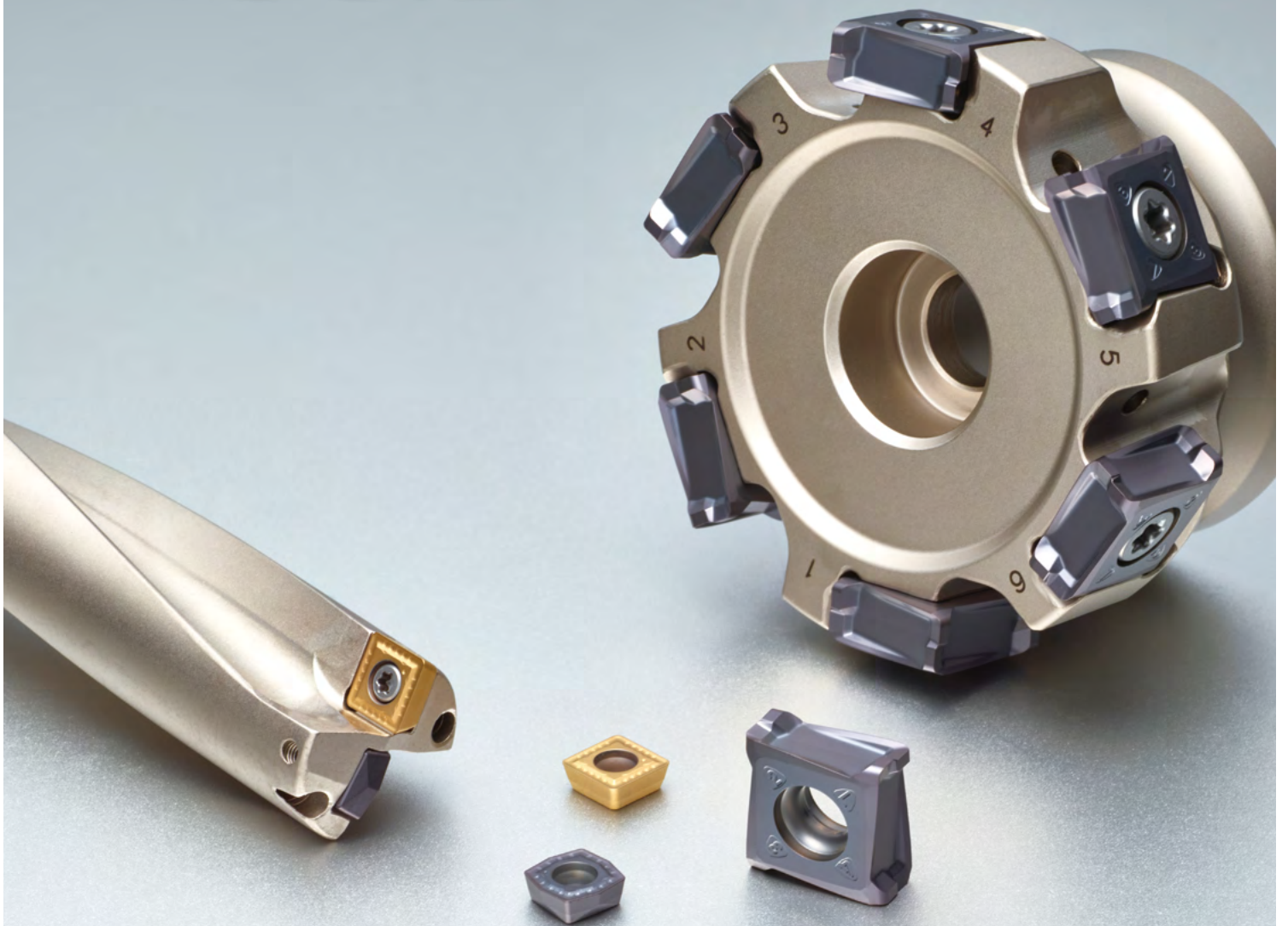


# Cutting Tools



2025

**ROTATING**

2026

TURNING / ROTATING / SOLID

**2025-2026**  
**KORLOY ROTATING TOOLS**

# CONTENTS

---

## A

### GRADES

#### Grades

- A2** KORLOY Grade Index
- A3** Grade System
- A4** Milling Grade selections

#### Rotating Grades

- A5** CVD Coated Grades
- A6** PVD Coated Grades
- A14** Uncoated Carbide Grades
- A15** Cermet Grade
- A16** Diamond Coated Grades
- A17** DLC Coated Grades
- A18** PCD Insert Grades
- A19** Chip Breakers for Milling
- A26** Chip Breakers for Drilling

## B

### MILLING

#### Inserts

- B2** Milling Insert Code System (ISO)
- B4** Milling Inserts
- B34** KORLOY Cutters
- B41** KORLOY Shanks
- B45** KORLOY Modular Adaptors

#### Face Milling Cutters

- B47** Mill Max / Mill Max Plus
- B57** Mill Max Heavy
- B59** Turbo Mill
- B62** Double Mill
- B64** Power Buster
- B70** Rich Mill
- B148** Aero Mill / Aero Mill Plus / Aero Mill Mini
- B157** PCD Face Cutter

#### Cutters for Molds

- B158** Alpha Mill-X
- B166** Alpha Mill / Alpha Mill Nick
- B203** Future Mill / FMR P-Positive
- B256** Triple Mill
- B263** HFMD
- B277** HFM
- B283** HRMD
- B300** HRM
- B306** Tank Mill
- B307** TP2P
- B316** TP8P
- B320** Laser Mill / GBE / BRE
- B339** HAVE(Single-edge, Multi-edge)
- B343** BT/HSK Tooling System(Alpha Mill, Mono Tool)
- B355** HSK Tooling System(Alpha Mill, Mono Tool, Pro-V Mill)
- B367** O-ring Cutters
- B369** Chamfer Tool
- B374** T-Cutter

**B**  
**MILLING**

**Milling Cutter for Aluminum**

- B375** Pro-A Mill
- B380** Pro-X Mill
- B387** Pro-L Mill
- B393** Pro-XL Mill
- B395** Pro-V Mill
- B400** Modular Adaptor

**Side Milling Cutters**

- B404** Adjusting Side Cutter
- B410** Side Cutter
- B413** Wind Mill

**High feed Cutter**

- B417** High feed Cutter
- B419** Cube Mill
- B420** Couple Mill
- B422** Shave Mill
- B424** Shave Mill Ultra

**Gear Tools**

- B425** Gear Cutter Applicable Example
- B426** Gear Cutter Table
- B427** Gear Cutter
- B434** Gear Cutter Order Form
- B435** Indexable HOB
- B436** Indexable HOB Cutter Order Form

**C**  
**THREADING**

**Technical Information for Threading**

- C2** Thread Milling Holders Code System
- C2** Thread Milling Inserts Code System
- C3** Technical Information for Thread Milling

**Thread Milling Holders**

- C17** Standard Type
- C17** Long Type
- C17** Tapered Type

**Thread Milling Inserts**

- C12** ISO Metric
  - C13** American UNC
  - C14** UNJ(Unified Constant Thread)
  - C15** Whitworth(BSW, BSF, BSP, BSB)
  - C16** NPT
  - C16** NPTF
  - C16** BSPT
-

# CONTENTS

---

## D

### DRILL

**D2** KORLOY Drills

#### **Indexable Drills**

**D3** Technical Information for KING Drill

**D9** KING Drill

**D20** Technical Information for KING Drill  
(For through coolant system with a lathe)

**D21** KING Drill  
(For through coolant system with a lathe)

**D24** Technical Information for KING Drill  
(For large diameter drilling)

**D25** KING Drill (For large diameter drilling)

**D26** Technical Information for KED Plus Drill

**D29** KED Plus Drill

**D37** Technical Information for TPDC Plus Drill

**D45** TPDC Plus Drill

**D52** Technical Information for TPDB Plus Drill

**D58** TPDB Plus Drill

**D65** Technical Information for TPDB-DS

**D67** TPDB-DS

**D69** Technical Information for TPDB-H

**D72** TPDB-H

**D75** Technical Information for TPDB-F

**D77** TPDB-F

**D79** Technical Information for WPDC

**D82** Center Drill

**D83** WPDC

**D85** Technical Information for Multi Turn

**D87** Multi Turn

#### **Indexable Reamers**

**D88** Technical Information for Indexable Reamer

**D91** Indexable Reamers

## E

### TOOLING SYSTEM

**E2** Tooling System Index

**E4** DINOX MAP

**E8** DHE

**E15** DHE/S

**E18** DHE/G

**E20** DHC/DHJ Collet

**E22** DZC

**E24** DSC

**E33** NPM

**E39** DCL

**E40** DCJ

**E44** SDC/P

**E53** SDC/PL

**E56** GERC

**E60** ER Collet

**E64** ER/L

**E65** RTJW

**E67** DSK

**E70** GSK

**E74** HC Collet

**E78** DTN

**E81** TCA Tap Adapter

**E82** DST

**E85** TER Tap Collet

**E86** THE

**E88** STER PAT.

**E89** OFH

**E90** SLA

**E93** MTA/TMTA

**E94** FMA

**E96** FMC

**E99** MD

**E105** EXT/RDC

**E106** FBH/B

**E112** FBH

**E113** FBH/D

**E117** DBCA

**E121** DBC

**E123** SMB

**E125** KMB

**E**

**TOOLING  
SYSTEM**

<b>E127</b>	SMH	<b>E144</b>	KAC
<b>E129</b>	BKA	<b>E146</b>	SAH
<b>E131</b>	FZ UNIT	<b>E148</b>	POSITIONING BLOCK
<b>E132</b>	Angular head	<b>E150</b>	ATM
<b>E134</b>	KAH	<b>E153</b>	ATM(U) SPARE PART
<b>E136</b>	KHU	<b>E154</b>	ATU
<b>E138</b>	KAG	<b>E156</b>	Damping Pro
<b>E140</b>	HRAG	<b>E163</b>	Pull Stud Bolt
<b>E142</b>	MAH	<b>E164</b>	HT

**F**

**TECHNICAL  
INFORMATION**

**Technical Information I**

<b>F2</b>	Workpiece Material Grades
<b>F6</b>	Steel, Non-Ferrous Metal Symbol List
<b>F7</b>	SI Unit Conversion Table
<b>F8</b>	Hardness Calculating Table

**Technical Information II**

<b>F9</b>	Inch
<b>F10</b>	Metric - ISO6462, DIN138
<b>F11</b>	Clamping Part of Milling Cutter (Oil-hole)
<b>F12</b>	Technical Information for Milling
<b>F16</b>	Technical Information for Tapers
<b>F19</b>	The Comparison of Grade for Milling

**G**

**INDEX**

<b>G2</b>	Index
-----------	-------

---

# 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), Aluminium (Al), Silicon (Si), Tantalum (Ta), Boron (B) etc. and metal component like Cobalt (Co), Nickel (Ni), Chromium (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, appearance 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 extremely 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 catalog safety guidance prior to handling the tools.
- 7) Do not abuse 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 immediately with continuously 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 shorten 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 extremely high or low temperatures compare with the melting point of brazing materials may cause loosening or breakage.
- 8) Overheating an oil base coolant may cause a fire or flames, thus be prepared for fire prevention.

## 5 METALCUTTING SAFETY

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



# INTRODUCTION OF HOMEPAGE

1) Get on the homepage through the internet  
» <https://www.korloy.com/en> (KORLOY Homepage)

2) Choose a category and click that

## ➤ Main screen guide

**Browse all types of items by category**  
You can search desired items here

**Selection by each language**  
Moving on to the site in each language

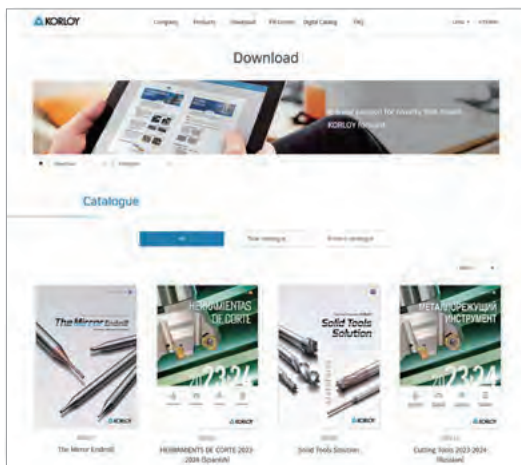
**Detailed screen**  
Selecting detailed screen by each category

**Quick menu**  
Checkable product information and KORLOY news quickly by scrolling the mouse

The screenshot shows the KORLOY homepage. At the top, there is a navigation bar with links for Company, Products, Download, PR Center, Digital Catalog, and FAQ. A language selection dropdown is set to 'LANG' and a 'SITEMAP' link is visible. Below the navigation bar is a horizontal menu with five categories: Overview, ESG, Greetings, History, and Directions. The main content area features a large banner with the text 'ANOTHER ORIGINALITY' and 'Everyday we pursue another originality for the future.' A 'Scroll' button is located at the bottom center of the banner, and a 'QUICK MENU' link is at the bottom right.

## Search the necessary materials in the detailed search screen.

### » Downloading technical materials



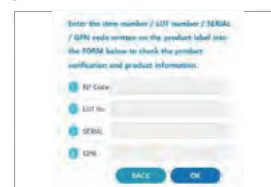
#### Downloading technical materials:

Downloading and searching by sections of various technical materials are available

### » Shortcut to KOMS



### » Shortcut to genuine product certification



# INTRODUCTION OF DIGITAL CATALOG

## 1) Connect to the digital catalog on PC or mobile

» <https://catalog.korloy.com>

## 2) Guideline for main screen



**Grade guide**  
Explanation of standard grades on the catalog

**My assembly**  
Check created assembly

**Log in/ registration**  
E-mail/password

**Language**  
Switch to the selected language

**Measurement unit**  
Metric/inch

**Currency(Unused)**  
KRW/USD/EUR

**Search items**  
Search necessary item with its grade or designation

**Main application**  
Select the main application of necessary items.



## Details

### » Sub application



### » Item group



### » Item



### » Item data, 2/3D modeling, etc.



# INTRODUCTION OF ONLINE EXHIBITION

1) Get on the online exhibition hall on the PC or mobile.

» [https://www.korloy.com/ko/prcenter/media\\_list.do#online](https://www.korloy.com/ko/prcenter/media_list.do#online)

2) Main screen guide



- ① **Mini map** | Move the wanted hall
- ② **Information desk** | Introduction in Korean/English
- ③ **Side menu** | Searchable wanted sections
- ④ **Product names /Explanation** | In Korean/English
- ⑤ **Video** | Item promotion video
- ⑥ **Tech news** | Checking tech news
- ⑦ **Detailed information of product** | Checking the information of product and promotion video
- ⑧ **3D modeling** | Checking 3D modeling view

\* **Connectable on mobile**

## Detailed screen

» **New product hall**



» **Industry hall**



» **Tooling guide**



» **History hall**



» **Smart factory**



» **Poster**



# TOOL KEEPER C/L(COIL/LOCKER) TYPE SYSTEM

The smart tool storage control system which is a 24-hour running unmanned system that can simultaneously store and manage tools and tool holders in real time. It is designed to improve the efficiency and security of tool management in operation sites and other industrial settings.

Efficient and transparent hybrid tool management control system + customer-customized S/W applied

C/L Type



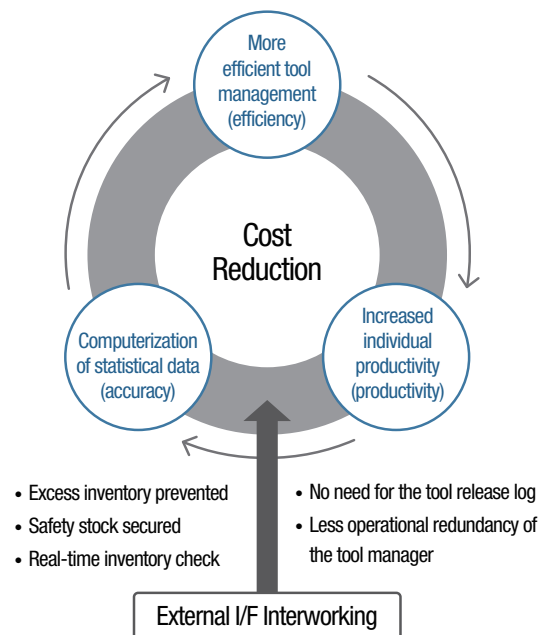
- Storage CAPA: Coils (81 types) + Lockers (21 types)
- Transparent Shipping (Packaging Units)

[Option] L Type



- Storage CAPA: 59 types
- Maximum Length: Up to 380mm
- Can Add Up to: 10 units

- Monthly performance data search (quantity / sum)
- Warehousing history and status search
- Computerization of statistical data (application history, etc.)

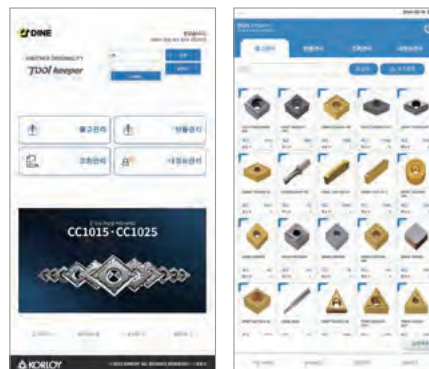


## Software Configuration: Administrator Program + User Program

### » Administrator Program



### » User Program

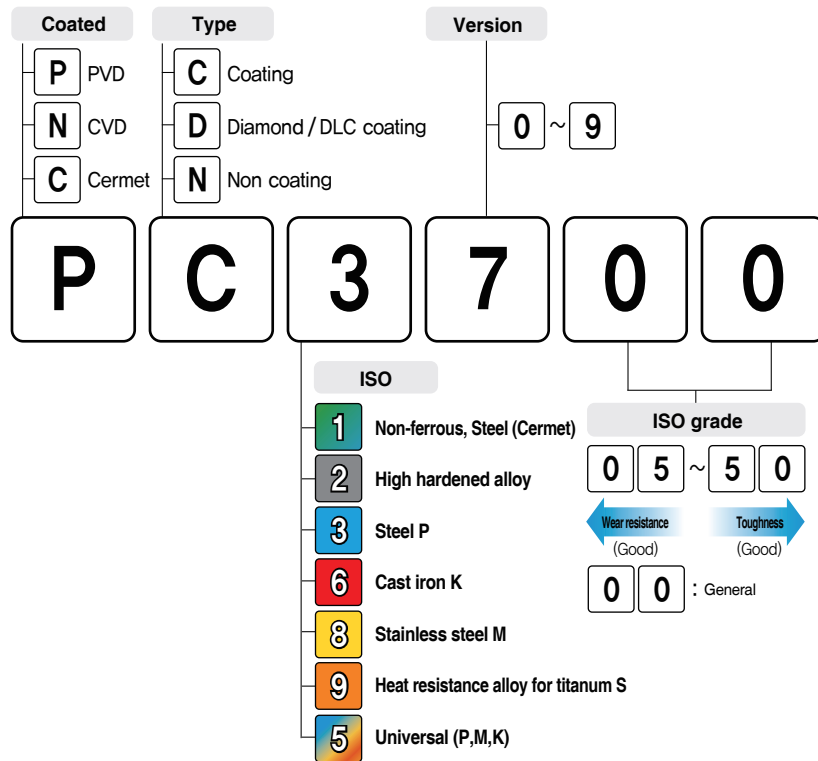


#### Key features

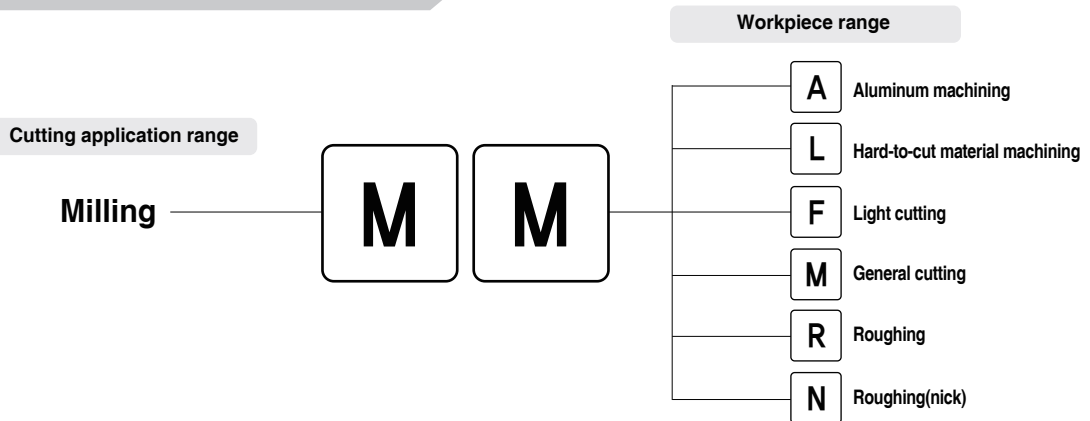
1. Safety Stock Alert Management (Automatic Email/SMS Notifications)
2. Multilingual Language Settings/Remote Diagnosis/SW
3. Automatic Updates Monthly Tool Usage(Average)/Expenditure/Inbound Quantity Management

# INTRODUCTION OF ONLINE EXHIBITION

## 1 Grade name for coated carbide



## 2 Chip breaker



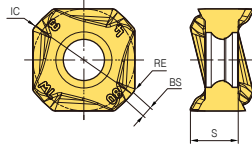
## 3 Terminology of tool formula

TERM	CODE	UNIT
Tool diameter	D	mm
Cutting speed	vc	m/min
Revolution per minute	n	min <sup>-1</sup>
Feed per minute	vf	mm/min
Feed per revolution	fn	mm/rev
Feed per tooth	fz	mm/t
Tooth	z	-
Axial depth of cut	ap	mm
Radial depth of cut	ae	mm
Peak feed	pf	mm

TERM	CODE	UNIT
Horse power requirement	Pc	kW
Specific cutting resistance	kc	MPa
Torque	TQ	N.m
Thrust	Tc	N
Cycle time	tc	min
Tool life	T	min
Flank wear	V <sub>B</sub>	mm
Crater wear	Kt	mm
Nose radius	RE	mm

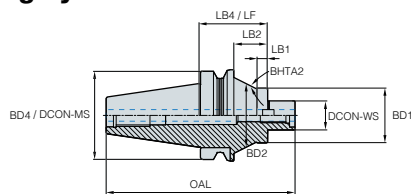
# ISO13399 GLOSSARY

## Insert



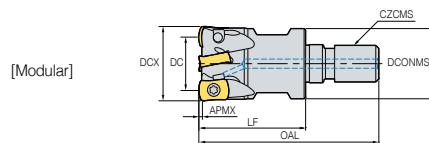
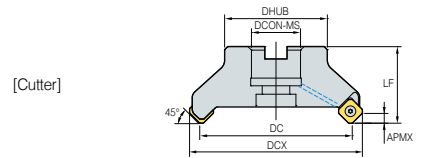
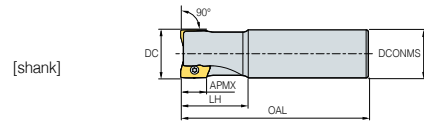
ISO13399 Property Symbols	Property Name
AN	Clearance Angle Major
APMX	Depth of Cut Maximum
BS	Wiper Edge Length
CBMD	Chip Breaker Manufacturers Designation
CHW	Corner Chamfer Width
CW	Cutting Width
DC	Cutting Diameter
IC	Inscribed Circle Diameter
IH	Insert Hand
INSL	Insert Length
KCH	Corner Chamfer
KAPR	Tool cutting edge angle
LE	Cutting Edge Effective Length
RE	Corner Radius
S	Insert Thickness
SC	Insert Shape Code
TQ	Torque
W1	Insert Width

## Tooling System



ISO13399 Property Symbols	Property Name
ADJ	Adjust Screw
BD	Body Diameter
CCKZ	Cutter Connector Key Size
CRKS	Connection Retention Knob Thread Size
DC	Cutting Diameter
DCON-WS	Connection Diameter Workpiece Side
DCX	Cutting Diameter Maximum
H	Shank Height
HF	Functional Height
LB	Body Length
LF	Functional Length
MBCB	Mount Bolt, Clamp Bolt
SSL	Set Screw Length
SSZ	Set Screw Size
WF	Functional Width

## Holder



ISO13399 Property Symbols	Property Name
APMX	Depth of Cut Maximum
BD	Body Diameter
BHTA	Body Half Taper Angle
CBDP	Connection Bore Depth
CDX	Cutting Depth Maximum
CICT	Cutting Item Count
CW	Cutting Width
CXSC	Coolant Exit Style Code
CZC-MS	Connection Moduler Machine Side
CZC-WS	Connection Moduler Work Side
DC	Cutting Diameter
DCON-MS	Connection Diameter Machine Side
DCX	Cutting Diameter Maximum
DHUB	Hub Diameter
KAPR	Tool Cutting Edge Angle
KWW	Keyway Width
LF	Functional Length
LH	Head Length
LU	Usable length
MIID	Master Insert Identification
NOF	Flute Count
OAL	Overall Length
RE	Corner Radius
RMPX	Maximum Ramping Angle
SC	Insert Shape Code
THUB	Hub Thickness
WT	Weight of Item
ZEFF	Effective Cutting Edge Count



# GRADES & CHIP BREAKERS

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

## Technical Information for GRADES & CHIP BREAKERS

### Grades

- A2** KORLOY Grade Index
- A3** Grade System
- A4** Milling Grade selections

### Rotating Grades

- A5** CVD Coated Grades
- A6** PVD Coated Grades
- A14** Uncoated Carbide Grades
- A15** Cermet Grade
- A16** Diamond Coated Grades
- A17** DLC Coated Grades
- A18** PCD Insert Grades
- A19** Chip Breakers for Milling
- A26** Chip Breakers for Drilling

## KORLOY Grade Index

### Grade index

Workpiece	Coated	Grade	ISO						Milling	Multi functional tools	Thread (Milling)	
			P	M	K	S	N	H				
			Steel	Stainless steel	Cast iron	HRSA	Non-ferrous	Hardened				
Coated carbide	CVD	NCM325	P30-P40	M25-M35						•		
		NCM335	P35-P45	M30-M40						•		
		NCM535	P30-P40		K20-K30					•	•	
		NCM545	P40-P50		K25-K35					•		
		NC5330	P25-P35	M20-M30	K15-K25					•	•	
	PVD	PC210F	P10-P20	M10-M20	K10-K20				H10-H20	•		
		PC2005	P01-P10		K01-K10				H01-H10	•		
		PC2010	P05-P15		K05-K15				H05-H15	•		
		PC2015	P10-P20	M10-M20	K10-K20				H10-H20	•		
		PC2505	P01-P10						H01-H10	•		
		PC2510	P05-P15						H05-H15	•		
		PC3700	P30-P40							•	•	
		PC5335	P30-P40	M20-M30							•	
		PC5300	P30-P40	M20-M30	K20-K30	S15-S25				•	•	•
		PC5400	P35-P45	M30-M40	K25-K35	S25-S35				•	•	
		PC5535	P30-P40	M25-M35	K15-K25	S20-S30			H15-H25	•		
		PC6100			K05-K15					•	•	
		PC9530		M25-M35		S20-S30				•		
		PC9540		M35-M45		S30-S40				•	•	
	PC9570T	P25-P35	M20-M30	K15-K25							•	
	Non-coated	ST30A	P25-P35							•		
		H01			K05-K10			N10-N20		•	•	
		H05			K10-K15			N15-N25		•		
		G10			K15-K20					•		
	Cermet	Non-coated	CN30	P25-P35						•		
	Dia coated	CVD	ND3000					N01-N05		•		
DLC coated	PVD	PD1005					N05-N10		•			
		PD1010					N10-N15		•			
		DP90					N01-N20		•			
PCD	Non-coated	DP150					N05-N25		•			
		DP200					N10-N30		•			



## Grade System

### ➤ Cutting tool

Uncoated carbide	P	Steel	ST30A		
	K	Cast iron	H01	H05	G10
	N	Aluminum alloy/ Copper alloy	H01	H05	

Cermet	P	Steel	CN30
--------	---	-------	------

Dia coated	N	Non-ferrous	ND3000
------------	---	-------------	--------

DLC coated	N	Non-ferrous	PD1005	PD1010
------------	---	-------------	--------	--------

PCD	N	Non-ferrous	DP90	DP150	DP200
-----	---	-------------	------	-------	-------

### ➤ Applications

Milling coated	P	Steel	NC5330	NCM535	NCM545	NCM325	NCM335	PC3700	PC5300	PC5535	PC5400		
	M	Stainless steel	NC5330	NCM325	NCM335	PC9530	PC9540	PC5300	PC5535	PC5400	PC210F		
	K	Cast iron	NC5330	NCM535	NCM545	PC6100	PC5300	PC5535	PC5400	PC2005	PC2010	PC2015	PC210F
	S	HRSA	PC9530	PC9540	PC5300	PC5535	PC5400						
	N	Non-ferrous	ND3000	PD1005	PD1010								
	H	Hardened	PC2005	PC2010	PC2015	PC210F	PC2505	PC2510					

Indexable drill coated	P	Steel	NC5330	NCM535	PC3700	PC5300	PC5335	PC9540
	M	Stainless steel	NC5330	PC5300	PC5335	PC9540		
	K	Cast iron	NC5330	NCM535	PC6100	PC5300	PC5335	PC9540
	S	HRSA	PC5300	PC5335	PC9540			
	N	Non-ferrous	H01					

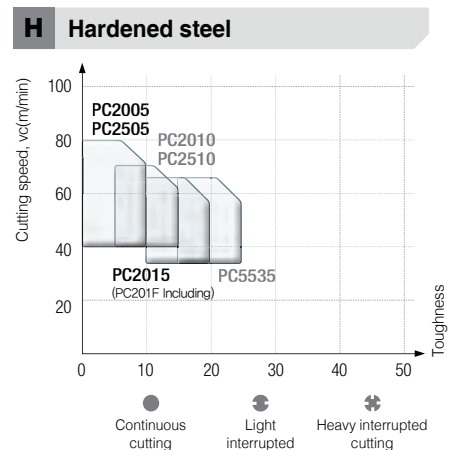
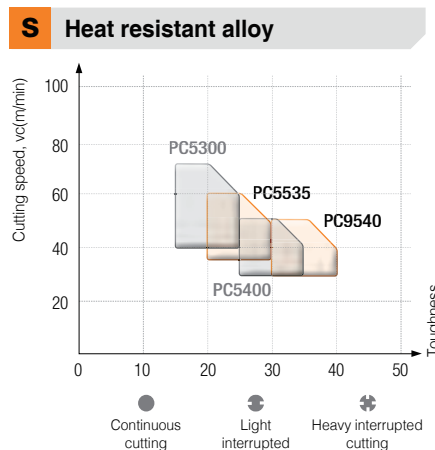
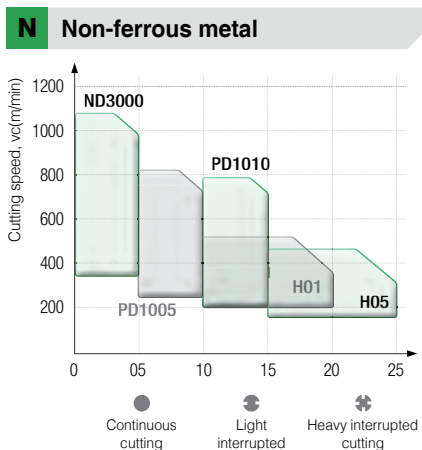
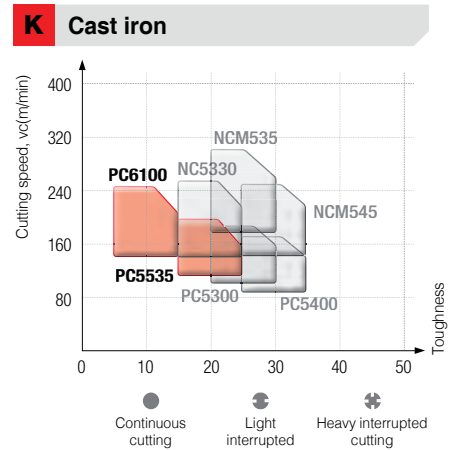
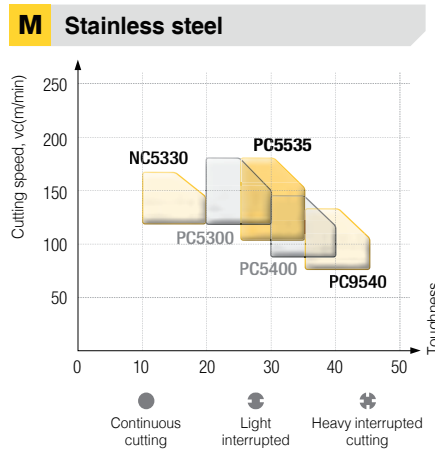
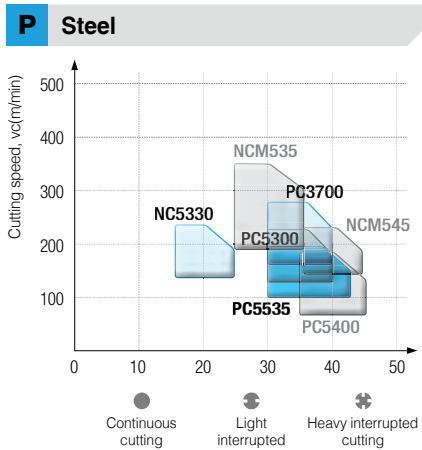
Thread coated	P	Steel	PC9570T
	K	Cast iron	PC9570T

## Milling Grade selections

### Selection system

Workpiece	Steel					Stainless steel				Cast iron				S				HRSA				N				Non-ferrous				H				Hardened						
	P10	P20	P30	P40	P50	M10	M20	M30	M40	K01	K10	K20	K30	K40	S10	S20	S30	S40	N01	N10	N20	N30	H01	H10	H20	H30	H01	H10	H20	H30										
Coated carbide			NC5330																																					
			PC3700																																					
			NCM535																																					
			PC5300																																					
			PC5535																																					
			PC5400																																					
			NCM545																																					
Cermet			CN30																																					
PCD																																								
Uncoated carbide																																								

### Application range of milling grades



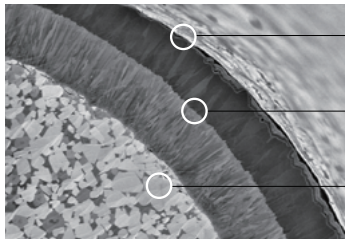
## CVD Coated Grades

### Milling Solutions for Steel and Cast Iron

# NCM535 / NCM545

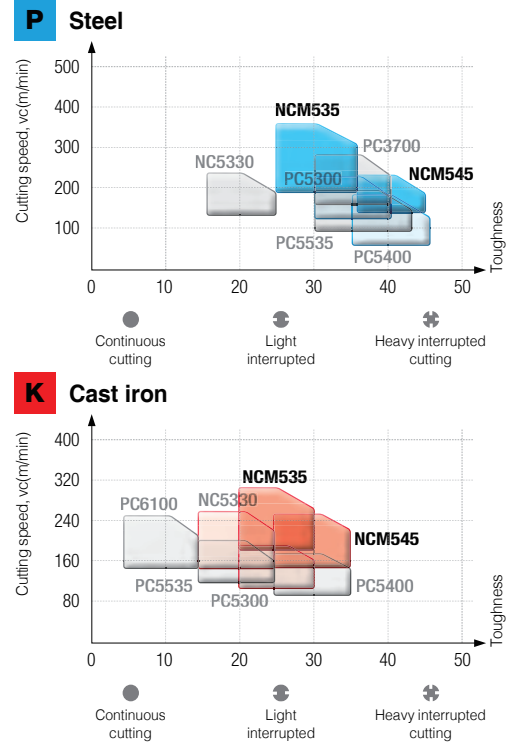
- Improved chipping resistance / heat and crack resistance: Applied after treatment with good chipping resistance and heat and crack resistance
- Improved wear and heat resistance: Applied high toughness substrate and high functional CVD alumina

### Features



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

### Application range



### Selection system of CVD coated grades

Workpiece	Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
P Steel	Continuous cutting	NC5330	300 (200 ~ 400)	P20	
				P25	
	Continuous cutting	NCM535	300 (200 ~ 400)	P30	
				P35	
Interrupted cutting	NCM545	200 (150 ~ 250)	P40		
			P45		
M Stainless steel	Continuous cutting	NC5330	150 (120 ~ 180)	M20	
				M30	
K Cast iron	Continuous cutting	NC5330	250 (200 ~ 300)	K10	
		NCM535	250 (200 ~ 300)	K20	
	General cutting	NCM545	200 (150 ~ 250)	K30	
				K40	

### The features of CVD milling grades

CVD Coated grades	ISO	Features
NC5330	P25 ~ P35 M20 ~ M30 K15 ~ K25	<ul style="list-style-type: none"> <li>• For high speed milling of steel and stainless steel</li> <li>• Superior wear resistance and chipping resistance grade for steel and stainless steel</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>
NCM535	P30 ~ P40 K20 ~ K30	<ul style="list-style-type: none"> <li>• Rising CVD milling grade for high productivity in large steel and cast iron machining at high speed</li> <li>• High toughness and thermal conductivity substrate and high functional CVD coating layer with heat resistance</li> <li>• High chipping resistance and heat and crack resistance from excellent after treatment</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub></li> </ul>
NCM545	P40 ~ P50 K25 ~ K35	<ul style="list-style-type: none"> <li>• For steel and cast iron milling with high toughness</li> <li>• High toughness substrate and high functional CVD coating layer</li> <li>• High chipping resistance and heat and crack resistance from excellent after treatment</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub></li> </ul>

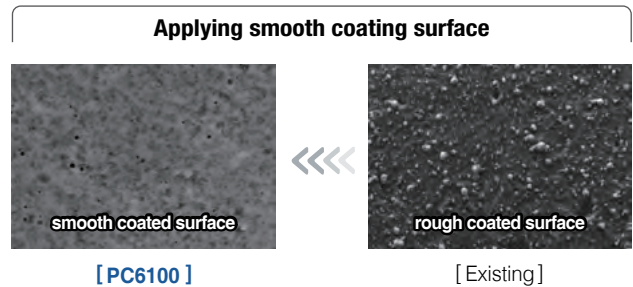
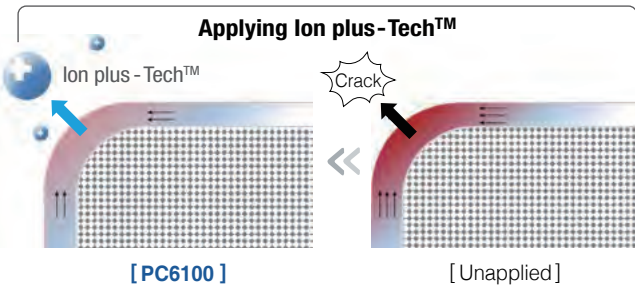
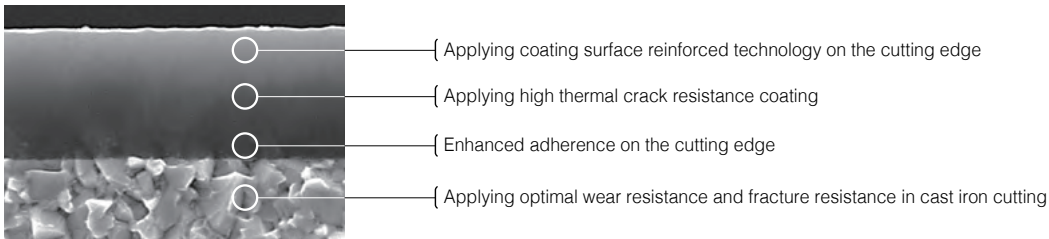
**PVD Coated Grades**

**PVD insert for cast iron Milling**

**PC6100**

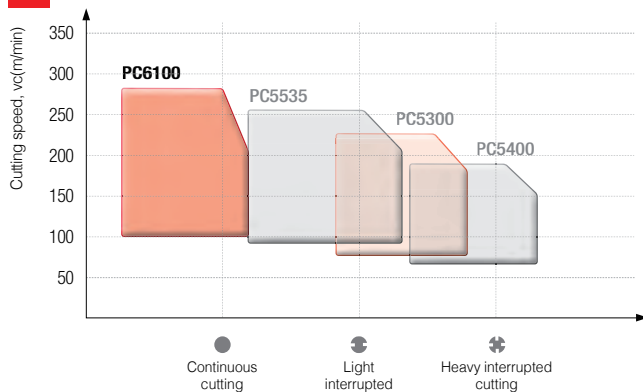
- Optimally designed PVD coating grade in cast iron milling
- Applying Ion plus - Tech™ increasing hardness and adherence of layer ensures wear resistance and thermal crack resistance
- Coating surface treatment technology prevents chipping and unexpected fracture
- The optimal substrate for cast iron cutting enhances wear resistance and fracture resistance

**Features**



**Application range**

**K Cast iron**



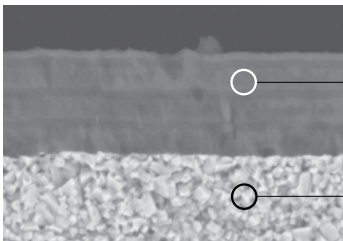
## PVD Coated Grades

Milling grade specialized for steel

# PC3700

- 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



#### Substrate for general milling applications of steel and PVC 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

- 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]

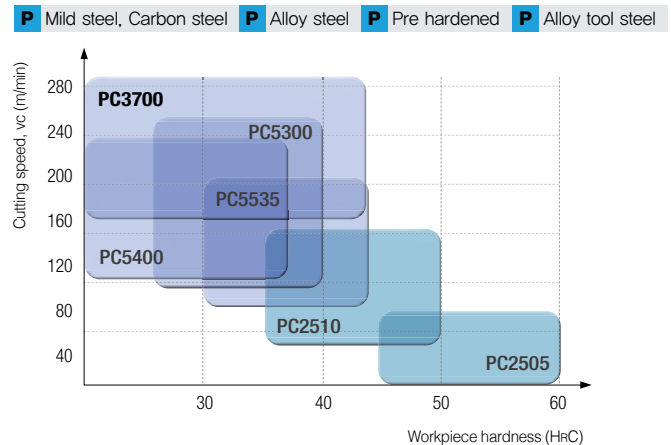
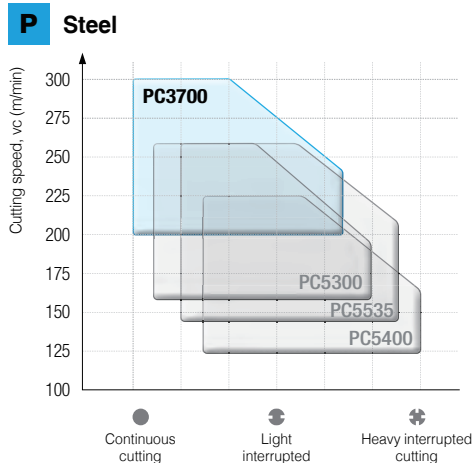
Excellent wear resistance and stable tool life

No macro-particle on the coated surface

Lots of macro-particles on the coated surface

### Application range

#### Recommended grades and cutting conditions for p-type milling application



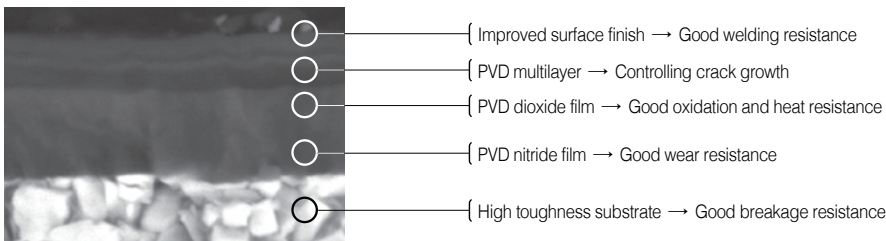
**PVD Coated Grades**

**PVD Coated Grades for hard-to-cut stainless steel milling**

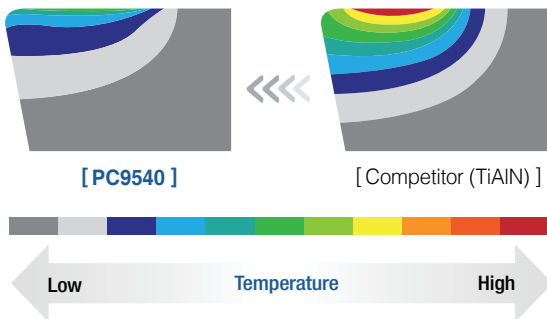
# PC9540

- Optimal PVD grade for medium to rough cutting and highly interrupted milling in stainless steel
- Longer tool life due to higher breakage resistance applying high toughness substrate controlling crack growth
- Excellent and new PVD oxide 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 treatment

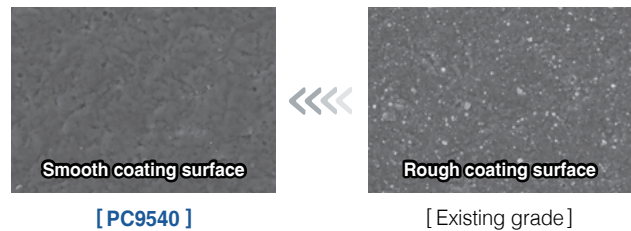
**Features**



**New PVD dioxide film (comparison of thermal conductivity)**

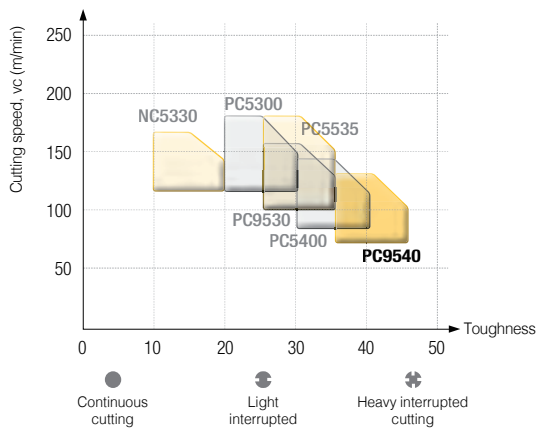


**Special coating surface treatment technology**

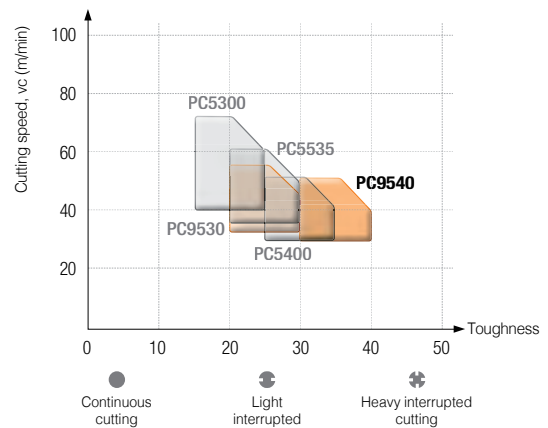


**Application range**

**M Stainless steel**



**S Heat resistant alloy**



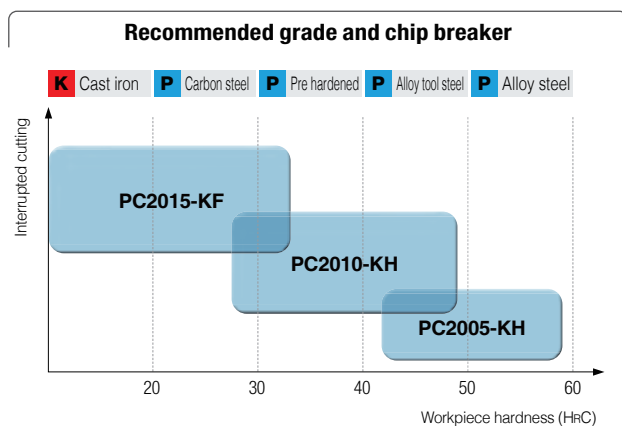
## PVD Coated Grades

PVD coated grades for finishing high hardened steel

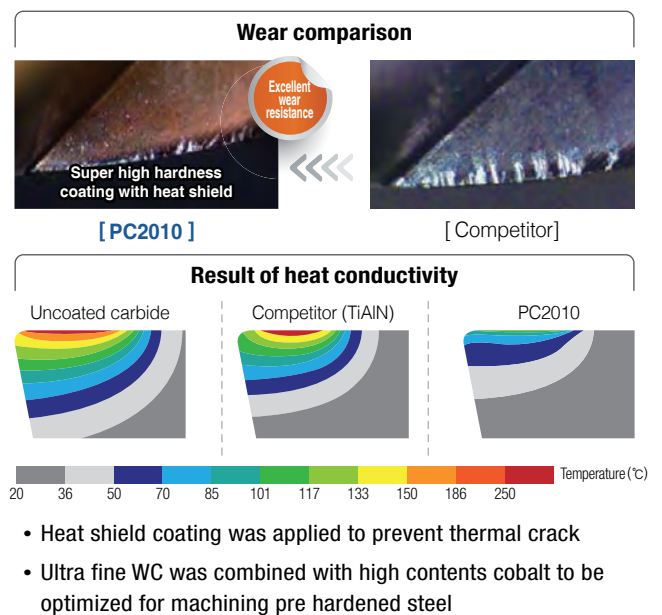
### PC2005 / PC2010 / PC2015

- 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



#### Features

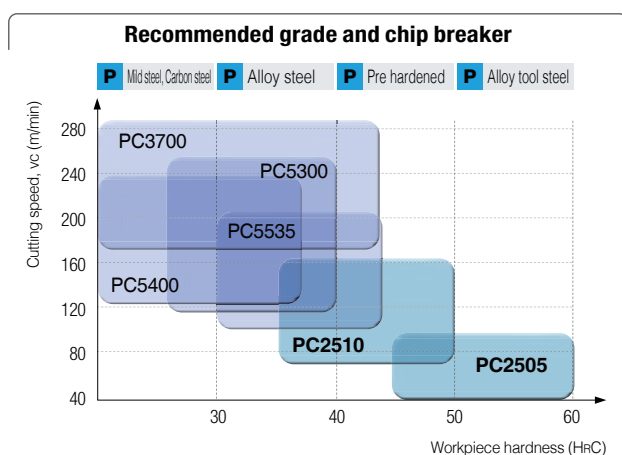


PVD coated grades for roughing high hardened steel

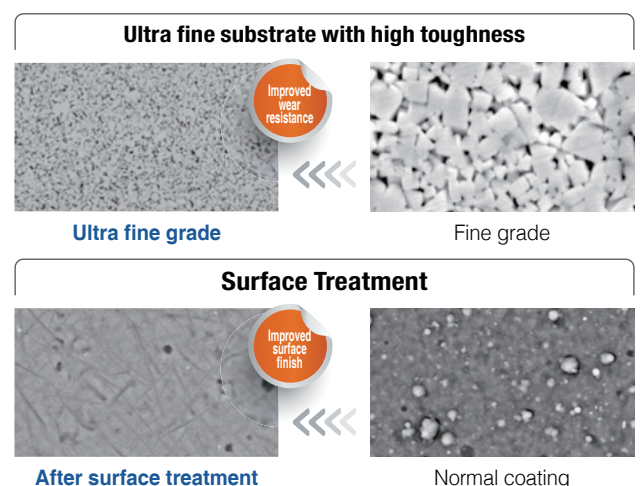
### PC2505 / PC2510

- 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



#### Features



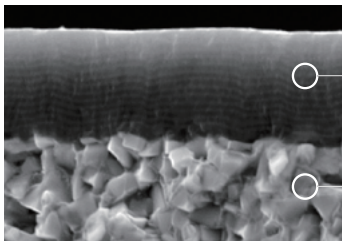
**PVD Coated Grades**

Universal PVD grade

**PC5400**

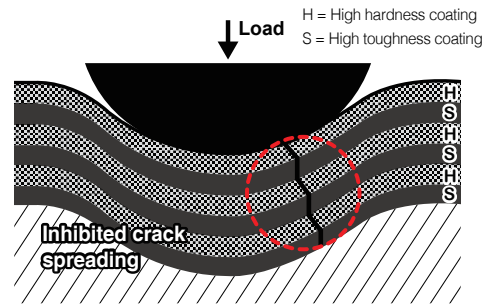
- New PVD coating layer with high toughness and lubrication
- High adhesive strength and toughness between the substrate and coating layer
- Excellent cutting edge strength and chipping resistance ensure stable machinability for P, M, K, S.

**Features**



Improved lubrication  
High toughness and strong adhesion

Ultra fine substrate of high toughness



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

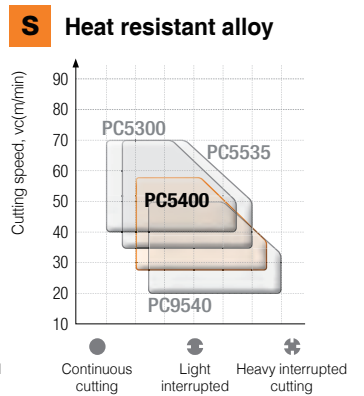
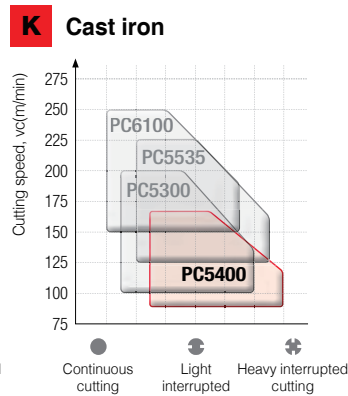
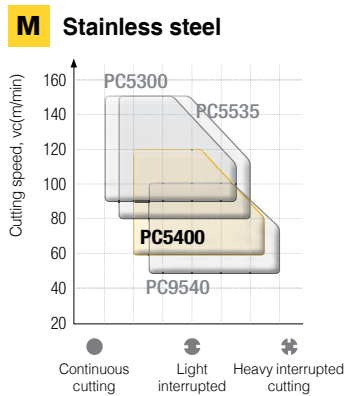
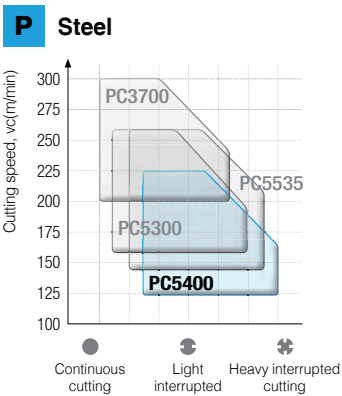


High toughness coating



Normal coating

**Application range**





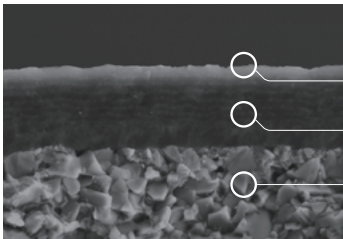
## PVD Coated Grades

Exclusive universal grade for indexable drill insert

# PC5335

- Excellent machining stability due to high toughness ultra-fine substrate
- Enhanced cutting due to high lubricated coating layer with welding resistance
- Optimal and general grade in various drilling

### Features



Applying exclusive PVD coating KROEX-tech™ and optimal substrate in drilling

{ Good welding resistance due to applying lubricated coating layer

{ Balance of wear resistance and chipping resistance from high hardness layer and high toughness layer

{ Good fracture resistance and cutting stability due to optimal high toughness substrate in drilling

### Point polishing-Tech™



Excellent chipping resistance



[ PC5335 ]

[ Competitor ]

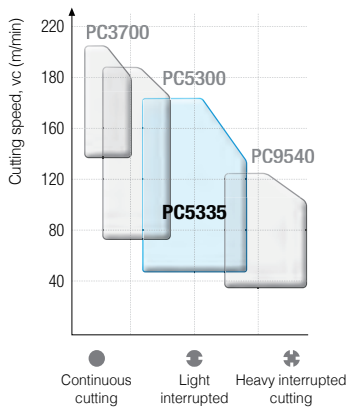
» Stable shape of cutting edge

» Fracture of cutting edge due to brittleness wear

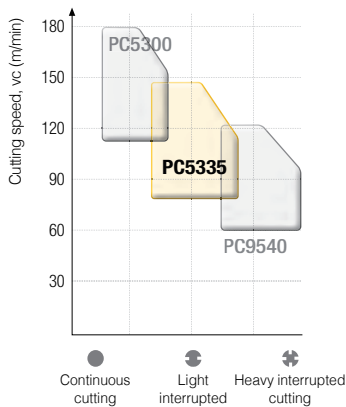
- Cutting stability by point polishing tech, special cutting edge treatment technology

### Application range

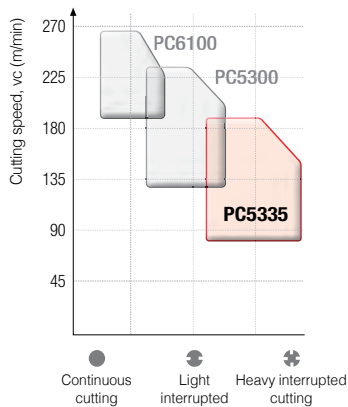
#### P Steel



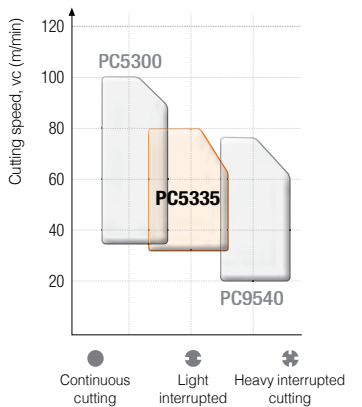
#### M Stainless steel



#### K Cast iron



#### S Heat resistant alloy



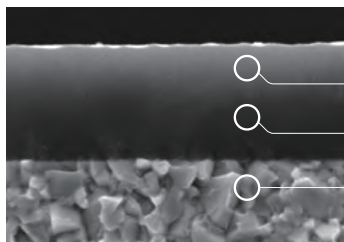
**PVD Coated Grades**

**PVD insert for general milling**

**PC5535**

- General use due to high toughness substrate with balance of wear resistance and toughness
- Maximized tool life by applying the omega tech overcoming primary troubles in milling
- Achieved stable cutting by implementing Edge tech and preventing welding, chipping and unexpected fracture
- PVD coated grade optimized for general milling

**Features**

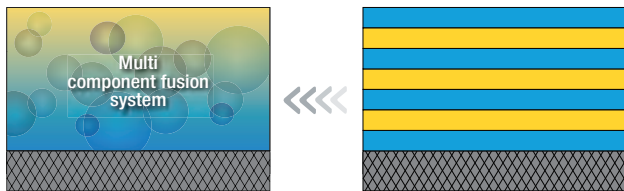


**Omega-Tech™ - PVD applying PVD fusion coating technology**

- { Maximized coating performance by applying exclusive PVD fusion coating technology
- { Increased adherence between substrate and coating layer with the application of newly designed layer
- { Fine substrate with balance of wear resistance and toughness



**Omega-Tech™**



[ PC5535 ]

[ Competitor ]

- One strong coating layer unifying various components
- Enhanced general use and cutting performance due to increased mechanical and chemical stability

**Edge-Tech™ - Applying high lubricated edge technology**



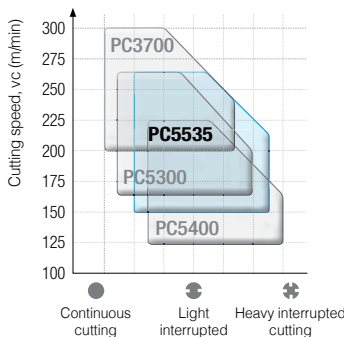
[ PC5535 ]

[ Competitor ]

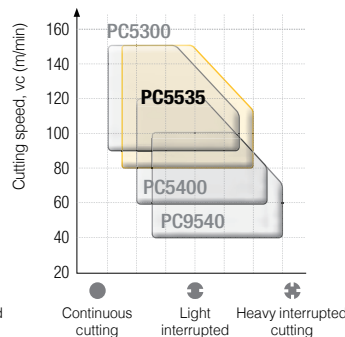
- Preventing welding, chipping and unexpected fracture
- Longer tool life and stable cutting

**Application range**

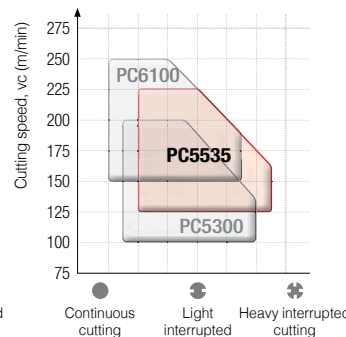
**P Steel**



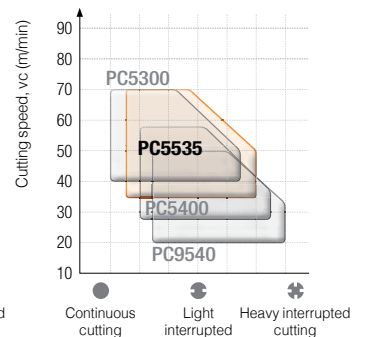
**M Stainless steel**



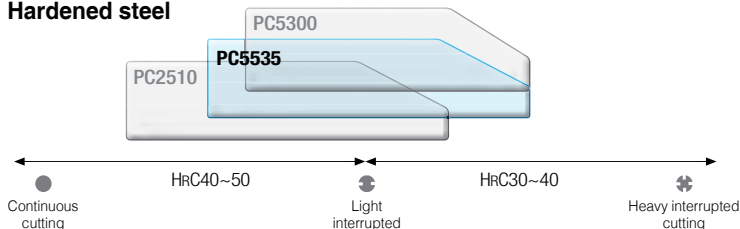
**K Cast iron**



**S Heat resistant alloy**



**H Hardened steel**



## Selection system of PVD coated grades

Workpiece	Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
P Steel	Continuous cutting	PC3700	235 (180 ~ 290)	P30	
	Interrupted cutting	PC5300	195 (150 ~ 240)	P40	
		PC5400	145 (80 ~ 210)	P50	
M Stainless steel	Continuous cutting	PC5300	130 (100 ~ 160)	M20	
		PC9530	130 (100 ~ 160)	M30	
	Interrupted cutting	PC5400	120 (95 ~ 155)	M40	
		PC9540	110 (80 ~ 140)	M50	
K Cast iron	Continuous cutting	PC6100	180 (140 ~ 230)	K10	
	Interrupted cutting	PC5300	145 (110 ~ 180)	K20	
		PC5400	125 (85 ~ 160)	K30	
S HRSA	Continuous cutting	PC5300	55 (40 ~ 70)	S20	
	Interrupted cutting	PC5400	40 (30 ~ 50)	S30	
		PC9540	40 (30 ~ 50)	S40	
H High hardness steel	Continuous cutting	PC2005	60 (40 ~ 80)	H01	
		PC2010	55 (40 ~ 70)	H10	
		PC2015	50 (35 ~ 65)	H20	
		PC210F	50 (35 ~ 65)	H30	

## The features of PVD coated grades

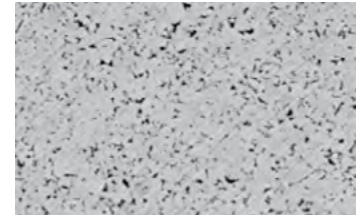
PVD Coated grades	ISO	Features
PC3700	P30 ~ P40	<ul style="list-style-type: none"> <li>Exclusive grade for steel milling</li> <li>Lubricated and high hardness multi-layered coating</li> </ul>
PC5300	P30 ~ P40 M20 ~ M30	<ul style="list-style-type: none"> <li>Superior universal grade for steel, cast iron, hard to cut material, stainless steel</li> <li>New coating and ultra fine grain provide wear resistance and oxidation resistance</li> <li>TiAlN Series new coating</li> </ul>
PC5535	P30 ~ P40 M25 ~ M35 K15 ~ K25	<ul style="list-style-type: none"> <li>General use for all kinds of workpiece materials milling; P, M, K, H and S</li> <li>Long tool life and stable machining due to PVD Omega tech and Edge tech</li> </ul>
PC5400	P35 ~ P45 M30 ~ M40	<ul style="list-style-type: none"> <li>Universal grade for interrupted machining of steel, cast iron, hard-to-cut materials and stainless steel with stable machinability</li> <li>New coating layer with high toughness and lubrication on ultra fine grain substrate with high toughness</li> <li>AICIN series new coating</li> </ul>
PC6100	K05 ~ K15	<ul style="list-style-type: none"> <li>PVD Ion plus-Tech™ provides long tool life and stability</li> <li>The optimal substrate for cast iron cutting with coating adherence technology ensures regular tool life</li> </ul>
PC9530	M25 ~ M35 S20 ~ S30	<ul style="list-style-type: none"> <li>Medium to rough cutting of hard to cut materials such as stainless steel, Cr-Ni steel, etc.</li> <li>The toughest sub-micron substrate provides excellent cutting performance at high feed</li> <li>TiAlN coating</li> </ul>
PC9540	M35 ~ M45 S30 ~ S40	<ul style="list-style-type: none"> <li>Exclusive high toughness grade for stainless steel milling</li> <li>PVD dioxide film with good heat resistance</li> </ul>
PC2005	H01 ~ H10 P01 ~ P10 K01 ~ K10	<ul style="list-style-type: none"> <li>Exclusive for Laser Mill in milling of high hardness workpieces and press mold steel</li> <li>Utmost wear resistance due to high hardness substrate and coating</li> <li>Ultra high hardness K-Brown coating</li> </ul>
PC2010	H05 ~ H15 P05 ~ P15 K05 ~ K15	<ul style="list-style-type: none"> <li>Exclusive for Laser Mill in milling of pre hardened steel and plastic mold steel</li> <li>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</li> <li>Ultra high hardness K-Brown coating</li> </ul>
PC2015	H10 ~ H20 M10 ~ M20	<ul style="list-style-type: none"> <li>Exclusive for Laser Mill in milling of carbon steel and cast</li> <li>Highly lubricative K-silver coating</li> <li>Lubricative coating layer and high contents substrate for machining mild steel and hard-to-cut cast materials</li> </ul>
PC210F	H10 ~ H20 M10 ~ M20	<ul style="list-style-type: none"> <li>High speed milling grade for hardened steel, cast iron, and stainless steel(Laser Mill)</li> <li>New coating and ultra fine grain provide wear resistance and oxidation resistance</li> <li>TiAlN Series new coating</li> </ul>
PC2505	H01 ~ H10 P01 ~ P10	<ul style="list-style-type: none"> <li>Roughing grade for high hardened steel and pressed die steel</li> <li>Excellent wear resistance ideal for machining die steel and high hardened steel over Hrc50</li> </ul>
PC2510	H05 ~ H15 P05 ~ P15	<ul style="list-style-type: none"> <li>Roughing grade for pre-hardened steel and plastic die steel</li> <li>Stabilized toughness ideal for interrupted cutting of high hardened steel and wet cutting accompanied by massive thermal shock</li> </ul>

## Uncoated Carbide Grades

### Uncoated carbide grades for turning application of titanium

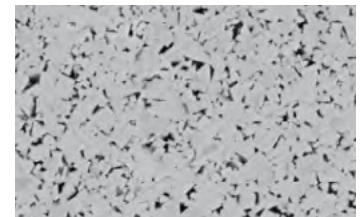
# H01

- 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

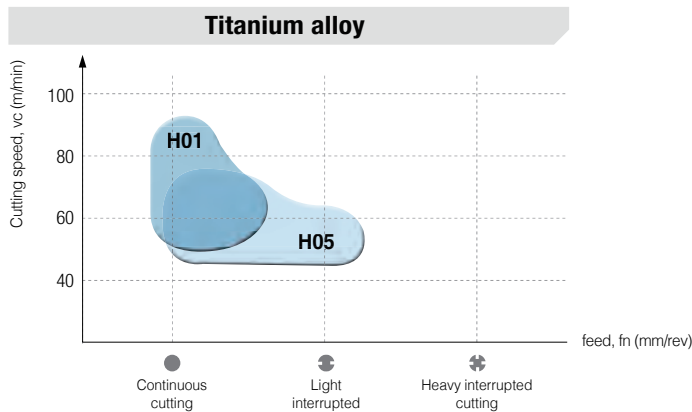


# H05

- The 1<sup>st</sup> 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



### Grades line-up



### Selection system of uncoated carbide grades

Workpiece	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
<b>P</b> Steel	ST30A	80(60 ~ 100)	P30	ST30A
<b>K</b> Cast iron	H01	120(90 ~ 150)	K01	
	H05	105(80 ~ 130)	K10	H01 H05
	G10	90(65 ~ 115)	K20	G10
<b>N</b> Non-ferrous metal (Aluminum alloy, Copper alloys)	H01	440(220 ~ 660)	N10	H01
	H05	395(195 ~ 595)	N20	H05

### Main composition and application range

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

## Cermet Grade

### Cermet grade for Milling of steel

# CN30

- 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

Workpiece	Machining types	Grade	Recommended cutting speed (m/min)	ISO	Application range
P Steel	Interrupted cutting	CN30	150 (100 ~ 200)	P30	CN30

### The features of cermet grades

Grade	ISO	Features
CN30	P25 ~ P35	<ul style="list-style-type: none"> <li>• For milling of steel</li> <li>• Cermet with high toughness</li> </ul>

### The physical properties of cermet grades

Workpiece	Grade	Hardness (Hv)	TRS (kgf/mm <sup>2</sup> )	SG (g•cm-3)
P Steel	CN30	< 1500	240 <	7.0 ~ 7.3

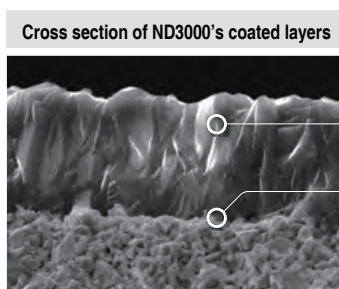
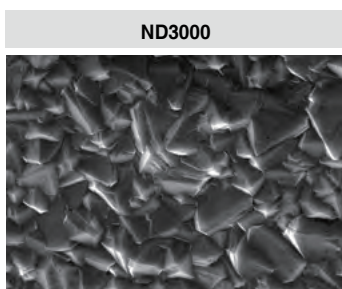
## Diamond Coated Grades

### Diamond coating grade for Non-ferrous steel

# ND3000

- 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

### Features

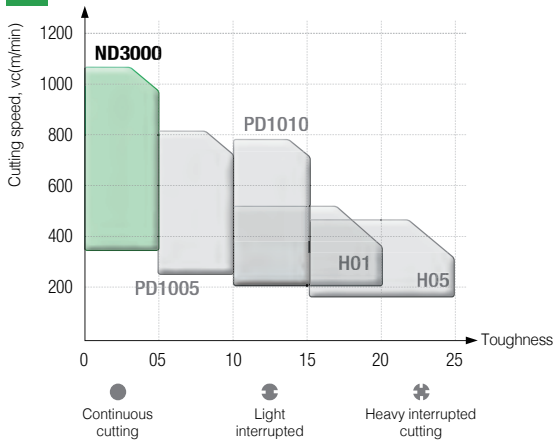


{ Micro diamond coating technology

{ High adherence coating technology

### Application range

#### N Non-ferrous metal



### Selection system

Workpiece		Grade	ISO	Application range
N	Non-ferrous	Graphite/ Ceramic	ND3000	ND3000
		Al alloy	ND3000	

### The features of diamond coated grades

Grade	ISO	Features
ND3000	N01 ~ N05	<ul style="list-style-type: none"> <li>• For continuous roughing of graphite, ceramic, and Al alloy at high speeds</li> <li>• Exceptional cutting performance due to high resistance to wear and flaking</li> <li>• High hardness diamond coatings of high purity SP3-crystalline structure</li> </ul>

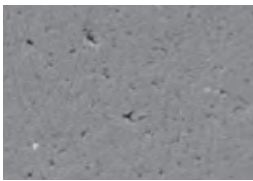
## DLC Coated Grades

### DLC-Coated Inserts for Non-ferrous steel

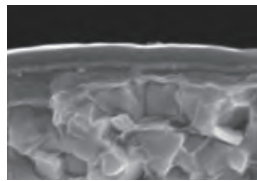
# PD1005 / PD1010

- High hardness and low friction DLC coating technology
- Lubrication and maximized wear resistance increase 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



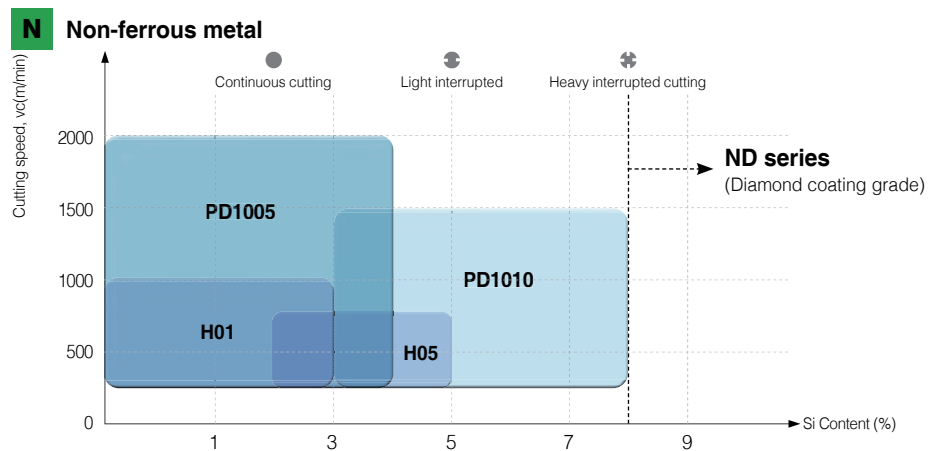
Smooth coating surface



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	Aluminum and copper (Soft non-ferrous metals)	PD1005	N05	
	Aluminum alloy	PD1005 PD1010	N10	
	Al-Si alloy (Hardened non-ferrous metals)	PD1010	N15	

### The features of DLC coating grades

Grade	ISO	Features
PD1005	N05~N10	<ul style="list-style-type: none"> <li>• For high speed and continuous machining of Aluminum and copper</li> <li>• High wear and welding resistance realize good machinability</li> <li>• High performance of DLC coating with high hardness and low friction</li> </ul>
PD1010	N10~N15	<ul style="list-style-type: none"> <li>• For medium to high and interrupted machining of aluminum alloy and Al-Si alloy</li> <li>• Stable tool life due to substrate with chipping resistance</li> <li>• High performance DLC coating with high hardness and low friction</li> </ul>

## PCD Insert Grades

### PCD Insert grade for Non-ferrous steel

# DP90 / DP150 / DP200

- 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

### 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

### PCD grade

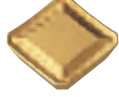

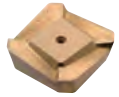













Grade	Features	Application	Grain size ( $\mu\text{m}$ )	Force of resistance(Gpa)
DP90	Coarse diamond grain has been used to get excellent wear resistance enough to machine cemented-carbide, high Si aluminum alloy	Cemented carbide Ceramic roughing High Si aluminum alloy Rock, Stone	25 ~ 30	$\approx 1.10$
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	$\approx 1.95$
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	$\approx 2.45$

### Recommended cutting condition

Workpiece	Cutting speed (m/min)	Feed Turning(mm/rev) Milling(mm/t)	Depth of cut (mm)	Recommended grade	
				1st	2nd
Aluminum alloy (4%~8%Si)	1000 ~ 3000	0.1 ~ 0.6	~ 3	DP150	DP200
Aluminum alloy (9%~14%Si)	600 ~ 2500	0.1 ~ 0.5	~ 3	DP150	DP200
Aluminum alloy (15%~18%Si)	300 ~ 700	0.1 ~ 0.4	~ 3	DP150	DP200
Copper, Bronze alloy	~ 1000	0.05 ~ 0.2	~ 3	DP150	DP200
Reinforced plastic	~ 1000	0.1 ~ 0.3	~ 2	DP150	DP200
Wood	~ 4000	0.1 ~ 0.4	-	DP150	DP200
Cemented carbide	10 ~ 30	~ 0.2	~ 0.5	DP90	DP150



















## Chip Breakers for Milling

Picture	Cutting edge	Application range																Features									
		feed rate $f_n$ (mm/rev)																									
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.80	1.20	1.40	1.60	depth of cut ap (mm)													
0.1	0.5	1	2	3	4	5	6	8	10	15	20																
MX series 		0.10-0.30																<b>For Roughing</b>  <ul style="list-style-type: none"> <li>Possible to increase productivity through increase feed and depth</li> <li>Excellent heat resistance due to the special chip breaker design of top face of insert</li> </ul>									
		1.0-5.0																									
Mill-max Heavy 		0.20-0.40																<b>For Roughing</b>  <ul style="list-style-type: none"> <li>Specialized tool for high depth of cut roughing with high rigidity cutting edge ensures stable machining.</li> </ul>									
		2.0-14.0																									
MA 		0.05-0.40																<b>For Aluminum machining</b>  <ul style="list-style-type: none"> <li>Sharp cutting edge for low cutting load, which is ideal for machining steel, hard-to-cut materials and aluminum</li> </ul>									
		1.0-8.0																									
Rich Mill series-RM3 		0.05-0.30																<b>For machining hard-to-cut materials</b>  <ul style="list-style-type: none"> <li>Low cutting resistance for light cutting and machining hard-to-cut materials with excellent tool life and surface roughness</li> </ul>									
		1.0-8.0																									
MM 		0.05-0.35																<b>For General cutting</b>  <ul style="list-style-type: none"> <li>Available for most of applications with universal design for general milling</li> </ul>									
		1.0-8.0																									
MA 		0.05-0.25																<b>For Aluminum machining</b>  <ul style="list-style-type: none"> <li>Sharp cutting edge design ensures low cutting resistance and excellent machining in difficult-to-cut materials, aluminum and light machining</li> </ul>									
		0.3-14.0																									
Rich Mill series-RM4 		0.05-0.30																<b>For Light cutting</b>  <ul style="list-style-type: none"> <li>Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining</li> </ul>									
		0.5-14.0																									
MM 		0.05-0.30																<b>For General cutting</b>  <ul style="list-style-type: none"> <li>Suitable geometry design for general milling has wider ranges of machining</li> </ul>									
		1.0-14.0																									

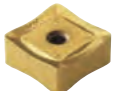


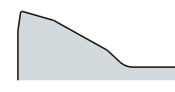

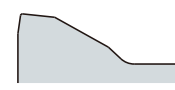










Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

Picture	Cutting edge	Application range														Features
		feed rate $f_n$ (mm/rev)														
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.80	1.20	1.40	1.60			
depth of cut $a_p$ (mm)																
0.1	0.5	1	2	3	4	5	6	8	10	15	20					
<b>Rich Mill series-RM6</b>  <b>MA</b>  <b>ML</b>  <b>MM</b>		0.05-0.20													1.0-8.2	<b>For Aluminum machining</b> <ul style="list-style-type: none"> <li>Specialized sharp cutting edge for aluminum machining ensures machinability.</li> <li>Buffing treatment on the surface realizes good chip flow and welding resistance.</li> </ul>
		0.05-0.25													1.0-8.2	<b>For Machining hard-to-cut materials</b> <ul style="list-style-type: none"> <li>Low cutting load chip breaker for light cutting</li> <li>Long tool life and high quality of machining in hard-to cut material cutting</li> </ul>
		0.05-0.25													1.0-8.2	<b>For General cutting</b> <ul style="list-style-type: none"> <li>Optimally designed shape for general shoulder milling in various cutting ranges</li> </ul>
<b>Rich Mill series-RM8</b>  <b>MA</b>  <b>MF</b>  <b>ML</b>  <b>MM</b>		0.05-0.35												0.3-6.0	<b>For Aluminum machining</b> <ul style="list-style-type: none"> <li>Sharp cutting edge and lubricated top face show excellent chip flow and welding resistance in aluminum machining</li> </ul>	
		0.05-0.35													0.3-6.0	<b>For Light cutting</b> <ul style="list-style-type: none"> <li>Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining</li> </ul>
		0.05-0.30													0.3-6.0	<b>For Machining hard-to-cut materials</b> <ul style="list-style-type: none"> <li>Chip breaker with low cutting load resistance ensures long tool life and high quality in light and difficult-to-cut material cutting.</li> </ul>
															0.10-0.40 0.5-6.0	<b>For General cutting</b> <ul style="list-style-type: none"> <li>Suitable geometry design for general milling has wider ranges of machining</li> </ul>
<b>Rich Mill series-RMT8</b>  <b>MF</b>		0.05-0.20												0.5-5.0	<b>For Light cutting</b> <ul style="list-style-type: none"> <li>Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining</li> </ul>	

















Notice: Application ranges are based on main cutting material

## Chip Breakers for Milling

Picture	Cutting edge	Application range																Features
		feed rate $f_n$ (mm/rev)																
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.80	1.20	1.40	1.60					
depth of cut ap (mm)																		
0.1	0.5	1	2	3	4	5	6	8	10	15	20							
Rich Mill series-RMT8 MM 		0.05-0.30																<b>For General cutting</b>  • Suitable geometry design for general milling has wider ranges of machining
		0.5-8.0																
ML 		0.05-0.30																<b>For Machining hard-to-cut materials</b>  • 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
		0.5-5.5																
Rich Mill series-RM8-X MM SAGX 		0.05-0.30																<b>For high hardness cutting</b>  • Stable tool life and good cutting quality due to double reverse positive relief surface and high rigidity chip breaker
		0.5-5.5																
MM SNMX 		0.10-0.30																<b>For General cutting</b>  • For general cutting range with optimal shape for general milling
		0.5-5.5																
Rich Mill series-RM14 ML Neutral 		0.05-0.30																<b>For HRSA cutting</b>  • Excellent cutting performance in heat resistance STS cutting from neutral type flat cutting edge and sharp chip breaker
		1.0-3.0																
ML Right-handed 		0.05-0.30																<b>For cast iron and STS cutting</b>  • Excellent cutting performance in general STS and cast iron cutting from right-handed helix cutting edge and sharp chip breaker
		1.0-3.0																
Rich Mill series-RM16 MA 		0.05-0.30																<b>For Aluminum machining</b>  • Sharp cutting edge design ensures low cutting resistance and excellent machining in difficult-to-cut materials, aluminum and light machining
		0.3-5.5																
MF 		0.05-0.40																<b>For Light cutting</b>  • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
		0.3-5.5																







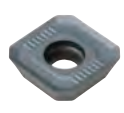

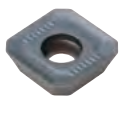







Notice: Application ranges are based on main cutting material

Chip Breakers for Milling

Picture	Cutting edge	Application range																Features	
		feed rate $f_n$ (mm/rev)																	
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.80	1.20	1.40	1.60						
depth of cut ap (mm)																			
0.1	0.5	1	2	3	4	5	6	8	10	15	20								
Rich Mill series-RM16	ML			0.05~0.35												0.3~5.5		For Machining hard-to-cut materials	<ul style="list-style-type: none"> <li>Low cutting resistance for excellent tool life and surface roughness in machining hard-to-cut materials</li> </ul>
	MM			0.10~0.45												0.5~5.5		For General cutting	<ul style="list-style-type: none"> <li>Suitable geometry design for general milling has wider ranges of machining</li> </ul>
	W			0.05~0.30												0.3~2.0		For Finishing of milling (Wiper)	<ul style="list-style-type: none"> <li>Wiper insert provides improved surface roughness due to special cutting edge</li> </ul>
Rich Mill series-RMR	ML			0.05~0.40												1.0~3.0		For Machining hard-to-cut materials	<ul style="list-style-type: none"> <li>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</li> </ul>
Alpha Mill series	MA			0.10~0.40												0.5~16		For Aluminum machining	<ul style="list-style-type: none"> <li>Sharp cutting edge and lubricated top face show excellent chip flow and welding resistance in aluminum machining</li> </ul>
	MF			0.05~0.15												0.5~16		For Light cutting	<ul style="list-style-type: none"> <li>Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining</li> </ul>
	MM			0.10~0.25												0.5~16		For General cutting	<ul style="list-style-type: none"> <li>Suitable geometry design for general milling has wider ranges of machining</li> </ul>
	ML			0.05~0.15												0.5~16		For Machining hard-to-cut materials	<ul style="list-style-type: none"> <li>The chip breaker with low cutting resistance ensures superior machinability in hard-to-cut materials</li> </ul>




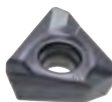
Notice: Application ranges are based on main cutting material

## Chip Breakers for Milling

Picture	Cutting edge	Application range																Features
		feed rate $f_n$ (mm/rev)																
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.80	1.20	1.40	1.60	depth of cut ap (mm)				
0.1	0.5	1	2	3	4	5	6	8	10	15	20							
Alpha Mill series <b>MN</b> 		0.10-0.25	0.5-16															<b>For Roughing (nick)</b>  • Design for easy chip cutting ensures high machinability in roughing
Alpha Mill-X series <b>MM</b> 		0.05-0.35	1.0-16.5															<b>For General cutting</b>  • Shape for general milling with most cutting range
Alpha Mill-X series <b>ML</b> 		0.05-0.30	1.0-16.5															<b>For Hard-to-cut material machining</b>  • Chip breaker for cutting with low cutting load guarantees long tool life and qualified machining in light cutting and HRSA machining
Future Mill series <b>MF</b> 		0.05-0.20	0.5-5.0															<b>For Light cutting</b>  • Special design for light cutting of gummy materials like stainless steel and hard to machine material provide fine surface finish and longer tool life
Future Mill series <b>MM</b> 		0.05-0.30	1.0-5.0															<b>For General cutting</b>  • Chip breaker design to cover general cutting condition provides wide available application range • Ground type and sintered type are
Future Mill series <b>MR</b> 		0.05-0.35	1.5-5.0															<b>For Roughing</b>  • Strongest cutting edge strength provide stable tool life even in case of severe cutting with heavy intermittent and heavy roughing
Future Mill series <b>MA</b> 		0.10-0.35	0.5-5.0															<b>For Aluminum machining</b>  • Sharp cutting edge and lubricated top face show excellent chip flow and welding resistance in aluminum machining
Future Mill series P-posi <b>MA</b> 		0.30-0.60	0.3-6.0															<b>For Aluminum machining</b>  • Excellent surface roughness due to buffed surface in machining aluminum







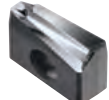










Notice: Application ranges are based on main cutting material

## Chip Breakers for Milling

Picture	Cutting edge	Application range												Features		
		feed rate $f_n$ (mm/rev)														
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.80	1.20	1.40	1.60			
		depth of cut $a_p$ (mm)														
		0.1	0.5	1	2	3	4	5	6	8	10	15	20			
Future Mill series P-posi	ML				0.3-3.0				0.30-0.50						For Hard-to-cut material machining	<ul style="list-style-type: none"> <li>• Low cutting resistance and high hardness cutting edges for excellent surface roughness in machining titanium and Inconel</li> </ul>
	MF				0.3-6.0				0.12-0.50						For Light cutting	<ul style="list-style-type: none"> <li>• Low cutting resistance for light cutting</li> </ul>
	MM				0.3-6.0				0.20-0.70						For General cutting	<ul style="list-style-type: none"> <li>• Universal purpose for most of milling applications</li> </ul>
	None C/B				0.3-0.5				0.30-0.50						For Machining high hardness steel	<ul style="list-style-type: none"> <li>• Ideal for machining high hardness mold steel and heat resistant alloy</li> </ul>
Triple Mill series	ML		0.05-0.20		1.0-15.5										For Hard-to-cut material machining	<ul style="list-style-type: none"> <li>• Stable tool life and cutting performance in hard-to-cut material cutting due to low cutting load chip breaker</li> </ul>
	MM		0.10-0.30		1.0-15.5										For General cutting	<ul style="list-style-type: none"> <li>• For general cutting range with optimal shape for general milling</li> </ul>
HFM	MF		0.1-0.4						0.30-1.0						For Light cutting	<ul style="list-style-type: none"> <li>• Chip breaker for cutting with low cutting load is optimal for light cutting</li> </ul>
	None C/B		0.1-0.4						0.30-0.80						For Machining high hardness steel	<ul style="list-style-type: none"> <li>• Shape with hard cutting edge is optimal for high hardness alloy steel machining</li> </ul>



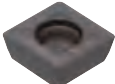





Notice: Application ranges are based on main cutting material

## Chip Breakers for Milling

Picture	Cutting edge	Application range																Features	
		feed rate $f_n$ (mm/rev)																	
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.80	1.20	1.40	1.60	depth of cut ap (mm)					
0.1	0.5	1	2	3	4	5	6	8	10	15	20								
<b>HFMD</b>  <b>ML</b>  <b>MF</b>  <b>MM</b>	  	0.2-1.0						0.30-0.80									<b>For Hard-to-cut material machining</b> <ul style="list-style-type: none"> <li>Chip breaker for cutting with low cutting load and hard cutting edge ensure high qualified machining</li> </ul>		
		0.2-1.0							0.30-1.0									<b>For Light cutting</b> <ul style="list-style-type: none"> <li>Chip breaker for cutting with low cutting load is for light cutting</li> </ul>	
		0.2-1.0								0.30-1.20									<b>For General cutting</b> <ul style="list-style-type: none"> <li>Shape for general machining with high feed is available for most machining range</li> </ul>
<b>TP2P</b>  <b>ML</b>  <b>ML</b>  <b>MM</b>	   		0.05-0.25														<b>For Aluminum machining</b> <ul style="list-style-type: none"> <li>Sharp cutting edge for aluminum machining ensures good machinability</li> <li>Buffed surface realizes chip flow and welding resistance</li> </ul>		
			0.05-0.25																<b>For Hard-to-cut material machining</b> <ul style="list-style-type: none"> <li>Chip breaker for cutting with low cutting load guarantees long tool life and qualified machining in light cutting and HRSA machining</li> </ul>
			0.05-0.25																<b>For General cutting</b> <ul style="list-style-type: none"> <li>Specialized shape for general slotting is applicable in most cutting ranges</li> </ul>
<b>Pro-XL MIII</b>  <b>MA</b>			0.05-0.20												10-57		<b>For Aluminum machining</b> <ul style="list-style-type: none"> <li>Sharp cutting edge with buffing on the surface for aluminum machining ensures chip flow and welding resistance</li> </ul>		
<b>Pro-V MIII</b>  <b>MA</b>				0.10-0.30												1.0-17	<b>For Aluminum machining</b> <ul style="list-style-type: none"> <li>Shape for general slotting is applicable in most cutting ranges</li> </ul>		

Notice: Application ranges are based on main cutting material

Chip Breakers for Drilling

Picture	Cutting edge	Application range																Features								
		feed rate $f_n$ (mm/rev)																								
		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.80	1.20	1.40	1.60													
depth of cut $a_p$ (mm)																										
0.1																0.5	1	2	3	4	5	6	8	10	15	20
King Drill series	PD			0.04-0.20		60-300										<p><b>For General cutting</b></p> <ul style="list-style-type: none"> <li>Chip breaker with strong cutting edge for universal applications with steel, stainless steel, and cast iron</li> </ul>										
	LD			0.04-0.15		40-250										<p><b>For Light cutting</b></p> <ul style="list-style-type: none"> <li>Superior chip control in machining of mild steel, forged steel and stainless steel</li> </ul>										
	RD			0.04-0.20		60-300										<p><b>Reinforced chipping resistance</b></p> <ul style="list-style-type: none"> <li>Improved central chipping resistance due to reinforced corners of the King Drill central inserts</li> <li>Excellent cutting performance even in machining where there is frequent corner breakage of central inserts</li> <li>e.g. Machining heat-treated steel or stainless steel, and high feed machining, etc.</li> </ul>										
	ND			0.04-0.10		100-400										<p><b>Non-ferrous metals</b></p> <ul style="list-style-type: none"> <li>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</li> </ul>										

Notice: Application ranges are based on main cutting material





# MILLING

Milling tools that provide the best quality and improve productivity for every customer needs.

## Technical Information for MILLING

### Inserts

- B2** Milling Insert Code System (ISO)
- B4** Milling Inserts
- B34** KORLOY Cutters
- B41** KORLOY Shanks
- B45** KORLOY Modular Adaptors

### Face Milling Cutters

- B47** Mill Max / Mill Max Plus
- B57** Mill Max Heavy
- B59** Turbo Mill
- B62** Double Mill
- B64** Power Buster
- B70** Rich Mill
- B148** Aero Mill / Aero Mill Plus / Aero Mill Mini
- B157** PCD Face Cutter

### Cutters for Molds

- B158** Alpha Mill-X
- B166** Alpha Mill / Alpha Mill Nick
- B203** Future Mill / FMR P-Positive
- B256** Triple Mill
- B263** HFMD
- B277** HFM
- B283** HRMD
- B300** HRM
- B306** Tank Mill
- B307** TP2P
- B316** TP8P
- B320** Laser Mill / GBE / BRE
- B339** HAVE(Single-edge, Multi-edge)
- B343** BT/HSK Tooling System(Alpha Mill, Mono Tool)
- B355** HSK Tooling System(Alpha Mill, Mono Tool, Pro-V Mill)
- B367** O-ring Cutters
- B369** Chamfer Tool
- B374** T-Cutter



### Milling Cutter for Aluminum

- B375** Pro-A Mill
- B380** Pro-X Mill
- B387** Pro-L Mill
- B393** Pro-XL Mill
- B395** Pro-V Mill
- B400** Modular Adaptor

### Side Milling Cutters

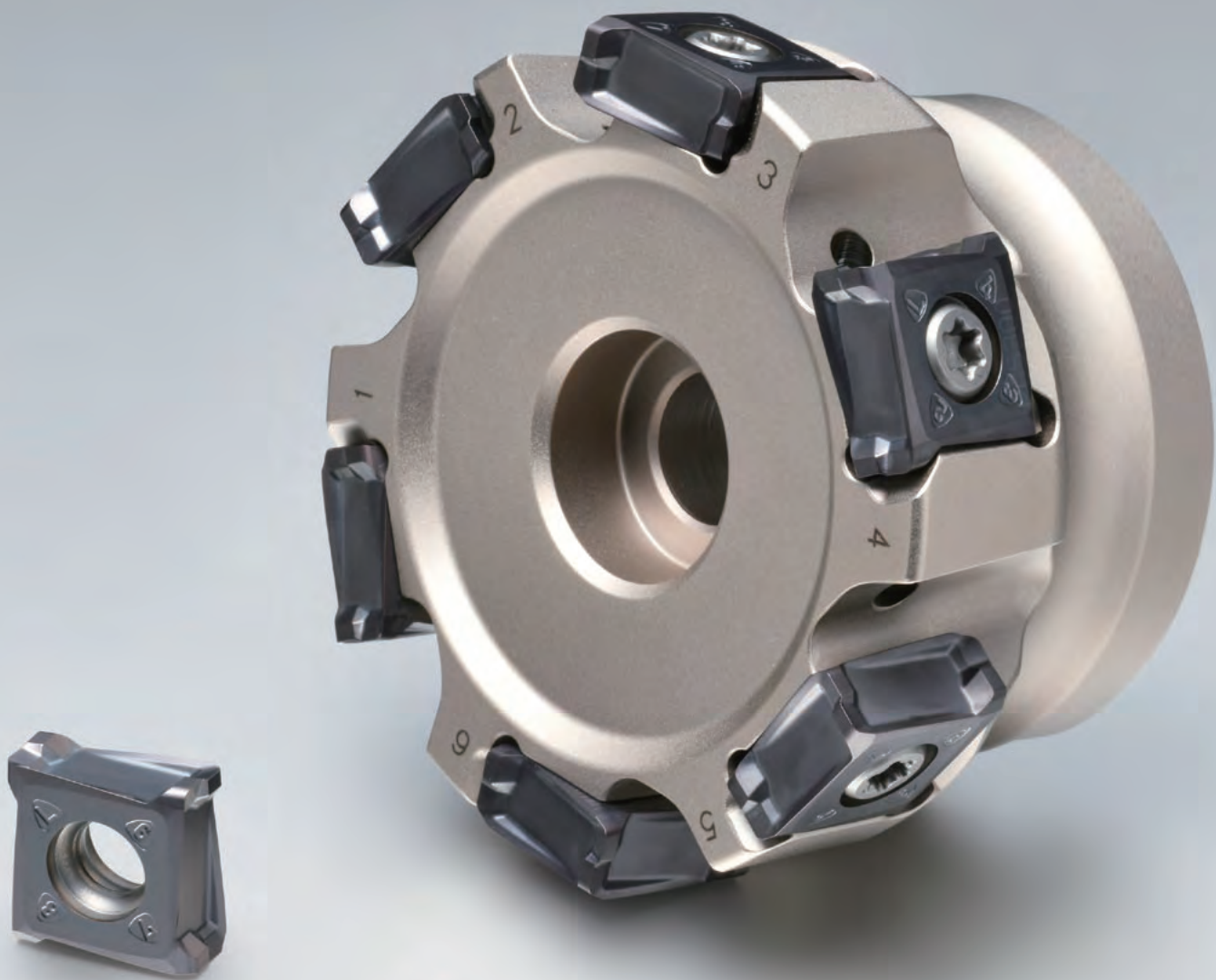
- B404** Adjusting Side Cutter
- B410** Side Cutter
- B413** Wind Mill

### High feed Cutter

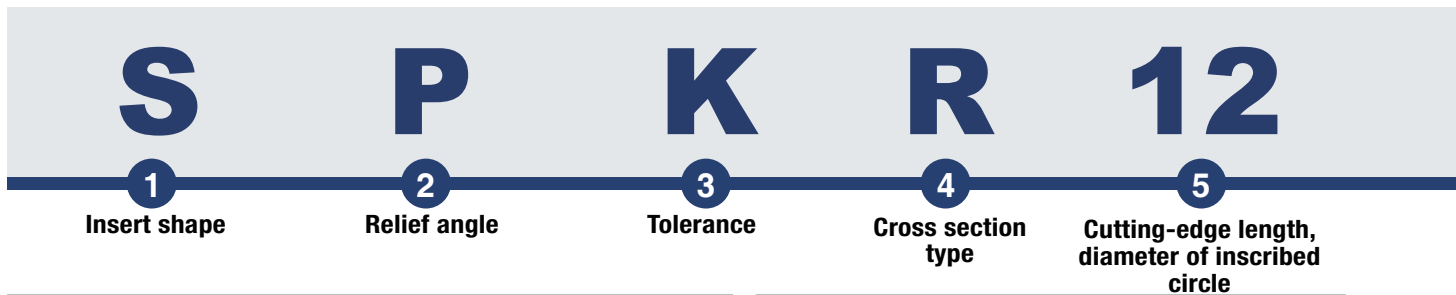
- B417** High feed Cutter
- B419** Cube Mill
- B420** Couple Mill
- B422** Shave Mill
- B424** Shave Mill Ultra

### Gear Tools

- B425** Gear Cutter Applicable Example
- B426** Gear Cutter Table
- B427** Gear Cutter
- B434** Gear Cutter Order Form
- B435** Indexable HOB
- B436** Indexable HOB Cutter Order Form



# B Milling Insert Code System (ISO)



### 1 Insert shape

**S** **P** **K** **R** 12 03 <sup>ED</sup><sub>08</sub> **S** **R** - **MX**

### 2 Relief angle

**S** **P** **K** **R** 12 03 <sup>ED</sup><sub>08</sub> **S** **R** - **MX**

### 3 Tolerance

**S** **P** **K** **R** 12 03 <sup>ED</sup><sub>08</sub> **S** **R** - **MX**

IC : Incribed circle  
S : Thickness  
M : Refer to figure

Tolerance on C,E,H,M,O,P,R,S,T,W Insert Shape (exceptional case) (mm)

Class	IC	M	S	Tolerance on IC		Tolerance on M	
				J,K,L,M,N	U	M,N	U
A	±0.025	±0.005	±0.025	6.35	±0.05 ±0.08	±0.08	±0.13
C	±0.025	±0.013	±0.025	9.525	±0.05 ±0.08	±0.08	±0.13
H	±0.013	±0.013	±0.025	12.7	±0.08 ±0.13	±0.13	±0.20
E	±0.025	±0.025	±0.025	15.875	±0.10 ±0.18	±0.15	±0.27
G	±0.025	±0.025	±0.13	19.05	±0.10 ±0.18	±0.15	±0.27
J	±0.05~±0.15	±0.005	±0.025	25.4	±0.13 ±0.25	±0.18	±0.38
K	±0.05~±0.15	±0.013	±0.025	Tolerance on D Insert Shape (exceptional case)			
L	±0.05~±0.15	±0.025	±0.025	<b>IC</b>	<b>Tolerance on IC</b>	<b>Tolerance on M</b>	
M	±0.05~±0.15	±0.08~±0.20	±0.13	6.35	±0.05	±0.11	
U	±0.08~±0.25	±0.13~±0.38	±0.13	9.525	±0.05	±0.11	
				12.7	±0.08	±0.15	
				15.875	±0.10	±0.18	
				19.05	±0.10	±0.18	

### 4 Cross section type

**S** **P** **K** **R** 12 03 <sup>ED</sup><sub>08</sub> **S** **R** - **MX**

### 5 Cutting-edge length, diameter of inscribed circle

**S** **P** **K** **R** 12 03 <sup>ED</sup><sub>08</sub> **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

Symbol	06	09	11	16	22	27	33	44
△	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(C)	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

**03**

**ED  
08**

**S**

**R - MX**

**6**

Height of cutting-edge

**7**

Nose radius (Nose R)

**8**

Edge preparation

**9**

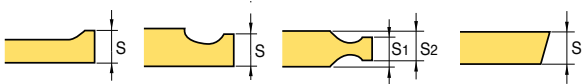
Hand

**10**

Chip breaker for milling

**6** Height of cutting-edge

S P K R 12 03 **ED 08** S R - MX

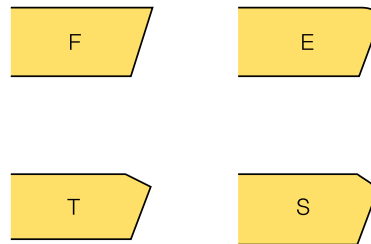


Symbol		Height of cutting-edge (t)	
Metric	Inch	Metric	Inch
01	1(2)	1.59	1/16
T0	1.125	1.79	9/128
T1	1.2	1.98	5/64
02	1.5(3)	2.38	3/32
T2	1.75	2.78	7/64
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
122	8(16)	12.70	1/2

( ) Symbol for small size insert

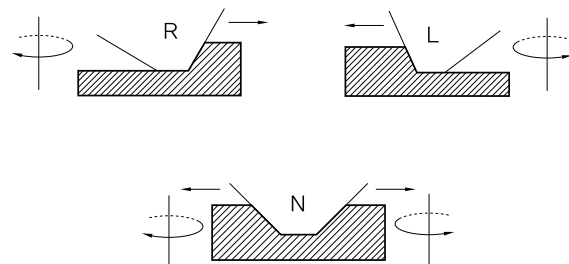
**8** Edge preparation

S P K R 12 03 **ED 08** S R - MX



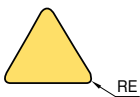
**9** Hand

S P K R 12 03 **ED 08** S R - MX

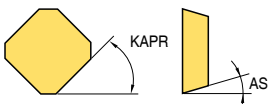


**7** Nose radius (Nose R)

S P K R 12 03 **ED 08** S R - MX



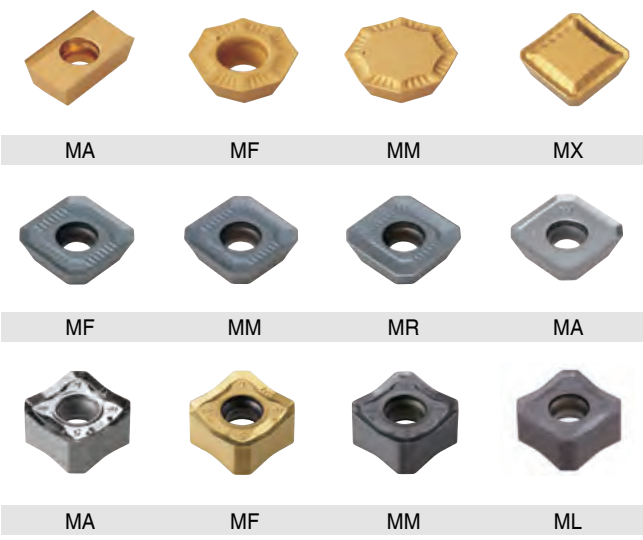
Symbol		RE		Symbol		RE	
Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch
00	0	0.0		12	3	1.2	3/64
02		0.2		15		1.5	
04	1	0.4	1/64	16	4	1.6	4/64
05		0.5		24	6	2.4	6/64
08	2	0.8	2/64	32	8	3.2	8/64
10		1.0		40		4.0	



Parallel Land		Relief Angle	
KAPR		AS	
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			


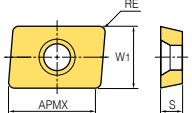



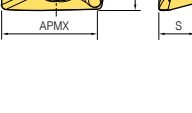

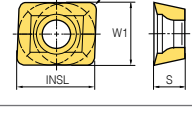

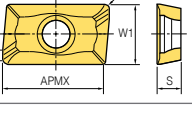

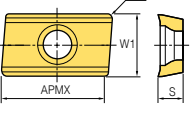

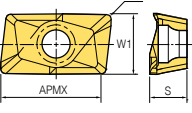

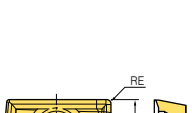

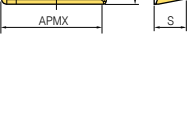

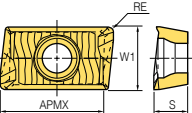
**10** Chip breaker for milling

S P K R 12 03 **ED 08** S R - MX



# B Milling Inserts

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


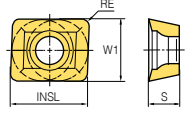

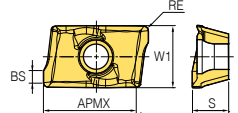

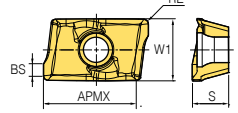

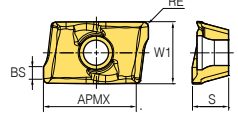
Picture	Designation	Cermet	Coated							Uncoated			Dimension (mm)							Geometry	Page					
			CN30	NCM325	NCM335	NCM535	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400	G10	H01	H05	INSL	W1	S/S1			RE	BS	APMX	KAPR(°)	
	150308R														15	9.525	3.18	0.8	-	-	-					-
	150308SR														15	9.525	3.18	0.8	-	-	-					
	150308TR	●													15	9.525	3.18	0.8	-	-	-					
	10T304PEER-ML				●	●	●	●	●	●	●				11.7	6.424	3.819	0.4	0.96	9.5	90				B162 ~ B165	
	120408PESR-ML				●	●	●	●	●	●	●				14.5	7.813	4.824	0.8	1.71	11.5	90					
	170608PESR-ML				●	●	●	●	●	●	●				19.665	10.843	6.529	0.8	3.5	16.5	90					
	10T304PESR-MM				●	●	●	●	●	●	●				11.7	6.424	3.819	0.4	1.2	9.5	90				B162 ~ B165	
	10T308PESR-MM										●	●			11.7	6.424	3.819	0.8	0.8	9.5	90					
	10T312PESR-MM										●	●			11.7	6.424	3.819	1.2	0.4	9.5	90					
	120408PESR-MM				●	●	●	●	●	●	●				14.5	7.813	4.824	0.8	1.71	11.5	90					
	120412PESR-MM				●	●	●	●	●	●	●				14.5	7.813	4.824	1.2	1.21	11.5	90					
	120416PESR-MM				●	●	●	●	●	●	●				14.5	7.813	4.824	1.6	0.85	11.5	90					
	170604PESR-MM										●	●			19.665	10.843	6.529	0.4	3.17	16.5	90					
	170608PESR-MM				●	●	●	●	●	●	●				19.665	10.843	6.529	0.8	3.3	16.5	90					
	170616PESR-MM				●	●	●	●	●	●	●				19.665	10.843	6.529	1.6	2.5	16.5	90					
170620PESR-MM				●	●	●	●	●	●	●				19.665	10.843	6.529	2	2.1	16.5	90						
	150308R				●						●				15	9.525	3.18	0.8	-	-	88				B306	
	150308SR										●				15	9.525	3.18	0.8	-	-	88					
	150308TR											●			15	9.525	3.18	0.8	-	-	88					
	1604PDSR				●		●								16.9	9.525	4.76	0.8	2.263	16.4	90				B177 B190	
	1604PDFR-MA											●	●		16.9	9.525	4.76	0.2	1.915	16.4	90				B177 B190	
	160416FR-MA											●			16.9	9.525	5.67	1.6	-	16.4	90					
	1604PDFR-MA2											●			17.317	9.518	5.67	0.8	-	16.5	90				B177 B190	
	160416FR-MA2														16.51	9.518	5.553	1.6	-	16.5	90					
	160432FR-MA2														16.544	9.518	5	3.2	-	16.5	90					
	1604PDFR-MA3											●	●	●	17	9.44	5	0.8	2.15	16.4	90				B177 B190	
	160420FR-MA3														17	9.44	5	2	-	16	90					
	1604PDSR-MF				●						●				17.04	9.525	5	0.8	2.15	16.4	90				B177 B190 B199	
	1604PDSR-MM				●	●	●	●	●	●					17.04	9.525	5	0.8	2.15	16.4	90				B177 B190 B199	

● : Stock item

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

●	Continuous cutting
●	General cutting
●	Interrupted cutting


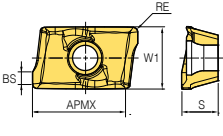

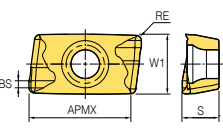

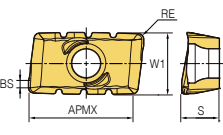
Picture	Designation	Cermet	Coated								Uncoated		Dimension (mm)							Geometry	Page						
			CN30	NC5330	NCM535	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400	H01	H05	INSL	W1	S/S1			RE	BS	APMX	KAPR(°)		
	<b>070304R</b>														7	6.35	3.18	0.4	-	-	88		B306				
	<b>0602PDRF-MA</b>												●		6.876	4.24	2.6	0.4	0.786	6	90		B173 B202 B344 B364				
	<b>060208PDRF-MA</b>														6.876	4.24	2.6	0.8	0.443	6	90						
	<b>0903PDRF-MA</b>												●		10.908	6.21	3.6	0.4	1.477	9.4	90						
	<b>090308PDRF-MA</b>														10.908	6.21	3.6	0.8	1.092	9.4	90						
	<b>11T3PDRF-MA</b>												●		12.145	6.467	3.6	0.5	1.092	11.2	90						
	<b>11T308PDRF-MA</b>														12.145	6.467	3.6	0.8	0.797	11.2	90						
	<b>160404PDRF-MA</b>														18.262	9.41	5.76	0.4	1.414	16.4	90						
	<b>1604PDRF-MA</b>												●		17.815	9.41	5.76	0.8	0.9849	16.4	90						
	<b>180604PDRF-MA</b>												●		18.808	10.98	6.35	0.4	2.512	17.4	90						
	<b>1806PDRF-MA</b>												●		18.808	10.98	6.35	0.8	2.269	17.4	90						
	<b>180612PDRF-MA</b>														18.808	10.98	6.35	1.2	1.698	17.4	90						
<b>180616PDRF-MA</b>														18.808	10.98	6.35	1.6	1.299	17.4	90							
<b>180620PDRF-MA</b>												●		18.808	10.98	6.35	2	0.899	17.4	90							
<b>180624PDRF-MA</b>														18.808	10.98	6.35	2.4	0.459	17.4	90							
<b>180630R-MA</b>												●		18.808	10.98	6.35	3	-	17.4	90							
	<b>11T3PDSR-MF</b>		●			●	●			●	●			12.045	6.467	3.6	0.5	1.2	11.2	90		B175 B202 B346 B364					
	<b>1604PDSR-MF</b>		●			●	●			●	●			17.62	9.41	5.76	0.8	1.1	16.4	90							
	<b>1806PDSR-MF</b>						●			●				18.7	10.98	6.35	0.8	2.2	17.4	90							
<b>180612PDSR-MF</b>													18.7	10.98	6.35	1.2	1.8	17.4	90								
	<b>0903PDER-ML</b>											●	●	10.908	6.21	3.6	0.4	1.477	9.4	90		B174 B202 B345 B362					
	<b>090308PDER-ML</b>											●		10.908	6.21	3.6	0.8	1.092	9.4	90							
	<b>11T3PDER-ML</b>											●	●	12.145	6.467	3.6	0.5	1.092	11.2	90							
	<b>11T308PDER-ML</b>											●	●	12.145	6.467	3.6	0.8	0.797	11.2	90							

● : Stock item

# B Milling Inserts

Workpiece	Machining types	
	P	M
Steel	●	●
Stainless steel	●	●
Cast iron	●	●
Non-ferrous metal	●	●
Heat resistant alloy, Titanium alloy	●	●
Hardened steel	●	●



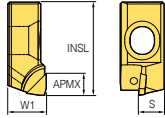








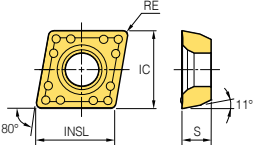
Continuous cutting  
 General cutting  
 Interrupted cutting

Picture	Designation	Coated										Dimension (mm)								Geometry	Page			
		CN30	NC5330	NCM535	PC2505	PC2510	PC3700	PC6100	PC9590	PC9540	PC5300	PC5535	PC5400	H01	H05	INSL	W1	S/S1	RE			BS	APMX	KAPR(°)
<b>APMT-ML</b> 	160404PDER-ML														17.815	9.41	5.76	0.4	1.414	16.4	90		B176 ~ B199 ~ B347 ~ B364	
	1604PDER-ML														17.815	9.41	5.76	0.8	0.9849	16.4	90			
	180604PDER-ML														18.808	10.98	6.35	0.4	2.512	17.4	90			
	1806PDER-ML														18.808	10.98	6.35	0.8	2.269	17.4	90			
	180612PDER-ML														18.808	10.98	6.35	1.2	1.698	17.4	90			
	180616PDER-ML														18.808	10.98	6.35	1.6	1.299	17.4	90			
	180620PDER-ML														18.808	10.98	6.35	2	0.899	17.4	90			
	180624PDER-ML														18.808	10.98	6.35	2.4	0.459	17.4	90			
180630R-ML														18.808	10.98	6.35	3	-	17.4	90				
<b>APMT-MM</b> 	060202PDSR-MM		●			●							●	●	6.79	4.24	2.6	0.2	1.1	6	90		B173 ~ B202 ~ B344 ~ B364	
	0602PDSR-MM		●		●	●	●	●					●	●	6.79	4.24	2.6	0.4	0.9	6	90			
	060208PDSR-MM		●				●							●	●	6.79	4.24	2.6	0.8	0.5	6			90
	060212R-MM		●											●	●	6.79	4.24	2.6	1.2	0.1	6			90
	060216R-MM *		●											●	●	6.79	4.24	2.6	1.6	-	6			90
	0903PDSR-MM		●		●	●	●							●	●	10.84	6.21	3.6	0.4	0.9	9.4			90
	090308PDSR-MM		●				●							●	●	10.84	6.21	3.6	0.8	0.5	9.4			90
	090312R-MM						●							●	●	10.84	6.21	3.6	1.2	-	9.4			90
	090316R-MM						●							●	●	10.84	6.21	3.6	1.6	-	9.4			90
	090320R-MM						●							●	●	10.84	6.21	3.6	2	-	9.2			90
	090332R-MM *						●							●	●	10.84	6.21	3.6	3.2	-	9.2			90
	11T3PDSR-MM		●	●	●	●	●	●						●	●	12.045	6.467	3.6	0.5	1.2	11.2			90
	11T308PDSR-MM		●				●		●	●	●	●	●	●	12.045	6.467	3.6	0.8	0.9	11.2	90			
	11T312PDSR-MM		●				●		●	●	●	●	●	●	12.045	6.467	3.6	1.2	0.5	11.2	90			
	11T316R-MM		●				●		●	●	●	●	●	●	12.045	6.467	3.6	1.6	-	11	90			
	11T318R-MM		●				●		●	●	●	●	●	●	12.045	6.467	3.6	1.8	-	11	90			
	11T324R-MM		●				●		●	●	●	●	●	●	12.045	6.467	3.6	2.4	-	11	90			
	160404PDSR-MM														17.62	9.41	5.76	0.4	1.9	16.4	90			
	1604PDSR-MM			●	●	●	●	●	●	●	●	●	●	●	17.62	9.41	5.76	0.8	1.1	16.4	90			
	160410PDSR-MM				●	●									17.62	9.41	5.76	1	0.9	16.4	90			
	160416PDSR-MM					●									17.62	9.41	5.76	1.6	0.3	16.4	90			
	160420R-MM														17.62	9.41	5.76	2	-	16	90			
	160424R-MM														17.62	9.41	5.76	2.4	-	16	90			
	160430R-MM														17.62	9.41	5.76	3	-	16	90			
	160432R-MM			●			●								17.62	9.41	5.76	3.2	-	16	90			
	160450R-MM *						●								17.62	9.41	5.76	5	-	16	90			
	160464R-MM *						●								17.62	9.41	5.76	6.4	-	16	90			
	1806PDSR-MM			●		●	●	●	●	●	●	●	●	●	18.7	10.98	6.35	0.8	2.2	17.4	90			
	180612PDSR-MM			●			●								18.7	10.98	6.35	1.2	1.8	17.4	90			
	180616PDSR-MM														18.7	10.98	6.35	1.6	1.4	17.4	90			
	180620PDSR-MM														18.7	10.98	6.35	2	1	17.4	90			
	180624PDSR-MM						●								18.7	10.98	6.35	2.4	0.6	17.4	90			
180630R-MM														18.7	10.98	6.35	3	-	16.7	90				
180632R-MM			●											18.7	10.98	6.35	3.2	-	16.7	90				
180640R-MM *														18.7	10.98	6.35	4	-	16.7	90				
180648R-MM *														18.7	10.98	6.35	4.8	-	16.7	90				
180650R-MM *														18.7	10.98	6.35	5	-	16.7	90				
180660R-MM *														18.7	10.98	6.35	6	-	16.7	90				
180664R-MM *														18.7	10.98	6.35	6.4	-	16.7	90				
<b>APMT-MN</b> 	11T3PDSR-MN2													12.045	6.467	3.6	0.5	1.2	11.2	90		B175 ~ B202 ~ B346 ~ B364		
	11T3PDSR-MN3													12.045	6.467	3.6	0.5	1.2	11.2	90				
	1604PDSR-MN3														17.62	9.41	5.76	0.8	1.1	16.4			90	
	1604PDSR-MN4														17.62	9.41	5.76	0.8	1.1	16.4			90	
	1806PDSR-MN3														18.7	10.98	6.35	0.8	2.2	17.4			90	
	1806PDSR-MN4														18.7	10.98	6.35	0.8	2.2	17.4			90	

\* Inserts marked with an asterisk(\*) require a custom - made order for special holders.

● : Stock item

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

Picture	Designation	Cermet	Coated						Uncoated	PCD			Dimension (mm)					Geometry	Page			
			CN30	NC5330	NCM535	PC3700	PC6100	PC9540		PC5300	PC5535	PC5400	G10	H01	DP90	DP150	DP200			INSL	IC	S/S <sub>1</sub>
	BAMPR-XAF										●				25.6	-	7	0.2	5.9	10.5		
	BAMPR-XAW										●	●			25.6	-	7	-	5.9	10		B152 ~ B153
	BAMPR-XAWR										●	●			25.6	-	7	0.2	5.9	10		
	1204R-NAF 1204L-NAF										●				12.7	9.525	4.76	0.2	-	-		
Strengthened Edge																						
	1204R-NAW 1204L-NAW														12.7	9.525	4.76	0.2	-	-		
Strengthened Edge Wiper Insert																						
	1204R-XAW 1204L-XAW										●	●			12.7	9.525	4.76	0.2	-	-		
Sharp Edge Wiper Insert																						
	1204R-XAF 1204L-XAF										●	●			12.7	9.525	4.76	0.2	-	-		
Sharp Edge																						
	1204R-XCF 1204L-XCF										●				12.7	9.525	4.76	-	-	-		
Sharp Edge																						
	1005-C0.5 1305-C0.5 1606-C0.5														10 12.7 16	10 10 12	5.4 5.4 6.4	- - -	- - -	- - -		
	120408-MM				●										12.7	-	4.76	0.8	18	12.7		B374


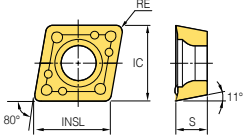

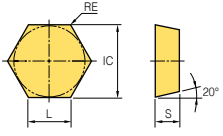

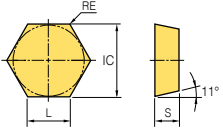

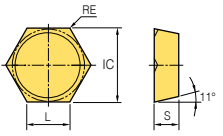

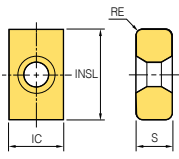

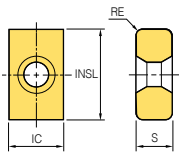

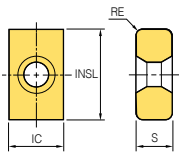

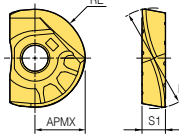

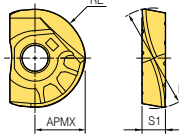
● : Stock item



# B Milling Inserts


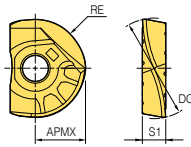

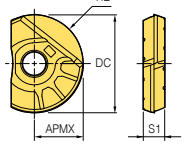

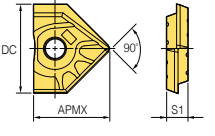
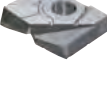
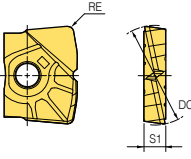

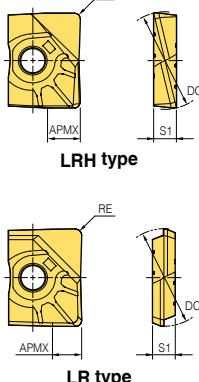
Workpiece	Steel	P	●	●	●	●	●	●	●	●	Machining types						
	Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●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

● Continuous cutting  
 ● General cutting  
 ✱ Interrupted cutting

Picture	Designation	Cermet	Coated								Uncoated		Dimension (mm)						Geometry	Page				
			CN30	PC2005	PC2010	PC2015	PC210F	PC3700	PC6100	PC9530	PC5300	PC5535	PC5400	ND3000	H01	H05	DC	INSL			IC	S/S <sub>1</sub>	RE	APMX
	060204-MM						●										-	6.35	6.35	2.38	0.4	9		B374
	080308-MM						●										-	7.938	7.938	3.18	0.8	11		
	09T308-MM							●										-	9.525	9.525	3.97	0.8		
	090408FN																-	9	15.875	4.76	0.8	-		-
	090408SN																-	9	15.875	4.76	0.8	-		
	090408TN																-	9	15.875	4.76	0.8	-		
	110412FN																-	11	19.05	4.76	1.2	-		
	110412TN																-	11	19.05	4.76	1.2	-		
	090408FN																-	9	15.875	4.76	0.8	-		-
	090408SN																-	9	15.875	4.76	0.8	-		
	090408EN																-	9	15.875	4.76	0.8	-		
	110412FN																-	11	19.05	4.76	1.2	-		
	090408-WC																-	9	15.875	4.76	0.8	-		-
	110412-WC																-	11	19.05	4.76	1.2	-		
	150608-MF																-	15.875	9.525	6.35	0.8	-		-
	150608-ML																-	15.875	9.525	6.35	0.8	-		
	1506QNN-MF																-	15.875	9.525	6.35	0.8	-		-
	1506QNN-ML																-	15.875	9.525	6.35	0.8	-		
	1506ANN-MF																-	15.875	9.525	6.35	0.8	-		-
	1506ANN-ML																-	15.875	9.525	6.35	0.8	-		
	080						●										8	-	-	2.4	4	4		B324 ~ B328
	100						●										10	-	-	2.6	5	5		
	120						●										12	-	-	3	6	6		
	160						●										16	-	-	4	8	8		
	200						●										20	-	-	5	10	10		
	250						●										25	-	-	6	12.5	12.5		
	300						●										30	-	-	7	15	15		
	320						●										32	-	-	7	16	16		
	080-KF																8	-	-	2.4	4	4		B324 ~ B328
	100-KF																10	-	-	2.6	5	5		
	120-KF																12	-	-	3	6	6		
	130-KF																13	-	-	3	6.5	6.5		
	160-KF																16	-	-	4	8	8		
	170-KF																17	-	-	4	8.5	8.5		
	200-KF																20	-	-	5	10	10		
	210-KF																21	-	-	5	10.5	10.5		
	250-KF																25	-	-	6	12.5	12.5		
	300-KF																30	-	-	7	15	15		
	320-KF																32	-	-	7	16	16		
330-KF																33	-	-	7	16.5	16.5			

● : Stock item

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


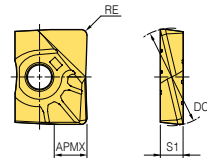




Picture	Designation	Cermet CN30	Coated								Uncoated H01 H05	Dimension (mm)				Geometry	Page		
			PC2005	PC2010	PC2015	PC210F	PC3700	PC6100	PC9530	PC5300		PC5535	PC5400	ND3000	DC			S/S1	RE
	080-KH		●											8	2.4	4	4		B324 ~ B328
	100-KH		●											10	2.6	5	5		
	120-KH		●											12	3	6	6		
	130-KH													13	3	6.5	6.5		
	160-KH		●											16	4	8	8		
	170-KH		●											17	4	8.5	8.5		
	200-KH		●											20	5	10	10		
	210-KH			●										21	5	10.5	10.5		
	250-KH													25	6	12.5	12.5		
	260-KH			●										26	6	13	13		
	300-KH			●										30	7	15	15		
	320-KH				●									32	7	16	16		
	330-KH					●								33	7	16.5	16.5		
	080													8	2.4	4	4		B324 ~ B328
	090													9	2.4	4.5	4.5		
	100													10	2.6	5	5		
	110													11	2.6	5.5	5.5		
	120													12	3	6	6		
	130													13	3	6.5	6.5		
	160													16	4	8	8		
	170													17	4	8.5	8.5		
	200													20	5	10	10		
	210													21	5	10.5	10.5		
	250													25	6	12.5	12.5		
	260													26	6	13	13		
	300													30	7	15	15		
310													31	7	15.5	15.5			
320													32	7	16	16			
	160-D90				●									16	4	-	7.7		B324 ~ B328
	200-D90				●									20	5	-	9.66		
	250-D90					●								25	6	-	11.8		
	100													10	2.6	-	0.62		B324 ~ B328
	120													12	3	-	0.71		
	160					●								16	4	-	1.02		
	200													20	5	-	1.14		
	250													25	6	-	1.56		
	300													30	7	-	1.66		
	320													32	7	-	1.83		
	100-R05					●								10	2.6	0.5	3		B324 ~ B328
	100-R10					●								10	2.6	1	3		
	100-R20													10	2.6	2	3		
	110-R05													11	2.6	0.5	3		
	120-R05						●							12	3	0.5	4		
	120-R10						●							12	3	1	4		
	120-R20													12	3	2	4		
	130-R05													13	3	0.5	4		
	130-R10													13	3	1	4		
	160-R05							●						16	4	0.5	5		
	160-R10							●						16	4	1	5		
	160-R20													16	4	2	5		
	160-R30							●						16	4	3	5		
	170-R05													17	4	0.5	5		
	170-R10													17	4	1	5		
	200-R05								●					20	5	0.5	7		
	200-R10								●					20	5	1	7		
200-R20								●					20	5	2	7			
200-R30								●					20	5	3	7			
210-R05													21	5	0.5	7			

● : Stock item

# B Milling Inserts

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

● Continuous cutting  
 ● General cutting  
 ✳ Interrupted cutting

Picture	Designation	Cermet	Coated								Uncoated		Dimension (mm)							Geometry	Page		
			CN30	PC2005	PC2010	PC2015	PC210F	PC3700	PC6100	PC9530	PC5300	PC5535	PC5400	ND3000	H01	H05	DC/INSL	IC/W1	S/S1			RE	BS
	210-R10														15.5	-	5	1	-	7	-		B324 ~ B328
	250-R05														15.5	-	6	0.5	-	9	-		
	250-R10					●									15.5	-	6	1	-	9	-		
	250-R20														18.5	-	6	2	-	9	-		
	250-R30														18.5	-	6	3	-	9	-		
	260-R05														19	-	6	0.5	-	9	-		
	260-R10														19	-	6	1	-	9	-		
	300-R10														22.5	-	7	1	-	11	-		
	300-R20														22.5	-	7	2	-	11	-		
	300-R30														22.5	-	7	3	-	11	-		
	310-R05														23	-	7	0.5	-	11	-		
	320-R10					●									23.5	-	7	1	-	12	-		
	320-R20					●									23.5	-	7	2	-	12	-		
	320-R30														23.5	-	7	3	-	12	-		
	330-R05														24	-	7	0.5	-	12	-		
	330-R10														24	-	7	1	-	12	-		
330-R20														24	-	7	2	-	12	-			
330-R30														24	-	7	3	-	12	-			
	650540PPFR-MA														57	15	5.625	4	-	57	90	B394	
	650550PPFR-MA														57	15	5.625	5	-	57	90		
	1907-C1.5-WC														14.3	19.05	7	-	16.05	0.5	-	-	
	1907-R3.0-WC														14.3	19.05	7	-	14.05	0.5	-		
	324-R0.8														15.875	9.525	6.35	0.8	-	-	-	-	
	324-C1.0														15.875	9.525	6.35	0.8	-	-	-		
	080404PNR-MA														8.593	4.2	6.6	0.4	1.117	8	90	B310 ~ B315	
	080408PNR-MA														8.593	4.2	6.6	0.8	0.717	8	90		
	080412PNR-MA														8.593	4.2	6.6	1.2	0.559	8	90		
	080416PNR-MA														8.593	4.2	6.6	1.6	-	8	90		
	140604PNR-MA														13.745	6.65	10	0.4	1.531	12	90		
	140608PNR-MA														13.745	6.65	10	0.8	1.1273	12	90		
	140612PNR-MA														13.745	6.65	10	1.2	0.7249	12	90		
	140616PNR-MA														13.745	6.65	10	1.6	0.318	12	90		
	170704PNR-MA														17.126	7	11	0.4	1.332	16.5	90		
	170708PNR-MA														17.126	7	11	0.8	0.932	16.5	90		
	170712PNR-MA														17.126	7	11	1.2	0.532	16.5	90		
	170716PNR-MA														17.126	7	11	1.6	0.132	16.5	90		
170720PNR-MA														17.126	7	11	2	-	16.5	90			

● : Stock item

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


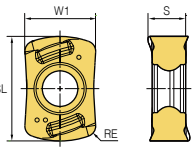

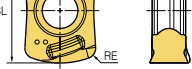

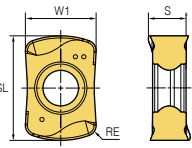

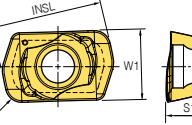

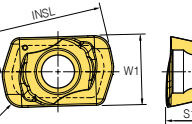
Picture	Designation	Cermet CN30	Coated							Uncoated H01 H05		Dimension (mm)							Geometry	Page	
			NC5330	NCM535	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5335	PC5400	DC/INSL	IC/W1	S/S1	RE	BS			APMX
	080404PNR-ML											8.593	4.2	6.6	0.4	1.117	8	90		B310 ~ B315	
	080408PNR-ML											8.593	4.2	6.6	0.8	0.717	8	90			
	080412PNR-ML												8.593	4.2	6.6	1.2	0.559	8			90
	080416PNR-ML												8.593	4.2	6.6	1.6	-	8			90
	140604PNR-ML												13.745	6.65	10	0.4	1.534	12			90
	140608PNR-ML												13.745	6.65	10	0.8	1.1273	12			90
	140612PNR-ML												13.745	6.65	10	1.2	0.7249	12			90
	140616PNR-ML												13.745	6.65	10	1.6	0.346	12			90
	170704PNR-ML												17.276	7	11	0.4	1.332	16.5			90
	170708PNR-ML									●	●		17.276	7	11	0.8	0.932	16.5			90
	170712PNR-ML												17.157	7	11	1.2	0.532	16.5			90
	170716PNR-ML												17.157	7	11	1.6	0.132	16.5			90
170720PNR-ML												17.157	7	11	2	-	16.5	90			
	080404PNR-MM											8.593	4.2	6.6	0.4	1.117	8	90		B310 ~ B315	
	080408PNR-MM											8.593	4.2	6.6	0.8	0.717	8	90			
	080412PNR-MM												8.593	4.2	6.6	1.2	0.559	8			90
	080416PNR-MM												8.593	4.2	6.6	1.6	-	8			90
	140604PNR-MM												13.745	6.65	10	0.4	1.531	12			90
	140608PNR-MM												13.745	6.65	10	0.8	1.1273	12			90
	140612PNR-MM												13.745	6.65	10	1.2	0.7249	12			90
	140616PNR-MM												13.745	6.65	10	1.6	0.318	12			90
	170704PNR-MM												17.126	7	11	0.4	1.332	16.5			90
	170708PNR-MM									●	●		17.126	7	11	0.8	0.932	16.5			90
	170712PNR-MM												17.126	7	11	1.2	0.532	16.5			90
	170716PNR-MM												17.126	7	11	1.6	0.132	16.5			90
170720PNR-MM												17.126	7	11	2	-	16.5	90			
	100605PNR-MA											●	10	6.5	6.5	0.5	1.7	9	90		B92 ~ B106
	151004PNR-MA											●	15	10	10	0.4	3.1	14	90		
	151008PNR-MA												●	15	10	10	0.8	2.7	14		
	LNMX 100605PNR-MF												10	6.5	6.5	0.5	1.7	9	90		B92 ~ B106
	100608PNR-MF												10	6.5	6.5	0.8	1.4	9	90		
	151004PNR-MF												15	10	10	0.4	3.1	14	90		
	151008PNR-MF												15	10	10	0.8	2.7	14	90		
	151016PNR-MF												15	10	10	1.6	1.9	14	90		
	LNEC 100605PNR-MF												10	6.5	6.5	0.5	1.7	9	90		
	100608PNR-MF												10	6.5	6.5	0.8	1.4	9	90		
	151004PNR-MF												15	10	10	0.4	3.1	14	90		
	151008PNR-MF												15	10	10	0.8	2.7	14	90		
	151016PNR-MF												15	10	10	1.6	1.9	14	90		
	LNMX 100605PNR-MM												10	6.5	6.5	0.5	1.7	9	90		B92 ~ B106
	100608PNR-MM												10	6.5	6.5	0.8	1.4	9	90		
	100605PNL-MM												10	6.5	6.5	0.5	1.7	9	90		
	151004PNR-MM												15	10	10	0.4	3.1	14	90		
	151008PNR-MM												15	10	10	0.8	2.7	14	90		
	151016PNR-MM												15	10	10	1.6	1.9	14	90		
	151008PNL-MM												15	10	10	0.8	2.7	14	90		
	LNEC 100605PNR-MM												10	6.5	6.5	0.5	1.7	9	90		
	100608PNR-MM												10	6.5	6.5	0.8	1.4	9	90		
	100605PNL-MM												10	6.5	6.5	0.5	1.7	9	90		
	151004PNR-MM												15	10	10	0.4	3.1	14	90		
	151008PNR-MM												15	10	10	0.8	2.7	14	90		
	151016PNR-MM												15	10	10	1.6	1.9	14	90		
	151008PNL-MM												15	10	10	0.8	2.7	14	90		

● : Stock item

# B Milling Inserts


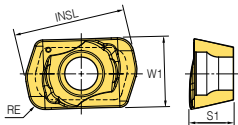

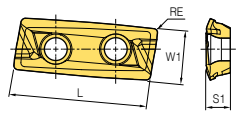

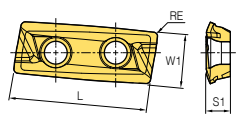
Workpiece	Machining types										
	Steel	P	M	K	N	S	H	●	●	●	●
Steel	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Picture	Designation	Cermet	Coated								Uncoated		Dimension (mm)					Geometry	Page		
			CN30	NC5330	NCM535	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400	H01	H05	INSL			W1	S/S1
	060310R-MF														10	6.8	3.6	1	1		
	100412R-MF														12.2	10	4.2	1.2	1.5		
	040205R-ML														6.2	4.2	2.35	0.5	0.5		B267 ~ B276
	060310R-ML														10	6.8	3.6	1	1		
	100412R-ML														12.2	10	4.2	1.2	1.5		
	040205R-MM														6.2	4.2	2.35	0.5	0.5		
	060310R-MM														10	6.8	3.6	1	1		
	100412R-MM														12.2	10	4.2	1.2	1.5		
	040210R														6.773	4.2	2.6	1	0.5		B280 ~ B282
	040220R														6.4	4.2	2.6	2	0.5		
	040210R-MF														6.773	4.2	2.6	1	0.5		B280 ~ B282
	040220R-MF														6.4	4.2	2.6	2	0.5		

● : Stock item

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


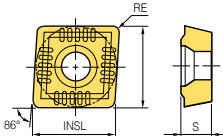

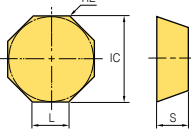

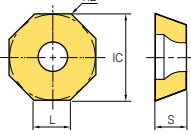


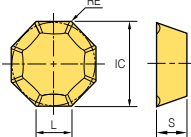


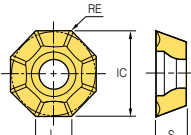

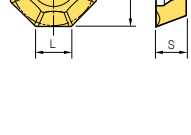
Picture	Designation	Cermet CN30	Coated							Uncoated H01 H05	Dimension (mm)							Geometry	Page			
			NC5330	NCM535	PC2505	PC2510	PC3700	PC6100	PC9530		PC9540	PC5300	PC5535	PC5400	INSL	W1	S/S1			RE	BS	APMX
	040210R				●	●							6.773	4.2	2.6	1	-	0.5	13		B280 ~ B282	
	040220R				●	●							6.7	4.2	2.6	2	-	0.5	13			
	250404PEFR-32-MA												28.21	10.775	4.76	0.4	2.6	25	90		B389 ~ B392	
	2504PEFR-32-MA								●				28.21	10.775	4.76	0.8	2.7	25	90			
	250412PEFR-32-MA												28.09	10.775	4.76	1.2	1.8	25	90			
	250416PEFR-32-MA												28.09	10.775	4.76	1.6	1.4	25	90			
	250404PEFR-40-MA												28.02	10.618	4.76	0.4	2.6	25	90			
	2504PEFR-40-MA												28.02	10.618	4.76	0.8	2.7	25	90			
	250412PEFR-40-MA												28.1	10.618	4.76	1.2	1.8	25	90			
	250416PEFR-40-MA												28.1	10.618	4.76	1.6	1.4	25	90			
	340504PEFR-50-MA													37.85	13.765	5.56	0.4	3.1	34			90
	3405PEFR-50-MA									●				37.85	13.765	5.56	0.8	2.7	34			90
	340512PEFR-50-MA													37.68	13.765	5.56	1.2	2.3	34			90
	340516PEFR-50-MA													37.68	13.765	5.56	1.6	1.9	34			90
	340504PEFR-63-MA													37.59	13.803	5.56	0.4	3.1	34			90
	3405PEFR-63-MA													37.59	13.803	5.56	0.8	2.7	34			90
340512PEFR-63-MA													37.77	13.803	5.56	1.2	2.3	34	90			
340516PEFR-63-MA													37.77	13.803	5.56	1.6	1.9	34	90			
	250404PEER-32-ML												28.21	10.775	4.76	0.4	2.6	25	90		B389 ~ B392	
	2504PEER-32-ML												28.21	10.775	4.76	0.8	2.7	25	90			
	250412PEER-32-ML												28.09	10.775	4.76	1.2	1.8	25	90			
	250416PEER-32-ML												28.09	10.775	4.76	1.6	1.4	25	90			
	250404PEER-40-ML												28.02	10.618	4.76	0.4	2.6	25	90			
	2504PEER-40-ML												28.02	10.618	4.76	0.8	2.7	25	90			
	250412PEER-40-ML												28.1	10.618	4.76	1.2	1.8	25	90			
	250416PEER-40-ML												28.1	10.618	4.76	1.6	1.4	25	90			
	340504PEER-50-ML													37.85	13.765	5.56	0.4	3.1	34			90
	3405PEER-50-ML													37.85	13.765	5.56	0.8	2.7	34			90
	340512PEER-50-ML													37.68	13.765	5.56	1.2	2.3	34			90
	340516PEER-50-ML													37.68	13.765	5.56	1.6	1.9	34			90
	340504PEER-63-ML													37.59	13.803	5.56	0.4	3.1	34			90
	3405PEER-63-ML													37.59	13.803	5.56	0.8	2.7	34			90
340512PEER-63-ML													37.77	13.803	5.56	1.2	2.3	34	90			
340516PEER-63-ML													37.77	13.803	5.56	1.6	1.9	34	90			

● : Stock item

# B Milling Inserts


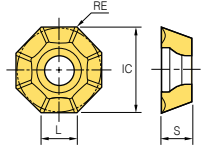

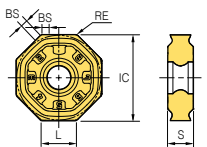


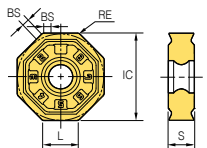


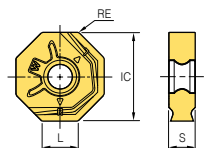

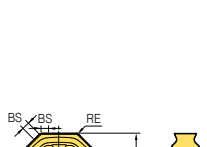

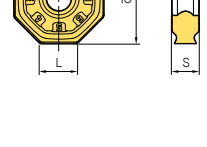

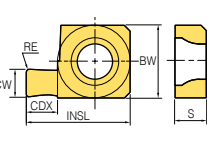
Workpiece	Steel	P	●	●	●	●	●	●	●	●	●	●	Machining types				
	Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●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

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Picture	Designation	Cermet	Coated								Uncoated		Dimension (mm)								Geometry	Page					
			CN30	NC5330	NCM325	NCM335	NCM535	PC2510	PC3700	PC6100	PC9530	PC5300	PC5535	PC5400	H01	H05	L	INSL	IC	S/S <sub>1</sub>			RE	BS	APMX	KAPR(°)	
	090308																-	9.525	9.525	3.18	0.8	-	-	-	90		
	120408																-	12.7	12.7	4.76	0.8	-	-	-	90		
	0704SN																7.4	18.02	18	4.86	0.8	1.8	7.4	45		B63	
	070408SN																7.4	18.02	18	4.86	0.8	-	7.4	45			
	05T3SN																5.2	12.756	12.7	3.85	0.5	1.5	5.2	45		B62	
	0704FN-MA																7.4	17.941	18	4.76	0.5	1.8	7.4	45			
	0704SN-MF			●	●												7.4	17.941	18	4.76	0.5	1.8	7.4	45		B63	
	070408SN-MF																7.4	17.941	18	4.76	0.8	-	7.4	45			
	0704SN-MM			●	●					●	●	●					7.4	17.941	18	4.76	0.5	1.8	7.4	45			
	070408SN-MM			●													5.2	17.941	18	4.76	0.8	-	7.4	45			
	05T3FN-MA																5.2	12.7	12.7	3.85	0.5	1.5	5.2	45			
	05T3EN-MA																5.2	12.756	12.7	3.85	0.5	1.5	5.2	45			
	0704FN-MA																	7.4	17.941	18	4.74	0.5	1.8	7.4			45
	05T3SN-MF																5.2	12.724	12.7	3.85	0.5	1.5	5.2	45		B62 B63	
	05T308SN-MF																5.2	12.724	12.7	3.85	0.8	-	5.2	45			

● : Stock item

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

Picture	Designation	Cermet	Coated							Uncoated	Dimension (mm)							Geometry	Page						
			CN30	NC5330	NCM325	NCM535	PC2510	PC3700	PC6100		PC9530	PC9540	PC5300	PC5535	PC5900	H01	H05			L	IC /BW	S/S <sub>1</sub>	RE	BS	APMX /INSL
	05T3SN-MM		●													5.2	12.7	3.85	0.5	1.5	5.2	45	-		B62 B63
	05T308SN-MM															5.2	12.7	3.85	0.8	-	5.2	45	-		
	0704SN-MM															7.4	18	4.74	0.5	1.8	7.4	45	-		
	060608-MF															6.627	16	6	0.8	-	4	45	-		
	080608-MF															8.367	20.2	6	0.8	-	5.5	45	-		
	0606ANN-MF															6.627	16	6	0.8	1.035	4	45	-		
	0806ANN-MF															8.367	20.2	6	0.8	1.531	5.5	45	-		
	060608-ML															6.627	16	6	0.8	-	4	45	-		
	080608-ML															8.367	20.2	6	0.8	-	5.5	45	-		
	060608-MM															6.627	16	6	0.8	-	4	45	-		
	080608-MM															8.367	20.2	6	0.8	-	5.5	45	-		
	0606ANN-MM															6.627	16	6	0.8	1.035	4	45	-		
	0806ANN-MM															8.367	20.2	6	0.8	1.531	5.5	45	-		
	060608-MA															6.627	16	6	0.8	-	4	45	-		B142 B143
	080608-MA															8.367	20.2	6	0.8	-	5.5	45	-		
	060608-W															6.478	16	6	0.8	6.036	4	45	-		
	080608-W															8.217	20.2	6	0.8	7.775	5.5	45	-		
	060608-MF															6.627	16	6	0.8	-	4	45	-		
	080608-MF															8.367	16	6	0.8	-	4	45	-		
	0606ANN-MF															6.627	16	6	0.8	1.035	4	45	-		
	0806ANN-MF															8.367	20.2	6	0.8	1.531	5.5	45	-		
	060608-MM															6.627	16	6	0.8	-	4	45	-		
	080608-MM															8.367	20.2	6	0.8	-	5.5	45	-		
	0606ANN-MM															6.627	16	6	0.8	1.035	4	45	-		
	0806ANN-MM															8.367	20.2	6	0.8	1.531	5.5	45	-		
	265															-	7	3	0.3	-	10	-	2.65		B368
	325															-	7	3	0.3	-	10	-	3.25		
	405															-	12	4.5	0.5	-	15	-	4.05		
	470															-	12	4.5	0.5	-	15	-	4.7		

● : Stock item


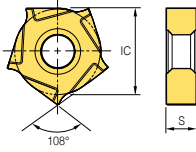

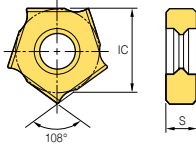

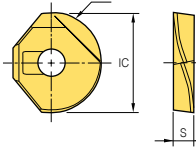

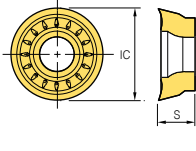

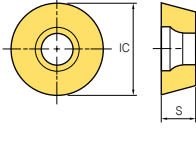


# B Milling Inserts

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


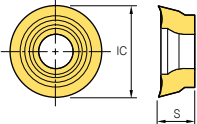

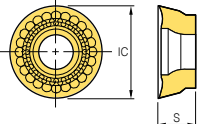

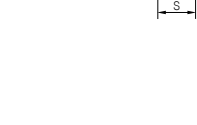

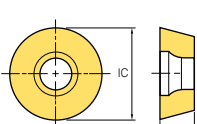

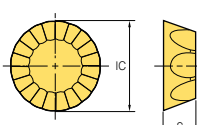

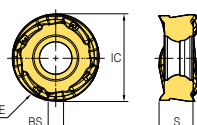

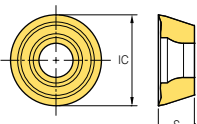
Picture	Designation	Cermet		Coated							Uncoated		Dimension (mm)				Geometry	Page		
		CN30	NC5330	PC210F	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400	H01	H05	INSL			IC	S/S <sub>1</sub>
	1223N						●								-	12.7	2.3	-		B410 B411
	1225N														-	12.7	2.5	-		
	1230N														-	12.7	3	-		
	1235N														-	12.7	3.5	-		
	1240N														-	12.7	4	-		
	1245N														-	12.7	4.5	-		
	1250N														-	12.7	5	-		
	1255N														-	12.7	5.5	-		
	1260N														-	12.7	6	-		
	1265N														-	12.7	6.5	-		
	1270N														-	12.7	7	-		
	1275N														-	12.7	7.5	-		
	1285N														-	12.7	8.5	-		
	1223N-C03														-	12.7	2.3	-		B410 B411
	1230N-C03														-	12.7	3	-		
	1235N-C03														-	12.7	3.5	-		
	1240N-C05														-	12.7	4	-		
	1245N-C05														-	12.7	4.5	-		
	1250N-C05														-	12.7	5	-		
	1255N-C05														-	12.7	5.5	-		
	1260N-C05														-	12.7	6	-		
	1265N-C05														-	12.7	6.5	-		
1270N-C05														-	12.7	7	-			
1275N-C05														-	12.7	7.5	-			
	16						●								-	16	3.5	8		B329
	20						●								-	20	4	10		
	25							●							-	25	5	12.5		
	30														-	30	6	15		
	32														-	32	6	16		
	10T3M0-MA														●	10	3.97	5		B225 B226 B231 B232 B237 B238
	1204M0-MA														●	12	4.76	6		
	0501M0F														-	5	1.59	2.5		B227 B238
	0501M0E														-	5	1.59	2.5		
	0501M0S														-	5	1.59	2.5		
	06T1M0F														-	6	1.98	3		
	06T1M0E														-	6	1.98	3		
	06T1M0S														-	6	1.98	3		
	0702M0F														-	7	2.38	3.5		
	0702M0E														-	7	2.38	3.5		
	0702M0S														-	7	2.38	3.5		
	0803M0F														-	8	3.18	4		
	0803M0E														-	8	3.18	4		
	0803M0S														-	8	3.18	4		
	1605M0F														-	16	5.56	8		
	1605M0E														-	16	5.56	8		
	1605M0S														-	16	5.56	8		
2006M0F														-	20	6.35	10			
2006M0E														-	20	6.35	10			
2006M0S														-	20	6.35	10			

● : Stock item

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

Machining types


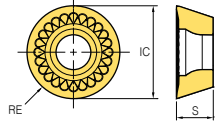

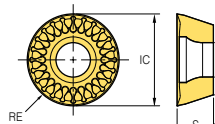

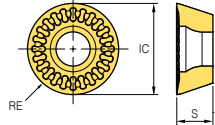

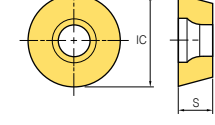



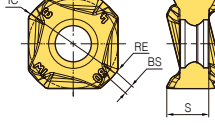


- Continuous cutting
- General cutting
- ✱ Interrupted cutting

Picture	Designation	Cermet CN30	Coated							Uncoated		Dimension (mm)		Geometry	Page		
			NC5330	NCM325	NCM535	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400			H01	H05
	10T3M0-MF													10	3.97		B225 ~ B227 B231 ~ B238
	1204M0-MF					●								12	4.76		
	1605M0-MF						●		●					16	5.56		
	1605M0-ML													16	5.56		B227 B233 B238
	10T3M0-MM			●		●	●	●		●	●			10	3.97		B225 ~ B228 B231 ~ B238
	1204M0-MM			●		●	●	●		●	●			12	4.76		
	1605M0-MM					●								16	5.56		
	2006M0-MM					●								20	6.35		
	0501M0E					●								5	1.59		B229 B230 B235 B236
	06T1M0E					●								6	1.98		
	0702M0E					●								7	2.38		
	0803M0E					●								8	3.18		
	170400-MM													17.8	4.76		B63
	1204M0E-ML					●		●	●					12	4.75		B146 B147
	10T3M0-MA												●	8	3.97		B244 ~ B255
	1204M0-MA												●	12	4.76		
	1606M0-MA												●	16	6.35		
	2007M0-MA												●	20	7		

● : Stock item


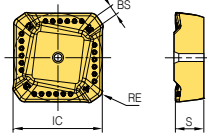

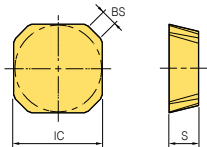

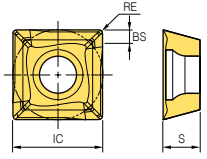

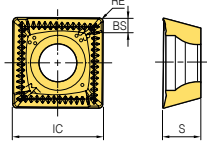

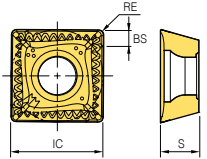

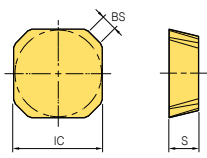
# B Milling Inserts

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

Picture	Designation	Cermet	Coated							Uncoated		Dimension (mm)						Geometry	Page			
			CN30	NC5330	NCM535	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400	H01	H05	IC			S/S <sub>1</sub>	RE	BS
	0803M0E-MF									●	●				8	3.18	4	-	4	-		B244 ~ B255
	10T3M0E-MF									●	●				10	3.97	5	-	5	-		
	1204M0E-MF									●	●	●			12	4.76	6	-	6	-		
	1606M0E-MF									●	●	●	●		16	6.35	8	-	8	-		
	2007M0E-MF									●	●	●	●		20	7	10	-	10	-		
	0803M0E-ML									●					8	3.18	4	-	4	-		B244 ~ B255
	10T3M0E-ML									●					10	3.97	5	-	5	-		
	1204M0E-ML									●	●				12	4.76	6	-	6	-		
	1606M0E-ML									●	●	●			16	6.35	8	-	8	-		
	2007M0E-ML									●	●	●	●		20	7	10	-	10	-		
	0803M0S-MM			●	●					●					8	3.18	4	-	4	-		B244 ~ B255
	10T3M0S-MM			●	●					●	●	●			10	3.97	5	-	5	-		
	1204M0S-MM			●	●	●				●	●	●	●		12	4.76	6	-	6	-		
	1606M0S-MM			●	●	●				●	●	●	●		16	6.35	8	-	8	-		
	2007M0S-MM			●	●	●				●	●	●	●		20	7	10	-	10	-		
	0803M0E1									●	●				8	3.18	4	-	4	-		B244 ~ B255
	10T3M0E1				●					●	●				10	3.97	5	-	5	-		
	1204M0S1				●	●				●	●				12	4.76	6	-	6	-		
	1204M0S2				●	●				●	●				12	4.76	6	-	6	-		
	1606M0S1				●	●				●	●				16	6.35	8	-	8	-		
	2007M0S1				●	●				●	●				20	7	10	-	10	-		
	140808ANER-ML							●	●	●					14	6.56	0.8	1.21	5.5	45		B136
	140808ANER-MM							●	●	●					14	6.56	0.8	1.21	5.5	45		
	140808ANER-MM							●	●	●					14	6.56	0.8	1.21	5.5	45		B136
	140808ANER-MM							●	●	●					14	6.56	0.8	1.21	5.5	45		
	140808ANER-MM							●	●	●					14	6.56	0.8	1.21	5.5	45		

● : Stock item

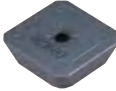
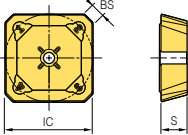
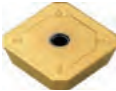
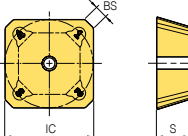
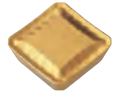
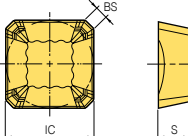
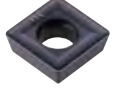
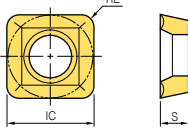

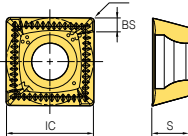

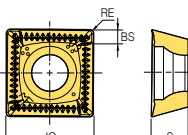

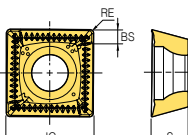

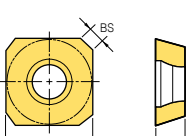
Workpiece	Steel	P	●	●	●	●	●	●	●	Machining types
	Stainless steel	M	●	●	●	●	●	●	●	
Cast iron	K		●	●	●	●	●	●	●	● Continuous cutting ● General cutting ✱ Interrupted cutting
Non-ferrous metal	N									
Heat resistant alloy, Titanium alloy	S									
Hardened steel	H									

Picture	Designation	Cermet	Coated							Uncoated			Dimension (mm)						Geometry	Page		
			CN30	NCM325	NCM335	NCM535	PC3700	PC6100	PC9530	PC5300	PC5535	PD1010	ST30A	G10	H01	H05	IC	S/S <sub>1</sub>			RE	BS
	220715DDSR-MM				●	●									22	7.65	1.5	2.563	10.5	55		B58
	280920DDSR-MM				●	●									28	7.65	1.5	3.095	14.5	55		
	42M										●				12.7	3.18	-	1.46	6	45	 <p>► <b>Cutting-edge geometry</b></p> <ul style="list-style-type: none"> <li>G: Light Side, Sharpe Edge</li> <li>S20: STS</li> <li>RH: Strengthened edge</li> </ul> <p>► <b>Sub-cutting-edge geometry</b></p> <ul style="list-style-type: none"> <li>M: AEFN</li> <li>MT: AETN</li> </ul>	B47 B48 B59 B60
	42M-G										●	●			12.7	3.18	-	1.46	6	45		
	42MT		●		●						●				12.7	3.18	-	1.46	6	45		
	42MT-RH														12.7	3.18	-	1.43	6	45		
	42MT-S20						●								12.7	3.18	-	1.46	6	45		
	53M											●			15.875	4.76	-	1.46	8	45		
	53M-G											●	●		15.875	4.76	-	1.46	8	45		
	53MT		●	●							●				15.875	4.76	-	1.46	8	45		
	53MT-RH														15.875	4.76	-	1.43	8	45		
	53MT-S20						●								15.875	4.76	-	1.46	8	45		
	1203AEEN-RH														12.7	3.18	1	1.43	9	45		
	1203AESN														12.7	3.18	-	1.46	6	45		
	1203AESN-RH														12.7	3.18	1	1.43	6	45		
1504AEEN-RH						●	●							15.875	4.76	1	1.43	8	45			
1504AESN														15.875	4.76	-	1.46	8	45			
1504AESN-RH						●								15.875	4.76	1	1.43	8	45			
	09M402R-MA										●	●		9.525	3.923	0.2	-	7	90			
	09M404R-MA										●	●		9.525	3.923	0.4	-	7	90			
	09M405R-MA											●	●	9.525	3.923	0.5	-	7	90			
	130504R-MA											●	●	13.5	5.56	0.4	-	11	90			
	09M405R-MF													9.525	3.923	0.5	-	7	90		B212 ~ B217	
	130508R-MF													13.5	5.56	0.8	-	11	90			
	09M405R-MM													9.525	3.923	0.5	-	7	90			
	130508R-MM													13.5	5.56	0.8	-	11	90			
	42MT-CM		●											12.7	3.18	-	1.49	6	45			

● : Stock item

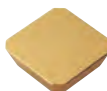
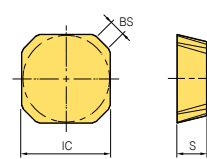

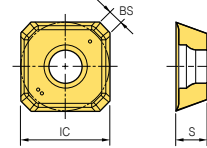

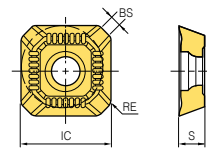

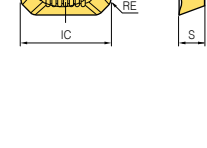
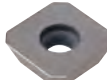
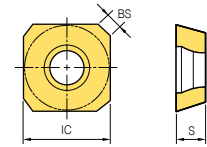

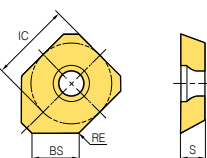

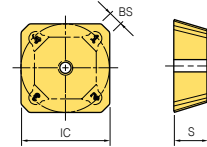
# B Milling Inserts

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

Picture	Designation	Cermet CN30	Coated							Uncoated H01 H05		Dimension (mm)						Geometry	Page
			NC5330	NCM325	NCM335	NCM535	PC2510	PC3700	PC6100	PC9530	PC5300	PC5535	PC5400	IC	S/S1	RE	BS		
	1203AESN-MU								●			12.7	3.18	0.5	2.181	6	45		
	1504AESN-MU							●				15.875	4.76	0.5	2.096	8	45		
	1203AESN-SU								●	●	●	12.7	3.18	1	1.75	6	45		B47 B48 B59 B60
	1504AESN-SU							●	●	●		15.875	4.76	1.2	1.69	8	45		
	1203AESN-MX											12.7	3.18	2.1	1.46	6	45		
	1203AEN-MX		●									12.7	3.18	2.1	1.46	6	45		
	1504AESN-MX			●								15.875	4.76	0.8	0	8	45		
	1504AEN-MX			●								15.875	4.76	2.1	1.46	8	45		
	090308-MM								●	●		9.525	3.18	9	-	9.5	90		B306 B338
	09M405R-MA								●			9.525	3.923	0.5	-	7	90		E212 ~ E217
	130508R-MA								●	●		9.525	3.923	0.5	-	11	90		
	09M403R-MF											13.5	5.56	0.8	-	7	90		B212 ~ B217
	09M403L-MF											9.525	3.923	0.3	-	7	90		
	09M404R-MF											9.525	3.923	0.4	-	7	90		
	09M404L-MF											9.525	3.923	0.4	-	7	90		
	09M405R-MF			●					●	●	●	9.525	3.923	0.5	-	7	90		
	09M405L-MF											9.525	3.923	0.5	-	7	90		
	130508R-MF			●					●	●	●	13.5	5.56	0.8	-	11	90		
	09M405R-MM		●	●					●	●	●	9.525	3.923	0.5	-	7	90		B212 ~ B217
	09M405L-MM								●			9.525	3.923	0.5	-	7	90		
	130508R-MM			●	●				●	●	●	13.5	5.56	0.8	-	11	90		
	130508L-MM											13.5	5.56	0.8	-	11	90		
	130538-MM											13.5	5.56	3.8	-	11	90		
	1204AFSN			●								12.7	4.76	-	2.66	-	45		
	1204AFTN		●					●	●			12.7	4.76	-	2.66	-	45		
	1204AFFN											12.7	4.76	-	2.66	-	45		
	1204AFEN											12.7	4.76	-	2.66	-	45		
	1504AFSN											15.875	4.76	-	2.8	-	45		
	1504AFTN											15.875	4.76	-	2.8	-	45		
1504AFFN											15.875	4.76	-	2.8	-	45			

● : Stock item

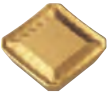
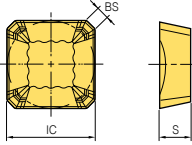
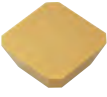
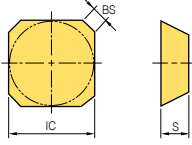

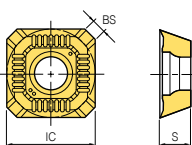

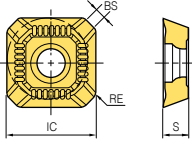

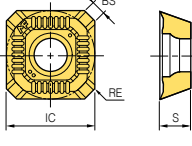

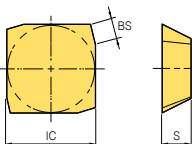

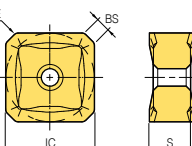
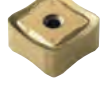
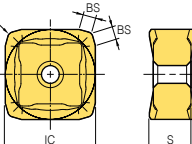
Workpiece	Steel	P	●	●	●	●	●	●	●	●	Machining types
	Stainless steel	M	●	●	●	●	●	●	●	●	
Cast iron	K	●	●	●	●	●	●	●	●	●	
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	
Hardened steel	H	●	●	●	●	●	●	●	●	●	

Picture	Designation	Cermet	Coated						Uncoated			Dimension (mm)						Geometry	Page		
			CN30	NCM325	NCM335	PC3700	PC6100	PC9530	PC5300	PC5535	PC5400	ND3000	ST30A	G10	H01	H05	IC			S/S <sub>1</sub>	RE
	1203AFFN										●	●		12.7	3.18	0.8	2.36	5.5	45	 <p>► Shape of Edge</p> <ul style="list-style-type: none"> <li>· S20: STS</li> <li>· RH: Strengthened edge, STS</li> </ul>	B49 B50
	1203AFTN	●									●			12.7	3.18	0.8	2.36	5.5	45		
	1203AFEN													12.7	3.18	0.8	2.36	5.5	45		
	1203AFSN		●	●									●	12.7	3.18	0.8	2.36	5.5	45		
	1203AFEN-RH				●		●							12.7	3.18	0.8	2.36	5.5	45		
	1203AFSN-RH					●								12.7	3.18	0.8	2.36	5.5	45		
	1203AFTN-S20					●								12.7	3.18	0.8	2.36	5.5	45		
	1504AFFN											●		15.875	4.76	0.5	1.9	7.5	45		
	1504AFTN	●												15.875	4.76	0.5	1.9	7.5	45		
	1504AFEN													15.875	4.76	0.5	1.9	7.5	45		
	1504AFSN													15.875	4.76	1.0	2.4	7.5	45		
	1504AFEN-RH													15.875	4.76	0.5	1.9	7.5	45		
	1504AFSN-RH					●								15.875	4.76	1.0	2.4	7.5	45		
	1504AFTN-S20													15.875	4.76	1.0	2.4	7.5	45		
	0903AGFN-MA										●	●	9.525	3.18	0.8	1.44	4	45		B206 ~ B211	
	14M4AGFN-MA										●	●	14	4	0.8	1.81	6.5	45			
	0903AGSN-MF				●	●	●						9.525	3.18	0.8	1.44	4	45		B207 B209 B211	
	14M4AGSN-MF				●	●	●						14	4	0.8	1.81	6.5	45			
	0903AGSN-MM		●		●		●						9.525	3.18	0.8	1.44	4	45		B207 B209 B211	
	14M4AGSN-MM		●	●	●	●	●	●					14	4	0.8	1.81	6.5	45			
	0903AGTN												9.525	3.18	0.8	1.44	4	45		B207 B209 B211	
	14M4AGTN	●											14	4	0.8	1.44	6.5	45			
	14M4AGFN-W												14	4	0.8	1.81	6.5	45		B207 B209 B211	
	14M4AGSN-W												14	4	0.8	1.81	6.5	45			
	14M4AGTN-W				●									14	4	0.8	1.81	6.5			45
	1203AFSN-SU				●								12.7	3.18	0.5	1.85	-	45		B49 B50	
	1504AFSN-SU				●			●					15.875	4.76	0.5	1.9	-	45			

● : Stock item


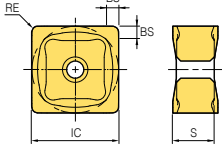

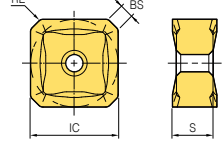

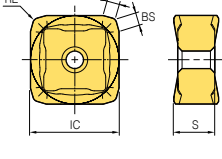

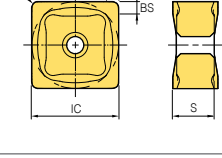

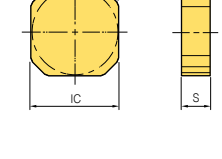

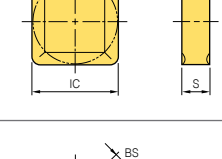

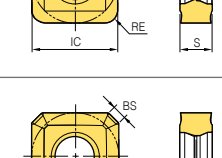

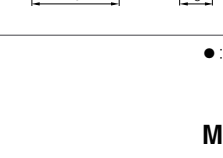
# B Milling Inserts

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

Picture	Designation	Cermet CN30	Coated							Uncoated H01 H05		Dimension (mm)						Geometry	Page
			NC5330	NCM325	NCM335	NCM535	PC2510	PC3700	PC6100	PC9530	PC5300	PC5535	PC5400	IC	S/S <sub>1</sub>	RE	BS		
	1203AFSN-MX		●	●					●			12.7	3.18	0.8	2.4	5.5	45		B49 B50
	1504AFSN-MX		●					●				15.875	4.76	0.8	2.4	7.5	45		
	1204AZ											12.7	4.76	-	2	-	-		
	0903AGSN-MF							●	●			9.525	3.18	0.8	1.44	4	45		
	14M4AGSN-MF							●	●	●		14	4	0.8	1.81	6.5	45		
	0903AGSN-MM							●	●	●	●	9.525	3.18	0.8	1.44	4	45		B206 ~ B211
	14M4AGSN-MM		●					●	●	●	●	14	4	0.8	1.81	6.5	45		
	0903AGSN-MR								●	●		9.525	3.18	0.8	1.44	4	45		
	14M4AGSN-MR								●	●		14	4	0.8	1.81	6.5	45		
	1203EFR										●	12.7	3.18	-	2.5	8	75		B51
	SNMF 1206ANN-MF											12.7	6.05	0.8	2.1	-	45		B129 B130
	1507ANN-MF											15.875	6.78	0.8	2.1	-	45		
	SNCF 1206ANN-MF											12.7	6.05	0.8	2.1	-	45		
	1507ANN-MF											15.875	6.78	0.8	2.1	-	45		
	SNMF 1206ENN-MF							●				12.7	6.05	0.8	1.8	-	75		B131 B132
	1507ENN-MF											15.875	6.78	0.8	1.8	-	75		
	SNCF 1206ENN-MF											12.7	6.05	0.8	1.8	-	75		
	1507ENN-MF											15.875	6.78	0.8	1.8	-	75		

● : Stock item

Workpiece	Steel	P	●	●	●	●	●	●	●	●	●	●	●	Machining types
	Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●	<ul style="list-style-type: none"> <li>● Continuous cutting</li> <li>● General cutting</li> <li>✱ Interrupted cutting</li> </ul>
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●		
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●		
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●		


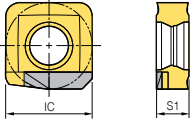

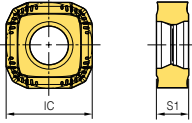

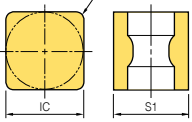

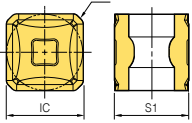

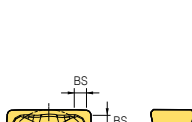

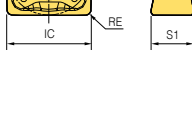

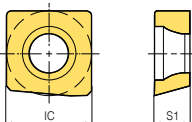



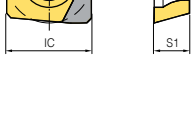

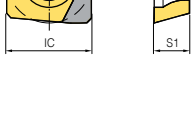
Picture	Designation	Cermet	Coated							Uncoated	Dimension (mm)						Geometry	Page				
			CN30	NC5330	NCM325	NCM535	PC2510	PC3700	PC6100		PC9530	PC5300	PC5535	PC5400	ST30A	H01			H05	IC	S/S1	RE
	SNMF 1206QNN-MF							●							12.7	6.05	0.8	1	-	88		B133
	SNCF 1206QNN-MF														12.7	6.05	0.8	1	-	88		
	SNMF 1206ANN-MM														12.7	6.05	0.8	2.1	-	45		B129 B130
	1507ANN-MM														15.875	6.78	0.8	2.1	-	45		
	SNCF 1206ANN-MM														12.7	6.05	0.8	2.1	-	45		
	1507ANN-MM														15.875	6.78	0.8	2.1	-	45		
	SNMF 1206ENN-MM							●							12.7	6.05	0.8	1.8	-	75		B131 B132
	1507ENN-MM							●							15.875	6.78	0.8	1.8	-	75		
	SNCF 1206ENN-MM														12.7	6.05	0.8	1.8	-	75		
	1507ENN-MM														15.875	6.78	0.8	1.8	-	75		
	SNMF 1206QNN-MM							●							12.7	6.05	0.8	1	-	88		B133
	SNCF 1206QNN-MM														12.7	6.05	0.8	1	-	88		
	1204ENN			●						●					12.7	4.76	-	1.26	-	75		B52
	1504ENN														15.875	4.76	-	1.4	11.5	75		
	435														12.7	4.76	2	-	-	-		-
	535														15.875	4.76	2	-	-	-		
	120420-MF														12.7	4.76	2	-	-	-		B423
	1204ANN-MF														12.7	4.76	0.4	2.15	-	45		B423

● : Stock item



# B Milling Inserts


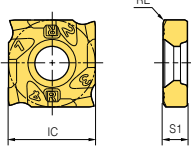

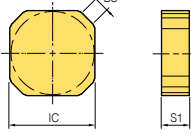

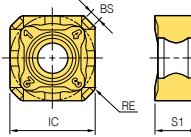

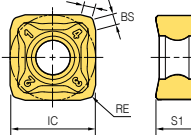

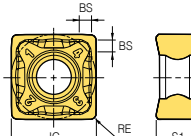

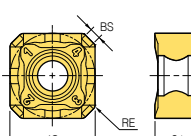
Workpiece	Steel	P	●	●	●	●	●	●	●	●	Machining types	
	Stainless steel	M	●	●	●	●	●	●	●	●	●	● Continuous cutting
Cast iron	K	●	●	●	●	●	●	●	●	●	●	● General cutting
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	● Interrupted cutting
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	
Hardened steel	H	●	●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

Picture	Designation	Cermet CN30	Coated						Uncoated G10 HD1	PCD			Dimension (mm)						Geometry	Page
			NCM535	PC2510	PC3700	PC6100	PC9530	PC5300		PC5535	PC5400	DP90	DP150	DP200	IC	S/S <sub>1</sub>	RE	BS		
	1204-TBW											12.7	4.76	0.6	5	2.5	90		B423	
	<b>SNEU-TBW</b>																			
	1204R-WMF											12.7	4.76	2	3.5	10.2	90		B423	
	<b>SNEU-WMF</b>																			
	101010											10	10	1	-	9	90		B419	
	1010ZNN											10	10	0.8	1.41	9	45			
	101010-CU1											10	10	1	-	9	90		B419	
	1010ZNN-CU1											10	10	0.8	1.41	9	45			
	121212-CU1											12.7	12.7	1.2	0	11.5	90			
	1212ZNN-CU1											12.7	12.7	1	1.7	11.5	45			
	1206ANN-MA							●				12.7	6.35	0.8	1.56	6	45		B118 B119 B122 B123 B126 B127	
	1206ENN-MA							●				12.7	6.35	1	1.32	9	75			
	1206QNN-MA							●				12.7	6.35	0.8	1.394	11.5	88			
	120612-MA							●				12.7	6.35	1.2	-	11.5	-			
	1206ANN-ML						●	●				12.7	6.35	0.8	1.56	6	45		B118 ~ B127	
	1206ENN-ML						●	●				12.7	6.35	1	1.32	9	75			
	1206QNN-ML						●	●				12.7	6.35	0.8	1.394	11.5	88			
	120612-ML											12.7	6.35	1.2	0	11.5	-			
	1507ANN-ML							●				15.875	7.94	0.8	2.36	7.5	45			
	1507ENN-ML											15.875	7.94	1	2.16	11	75			
	09T3ADFR							●				9.525	3.97	-	1.8	5	-		B155 ~ B156	
	<b>SNEW-NAF</b>																			
	09T3ADTR-NAF								●	●		9.525	3.97	-	1.8	5	-		B155 ~ B156	
	09T3ADTR-XAF											9.525	3.97	-	1.8	5	-			
	09T3ADTR-XAF								●	●		9.525	3.97	-	1.8	5	-		B155 ~ B156	
	09T3ADTR-XAW											9.525	3.97	-	2.1	5	-			
	09T3ADTR-XAW								●	●		9.525	3.97	-	2.1	5	-		B155 ~ B156	
	XAW: Wiper insert																			

● : Stock item

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

● Continuous cutting  
 ● General cutting  
 ✱ Interrupted cutting

Picture	Designation	Cermet	Coated							Uncoated	Dimension (mm)						Geometry	Page					
			CN30	NC5330	NCM535	PC2505	PC2510	PC3700	PC6100		PC9530	PC9540	PC5300	PC5535	PC5400	H01			H05	IC	S/S <sub>1</sub>	RE	BS
<b>SNHT-WX</b> 	1102308R-WX								●							11	2.3	0.8	0.74	-	90		B415 B416
	110308R-WX								●							11	3	0.8	0.74	-	90		
	1203508R-WX								●							12.7	3.5	0.8	0.6	-	90		
	120408R-WX								●							12.7	4	0.8	0.6	-	90		
	1204508R-WX								●							12.7	4.54	0.8	0.6	-	90		
	120508R-WX								●							12.7	5	0.8	0.6	-	90		
	1205408R-WX								●							12.7	5.47	0.8	0.6	-	90		
	120608R-WX								●							12.7	6	0.8	0.6	-	90		
	1206508R-WX								●							12.7	6.5	0.8	0.6	-	90		
	120708R-WX								●							12.7	7	0.8	0.6	-	90		
	1207508R-WX								●							12.7	7.5	0.8	0.6	-	90		
	1102308L-WX								●							11	2.3	0.8	0.74	-	90		
	110308L-WX								●							11	3	0.8	0.74	-	90		
	120308L-WX								●							12.7	3.25	0.8	0.6	-	90		
	1203508L-WX								●							12.7	3.5	0.8	0.6	-	90		
	120408L-WX								●							12.7	4	0.8	0.6	-	90		
	1204508L-WX								●							12.7	4.54	0.8	0.6	-	90		
	120508L-WX								●							12.7	5	0.8	0.6	-	90		
	1205408L-WX								●							12.7	5.47	0.8	0.6	-	90		
	120608L-WX								●							12.7	6	0.8	0.6	-	90		
1206508L-WX								●							12.7	6.5	0.8	0.6	-	90			
120708L-WX								●							12.7	7	0.8	0.6	-	90			
1207508L-WX								●							12.7	7.5	0.8	0.6	-	90			
<b>SNKN</b> 	1204ENN							●								12.7	4.76	0	1.26	-	75		B52
	1504ENN															15.875	4.76	0	1.4	-	75		
<b>SNM(E)X-MF</b> 	SNMX 1206ANN-MF		●		●	●	●	●	●	●						12.7	6.35	0.8	1.56	6	45		B118 ~ B121
	1507ANN-MF				●	●	●	●	●	●						15.875	7.94	0.8	2.36	7.5	45		
	SNEX 1206ANN-MF				●	●	●	●	●	●						12.7	6.35	0.8	1.56	6	45		
	1507ANN-MF									●						15.875	7.94	0.8	2.36	7.5	45		
<b>SNM(E)X-MF</b> 	SNMX 1206ENN-MF				●	●	●	●	●	●						12.7	6.35	1	1.32	9	75		B122 ~ B125
	1507ENN-MF				●	●	●	●	●	●						15.875	7.94	1	2.16	11	75		
	SNEX 1206ENN-MF								●	●	●					12.7	6.35	1	1.32	9	75		
	1507ENN-MF								●	●						15.875	7.94	1	2.16	11	75		
<b>SNM(E)X-MF</b> 	SNMX 1206QNN-MF		●		●	●	●	●	●	●						12.7	6.35	0.8	1.394	11.5	88		B126 B127
	120612-MF							●	●	●						12.7	6.35	1.2	-	11.5	-		
	SNEX 1206QNN-MF							●	●	●	●					12.7	6.35	0.8	1.394	11.5	88		
	120612-MF								●	●						12.7	6.35	1.2	-	11.5	-		
<b>SNM(E)X-MM</b> 	SNMX 1206ANN-MM		●		●	●	●	●	●	●						12.7	6.35	0.8	1.56	6	45		B118 ~ B121
	1507ANN-MM		●		●	●	●	●	●	●						15.875	7.94	0.8	2.36	7.5	45		
	SNEX 1206ANN-MM				●	●	●	●	●	●						12.7	6.35	0.8	1.56	6	45		
	1507ANN-MM								●	●						15.875	7.94	0.8	2.36	7.5	45		

● : Stock item

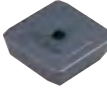
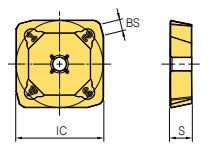

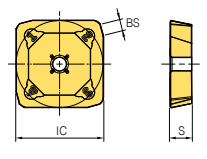

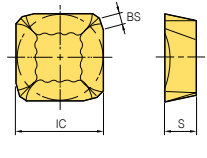
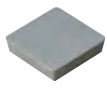
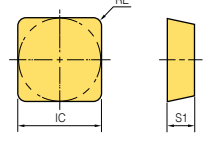

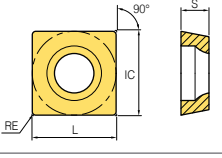

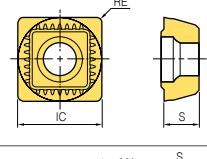

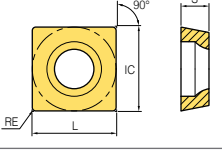

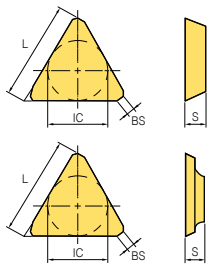

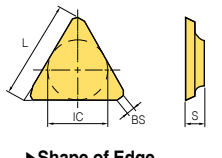
# B Milling Inserts

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

Picture	Designation	Cermet	Coated							Uncoated			Dimension (mm)								Geometry	Page		
			CN30	NC5330	NCM325	NCM535	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400	ST30A	G10	H01	INSL	IC/W1	S/S1	RE			BS	APMX
	SNMX 1206ENN-MM			●	●	●	●	●	●	●	●	●	●	●	12.7	12.7	6.35	1	1.32	9	75	-		B122 ~ B125
	1507ENN-MM				●	●	●	●	●	●	●	●	●	15.875	15.875	7.94	1	2.16	11	75	-			
	SNEX 1206ENN-MM					●	●	●	●	●	●	●	●	12.7	12.7	6.35	1	1.32	9	75	-			
	1507ENN-MM						●	●	●	●	●	●	●	15.875	15.875	7.94	1	2.16	11	75	-			
	SNMX 1206QNN-MM			●	●	●	●	●	●	●	●	●	●	12.7	12.7	6.35	0.8	1.394	11.5	88	-		E126 E127	
	120612-MM				●	●	●	●	●	●	●	●	12.7	12.7	6.35	1.2	-	11.5	88	-				
	SNEX 1206QNN-MM					●	●	●	●	●	●	●	12.7	12.7	6.35	0.8	1.394	11.5	88	-				
	120612-MM						●	●	●	●	●	●	12.7	12.7	6.35	1.2	-	11.5	88	-				
	1206ANN-W				●	●		●						12.7	12.7	6.35	1	7.63	6	45	-		E118 E119	
	1406XPNR-ML					●		●						14.47	6.56	-	-	1.35	11	90	-		E318 E319	
	140608PNR-ML						●	●						14.47	6.56	-	0.8	1.69	11	90	-			
	1203EDR	●	●			●						●	●	12.7	12.7	3.18	-	1.4	9	75	-		B53 B54	
	1203EDR-RH											●	●	12.7	12.7	3.18	-	1.4	9	75	-			
	1203EDL											●	●	12.7	12.7	3.18	-	1.4	9	75	-			
	1203EDR-G											●	●	12.7	12.7	3.18	0.5	1.4	9	75	-			
	1203EDR-RN											●	●	12.7	12.7	3.18	0.8	1.63	9	75	-			
	1203EDER-RH						●		●			●	●	12.7	12.7	3.18	0.8	1.63	9	75	-			
	1203EDSR-RH							●				●	●	12.7	12.7	3.18	0.8	1.63	9	75	-			
	1203EDTR-RH											●	●	12.7	12.7	3.18	0.8	1.4	9	75	-			
	1203EDR-S20							●				●	●	12.7	12.7	3.18	-	1.4	9	75	-			
	150412T											●	●	15.875	15.875	4.76	-	0	12	75	-			
	1504EDR	●	●									●	●	15.875	15.875	4.76	-	1.4	12	75	-			
	1504EDSR											●	●	15.875	15.875	4.76	-	1.4	12	75	-			
	1504EDL											●	●	15.875	15.875	4.76	-	1.4	12	75	-			
	1504EDR-G											●	●	15.875	15.875	4.76	-	1.4	12	75	-			
	1504EDR-RN											●	●	15.875	15.875	4.76	1	1.4	12	75	-			
	1504EDER-RH											●	●	15.875	15.875	4.76	-	1.64	12	75	-			
1504EDSR-RH											●	●	15.875	15.875	4.76	-	1.64	12	75	-				
1504EDTR-RH											●	●	15.875	15.875	4.76	-	1.64	12	75	-				
1504EDR-S20											●	●	15.875	15.875	4.76	-	1.4	12	75	-				
	120416-WC													-	12.7	4.76	1.6	-	-	-	-			
	150412-WC													-	15.875	4.76	1.2	-	-	-	-			
	150416-WC													-	15.875	4.76	1.6	-	-	-	-			
	150420-WC													-	15.875	4.76	2	-	-	-	-			
	190424-WC													-	19.05	4.76	2.4	-	-	-	-			-
	1203EDR-1													-	12.7	3.18	-	10.2	-	-	-		B53 B54	
	1203EDL-1													-	12.7	3.18	-	10.2	-	-	-			
	1504EDR-1													-	15.875	4.76	-	10.2	-	-	-			
	1504EDL-1													-	15.875	4.76	-	10.2	-	-	-			
	200-N													8.8	-	-	0.16	-	-	-	2.2		B412	
	300-N													9.8	-	-	0.2	-	-	-	3.0			
	400-N													9.8	-	-	0.25	-	-	-	4.0			

● : Stock item


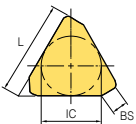

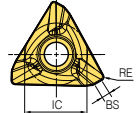

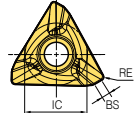

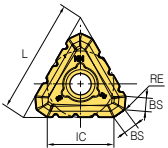

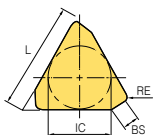
Workpiece	Steel	P	●	●	●	●	●	●	●	●	●	●	Machining types
	Stainless steel	M	●	●	●	●	●	●	●	●	●	●	
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	● Continuous cutting ● General cutting ✱ Interrupted cutting
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	
Hardened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

Picture	Designation	Cermet	Coated							Uncoated	Dimension (mm)							Geometry	Page						
			CN30	NC5330	NCM325	NCM335	NCM535	PC3700	PC6100		PC9530	PC5300	PC5535	PC5400	ST30A	G10	H01			INSL	IC	S/S1	RE	BS	APMX
	1203EDSR-MU			●	●	●	●	●	●	●	●	●	●	●	●	●	-	12.7	3.18	0.3	1.87	12	75		B53 B54
	1504EDSR-MU				●												-	15.875	4.76	1	1.92	12	75		
	1203EDSR-SU					●			●	●							-	12.7	3.18	0.8	1.643	12	75		B53 B54
	1203EDSL-SU					●			●	●							-	12.7	3.18	0.8	1.91	12	75		
	1504EDSR-SU					●			●	●							-	15.875	4.76	1.2	1.691	12	75		
	1504EDSL-SU					●			●	●							-	15.875	4.76	0.8	1.69	12	75		
	1203EDSR-MX			●	●												-	12.7	3.18	1	1.4	9	75		B53 B54
	1203EDSL-MX																-	12.7	3.18	1	1.4	9	75		
	1504EDR-MX				●												-	15.875	4.76	1	1.45	12	75		
	1504EDSR-MX																-	15.875	4.76	1	1.45	12	75		
	120308											●					-	12.7	3.18	0.8	-	7.8	90		B371
	060304			●													-	6.35	3.18	0.4	-	5.5	90		B306 B334 B335 B337
	110408-KC								●	●		●	●				-	11.5	4.8	0.8	-	9.5	90		B371
	120408-MM								●	●							-	12.7	4.76	0.8	-	11.5	90		B306 B335 B338 B354
	120508-MMN																-	12.7	5.56	0.8	-	12.7	90		
	TECN 22R																11	6.35	3.18	-	1	8	90	 <p>► Shape of Edge</p> <ul style="list-style-type: none"> <li>· G: Light Side, Sharpe Edge</li> <li>· S20: STS</li> <li>· ZH: Hole added</li> </ul>	B61
	22TR		●														11	6.35	3.18	0.8	0.532	8	90		
	32R																16.5	9.525	3.18	-	1	13	90		
	32R-G																16.5	9.525	3.18	-	1	13	90		
	32TR		●		●												16.5	9.525	3.18	0.8	0.527	13	90		
	32TR-S20																16.5	9.525	3.18	0.8	0.527	13	90		
	43R-G																22	12.7	4.76	-	0.955	16.5	90		
	43TR																22	12.7	4.76	0.8	1.477	16.5	90		
TEEN 32TR																16.5	9.525	3.18	0.8	0.527	13	90			
	43TR-Z											●				22	12.7	4.76	0.8	1.477	16.5	90		B61	
	43TR-ZH											●				22	12.7	4.76	-	1.477	16.5	90			
	43R											●				22	12.7	4.76	0.8	1.955	16.5	90			
	43R-G											●				22	12.7	4.76	0.8	1.955	16.5	90			
	43TR		●		●	●						●				22	12.7	4.76	0.8	1.477	16.5	90			
43TR-S20												●			22	12.7	4.76	0.8	1.477	16.5	90				

● : Stock item

# B Milling Inserts


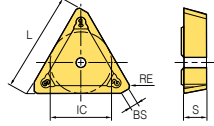

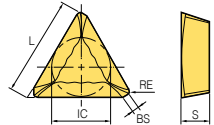

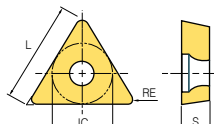

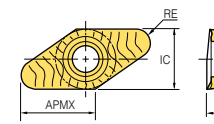

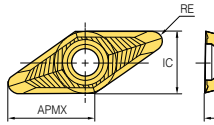

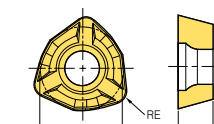
Workpiece	Steel	P	●	●	●	●	●	●	●	●	●	Machining types
	Stainless steel	M	●	●	●	●	●	●	●	●	●	
Cast iron	K	●	●	●	●	●	●	●	●	●	●	● Continuous cutting ● General cutting ● Interrupted cutting
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	
Hardened steel	H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

Picture	Designation	Cermet	Coated							Uncoated	Dimension (mm)						Geometry	Page		
			CN30	NC5330	NCM325	NCM335	NCM535	PC3700	PC6100		PC9530	PC9540	PC5300	PC5335	ST30A	G10			H01	INSL
	2203PFR									●	22	12.7	3.18	-	2.42	16	90		B55	
	2203PFL										22	12.7	3.18	-	2.42	16	90			
	110508PEER-ML					●			●	●	11.286	8	4.5	0.8	1.297	8	90		B259 ~ B262	
	160608PEER-ML					●			●	●	16.36	11.7	5.5	0.8	1.581	11.5	90			
	200708PEER-ML						●			●	●	21.414	14.5	7	0.8	2	15.5			90
	110508PESR-MM					●	●		●	●	11.286	8	4.5	0.8	1.299	8	90		B259 ~ B262	
	160608PESR-MM					●	●		●	●	16.36	11.7	5.5	0.8	1.517	11.5	90			
	200708PESR-MM						●	●		●	●	21.414	14.5	7	0.8	2	15.5			90
	2710AZNR-NM		●		●	●		●			27	15.875	10	0.8	2.63	18	45		B67 ~ B69	
	2710AZNL-NM										27	15.875	10	0.8	2.63	18	45			
	3012PNR-NM								●			30	17.462	11.97	0.8	3.5	20			90
	1103PPN	●								●	11	6.35	3.18	-	0.7	8	90	 <ul style="list-style-type: none"> <li>· G: Light Side, Sharpe Edge</li> <li>· S20: STS</li> <li>· RH: Strengthened edge</li> </ul>	B56	
	1603PDR		●							●	16.5	9.525	1.98	-	1.2	13	90			
	1603PPN	●	●							●	16.5	9.525	2.38	-	1.2	13	90			
	1603PPR	●	●							●	16.5	9.525	2.38	-	1.2	13	90			
	1603PPR-G									●	16.5	9.525	3.18	-	1.2	13	90			
	1603PPSR										16.5	9.525	3.18	-	1.2	13	90			
	1603PPTR-RH										16.5	9.525	3.18	-	1.2	13	90			
	1603PDER-RH						●		●		16.5	9.525	1.59	0.8	1.5	13	90			
	1603PDSR-RH						●				16.5	9.525	2.38	0.8	1.5	13	90			
	1603PDR-S20								●		16.5	9.525	1.98	-	1.2	13	90			
	1603PDR-RN										16.5	9.525	1.98	0.5	1.5	13	90			
	2204PDR	●	●							●	22	12.7	4.76	-	1.42	18	90			
	2204PDR-RN										22	12.7	4.76	0.8	1.79	18	90			
	2204PDR-G									●	22	12.7	4.76	-	1.42	18	90			
	2204PDL									●	22	12.7	4.76	-	1.42	18	90			
	2204PDSR			●							22	12.7	4.76	-	1.42	18	90			
	2204PDTR										22	12.7	4.76	-	1.42	18	90			
2204PPN										22	12.7	4.76	-	1.268	18	90				
2204PPTN										22	12.7	4.76	-	1.268	18	90				
2204PDER-RH						●		●		22	12.7	4.76	0.8	1.79	18	90				
2204PDSR-RH						●				22	12.7	4.76	0.8	1.79	18	90				
2204PDR-S20								●		22	12.7	4.76	-	1.42	18	90				

※ In this page, TPC(K)N □□□□~N is for FC~HC and □□□□~R is for Cutter (face).

● : Stock item

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

Picture	Designation	Cermet	Coated							Uncoated	Dimension (mm)							Geometry	Page					
			CN30	NCM325	NCM335	PC2505	PC2510	PC3700	PC6100		PC9530	PC9540	PC5300	PC5535	PC5900	H01	H05			INSL	IC/W1	S/S1	RE	BS
	2204PDSR-MU							●								22	12.7	4.76	0.8	1.964	18	90		B56
	TPKN-SU	1603PDSL-SU						●								16.5	9.525	3.18	0.8	1.88	13	90		
	1603PDSR-SU							●							16.5	9.525	3.18	0.8	1.88	13	90			
	2204PDSL-SU							●							22	12.7	4.76	0.8	1.97	18	90			
	2204PDSR-SU							●		●	●				22	12.7	4.76	0.8	1.97	18	90			
	1603PDSR-MX								●						16.5	9.525	3.18	0.8	1.2	13	90			
	1603PPR-MX							●							16.5	9.525	3.18	-	1.2	13	90			
	1603PPSN-MX														16.5	9.525	3.18	-	1.2	13	90			
	1603PPSR-MX								●						16.5	9.525	3.18	-	1.2	13	90			
	2204PDR-MX								●						22	12.7	4.76	1	1.38	18	90			
	2204PDSR-MX								●	●					22	12.7	4.76	1	1.38	18	90			
	16R-KC									●					-	9.525	3.97	0.8	-	-	60		B373	
	22R-KC									●					-	9.525	3.97	0.8	-	-	60			
	220530N-MA									●					28.281	12.7	5.56	3	-	15	90		B377 B378	
	VCKT-MA																							
	11T210N-MA									●					16.466	6.35	2.87	1	-	8	90		B377 B378 B379	
	11T220N-MA														16.466	6.35	2.87	2	-	8	90			
	080316ZDSR-MH														1	8	3.18	1.6	-	1	15		B299 ~ B305	
	10T320ZDSR-MH														1.5	10	3.97	2	-	1.5	15			
	130520ZDSR-MH														2	13	5.56	2	-	2	15			
	150625ZDSR-MH														2.5	15	6.35	2.5	-	2.5	15			

● : Stock item

# B Milling Inserts


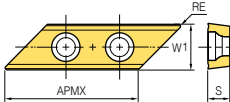

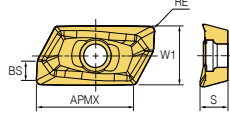

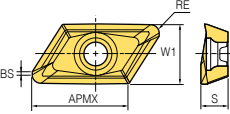


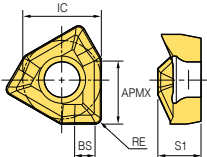
Workpiece	Steel	P	●	●	●	●	●	●	●	●	●	●	Machining types				
	Stainless steel	M	●	●	●	●	●	●	●	●	●	●					
	Cast iron	K	●	●	●	●	●	●	●	●	●	●					
	Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●					
	Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●					
	Hardened steel	H	●	●	●	●	●	●	●	●	●	●					
						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

Picture	Designation	Cermets		Coated								Uncoated		Dimension (mm)						Geometry	Page			
		CN30		NC5330	NCM535	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400	H01	H05	IC	S/S <sub>1</sub>	RE			BS	APMX	KAPR(°)
	040304PNFR-MA													●	7	3.46	0.4	1.6	4.3	90		B110 ~ B115		
	040308PNFR-MA													●	7	3.46	0.8	1.2	4.3	90				
	040312PNFR-MA													●	7	3.46	1.2	0.8	4.3	90				
	040316PNFR-MA													●	7	3.46	1.6	0.4	4.3	90				
	080604PNFR-MA													●	13	6.4	0.4	4.1	8.2	90				
	080608PNFR-MA													●	13	6.4	0.8	3.7	8.2	90				
	080612PNFR-MA													●	13	6.4	1.2	3.3	8.2	90				
	080616PNFR-MA													●	13	6.4	1.6	2.9	8.2	90				
	080620PNFR-MA													●	13	6.4	2	2.5	8.2	90				
	040304PNER-ML								●	●	●	●			7	3.46	0.4	1.6	4.3	90		B110 ~ B115		
	040308PNER-ML										●	●			7	3.46	0.8	1.2	4.3	90				
	040312PNER-ML											●			7	3.46	1.2	0.8	4.3	90				
	040316PNER-ML											●			7	3.46	1.6	0.4	4.3	90				
	080604PNER-ML									●	●	●	●		13	6.4	0.4	4.1	8.2	90				
	080608PNER-ML				●				●	●	●	●	●		13	6.4	0.8	3.7	8.2	90				
	080612PNER-ML											●			13	6.4	1.2	3.3	8.2	90				
	080616PNER-ML											●			13	6.4	1.6	2.9	8.2	90				
	080620PNER-ML											●			13	6.4	2	2.5	8.2	90				
	040304PNSR-MM								●	●	●	●			7	3.46	0.4	1.6	4.3	90		B288 ~ B298		
	040308PNSR-MM										●	●			7	3.46	0.8	1.2	4.3	90				
	040312PNSR-MM											●			7	3.46	1.2	0.8	4.3	90				
	040316PNSR-MM											●			7	3.46	1.6	0.4	4.3	90				
	080604PNSR-MM									●	●	●	●		13	6.4	0.4	4.1	8.2	90				
	080608PNSR-MM				●				●	●	●	●	●		13	6.4	0.8	3.7	8.2	90				
	080612PNSR-MM											●			13	6.4	1.2	3.3	8.2	90				
	080616PNSR-MM											●			13	6.4	1.6	2.9	8.2	90				
	080620PNSR-MM											●			13	6.4	2	2.5	8.2	90				
	060312ZNN-MF										●	●		6	3.18	1.2	-	1	14		B288 ~ B298			
	09T316ZNN-MF								●	●	●			9	3.97	1.6	-	1.5	14					
	130520ZNN-MF										●	●		13	5.56	2	-	2	14					
	160720ZNN-MF										●	●		16	7	2	-	2.5	14					
	060312ZNN-ML										●	●		6	3.18	1.2	-	1	14		B288 ~ B298			
	09T316ZNN-ML										●	●		9	3.97	1.6	-	1.5	14					
	130520ZNN-ML										●	●		13	5.56	2	-	2	14					
	160720ZNN-ML										●	●		16	7	2	-	2.5	14					
	060312ZNN-MM										●	●		6	3.18	1.2	-	1	14		B288 ~ B298			
	09T316ZNN-MM										●	●		9	3.97	1.6	-	1.5	14					
	130520ZNN-MM										●	●		13	5.56	2	-	2	14					
	160720ZNN-MM										●	●		16	7	2	-	2.5	14					

● : Stock item

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

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Picture	Designation	Cermet	Coated							Uncoated			Dimension (mm)						Geometry	Page		
			CN30	NC5330	NCM535	PC3700	PC6100	PC9530	PC5300	PC5535	PC5400	PDI010	ST30A	G10	H01	H05	IC/W1	S/S <sub>1</sub>			RE	BS
	310404ER-KC					●						●	●		9.525	4.5	0.4	-	26	90		B372
	190504PEFR-MA											●	●		11.3	5	0.4	3.817	17	90		B365 B398 B399
	190508PEFR-MA											●	●		11.3	5	0.8	3.365	17	90		
	190512PEFR-MA											●	●		11.3	5	1.2	2.978	17	90		
	190516PEFR-MA											●	●		11.3	5	1.6	2.624	17	90		
	190520PEFR-MA											●	●		11.3	5	2	2.181	17	90		
	190524PEFR-MA											●	●		11.3	5	2.4	1.813	17	90		
	190530PEFR-MA											●	●		11.3	5	3	1.166	17	90		
	190532PEFR-MA											●	●		11.3	5	3.2	0.975	17	90		
	190540PEFR-MA											●	●		11.3	5	4	1.649	17	90		
	190550PEFR-MA											●	●		11.3	5	5	0.679	17	90		
	19M504FR-MA											●	●		11.3	5	0.4	1.4	17	90		B366 B382 B386
	19M508FR-MA											●	●		11.3	5	0.8	1	17	90		
	19M512FR-MA											●	●		11.3	5	1.2	0.63	17	90		
	19M516FR-MA											●	●		11.3	5	1.6	0.32	17	90		
	19M518FR-MA											●	●		11.3	5	1.8	0.49	17	90		
	19M520FR-MA											●	●		11.3	5	2	0.834	17	90		
	19M530FR-MA											●	●		11.3	5	3	0.67	17	90		
	19M532FR-MA											●	●		11.3	5	3.2	0.48	17	90		
	19M540FR-MA											●	●		11.3	5	4	0.53	17	90		
	19M550FR-MA											●	●		11.3	5	5	0.4	17	90		
	250604FR-MA											●	●		13.84	6.35	0.4	1.545	23	90		
	250608FR-MA											●	●		13.84	6.35	0.8	1.17	23	90		
	250612FR-MA											●	●		13.84	6.35	1.2	0.76	23	90		
	250616FR-MA											●	●		13.84	6.35	1.6	0.363	23	90		
	250620FR-MA											●	●		13.84	6.35	2	1.469	23	90		
	250630FR-MA											●	●		13.84	6.35	3	0.561	23	90		
	250632FR-MA											●	●		13.84	6.35	3.2	0.363	23	90		
	250640FR-MA											●	●		13.84	6.35	4	1.206	23	90		
	250650FR-MA											●	●		13.84	6.35	5	0.386	23	90		
		19M504ER-ML														11.2	5	0.4	1.4	17		
19M508ER-ML															11.2	5	0.8	1	17	90		
19M512ER-ML															11.2	5	1.2	0.63	17	90		
19M516ER-ML															11.2	5	1.8	0.32	17	90		
19M518ER-ML															11.2	5	2	0.49	17	90		
19M520ER-ML															11.2	5	2.4	0.834	17	90		
19M530ER-ML															11.2	5	3	0.67	17	90		
19M532ER-ML															11.2	5	3.2	0.48	17	90		
19M540ER-ML															11.2	5	4	0.53	17	90		
19M550ER-ML															11.2	5	5	0.4	17	90		
250604ER-ML															13.84	6.35	0.4	1.545	23	90		
250608ER-ML															13.84	6.35	0.8	1.17	23	90		
250612ER-ML															13.84	6.35	0.8	0.76	23	90		
250616ER-ML															13.84	6.35	0.8	0.363	23	90		
250620ER-ML															13.84	6.35	0.8	1.469	23	90		
250630ER-ML															13.84	6.35	0.8	0.561	23	90		
250632ER-ML															13.84	6.35	0.8	0.363	23	90		
250640ER-ML															13.84	6.35	0.8	1.206	23	90		
250650ER-ML															13.84	6.35	0.8	0.386	23	90		
		080504PNFR-MA											●			10	5.5	0.4	2.57	8.2	90	
	080508PNFR-MA											●			10	5.5	0.8	2.29	8.2	90		
	080512PNFR-MA											●			10	5.5	1.2	2.28	8.2	90		
	080520PNFR-MA											●			10	5.5	2	1.39	8.2	90		
	120608PNFR-MA														13	6.5	0.8	2.78	12	90		


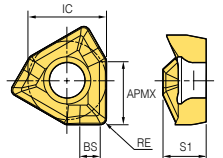

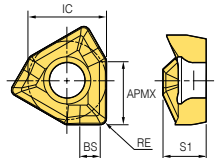

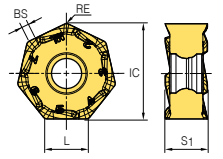

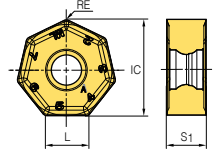

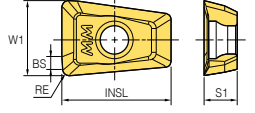
● : Stock item



# B Milling Inserts


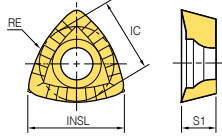

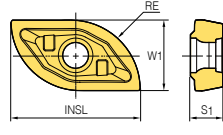

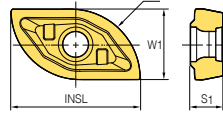

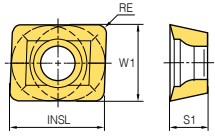

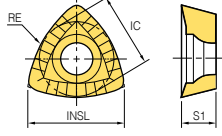

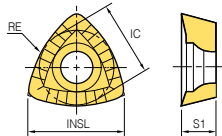
Workpiece	Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	Machining types
	Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●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

● Continuous cutting  
 ● General cutting  
 ✱ Interrupted cutting



Picture	Designation	Cermet	Coated								Uncoated		Dimension (mm)							Geometry	Page				
			CN30	NC5330	NCM535	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5535	PC5400	H01	H05	INSL	IC/W1	S/S1			RE	BS	APMX	KAPR(°)
 <b>XNKT-ML</b>	060405PNER-ML					●	●	●		●	●	●			-	6.5	4	0.5	1.3	5.7	90	 IC, APMX, BS, RE, S1	B80 ~ B85		
	060408PNER-ML							●		●	●	●			-	6.5	4	0.8	1.1	5.7	90				
	080504PNER-ML										●	●			-	10	5.5	0.4	2.98	8.2	90				
	080508PNER-ML			●		●	●	●		●	●	●			-	10	5.5	0.8	2.2	8.2	90				
	080512PNER-ML										●	●			-	10	5.5	1.2	1.81	8.2	90				
	080516PNER-ML										●	●			-	10	5.5	1.6	1.43	8.2	90				
	080520PNER-ML										●	●	●		-	10	5.5	2	1.05	8.2	90				
	120608PNER-ML						●	●		●	●	●			-	13	6.5	0.8	2.76	12	90				
	120612PNER-ML											●	●		-	13	6.5	1.2	2.37	12	90				
	120616PNER-ML											●	●		-	13	6.5	1.6	1.98	12	90				
	120620PNER-ML											●	●		-	13	6.5	2	1.59	12	90				
 <b>XNKT-MM</b>	060405PNSR-MM				●	●	●	●		●	●	●			-	6.5	4	0.5	1.3	5.7	90	 IC, APMX, BS, RE, S1	B80 ~ B85		
	060408PNSR-MM				●	●	●		●	●	●				-	6.5	4	0.8	1.1	5.7	90				
	080504PNSR-MM						●				●	●			-	10	5.5	0.4	2.57	8.2	90				
	080508PNSR-MM			●		●	●	●		●	●	●			-	10	5.5	0.8	2.2	8.2	90				
	080512PNSR-MM					●	●			●	●				-	10	5.5	1.2	1.81	8.2	90				
	080516PNSR-MM					●	●			●	●	●			-	10	5.5	1.6	1.43	8.2	90				
	080520PNSR-MM			●						●	●				-	10	5.5	2	1.1	8.2	90				
	120604PNSR-MM										●	●			-	13	6.5	0.4	3.11	12	90				
	120608PNSR-MM						●	●		●	●	●			-	13	6.5	0.8	2.76	12	90				
	120612PNSR-MM										●	●			-	13	6.5	1.2	2.37	12	90				
	120616PNSR-MM										●	●			-	13	6.5	1.6	1.98	12	90				
120620PNSR-MM						●			●					-	13	6.5	2	1.59	12	90					
 <b>XNMX-ML</b> [Right handed type]	0606XNR-ML		●				●	●	●	●	●				14.665	14	6.5	0.8	0.98	3.5	51	 BS, RE, IC, L, S1	B140		
 <b>XNMX-ML</b> [Neutral type]	060608-ML									●	●	●			14.665	14	6.5	0.8	-	4.8	51	 RE, IC, L, S1	B140		
 <b>XPMT-MM</b>	0802ER-MM									●					8.5	5.9	2.38	0.8	1.6	-	90	 W1, BS, RE, INSL, S1	B341 B342		
	1003ER-MM					●				●					10.5	7.25	3.18	0.8	1.6	-	90				
	13T3ER-MM									●					13.1	9	3.97	0.8	2.3	-	90				
	1604ER-MM									●					16.5	11.5	4.76	0.8	2.3	-	90				
	1805ER-MM									●					18	12.4	5.56	0.8	2.3	-	90				
	2006ER-MM									●					20.5	14.1	6.35	0.8	3.3	-	90				
2507ER-MM									●					25.5	17.6	7.94	0.8	3.8	-	90					

● : Stock item










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

Picture	Designation	Cermet	Coated							Uncoated	Dimension (mm)				Geometry	Page					
			CN30	NC5330	NCM325	NCM535	PC2505	PC2510	PC3700		PC6100	PC9530	PC5300	PC5535			PC5400	H01	H05	INSL	W1
	080310R-MM							●								8.114	6.73	3.2	10		B337
	110312.5R-MM															10.222	8.5	3.65	12.5		
	130416R-MM								●		●					12.723	10.5	4.76	16		
 Internal	080M-MM															16	8	3.5	8		B333
	100M-MM						●	●		●						18	10.4	4.5	10		
	125M-MM							●	●		●					23	12.9	5.3	12.5		
	130M-MM															25.7	13.4	5.3	13		
	150M-MM									●		●				28	15.4	7	15		
	160M-MM								●	●		●				28.5	16.4	7	16		
	200M-MM									●						38	20.7	8	20		
250M-MM															48	25.9	9.5	25			
 External	080S-MM															15	6.6	3.1	8		B335
	100S-MM							●	●		●					15.5	8.4	3.8	10		
	125S-MM								●		●					20.5	10.7	4.5	12.5		
	130S-MM															22.2	11	4.4	13		
	150S-MM									●		●				25	12.4	6.5	15		
	160S-MM								●	●		●				26	13.4	3.5	16		
	200S-MM									●						32	16.7	7	20		
250S-MM															40	20.7	8.5	25			
	1504PPSR-MM								●		●					15.848	12.7	4.76	1		B306 B354
	1505PPSR-MMN															15.848	12.7	5.56	1		
	160520R-MM								●		●					15.543	12.7	5.56	20		B338
	160525R-MM								●		●					15.69	12.7	5.56	25		
	160531.5R-MM											●				16.278	12.7	5.56	31.5		
	160525R-MR															15.661	12.7	5.56	25		











● : Stock item











Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for face milling	Mill-max	<b>ADN(M) 4000/5000+</b>		45°	Ø80~Ø315	Excellent cutting-edge strength and chip flow	●					B47 B48
		<b>AE(M) 4000/5000</b>		45°	Ø80~Ø315	Low cutting load and good machinability	●					B49 B50
		<b>EF(M) 4000</b>	<span style="border: 1px solid blue; padding: 2px;">Al</span> 	75°	Ø80~Ø315	High rake angle to prevent welding	●					B51
		<b>EN(M) 4000</b>		75°	Ø80~Ø315	Economical because double sided inserts applied	●					B52
		<b>EPN(M) 4000/5000+</b>		75°	Ø80~Ø315	Double posi rake angle and low cutting force	●					B53 B54
		<b>PF(M) 4000</b>	<span style="border: 1px solid blue; padding: 2px;">Al</span> 	90°	Ø80~Ø315	High rake angle and good machinability	●	●	●			B55
		<b>PPN(M) 4000</b>		90°	Ø80~Ø315	Double posi rake angle and low cutting force	●	●	●			B56
	Mill-max Heavy	<b>HDDCM 7000/9000</b>		55°	Ø125~Ø315	Deep roughing is available from its high-rigidity edge	●					B58
	Turbo Mill	<b>ADS 4000/5000</b>		45°	Ø50~Ø63	Anti-vibration	●					B59 B60
		<b>PES 2000/3000/ 4000</b>		90°	Ø20~Ø63	High rake angle, Cutting efficiency	●	●	●			B61
	Double Mill	<b>AFO(M)4000</b>		45°	Ø80~Ø125	High rake angle low cutting force	●					B62
		<b>AFO(M)5000</b>			Ø80~Ø315	Economical (8 corners available)						B63











Al Cutter for aluminum













Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for face milling	Power Buster	PBAC(M)5000		45°	Ø80-Ø315		●					B67
		PBZC(M)5000		90°	Ø80-Ø315	Double-sided Insert High depth High feed roughing	●					B68
		PBPCM6000			Ø80-Ø315		● ●				B69	
	Aero Mill	APD(M) A type		90°	Ø80-Ø315	Aluminum cutter body suitable for high speed machining, Both cemented carbides and PCD inserts are available, G2.5 balance possible	●					B150
	Aero Mill - Plus	APD(M)-PB		90°	Ø80-Ø315	Prevent overload to the spindle bearings through weight reduction of the Al alloy body and enable high-speed processing	●					B152 B153
	Aero Mill-Mini	MAPDS		90°	Ø40-Ø63		●					B156
		MAPD		90°	Ø32-Ø40	Suitable for small-sized machining center-Carbide, PCD insert Application-Balancing class G2.5	●					B155
	Rich Mill	RM8AC(M)4000 RMH8AC(M)4000		45°	Ø50-Ø400	8 corners available Double-sided insert for steel, cast iron, stainless steel, aluminum	●					B118 B119
		Ø80-Ø400				●				B120 B121		
		RM8EC(M)4000 RMH8EC(M)4000		75°	Ø50-Ø400	8 corners available Double-sided insert for steel, cast iron	●					B122 B123
		Ø80-Ø400				●				B124 B125		

 Cutter for aluminum

Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for face milling	Rich Mill	<b>RM8QC(M)4000</b> <b>RMH8QC(M)4000</b>		88°	Ø63~Ø200	8 corners available Reduced cutting interruption at cast Iron	●					B126 B127
		<b>RMT8A(M)4000/5000</b>		45°	Ø80~Ø315		●					B129 B130
		<b>RMT8E(M)4000/5000</b>		75°	Ø80~Ø315	Easy insert change and good machinability due to latch clamping system 8 corners available Excellent surface finish	●					B131 B132
		<b>RMT8Q(M)4000</b>		88°	Ø80~Ø315		●					B133
		<b>RMX8AC(M)-SA14</b>		45°	Ø50~Ø125	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	●					B136
		<b>RM14XCM-XN06</b>		51°	Ø50~Ø160	Double sided insert with 14 corners Suitable for automobile components machining	●					B140
		<b>RM16AC(M)6000/8000</b>		45°	Ø63~Ø400	16 corners available Wiper inserts can be applied for good surface finish Strong insert and powerful clamping	●					B142 B143
		<b>RMRC(M)-RN12</b>		-	Ø50~Ø125	High cost efficiency due to double sided round typed cutting edge Excellent rotating prevention by strong clamping system Suitable for Inconel cutting	●					B146
Cutters for molds	Rich Mill	<b>RM3PC(M)3000</b>		90°	Ø40~Ø80	Perfect perpendicularity Strong clamping	●	●	●	●	B80	
		Ø40~Ø125			B81							
		Ø80~Ø125			B82							
		<b>RM4PC(M)3000</b>		90°	Ø40~Ø100	4 corners available High rake angle insert reduces cutting force. Excellent insert rigidity	●	●	●	●	B92 B93	
		Ø50~Ø160										














Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	Rich Mill	RM4ZCM3000		90°	Ø40~Ø52	4 corners available In vertical machining, the maximum cutting depth for RM4Z3000: 9.00 mm, RM4Z4000: 14.0 mm	●	●	●	●	●	B97
		RM4ZC(M)4000			Ø63~Ø100							
		RM6PCM-WN04		90°	Ø40~Ø63	Improved productivity and high-quality shouldering through high speed and high feed machining	●	●	●	●	●	B110
		RM6PC(M)-WN08			Ø50~Ø125							B111
	Alpha Mill-X	AMXCM-AD10/12/17		90°	Ø40~Ø125	High rake angle cutting edge and chip breaker reduce cutting load and improve chip evacuation. High rigidity due to special design	●	●	●	●	●	B162 B163
	Alpha Mill	AMCM 1000S/1500S/2000S		90°	Ø32~Ø100	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	●	●	●	●	●	B173~ B175
		AMCM 3000S/3000S-K/4000S		90°	Ø40~Ø200		●	●	●	●	●	B176~ B178
		AMCM 1000SE 2000SE 3000SE		75°	Ø40~Ø100		●					B179~ B180
		AMCM 2000M 3000M 4000M		90°	Ø50~Ø125		●	●	●	●	●	B181~ B183
	Future Mill	FMAC(M)3000		45°	Ø50~Ø125	Accurate inserts and cutter, Excellent chip flow	●					B206
		FMAC(M)4000			Ø50~Ø200							B207
		FMAC(M)3000-A		45°	Ø63~Ø125	Excellent in high speed cutting and tapping center, low power machine due to light aluminum body	●					B208
		FMAC(M)4000-A			Ø63~Ø315							B209
		FMPC(M)3000		90°	Ø50~Ø100	4 corners available various inserts can be applied to machine for different types of workpiece	●	●	●			B212
FMPC(M)4000		Ø63~Ø125			B213							













Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	Future Mill	FMPC(M)3000-A		90°	Ø63~Ø100	Excellent in high speed cutting and tapping center, low power machine due to light aluminum body	●	●	●			B214 B215
		FMPC(M)4000-A			Ø63~Ø315							
		FMRC(M)3000		-	Ø40~Ø100	4-8 corners available Double contact faces between insert & seat part of cutter for stable clamping	●	●	●	●	●	B225
		FMRC(M)4000			Ø50~Ø125							B226
		FMRC(M)5000		-	Ø50~Ø125	Excellent rotating-free machining	●	●	●	●	●	B227
		FMRC(M)6000			Ø63~Ø160							B228
	Future Mill P-positive	FMRC(M)3000 4000 5000 6000		-	Ø40~Ø250	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.	●	●	●	●	●	B244~ B247
	Triple Mill	TPMCM-TN16		90°	Ø50~Ø125	3-cornered insert for shouldering	●	●	●			B259
		TPMCM-TN20			Ø63~Ø125	-Reduced cutting resistance due to high rake angled cutting edge and chip breaker						B260
	HFMD	HFMDCM-LN06		-	Ø32~Ø66	Double sided with 4 corners insert for small diameter machining	●	●	●		●	B267
		HFMD(M)-LN10			Ø40~Ø100	For high feed and multi-functional machining Strong clamping realizes stable machining.						B268
	HRM	HRMC(M)13		15°	Ø50~Ø80	Powerful clamping by double clamping system	●	●	●		●	B299
		HRMC(M)15			Ø63~Ø160	3 corners available high feed cutting with low cutting load						B300
	HRMD	HRMDC(M)09		14°	Ø40~Ø100	Double side insert with 6 corner High feed cutting with strong simple screw-on clamp	●	●	●		●	B288
		HRMDC(M)13			Ø50~Ø125							B289
		HRMDC(M)16			Ø80~Ø315							B290
	Tangen-Pro	TP2PC(M)-LN08		90°	Ø40~Ø63	High-quality results available even under harsh cutting conditions, thanks to the stable clamping force	●	●	●			B310
		TP2PC(M)-LN14			Ø40~Ø125							B311
TP2PC(M)-LN17		Ø40~Ø125			B312							
TP8PC(M)-SO14			90°	Ø40~Ø125	Application of 8-corner double-sided tangential insert Quality can be ensured even under harsh conditions with stable clamping force	●	●	●			B318	












Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page		
							Facing	Shouldering	Slotting	Copying	Ramping, Helical			
Cutters for molds	BT/HSK Tooling System	BT30/40/50		90°	Ø10~Ø50	BT/HSK one solid type has been accepted to increase the precision  Inner coolant system can also make it possible to evacuate the chip effectively	●	●	●	●	B344~B348			
		HSK63									B355~B359			
		BT30/40/50		90°	Ø16~Ø100	High feed and high depth	●	●	●	●	B349~B353			
		HSK63/100									B360~B364			
		BT30/40/50-MAT		90°	Ø12~Ø40	Alpha Mill, Rich Mill, FMR, Laser Mill, HRM(D), Pro-A, Pro-X Modular head M06~M16 applicable	●	●	●	●	●	B402		
		HSK63/100-MAT										B403		
	BT50 HAT4000		90°	Ø50~Ø80	Head only replacement possible and higher efficiency by self assembly head	●	●	●	●	●	B354			
Cutters for aluminum	Pro-A Mill	PAC(M) 2000/4000		90°	Ø40~Ø100	AI	Buffed insert controls chip flow without built-up edge	●	●	●	●	●	B377	
	Pro-X Mill	PAXC(M)5000		90°	Ø40~Ø125 Ø50~Ø125	AI	Powerful clamping Excellent body rigidity for rectangular and curve machining	●	●	●	●	●	B382	
		PAXC(M)6000											B383	
	Pro-L Mill	PALC(M)		90°	Ø63	AI	High helix and high depth of cut High perpendicularity Low cutting load	●	●	●	●	●	B389	
	Pro-V Mill	PAVCM-XD19		90°	Ø40~Ø125	AI	Exclusive milling tool for high speed aluminum machining with key to key way structure ensures stable clamping.	●	●	●	●	●	B398	
Indexable side cutter	Tangential type	Full-side cutter	TAFCP		-	Ø100~Ø315	AI	Various cutting depth can be possible because of adjustable length control. Medium to Roughing based on strengthened edge	●	●	●	●	●	B406
			TAFCB		-	Ø100~Ø315								B406, B408
	Half-side cutter	TAHCP		-	Ø100~Ø315	B407								
		TAHCB		-	Ø100~Ø315	B407, B409								













AI Cutter for aluminum























Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page		
							Facing	Shouldering	Slotting	Copying	Ramping, Helical			
Indexable side cutter	Radial type	Full-side cutter	<b>RAFCP</b>		-	Ø100~Ø315	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		●	●			B408	
			<b>RAFCB</b>		-	Ø100~Ø315		●	●	●			B408	
	Half-side cutter	<b>RAHCP</b>		-	Ø100~Ø315				●	●			B409	
		<b>RAHCB</b>		-	Ø100~Ø315	●		●	●				B409	
Side cutters	Full-side cutter	<b>SPP(M)</b>		-	Ø80~Ø200	Economical by using pentagonal insert Suitable for narrow & deep grooving				●			B410	
		<b>SPB(M)</b>		-	Ø80~Ø200	Economical by using pentagonal insert Suitable for narrow & deep grooving				●			B411	
		<b>SPS</b>		-	Ø50~Ø200	For narrow and deep width grooving				●			B412	
	Full-side cutter	<b>RM4PFCB</b>		-	Ø80~Ø160	4 corner usage with double-sided insert can be economical					●			B99 B100
		<b>RM4PFCP</b>		-	Ø80~Ø160						●			B103 B104
	Half-side cutter	<b>RM4PHCB</b>		-	Ø80~Ø160	4 corner usage with double-sided insert can be economical					●			B101 B102
		<b>RM4PHCP</b>		-	Ø80~Ø160						●			B105 B106
	Wind Mill	<b>WFSB(M)</b>		-	Ø100~Ø250	The nose R shape of insert ensures long tool life. Wide applications with various widths and corner R sizes.	●	●	●					B415
		<b>WFSP(M)</b>		-	Ø100~Ø250				●	●				

Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page	
							Facing	Shouldering	Slotting	Copying	Ramping, Helical		
Cutters for face milling	Turbo Mill	<b>ADS 4000/5000</b>		45°	Ø50~Ø63	Uneven insert spacing prevents chattering	●					B59 B60	
		<b>PES 2000/3000/4000</b>		90°	Ø20~Ø63	Good machinability due to the high rake angle	●	●	●			B61	
Cutters for molds	Rich Mill	<b>RM3PS3000</b>		90°	Ø20~Ø40	Perfect perpendicularity Strong clamping	●	●	●		●	B83	
		Ø32~Ø63			B84								
		<b>RM4PS3000</b>		90°	Ø14~Ø50	4 corners available High rake angle insert reduces cutting force Excellent insert rigidity	●	●	●		●	●	B94
		Ø32~Ø63			B95								
		<b>RM4ZS3000</b>		90°	Ø25~Ø40	In vertical machining, the maximum cutting width: 9.0 mm	●	●	●		●	B98	
		<b>RM6PS-WN04</b>		90°	Ø20~Ø32	Improved productivity and high-quality shouldering through high speed and high feed machining	●	●	●		●	●	B112
		Ø32~Ø50			B113								
		<b>RMRS-RN12</b>		-	Ø32~Ø63	High cost efficiency due to double sided round typed cutting edge Excellent rotating prevention by strong clamping system Suitable for Inconel cutting	●						B147
		<b>AMXS-AD10/12/17</b>		90°	Ø20~Ø40	High rake angle cutting edge and chip breaker reduce cutting resistance and improve chip evacuation. High rigidity due to special design	●	●	●	●	●		B164 B165
		Alpha Mill	<b>AMS 1000S/1500S 2000S/3000S 3000S-K/4000S</b>		90°	Ø10~Ø63	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	●	●	●	●	●	B184~ B192
			<b>AMS 1000SE/2000SE 3000SE</b>		75°	Ø25~Ø63							B193 B194
			<b>AMS 1000M/1500M 2000M/4000M</b>		90°	Ø16~Ø50							B195~ B197
<b>AMS 1000MH/1500MH 2000MH/3000MH(-K)</b>			90°	Ø14~Ø40	B198 B199								

Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	Future Mill	FMAS3000		45°	Ø25~Ø63	For precision machining Excellent chip evacuation	●					B210
		FMAS4000			Ø50~Ø63							B211
		FMPS3000		90°	Ø25~Ø63	4 corners available Strong cutting-edge with low cutting load	●					B216
		FMPS4000			Ø40~Ø63							B217
		FMRS 1000/1500/2000 2500/3000/4000 5000/6000		-	Ø8~Ø63	2 touch clamping system, convenient insert change	●	●	●	●	●	B229~ B234
	Future Mill P-positive	FMRS 2500/3000 4000/5000 6000		-	Ø17~Ø50	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	●	●	●	●	●	B248~ B251
	Triple Mill	TPMS-TN11		90°	Ø25~Ø40	3-cornered insert for shouldering	●	●	●			B261
		TPMS-TN16			Ø32~Ø40	Reduced cutting resistance due to high rake angled cutting edge and chip breaker						B262
	HFMD	HFMS-LN04		-	Ø8~Ø21	Double sided insert with 4 corners for small diameter machining	●	●	●	●	●	B269 B270
		HFMS-LN06			Ø16~Ø40	For high feed and multi- functional machining						B271 B272
		HFMS-LN10			Ø25~Ø42	Strong clamping system for stable machining						B273
	HFM	HFMS 1000		13°	Ø8~Ø21	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	●	●	●	●	●	B280 B281
	HRM	HRMS 08/10/13/15		15°	Ø20~Ø63	Powerful clamping by double clamping system 3 corners available  High feed cutting with low cutting load	●	●	●	●	●	B301~ B303
	HRMD	HRMS 06/09/13		14°	Ø16~Ø63	6 corners available, High feed, multi-function, only one screw application	●	●	●	●	●	B291~ B295
	Tangen-Pro	TP2PS-LN08		90°	Ø16~Ø25	High-quality results available even under harsh cutting conditions, thanks to the stable clamping force	●	●	●			B313
		TP2PS-LN14			Ø25~Ø50							B314
TP2PS-LN17		Ø32~Ø50			B315							
TP8PS-SO14			90°	Ø32~Ø40	Application of 8-corner double- sided tangential insert  Quality can be ensured even under harsh conditions with stable clamping force	●	●	●			B319	

Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page	
							Facing	Shouldering	Slotting	Copying	Ramping, Helical		
Cutters for molds	Tank Mill	<b>THE</b>		90°	Ø25~Ø50	Right-hand helix angle employed for good chip evacuation. Special surface treatment prevents body breaking and improves rigidity. Strong cutting-edge	●	●				B306	
	Laser Mill	<b>LBE</b> □□ <b>LRE</b> □□		-	Ø8~Ø32	Indexable ball endmill for precise mold. Rigid holder with simple design finishing MQL is available	●	●	●	●		B325~B327	
		<b>LBE</b> □□-C <b>LRE</b> □□-C		-	Ø8~Ø32	Indexable ball endmill for precise mold. Rigid holder with simple design finishing MQL is available Carbide shank	●	●	●	●		B324~B326	
	Mach Mill	<b>BFE</b>		-	Ø16~Ø32	Upgraded cutting performance with S type curve design V clamping application	●	●	●	●		B329	
		<b>GBE</b>		-	Ø16~Ø50	Helical design of edge can reduce the force during operation. Safe application to prevent rotation guarantee the increased tool life	●	●	●	●		B333~B334	
		<b>BRE</b>		-	Ø20~Ø63	Flute type chip-pocket can make chip-evacuation Customized edge design can prevent the breakage of holder's body	●	●	●	●		B337 B338	
	HAVE	<b>Multi-edge</b>		90°	Ø16~Ø50	Tools for Z-axis feed plunge machining to cut faster and more effectively in vertical machining	●	●	●	●		B342	
		<b>Single-edge</b>									Machining with whole diameter		B341
	O-ring Cutter	<b>ORC</b>		90°	Ø11~Ø46	For grooving the seat of an O-Ring in a plastic mold Superior surface roughness and cutting performance compared to HSS and razed tool	-	-	-	-	-	B368	
	Chamfer Tool	<b>CE</b>		75°	Ø25~Ø30	For Back & Front high quality chamfering and various Chamfering angle machining	●						B371
				60°	Ø25~Ø35								
				45°	Ø7~Ø39								
				30°	Ø25~Ø42								
		<b>CE</b>		30°	Ø5~Ø35	Various chamfer degrees available Effective long chamfer cutting available	●	●	●				B372
45°				Ø5~Ø48									
60°	Ø5~Ø57												
<b>CE</b>		45°	~Ø28	Centering, Grooving, Chamfering	●	●	●		●	B373			

Type	Cutter	Designation	Picture	KAPR	Diameter range	Features	Application					Page
							Facing	Shouldering	Slotting	Copying	Ramping, Helical	
Cutters for molds	Chamfer Tool	<b>CCT</b>		30°	Ø3~Ø16	Centering, Countersinking, Chamfering						E374
				45°								
				60°								
Cutters for molds	Chamfer Tool	<b>CET</b>		30°	Ø4~Ø16	Countersinking, Chamfering, Shouldering	●	●	●		●	E378
				45°								
				60°								
Cutters for molds	T-Cutter	<b>TFE</b>		90°	Ø21~Ø50	For slotting	●	●	●	●	●	B374
Cutters for aluminum	Pro-A Mill	<b>PAS 2000/4000</b>		90°	Ø12~Ø42 Ø32~Ø40	Polished face increases chip flow and reduces built-up edge	●	●	●	●	●	B378
	Pro-X Mill	<b>PAXS 5000/6000</b>		90°	Ø20~Ø40 Ø25~Ø40	Square shoulder and corner machining	●	●	●	●	●	B384 B385
	Pro-L Mill	<b>PALS-HR</b> (Single-edge)		90°	Ø32~Ø63	High helix and high depth of cut High perpendicularity Low cutting load	●	●	●	●	●	B390 B391
		<b>PALS-HM</b> (Multi-edge)			Ø63		●	●	●	●	●	
	Pro-XL Mill	<b>PXL</b>		90°	Ø40~Ø80	Improved surface finish and perpendicularity achieved by a single pass with the deep cutting-edges	●	●				B394
	Pro-V Mill	<b>PAVS-XD19</b>		90°	Ø25~Ø40	Exclusive milling tool for high speed aluminum machining with key to key way structure ensures stable machining.	●	●	●	●	●	B399
<b>HSK-XD19</b>			Ø32~Ø50		●		●	●	●	●		
Thread milling	-	<b>TM</b>		-	Ø32~Ø50	For internal and external threading	●					C17

<p><b>FMRM type</b></p> <p>➔ B235-B238 B252-B255</p>			<p><b>Steel Shank type</b></p> <p>➔ B400</p>
<p><b>LBE-MHD type</b></p> <p>➔ B328</p>			<p><b>Carbide Shank type</b></p> <p>➔ B401</p>
<p><b>PAM type</b></p> <p>➔ B379</p>			<p><b>BT Arbors type</b></p> <p>➔ B402</p>
<p><b>PAXM type</b></p> <p>➔ B386</p>			<p><b>HSK Arbors type</b></p> <p>➔ B403</p>
<p><b>AMM type</b></p> <p>➔ B200-B202</p>			
<p><b>RM3PM type</b></p> <p>➔ B85</p>			
<p><b>RM4PM type</b></p> <p>➔ B96</p>			

# B KORLOY Modular Adaptors

**RM4ZM type**

→ B98



**RM6PM type**

→ B114, B115



**HFMDM type**

→ B274-B276



**HFMM type**

→ B282



**HRMM type**

→ B304, B305



**HRMDM type**

→ B296-B298



**GBEM type**

→ B335



**Steel Shank type**

→ B400



**Carbide Shank type**

→ B401



**BT Arbors type**

→ B402



**HSK Arbors type**

→ B403

# ADN(M)4000

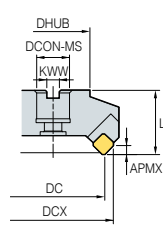
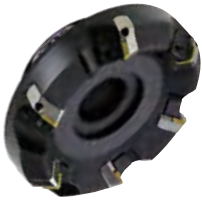


Fig. 1

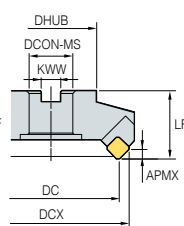


Fig. 2

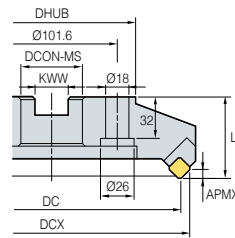


Fig. 3

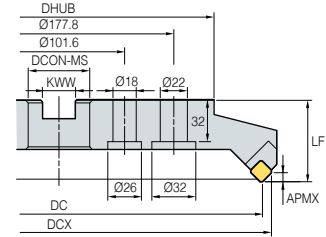


Fig. 4



KAPR  
**45°**

- GAMP : 15°
- GAMF : -4°

(mm)

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
<b>ADN</b>												
<b>(ADNM)</b>												
<b>4080R/L</b>	● (●)	(●)	4	80	93.8	57	25.4(27)	9.75(12.4)	50	6	1.8	1
<b>4100R/L</b>	● (●)		5	100	113.8	67	31.75(27)	12.7(14.4)	50	6	2.4	2
<b>4125R/L</b>	● (●)		6	125	138.8	87	38.1(32)	15.9(16.4)	63	6	4.2	2
<b>4160R/L</b>	● (●)		8	160	173.8	107	50.8(40)	19(16.4)	63	6	6.3	2
<b>4200R/L</b>	●		10	200	213.7	130	47.625(60)	25.4(25.7)	63	6	8.5	3
<b>4250R/L</b>	●		12	250	263.7	180	47.625(60)	25.4(25.7)	63	6	13.9	3
<b>4315R/L</b>	●		14	315	328.7	240	47.625(60)	25.4(25.7)	63	6	21.0	4

( ) Metric size, ● : Stock item

## Available inserts

	SDCN	SDKN-MU	SDKN-SU	SDKR-MX												
Designation	Cermet	Coated			Page											
	CN30	NC5330	NCM325	NCM335		NCM535	NCM545	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
<b>SDCN 42M</b>																
<b>42M-G</b>																
<b>42MT</b>	●		●													
<b>42MT-RH</b>																
<b>42MT-S20</b>									●							B19
<b>1203AEEN</b>																
<b>1203AEEN-RH</b>																
<b>1203AESN</b>																
<b>1203AESN-RH</b>																
<b>SDKN 1203AESN-MU</b>																
<b>1203AESN-SU</b>																
<b>SDKR 1203AESN-MX</b>																
<b>1203AETN-MX</b>																
<b>1203AEN-MX</b>																

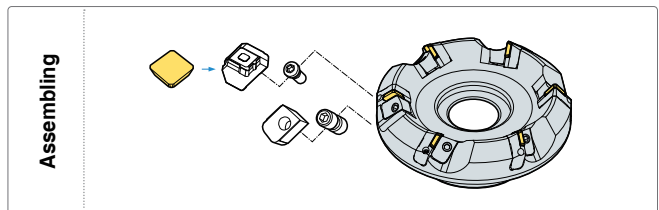
## Available arbors

Designation	General arbor	NC arbors	
		ADN	ADNM
<b>ADN 4080R/L</b>	NT*□□ (MU)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
<b>(ADNM) 4100R/L</b>	NT*□□ (MU)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
<b>4125R/L</b>	NT*□□ (MU)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
<b>4160R/L</b>	NT*□□ (MU)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
<b>4200R/L</b>	NT*□□ (MU)-FMA47.625-25. KCP-8***	BT**□□ -FMA47.625-□□	FMB60
<b>4250R/L</b>	NT*□□ (MU)-FMA47.625-25. KCP-8***	BT**□□ -FMA47.625-□□	FMB60
<b>4315R/L</b>	KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
<b>P</b>	190~320	0.05~0.20	<b>NCM325</b> <b>PC3700</b> <b>ST30A</b>
	161~270	0.05~0.20	
	80~140	0.05~0.20	
<b>M</b>	90~150	0.05~0.20	<b>PC9530</b>
<b>K</b>	140~230	0.05~0.30	<b>PC6100</b> <b>G10</b>
	50~90	0.05~0.30	



## Parts

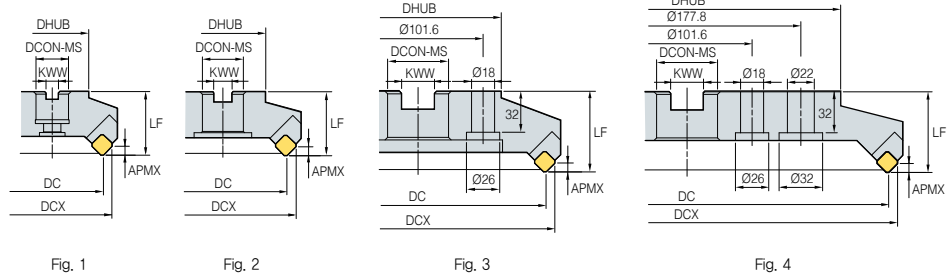
Specification					
Ø80~Ø315	LADN4R/L	WEPN4R/L	DHA0821F	LTX0514	HW40

Available inserts **B19, B20**

Available arbors and bolt **E94 ~ 95**



## ADN(M)5000+



KAPR  
45°  
• GAMP : 15°  
• GAMF : -4°

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
ADN			4	80	98.4	65	25.4(27)	9.75(12.4)	63	8	2.3	1
(ADNM)	●		5	100	118.4	67	31.75(27)	12.7(14.4)	63	8	3.0	2
	● (●)		6	125	143.3	87	38.1(32)	15.9(16.4)	63	8	4.6	2
	●		8	160	173.3	107	50.8(40)	19.1(16.4)	63	8	6.4	2
	● (●)		10	200	218.3	140	47.625(60)	25.4(25.7)	63	8	8.6	3
	(●)		12	250	268.3	220	47.625(60)	25.4(25.7)	63	8	15.4	3
	(●)		14	315	333.3	280	47.625(60)	25.4(25.7)	63	8	23.6	4

( ) Metric size, ● : Stock item

### Available inserts

	SDCN	SDKN-MU	SDKN-SU	SDKR-MX	
Designation	Cermet	Coated			Page
	CN30	NC5330 NCM325 NCM335 NCM535 NCM545	PC3700 PC9530 PC9540 PC5300 PC5400	ST30A G10 H01	
SDCN	53M				B19
	53M-G				
	53MT	●	●	●	
	53MT-RH				
	53MT-S20			●	
	1504AEEN				
	1504AEEN-RH		●	●	
	1504AESN				
	1504AESN-RH			●	
SDKN	1504AESN-MU		●		B20
	1504AESN-SU		●	● ●	
SDKR	1504AESN-MX		●		B20
	1504AETN-MX				
	1504AEN-MX		●		

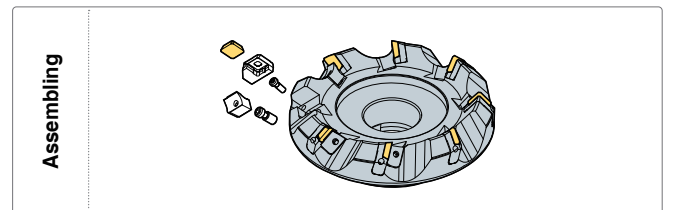
### Available arbors

Designation	General arbor	NC arbors	
		ADN	ADNM
ADN	5080R/L+ NT*□□ (M/U)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
(ADNM)	5100R/L+ NT*□□ (M/U)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
	5125R/L+ NT*□□ (M/U)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
	5160R/L+ NT*□□ (M/U)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
	5200R/L+ NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
	5250R/L+ NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
	5315R/L+ KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	



### Parts

Specification					
Locator	LADN5R/L	WHP55R/L	Wedge screw	Locator screw	Wrench
Ø80~Ø315			WHX0817 WHX0813*	LTX0514	HW40

Available inserts B19, B20 Available arbors and bolt E94 ~ 95

\*: Ø80

# AE(M)4000

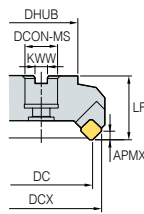


Fig. 1

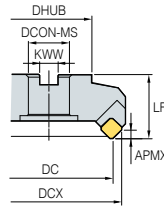


Fig. 2

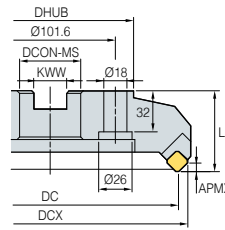


Fig. 3

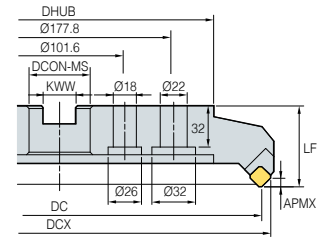


Fig. 4



KAPR  
**45°**  
• GAMP : 20°  
• GAMF : -3°

(mm)

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
<b>AE</b>												
<b>(AEM)</b>												
<b>4080R/L</b>			4	80	93.1	60	25.4(27)	9.5(12.4)	50	5.5	1.9	1
<b>4100R/L</b>	●		5	100	113.1	80	31.75(32)	12.7(14.4)	50	5.5	2.5	2
<b>4125R/L</b>	● (●)		6	125	138.1	100	38.1(40)	15.9(16.4)	63	5.5	4.5	2
<b>4160R/L</b>	●		8	160	173.1	120	50.8(40)	19.1(16.4)	63	5.5	6.9	2
<b>4200R/L</b>	● (●)		10	200	213.1	130	47.625(60)	25.4(25.7)	63	5.5	8.9	3
<b>4250R/L</b>	(●)		12	250	263.1	130	47.625(60)	25.4(25.7)	63	5.5	17.5	3
<b>4315R/L</b>	(●)		15	315	328	240	47.625(60)	25.4(25.7)	63	5.5	1.4	4

( ) Metric size, ● : Stock item

## Available inserts

		SECN	SEKN-SU	SEKR-MX												
Designation	Page	Cermet	Coated				Uncoated									
		CN30	NC5330	NCM325	NCM335	NCM335	NCM335	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
SECN	1203AFFN															
	1203AFTN	●														
	1203AFEN															
	1203AFSN		● ●													B21
	1203AFEN-RH															
	1203AFSN-RH															
	1203AFTN-S20															
SEKN	1203AFSN-SU															B21
SEKR	1203AFSN-MX															B22

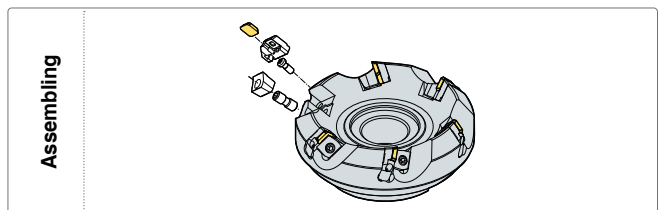
## Available arbors

Designation	General arbor	NC arbors	
		AE	AEM
<b>AE</b>			
<b>(AEM)</b>			
<b>4080R/L</b>	NT*□□ (MU)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
<b>4100R/L</b>	NT*□□ (MU)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
<b>4125R/L</b>	NT*□□ (MU)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
<b>4160R/L</b>	NT*□□ (MU)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
<b>4200R/L</b>	NT*□□ (MU)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
<b>4250R/L</b>	NT*□□ (MU)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
<b>4315R/L</b>	KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
<b>P</b>	190~320	0.05~0.20	<b>NCM325</b> <b>PC3700</b> <b>ST30A</b>
	161~270	0.05~0.20	
	80~140	0.05~0.20	
<b>M</b>	90~150	0.05~0.20	<b>PC9530</b>
<b>K</b>	140~230	0.05~0.30	<b>PC6100</b> <b>G10</b>
	50~90	0.05~0.30	



## Parts

Specification					
Ø80~Ø315	LADN4R/L	WEPN4R/L	DHA0821F	LTX0514	HW40

Available inserts **B21, B22**

Available arbors and bolt **E94 ~ E95**

## AE(M)5000

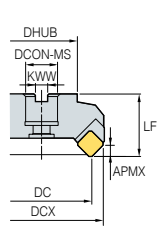


Fig. 1

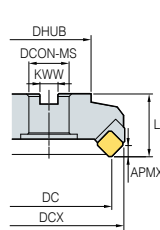


Fig. 2

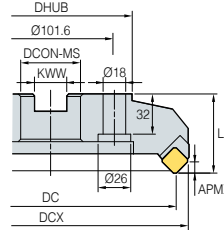


Fig. 3

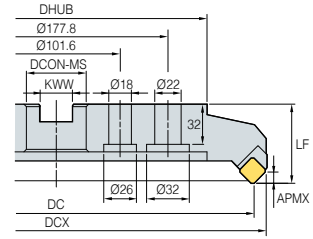


Fig. 4



KAPR  
45°  
• GAMP : 20°  
• GAMF : -3°

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
AE (AEM) 5080R/L			4	80	97.6	60	25.4(27)	9.5(12.4)	50	7.5	1.8	1
5100R/L			5	100	117.5	80	31.75(32)	12.7(14.4)	50	7.5	2.4	2
5125R/L	●		6	125	142.5	100	38.1(40)	15.9(16.4)	63	7.5	4.4	2
5160R/L	●		8	160	177.4	120	50.8(40)	19.1(16.4)	63	7.5	6.1	2
5200R/L	●		10	200	217.5	130	47.625(60)	25.4(25.7)	63	7.5	8.6	3
5250R/L			12	250	267.4	180	47.625(60)	25.4(25.7)	63	7.5	14.1	3
5315R/L			15	315	332.4	240	47.625(60)	25.4(25.7)	63	7.5	25.1	4

( ) Metric size, ● : Stock item

### Available inserts



Designation	Cermet	Coated								Uncoated	Page				
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	G10
SECN 1504AFFN													●		
1504AFTN	●														
1504AFEN															
1504AFSN															
1504AFEN-RH															B21
1504AFSN-RH									●						
1504AFTN-S20															
SEKN 1504AFSN-SU													●		
1504AFSN-MX														●	
SEKR 1504AFSN-MX															B22

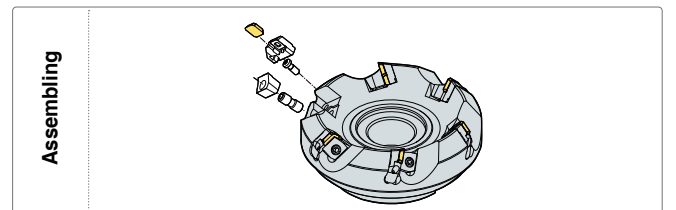
### Available arbors

Designation	General arbor	NC arbors	
		AE	AEM
AE (AEM) 5080R/L	NT*□□ (M/U)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
5100R/L	NT*□□ (M/U)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
5125R/L	NT*□□ (M/U)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
5160R/L	NT*□□ (M/U)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
5200R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
5250R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
5315R/L	KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	

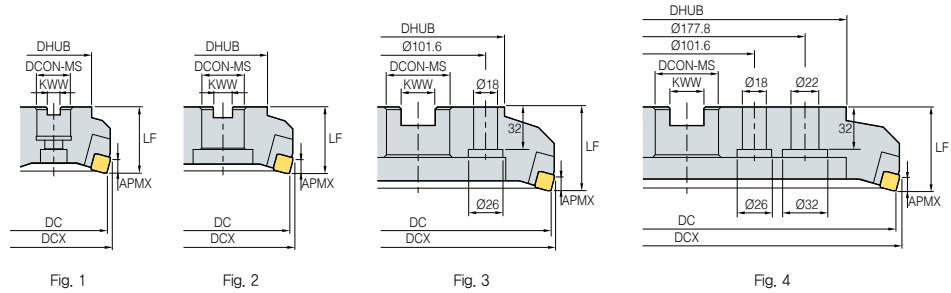


### Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LAE5R/L	WAE5R/L	DHA0821F	LTX0512	HW40

Available inserts B21, B22 Available arbors and bolt E94 ~ E95

# EF(M)4000



KAPR  
**75°**  
• GAMP : 18°  
• GAMF : 11°

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
<b>EF</b>												
<b>(EFM)</b>												

( ) Metric size, ● : Stock item

## Available inserts

SFCN	
Designation	Page
SFCN 1203EFR	B22

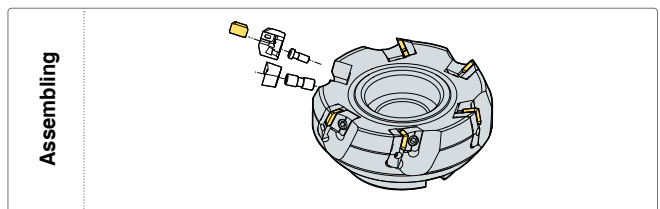
## Available arbors

Designation	General arbor	NC arbors	
		EN	ENM
<b>ADN</b>	5080R/L+ NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
<b>(ADNM)</b>	5100R/L+ NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
	5125R/L+ NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
	5160R/L+ NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
	5200R/L+ NT*□□(M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
	5250R/L+ NT*□□(M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
	5315R/L+ KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
<b>K</b>	75~125	0.05~0.3	<b>H01</b>
<b>N</b>	300~400	0.05~0.3	<b>H01</b>



## Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LEF4R/L LEF4R1*/L1*	WEFR/L	DHA0821F	LTX0512	HW40

Available inserts **B22** Available arbors and bolt **E94 ~ E95**

\*:Ø80~Ø125

## EN(M)4000

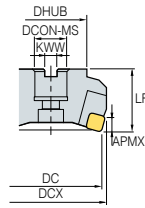


Fig. 1

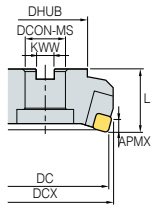


Fig. 2

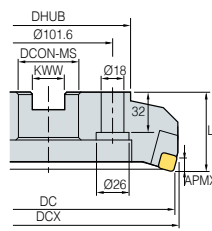


Fig. 3

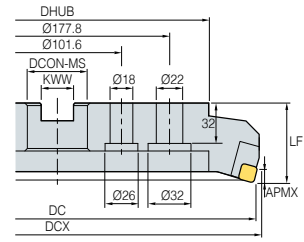


Fig. 4



KAPR  
75°

- GAMP : -6°
- GAMF : -5°

(mm)

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
EN 4080R/L			5	80	85.3	57	25.4(27)	9.5(12.4)	50	8.5	1.5	1
(ENM) 4100R/L	●		6	100	105.3	67	31.75(32)	12.7(14.4)	50	8.5	2.2	2
4125R/L	●		8	125	130.3	87	38.1(40)	15.9(16.4)	63	8.5	4.5	2
4160R/L	●		10	160	165.3	107	50.8(40)	19.1(16.4)	63	8.5	10.0	2
4200R/L			12	200	205.3	130	47.625(60)	25.4(25.7)	63	8.5	8.4	3
4250R/L			16	250	255.3	180	47.625(60)	25.4(25.7)	63	8.5	16.5	3
4315R/L			20	315	322	240	47.625(60)	25.4(25.7)	63	8.5	21.6	4

( ) Metric size, ● : Stock item

### Available inserts

SNCN

SNKN



Designation	Cermet	Coated							Uncoated			Page				
	CN30	NC5330	NCM325	NCM335	NCM545	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
SNCN 1204ENN		●											●			B23
SNKN 1204ENN																B25

### Available arbors

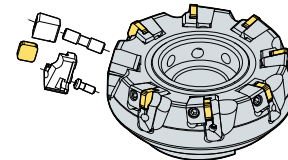
Designation	General arbor	NC arbors	
		EN	ENM
EF 4080R/L	NT*□□(MU)-FMA25.4-25-□□	BT**□□-FMA25.4-□□	FMC27
(EFM) 4100R/L	NT*□□(MU)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
4125R/L	NT*□□(MU)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
4160R/L	NT*□□(MU)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
4200R/L	NT*□□(MU)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
4250R/L	NT*□□(MU)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
4315R/L	KCP-8***(Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	

Assembling



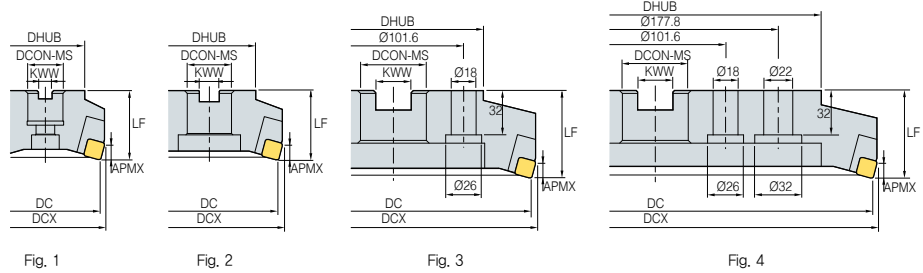
### Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LEN4R/L	WENR/L WENR1*/L1*	DHA0830 DHA0825*	LTX0512	HW40

Available inserts B23, B25 Available arbors and bolt E94 ~ E95

\*:Ø80~Ø100

# EPN(M)4000



KAPR  
**75°**  
• GAMP : 7°  
• GAMF : 0°

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
EPN	4080R/L	● (●)	5	80	85.4	57	25.4(27)	9.5(12.4)	50	9	1.3	1
(EPNM)	4100R/L	● (●)	6	100	105.3	67	31.75(32)	12.7(14.4)	50	9	1.9	2
	4125R/L	● (●) ●	8	125	130.3	87	38.1(40)	15.9(16.4)	63	9	3.8	2
	4160R/L	● (●)	10	160	166.1	107	50.8(40)	19.1(16.4)	63	9	5.4	2
	4200R/L	●	12	200	205.3	130	47.625(60)	25.4(25.7)	63	9	8.2	3
	4250R/L	● (●)	16	250	255.3	180	47.625(60)	25.4(25.7)	63	9	13.1	3
	4315R/L	●	20	315	320.3	240	47.625(60)	25.4(25.7)	63	9	20.6	4

( ) Metric size, ● : Stock item

## Available inserts



Designation	Cermet	Coated							Uncoated			Page				
		CN30	NC5330	NCM325	NCM335	NCM335	NCM545	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	G10
SPCN 1203EDR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1203EDL																●
1203EDR-G																●
1203EDER-RH																●
1203EDSR-RH																●
1203EDTR-RH																●
1203EDR-S20																●
SPKN 1203EDSR-MU																●
1203EDSR-SU																●
1203EDSL-SU																●
SPKR 1203EDSR-MX																●
1203EDSL-MX																●
SPEX 1203EDR/L-1																●

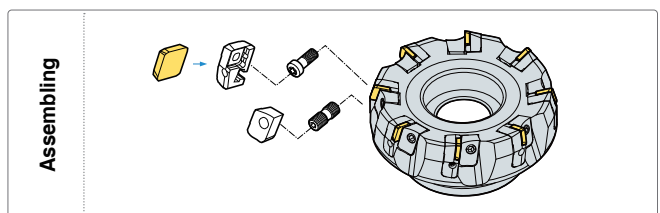
## Available arbors

Designation	General arbor	NC arbors	
		EPN	EPNM
EPN 4080R/L	NT*□□ (MU)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
(EPNM) 4100R/L	NT*□□ (MU)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
4125R/L	NT*□□ (MU)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
4160R/L	NT*□□ (MU)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
4200R/L	NT*□□ (MU)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
4250R/L	NT*□□ (MU)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
4315R/L	KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	



## Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80-Ø315	LEPN4R/L LEPN4R1*/L1*	WEPN4R/L	DHA0821F DHA0817F*	LTX0514	HW40

Available inserts **B26, B27** Available arbors and bolt **E94 ~ E95**

\*: Ø80~Ø100

## EPN(M)5000+

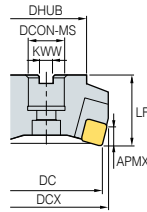


Fig. 1

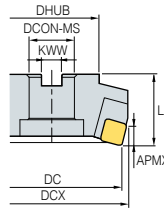


Fig. 2

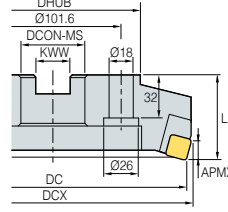


Fig. 3

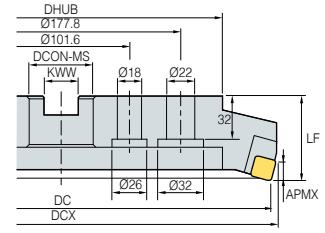


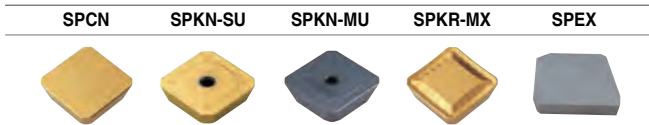
Fig. 4



Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
EPN	5080R/L+	●	5	80	87.1	60	25.4(27)	9.5(12.4)	63	12	1.6	1
(EPNM)	5100R/L+	●	6	100	107.1	70	31.75(32)	12.7(14.4)	63	12	2.3	1
	5125R/L+	●	8	125	132.1	90	38.1(40)	15.9(16.4)	63	12	3.5	2
	5160R/L+	●	10	160	169.2	110	50.8(40)	19.1(16.4)	63	12	3.6	2
	5200R/L+	●	12	200	209.1	150	47.625(60)	25.4(25.7)	63	12	8.4	3
	5250R/L+	●	16	250	257.1	220	47.625(60)	25.4(25.7)	63	12	14.3	3
	5315R/L+	●	20	315	322	270	47.625(60)	25.4(25.7)	63	12	21.8	4

( ) Metric size, ● : Stock item

### Available inserts



Designation	Cermet		Coated						Uncoated		Page			
	CN80	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6100	PC9530	PC5300		PC5400	ST30A	G10
SPCN 150412T														
1504EDR	●		●									●	●	
1504EDSR														
1504EDL									●					
1504EDR-G														● B26
1504EDER-RH									●	●				
1504EDSR-RH									●					
1504EDTR-RH														
1504EDR-S20										●				
SPKN 1504EDSR-MU									●					
1504EDSR-SU									●	●	●			B27
1504EDSL-SU									●					
SPKR 1504EDR-MX			●											B27
1504EDSR-MX														
SPEX 1504EDR/L-1														B26

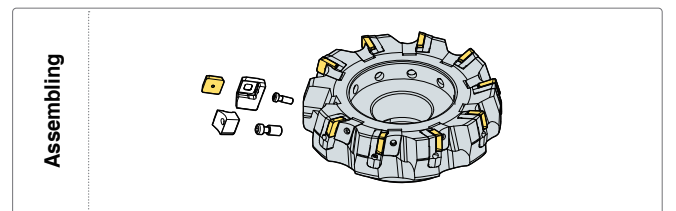
### Available arbors

Designation	General arbor	NC arbors	
		EPN	EPNM
EPN 5080R/L+	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
(EPNM) 5100R/L+	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
5125R/L+	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
5160R/L+	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
5200R/L+	NT*□□(M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
5250R/L+	NT*□□(M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
5315R/L+	KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	



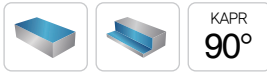
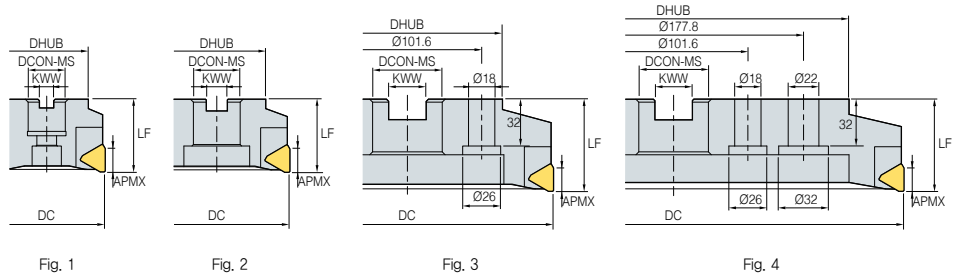
### Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LEPN5R/L LEPN5R1*/L1*	WHPS5R/L	WHX0817 WHX0813*	LTX0514	HW40

Available inserts B26, B27 Available arbors and bolt E94 ~ E95

\* : Ø80

# PF(M)4000



• GAMP : 15°  
• GAMF : 14°

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
PF (PFM) 4080R/L	●		4	80	80	57	25.4(27)	9.5(12.4)	50	16	1.1	1
4100R/L	●		4	100	100	67	31.75(32)	12.7(14.4)	50	16	1.8	2
4125R/L	●		7	125	125	87	38.1(40)	15.9(16.4)	63	16	3.3	2
4160R/L			9	160	160	107	50.8(40)	19.1(16.4)	63	16	5.3	2
4200R/L			11	200	200	130	47.625(60)	25.4(25.7)	63	16	8.8	3
4250R/L			15	250	250	180	47.625(60)	25.4(25.7)	63	16	16.0	3
4315R/L			19	315	315	240	47.625(60)	25.4(25.7)	63	16	20.8	4

( ) Metric size, ● : Stock item

## Available inserts

TFCN

Designation	Cermet	Coated							Uncoated		Page				
	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	G10
TFCN 2203PFR															●
2203PFL															

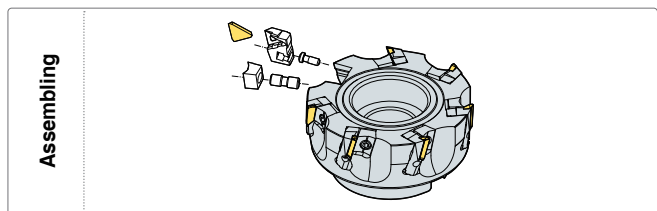
## Available arbors

Designation	General arbor	NC arbors	
		PF	PFM
PF 4080R/L	NT*□□ (MU)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
(PFM) 4100R/L	NT*□□ (MU)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
4125R/L	NT*□□ (MU)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
4160R/L	NT*□□ (MU)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
4200R/L	NT*□□ (MU)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
4250R/L	NT*□□ (MU)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
4315R/L	KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	



## Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LPF4R/L LPF4R1**/L1**	WPFR/L	DHA0821F DHA0817F*	LTX0512	HW40

Available inserts **B28** Available arbors and bolt **E94 ~ E95**

\*:Ø80~Ø100 / \*\*:Ø80~Ø125



## PPN(M)4000

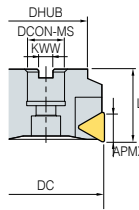
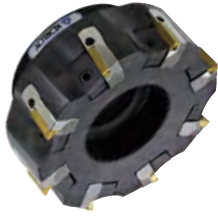


Fig. 1

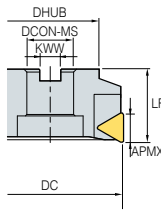


Fig. 2

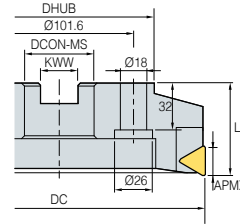


Fig. 3

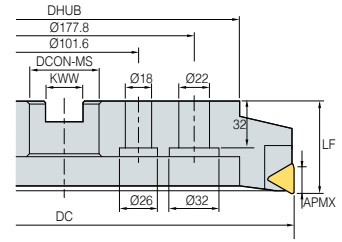
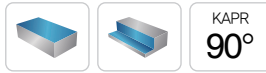


Fig. 4

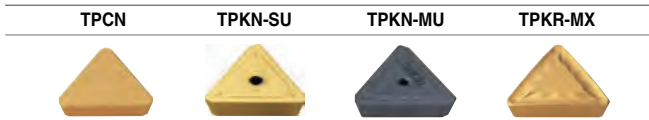


• GAMP : 7°  
• GAMF : 0°

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
PPN	4080R/L	● (●)	5	80	80.3	57	25.4(27)	9.5(12.4)	50	18	1.3	1
(PPNM)	4100R/L	● (●)	6	100	100.3	67	31.75(32)	12.7(14.4)	50	18	1.9	2
	4125R/L	● (●)	8	125	125.3	87	38.1(40)	15.9(16.4)	63	18	3.5	2
	4160R/L	● (●)	10	160	160.3	107	50.8(40)	19.1(16.4)	63	18	5.6	2
	4200R/L	● (●)	12	200	200.2	130	47.625(60)	25.4(25.7)	63	18	7.7	3
	4250R/L	●	16	250	250.2	180	47.625(60)	25.4(25.7)	63	18	12.8	3
	4315R/L	●	20	315	315.2	240	47.625(60)	25.4(25.7)	63	18	20.6	4

( ) Metric size, ● : Stock item

### Available inserts



Designation	Cermet	Coated						Uncoated			Page			
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6100	PC9530	PC5300		PC5400	ST30A	G10
TPCN	2204PDR	●	●									●	●	
	2204PDR-G													●
	2204PDL													●
	2204PDSR			●										
	2204PDTR													
	2204PDR-RH													
	2204PDER-RH							●		●				
	2204PDSR-RH							●						
	2204PDR-S20								●					
TPKN	2204PDSR-MU							●						
	2204PDSR-SU							●		●	●			
	2204PDSL-SU							●						
TPKR	2204PDR-MX		●											
	2204PDSR-MX		●	●										
	2204PPR-MX													

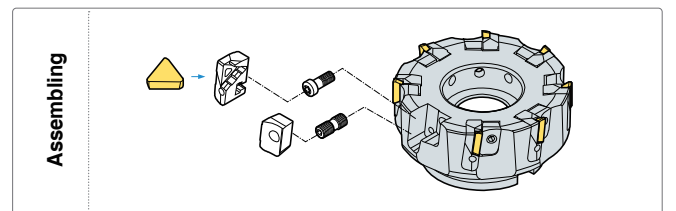
### Available arbors

Designation	General arbor	NC arbors		
		PPN	PPNM	
PPN	4080R/L	NT*□□ (M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
(PPNM)	4100R/L	NT*□□ (M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
	4125R/L	NT*□□ (M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
	4160R/L	NT*□□ (M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
	4200R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
	4250R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
	4315R/L	KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	



### Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LPPN4R/L LPPN4R1*/L1*	WPPN4R/L	DHA0821F DHA0817F*	LTX0514	HW40

Available inserts B28, B29 Available arbors and bolt E94 ~ E95

\*:Ø80~Ø100

Highly rigid inserts for roughing

# Mill Max Heavy



- **Productivity** - Cutting time is reduced by the cutting-edge design specialized for rough facing at high depth of cuts
- **High rigidity** - The highly rigid inserts and cutter shim prevent tool breakage in rough facing
- **Clamping stability** - The wedge-type clamping system, which is easy-to-use and strong, reduces time for replacing inserts, and improves clamping stability

## Features of insert

- **Highly rigid inserts**
  - Ideally suited for roughing at high depth of cuts
- **Wide chip pocket area**
  - Improved chip evacuation
  - Reduced cutting loads
- **Minor cutting-edge**
  - Improved surface finish thanks to the wiper function
- **Major cutting-edge**
  - High rake angle
- **2-level flank relief surface**
  - Relief angle availability even at high feed rates

**MAX. ap**  
 SCKN22: 10.5 mm  
 SCKN28: 14.5 mm

## Features of chip breakers

Insert	Cutting-edge	Uses	Features
MM 		For roughing	Highly rigid chip breaker ideally suited for roughing at high depth of cuts

## Features of cutter

- **Cutter shim**
  - Prevent cutter breakage even under harsh cutting conditions
- **Wide chip pockets**
  - Improve chip evacuation
- **Wedge-type clamping system**
  - Provides clamping stability
  - Reduces time for replacing inserts

## Recommended cutting conditions

	Workpiece	Grade	Cutting condition		
			vc (m/min)	fz (mm/t)	ap (mm)
P	Low carbon steel/Mild steel	PC5300, NC5340, NCM535	140~270	0.2~0.4	2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28]
	High carbon steel	PC5300, NC5340, NCM535	100~220	0.2~0.4	2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28]
	Alloy steel	PC5300, NC5340, NCM535	100~180	0.2~0.4	2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28]
M	Stainless steel	PC5300, NC5340, NCM535	90~180	0.2~0.4	2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28]
K	Cast iron	PC5300, NC5340, NCM535	100~180	0.2~0.4	2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28]

## HDDCM 7000/9000

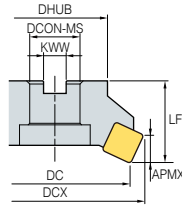


Fig. 1

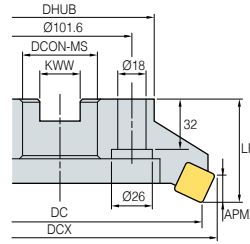


Fig. 2

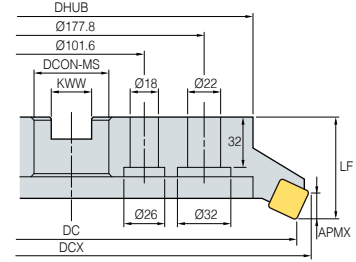


Fig. 3



KAPR  
55°

- GAMP : 8°
- GAMF : -11°

Designation		Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
HDDCM	7125R-5		5	125	144.139	90	40	16.4	63	10.5	3.6	1
	7160R-6		6	160	179.092	110	40	16.4	63	10.5	5.1	2
	7160R-8	●	8	160	179.092	110	40	16.4	63	10.5	4.6	2
	7200R-8		8	200	219.06	130	60	25.7	63	10.5	8.7	2
	7200R-10	●	10	200	219.06	130	60	25.7	63	10.5	8.5	2
	7250R-10		10	250	269.086	180	60	25.7	63	10.5	13.8	2
	7250R-12	●	12	250	269.086	180	60	25.7	63	10.5	13.2	2
	7315R-12	●	12	315	334.073	240	60	25.7	63	10.5	21.7	3
	7315R-14		14	315	334.073	240	60	25.7	63	10.5	22	3
	9125R-5		5	125	149.74	90	40	16.4	63	14.5	3.5	1
	9160R-6		6	160	184.678	110	40	16.4	63	14.5	6.5	2
	9200R-8		8	200	224.695	130	60	25.7	63	14.5	8.8	2
	9250R-10		10	250	274.656	180	60	25.7	63	14.5	14.1	2
	9250R-12		12	250	274.656	180	60	25.7	63	14.5	134.1	2
9315R-12		12	315	339.55	240	60	25.7	63	14.5	21.3	3	

● : Stock item

### Available inserts

SCKN-MM



Designation	Cermet		Coated						Uncoated		Page				
	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC8100	PC9530	PC9540		PC5300	PC5400	ST30A	G10
7000 type SCKN 220715DDSR-MM			●												
9000 type SCKN 280920DDSR-MM															B19

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	140~270	0.2~0.4	NC5340 NCM535
	100~220		
	100~180		
M	90~180		
K	100~180		

### Available arbors

Designation	General arbor
HDDCM 7125R-5	NT*□□ (M/U)-FMC40
7160R-6	
7160R-8	
7200R-8	NT*□□ (M/U)-FMC60
7200R-10	
7250R-10	
7250R-12	
7315R-12	
7315R-14	NT*□□ (M/U)-FMC40
9125R-5	
9160R-6	
9200R-8	
9250R-10	
9250R-12	
9315R-12	

\*□□ -NT number

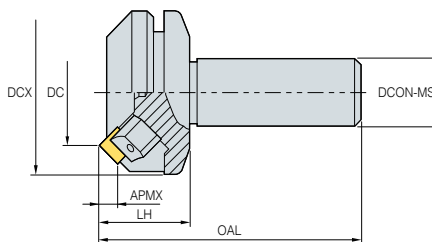
### Parts

Specification					
Ø125~Ø315(7000 type)	WHD7R/L	WHX0817	SS64DPR	FTGA0614	HW40
Ø125~Ø315(9000 type)	WHD9R/L	WHX0817	SS84DPR	FTGA0818	HW40

Available inserts **B19**

Available arbors and bolt **E96**

# ADS4000



KAPR  
45°

- GAMP : 15°
- GAMF : -3°

Designation	Stock		CICT	DC	DCX	DCON-MS	LH	OAL	APMX	kg
	R	L								
ADS	4050R/L	●	3	50	63.88	32	40	120	6	1.3
	4050R/L-S42		3	50	63.88	42	40	120	6	2.2
	4063R/L	●	4	63	76.85	32	40	120	6	1.6
	4063R/L-S42		4	63	76.85	42	40	120	6	2.7

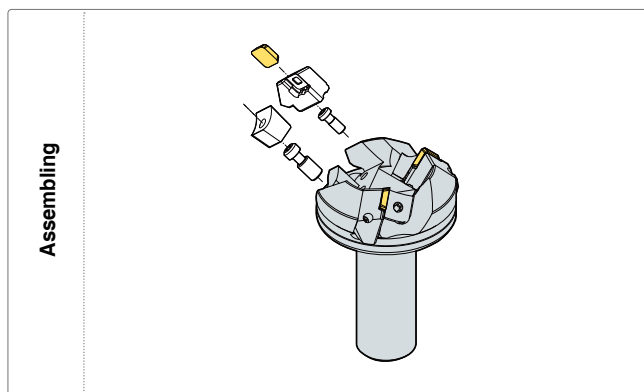
● : Stock item

## Available inserts

SDCN	SDKN-MU	SDKN-SU	SDKR-MX				
Designation	Cermet	Coated				Uncoated	Page
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	
		PC3700	PC6100	PC9530	PC9540	PC5300	
		PC5400	ST30A	G10	H01		
SDCN 42M							●
42M-G							●
42MT	●		●				●
42MT-RH							
42MT-S20					●		B19
1203AEEN							
1203AEEN-RH							
1203AESN							
1203AESN-RH							
SDKN 1203AESN-MU					●		
1203AESN-SU					●	●	
SDKR 1203AESN-MX							●
1203AETN-MX							
1203AEN-MX		●					

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	

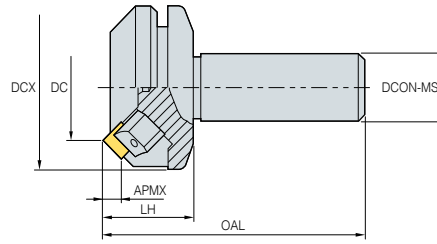


## Parts

Specification					
Ø50~Ø63	Locator LASS4R/L	Wedge WASR/L	Wedge screw WTX0817	Locator screw LTX0512	Wrench TW25

Available inserts B19, B20

## ADS5000



KAPR  
45°

- GAMP : 15°
- GAMF : -3°

	Designation	Stock		CICT	DC	DCX	DCON-MS	LH	OAL	APMX	kg
		R	L								
ADS	5050R/L	●		3	50	67	32	40	120	8	7.2
	5050R/L-S42			3	50	67	42	40	120	8	1.8
	5063R/L	●		4	63	80	32	40	120	8	1.6
	5063R/L-S42			4	63	80	42	40	120	8	2.0

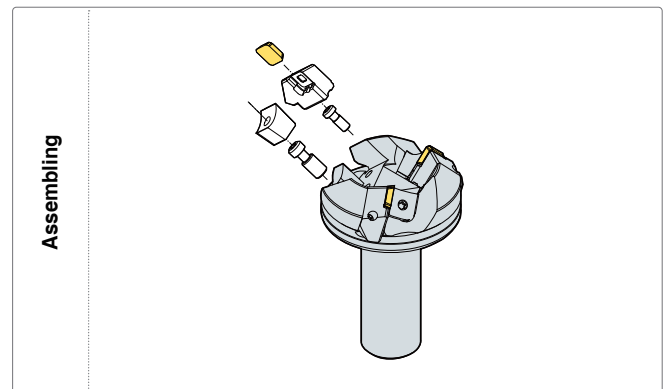
● : Stock item

### Available inserts

		SDCN	SDKN-MU	SDKN-SU	SDKR-MX										
Designation	Page	Cermet	Coated						Uncoated						
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
SDCN	53M													●	B19
	53M-G													●	
	53MT	●		●										●	
	53MT-RH														
	53MT-S20									●					
	1504AEEN														
	1504AEEN-RH									●				●	
	1504AESN														
	1504AESN-RH									●					
SDKN	1504AESN-MU									●					B20
	1504AESN-SU									●				●	
SDKR	1504AESN-MX									●					B20
	1504AETN-MX														
	1504AEN-MX									●					

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	



### Parts

Specification					
Ø50-Ø63	LASS4R/L	WASR/L	WTX0817	LTX0512	TW25

Available inserts B19, B20

# PES2000/3000/4000

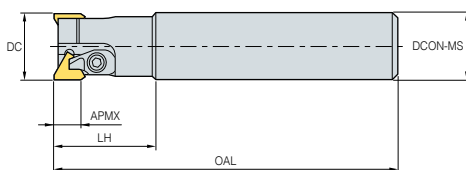


Fig. 1

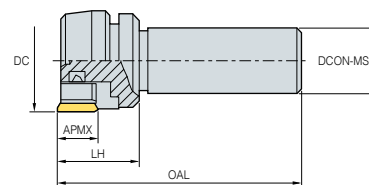
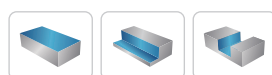


Fig. 2



KAPR  
90°

- GAMP : 10°~15°
- GAMF : 2°~3°

(mm)

Designation	Stock		CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.	
	R	L									
PES	2020R/L		2	20	20	30	110	8	0.3	1	
	2025R/L		2	25	25	35	120	8	0.5	1	
	3030R/L		2	30	32	45	160	13	0.9	1	
	3032R/L	●		2	32	32	45	160	13	1.0	1
	3033R/L			2	33	32	45	160	13	1.1	1
	3035R/L			2	35	32	45	160	13	1.2	1
	3036R/L			2	36	32	45	160	13	1.3	1
	3040R/L	●		2	40	32	45	160	13	1.4	1
	4050R/L	●		3	50	32	40	120	17	1.2	2
	4050R/L-S42			3	50	42	40	120	16.5	1.5	2
	4063R/L	●		4	63	32	40	120	17	1.5	2
	4063R/L-S42			4	63	42	40	120	16.5	1.8	2

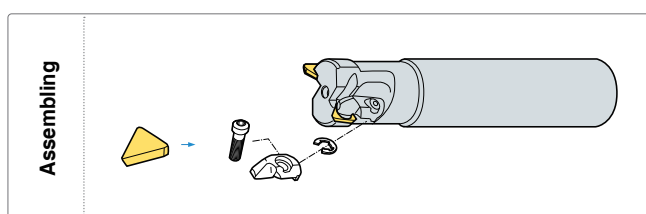
● : Stock item

## Available inserts

		TECN	TEEN													
		Cemented		Coated					Uncoated		Page					
Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
2000 type	TECN 22R															
	22TR	●														
3000 type	TECN 32R															
	32TR	●		●												
	32TR-S20							●								
4000 type	TEEN 43R															
	43R-G															
	43TR	●		●	●			●								
	43TR-S20								●							
	43TR-Z															
	43TR-ZH								●							

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	



## Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench	Wrench	Clamp	Ring
Ø20~Ø25(2000 type)	-	-	-	CHX0407	HW25L	-	CH4R1	ER03
Ø30~Ø40(3000 type)	-	-	-	CHX0510	HW30L	-	CH5R1	ER04
Ø50~Ø63(4000 type)	LPTS4R/L	WPTSR	DHA0815	LTX0512	-	HW40	-	-

Available inserts **B27**

## AFO(M)4000

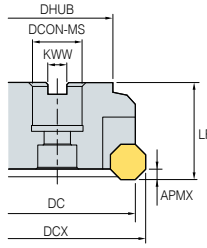


Fig. 1

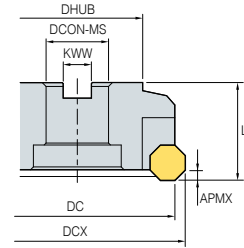


Fig. 2



KAPR  
45°  
• GAMP : 15°  
• GAMF : 5°

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
AFO	4080R/L	●	5	80	88.1	60	25.4(27)	9.5(12.4)	50	3.4	1.4	1
(AFOM)	4100R/L	●	6	100	108.1	80	31.75(32)	12.7(14.4)	50	3.4	2.0	2
	4125R/L	●	8	125	133.1	100	38.1(40)	15.9(16.4)	63	3.4	3.7	2

(mm)

( ) Metric size, ● : Stock item

### Available inserts

OFCW OFKT-MF OFKT-MM OFKT-MA



Designation	Cermet	Coated							Uncoated		Page					
	CN80	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	G10	H01
OFCW 05T3SN																B14
05T3FN																
05T308FN																
OFKT 05T3SN-MF									●							B14
05T308SN-MF																
05T3SN-MM			●			●		●								
05T308SN-MM																B15
05T3FN-MA															●	
05T3EN-MA																

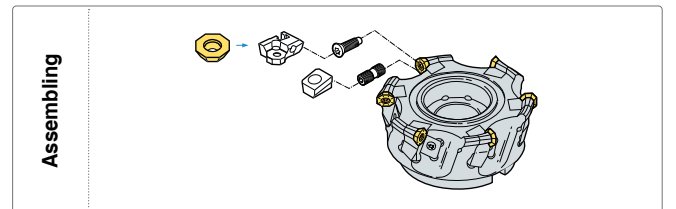
### Available arbors

Designation	General arbor	NC arbors	
		AFO	AFOM
AFO 4080R/L	NT*□□ (M/U)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
(AFOM) 4100R/L	NT*□□ (M/U)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
4125R/L	NT*□□ (M/U)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40

\*□□ -NT number \*\*□□ -BT number

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	

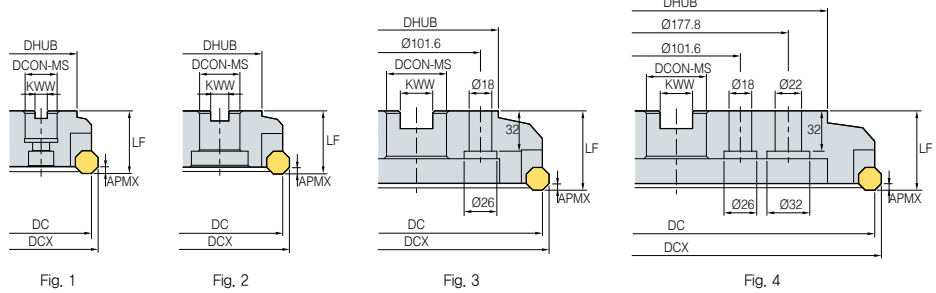
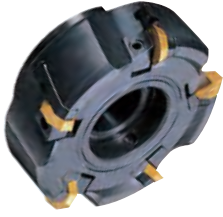


### Parts

Specification	Locator	Wedge	Wedge screw	Screw	Wrench
Ø80~Ø125	LAF04R/L	WAFO4R/L	DHA0815	FTKA0408	TW15S

Available inserts B14, B15

# AFO(M)5000

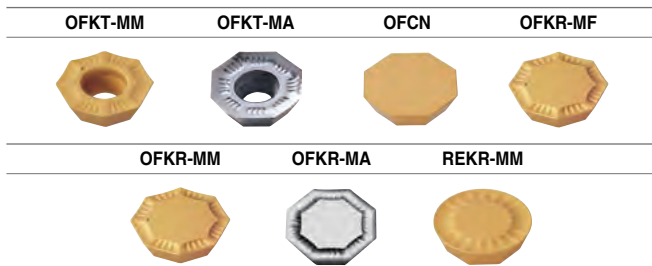


KAPR  
45°  
• GAMP : 15°  
• GAMF : 5°

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
AFO 5080R/L	● (●)		5	80	91.2	60	25.4(27)	9.5(12.4)	50	4.8	1.3	1
(AFOM) 5100R/L	● (●)		6	100	111.2	80	31.75(32)	12.7(14.4)	50	4.8	2.1	2
5125R/L	● (●)		8	125	136.2	100	38.1(40)	15.9(16.4)	63	4.8	4.5	2
5160R/L	● (●)		10	160	171.1	120	50.8(40)	19.1(16.4)	63	4.8	5.8	2
5200R/L	● (●)		12	200	211.1	130	47.625(60)	25.4(25.7)	63	4.8	8.5	3
5250R/L	(●)		16	250	261.1	180	47.625(60)	25.4(25.7)	63	4.8	16.1	3
5315R/L			20	315	326.4	240	47.625(60)	25.4(25.7)	63	4.8	21.5	4

( ) Metric size, ● : Stock item

## Available inserts



Designation	Cermet	Coated							Uncoated		Page					
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC8100	PC9530	PC9540		PC5300	PC5400	ST30A	G10	H01
OFCN 0704SN							●									B14
0704FN																
070408SN																
070408FN																
OFKR 0704SN-MF			●	●												B14
070408SN-MF																
0704SN-MM			●	●	●	●	●	●			●					
070408SN-MM			●													
0704FN-MA															●	B15
0704EN-MA																
OFKT 0704SN-MM															●	
0704FN-MA															●	
0704EN-MA																
REKR 170400-MM																B17

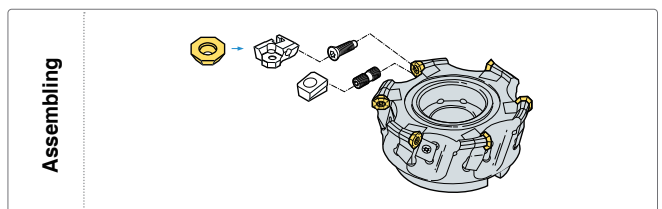
## Available arbors

Designation	General arbor	NC arbors	
		AFO	AFOM
AFO 5080R/L	NT*□□ (MU)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
(AFOM) 5100R/L	NT*□□ (MU)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
5125R/L	NT*□□ (MU)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
5160R/L	NT*□□ (MU)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
5200R/L	NT*□□ (MU)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
5250R/L	NT*□□ (MU)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60
5315R/L	KCP-8*** (Centering Plug)		

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
P	190~320	0.05~0.20	NCM325 PC3700 ST30A
	161~270	0.05~0.20	
	80~140	0.05~0.20	
M	90~150	0.05~0.20	PC9530
K	140~230	0.05~0.30	PC6100 G10
	50~90	0.05~0.30	



## Parts

Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LAF05R/L LAF05R*/L-1*	WEFR/L	DHA0821F	LTX0512	HW40

Available inserts B14 ~ B17

Available arbors and bolt E94 ~ E95

\*: Ø80~Ø100



# B Technical Information for Power Buster

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 (Approach angle: 45°) and PBZ (KAPR: 80°), and TNMX30 for PBP (KAPR: 90°)
- Application: High depth of cut and feed rate (Steel, Cast iron)

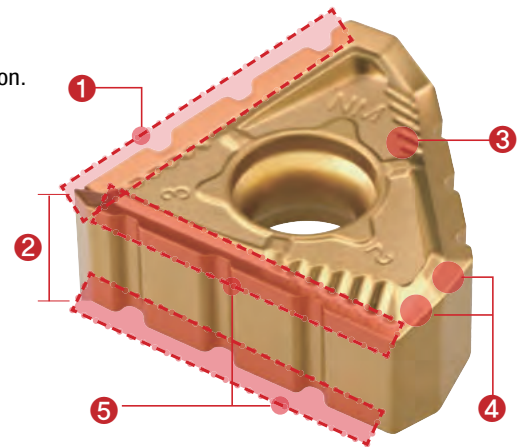
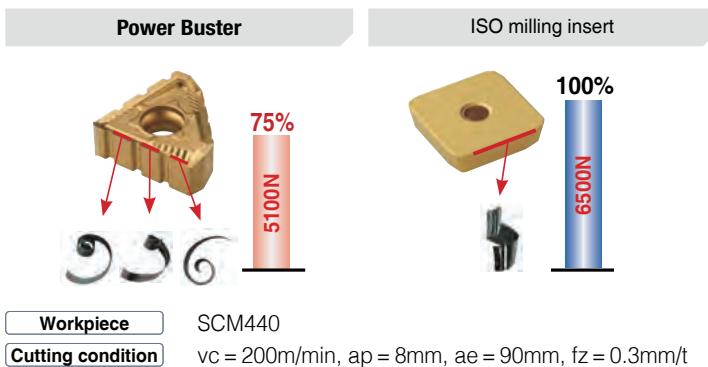
### Code system

<b>PB</b>	<b>A</b>	<b>C</b>	<b>M</b>	<b>5</b>	<b>250</b>	<b>R/L</b>	<b>-</b>	<b>M</b>
<b>Power Buster</b>	<b>KAPR</b> A : 45° Z : 80° P : 90°	<b>Cutter type</b> C: Cutter	<b>Arbor type</b> M: Metric Non: Inch	<b>Inscribed circle of insert</b> 5 : 15.875 6 : 17.462	<b>Tool diameter</b> DC : 250	<b>Hand</b> R: Right-handed L: Left-handed		<b>No of tooth</b> No code: Coarse pitch M: Close pitch 8: 8 teeth

### Features of insert

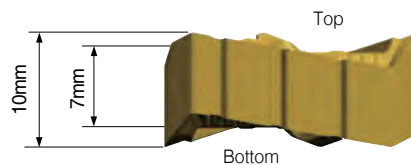
#### 1 Major cutting-edge (Serrated edge)

- 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



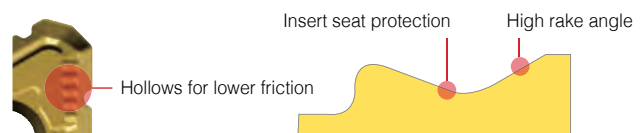
#### 2 Thicker insert

- Thick insert guarantees high rigidity
- Balanced insert design for stable mounting



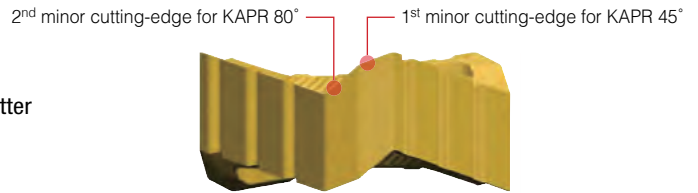
#### 3 NM Chip breaker

- 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



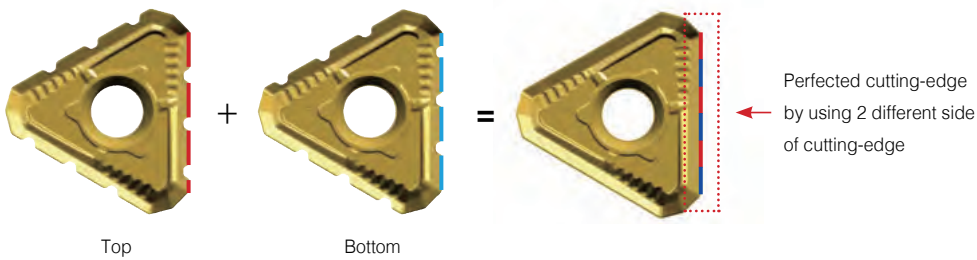
## ④ Insert shape applied to PBA/Z cutters (KAPR: 45°/80°)

- High rake angle to avoid interference with chip
- Calculated minor cutting-edge angel for both KAPR 45° & 80° cutter



## ⑤ Mirror system

- Cutting-edge on the both side of insert covers all overlapped cutting area



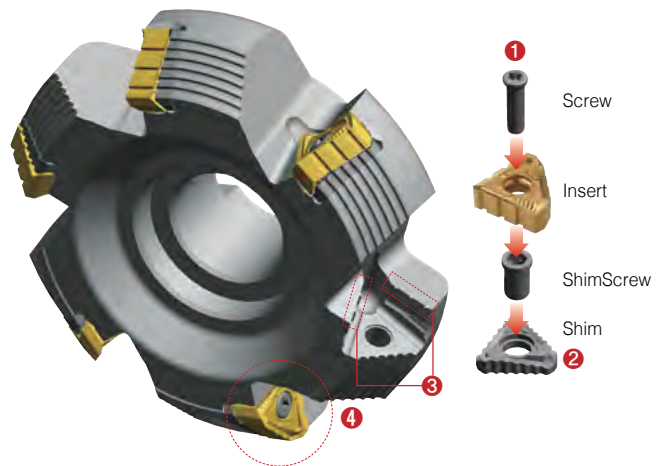
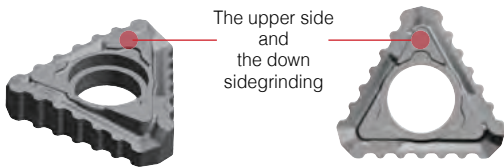
## ➤ Features of cutter

### ① Screw-on clamping system

- Simple and strong screw on clamping system

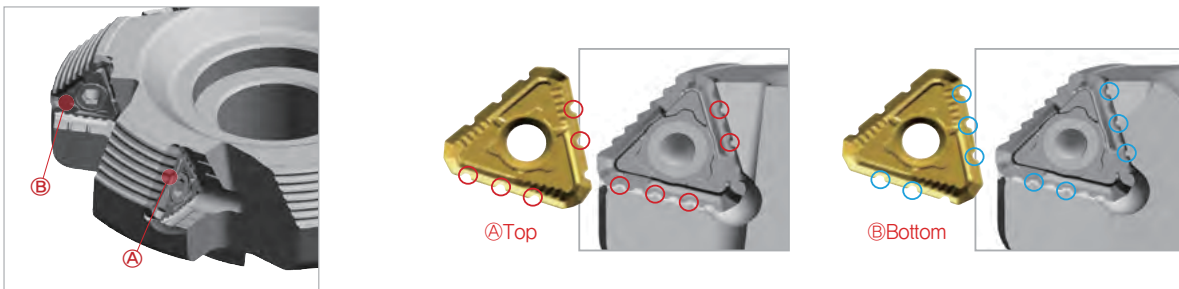
### ② Better rigidity & Stable Assembly system

- 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

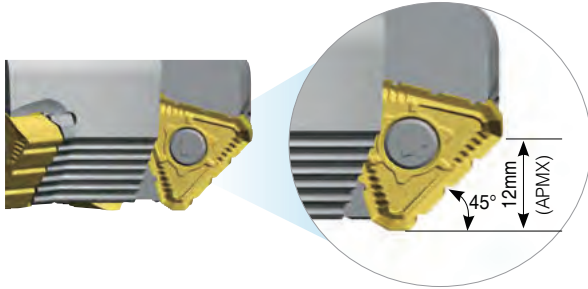


# B Technical Information for Power Buster

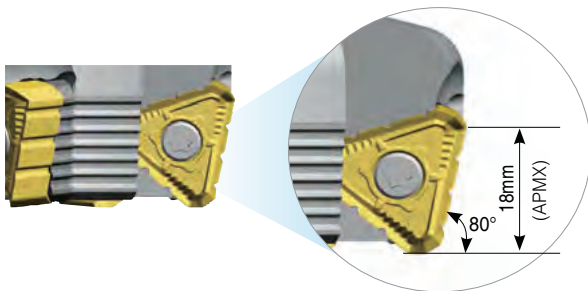
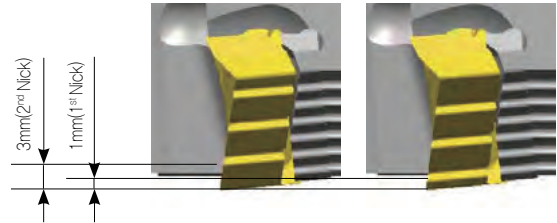
## 4 Multi-application system

- Same insert for multi-use (45° and 80°)

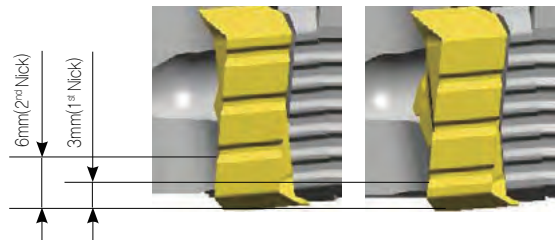
### PBA/PBZ



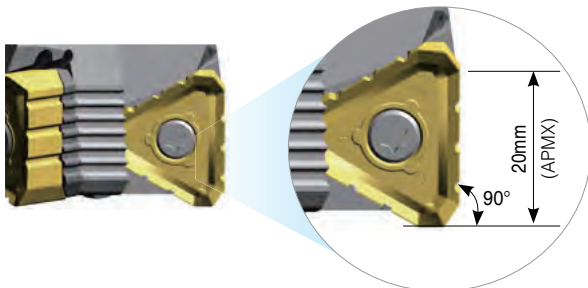
KAPR 45° ⇒ The serrations are effective with a depth of cut larger than 1



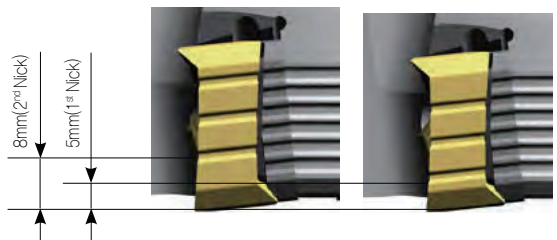
KAPR 80° ⇒ The serrations are effective with a depth of cut larger than 3



### PBP

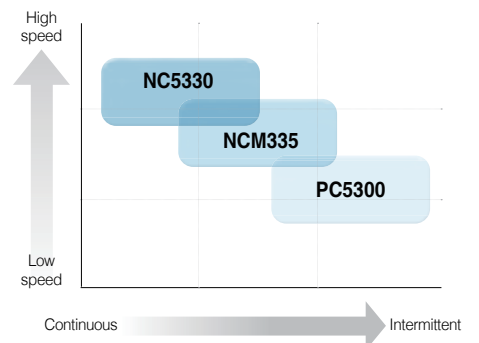


KAPR 90° ⇒ The serrations are effective with a depth of cut larger than 5



## Recommended cutting conditions

ISO	Workpiece		Material	NC5330	NCM335	PC5300
				fz (mm/t)		
				0.1-0.2-0.3	0.1-0.2-0.3	0.1-0.2-0.3
				vc (m/min)		
P	Carbon steel	-	SUM22, C = 0.1~25	400	335	280
		-	C = 0.30~55	365	305	255
		-	C = 0.55~80	340	285	240
	Low alloy steel (Alloy constituent < 5%)	-	SCM415(H), SCM420, SCM440	280	235	195
		Hardened		165	140	115
		High alloy steel (Alloy constituent > 5%)	Annealed	SKD61	210	180
Hardened	SKH51, SKH55		175	145	120	
K	Gray cast iron	Low tensile	FC200, FC250	125	-	145
		High tensile	FC300, FC350	105	-	120
		Ferritic	FCD400, FCD500	80	-	95
		Pearlitic	FCD600, FCD700	75	-	85



# PBAC(M)5000

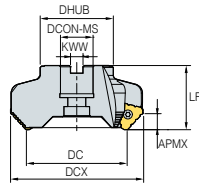


Fig. 1

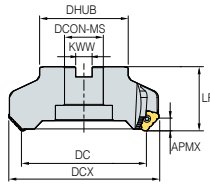


Fig. 2

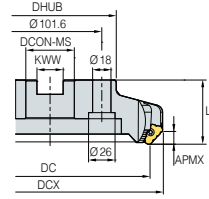


Fig. 3

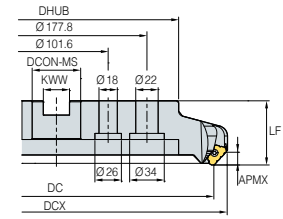


Fig. 4



KAPR  
45°

- GAMP : -5°
- GAMF : -11°

(mm)

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	Lf	APMX	kg	Fig.
	R	L										
Coarse pitch PBAC (PBACM)	5080R/L		4	80	104.246	57	25.4(27)	9.5(12.4)	50	12	1.5	1
	5100R/L		4	100	124.234	67	31.75(32)	12.7(14.4)	50	12	2.3	2
	5125R/L		6	125	149.224	87	38.1(40)	15.9(16.4)	63	12	4.7	2
	5160R/L		8	160	184.214	107	50.8(40)	19(16.4)	63	12	6.4	2
	5200R/L		10	200	224.2	130	47.625(60)	25.4(25.7)	63	12	9.0	3
	5250R/L		12	250	274.2	180	47.625(60)	25.4(25.7)	63	12	14.0	3
	5315R/L		14	315	339.2	240	47.625(60)	25.4(25.7)	63	12	23.0	4
Close pitch PBAC (PBACM)	5080R/L-M		6	80	104.246	57	25.4(27)	9.5(12.4)	50	12	1.7	1
	5100R/L-M		6	100	124.234	67	31.75(32)	12.7(14.4)	50	12	1.9	2
	5125R/L-M	● (●)	8	125	149.224	87	38.1(40)	15.9(16.4)	63	12	4.0	2
	5160R/L-M	● (●)	10	160	184.214	107	50.8(40)	19(16.4)	63	12	6.2	2
	5200R/L-M	● (●)	12	200	224.2	130	47.625(60)	25.4(25.7)	63	12	7.7	3
	5250R/L-M		14	250	274.2	180	47.625(60)	25.4(25.7)	63	12	13.0	3
	5315R/L-M		16	315	339.2	240	47.625(60)	25.4(25.7)	63	12	22.0	4

( ) Metric size, ● : Stock item

## Available inserts

### TNMX-NM



Designation	Cermet	Coated										Uncoated			Page			
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
TNMX 2710AZNR-NM		●			●				●	●			●					
2710AZNL-NM																		

## Available arbors

Designation	Available arbors	
	PBAC	PBACM
PBAC (PBACM) 5080R/L-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
5100R/L-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
5125R/L-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
5160R/L-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
5200R/L-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□
5250R/L-□		
5315R/L-□		

## Parts

Specification				
Ø80~Ø315	FTGA0518	ST53AZR	SHXN0712F	TW20-100

Available inserts **B28** Available arbors and bolt **E94 ~ E95**

## PBZC(M)5000

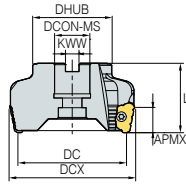
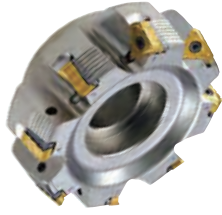


Fig. 1

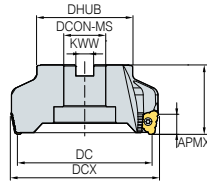


Fig. 2

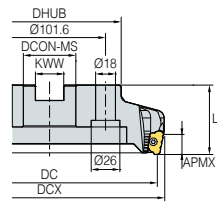


Fig. 3

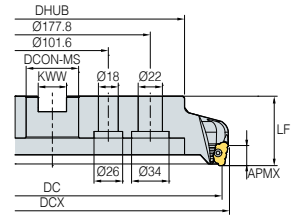


Fig. 4



	Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
		R	L										
Coarse pitch	PBZC 5080R/L			4	80	91.177	57	25.4(27)	9.5(12.4)	50	18	1.2	1
	(PBZCM) 5100R/L			4	100	111.17	67	31.75(32)	12.7(14.4)	50	18	1.8	2
	5125R/L			6	125	136.162	87	38.1(40)	15.9(16.4)	63	18	3.8	2
	5160R/L			8	160	171.156	107	50.8(40)	19(16.4)	63	18	5.4	2
	5200R/L			10	200	211.151	130	47.625(60)	25.4(25.7)	63	18	7.8	3
	5250R/L			12	250	258	180	47.625(60)	25.4(25.7)	63	18	14	3
	5315R/L			14	315	326.2	240	47.625(60)	25.4(25.7)	63	18	22	4
Close pitch	PBZC 5080R/L-M			6	80	91.177	57	25.4(27)	9.5(12.4)	50	18	1.2	1
	(PBZCM) 5100R/L-M			6	100	111.17	67	31.75(32)	12.7(14.4)	50	18	1.8	2
	5125R/L-M	● (●)		8	125	136.162	87	38.1(40)	15.9(16.4)	63	18	3.8	2
	5160R/L-M	● (●)		10	160	171.156	107	50.8(40)	19(16.4)	63	18	5.4	2
	5200R/L-M	(●)		12	200	211.151	130	47.625(60)	25.4(25.7)	63	18	7.3	3
	5250R/L-M			14	250	258	180	47.625(60)	25.4(25.7)	63	18	12.1	3
	5315R/L-M			16	315	326.2	240	47.625(60)	25.4(25.7)	63	18	22	4

( ) Metric size, ● : Stock item

### Available inserts

#### TNMX-NM



Designation	Coated	Uncoated			Page													
	CN80	NC5330	NCM325	NCM335		NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
TNMX 2710AZNR-NM		●			●				●	●	●							
2710AZNL-NM																		

### Available arbors

Designation	Available arbors	
	PBAC	PBACM
PBAC 5080R/L-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(PBACM) 5100R/L-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
5125R/L-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
5160R/L-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
5200R/L-□		
5250R/L-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□
5315R/L-□		

### Parts

Specification				
Ø80~Ø315	FTGA0518	ST53AZR	SHXN0712F	TW20-100

Available inserts **B28** Available arbors and bolt **E94 ~ E96**

# PBPCM6000

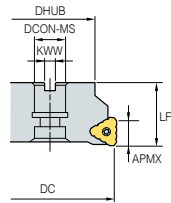


Fig. 1

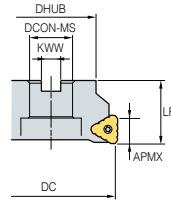


Fig. 2

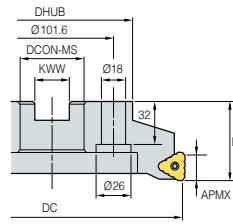


Fig. 3

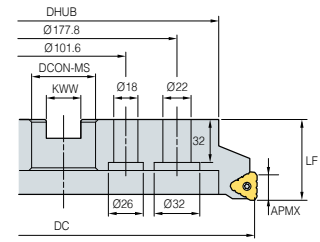


Fig. 4



KAPR  
**90°**

- GAMP : -5°
- GAMF : -12°

	Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
		R	L										
PBPCM	7125R/L-5			4	80	80	57	27	12.4	50	20	0.85	1
	7160R/L-6			6	100	100	67	32	14.4	50	20	1.16	2
	7160R/L-8			6	125	125	87	40	16.4	63	20	2.84	2
	7200R/L-8			8	160	160	107	40	16.4	63	20	3.58	3
	7200R/L-10			10	200	200	130	60	25.7	63	20	5.13	3
	7250R/L-10			12	250	250	180	60	25.7	63	20	9	3
	7250R/L-12			14	315	315	240	60	25.7	63	20	16.85	4

( ) Metric size, ● : Stock item

## Available inserts

### TNMX-NM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
TNMX 3012PNR-NM																		B28

## Available arbors

Designation	General arbor
PBPCM 6080R-4	BT□□ -FMC27-□□
6100R-6	BT□□ -FMC32-□□
6125R-6	
6160R-8	BT□□ -FMC40-□□
6200R-10	
6250R-12	BT□□ -FMC60-□□
6315R-14	

## Parts

Specification				
Ø80-Ø315	FTGA0518	ST53PNR	SHXN0712F	TW20-100

Available inserts **B28** Available arbors and bolt **E96**

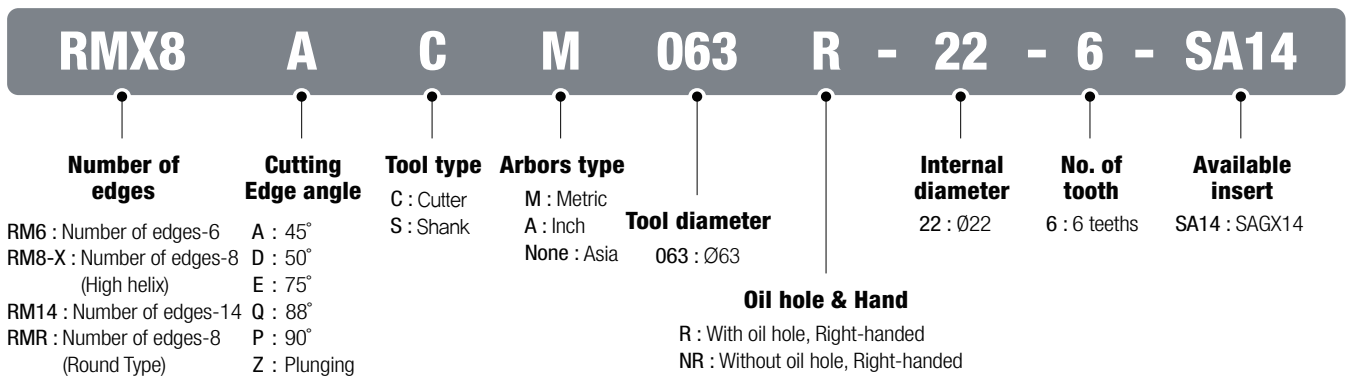
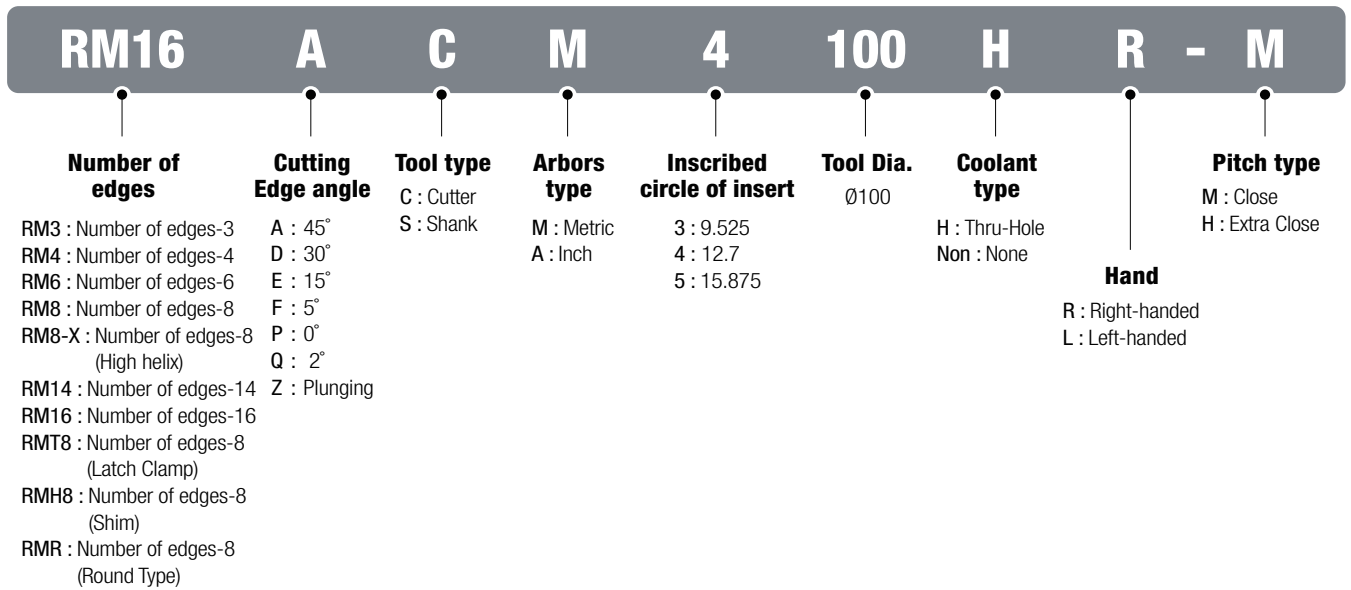
# B Technical Information for Rich Mill

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 Series

- 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




**Cutters**

Type	KAPR	Designation	Picture	Cutter Diameter	Available inserts	Features	Page	
RM3	90°	RM3PC(M)3000		Ø40-Ø80	XNKT060405PNER-ML XNKT060408PNER-ML XNKT060405PNSR-MM XNKT060408PNSR-MM		B80	
		RM3PC(M)4000		Ø40-Ø125	XNCT080508PNFR-MA XNKT080508PNER-ML XNKT080508PNSR-MM XNKT080512PNSR-MM XNKT080516PNSR-MM XNKT080520PNSR-MM			B81
		RM3PC(M)5000		Ø80-Ø125	XNCT120608PNER-MA XNKT120608PNER-ML XNKT120612PNER-ML XNKT120616PNER-ML XNKT120620PNER-ML XNKT120608PNSR-MM XNKT120612PNSR-MM XNKT120616PNSR-MM XNKT120620PNSR-MM			
RM4	90°	RM4PC(M)3000		Ø40-Ø100	LNEX100605PNR-MF LNMX100605PNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF LNEX100605PNL-MM LNMX100605PNL-MM		B92	
		RM4PC(M)4000		Ø50-Ø160	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			B93
		RM4ZCM3000		Ø40-Ø52	LNEX100605PNL-MM LNMX100605PNL-MM		B97	
		RM4ZC(M)4000		Ø63-Ø100	LNEX151008PNL-MM LNMX151008PNL-MM			












## Cutters

Type	KAPR	Designation	Picture	Cutter Diameter	Available inserts	Features	Page
RM6	90°	RM6PCM-WN04		Ø40~Ø63	WNGX040304PNFR-MA WNGX040312PNER-ML WNGX040308PNFR-MA WNGX040316PNER-ML WNGX040312PNFR-MA WNGX040304PNSR-MM WNGX040316PNFR-MA WNGX040308PNSR-MM WNGX040304PNER-ML WNGX040312PNSR-MM WNGX040308PNER-ML WNGX040316PNSR-MM	  	B110
		RM6PC(M)-WN08		Ø50~Ø125	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		B111
RM8	45°	RM8AC(M)4000		Ø50~Ø400	SNEX1206ANN-MA SNEX1206ANN-MM SNEX1206ANN-MF SNMX1206ANN-MM SNMX1206ANN-MF SNEX1206ANN-W SNEX1206ANN-ML		B118
		RM8AC(M)5000		Ø80~Ø400	SNEX1507ANN-MF SNEX1507ANN-MM SNMX1507ANN-MF SNMX1507ANN-MM SNEX1507ANN-ML		B120
	75°	RM8EC(M)4000	Ø50~Ø400	SNEX1206ENN-MA SNEX1206ENN-ML SNEX1206ENN-MF SNMX1206ENN-MM SNMX1206ENN-MF		<ul style="list-style-type: none"> <li>Economical 8 corners</li> <li>Low cutting load and excellent smooth cutting</li> <li>Economical 8 corners</li> <li>Low cutting load and excellent smooth cutting</li> </ul>	B122
		RM8EC(M)5000	Ø80~Ø400	SNEX1507ENN-MF SNEX1507ENN-MM SNMX1507ENN-MF SNMX1507ENN-MM SNEX1507ENN-ML			B124
88°	RM8QC(M)4000		Ø63~Ø200	SNEX1206QNN-MA SNEX120612-MA SNEX1206QNN-MF SNEX120612-MF SNMX1206QNN-MF SNMX120612-MF SNEX1206QNN-ML SNEX120612-ML SNEX1206QNN-MM SNEX120612-MM SNMX1206QNN-MM SNMX120612-MM		B126	

**Cutters**

Type	KAPR	Designation	Picture	Cutter Diameter	Available inserts	Features	Page		
RMB	45°	RMH8AC(M)4000		Ø50-Ø400	SNEX1206ANN-MA SNEX1206ANN-MF SNMX1206ANN-MF	SNEX1206ANN-ML SNEX1206ANN-MM SNMX1206ANN-MM SNEX1206ANN-W		B119	
		RMH8AC(M)5000		Ø80-Ø400	SNEX1507ANN-MF SNMX1507ANN-MF SNEX1507ANN-ML	SNEX1507ANN-MM SNMX1507ANN-MM		B121	
	75°	RMH8EC(M)4000		Ø50-Ø400	SNEX1206ENN-MA SNEX1206ENN-MF SNMX1206ENN-MF	SNEX1206ENN-ML SNEX1206ENN-MM SNMX1206ENN-MM		<ul style="list-style-type: none"> <li>• Economical 8 corners</li> <li>• Low cutting load and excellent smooth cutting</li> <li>• Economical 8 corners</li> <li>• Low cutting load and excellent smooth cutting</li> </ul>	B123
		RMH8EC(M)5000		Ø80-Ø400	SNEX1507ENN-MF SNMX1507ENN-MF SNEX1507ENN-ML	SNEX1507ENN-MM SNMX1507ENN-MM			B125
	88°	RMH8QC(M)4000		Ø63-Ø200	SNEX1206QNN-MA SNEX1206QNN-MF SNMX1206QNN-MF SNEX1206QNN-ML SNEX1206QNN-MM SNMX1206QNN-MM	SNEX120612-MA SNEX120612-MF SNMX120612-MF SNEX120612-ML SNEX120612-MM SNMX120612-MM		B127	
RMT8	45°	RMT8A(M)4000/5000		Ø80-Ø315	SNCF1206ANN-MF SNCF1507ANN-MF SNMF1206ANN-MF SNMF1507ANN-MF	SNCF1206ANN-MM SNCF1507ANN-MM SNMF1206ANN-MM SNMF1507ANN-MM		B129 B130	
		75°	RMT8E(M)4000/5000		Ø80-Ø315	SNCF1206ENN-MF SNCF1507ENN-MF SNMF1206ENN-MF SNMF1507ENN-MF		SNCF1206ENN-MM SNCF1507ENN-MM SNMF1206ENN-MM SNMF1507ENN-MM	
	88°	RMT8Q(M)4000		Ø80-Ø315	SNCF1206QNN-MF	SNMF1206QNN-MF		B133	

## Cutters

Type	KAPR	Designation	Picture	Cutter Diameter	Available inserts		Features	Page	
RM8-X	45°	RMX8AC(M)-SA14		Ø50~Ø250	SAGX140808ANER-ML	SAGX140808ANER-MM SNMX140808ANER-MM		<ul style="list-style-type: none"> <li>• Double sided insert with 8 corners</li> <li>• Stable cutting performance due to double reversal positive relief surface</li> <li>• Good machinability in stainless cutting with High</li> </ul>	B136
RM14	51°	RM14XCM-XN06		Ø50~Ø160	XNMX0606XNR-ML	XNMX060608-ML	 	<ul style="list-style-type: none"> <li>• Reduced vibration with the application of maximum approach angle on heptagonal shape</li> <li>• Stable clamping from wedge type clamping structure</li> <li>• Available for multiple-staged cutting without interference of the cutter's side wall</li> </ul>	B140
RM16	45°	RM16AC(M) 6000/8000		Ø63~Ø400	ONHX060608-MF ONMX060608-MF ONHX0606ANN-MF ONMX0606ANN-MF ONHX080608-MF ONMX080608-MF ONHX0806ANN-MF ONMX0806ANN-MF ONHX060608-ML ONMX060608-ML ONHX080608-ML ONMX080608-ML ONHX060608-MM ONMX060608-MM ONHX0606ANN-MM ONMX0606ANN-MM ONHX080608-MM ONMX080608-MM ONHX0806ANN-MM ONMX0806ANN-MM ONHX060608-MA ONMX060608-MA ONHX080608-MA ONMX080608-MA ONHX060608-W ONMX060608-W ONHX080608-W ONMX080608-W		<ul style="list-style-type: none"> <li>• Economical 16 corners</li> <li>• Wiper insert for surface roughness</li> </ul>	B142 B143	
RMR	-	RMRC(M)-RN12		Ø50~Ø125	RNMX1204M0E-ML			<ul style="list-style-type: none"> <li>• High cost efficiency due to double sided round typed cutting edge</li> <li>• Excellent rotating prevention by strong clamping system</li> <li>• Suitable for Inconel cutting</li> </ul>	B146

**Shanks/Modulars**

Type	KAPR	Designation	Picture	Cutter Diameter	Available inserts	Features	Page
RM3	90°	RM3PS3000		Ø20-Ø40	XNKT060405PNER-ML XNKT060405PNSR-MM		B83
		RM3PS4000		Ø32-Ø63	XNKT080508PNER-ML XNKT080508PNSR-MM XNKT080512PNSR-MM		
		RM3PM 3000/4000	Ø20-Ø50	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	B85		
RM4	90°	RM4PS3000		Ø14-Ø50	LNEX100605PNR-MF LNMX100605PNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF LNEX100608PNR-MM LNMX100608PNR-MM	 	B94
		RM4PS4000		Ø32-Ø63	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 LNEX151008PNL-MM LNMX151008PNL-MM		
		RM4ZS3000	Ø25-Ø40	LNEX100605PNL-MM LNMX100605PNL-MM	B98		
		RM4PM3000	Ø14-Ø50	LNEX100605PNR-MF LNMX100605PNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF LNEX100608PNR-MM LNMX100608PNR-MM LNEX100608PNR-MA LNEX100605PNL-MM LNEX100605PNL-MM	B96		
		RM4ZM3000	Ø25-Ø40	LNEX100605PNL-MM LNMX100605PNL-MM	B98		

## Shanks/Modulars

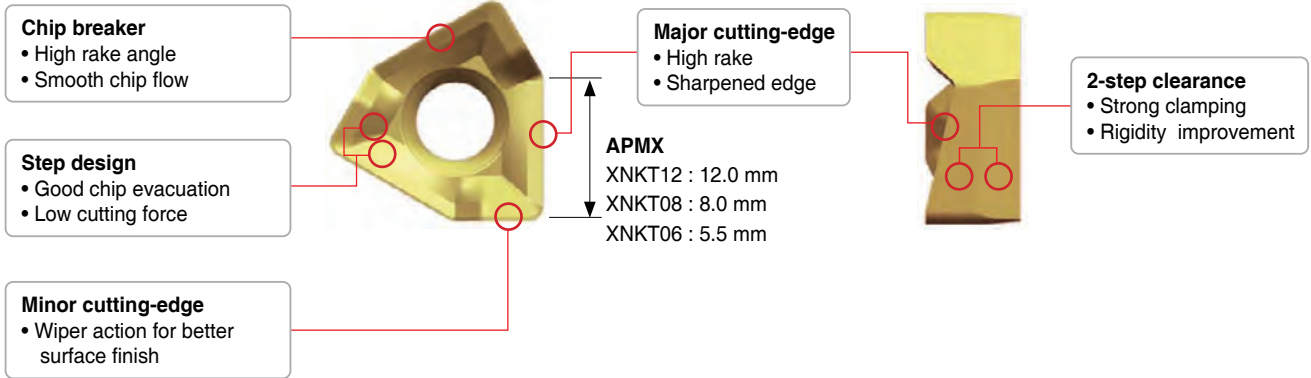
Type	KAPR	Designation	Picture	Cutter Diameter	Available inserts	Features	Page	
RM6	90°	RM6PS-WN04		Ø20-Ø32	WNGX040304PNFR-MA WNGX040312PNER-ML WNGX040308PNFR-MA WNGX040316PNER-ML WNGX040312PNFR-MA WNGX040304PNSR-MM WNGX040316PNFR-MA WNGX040308PNSR-MM WNGX040304PNER-ML WNGX040312PNSR-MM WNGX040308PNER-ML WNGX040316PNSR-MM	  	B112	
		RM6PS-WN08		Ø32-Ø50	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		B113	
		RM6PM-WN04	Ø20-Ø32	WNGX040304PNFR-MA WNGX040312PNER-ML WNGX040308PNFR-MA WNGX040316PNER-ML WNGX040312PNFR-MA WNGX040304PNSR-MM WNGX040316PNFR-MA WNGX040308PNSR-MM WNGX040304PNER-ML WNGX040312PNSR-MM WNGX040308PNER-ML WNGX040316PNSR-MM	B114			
		RM6PM-WN08	Ø32-Ø40	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	B115			
RMFR	-	RMRS-RN12		Ø32-Ø63	RNMX1204M0E-ML RNMX1204M0S-MM		<ul style="list-style-type: none"> <li>• High cost efficiency due to double sided round typed cutting edge</li> <li>• Excellent rotating prevention by strong clamping system</li> <li>• Suitable for Inconel cutting</li> </ul>	B147

## Rich Mill RM3

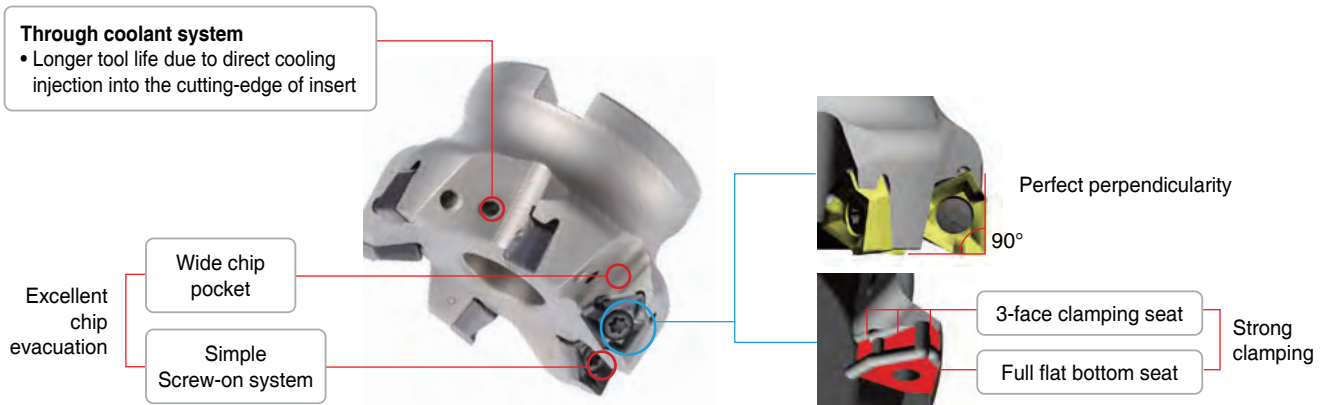
### Features

- **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



### Features of cutter



### Through coolant system

- Exclusive through coolant bolt required
- Effective coolant distribution directly to cutting-edge
- Coolant supporting arbor required



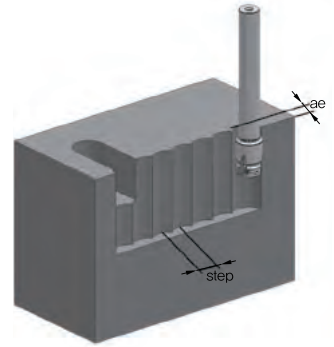
### Features of chip breakers

Insert	Cutting-edge	Uses	Features
<b>MA</b>		Aluminum	Superior cutting quality for aluminum due to sharp cutting-edge and buffed surface
<b>ML</b>		Light	Superior cutting quality for light and light cutting, difficult-to-cut material machining through the low cutting load of chip breaker
<b>MM</b>		General	Suitable for various cutting due to special shape design for general cutting

## Rich Mill RM3

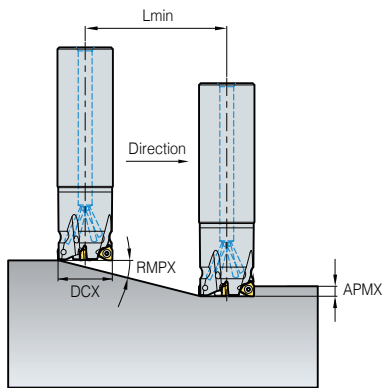
### ➤ Max step in plunging

Type	max. ae	ae	Cutter Diameter (Ø)											
			Ø20	Ø21	Ø25	Ø26	Ø32	Ø33	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
			max step (mm)											
3000 type	2.5	1	8.5	8.9	9.7	10	11.1	11.3	12.4	14	15.7	17.7	19.9	22.2
4000 type	3.0	2	12	12.3	13.5	13.8	15.4	15.7	17.4	19.5	22	24.9	28	31.3
5000 type	3.5	3	-	-	-	-	-	-	21	23.7	26.8	30.3	34.1	38.2

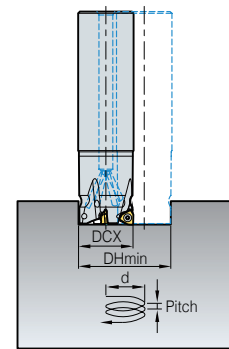
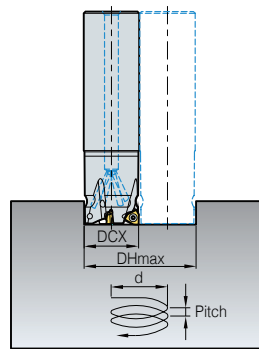


### ➤ Ramping and helical cutting

#### Ramping



#### Helical cutting



(mm)

Type	DCX	APMX	Ramping		Helical cutting for blind hole				Helical cutting for through hole	
			RMPX	Lmin	DHmin	Max. pitch	DHmax	Max. pitch	DHmin	Max. pitch
3000 type	20	5.5	15.5	19.8	36.5	5.5	38.5	5.5	33.0	5.5
	21	5.5	14.0	22.1	38.5	5.5	40.5	5.5	35.0	5.5
	25	5.5	10.0	31.2	46.5	5.5	48.5	5.5	43.0	5.5
	26	5.5	9.5	32.9	48.34	5.5	51.0	5.5	45.0	5.5
	32	5.5	6.5	48.3	60.5	5.5	62.5	5.5	59.0	5.5
	33	5.5	6.0	52.3	62.5	5.5	64.5	5.5	59.0	5.5
	40	5.5	4.5	69.9	46.5	5.5	78.5	5.5	73.0	5.5
	50	5.5	3.5	89.9	96.5	5.5	98.5	5.5	93.0	5.5
	63	5.5	2.5	126.0	122.5	5.5	124.5	5.5	119.0	5.5
	80	8	2.0	157.5	156.5	5.5	158.5	5.5	153.0	5.5
	100	8	1.5	210.0	194.5	5.5	198.5	5.5	193.0	5.5
	125	8	1.0	315.1	246.5	5.5	248.5	5.5	243.0	5.5
4000 type	25	8	24.0	18.0	44.5	8.0	48.0	8.0	38.5	8.0
	32	8	13.0	34.7	58.5	8.0	62.0	8.0	52.5	8.0
	33	8	12.0	37.6	60.02	8.0	64.4	8.0	54.5	8.0
	40	8	8.5	53.5	74.5	8.0	78.0	8.0	68.5	8.0
	50	8	6.0	76.1	94.5	8.0	98.0	8.0	88.5	8.0
	63	8	4.0	114.4	120.5	8.0	124.0	8.0	114.5	8.0
	80	8	3.0	152.6	154.5	8.0	158.0	8.0	148.5	8.0
	100	8	2.0	229.1	194.5	8.0	198.0	8.0	188.5	8.0
5000 type	80	12	5.5	124.6	153.5	12.0	158.0	12.0	146.5	12.0
	100	12	4.5	152.5	193.5	12.0	198.0	12.0	159.5	12.0
	125	12	3.5	196.2	242.5	12.0	248.0	12.0	236.5	12.0

\* Please be sure to use cutting oil or air for ramping and helical machining

$$Lmin = ap / \tan(RMPX)$$

**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	PC6100	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 (m/min)	fz (mm/t)	APMX (mm)	Available inserts	vc (m/min)	fz (mm/t)	APMX (mm)	Available inserts	
P	steel	PC3700	160~270	0.25~0.05	5.5	XNKT0604□□ PNSR-MM	160~270	0.2~0.05	5.5	XNKT0604□□ PNER-ML
		PC5300	150~240	0.25~0.05			150~240	0.25~0.05		
		PC5400	130~210	0.25~0.05			130~210	0.25~0.05		
M	Stainless steel	PC5300	90~150	0.2~0.05			90~150	0.1~0.05		
		PC5400	70~120	0.2~0.05			70~120	0.1~0.05		
K	Cast iron	PC6100	140~230	0.3~0.08			140~230	0.25~0.08		
		PC5300	120~200	0.3~0.08			120~200	0.25~0.08		

※ Maximum cutting condition: vc = 350 m/min, fz = 0.5 mm/t according to cutting environment

**Recommended cutting condition RM3 4000 type**

Workpiece	Grade	Cutting conditions				Cutting conditions							
		vc (m/min)	fz (mm/t)	APMX (mm)	Available inserts	vc (m/min)	fz (mm/t)	APMX (mm)	Available inserts				
P	steel	PC3700	160~270	0.3~0.05	8.0	XNKT0805□□ PNSR-MM	160~270	0.25~0.05	8.0	XNKT0805□□ PNER-ML			
		PC5300	150~240	0.3~0.05			150~240	0.25~0.05					
		PC5400	130~210	0.3~0.05			130~210	0.25~0.05					
M	Stainless steel	PC5300	90~150	0.25~0.05			90~150	0.2~0.05					
		PC5400	70~120	0.25~0.05			70~120	0.2~0.05					
K	Cast iron	PC6100	140~230	0.35~0.08			140~230	0.3~0.08					
		PC5300	120~200	0.35~0.08			120~200	0.3~0.08					
N	Aluminum	H01	400~1200	0.4~0.1			XNCT0805□□PNFR-MA	-			-	-	-

※ Maximum cutting condition: vc = 350 m/min, fz = 0.5 mm/t according to cutting environment

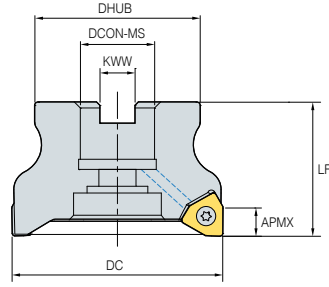
**Recommended cutting condition RM3 5000 type**

Workpiece	Grade	Cutting conditions				Cutting conditions							
		vc (m/min)	fz (mm/t)	APMX (mm)	Available inserts	vc (m/min)	fz (mm/t)	APMX (mm)	Available inserts				
P	steel	PC3700	160~270	0.3~0.05	12.0	XNKT1206□□ PNSR-MM	160~270	0.25~0.05	12.0	XNKT1206□□ PNER-ML			
		PC5300	150~240	0.3~0.05			150~240	0.25~0.05					
		PC5400	130~210	0.3~0.05			130~210	0.25~0.05					
M	Stainless steel	PC5300	90~150	0.25~0.05			90~150	0.2~0.05					
		PC5400	70~120	0.25~0.05			70~120	0.2~0.05					
K	Cast iron	PC6100	140~230	0.35~0.08			140~230	0.3~0.08					
		PC5300	120~200	0.35~0.08			120~200	0.3~0.08					
N	Aluminum	H01	400~1200	0.4~0.1			XNCT1206□□PNFR-MA	-			-	-	-

※ Maximum cutting condition: vc = 350 m/min, fz = 0.5 mm/t according to cutting environment



## RM3PC(M)3000



Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	kg	
RM3PCM	3040HR	●	5	40	35	16	8.4	40	5.5	0.2
	3040HR-M	●	6	40	35	16	8.4	40	5.5	0.2
	3050HR	●	6	50	41	22	10.4	40	5.5	0.1
	3050HR-M	●	7	50	41	22	10.4	40	5.5	0.3
	3063HR	●	7	63	49	22	10.4	40	5.5	0.5
	3063HR-M	●	8	63	49	22	10.4	40	5.5	0.5
RM3PC (RM3PCM)	3080HR	(●)	8	80	57	25.4(27)	9.5(12.4)	50	5.5	0.9
	3080HR-M	(●)	10	80	57	25.4(27)	9.5(12.4)	50	5.5	0.9

( ) Metric size, ● : Stock item

### Available inserts

XNKT-ML XNKT-MM



Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10
XNKT 060405PNER-ML							●	●	●		●	●	●				
060405PNSR-MM							●	●	●		●	●	●				
060408PNER-ML									●		●	●					
060408PNSR-MM							●	●	●	●		●	●				

### Available arbors

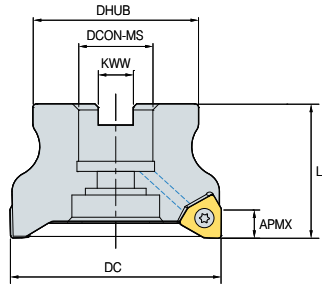
Designation	Available arbors	
	RM3PC	RM3PCM
RM3PC(M) 3040HR	-	BT□□-FMC16-□□
3040HR-M		
3050HR	-	BT□□-FMC22-□□
3050HR-M		
3063HR		
3063HR-M		
3080HR	BT□□-FMA25.4-□□	BT□□-FMC27-□□
3080HR-M		

### Parts

Specification	Screw	Wrench
Ø40~Ø80	FTNA0306	TW09S

Available inserts B32 Available arbors and bolt E94 ~ E95

# RM3PC(M)4000



KAPR  
90°  
• GAMP : -5°  
• GAMF : -8° ~ -6°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX		
RM3PCM	4040HR	●	3	40	35	16	8.4	40	8	0.2
	4040HR-M	●	4	40	35	16	8.4	40	8	0.2
	4050HR	●	4	50	42	22	10.4	40	8	0.3
	4050HR-M	●	5	50	42	22	10.4	40	8	0.3
	4063HR	●	5	63	49	22	10.4	40	8	0.5
	4063HR-M	●	6	63	49	22	10.4	40	8	0.5
RM3PC (RM3PCM)	4080HR	● (●)	5	80	57	25.4(27)	9.5(12.4)	50	8	1.1
	4080HR-M	● (●)	7	80	57	25.4(27)	9.5(12.4)	50	8	1.1
	4100HR	● (●)	7	100	67	31.75(32)	12.7(14.4)	63(50)	8	1.4
	4100HR-M	● (●)	8	100	67	31.75(32)	12.7(14.4)	63(50)	8	1.4
	4125HR	● (●)	8	125	90	38.1(40)	15.9(16.4)	63	8	3.2
	4125HR-M	● (●)	10	125	90	38.1(40)	15.9(16.4)	63	8	3.0

( ) Metric size, ● : Stock item

## Available inserts

XNCT-MA XNKT-ML XNKT-MM



Designation	Cermet	Coated											Uncoated			Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC3300	PC5400	ST30A		G10	H01
XNCT	080504PNFR-MA																	●
	080508PNFR-MA																	●
	080512PNFR-MA																	●
	080520PNFR-MA																	●
XNKT	080504PNER-ML												●	●				
	080504PNSR-MM												●	●				
	080508PNER-ML					●		●	●	●		●	●	●				
	080508PNSR-MM					●		●	●	●		●	●	●				
	080512PNER-ML												●	●				
	080512PNSR-MM												●	●				
	080516PNER-ML												●	●				
	080516PNSR-MM												●	●				
	080520PNER-ML												●	●				
	080520PNSR-MM												●	●				

B31  
B32

## Available arbors

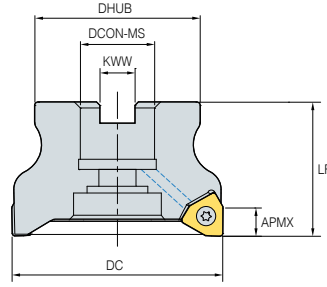
Designation	Available arbors	
	RM3PC	RM3PCM
RM3PC(M) 4040HR	-	BT□□-FMC16-□□
4050HR	-	BT□□-FMC22-□□
4063HR	-	BT□□-FMC27-□□
4080HR	BT□□-FMA25.4-□□	BT□□-FMC32-□□
4100HR	BT□□-FMA31.75-□□	BT□□-FMC40-□□
4125HR	BT□□-FMA38.1-□□	

## Parts

Specification		
Ø40~Ø125	FTNA0408	TW15S

Available inserts **B31, B32** Available arbors and bolt **E94 ~ E95**

## RM3PC(M)5000



KAPR  
90°  
• GAMP : -5°  
• GAMF : -7°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
RM3PC	● (●)	5	80	57	25.4(27)	9.5(12.4)	50	12	0.9
(RM3PCM)	● (●)	7	80	57	25.4(27)	9.5(12.4)	50	12	0.9
5100HR	● (●)	7	100	67	31.75(32)	12.7(14.4)	63	12	1.8
5100HR-M	● (●)	8	100	67	31.75(32)	12.7(14.4)	63	12	1.8
5125HR	● (●)	8	125	90	38.1(40)	15.9(16.4)	63	12	2.7
5125HR-M	● (●)	10	125	90	38.1(40)	15.9(16.4)	63	12	2.7

( ) Metric size, ● : Stock item

### Available inserts

XNCT-MA XNKT-ML XNKT-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
XNCT 120608PNFR-MA																		●
XNKT 120604PNSR-MM													●	●				
120608PNER-ML									●	●		●	●	●				
120608PNSR-MM							●	●	●	●		●	●	●				
120612PNER-ML													●	●				
120612PNSR-MM							●	●					●	●				
120616PNER-ML													●	●				
120616PNSR-MM							●	●					●	●				
120620PNER-ML													●	●				
120620PNSR-MM							●	●					●	●				

B31  
B32

### Available arbors

Designation	Available arbors	
	RM3PC	RM3PCM
RM3PC(M) 5080HR	BT□□ -FMA25.4-□□	BT□□ -FMC27-□□
5100HR	BT□□ -FMA31.75-□□	BT□□ -FMC32-□□
5125HR	BT□□ -FMA38.1-□□	BT□□ -FMC40-□□

### Parts

Specification	Screw	Wrench
Ø80~Ø125	FTNA0511	TW20-100

Available inserts B31, B32 Available arbors and bolt E94 ~ E95

# RM3PS3000

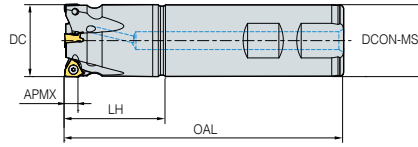


Fig. 1

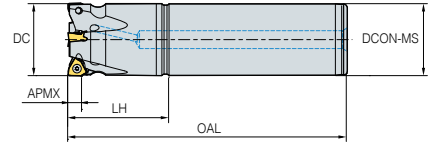


Fig. 2



KAPR  
90°

- GAMP : -5°
- GAMF : -16°~ -9°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.	
RM3PS	3020HR-2S20	●	2	20	20	35	100	5.5	0.2	2	
	3020HR-2L20	●	2	20	20	35	200	5.5	0.4	1	
	3021HR-2S20	●	2	21	20	30	100	5.5	0.2	2	
	3021HR-2L20	●	2	21	20	30	200	5.5	0.4	1	
	3025HR-3S20	●	3	25	20	35	115	5.5	0.3	2	
	3025HR-3L20	●	3	25	20	35	200	5.5	0.5	1	
	3025HR-3S25	●	3	25	25	40	115	5.5	0.4	2	
	3025HR-3L25	●	3	25	25	40	200	5.5	0.7	1	
	3026HR-2S20	●	2	26	20	35	115	5.5	0.3	2	
	3026HR-2L20	●	2	26	20	35	200	5.5	0.5	1	
	3026HR-3S20	●	3	26	20	35	115	5.5	0.3	2	
	3026HR-3L20	●	3	26	20	35	200	5.5	0.5	1	
	3026HR-2S25			2	26	25	35	115	5.5	0.3	2
	3026HR-2L25			2	26	25	35	165	5.5	0.6	1
	3026HR-3S25	●	3	26	25	35	115	5.5	0.4	2	
	3026HR-3L25	●	3	26	25	35	200	5.5	0.7	1	
	3032HR-3S25			3	32	25	42	125	5.5	0.5	2
	3032HR-3L25			3	32	25	42	200	5.5	0.8	1
	3032HR-4S25	●	4	32	25	42	125	5.5	0.5	2	
	3032HR-4L25	●	4	32	25	42	200	5.5	0.7	1	
	3032HR-4S32	●	4	32	32	42	125	5.5	0.7	2	
	3032HR-4L32	●	4	32	32	42	200	5.5	1.1	1	
	3033HR-3S25			3	33	25	42	115	5.5	0.5	2
	3033HR-3L25			3	33	25	42	165	5.5	0.6	1
	3033HR-4S25	●	4	33	25	42	125	5.5	0.5	2	
	3033HR-4L25	●	4	33	25	42	200	5.5	0.8	1	
	3033HR-4S32	●	4	33	32	42	125	5.5	0.7	2	
	3033HR-4L32	●	4	33	32	42	200	5.5	1.1	1	
	3040HR-4S32			4	40	32	45	130	5.5	0.8	2
	3040HR-4L32			4	40	32	45	200	5.5	1.3	1
	3040HR-5S32			5	40	32	45	130	5.5	0.8	2
	3040HR-5L32			5	40	32	45	200	5.5	1.2	1

● : Stock item

## Available inserts

XNKT-ML XNKT-MM



Designation	Cermet		Coated										Uncoated			Page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10
XNKT 060405PNER-ML							●	●	●		●	●	●				
060405PNSR-MM							●	●	●		●	●	●				
060408PNER-ML							●	●	●		●	●	●				
060408PNSR-MM							●	●	●		●	●	●				

## Parts

Specification	Screw	Wrench
Ø20~Ø40	FTNA0306	TW09S

Available inserts **B32**

## RM3PS4000

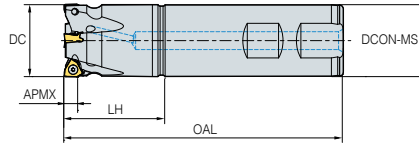


Fig. 1

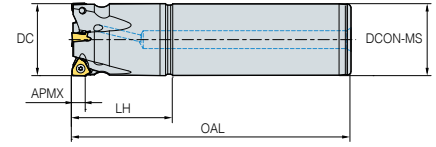
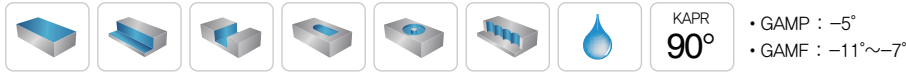


Fig. 2



(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX		Fig.
RM3PS 4032HR-3S32	●	3	32	32	42	125	8	0.7	2
4032HR-3L32		3	32	32	42	200	8	1.1	1
4033HR-3S32	●	3	32	32	42	125	8	0.7	2
4033HR-3L32		3	32	32	42	200	8	1.1	1
4040HR-3S32	●	3	40	32	42	130	8	0.8	2
4040HR-3L32		3	40	32	42	200	8	1.2	1
4040HR-4S32	●	4	40	32	42	130	8	0.8	2
4040HR-4L32		4	40	32	42	200	8	1.2	1
4050HR-4S32	●	4	50	32	42	135	8	1	2
4050HR-4L32		4	50	32	42	200	8	1.4	1
4050HR-4S40	●	4	50	40	42	135	8	1.3	2
4050HR-4L40		4	50	40	42	200	8	1.9	1
4050HR-5S32	●	5	50	32	42	135	8	1.1	2
4050HR-5L32		5	50	32	42	200	8	1.7	1
4050HR-5S40	●	5	50	40	42	135	8	1.4	2
4050HR-5L40		5	50	40	42	200	8	1.9	1
4063HR-5S32	●	5	63	32	42	135	8	1.3	2
4063HR-5L32		5	63	32	42	200	8	1.7	1
4063HR-5S40	●	5	63	40	42	135	8	1.6	2
4063HR-5L40		5	63	40	42	200	8	2.2	1
4063HR-6S32	●	6	63	32	42	135	8	1.3	2
4063HR-6L32		6	63	32	42	200	8	1.9	1
4063HR-6S40	●	6	63	40	42	135	8	1.6	2
4063HR-6L40		6	63	40	42	200	8	2.3	1

● : Stock item

### Available inserts

XNCT-MA XNKT-ML XNKT-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
XNCT 080504PNFR-MA																		●
080508PNFR-MA																		●
080512PNFR-MA																		●
080520PNFR-MA																		●
XNKT 080504PNER-ML													●	●				
080504PNSR-MM								●				●	●					
080508PNER-ML					●			●	●			●	●					
080508PNSR-MM					●		●	●	●			●	●					
080512PNER-ML							●	●				●	●					
080512PNSR-MM							●	●				●	●					
080516PNER-ML							●	●				●	●					
080516PNSR-MM							●	●				●	●					
080520PNER-ML							●	●				●	●					
080520PNSR-MM							●	●				●	●					

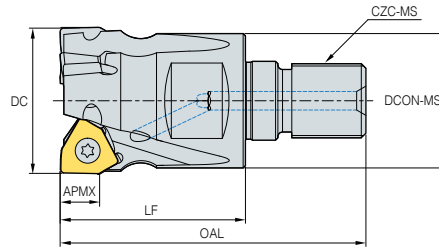
B31  
B32

### Parts

Specification		
Ø32-Ø63	FTNA0408	TW15S

Available inserts B31, B32

# RM3PM3000/4000



Designation	Stock	CICT	DC	DCON-MS	LF	OAL	CZC-MS	APMX	(mm)
<b>RM3PM</b> 3020HR-2-M10		2	20	18	30	50	M10	5.5	0.1
3025HR-3-M12		3	25	21	35	58	M12	5.5	0.1
3032HR-4-M16		4	32	29	40	66	M16	5.5	0.2
3040HR-5-M16		5	40	29	40	66	M16	5.5	0.3
<b>RM3PM</b> 4032HR-3-M16		3	32	29	40	66	M16	8	0.2
4040HR-4-M16		4	40	29	50	76	M16	8	0.3
4050HR-5-M16		5	50	29	55	81	M16	8	0.5

## Available inserts

XNCT-MA XNKT-ML XNKT-MM



Designation	Cermet		Coated										Uncoated			Page		
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
3000 type	XNKT 060405PNER-ML																	B32
	060405PNSR-MM						●	●	●	●		●	●	●				
	060408PNER-ML						●	●	●	●		●	●	●				
	060408PNSR-MM						●	●	●	●		●	●	●				
4000 type	XNCT 080504PNFR-MA																●	B31 B32
	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 adaptors

Designation	Available adaptors
<b>RM3PM</b> 3020HR-2-M10	MAT-M10
3025HR-3-M12	MAT-M12
3032HR-4-M16	MAT-M16
3040HR-5-M16	MAT-M16
<b>RM3PM</b> 4032HR-3-M16	MAT-M16
4040HR-4-M16	MAT-M16
4050HR-5-M16	MAT-M16

Designation : RM3PM4032HR-M16  
 Modular head threading measure size (M16)

II

Adaptor spec.: MAT-M16-035-S32S  
 Adaptor threading measure (M16)

## Parts

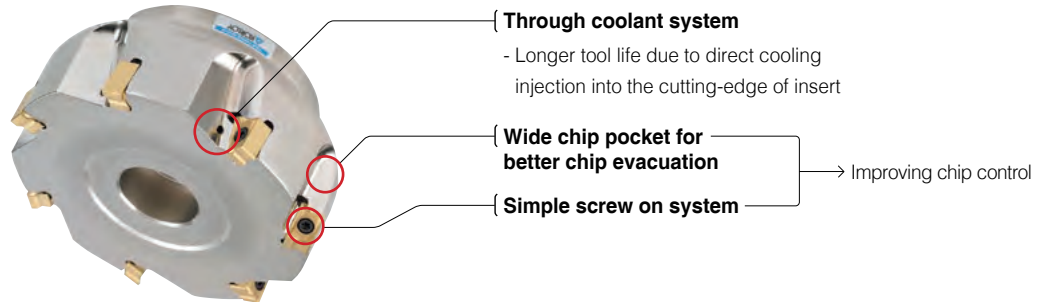
Specification	Screw	Wrench
Ø20~Ø40(3000형)	FTNA0306	TW09S
Ø32~Ø50(4000형)	FTNA0408	TW15S

Available inserts **B31, B32** Available adaptors **B400**

## Rich Mill RM4

### 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



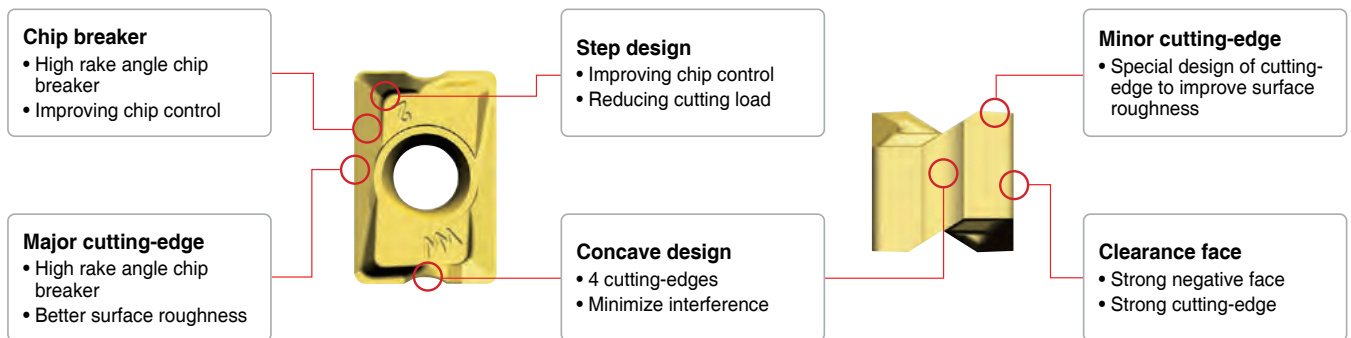
### Economical 4 cutting-edges by using double-sided insert

- 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

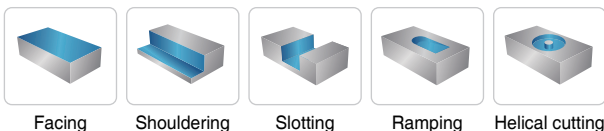


### Features of insert

- 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









### Uses


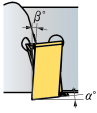
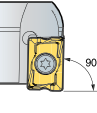


## Rich Mill RM4

### Features of chip breakers

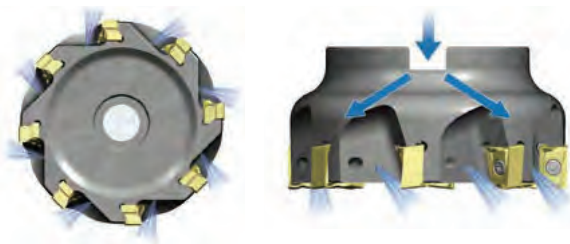
Insert	Cutting-edge	Uses	Features
MA 		Aluminum, Light machining	With sharp edge application the better productivity has been accomplished, especially for Aluminum or low force cut
MF 		Light cutting	Due to low cutting load, it is good for light cutting and difficult-to-cut material
MM 		General cutting	It is suitable design for general milling

### Setting configuration

Shape	Setting angle of insert	Features
	 $\beta^\circ$ $\alpha^\circ$	High rake chip breaker & positive setting angle for low cutting load → Improving machinability
	 $90^\circ$	Multi applications for facing, shouldering, slotting, ramping, helical cutting, etc

### Through coolant system

- By using on exclusive coolant bolt (hexagonal socket bolt) powerful cooling & better chip evacuation can be acquired
- 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)



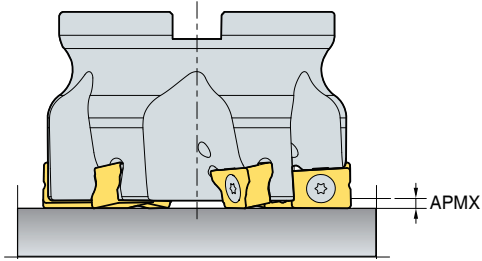
» Through coolant system for decreasing cutting heat and good chip evacuation



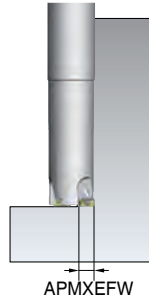
## Rich Mill RM4Z

### ➤ The depth of cut by machining type

• In horizontal machining, APMX (mm)



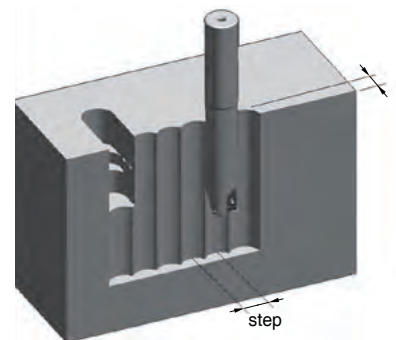
• In plunging, APMXEFW (mm)



RM4Z	Horizontality	Verticality	
	APMX(mm)	APMXEFW(mm)	step
RM4Z3000	1.5	9	< 0.7D
RM4Z4000	2.5	14	< 0.7D

### ➤ Max step in plunging

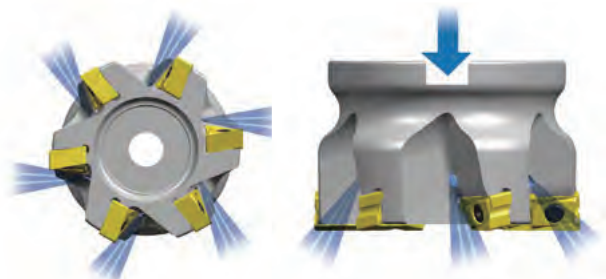
ae	Cutter Diameter (mm)								
	25	32	40	50	52	63	66	80	100
	Max step (mm)								
1	9.7	11.1	12.4	14	14.2	15.7	16.1	17.7	19.9
2	13.5	15.4	17.4	19.5	20	22	22.6	24.9	28
3	16.2	18.6	21	23.7	24.2	26.8	27.4	30.3	34.1
4	18.3	21.1	24	27.1	27.7	30.7	31.4	34.8	39.1
5	20	23.2	26.4	30	30.6	34	34.9	38.7	43.5
6	21.3	24.9	28.5	32.4	33.2	36.9	37.9	42.1	47.4
7	22.4	26.4	30.3	34.6	35.4	39.5	40.6	45.2	51
8	23.3	27.7	32	36.6	37.5	41.9	43	48	54.2
9	24	28.7	33.4	38.4	39.3	44	45.2	50.5	57.2
10	-	-	-	-	-	46	47.3	52.9	60
11	-	-	-	-	-	47.8	49.1	55.1	62.5
12	-	-	-	-	-	49.4	50.9	57.1	64.9
13	-	-	-	-	-	50.9	52.4	59	67.2
14	-	-	-	-	-	52.3	53.9	60.7	69.3



### ➤ Through coolant system

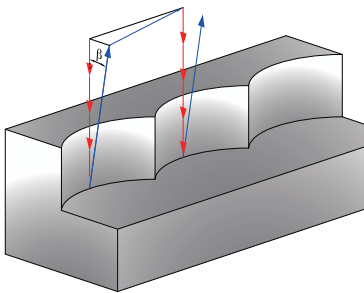
- Exclusive hexagonal coolant socket bolt provides excellent cooling and chip evacuation
- Direct coolant injection to cutting-edge improves cooling effectiveness
- Coolant type arbor should be used

\* Coolant bolt is not included, it is for sale



## Rich Mill RM4Z

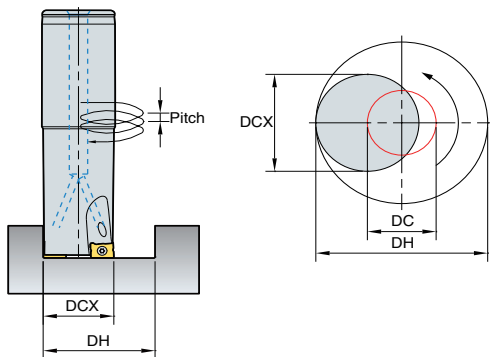
### ➤ Programming tip



- - - Plunging feed direction
- Tool escape
- $\beta$  Escape angle ( $\beta \geq 1^\circ$ )

- When your tool steps back after plunging, please get over  $1^\circ$  more escape angle

### ➤ Helical machining



$$DH = DH - DCX$$

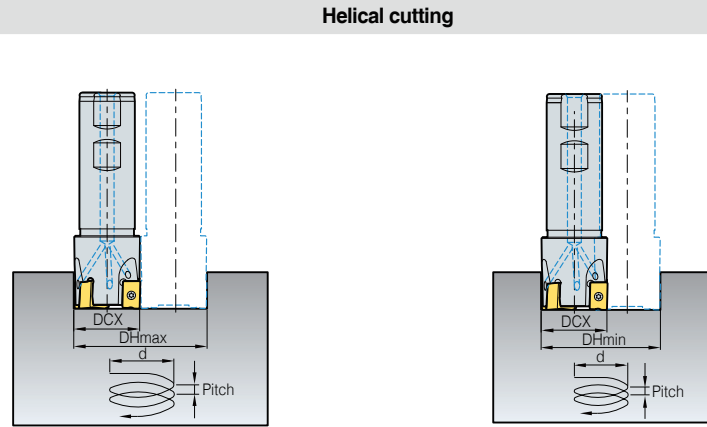
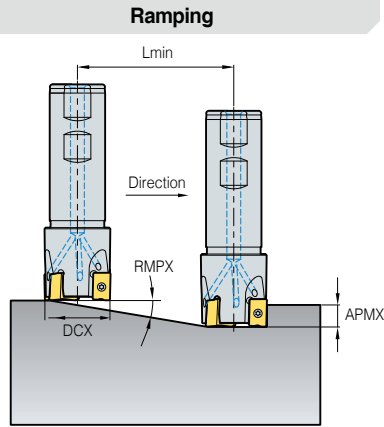
- DC = Tool center path
- DH = Desire hole diameter
- DCX = Tool diameter

(mm)

Designation	DCX	Helical data				
		Min. machining Dia. $\text{\O}DH_{\min}$	Max. pitch	Max. machining Dia. $\text{\O}DH_{\max}$	Max. pitch	
RM4ZS	3025HR-L25	25	30	0.4	48	1.8
	3032HR-L32	32	43	0.3	62	0.9
	3040HR-L32	40	59	0.3	78	0.6
RM4ZCM	3040HR	40	59	0.3	78	0.6
	3050HR	50	79	0.3	98	0.5
	3052HR	52	83	0.3	102	0.5
RM4ZM	3025HR-M12	25	30	0.4	48	1.8
	3032HR-M16	32	43	0.3	62	0.9
	3040HR-M16	40	59	0.3	78	0.6
RM4ZCM	4063HR	63	95	0.5	124	1.0
	4066HR	66	101	0.5	130	1.0
	4080HR	80	129	0.5	158	0.8
	4100HR	100	169	0.3	198	0.5

## Rich Mill RM4Z

### Ramping and helical cutting



(mm)

Designation	DCX	APMX	Ramping		Helical cutting for blind hole				Helical cutting for through hole	
			RMPX	Lmin	DHmin	Max. pitch	DHmax	Max. pitch	DHmin	Max. pitch
RM4PS3014HR	14	9	4.5	125	25	2.7	27	3.1	19	1.3
RM4PS3016HR	16	9	3.5	160	29	2.5	31	2.7	23	1.4
RM4PS3018HR	18	9	3.0	185	33	2.4	35	2.7	27	1.5
RM4PS3020HR	20	9	2.7	204	37	2.5	39	2.7	31	1.6
RM4PS3025HR	25	9	1.8	301	47	2.1	49	2.3	41	1.6
RM4PS3032HR	32	9	1.2	451	61	1.9	63	2.0	55	1.5
RM4PS3040HR	40	9	0.9	616	77	1.8	79	1.8	71	1.5
RM4PS3050HR	50	9	0.6	843	97	1.5	99	1.5	91	1.3
RM4PC(M)3040HR	40	9	0.9	616	77	1.8	79	1.8	71	1.5
RM4PC(M)3050HR	50	9	0.6	843	97	1.5	99	1.5	91	1.3
RM4PC(M)3063HR	63	9	0.5	1123	123	1.6	125	1.6	117	1.4
RM4PC(M)3080HR	80	9	0.3	1508	157	1.2	159	1.2	151	1.1
RM4PC(M)3100HR	100	9	0.2	1910	197	1.0	199	1.0	191	0.9
RM4PS4032HR	32	14	2.5	229	59.5	3.0	62	4	49	2.0
RM4PS4040HR	40	14	2.0	286	75.5	3.0	78	4	65	2.0
RM4PS4050HR	50	14	2.0	286	95.5	4.0	98	5	85	3.5
RM4PS4063HR	63	14	2.0	286	121.5	5.0	124	5	111	5.0
RM4PC(M)4050HR	50	14	2.0	286	95.5	4.0	98	5	85	3.5
RM4PC(M)4063HR	63	14	2.0	286	121.5	5.0	124	5	111	5.0
RM4PC(M)4080HR	80	14	1.5	382	155.5	5.0	158	5	145	5.0
RM4PC(M)4100HR	100	14	1.0	573	195.5	4.5	198	5	185	4.0
RM4PC(M)4125HR	125	14	1.0	573	245.5	5.0	248	5	235	5.0
RM4PC(M)4160R	160	14	0.5	1146	315.5	3.5	318	4	305	3.5

\* Please be sure to use cutting oil or air for ramping and helical machining

$$Lmin = ap / \tan(RMPX)$$

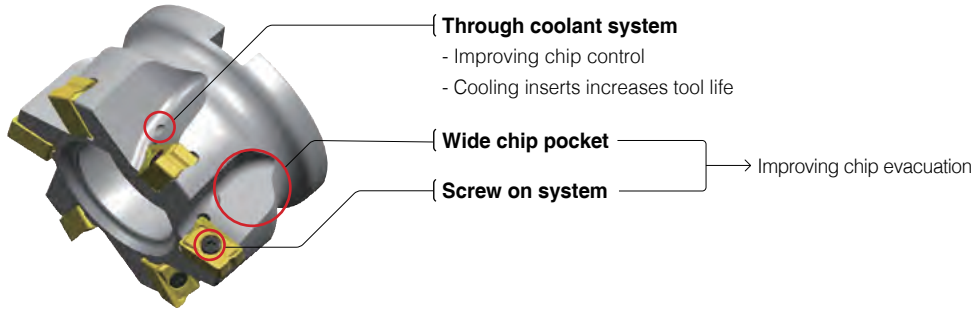
### Recommended cutting conditions

ISO	Grade	LNM(E)X100605PNR-MF		LNM(E)X100605PNR-MM		LNX100605PNR-MA		APMX (mm)	LNM(E)X151008PNR-MF		LNM(E)X151008PNR-MM		LNX151008PNR-MA		APMX (mm)
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	
P	NCM535	-	-	-	-	-	-	9.0	150~300	0.05~0.30	120~300	0.05~0.35	150~300	0.03~0.20	14.0
	PC3700	150~300	0.05~0.25	120~300	0.05~0.30	150~300	0.03~0.20		150~300	0.05~0.30	120~300	0.05~0.35	150~300	0.03~0.20	
M	PC5300	120~180	0.05~0.25	100~180	0.05~0.30	120~200	0.03~0.20		120~180	0.05~0.30	100~180	0.05~0.3	120~200	0.03~0.20	
K	PC6100	150~300	0.08~0.30	120~300	0.08~0.35	-	-		150~300	0.08~0.35	120~300	0.08~0.35	-	-	

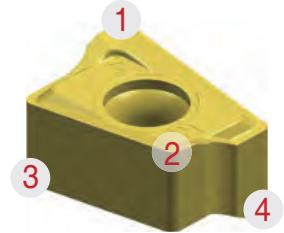
## Rich Mill RM4Z

### Features

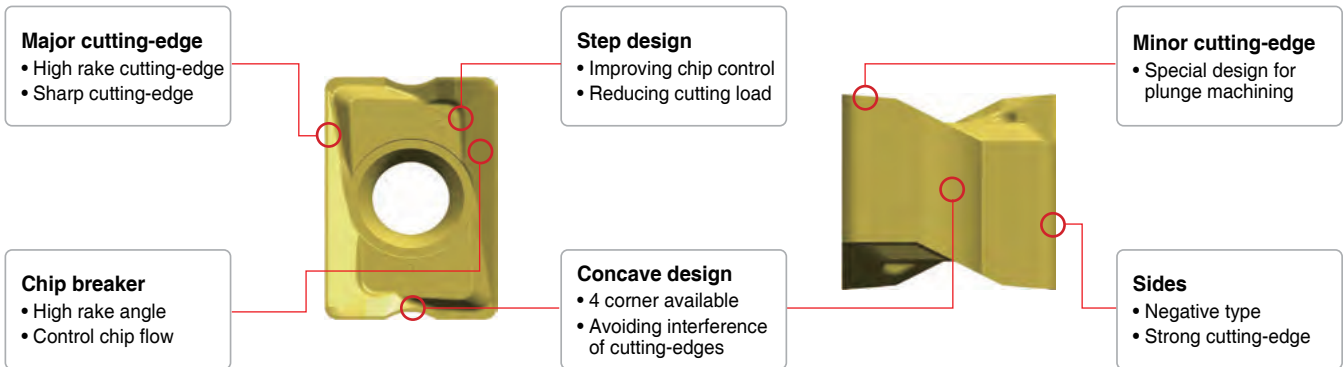
- Rich mill series RM4Z is a plunge mill for high efficiency vertical machining such as slotting and pocketing in roughing applications
- Rich mill series RM4Z is a highly efficient milling tool for plunging, shouldering and facing. It makes operations more economical with the use of its double-sided 4-corner insert
- Plunge machining reduces lead time for high productivity and precision machining.
- In plunging the max depth of RM4Z 3000 type is 9.0 mm and that of RM4Z 4000 type is 14.0 mm



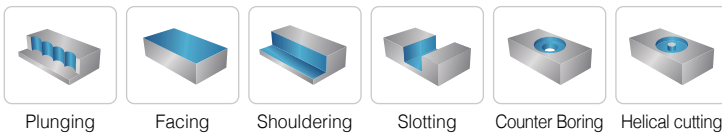
- Double-sided insert → 4 corner available
- High rake angle chip breaker and cutting-edge
- Various available machining types
- High efficiency and economical insert
- Negative type insert - Strong cutting-edge



### Features of insert



### Uses



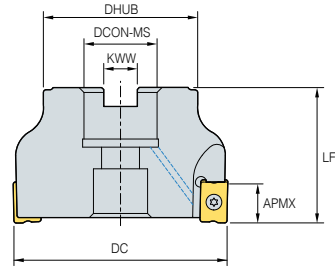
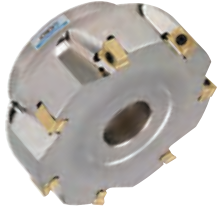
### Recommended cutting conditions

ISO	Grade	LNM(E)X100605PNL-MM				LNM(E)X151008PNL-MM			
		vc(m/min)	fz(mm/t)	APMXEFW(mm)	APMX(mm)	vc(m/min)	fz(mm/t)	APMXEFW(mm)	APMX(mm)
P	PC3700	100~250	0.05~0.25	9	1.5	120~250	0.05~0.25	14	2.5
M	PC5300	100~250	0.08~0.30			120~250	0.08~0.30		
K	PC6100	80~180	0.05~0.20			100~180	0.05~0.20		

\*APMXEFW (mm): (Plunging) max. radial depth of cut

\*\*APMX (mm): (Shouldering/Facing) max depth of cut

## RM4PC(M)3000



KAPR  
90°

- GAMP : -6°
- GAMF : -19°~-13°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	kg	
RM4PCM	3040HR	●	4	40	35	16	8.4	40	9	0.2
	3040HR-M	●	5	40	35	16	8.4	40	9	0.2
	3050HR	●	5	50	42	22	10.4	40	9	0.3
	3050HR-M	●	7	50	42	22	10.4	40	9	0.3
	3063HR	●	7	63	49	22	10.4	40	9	0.6
	3063HR-M	●	9	63	49	22	10.4	40	9	0.6
RM4PC (RM4PCM)	3080HR	● (●)	8	80	57	25.4(27)	9.5(12.4)	50(50)	9	1.3(1.2)
	3080HR-M	(●)	10	80	57	25.4(27)	9.5(12.4)	50(50)	9	1.2(1.2)
	3100HR	● (●)	9	100	67	31.75(32)	12.7(14.4)	63(50)	9	2.5(1.9)
	3100HR-M	(●)	12	100	67	31.75(32)	12.7(14.4)	63(50)	9	2.4(1.9)

( ) Metric size, ● : Stock item

### Available inserts

LNEX-MA LNM(E)X-MF LNM(E)X-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
LNEX	100605PNR-MF								●				●	●				
	100605PNR-MM							●	●				●	●				
	100605PNR-MA																●	
	100608PNR-MF								●	●			●	●				
	100608PNR-MM									●			●	●				
LNMX	100605PNR-MF								●				●	●				
	100605PNR-MM								●	●			●	●				
	100608PNR-MF									●			●	●				
	100608PNR-MM								●				●	●				

B11

### Available arbors

Designation	Available arbors	
	RM4PC	RM4PCM
RM4PC(M)	3040HR	BT□□-FMC16-□□
	3040HR-M	
	3050HR	
	3050HR-M	
	3063HR	
	3063HR-M	
		BT□□-FMC22-□□

Designation	Available arbors	
	RM4PC	RM4PCM
RM4PC(M)	3080HR	BT□□-FMA31.75-□□
	3080HR-M	
	3100HR	
	3100HR-M	

### Parts

Specification	Screw	Wrench
Ø40~Ø100	FTKA0307	TW09S

Available inserts B11 Available arbors and bolt E94, E96

# RM4PC(M)4000

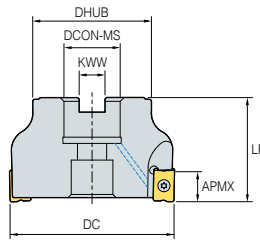


Fig. 1

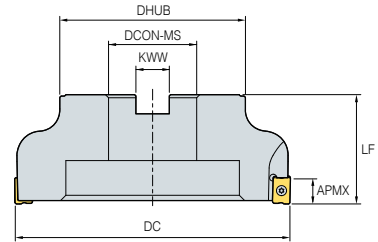


Fig. 2



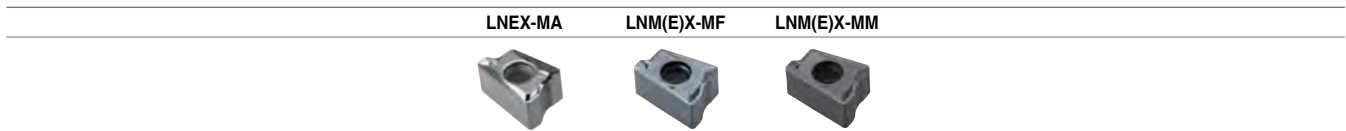
- GAMP : -6°
- GAMF : -19°~ -13°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>RM4PCM</b> 4040HR	●	3	40	36	16	8.4	40	14	0.2	1
4050HR	●	3	50	46	22	10.4	40	14	0.3	1
4050HR-M	●	4	50	46	22	10.4	40	14	0.3	1
4050HR-H	●	5	50	46	22	10.4	40	14	0.4	1
4063HR	●	4	63	49	22	10.4	40	14	0.5	1
4063HR-M	●	6	63	49	22	10.4	40	14	0.5	1
<b>RM4PC (RM4PCM)</b> 4080HR	● (●)	5	80	57	25.4(27)	9.5(12.4)	50	14	1.1	1
4080HR-M	● (●)	7	80	57	25.4(27)	9.5(12.4)	50	14	1.0	1
4080HR-H	(●)	8	80	57	25.4(27)	9.5(12.4)	50	14	1.0	1
4100HR	● (●)	5	100	67	31.75(32)	12.7(14.4)	63(50)	14	2.2	1
4100HR-M	● (●)	8	100	67	31.75(32)	12.7(14.4)	63(50)	14	2.2	1
4100HR-H	(●)	9	100	67	31.75(32)	12.7(14.4)	63(50)	14	2.2	1
4125HR	● (●)	7	125	87	38.1(40)	15.9(16.4)	63	14	3.9	1
4125HR-M	● (●)	10	125	87	38.1(40)	15.9(16.4)	63	14	3.8	1
4160R	(●)	8	160	107	50.8(40)	19(16.4)	63	14	5.0	2
4160R-M	(●)	12	160	107	50.8(40)	19(16.4)	63	14	5.0	2

( ) Metric size, ● : Stock item

## Available inserts



Designation	Coated										Page	Designation	Coated										Page																																												
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100			PC9530	PC9540	PC5300	PC5400	ST30A	H01	CN30	NC5330	NCM325	NCM335		NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	H01																																
L NEX 151004PNR-MF									●	●																							B11	L NMX 151004PNR-MF														●	●																B11		
151004PNR-MM									●	●																								B11	151004PNR-MM														●	●																B11	
151004PNR-MA																																		B11	151008PNR-MF																																B11
151008PNR-MM									●	●																								B11	151008PNR-MM																																B11
151008PNR-MA																																		B11	151016PNR-MF																																B11
151016PNR-MM									●	●																								B11	151016PNR-MM																																B11

## Available arbors

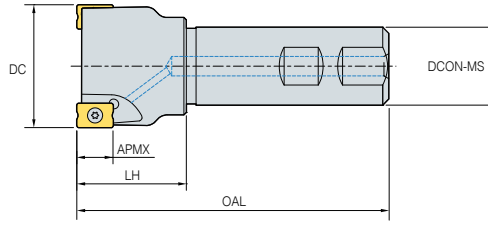
Designation	Available arbors		Designation	Available arbors	
	RM4PC	RM4PCM		RM4PC	RM4PCM
<b>RM4PC(M)</b> 4050HR			<b>RM4PC(M)</b> 4100HR	BT□□-FMA31.75-□□	BT□□-FMC32-□□
4050HR-M			4100HR-M		
4063HR		BT□□-FMC22-□□	4125HR	BT□□-FMA38.1-□□	BT□□-FMB40-□□
4063HR-M			4125HR-M		
4080HR	BT□□-FMA25.4-□□	BT□□-FMC27-□□	4160R	BT□□-FMA50.8-□□	BT□□-FMC40-□□
4080HR-M			4160R-M		

## Parts

Specification		
Ø50~Ø160	FTKA0412B	TW15S

Available inserts **B11** Available arbors and bolt **E94, E96**

## RM4PS3000



KAPR  
90°

- GAMP : -6°
- GAMF : -39°~16°

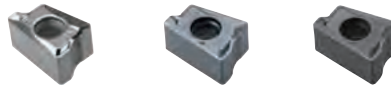
(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	
<b>RM4PS</b>								
3014HR-S16	●	1	14	16	23	90	9.0	0.1
3016HR-S16	●	1	16	16	25	90	9.0	0.1
3018HR-S16	●	2	18	16	23	90	9.0	0.1
3020HR-S20	●	2	20	20	30	100	9.0	0.2
3020HR-S20M	●	3	20	20	30	100	9.0	0.2
3025HR-S25	●	2	25	25	35	115	9.0	0.4
3025HR-S25M	●	3	25	25	35	115	9.0	0.4
3032HR-S32	●	3	32	32	40	125	9.0	0.7
3032HR-S32M	●	4	32	32	40	125	9.0	0.7
3040HR-S32	●	4	40	32	42	130	9.0	0.9
3040HR-S32M	●	5	40	32	42	130	9.0	0.8
3040HR-S40		4	40	40	42	130	9.0	1.2
3040HR-S40M		5	40	40	42	130	9.0	1.2
3040HR-S42		4	40	42	42	130	9.0	1.3
3040HR-S42M		5	40	42	42	130	9.0	1.3
3050HR-S32	●	5	50	32	45	135	9.0	1.0
3050HR-S32M	●	7	50	32	45	135	9.0	1.1
3050HR-S40		5	50	40	45	135	9.0	1.4
3050HR-S40M		7	50	40	45	135	9.0	1.4
3050HR-S42		5	50	42	45	135	9.0	1.5
3050HR-S42M		7	50	42	45	135	9.0	1.5

● : Stock item

### Available inserts

LNEXT-MA LNM(E)X-MF LNM(E)X-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>LNEXT</b>																		
100605PNR-MF									●				●	●				
100605PNR-MM								●	●				●	●				
100605PNR-MA																	●	
100605PNL-MM								●	●				●	●				
100608PNR-MF									●				●	●				
100608PNR-MM									●				●	●				
<b>LNMX</b>																		
100605PNR-MF									●	●	●		●	●				
100605PNR-MM									●	●			●	●				
100608PNR-MF									●				●	●				
100608PNR-MM									●	●			●	●				

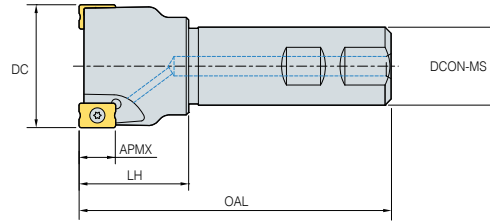
B11

### Parts

Specification		
Ø14-Ø50	FTKA0307	TW09S

Available inserts B11

# RM4PS4000



• GAMP : -6°  
• GAMF : -24°~-14°

Designation		Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg
RM4PS	4032HR-S32	●	2	32	32	40	125	14	0.6
	4032HR-S32M	●	3	32	32	40	125	14	0.6
	4040HR-S32	●	3	40	32	42	125	14	0.8
	4040HR-S32M	●	4	40	32	42	125	14	0.8
	4040HR-S40		3	40	40	42	125	14	1.14
	4040HR-S42		3	40	42	42	125	14	1.23
	4050HR-S32	●	3	50	32	45	125	14	1
	4050HR-S32M	●	4	50	32	45	125	14	1
	4050HR-S40		3	50	40	45	125	14	1.4
	4050HR-S40M		4	50	40	45	125	14	1.3
	4050HR-S42		3	50	42	45	125	14	1.5
	4050HR-S42M		4	50	42	45	125	14	1.5
	4063HR-S32	●	4	63	32	45	125	14	1.2
	4063HR-S32M	●	6	63	32	45	125	14	1.1
	4063HR-S40		4	63	40	45	125	14	1.6
	4063HR-S40M		6	63	40	45	125	14	0.6
	4063HR-S42		4	63	42	45	125	14	1.71
	4063HR-S42M		6	63	42	45	125	14	1.7

● : Stock item

## Available inserts

LNEX-MA LNM(E)X-MF LNM(E)X-MM



Designation	Cermet	Coated										Uncoated			Page		
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10
LNEX	151004PNR-MF								●			●	●				
	151004PNR-MM								●			●	●				
	151004PNR-MA																●
	151008PNR-MF									●			●	●			
	151008PNR-MM								●	●			●	●			
	151008PNR-MA																
LNMX	151016PNR-MF								●			●	●				
	151016PNR-MM								●			●	●				
	151004PNR-MF								●	●		●	●				
	151004PNR-MM								●	●		●	●				
	151008PNR-MF					●			●	●		●	●				
	151008PNR-MM					●			●	●	●	●	●				
151016PNR-MF								●	●	●	●	●					
151016PNR-MM								●	●	●	●	●					

B11

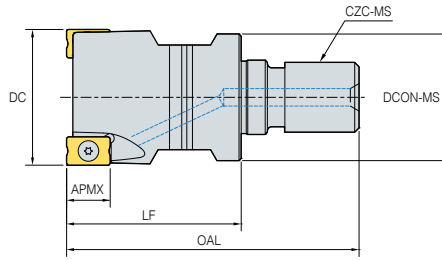
## Parts

Specification	Screw	Wrench
Ø32~Ø63	FTKA0412B	TW15S

Available inserts **B11**



## RM4PM3000



• GAMP :  $-6^\circ$   
• GAMF :  $-39^\circ \sim -16^\circ$

(mm)

Designation	Stock	CICT	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
<b>RM4PM</b> 3014HR-M06		1	14	12	25	40	M06	9	0.02
3016HR-M08	●	1	16	14.5	25	42	M08	9	0.02
3018HR-M08	●	2	18	14.5	25	42	M08	9	0.30
3020HR-M10	●	2	20	18	30	51	M10	9	0.10
3025HR-M12	●	2	25	23	35	59	M12	9	0.10
3032HR-M16	●	3	32	29	40	67	M16	9	0.20
3040HR-M16		4	40	29	40	67	M16	9	0.30
3050HR-M16		5	50	30	45	72	M16	9	0.40

● : Stock item

### Available inserts

LNEX-MA LNM(E)X-MF LNM(E)X-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>LNEX</b> 100605PNR-MF									●				●	●				
100605PNR-MM									●	●			●	●				
100605PNR-MA																		●
100608PNR-MF									●	●			●	●				
100608PNR-MM										●			●	●				
<b>LNMX</b> 100605PNR-MF										●			●	●				
100605PNR-MM										●	●		●	●				
100608PNR-MF										●			●	●				
100608PNR-MM										●			●	●				

B11

### Available adaptors

Designation	Available adaptors
<b>RM4PM</b> 3014HR-M06	MAT-M06
3016HR-M08	MAT-M08
3018HR-M08	
3020HR-M10	MAT-M10
3025HR-M12	MAT-M12
3032HR-M16	MAT-M16
3040HR-M16	
3050HR-M16	

Designation : RM3PM4032HR-M16  
Modular head threading measure size (M16)

II

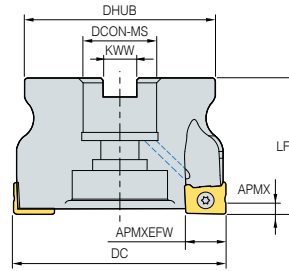
Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

### Parts

Specification		
Ø14-Ø50	FTKA0307	TW09S

Available inserts **B11** Available adaptors **B400**

# RM4ZC(M)3000/4000



KAPR **90°**  
 • GAMP : -11°  
 • GAMF : -12°~ -10°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX		
<b>RM4ZCM</b>	<b>3040HR</b>	●	4	40	37	16	8.4	40	1.5	0.2
	<b>3050HR</b>	●	5	50	47	22	10.4	40	1.5	0.3
	<b>3052HR</b>		5	52	48	22	10.4	40	1.5	0.3
	<b>4063HR</b>	●	5	63	58	22	10.4	40	2.5	0.5
<b>RM4ZC (RM4ZCM)</b>	<b>4066HR</b>		5	66	61	25.4(22)	9.5(12.4)	50(50)	2.5	0.7
	<b>4080HR</b>	(●)	6	80	70	25.4(27)	9.5(12.4)	50(50)	2.5	1
	<b>4100HR</b>		7	100	80	31.75(32)	12.7(14.4)	63(50)	2.5	1.6

( ) Metric size, ● : Stock item

## Available inserts

LNM(E)X-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
3000 type	LNEX 100605PNL-MM									●			●	●				B11
	LNMX 100605PNL-MM								●	●			●	●				
4000 type	LNEX 151008PNL-MM									●			●	●				
	LNMX 151008PNL-MM												●	●				

## Available arbors

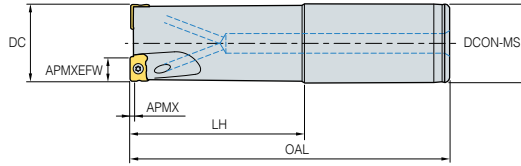
Designation	Available arbors	
	RM4ZC	RM4ZCM
<b>RM4ZCM</b>		BT□□ -FMC16-□□ BT□□ -SCA16-□□
		BT□□ -FMC22-□□
		BT□□ -FMC22-□□
<b>RM4ZCM (RM4ZC(M))</b>		BT□□ -FMA25.4-□□
		BT□□ -FMA31.75-□□ BT□□ -SCA31.75-□□
		BT□□ -FMC27-□□
		BT□□ -FMC32-□□

## Parts

Specification		
Ø40~Ø52(3000 type)	FTKA0307	TW09S
Ø63~Ø100(4000 type)	FTKA0412B	TW15S

Available inserts **B11** Available arbors and bolt **E94, E96**

## RM4ZS3000



KAPR  
90°

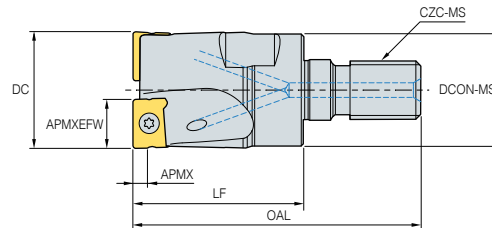
- GAMP : -11°
- GAMF : -17°~-14°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg
RM4ZS 3025HR-L25	●	2	25	25	120	200	1.5	0.6
3032HR-L32	●	3	32	32	120	210	1.5	1.1
3040HR-L32		4	40	32	120	250	1.5	1.5

● : Stock item

## RM4ZM3000



KAPR  
90°

- GAMP : -11°
- GAMF : -17°~-14°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LF	OAL	CZC-MS	APMX	kg
RM4ZM 3025HR-M12		2	25	23	35	59	12	1.5	0.1
3032HR-M16	●	3	32	29	40	67	16	1.5	0.2
3040HR-M16		4	40	29	40	67	16	1.5	0.3

● : Stock item

### Available inserts

LNM(E)X-MM



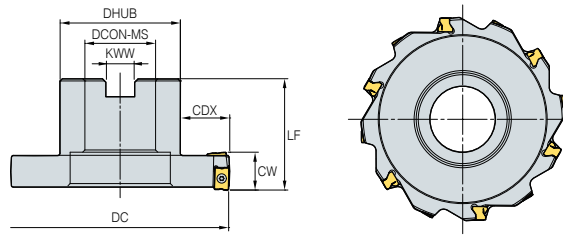
Designation	Cermet	Coated								Uncoated			Page					
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	G10	H01
LNEX 100605PNL-MM										●			●	●				B11
LNMX 100605PNL-MM								●	●				●	●				

### Parts

Specification	Screw	Wrench
Ø25-Ø40	FTKA0307	TW09S

Available inserts B11

# RM4PFCB3000



Designation		Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	CW	CDX
RM4PFCB	B308015R		10	80	40	25.4	9.5	50	15	19
	B308017R		10	80	40	25.4	9.5	50	17	19
	B310015R		12	100	54	31.75	12.7	50	15	22
	B310017R		12	100	54	31.75	12.7	50	17	22
	B312515R		14	125	70	38.1	15.9	60	15	26
	B312517R		14	125	70	38.1	15.9	60	17	26
	B316015R		16	160	70	38.1	15.9	60	15	44
	B316017R		16	160	70	38.1	15.9	60	17	44

● : Stock item

## Available inserts

LN(E)X-MM



Designation	Cermet	Coated											Uncoated			Page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10
LNEX	100605PNR-MM								●	●			●	●			
	100605PNL-MM									●			●	●			
LNMX	100605PNR-MM								●	●	●		●	●			
	100605PNL-MM								●	●			●	●			

## Available arbors

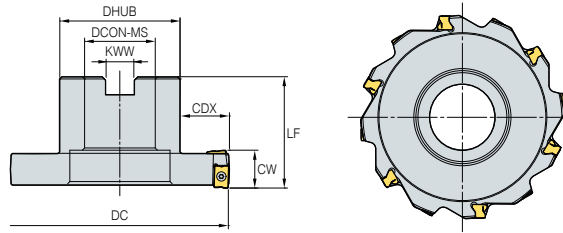
Designation	Available arbors
RM4PFCB	308015R
	308017R
	310015R
	310017R
312515R	BT□□ -FMA25.4-□□
312517R	
316015R	BT□□ -FMA31.75-□□
316017R	
	BT□□ -FMA38.1-□□

## Parts

Specification	Screw	Wrench
Ø80-Ø160	FTKA0307	TW09S

Available inserts **B11** Available arbors and bolt **E94**

## RM4PFCB4000



(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	CW	CDX
RM4PFCB 408022R		6	80	40	25.4	9.5	50	22	19
408024R		6	80	40	25.4	9.5	50	24	19
408026R		6	80	40	25.4	9.5	50	26	19
408028R		6	80	40	25.4	9.5	50	28	19
410022R		8	100	54	31.75	12.7	50	22	22
410024R		8	100	54	31.75	12.7	50	24	22
410026R		8	100	54	31.75	12.7	50	26	22
410028R		8	100	54	31.75	12.7	50	28	22
412522R		10	125	70	38.1	15.9	60	22	26
412524R		10	125	70	38.1	15.9	60	24	26
412526R		10	125	70	38.1	15.9	60	26	26
412528R		10	125	70	38.1	15.9	60	28	26
416022R		12	160	70	38.1	15.9	60	22	44
416024R		12	160	70	38.1	15.9	60	24	44
416026R		12	160	70	38.1	15.9	60	26	44
416028R		12	160	70	38.1	15.9	60	28	44

● : Stock item

### Available inserts

LNM(E)X-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
LNEX 151008PNR-MM									●	●			●	●				B11
151008PNL-MM										●			●	●				
LNMX 151008PNR-MM					●				●	●	●		●	●				
151008PNL-MM													●	●				

### Available arbors

Designation	Available arbors	Designation	Available arbors
RM4PFCB 408022R	BT□□ -FMA25.4-□□	RM4PFCB 412522R	BT□□ -FMA38.1-□□
408024R		412524R	
408026R		412526R	
408028R		412528R	
410022R	BT□□ -FMA31.75-□□	416022R	
410024R		416024R	
410026R		416026R	
410028R		416028R	

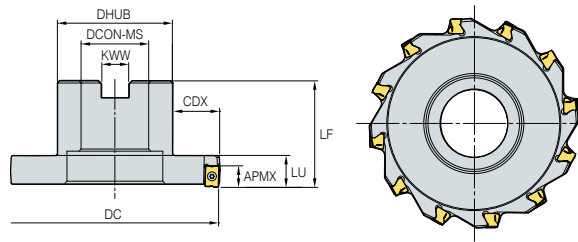
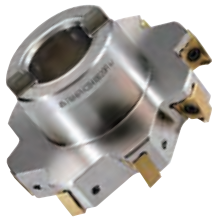
### Parts

Specification	Screw	Wrench
Ø80~Ø160	FTKA0412B	TW15S

Available inserts B11

Available arbors and bolt E94

# RM4PHCB3000



Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	CW	CDX
RM4PHCB 308015R		10	80	40	25.4	9.5	50	15	19
310015R		12	100	54	31.75	12.7	50	15	22
312515R		14	125	70	38.1	15.9	60	15	26
316015R		16	160	70	38.1	15.9	60	15	44

(mm)  
● : Stock item

## Available inserts

LNEX-MA      LNM(E)X-MF      LNM(E)X-MM





Designation	Cermet	Coated												Uncoated			Page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01
LNEX 100605PNR-MF									●				●	●				
100605PNR-MM									●	●			●	●				
100605PNR-MA																		●
100608PNR-MF									●	●			●	●				
100608PNR-MM										●			●	●				
LNMX 100605PNR-MF										●			●	●				
100605PNR-MM										●	●		●	●				
100608PNR-MF										●			●	●				
100608PNR-MM										●			●	●				

## Available arbors

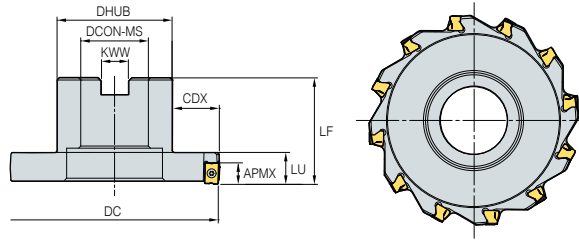
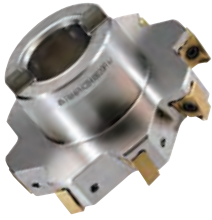
Designation	Available arbors
RM4PHCB 308015R	BT□□ -FMA25.4-□□
310015R	BT□□ -FMA31.75-□□
312515R	BT□□ -FMA38.1-□□
316015R	

## Parts

Specification	 Screw	 Wrench
Ø80-Ø160	FTKA0307	TW09S

Available inserts **B11**      Available arbors and bolt **E94**

## RM4PHCB4000



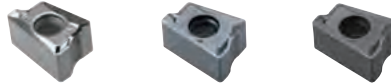
Designation		Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	CW	CDX
RM4PHCB	408020R		6	80	40	25.4	9.5	50	20	19
	410020R		8	100	54	31.75	12.7	50	20	22
	412520R		10	125	70	38.1	15.9	60	20	26
	416020R		12	160	70	38.1	15.9	60	20	44

(mm)

● : Stock item

### Available inserts

LNEX-MA LNM(E)X-MF LNM(E)X-MM



Designation	Coated	Coated										Uncoated			Page				
	CN30	NC5330	NCM325	NCM335	NCM635	NCM645	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01	
LNEX	151004PNR-MF									●			●	●					
	151004PNR-MM									●			●	●					
	151004PNR-MA																	●	
	151008PNR-MF									●			●	●					
	151008PNR-MM									●	●		●	●					
	151008PNR-MA																		●
	151016PNR-MF										●			●	●				
151016PNR-MM										●			●	●					
LNMX	151004PNR-MF								●	●			●	●					
	151004PNR-MM									●			●	●					
	151008PNR-MF				●				●	●			●	●					
	151008PNR-MM				●				●	●	●		●	●					
	151016PNR-MF									●			●	●					
	151016PNR-MM									●			●	●					

B11

### Available arbors

Designation	Available arbors
RM4PHCB 408020R	BT□□ -FMA25.4-□□
410020R	BT□□ -FMA31.75-□□
412520R	
416020R	BT□□ -FMA38.1-□□

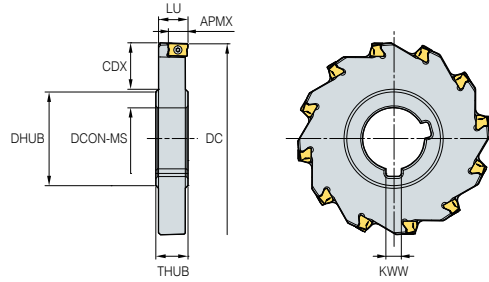
### Parts

Specification	Screw	Wrench
Ø80~Ø160	FTKA0412B	TW15S

Available inserts B11

Available arbors and bolt E94

# RM4PFCP3000



(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	THUB	CW	CDX
RM4PFCP	308015R	10	80	41.5	25.4	6.35	15	15	17
	308017R	10	80	41.5	25.4	6.35	17	17	17
	310015R	12	100	48	31.75	7.94	15	15	24
	310017R	12	100	48	31.75	7.94	17	17	24
	312515R	14	125	58	38.1	9.53	15	15	32
	312517R	14	125	58	38.1	9.53	17	17	32
	316015R	16	160	58	38.1	9.53	15	15	49
	316017R	16	160	58	38.1	9.53	17	17	49

● : Stock item

## Available inserts

LNM(E)X-MM





Designation	Cermet	Coated												Uncoated			Page
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	
LNEX	100605PNR-MM								●	●			●	●			
	100605PNL-MM									●			●	●			
LNMX	100605PNR-MM								●	●	●		●	●			
	100605PNL-MM								●	●			●	●			

B11

## Available arbors

Designation	Available arbors
RM4PFCP	308015R
	308017R
310015R	BT□□ -SCA31.75-□□
310017R	
312515R	BT□□ -SCA38.1-□□
312517R	
316015R	
316017R	

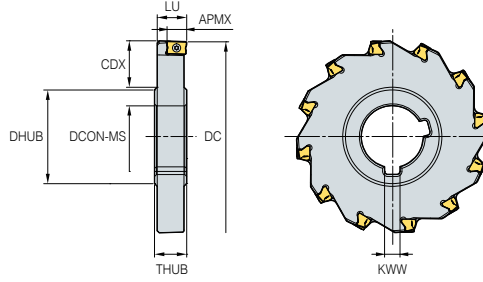
## Parts

Specification	 Screw	 Wrench
Ø80-Ø160	FTKA0307	TW09S

Available inserts **B11**



## RM4PFCP4000



(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	THUB	CW	CDX
RM4PFCP 408022R		6	80	41.5	25.4	6.35	22	22	17
408024R		6	80	41.5	25.4	6.35	24	24	17
408026R		6	80	41.5	25.4	6.35	26	26	17
408028R		6	80	41.5	25.4	6.35	28	28	17
410022R		8	100	48	31.75	7.94	22	22	24
410024R		8	100	48	31.75	7.94	24	24	24
410026R		8	100	48	31.75	7.94	26	26	24
410028R		8	100	48	31.75	7.94	28	28	24
412522R		10	125	58	38.1	9.53	22	22	32
412524R		10	125	58	38.1	9.53	24	24	32
412526R		10	125	58	38.1	9.53	26	26	32
412528R		10	125	58	38.1	9.53	28	28	32
416022R		12	160	58	38.1	9.53	22	22	49
416024R		12	160	58	38.1	9.53	24	24	49
416026R		12	160	58	38.1	9.53	26	26	49
416028R		12	160	58	38.1	9.53	28	28	49

● : Stock item

### Available inserts

LNM(E)X-MM





Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
LNEX 151008PNR-MM									●	●			●	●				B11
151008PNL-MM										●			●	●				
LNMX 151008PNR-MM					●				●	●	●		●	●				
151008PNL-MM													●	●				

### Available arbors

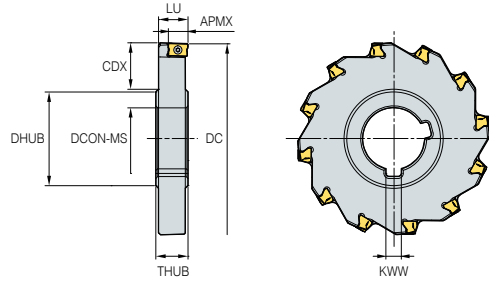
Designation	Available arbors	Designation	Available arbors
RM4PFCP 408022R	BT□□-SCA25.4-□□	RM4PFCP 412522R	BT□□-SCA38.1-□□
408024R		412524R	
408026R		412526R	
408028R		412528R	
410022R	BT□□-SCA31.75-□□	416022R	
410024R		416024R	
410026R		416026R	
410028R		416028R	

### Parts

Specification	 Screw	 Wrench
Ø80~Ø160	FTKA0412B	TW15S

Available inserts B11

# RM4PHCP3000



Designation		Stock	CICT	DC	DHUB	DCON-MS	KWW	THUB	CW	CDX
RM4PHCP	308015R		10	80	41.5	25.4	6.35	16.5	15.1	17
	310015R		12	100	48	31.75	7.94	16.5	15.1	24
	312515R		14	125	58	38.1	9.52	16.5	15.1	32
	316015R		16	160	58	38.1	9.52	16.5	15.1	49

(mm)

● : Stock item

## Available inserts

LNEX-MA      LNM(E)X-MF      LNM(E)X-MM




Designation	Cermet	Coated										Uncoated			Page			
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
LNEX	100605PNR-MF								●				●	●				B11
	100605PNR-MM								●	●			●	●				
	100605PNR-MA																●	
	100608PNR-MF								●	●			●	●				
	100608PNR-MM									●			●	●				
LNMX	100605PNR-MF								●				●	●				B11
	100605PNR-MM								●	●	●		●	●				
	100608PNR-MF								●				●	●				
	100608PNR-MM								●				●	●				

## Available arbors

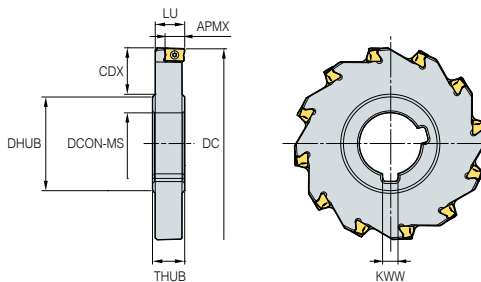
Designation	Available arbors
RM4PHCP 308015R	BT□□-SCA25.4-□□
310015R	BT□□-SCA31.75-□□
312515R	BT□□-SCA38.1-□□
316015R	

## Parts

Specification	 Screw	 Wrench
Ø80-Ø160	FTKA0307	TW09S

Available inserts **B11**

## RM4PHCP4000



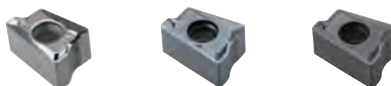
(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	THUB	CW	CDX
RM4PHCP 408020R		6	80	41.5	25.4	6.35	22	19.8	17
410020R		8	100	48	31.75	7.94	22	19.8	24
412520R		10	125	58	38.1	9.53	22	19.8	32
416020R		12	160	58	38.1	9.53	22	19.8	49

● : Stock item

### Available inserts

LNEX-MA LNM(E)X-MF LNM(E)X-MM



Designation	Cermet	Coated										Uncoated			Page				
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
LNEX	151004PNR-MF									●				●	●				
	151004PNR-MM									●				●	●				
	151004PNR-MA																		
	151008PNR-MF									●				●	●				
	151008PNR-MM									●	●			●	●				
	151008PNR-MA																		
	151016PNR-MF										●			●	●				
LNMX	151016PNR-MM									●			●	●					
	151004PNR-MF									●	●		●	●					
	151004PNR-MM									●			●	●					
	151008PNR-MF					●				●	●		●	●					
	151008PNR-MM					●				●	●		●	●					
	151016PNR-MF									●			●	●					
	151016PNR-MM									●			●	●					

B11

### Available arbors

Designation	Available arbors
RM4PHCP 408020R	BT□□-SCA25.4-□□
410020R	BT□□-SCA31.75-□□
412520R	BT□□-SCA38.1-□□
416020R	

### Parts

Specification	Screw	Wrench
Ø80~Ø160	FTKA0412B	TW15S

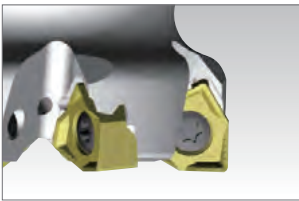
Available inserts B11

## Rich Mill RM6

### Features

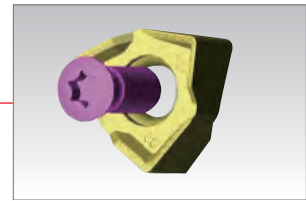
- **Stable clamping** - 3 clamping surfaces on the side and strong clamping screws  
→ Improves cutting stability
- **High quality results** - High precision, excellent perpendicularity, outstanding surface finish on the flank, accurate tolerance
- **High productivity** - High rake angle and sharp cutting-edges for lower cutting resistance  
→ Ideal for high speed and high feed machining

### Features of cutter



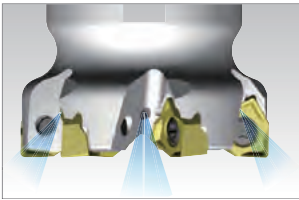
#### Streamlined holder design

- Improved chip evacuation in deep shouldering and slotting



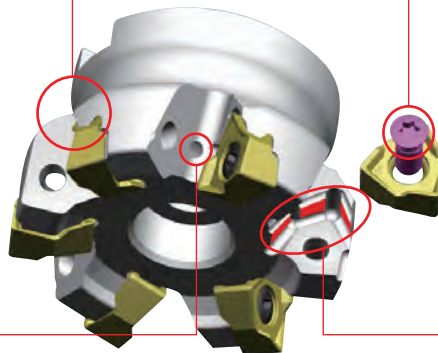
#### Strong clamping screws

- 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

### 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

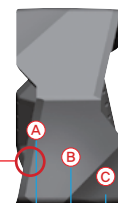
#### High rake cutting-edges

- Improved machinability and reduces cutting resistance

APMX  
WNGX08: 8.2 mm  
WNGX04: 4.3 mm




#### 3-level flank relief surface

- Enhances rigidity and enables stable clamping  
→ Improves cutting stability



## Rich Mill RM6

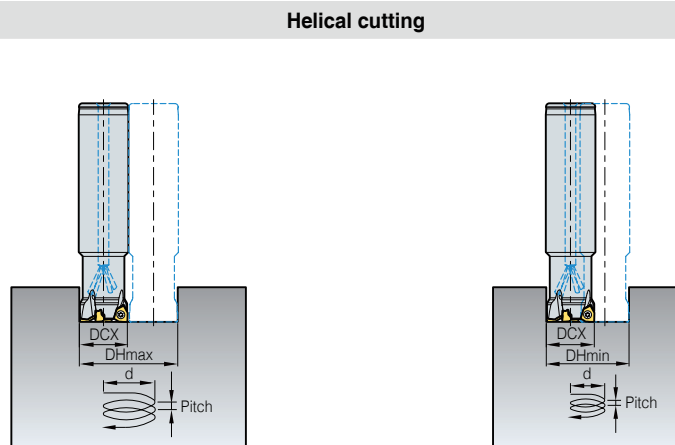
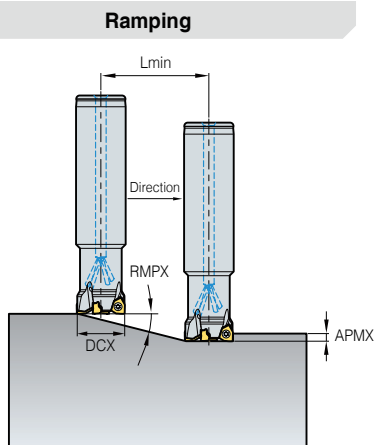
### Features of chip breakers

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	PC6100	H01
	General milling	PC5400	PC5300	PC5400	PC5300	H01
	Interrupted milling	PC5400	PC5400	PC5400	PC5400	H01

### Ramping and helical cutting



(mm)

Designation	DCX	APMX	Ramping		Helical cutting for blind holes				Helical cutting for through holes		
			RMPX	Lmin	DHmin	Max. pitch	DHmax	Max. pitch	DHmin	Max. pitch	
RM6PS	032R-2W32-120-WN08	32	8	0.8	572.9	54	0.96	62	1.3	38.5	0.5
	040R-3W32-120-WN08	40	8	0.5	916.7	70	0.82	78	1.0	54.5	0.4
	050R-4W32-120-WN08	50	8	0.3	1527.9	90	0.66	98	0.8	74.5	0.3
RM6PCM	063R-22-6-WN08	63	8	0.2	2291.3	116	0.58	124	0.6	100.5	0.3
	080R-27-7-WN08	80	8	0.1	4583.7	150	0.38	158	0.4	134.5	0.2
	100R-32-8-WN08	100	8	0.1	4583.7	190	0.49	198	0.5	174.5	0.3
	125R-40-11-WN08	125	8	0.1	4583.7	240	0.63	248	0.6	224.5	0.3

$L_{min} = ap / \tan(RMPX)$

Lmin: Cutting length at min. rake angle  
ap: Axial depth of cut  
RMPX: Available rake angle for ramping

**Rich Mill RM6**
**Recommended cutting condition RM6 WNGX04**

Workpiece	Grade	WNGX040304PNSR-MM			WNGX040304PNER-ML			WNGX040304PNFR-MA					
		vc (m/min)	fz (mm/t)	APMX (mm)	vc (m/min)	fz (mm/t)	APMX (mm)	vc (m/min)	fz (mm/t)	APMX (mm)			
P	Steel	PC3700	160~270	0.25~0.05	4.3	160~270	0.20~0.05	4.3	-	-	4.3		
		PC5300	150~240	0.25~0.05		150~240	0.25~0.05		-	-			
		PC5400	130~210	0.25~0.05		130~210	0.25~0.05		-	-			
M	Stainless steel	PC5300	90~150	0.20~0.05		90~150	0.10~0.05		-	-			
		PC5400	70~120	0.20~0.05		70~120	0.10~0.05		-	-			
K	Cast iron	PC6100	140~230	0.30~0.08		140~230	0.25~0.08		-	-			
		PC5300	120~200	0.30~0.08		120~200	0.25~0.08		-	-			
N	Non-ferrous metal	H01	-	-		-	-		-	500~1000		0.2~0.05	4.3

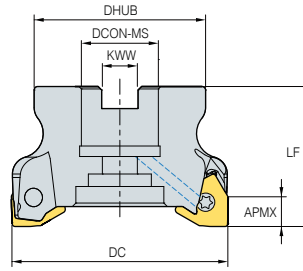
※ The above data refer to general cutting conditions and can be adjustable up to 300 m/min and 0.4 mm/t depending on user environment.

**Recommended cutting condition RM6 WNGX08**

Workpiece	Grade	WNGX080608PNSR-MM			WNGX080608PNER-ML			WNGX080608PNFR-MA					
		vc (m/min)	fz (mm/t)	APMX (mm)	vc (m/min)	fz (mm/t)	max. ap(mm)	vc (m/min)	fz (mm/t)	APMX (mm)			
P	Steel	PC3700	160~270	0.25~0.05	8.2	160~270	0.20~0.05	8.2	-	-	8.2		
		PC5300	150~240	0.25~0.05		150~240	0.25~0.05		-	-			
		PC5400	130~210	0.25~0.05		130~210	0.25~0.05		-	-			
M	Stainless steel	PC5300	90~150	0.20~0.05		90~150	0.10~0.05		-	-			
		PC5400	70~120	0.20~0.05		70~120	0.10~0.05		-	-			
K	Cast iron	PC6100	140~230	0.30~0.08		140~230	0.25~0.08		-	-			
		PC5300	120~200	0.30~0.08		120~200	0.25~0.08		-	-			
N	Non-ferrous metal	H01	-	-		-	-		-	500~1000		0.2~0.05	8.2

※ 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.

# RM6PCM-WN04



KAPR **90°**  
 • GAMP : -6°  
 • GAMF : -14°~ -11°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
RM6PCM 040R-16-6-WN04	●	6	40	35	16	8.4	40	4.3	0.2
040R-16-7-WN04	●	7	40	35	16	8.4	40	4.3	0.2
050R-22-8-WN04	●	8	50	42	22	10.4	40	4.3	0.3
050R-22-9-WN04	●	9	50	42	22	10.4	40	4.3	0.3
063R-22-10-WN04	●	10	63	49	22	10.4	40	4.3	0.5
063R-22-11-WN04	●	11	63	49	22	10.4	40	4.3	0.5

● : Stock item

## Available inserts

WNGX-MA      WNGX-ML      WNGX-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
WNGX 040304PNFR-MA																		●
040308PNFR-MA																		●
040312PNFR-MA																		●
040316PNFR-MA																		●
040304PNER-ML									●		●	●	●					
040308PNER-ML												●	●					
040312PNER-ML												●	●					
040316PNER-ML												●	●					
040304PNSR-MM									●			●	●					
040308PNSR-MM												●	●					
040312PNSR-MM												●	●					
040316PNSR-MM												●	●					

B30

## Available arbors

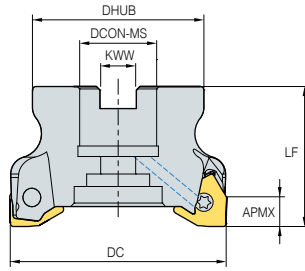
Designation	NC arbors
RM6PCM 040R-16-6-WN04	BT□□-FMC16-□□
040R-16-7-WN04	
050R-22-8-WN04	
050R-22-9-WN04	
063R-22-10-WN04	BT□□-FMC22-□□
063R-22-11-WN04	

## Parts

Specification		
Ø40~Ø63	ETNA02506	TW07S

Available inserts **B30**      Available arbors and bolt **E96**

# RM6PC(M)-WN08



KAPR  
90°

- GAMP : -6°
- GAMF : -14°~ -11°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX		
<b>RM6PCM</b>	050R-22-4-WN08	●	4	50	42	22	10.4	40	8.2	0.3
	050R-22-5-WN08	●	5	50	42	22	10.4	40	8.2	0.3
	063R-22-5-WN08	●	5	63	49	22	10.4	40	8.2	0.5
	063R-22-6-WN08	●	6	63	49	22	10.4	40	8.2	0.5
	080R-27-7-WN08	●	7	80	57	27	12.4	50	8.2	0.9
	080R-27-9-WN08	●	9	80	57	27	12.4	50	8.2	0.9
	100R-32-8-WN08	●	8	100	67	32	14.4	50	8.2	1.5
	100R-32-11-WN08	●	11	100	67	32	14.4	50	8.2	1.5
	125R-40-11-WN08	●	11	125	90	40	16.4	63	8.2	2.9
	125R-40-14-WN08	●	14	125	90	40	16.4	63	8.2	2.9
<b>RM6PC</b>	080R-25.4-7-WN08	●	7	80	57	25.4	9.5	50	8.2	0.9
	080R-25.4-9-WN08	●	9	80	57	25.4	9.5	50	8.2	0.9
	100R-31.75-8-WN08	●	8	100	67	31.75	12.7	63	8.2	1.7
	100R-31.75-11-WN08	●	11	100	67	31.75	12.7	63	8.2	1.7
	125R-38.1-11-WN08	●	11	125	90	38.1	15.9	63	8.2	3
	125R-38.1-14-WN08	●	14	125	90	38.1	15.9	63	8.2	2.9

● : Stock item

## Available inserts

WNGX-MA WNGX-ML WNGX-MM



Designation	Coated									Uncoated	Page	Designation	Coated									Uncoated	Page																
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700				PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	H01	CN30	NC5330			NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	H01		
<b>WNGX 080604PNFR-MA</b>	●											●	<b>WNGX 080616PNER-ML</b>																										
												●		<b>WNGX 080620PNER-ML</b>																									
												●			<b>WNGX 080604PNSR-MM</b>																								
												●				<b>WNGX 080608PNSR-MM</b>																							
												●					<b>WNGX 080612PNSR-MM</b>																						
												●						<b>WNGX 080616PNSR-MM</b>																					
												●							<b>WNGX 080616PNSR-MM</b>																				
												●								<b>WNGX 080620PNSR-MM</b>																			
											●	<b>WNGX 080620PNSR-MM</b>																											

## Available arbors

Designation	NC arbors
<b>RM6PC</b> 080R-25.4-7-WN08	BT□□-FMA25.4-□□
080R-25.4-9-WN08	
100R-31.75-8-WN08	
100R-31.75-11-WN08	BT□□-FMA31.75-□□
125R-38.1-11-WN08	
125R-38.1-14-WN08	
<b>RM6PCM</b> 050R-22-4-WN08	BT□□-FMC22-□□
050R-22-5-WN08	

Designation	NC arbors
<b>RM6PCM</b> 063R-22-5-WN08	BT□□-FMC22-□□
063R-22-6-WN08	
080R-27-7-WN08	BT□□-FMC27-□□
080R-27-9-WN08	
100R-32-8-WN08	BT□□-FMC32-□□
100R-32-11-WN08	
125R-40-11-WN08	
125R-40-14-WN08	BT□□-FMC40-□□

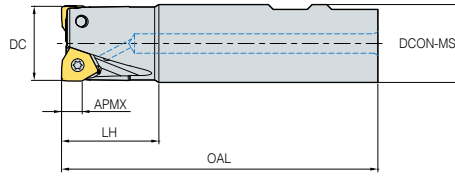
## Parts

Specification		
Ø50-Ø125	FTNA0511/FTNA0513	TW20-100

Available inserts **B30** Available arbors and bolt **E94, E96**



## RM6PS-WN04



Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX		
RM6PS	020R-2W20-110-WN04	●	20	20	35	110	4.3	0.2	
	020R-3W20-110-WN04	●	3	20	35	110	4.3	0.2	
	025R-3W25-110-WN04	●	3	25	35	110	4.3	0.4	
	025R-4W25-110-WN04	●	4	25	35	110	4.3	0.4	
	032R-5W32-110-WN04	●	5	32	32	35	110	4.3	0.6
	032R-6W32-110-WN04	●	6	32	32	35	110	4.3	0.6

● : Stock item

### Available inserts

WNGX-MA      WNGX-ML      WNGX-MM



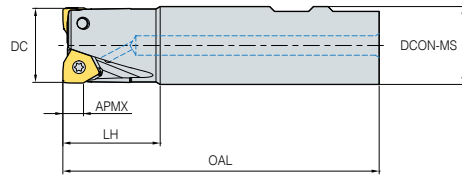
Designation	Cermet	Coated										Uncoated			Page	
	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01
WNGX 040304PNFR-MA															●	B30
040308PNFR-MA															●	
040312PNFR-MA															●	
040316PNFR-MA															●	
040304PNER-ML							●		●	●	●					
040308PNER-ML										●	●					
040312PNER-ML										●						
040316PNER-ML										●						
040304PNSR-MM							●			●	●					
040308PNSR-MM										●	●					
040312PNSR-MM										●						
040316PNSR-MM										●						

### Parts

Specification		
Ø20~Ø32	ETNA02506	TW07S

Available inserts B30

# RM6PS-WN08



• GAMP :  $-6^\circ$   
 • GAMF :  $-20^\circ \sim -14^\circ$

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	(mm)
<b>RM6PS</b>								
032R-2W32-120-WN08	●	2	32	32	40	120	8.2	0.7
040R-3W32-120-WN08	●	3	40	32	40	120	8.2	0.7
040R-4W32-120-WN08	●	4	40	32	40	120	8.2	0.7
050R-4W32-120-WN08	●	4	50	32	40	120	8.2	0.8
050R-5W32-120-WN08	●	5	50	32	40	120	8.2	0.8

● : Stock item

## Available inserts

WNGX-MA      WNGX-ML      WNGX-MM



Designation	Cermet	Coated												Uncoated			Page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01
<b>WNGX</b>																		
080604PNFR-MA																		●
080608PNFR-MA																		●
080612PNFR-MA																		●
080616PNFR-MA																		●
080620PNFR-MA																		●
080604PNER-ML									●			●	●	●				
080608PNER-ML					●				●	●		●	●	●				
080612PNER-ML												●						
080616PNER-ML												●						
080620PNER-ML												●						
080604PNSR-MM									●			●	●	●				
080608PNSR-MM					●				●	●		●	●	●				
080612PNSR-MM												●						
080616PNSR-MM												●						
080620PNSR-MM												●						

B30

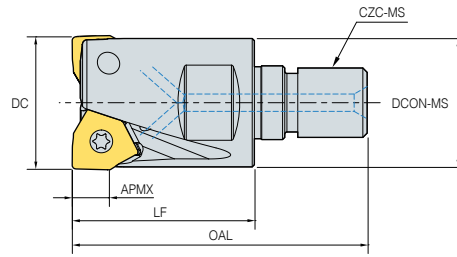
## Parts

Specification		
Ø32~Ø50	FTNA0513	TW20-100

Available inserts **B30**



# RM6PM-WN08



KAPR  
**90°**  
• GAMP : -6°  
• GAMF : -9°~ -6°

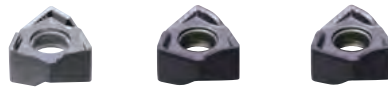
(mm)

Designation	Stock	CICT	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
<b>RM6PM</b> 032R-2-M16-WN08		2	32	29	43	69	M16	8.2	0.2
040R-3-M16-WN08		3	40	29	43	69	M16	8.2	0.3
040R-4-M16-WN08		4	40	29	43	69	M16	8.2	0.2

● : Stock item

## Available inserts

WNGX-MA WNGX-ML WNGX-MM



Designation	Coated										Page	Designation	Coated										Page													
	CN80	NC5330	NCM325	NCM335	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700			PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	H01	CN80	NC5330	NCM325		NCM335	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A
WNGX 040304PNFR-MA																	●	WNGX 080604PNFR-MA																	●	
040308PNFR-MA																		●	080608PNFR-MA																	●
040312PNFR-MA																		●	080612PNFR-MA																	●
040316PNFR-MA																		●	080616PNFR-MA																	●
040304PNER-ML																	●	080620PNFR-MA																	●	
040308PNER-ML																	●	080604PNER-ML																	●	
040312PNER-ML																	●	080608PNER-ML																	●	
040316PNER-ML																	●	080612PNER-ML																	●	
040304PNSR-MM																	●	080616PNER-ML																	●	
040308PNSR-MM																	●	080620PNER-ML																	●	
040312PNSR-MM																	●	080604PNSR-MM																	●	
040316PNSR-MM																	●	080608PNSR-MM																	●	
																			080612PNSR-MM																●	
																			080616PNSR-MM																●	
																			080620PNSR-MM																●	

## Available adaptors

Designation	Available adaptors
<b>RM6PM</b> 032R-2-M16-WN08	MAT-M16
040R-3-M16-WN08	MAT-M16
040R-4-M16-WN08	MAT-M16

Designation : RM6PM032R-5-M16-WN04  
Modular head threading measure size (M16)

II

Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

## Parts

Specification		
Ø32~Ø40	FTNA0513	TW20-100

Available inserts **B30** Available adaptors **B400**

## Rich Mill RM8

### Features

- Double-sided insert to use 8 cutting-edges
- 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

- Exclusive coolant bolt is adapted to get better chip evacuation and more powerful cooling. 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 breakers

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




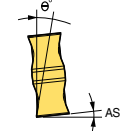
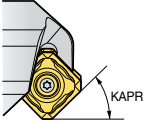
Facing

### Features of insert

Insert	Cutting-edge	Features
	<b>View-A</b> 	High rake chip breaker & positive setting angle for low cutting load
	<b>View-B</b> 	Designed wiper technology in minor cutting-edge for improved surface roughness
	<b>Chip breaker</b> 	Low cutting load due to the positive setting and high rake angle chip breaker

## Rich Mill RM8

### Features of cutter

Picture	Setting angle of insert	Features
		High rake angle makes positive setting angle for low cutting load
		Suitable for facing and chamfering • RM8A KAPR = 45° • RM8E KAPR = 75° • RM8Q KAPR = 88°

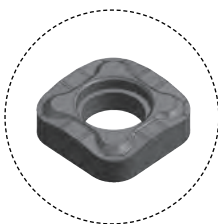
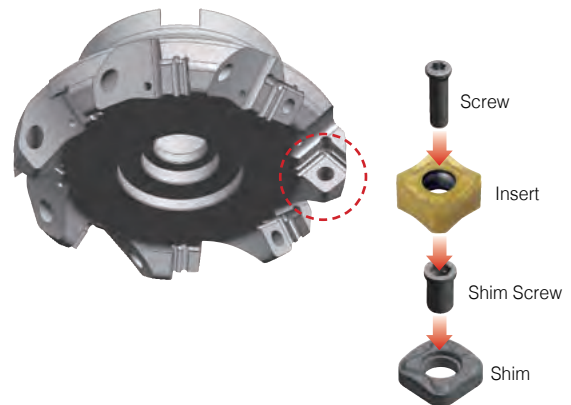
### Recommended cutting conditions

ISO	Grade	SNM(E)X1206A(E)NN-MF		SNM(E)X1206A(E)NN-MM		SNEX1206A(E)NN-MA		APMX (mm)	SNM(E)X1507A(E)NN-MF		SNM(E)X1507A(E)NN-MM		APMX (mm)
		vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)		vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	
P	NC5330	-	-	150~300	0.10~0.35	150~300	0.10~0.35	RM8A 6.0mm	-	-	150~300	0.10~0.35	RM8A 7.5mm
	NCM535	200~300	0.05~0.30	150~300	0.10~0.35	150~300	0.10~0.35		200~300	0.05~0.30	150~300	0.10~0.35	
	PC3700	200~300	0.05~0.30	150~300	0.10~0.35	150~300	0.10~0.35		200~300	0.05~0.30	150~300	0.10~0.35	
M	PC9530	90~150	0.05~0.25	90~150	0.10~0.35	-	-	RM8E 9.0mm	90~150	0.10~0.30	90~150	0.10~0.35	RM8E 11mm
	PC5300	90~150	0.05~0.25	90~150	0.10~0.35	-	-		90~150	0.10~0.30	90~150	0.10~0.35	
K	PC6100	150~300	0.08~0.35	150~300	0.10~0.40	150~300	0.10~0.40	RM8Q 11.5mm	150~300	0.08~0.35	150~300	0.10~0.40	
	PC5300	150~300	0.08~0.35	150~300	0.10~0.40	150~300	0.10~0.40		150~300	0.08~0.35	150~300	0.10~0.40	

## Rich Mill RMH8

### 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 (Cutting edge angle 45°, 75°, 88°)
  - Stable clamping power with insert



RMH8A  
(KAPR 45°)



RMH8E  
(KAPR 75°)



RMH8Q  
(KAPR 88°)

# RM8AC(M)4000

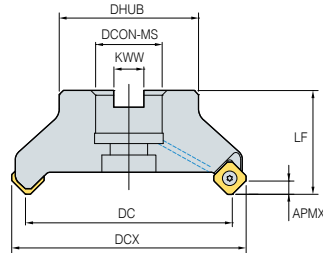


Fig. 1

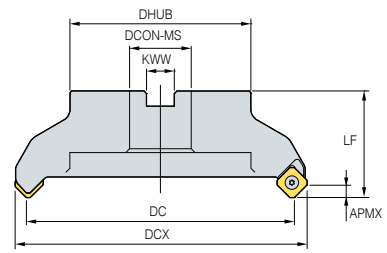


Fig. 2



KAPR  
45°

- GAMP : -6°
- GAMF : -9°~-6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
<b>RM8ACM</b> 4050HR-M	●	4	50	63.396	49	22	10.4	40	6	0.5	1
4050HR-H	●	6	50	63.396	49	22	10.4	40	6	0.5	1
4063HR-M	●	6	63	76.396	49	22	10.4	40	6	0.6	1
4063HR-H	●	8	63	76.396	49	22	10.4	40	6	0.7	1
<b>RM8AC (RM8ACM)</b> 4080HR	●	5	80	93.527	57	25.4(27)	9.5(12.4)	50	6	1.1	1
4080HR-M	● (●)	7	80	93.527	57	25.4(27)	9.5(12.4)	50	6	1.1	1
4080HR-H	● (●)	10	80	93.527	57	25.4(27)	9.5(12.4)	50	6	1.3	1
4100HR	● (●)	6	100	113.522	67	31.75(32)	12.7(14.4)	63(50)	6	2.2	1
4100HR-M	● (●)	8	100	113.522	67	31.75(32)	12.7(14.4)	63(50)	6	2.2	1
4100HR-H	(●)	12	100	113.522	67	31.75(32)	12.7(14.4)	63(50)	6	2.5	1
4125HR	●	8	125	138.459	87	38.1(40)	15.9(16.4)	63	6	3.5	1
4125HR-M	● (●)	10	125	138.459	87	38.1(40)	15.9(16.4)	63	6	3.5	1
4125HR-H	(●)	16	125	138.459	87	38.1(40)	15.9(16.4)	63	6	3.7	1
4160R		10	160	173.464	107	50.8(40)	19(16.4)	63	6	4.6	2
4160R-M	●	12	160	173.464	107	50.8(40)	19(16.4)	63	6	4.7	2
4160R-H	(●)	20	160	173.464	107	50.8(40)	19(16.4)	63	6	4.6	2
4200R-M	●	14	200	213.401	130	47.625(60)	25.4(25.7)	63	6	6.9	2
4200R-H		24	200	213.401	130	47.625(60)	25.4(25.7)	63	6	7.1	2
4250R-M		16	250	263.401	180	47.625(60)	25.4(25.7)	63	6	11.7	2
4250R-H		30	250	263.401	180	47.625(60)	25.4(25.7)	63	6	11.5	2
4315R		18	315	328.456	240	47.625(60)	25.4(25.7)	63	6	18.9	2
4315R-M		20	315	328.456	240	47.625(60)	25.4(25.7)	63	6	18.6	2
4400R-M		28	400	413.456	260	47.625(60)	25.4(25.7)	63	6	37.7	2

( ) Metric size, ● : Stock item

## Available inserts

SNM(E)X-MF	SNEX-ML	SNM(E)X-MM	SNEX-MA	SNEX-W													
Designation	Cermet	Coated						Uncoated	Page								
	CN30	NC5330	NCM325	NCM335	NCM635	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	H01	
SNEX 1206ANN-MF																	
1206ANN-ML																	
1206ANN-MM																	B24
1206ANN-MA																	B25
1206ANN-W																	B26
SNMX 1206ANN-MF																	
1206ANN-MM																	

## Available arbors

Designation	Available arbors	
	RM8AC	RM8ACM
RM8ACM 4050HR-□		BT□□-FMC22-□□
4063HR-□		
RM8AC 4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RM8ACM) 4100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
4125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
4160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
4200R-□		
4250R-□		
4315R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□
4400R-□		

## Parts

Specification		
Ø50~Ø400	FTKA0410	TW15S

Available inserts B24 ~ B26

Available arbors and bolt E94 ~ E96

# RMH8AC(M)4000

Shim type

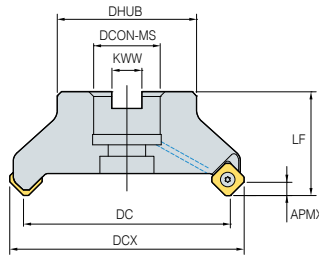


Fig. 1

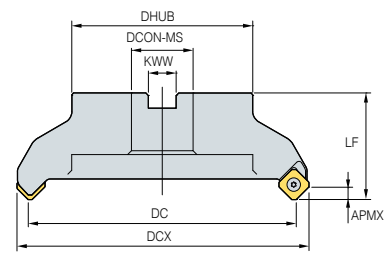


Fig. 2



KAPR  
45°

- GAMP : -6°
- GAMF : -9°~ -6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
RMH8AC											
(RMH8ACM) 4080HR-M	●	7	80	93.527	57	25.4(27)	9.5(12.4)	50	6	1.2	1
4100HR-M	●	8	100	113.522	67	31.75(32)	12.7(14.4)	63	6	2.5	1
4125HR-M	●	10	125	138.459	87	38.1(40)	15.9(16.4)	63	6	3.6	1
4160R-M	●	12	160	173.464	107	50.8(40)	19(16.4)	63	6	5.3	2
4200R-M		14	200	213.458	130	47.625(60)	25.4(25.7)	63	6	7.1	2
4250R-M		16	250	263.401	180	47.625(60)	25.4(25.7)	63	6	11.9	2
4315R-M		20	315	328.456	240	47.625(60)	25.4(25.7)	63	6	18.8	2
4400R-M		26	400	413.456	260	47.625(60)	25.4(25.7)	63	6	37.7	2

( ) Metric size, ● : Stock item

## Available inserts

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM

SNEX-MA

SNEX-W



Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9330	PC9540	PC5300	PC5400		ST30A	G10
SNEX 1206ANN-MF									●	●			●	●			
1206ANN-ML													●	●			
1206ANN-MM									●	●	●		●	●			
1206ANN-MA																	●
1206ANN-W									●	●			●	●			
SNMX 1206ANN-MF					●				●	●		●	●				
1206ANN-MM		●			●				●	●		●	●				

## Available arbors

Designation	Available arbors	
	RMH8AC	RMH8ACM
RMH8AC 4080HR-□	BT□□ -FMA25.4-□□	BT□□ -FMC27-□□
(RMH8ACM) 4100HR-□	BT□□ -FMA31.75-□□	BT□□ -FMC32-□□
4125HR-□	BT□□ -FMA38.1-□□	BT□□ -FMB40-□□
4160R-□	BT□□ -FMA50.8-□□	BT□□ -FMC40-□□
4200R-□		
4250R-□		
4315R-□		
4400R-□	BT□□ -FMA47.625-□□	BT□□ -FMB60-□□

## Parts

Specification				
Ø80~Ø400	FTKA0412B	SS42RM8	SHXN0609F	TW15S

Available inserts B24 ~ B26

Available arbors and bolt E94 ~ E96



## RM8AC(M)5000

Shim type

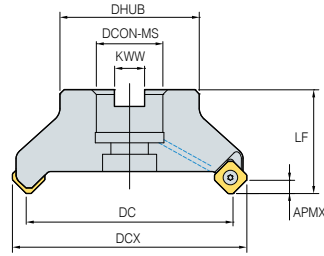


Fig. 1

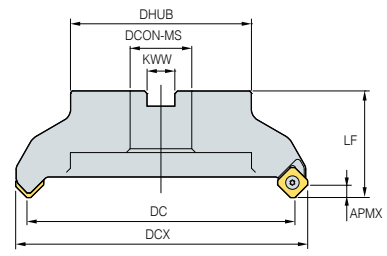


Fig. 2



KAPR  
45°

- GAMP : -6°
- GAMF : -9°~-6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
RM8AC	● (●)	6	80	96.401	57	25.4(27)	9.5(12.4)	50	7.5	1.3	1
(RM8ACM)	● (●)	7	100	116.401	67	31.75(32)	12.7(14.4)	63	7.5	2.4	1
	● (●)	8	125	141.401	87	38.1(40)	15.9(16.4)	63	7.5	3.6	1
	● (●)	10	160	176.401	107	50.8(40)	19(16.4)	63	7.5	4.8	2
	● (●)	12	200	216.401	130	47.625(60)	25.4(25.7)	63	7.5	7.1	2
	● (●)	15	250	266.401	180	47.625(60)	25.4(25.7)	63	7.5	11.9	2
		20	315	331.401	240	47.625(60)	25.7(25.7)	63	7.5	19.1	2
		28	400	416.401	260	47.625(60)	25.7(25.7)	80	7.5	37.7	2

( ) Metric size, ● : Stock item

### Available inserts

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM



Designation	Coated	Uncoated			Page
	CN30	ST30A	G10	H01	
SNEX	1507ANN-MF				B24
	1507ANN-ML				
	1507ANN-MM				
SNMX	1507ANN-MF				B25
	1507ANN-MM				B26

### Available arbors

Designation	Available arbors	
	RM8AC	RM8ACM
RM8AC	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RM8ACM)	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	BT□□-FMA47.625-□□	BT□□-FMB60-□□

### Parts

Specification	Screw	Wrench
Ø80~Ø400	FTGA0513	TW20-100

Available inserts B24 ~ B26

Available arbors and bolt E94 ~ E96

# RMH8AC(M)5000

Shim type

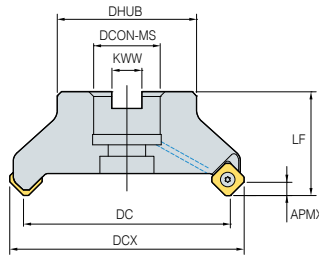


Fig. 1

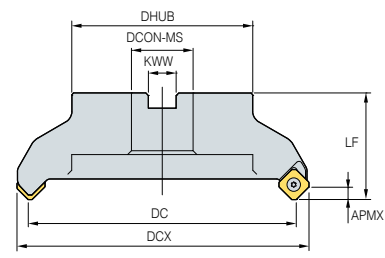


Fig. 2



KAPR  
45°

- GAMP : -6°
- GAMF : -9°~ -6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
RMH8AC	● (●)	6	80	96.402	57	25.4(27)	9.5(12.4)	50	7.5	1.2	1
(RMH8ACM) 5100HR-M	● (●)	7	100	116.401	67	31.75(32)	12.7(14.4)	63(50)	7.5	2.5	1
5125HR-M	● (●)	8	125	141.401	87	38.1(40)	15.9(16.4)	63	7.5	3.5	1
5160R-M	● (●)	10	160	176.401	107	50.8(40)	19(16.4)	63	7.5	5	2
5200R-M	● (●)	12	200	216.401	130	47.625(60)	25.4(25.7)	63	7.5	7.1	2
5250R-M	● (●)	15	250	266.401	180	47.625(60)	25.4(25.7)	63	7.5	11.9	2
5315R-M		20	315	331.401	240	47.625(60)	25.7(25.7)	63	7.5	19.1	2
5400R-M		22	400	416.401	260	47.625(60)	25.7(25.7)	80	7.5	37.7	2

( ) Metric size, ● : Stock item

## Available inserts

SNM(E)X-MF      SNEX-ML      SNM(E)X-MM



Designation	Cermet	Coated										Uncoated			Page				
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01	
SNEX 1507ANN-MF										●			●	●				B24	
1507ANN-ML													●	●					B25
1507ANN-MM										●			●	●					
SNMX 1507ANN-MF					●				●	●			●	●				B26	
1507ANN-MM					●				●	●			●	●					

## Available arbors

Designation	Available arbors	
	RMH8AC	RMH8ACM
RMH8AC 5080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RMH8ACM) 5100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
5125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
5160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
5200R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□
5250R-□		
5315R-□		
5400R-□		

## Parts

Specification				
Ø80~Ø400	FTGA0513	SS53RM8	SHXN0712F	TW20-100

Available inserts B24 ~ B26

Available arbors and bolt E94 ~ E96

## RM8EC(M)4000

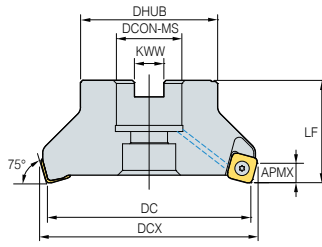


Fig. 1

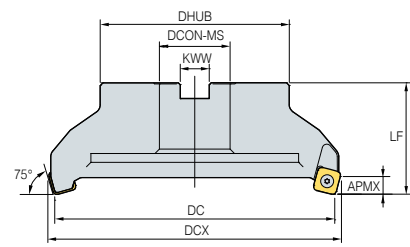


Fig. 2



KAPR  
75°

- GAMP : -6°
- GAMF : -8°~-6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
RM8ECM 4050HR-M	●	4	50	55.891	49	22	10.4	40	9	0.4	1
4063HR-M	●	6	63	68.913	49	22	10.4	40	9	0.5	1
RM8EC (RM8ECM) 4080HR	●	5	80	85.889	57	25.4(27)	9.5(12.4)	50	9	1.0	1
4080HR-M	(●)	7	80	85.889	57	25.4(27)	9.5(12.4)	50	9	1.0	1
4100HR	●	6	100	105.888	67	31.75(32)	12.7(14.4)	63(50)	9	1.5	1
4100HR-M	(●)	8	100	105.888	67	31.75(32)	12.7(14.4)	63(50)	9	2.5	1
4125HR	●	8	125	130.888	87	38.1(40)	15.9(16.4)	63	9	3.3	1
4125HR-M	(●)	10	125	130.888	87	38.1(40)	15.9(16.4)	63	9	3.1	1
4160R	●	10	160	165.911	107	50.8(40)	19(16.4)	63	9	4.2	2
4160R-M	(●)	12	160	165.911	107	50.8(40)	19(16.4)	63	9	4.1	2
4200R-M		16	200	205.911	130	47.625(60)	25.4(25.7)	63	9	5.9	2
4250R-M		16	250	255.929	180	47.625(60)	25.4(25.7)	63	9	10.4	2
4315R-M		20	315	320.987	240	47.625(60)	25.4(25.7)	63	9	17.9	2
4400R-M		28	400	405.986	260	47.625(60)	25.4(25.7)	63	9	31.5	2

( ) Metric size, ● : Stock item

### Available inserts

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM

SNEX-MA





Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
SNEX 1206ENN-MF										●			●	●				B24
1206ENN-ML													●	●				
1206ENN-MM										●			●	●				
1206ENN-MA										●							●	
SNMX 1206ENN-MF					●					●	●		●	●				B26
1206ENN-MM					●					●	●		●	●				

### Available arbors

Designation	NC arbors	
	RM8EC	RM8ECM
RM8ECM 4050HR-□	-	BT□□-FMC22-□□
4063HR-□		
RM8EC (RM8ECM) 4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
4100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
4125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
4160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
4200R-□		
4250R-□		
4315R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□
4400R-□		

### Parts

Specification	 Screw	 Wrench
Ø50~Ø400	PTKA0411-R3	TW15S

Available inserts B24 ~ B26

Available arbors and bolt E94, E158

# RMH8EC(M)4000

Shim type

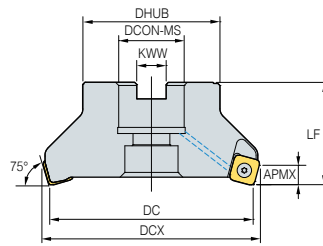


Fig. 1

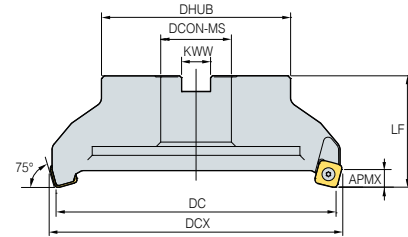


Fig. 2



KAPR  
**75°**

- GAMP : -6°
- GAMF : -8°~ -6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>RMH8EC</b>											
<b>(RMH8ECM)</b> 4080HR-M	●	7	80	85.287	57	25.4(27)	9.5(12.4)	50	9	1.0	1
4100HR-M	●	8	100	105.888	67	31.75(32)	12.7(14.4)	63	9	2.5	1
4125HR-M	●	10	125	130.888	87	38.1(40)	15.9(16.4)	63	9	3.0	1
4160R-M	●	12	160	165.911	107	50.8(40)	19(16.4)	63	9	4.3	2
4200R-M		16	200	205.911	130	47.625(60)	25.4(25.7)	63	9	5.9	2
4250R-M		16	250	255.929	180	47.625(60)	25.4(25.7)	63	9	10.8	2
4315R-M		20	315	320.987	240	47.625(60)	25.4(25.7)	63	9	18.1	2
4400R-M		24	400	405.9	260	47.625(60)	25.4(25.7)	63	9	31.8	2

( )Metric size, ● : Stock item

## Available inserts

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM

SNEX-MA



Designation	Cermet	Coated										Uncoated			Page			
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>SNEX</b> 1206ENN-MF										●			●	●				B24 B25 B26
1206ENN-ML													●	●				
1206ENN-MM										●			●	●				
1206ENN-MA										●							●	
<b>SNMX</b> 1206ENN-MF					●					●	●		●	●				
1206ENN-MM					●					●	●		●	●				

## Available arbors

Designation	Available arbors	
	RMH8EC	RMH8ECM
<b>RMH8EC</b> 4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
<b>(RMH8ECM)</b> 4100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
4125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
4160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
4200R-□		
4250R-□		
4315R-□		
4400R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□

## Parts

Specification				
Ø80~Ø400	PTKA0411-R3	SS42RM8	SHXN0609F	TW15S

Available inserts **B24 ~ B26**

Available arbors and bolt **E94, E158**

# RM8EC(M)5000

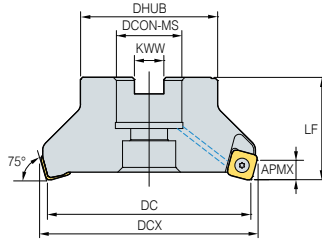
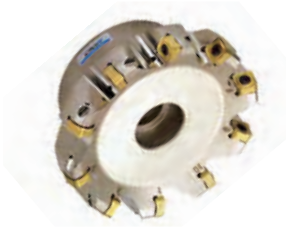


Fig. 1

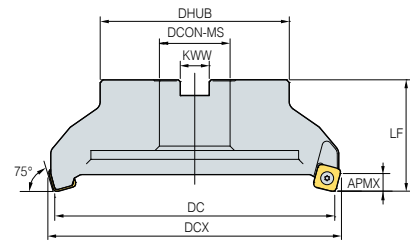


Fig. 2



KAPR  
**75°**

- GAMP : -6°
- GAMF : -8°~-6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>RM8EC</b>											
<b>(RM8ECM)</b>											
5080HR-M	● (●)	6	80	87.973	57	25.4(27)	9.5(12.4)	50	11	1.1	1
5100HR-M	● (●)	7	100	107.389	67	31.75(32)	12.7(14.4)	63(50)	11	2.4	1
5125HR-M		8	125	132.386	87	38.1(40)	15.9(16.4)	63	11	3.4	1
5160R-M	● (●)	10	160	167.384	87	50.8(40)	19(16.4)	63	11	4.4	2
5200R-M	(●)	12	200	207.382	130	47.625(60)	25.4(25.7)	63	11	6.4	2
5250R-M	(●)	15	250	257.38	180	47.625(60)	25.4(25.7)	63	11	11.1	2
5315R-M		20	315	322.379	240	47.625(60)	25.4(25.7)	63	11	18	2
5400R-M		28	400	407.378	260	47.625(60)	25.4(25.7)	63	11	35.7	2

( ) Metric size, ● : Stock item

## Available inserts

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM



Designation	Coated	Uncoated			Page													
	CN30	NC5330	NCM325	NCM335		NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
<b>SNEX</b>																		
1507ENN-MF										●				●	●			
1507ENN-ML														●	●			
1507ENN-MM														●	●			
<b>SNMX</b>																		
1507ENN-MF						●				●	●			●	●			
1507ENN-MM						●				●	●			●	●			

## Available arbors

Designation	Available arbors	
	RM8EC	RM8ECM
<b>RM8EC</b>		
<b>(RM8ECM)</b>		
5080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
5100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
5125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
5160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
5200R-□		
5250R-□		
5315R-□		
5400R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□

## Parts

Specification		
Ø80~Ø400	FTGA0513	TW20-100

Available inserts **B24 ~ B26**

Available arbors and bolt **E94 ~ E96**

# RMH8EC(M)5000

Shim type

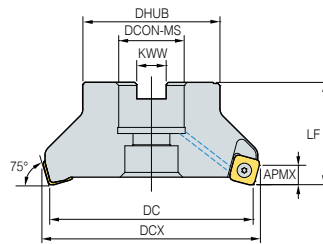


Fig. 1

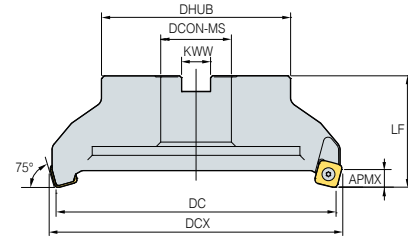


Fig. 2



KAPR  
**75°**

- GAMP : -6°
- GAMF : -8°~ -6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
RMH8EC		6	80	87.393	57	25.4(27)	9.5(12.4)	50	11	1.1	1
(RMH8ECM) 5100HR-M		7	100	107.391	67	31.75(32)	12.7(14.4)	63(50)	11	2.1	1
5125HR-M		8	125	132.386	87	38.1(40)	15.9(16.4)	63	11	3.4	1
5160HR-M		10	160	167.38	107	50.8(60)	19(16.4)	63	11	4.4	2
5200R-M		12	200	207.382	130	47.625(60)	25.4(25.7)	63	11	6.4	2
5250R-M		15	250	257.38	180	47.625(60)	25.4(25.7)	63	11	11.1	2
5315R-M		20	315	322.379	240	47.625(60)	25.4(25.7)	63	11	18	2
5400R-H		22	400	407.38	260	47.625(60)	25.4(25.7)	80	11	35.7	2

( ) Metric size, ● : Stock item

## Available inserts

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM



Designation	Cermet		Coated											Uncoated			Page	
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01
SNEX 1507ENN-MF									●				●	●				
1507ENN-ML													●	●				
1507ENN-MM													●	●				
SNMX 1507ENN-MF					●				●	●			●	●				
1507ENN-MM					●				●	●			●	●				

## Available arbors

Designation	Available arbors	
	RMH8EC	RMH8ECM
RMH8EC 5080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RMH8ECM) 5100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
5125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
5160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
5200R-□		
5250R-□		
5315R-□		
5400R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□

## Parts

Specification				
Ø80~Ø400	FTGA0513	SS53RM8	SHXN0712F	TW20-100

Available inserts **B24 ~ B26**

Available arbors and bolt **E94 ~ E96**

# RM8QC(M)4000

Shim type

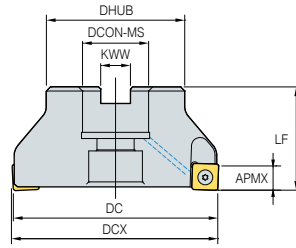


Fig. 1

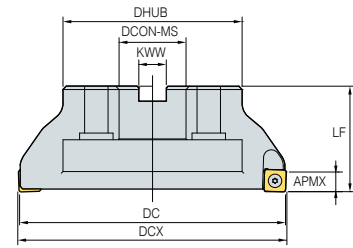


Fig. 2



KAPR  
88°

- GAMP : -6°
- GAMF : -8°~-6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
<b>RM8QCM</b> 4063HR-M	●	6	63	63.885	49	22	10.4	40	11.5	0.5	1
4063HR-H		8	63	63.885	49	22	10.4	40	11.5	0.5	1
<b>RM8QC</b> 4080HR-M	● (●)	7	80	80.876	57	25.4(27)	9.5(12.4)	50	11.5	1.1	1
(RM8QCM) 4080HR-H		10	80	80.876	57	25.4(27)	9.5(12.4)	50	11.5	1.0	1
4100HR-M	● (●)	8	100	100.869	67	31.75(32)	12.7(14.4)	63(50)	11.5	2.0	1
4100HR-H		12	100	100.869	67	31.75(32)	12.7(14.4)	63(50)	11.5	2.0	1
4125HR-M	● (●)	10	125	125.863	87	38.1(40)	15.9(16.4)	63	11.5	3.5	1
4125HR-H		14	125	125.863	87	38.1(40)	15.9(16.4)	63	11.5	3.9	1
4160R-M	(●)	12	160	160.776	107	50.8(40)	19(16.4)	63	11.5	4.3	2
4160R-H		18	160	160.776	107	50.8(40)	19(16.4)	63	11.5	4.3	2
4200R-M		14	200	200.772	130	47.625(60)	25.4(25.7)	63	11.5	6.5	2
4200R-H		22	200	200.772	130	47.625(60)	25.4(25.7)	63	11.5	6.5	2

( ) Metric size, ● : Stock item

## Available inserts

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM

SNEX-MA





Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM25	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>SNEX</b> 1206QNN-MF									●	●			●	●				
1206QNN-ML													●	●				
1206QNN-MM										●			●	●				
1206QNN-MA																		●
120612-MF										●			●	●				
120612-ML													●	●				
120612-MM										●			●	●				
120612-MA																		●
<b>SNMX</b> 1206QNN-MF					●				●	●			●	●				
1206QNN-MM					●				●	●			●	●				
120612-MF									●	●			●	●				
120612-MM									●	●			●	●				

## Available arbors

Designation	Available arbors	
	RM8QC	RM8QCM
<b>RM8QCM</b> 4063HR-□	-	BT□□-FMC22-□□
<b>RM8QC</b> 4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RM8QCM) 4100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
4125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
4160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
4200R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□

## Parts

Specification	 Screw	 Wrench
Ø63~Ø200	PTKA0411-R3	TW15S

Available inserts **B24 ~ B26**

Available arbors and bolt **E94 ~ E96**

# RMH8QC(M)4000

Shim type

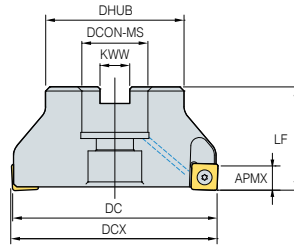


Fig. 1

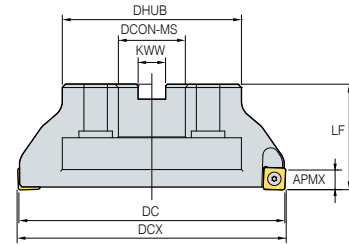


Fig. 2



KAPR  
88°

- GAMP : -6°
- GAMF : -8°~ -6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>RMH8QC</b> 4080HR-M	(●)	7	80	80.876	57	25.4(27)	9.5(12.4)	50	11.5	1.1	1
4100HR-M	(●)	8	100	100.869	67	31.75(32)	12.7(14.4)	63(50)	11.5	2.1	1
4125HR-M	(●)	10	125	125.863	87	38.1(40)	15.9(16.4)	63	11.5	3.5	1
4160R-M	(●)	12	160	160.776	107	50.8(40)	19(16.4)	63	11.5	4.3	2
4200R-M		14	200	200.772	130	47.625(60)	25.4(25.7)	63	11.5	6.7	2

( ) Metric size, ● : Stock item

## Available inserts

SNM(E)X-MF    SNEX-ML    SNM(E)X-MM    SNEX-MA



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>SNEX</b> 1206QNN-MF									●	●			●	●				B24 B25 B26
1206QNN-ML													●	●				
1206QNN-MM									●				●	●				
1206QNN-MA																	●	
120612-MF									●				●	●				
120612-ML													●	●				
120612-MM									●									
120612-MA																	●	
<b>SNMX</b> 1206QNN-MF					●				●	●			●	●				
1206QNN-MM					●				●	●		●	●	●				
120612-MF									●				●	●				
120612-MM									●				●	●				

## Available arbors

Designation	Available arbors	
	RMH8QC	RMH8QCM
<b>RMH8QC</b> 4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
<b>(RMH8QCM)</b> 4100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
4125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
4160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
4200R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□

## Parts

Specification				
Ø80~Ø200	PTKA0411-R3	SS42RM8	SHXN0609F	TW15S

Available inserts **B24 ~ B26**

Available arbors and bolt **E94 ~ E96**



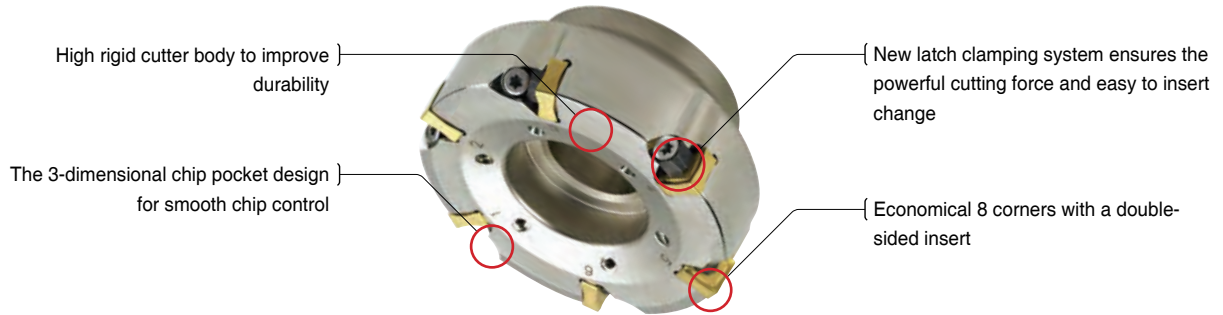
# B Technical Information for Rich Mill RMT8

## Rich Mill RMT8

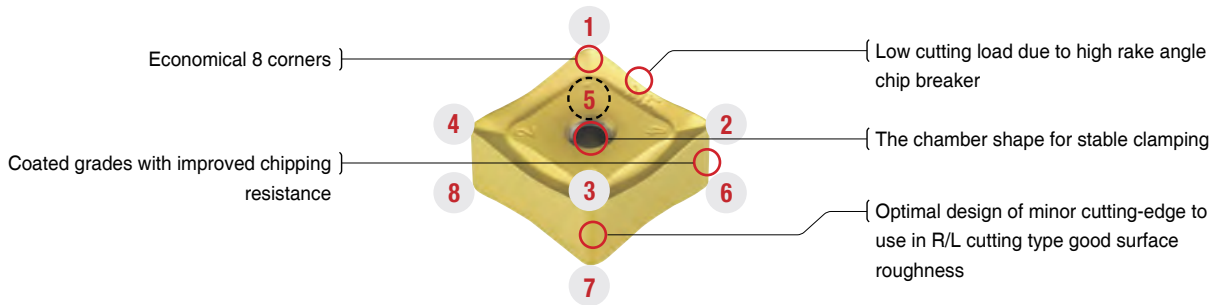
### Features

- 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

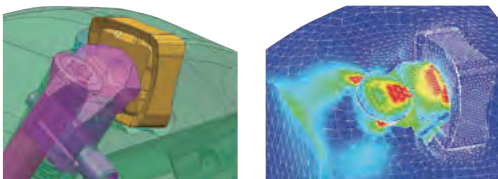
### Features of cutter



### Features of insert (Using R/L)



### Clamping force analysis



### Features of chip breakers

	Insert	Cutting-edge	Use	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

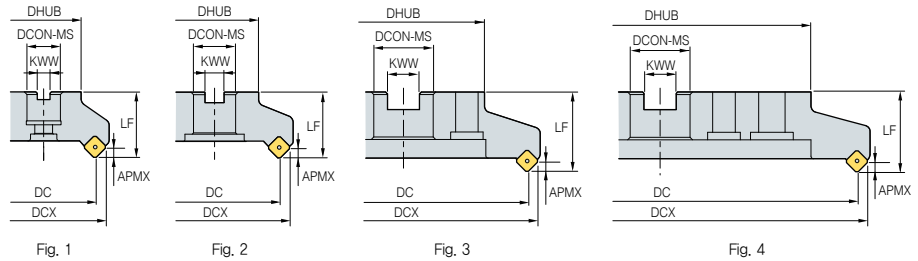
ISO	Grade	MM	MF
P	NCM535	⊙	○
	PC5300	⊙	○
M	PC9530	○	⊙
K	PC6100	○	⊙

⊙: Optimum ○: Proper

### Recommended cutting conditions

ISO	Grade	MM		MF	
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)
P	NC5330	190~310	0.10~0.35	190~310	0.05~0.30
	NCM535	160~270	0.10~0.35	160~270	0.05~0.30
	PC3700	130~210	0.10~0.35	130~210	0.05~0.30
M	PC9530	90~150	0.05~0.30	90~150	0.05~0.30
K	PC6100	140~230	0.10~0.40	140~230	0.08~0.35

# RMT8A(M)4000



KAPR  
**45°**

- GAMP : -6°
- GAMF : -6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
<b>RMT8A</b>											
<b>(RMT8AM)</b>											
4080R	●	5	80	93.9	57	25.4(27)	9.5(12.4)	50	3.5	1.7	1
4080R-M		6	80	93.9	57	25.4(27)	9.5(12.4)	50	3.5	1.7	1
4100R	●	6	100	113.9	70	31.75(32)	12.7(14.4)	50	3.5	2.4	2
4100R-M		8	100	113.9	70	31.75(32)	12.7(14.4)	50	3.5	2.2	2
4125R	●	8	125	138.9	87	38.1(40)	15.9(16.4)	63	3.5	4.2	2
4125R-M		10	125	138.9	87	38.1(40)	15.9(16.4)	63	3.5	4.2	2
4160R	●	10	160	173.9	110	50.8(40)	19.1(16.4)	63	3.5	6.5	2
4160R-M		14	160	173.9	110	50.8(40)	19.1(16.4)	63	3.5	6.4	2
4200R		12	200	213.9	130	47.625(60)	25.4(25.7)	63	3.5	8.7	3
4200R-M		18	200	213.9	130	47.625(60)	25.4(25.7)	63	3.5	8.6	3
4250R		16	250	263.9	180	47.625(60)	25.4(25.7)	63	3.5	14	3
4250R-M		22	250	263.9	180	47.625(60)	25.4(25.7)	63	3.5	13.9	3
4315R		20	315	328.9	240	47.625(60)	25.4(25.7)	63	3.5	22.1	4
4315R-M		28	315	328.9	240	47.625(60)	25.4(25.7)	63	3.5	22	4

( ) Metric size, ● : Stock item

## Available inserts

SNC(M)F-MF      SNC(M)F-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM395	NCM545	PC2505	PC2010	PC3700	PC6100	PC9330	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>SNCF</b>																		
1206ANN-MF																		
1206ANN-MM																		B22
<b>SNMF</b>																		B23
1206ANN-MF																		
1206ANN-MM																		

## Available arbors

Designation	General arbor	NC arbors	
		RMT8A	RMT8AM
<b>RMT8A</b>			
<b>(RMT8AM)</b>			
□080R	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
□100R	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
□125R	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
□160R	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	
□200R	NT*□□(M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
□250R			
□315R	KCP-8***(Centering Plug)	-	-

\*□□ -NT number    \*\*□□ -BT number    \*\*\*Over milling 5

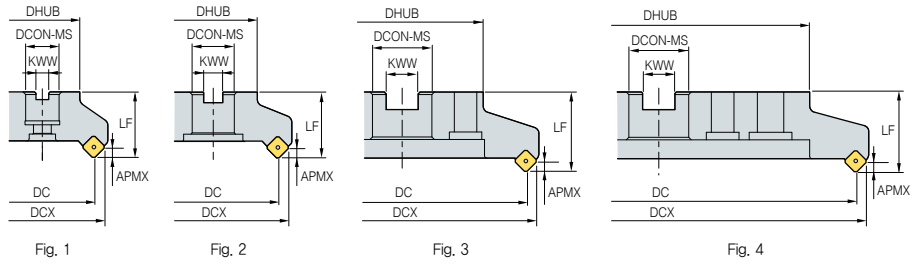
## Parts

Specification					
	Screw	Screw	Spring	Latch	Wrench
Ø80~Ø315	ETKA0523	KHB0417	SPR0315	LTC05SR-RM4	TW20-100

Available inserts **B22, B23**

Available arbors and bolt **E94 ~ E96**

# RMT8A(M)5000



KAPR  
45°  
• GAMP : -6°  
• GAMF : -6°

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
<b>RMT8A</b>											
<b>(RMT8AM)</b>											
5080R	●	5	80	98.3	57	25.4(27)	9.5(12.4)	50	6	1.8	1
5080R-M		6	80	98.3	57	25.4(27)	9.5(12.4)	50	6	1.8	1
5100R		6	100	118.3	70	31.75(32)	12.7(14.4)	50	6	2.6	2
5100R-M		8	100	118.3	70	31.75(32)	12.7(14.4)	50	6	2.6	2
5125R	●	8	125	143.3	87	38.1(40)	15.9(16.4)	63	6	4.3	2
5125R-M		10	125	143.3	87	38.1(40)	15.9(16.4)	63	6	4.3	2
5160R		10	160	178.3	110	50.8(40)	19.1(16.4)	63	6	6.5	2
5160R-M		14	160	178.3	110	50.8(40)	19.1(16.4)	63	6	6.5	2
5200R		12	200	218.3	130	47.625(60)	25.4(25.7)	63	6	9	3
5200R-M		18	200	218.3	130	47.625(60)	25.4(25.7)	63	6	9	3
5250R		16	250	268.3	180	47.625(60)	25.4(25.7)	63	6	14.4	3
5250R-M		22	250	268.3	180	47.625(60)	25.4(25.7)	63	6	14.4	3
5315R		20	315	338.5	240	47.625(60)	25.4(25.7)	63	6	22.2	4
5315R-M		28	315	338.5	240	47.625(60)	25.4(25.7)	63	6	22.2	4

( ) Metric size, ● : Stock item

## Available inserts

SNC(M)F-MF      SNC(M)F-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>SNCF</b>										●								
1507ANN-MM																		B22
<b>SNMF</b>																		B23
1507ANN-MM																		

## Available arbors

Designation	General arbor	NC arbors	
		RMT8A	RMT8AM
<b>RMT8A</b>			
<b>(RMT8AM)</b>			
□080R	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
□100R	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75	FMC32
□125R	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1	FMB40
□160R	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8	
□200R	NT*□□(M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
□250R			
□315R			

\*□□ -NT number    \*\*□□ -BT number    \*\*\*Over milling 5

## Parts

Specification					
Ø80~Ø315	ETKA0625	KHB0417	SPR0415	LTC06SR-RM5	TW20-100

Available inserts **B22, B23**    Available arbors and bolt **E94 ~ E96**

# RMT8E(M)4000

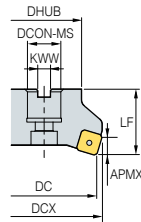
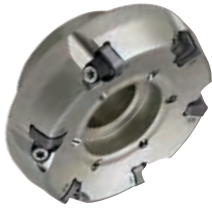


Fig. 1

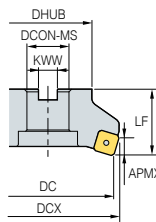


Fig. 2

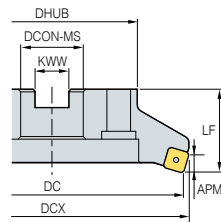


Fig. 3

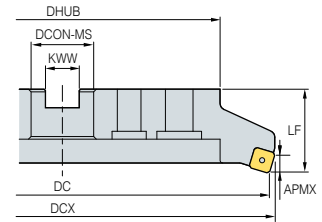


Fig. 4



KAPR  
**75°**

- GAMP : -6°
- GAMF : -8°~6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>RMT8E</b>											
<b>(RMT8EM)</b>											
<b>4080R</b>	●	5	80	85.2	57	25.4(27)	9.5(12.4)	50	5.5	1.4	1
<b>4080R-M</b>		6	80	85.2	57	25.4(27)	9.5(12.4)	50	5.5	1.4	1
<b>4100R</b>	●	6	100	105.3	67	31.75(32)	12.7(14.4)	50	5.5	1.9	2
<b>4100R-M</b>		8	100	105.3	67	31.75(32)	12.7(14.4)	50	5.5	1.9	2
<b>4125R</b>		8	125	130.2	87	38.1(40)	15.9(16.4)	63	5.5	3.7	2
<b>4125R-M</b>		10	125	130.2	87	38.1(40)	15.9(16.4)	63	5.5	3.5	2
<b>4160R</b>	●	10	160	165.2	107	50.8(40)	19.1(16.4)	63	5.5	5.6	2
<b>4160R-M</b>		14	160	165.2	107	50.8(40)	19.1(16.4)	63	5.5	5.6	2
<b>4200R</b>		12	200	205.2	130	47.625(60)	25.4(25.7)	63	5.5	7.8	3
<b>4200R-M</b>		18	200	205.2	130	47.625(60)	25.4(25.7)	63	5.5	7.8	3
<b>4250R</b>		16	250	255.2	180	47.625(60)	25.4(25.7)	63	5.5	12.8	3
<b>4250R-M</b>		22	250	255.2	180	47.625(60)	25.4(25.7)	63	5.5	12.8	3
<b>4315R</b>		20	315	320.2	240	47.625(60)	25.4(25.7)	63	5.5	20.2	4
<b>4315R-M</b>		28	315	320.2	240	47.625(60)	25.4(25.7)	63	5.5	20.2	4

( ) Metric size, ● : Stock item

## Available inserts

SNC(M)F-MF      SNC(M)F-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM335	NCM545	PC2505	PC2010	PC3700	PC6100	PC9630	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>SNCF</b>									●									
																		B22
<b>SNMF</b>									●									B23
									●									

## Available arbors

Designation	General arbor	NC arbors	
		RMT8E	RMT8EM
<b>RMT8E</b>			
<b>(RMT8EM)</b>			
<input type="checkbox"/> 080R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA25.4-25	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA25.4- <input type="checkbox"/> <input type="checkbox"/>	FMC27
<input type="checkbox"/> 100R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA31.75- <input type="checkbox"/> <input type="checkbox"/>	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA31.75- <input type="checkbox"/> <input type="checkbox"/>	FMC32
<input type="checkbox"/> 125R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA38.1- <input type="checkbox"/> <input type="checkbox"/>	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA38.1- <input type="checkbox"/> <input type="checkbox"/>	FMB40
<input type="checkbox"/> 160R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA50.8- <input type="checkbox"/> <input type="checkbox"/>	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA50.8- <input type="checkbox"/> <input type="checkbox"/>	
<input type="checkbox"/> 200R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA47.625-25, KCP-8***	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA47.625- <input type="checkbox"/> <input type="checkbox"/>	FMB60
<input type="checkbox"/> 250R			
<input type="checkbox"/> 315R			

\* -NT number    \*\* -BT number    \*\*\*Over milling 5

## Parts

Specification					
Ø80~Ø315	ETKA0523	KHB0417	SPR0315	LTC05SR-RM4	TW20-100

Available inserts **B22, B23**

Available arbors and bolt **E94 ~ E96**

# RMT8E(M)5000

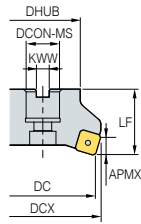
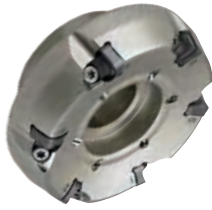


Fig. 1

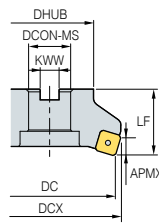


Fig. 2

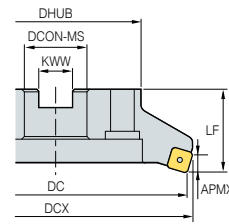


Fig. 3

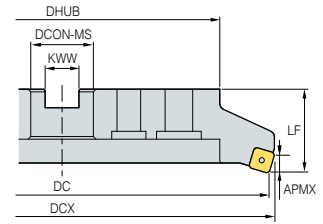


Fig. 4



KAPR  
75°

- GAMP : -6°
- GAMF : -8°~-6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
<b>RMT8E</b>											
<b>(RMT8EM)</b>											
5080R	●	5	80	87	57	25.4(27)	9.5(12.4)	50	7	1.4	1
5080R-M		6	80	87	57	25.4(27)	9.5(12.4)	50	7	1.4	1
5100R	●	6	100	107	67	31.75(32)	12.7(14.4)	50	7	1.8	2
5100R-M		8	100	107	67	31.75(32)	12.7(14.4)	50	7	1.8	2
5125R	●	8	125	131.9	87	38.1(40)	15.9(16.4)	63	7	3.5	2
5125R-M	●	10	125	131.9	87	38.1(40)	15.9(16.4)	63	7	3.5	2
5160R		10	160	166.9	107	50.8(40)	19.1(16.4)	63	7	5.6	2
5160R-M		14	160	166.9	107	50.8(40)	19.1(16.4)	63	7	5.6	2
5200R		12	200	206.9	130	47.625(60)	25.4(25.7)	63	7	7.3	3
5200R-M		18	200	206.9	130	47.625(60)	25.4(25.7)	63	7	7.3	3
5250R		16	250	256.9	180	47.625(60)	25.4(25.7)	63	7	12.2	3
5250R-M		22	250	256.9	180	47.625(60)	25.4(25.7)	63	7	12.2	3
5315R		20	315	320.2	240	47.625(60)	25.4(25.7)	63	7	19.7	4
5315R-M		28	315	320.2	240	47.625(60)	25.4(25.7)	63	7	19.7	4

( ) Metric size, ● : Stock item

## Available inserts

SNC(M)F-MF      SNC(M)F-MM



Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
<b>SNCF</b>										●								B22 B23
<b>SNMF</b>									●									

## Available arbors

Designation	General arbor	NC arbors	
		RMT8E	RMT8EM
<b>RMT8E</b>			
<b>(RMT8EM)</b>			
□ 080R	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
□ 100R	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
□ 125R	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
□ 160R	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	
□ 200R	NT*□□(M/U)-FMA47.625-25,	BT**□□-FMA47.625-□□	FMB60
□ 250R	KCP-8***		
□ 315R	KCP-8***(Centering Plug)	-	-

\*□□ -NT number    \*\*□□ -BT number    \*\*\*Over milling 5

## Parts

Specification					
Ø80~Ø315	ETKA0625	KHB0417	SPR0415	LTC06SR-RM5	TW20-100

Available inserts **B22, B23**    Available arbors and bolt **E94 ~ E96**

# RMT8Q(M)4000

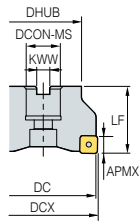
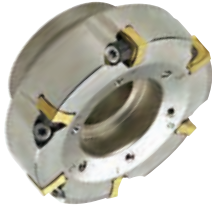


Fig. 1

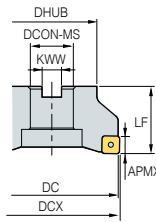


Fig. 2

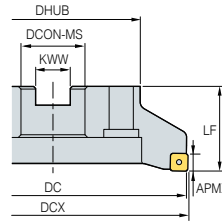


Fig. 3

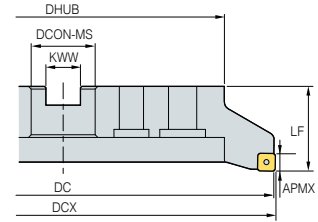


Fig. 4



KAPR  
**88°**

- GAMP : -6°
- GAMF : -11°~ -6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>RMT8Q</b>											
<b>(RMT8QM)</b>											
4080R	●	5	80	81.1	57	25.4(27)	9.5(12.4)	50	5	1.2	1
4080R-M		6	80	81.1	57	25.4(27)	9.5(12.4)	50	5	1.2	1
4100R	●	6	100	101	67	31.75(32)	12.7(14.4)	50	5	1.7	2
4100R-M	●	8	100	101	67	31.75(32)	12.7(14.4)	50	5	1.7	2
4125R	● (●)	8	125	126	87	38.1(40)	15.9(16.4)	63	5	3.5	2
4125R-M		10	125	126	87	38.1(40)	15.9(16.4)	63	5	3.5	2
4160R	●	10	160	161	107	50.8(40)	19.1(16.4)	63	5	5.6	2
4160R-M		14	160	161	107	50.8(40)	19.1(16.4)	63	5	5.6	2
4200R		12	200	200.9	130	47.625(60)	25.4(25.7)	63	5	7.5	3
4200R-M		18	200	200.9	130	47.625(60)	25.4(25.7)	63	5	7.5	3
4250R		16	250	250.9	180	47.625(60)	25.4(25.7)	63	5	12.5	3
4250R-M		22	250	250.9	180	47.625(60)	25.4(25.7)	63	5	12.5	3
4315R		20	315	315.9	240	47.625(60)	25.4(25.7)	63	5	19.9	4
4315R-M		28	315	315.9	240	47.625(60)	25.4(25.7)	63	5	19.9	4

( ) Metric size, ● : Stock item

## Available inserts

SNC(M)F-MF      SNC(M)F-MM



Designation	Cermet		Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM335	NCM335	NCM335	PC2505	PC2010	PC3700	PC6100	PC9630	PC9540	PC5300	PC5400		ST30A	G10	H01
SNCF	1206QNN-MF										●								B23
	1206QNN-MM										●								
SNMF	1206QNN-MF									●									
	1206QNN-MM									●									

## Available arbors

Designation	General arbor	NC arbors	
		RMT8Q	RMT8QM
<b>RMT8Q</b>			
<b>(RMT8QM)</b>			
<input type="checkbox"/> 080R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA25.4-25	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA25.4- <input type="checkbox"/> <input type="checkbox"/>	FMC27
<input type="checkbox"/> 100R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA31.75- <input type="checkbox"/> <input type="checkbox"/>	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA31.75- <input type="checkbox"/> <input type="checkbox"/>	FMC32
<input type="checkbox"/> 125R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA38.1- <input type="checkbox"/> <input type="checkbox"/>	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA38.1- <input type="checkbox"/> <input type="checkbox"/>	FMB40
<input type="checkbox"/> 160R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA50.8- <input type="checkbox"/> <input type="checkbox"/>	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA50.8- <input type="checkbox"/> <input type="checkbox"/>	
<input type="checkbox"/> 200R	NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA47.625-25, KCP-8***	BT** <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA47.625- <input type="checkbox"/> <input type="checkbox"/>	FMB60
<input type="checkbox"/> 250R			
<input type="checkbox"/> 315R			
	KCP-8*** (Centering Plug)	-	-

\* -NT number    \*\* -BT number    \*\*\*Over milling 5

## Parts

Specification					
Ø80~Ø315	ETKA0523	KHB0417	SPR0315	LTC05SR-RM4	TW20-100

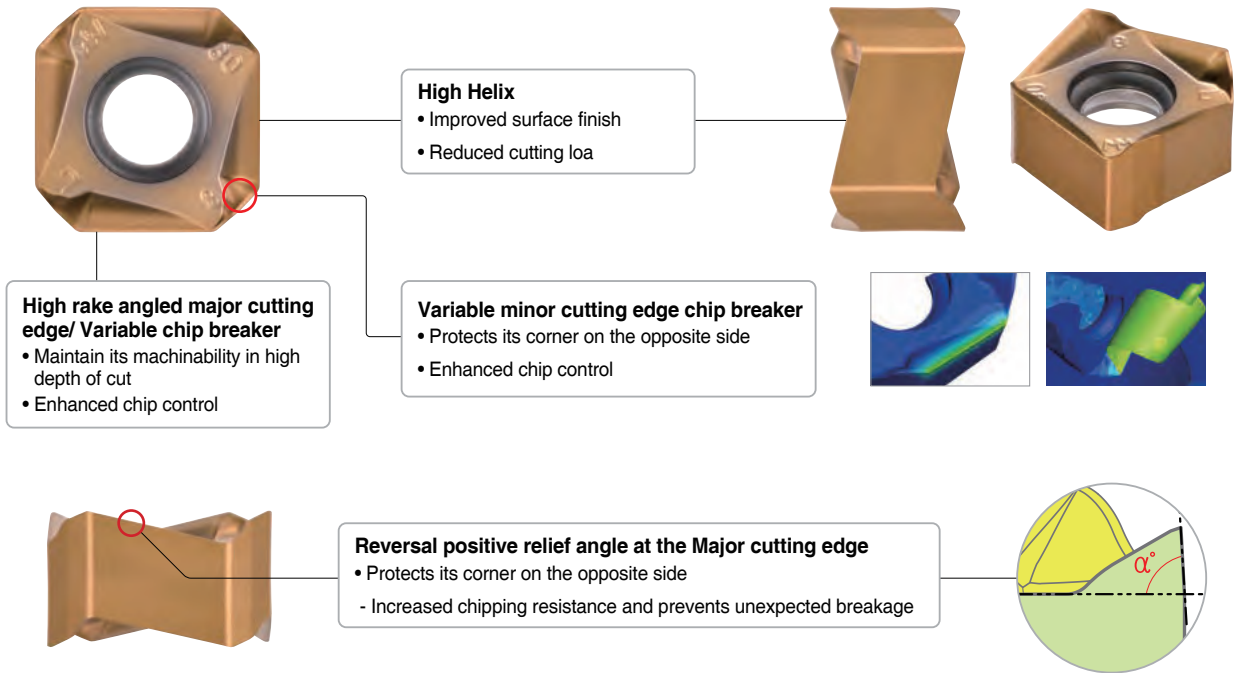
Available inserts **B23**    Available arbors and bolt **E94 ~ E96**

## Rich Mill RM8-X

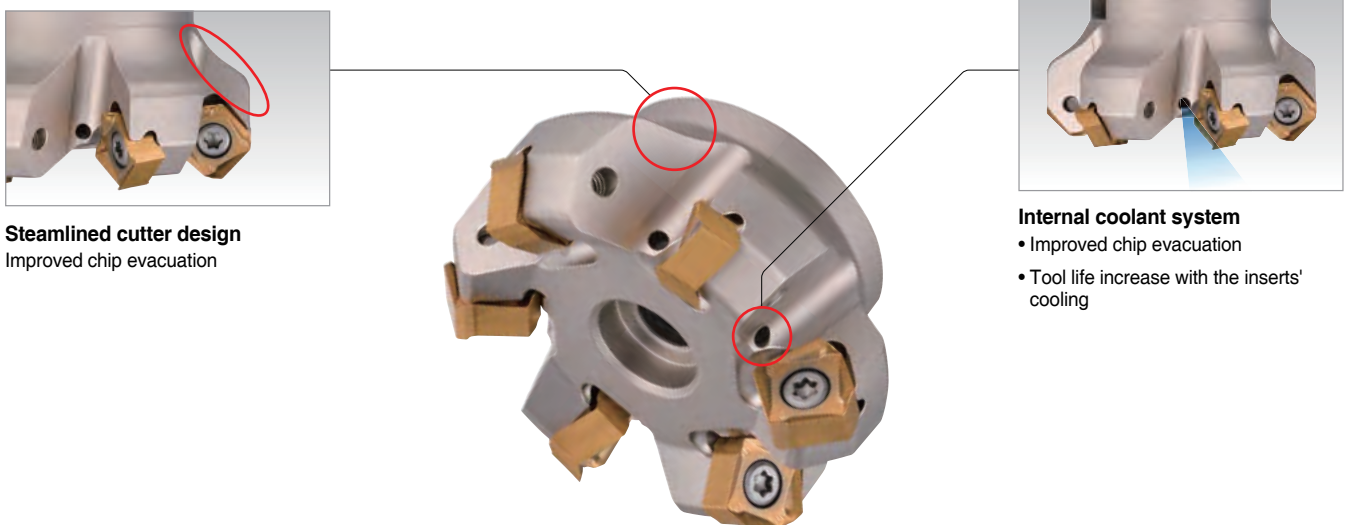
### Features

- 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

### Features of insert



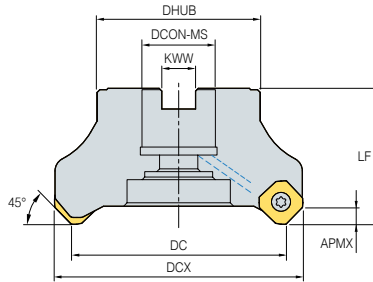
### Features of cutter








# RMX8AC(M)-SA14





KAPR  
**45°**

- GAMP : -8°
- GAMF : -11°~ -9°

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		
<b>RMX8ACM</b>	050R-22-4-SA14		4	50	62.5	42	22	10.4	40	5.5	0.3
	050R-22-5-SA14	●	5	50	62.5	42	22	10.4	40	5.5	0.4
	063R-22-5-SA14		5	63	75.5	42	22	10.4	40	5.5	0.6
	063R-22-6-SA14	●	6	63	75.5	42	22	10.4	40	5.5	0.6
	080R-27-6-SA14		6	80	92.5	60	27	12.4	50	5.5	1.0
	080R-27-8-SA14	●	8	80	92.5	60	27	12.4	50	5.5	1.0
	100R-32-8-SA14		8	100	112.5	70	32	14.4	50	5.5	2.1
	100R-32-10-SA14	●	10	100	112.5	70	32	14.4	50	5.5	2.1
	125R-40-8-SA14		8	125	137.5	90	40	16.4	63	5.5	3.3
	125R-40-12-SA14	●	12	125	137.5	90	40	16.4	63	5.5	3.3
<b>RMX8AC</b>	080R-25.4-6-SA14		6	80	92.5	60	25.4	9.5	50	5.5	1.1
	080R-25.4-8-SA14	●	8	80	92.5	60	25.4	9.5	50	5.5	1.1
	100R-31.75-8-SA14		8	100	112.5	70	31.75	12.7	63	5.5	2.1
	100R-31.75-10-SA14	●	10	100	112.5	70	31.75	12.7	63	5.5	2.1
	125R-38.1-8-SA14		8	125	137.5	90	38.1	15.9	63	5.5	3.4
	125R-38.1-12-SA14	●	12	125	137.5	90	38.1	15.9	63	5.5	3.4

● : Stock item



## Available inserts

Designation	Cermet	Coated											Uncoated			Page			
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		ST30A	G10	H01
<b>SAGX</b>	140808ANER-ML														●	●			B18
	140808ANER-MM															●			
<b>SNMX</b>	140808ANER-MM									●	●			●					

## Available arbors

Designation	DCON-MS	Available arbors	Designation	DCON-MS	Available arbors	
<b>RMX8ACM</b>	050R-22-□-SA14	BT□□-FMC22-□□	<b>RMX8AC</b>	080R-25.4-□-SA14	25.4	BT□□-FMA25.4-□□
	063R-22-□-SA14			100R-31.75-□-SA14	31.75	BT□□-FMA31.75-□□
	080R-27-□-SA14			125R-38.1-□-SA14	38.1	BT□□-FMA38.1-□□
	100R-32-□-SA14					
	125R-40-□-SA14					

## Parts

Specification		
Ø50~Ø125	FTNA0513	TW20-100

Available inserts **B18** Available arbors and bolt **E96**

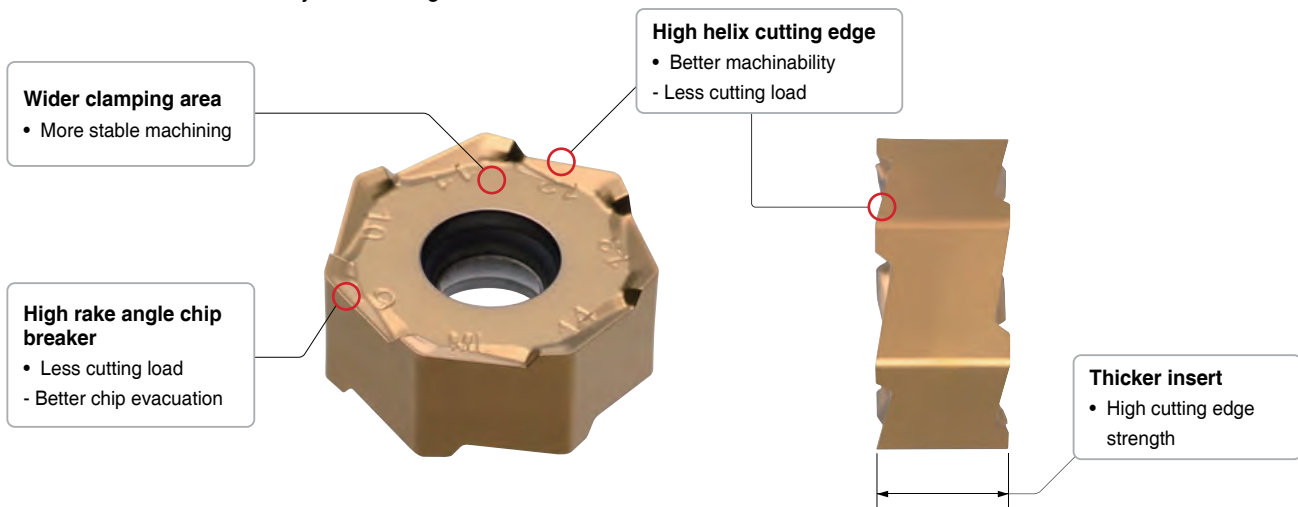
## Rich Mill RM14

### 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

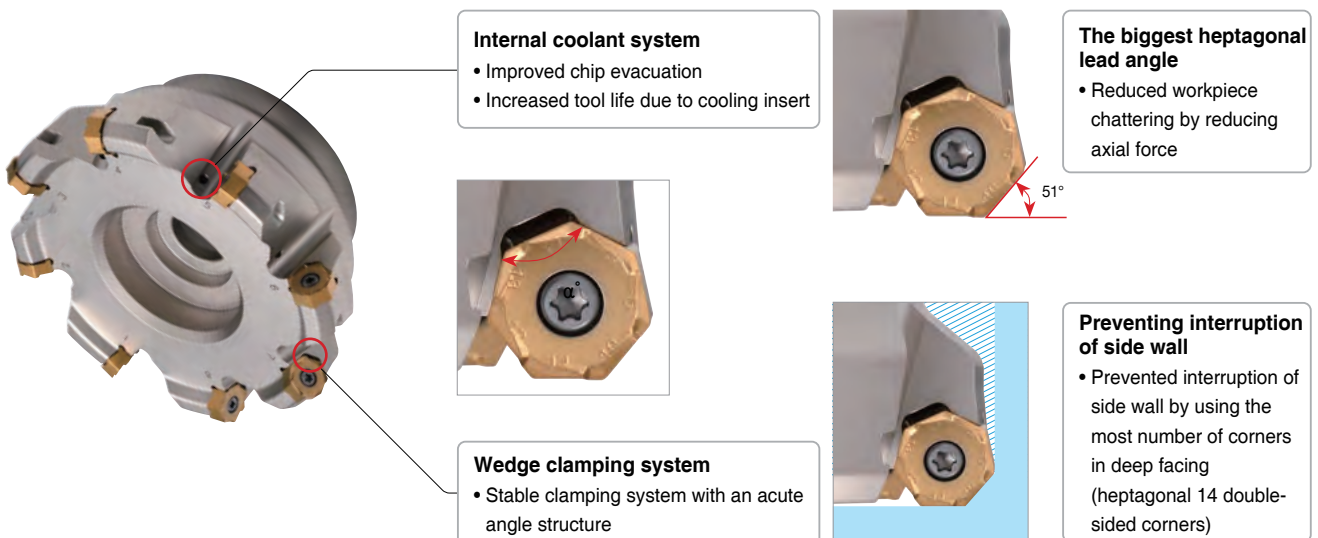
### Features of insert

- 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.



### Features of cutter


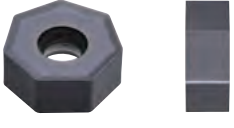
- The biggest heptagonal lead angle reduces chatter in machining.
- Wedge type clamping system ensures stable clamping.
- Stepped machining is available without interruption of side wall of insert.



# B Technical Information for Rich Mill RM14

## Rich Mill RM14

### Features of chip breakers

Type	Workpiece	Features
<b>Helix</b> 	<ul style="list-style-type: none"> <li>Right handed type</li> <li>High helix cutting edge</li> </ul>	<ul style="list-style-type: none"> <li>1st recommended for P and K series cutting</li> <li>For high speed and high feed machining</li> </ul>
<b>Flat</b> 	<ul style="list-style-type: none"> <li>Neutral type</li> <li>Flat cutting edge</li> </ul>	<ul style="list-style-type: none"> <li>1st recommended for M series cutting</li> <li>Applicable for both right handed and left handed</li> </ul>

### Recommended grade and cutting edge

(● : 1st recommendation)

Type	P			M			K		
	Type	C/B	Grade	Type	C/B	Grade	Type	C/B	Grade
<b>Helix</b>	●	○ML ●MM	●PC3700 ○PC5300 ○PC5400	○	○ML ○MM	●PC9540 ○PC5300	●	●ML ○MM	●PC6100 ○PC5300 ○NCM535
<b>Flat</b>	○	○ML ○MM	●PC3700 ○PC5300 ○PC5400	●	●ML ○MM	●PC9540 ○PC5300	○	○ML ○MM	●PC6100 ○PC5300 ○NCM535

### Recommended cutting conditions

ISO	Workpiece			Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Grade	C/B		Grade	C/B		ML / MM
	Workpiece material	KS	ISO			PC3700	ML	MM	PC5300	ML	MM	
						vc (m/min)	fz (mm/t)		vc (m/min)	fz (mm/t)		
P	Non-ferrous alloy steel Mn < 1.65	SM25C	C25	1500	125	160	0.25	0.3	150	0.25	0.3	1~3
						215	0.2	0.2	195	0.2	0.2	
						270	0.1	0.1	240	0.1	0.1	
		SM45C	C45	1700	190	160	0.25	0.3	150	0.25	0.3	
						215	0.2	0.2	195	0.2	0.2	
						270	0.1	0.1	240	0.1	0.1	
	Low alloy steel ≤ 5%	SCM440	42CrMo4	1700	175	160	0.25	0.3	150	0.25	0.3	
						215	0.2	0.2	195	0.2	0.2	
						270	0.1	0.1	240	0.1	0.1	
		High alloy steel > 5%	STD11 STD61	X40CrMoV5-1	1950	200	150	0.2	0.25	130	0.2	0.25
							195	0.15	0.2	170	0.15	0.2
							240	0.1	0.1	210	0.1	0.1

**Rich Mill RM14**
**Recommended cutting condition**

ISO	Workpiece			Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Grade	C/B		Grade	C/B		ML / MM
	Workpiece material	KS	ISO			PC9540	ML	MM	PC5300	ML	MM	
						vc (m/min)	fz (mm/t)		vc (m/min)	fz (mm/t)		ap (mm)
<b>M</b>	<b>Ferritic/ martensitic</b>	STS405 STS430	X6CrAl13 X6Cr17	1800	200	120	0.2	0.25	120	0.2	0.25	1~3
						<b>160</b>	<b>0.1</b>	<b>0.15</b>	<b>160</b>	<b>0.1</b>	<b>0.15</b>	
						200	0.05	0.1	200	0.05	0.1	
		STS416 STS434	X12CrS13 X6CrMo17-1	2850	330	110	0.22	0.25	110	0.22	0.25	
						<b>150</b>	<b>0.12</b>	<b>0.15</b>	<b>150</b>	<b>0.12</b>	<b>0.15</b>	
						190	0.05	0.1	190	0.05	0.1	
	STS403 STS410	X12Cr13	2350	330	100	0.2	0.25	100	0.2	0.25		
					<b>140</b>	<b>0.1</b>	<b>0.15</b>	<b>140</b>	<b>0.1</b>	<b>0.15</b>		
					180	0.05	0.1	180	0.05	0.1		
	<b>Austenite</b>	STS304 STS316	X5CrNi18-9 X5CrNiMo17-12-2 XCrNiMo17-12-3	2000	180	70	0.2	0.25	90	0.2	0.25	
						<b>95</b>	<b>0.1</b>	<b>0.15</b>	<b>120</b>	<b>0.1</b>	<b>0.15</b>	
						120	0.05	0.1	150	0.05	0.1	
<b>Austenitic/ ferritic (Duplex)</b>	-	-	2450	260	60	0.2	0.25	70	0.2	0.25		
					<b>80</b>	<b>0.1</b>	<b>0.15</b>	<b>95</b>	<b>0.1</b>	<b>0.15</b>		
					110	0.05	0.1	120	0.05	0.1		

ISO	Workpiece			Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Grade	C/B		Grade	C/B		ML / MM
	Workpiece material	KS	ISO			PC6100	ML	MM	PC5300	ML	MM	
						vc (m/min)	fz (mm/t)		vc (m/min)	fz (mm/t)		ap (mm)
<b>K</b>	<b>Gray cast iron</b>	GC200	200	900	180	140	0.25	0.3	120	0.25	0.3	1~3
						<b>180</b>	<b>0.2</b>	<b>0.2</b>	<b>160</b>	<b>0.2</b>	<b>0.2</b>	
						230	0.1	0.1	200	0.1	0.1	
	<b>Ductile cast iron</b>	GCD500	500-7	870	155	120	0.25	0.3	110	0.25	0.3	
						<b>160</b>	<b>0.2</b>	<b>0.2</b>	<b>145</b>	<b>0.2</b>	<b>0.2</b>	
						200	0.1	0.1	180	0.1	0.1	

# RM14XCM-XN06

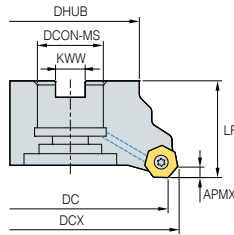


Fig. 1

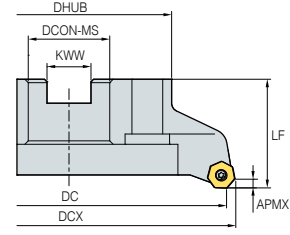


Fig. 2

• GAMP : -6°  
 • GAMF : -9°

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
RM14XCM 050R-22-5-XN06	●	5	50	58.562	42	22	10.4	40	3.5	0.3	1
050R-22-6-XN06	●	6	50	58.562	42	22	10.4	40	3.5	0.3	1
063R-22-6-XN06	●	6	63	71.562	42	22	10.4	40	3.5	0.5	1
063R-22-8-XN06	●	8	63	71.562	42	22	10.4	40	3.5	0.6	1
080R-27-6-XN06	●	6	80	88.561	57	27	12.4	50	3.5	1.0	1
080R-27-8-XN06	●	8	80	88.561	57	27	12.4	50	3.5	1.1	1
080R-27-10-XN06	●	10	80	88.561	57	27	12.4	50	3.5	1.1	1
100R-32-10-XN06	●	10	100	108.561	67	32	14.4	50	3.5	1.6	1
100R-32-12-XN06	●	12	100	108.561	67	32	14.4	50	3.5	1.6	1
125R-40-12-XN06	●	12	125	133.561	90	40	16.4	63	3.5	3.4	1
125R-40-14-XN06	●	14	125	133.561	90	40	16.4	63	3.5	3.4	1
160NR-40-16-XN06	●	16	160	168.561	110	40	16.4	63	3.5	4.9	2
160NR-40-18-XN06	●	18	160	168.561	110	40	16.4	63	3.5	4.8	2

※ In applying XNMX060608- , APMX = 4.8 mm

● : Stock item

## Available inserts

Designation	Cermet	Coated										Uncoated			Page				
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	PC5535	ST30A	G10
XNMX 0606XNR-ML					●					●		●	●	●	●				
0606XNR-MM										●	●		●	●	●				
060608-ML												●	●	●	●				
060608-MM										●	●		●	●	●				

## Available arbors

Designation	DCON-MS	Available arbors
RM14XCM 050R	22	BT□□-FMC22-□□
063R		
080R	27	BT□□-FMC27-□□
100R	32	BT□□-FMC32-□□
125R	40	BT□□-FMC40-□□
160R		

## Parts

Specification		
Ø50~Ø160	FTKA0412B	TW15S






Available inserts **B32**
 Available arbors and bolt **E96**

## 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 5.5 mm, but it is used 8 corners, maximum cutting depth is 13 mm
- Wiper insert is placed 0.05 mm lower than facing insert in cutter
- When feed is bigger than wiper cutting-edge length (7 mm), 2 wiper inserts are placed in symmetrical position

### Features of chip breakers

Chip breakers Picture	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 conditions

ISO	Grade	ONM(H)X060608-MM		ONM(H)X060608-MF		ONHX060608-W		ONM(H)X080608-MM		ONM(H)X080608-MF		ONHX080608-W	
		vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)
P	NCM535	150~300	0.10~0.35	200~300	0.05~0.30	200~300	0.05~0.20	150~300	0.10~0.40	200~300	0.05~0.35	200~300	0.05~0.25
	PC3700	150~300	0.10~0.35	200~300	0.05~0.30	200~300	0.05~0.20	150~300	0.10~0.40	200~300	0.05~0.35	200~300	0.05~0.25
M	PC9530	120~180	0.10~0.35	100~180	0.05~0.30	100~180	0.05~0.20	120~180	0.10~0.40	100~180	0.05~0.35	100~180	0.05~0.25
K	PC6100	150~300	0.10~0.40	150~300	0.08~0.35	150~300	0.05~0.25	150~300	0.10~0.45	150~300	0.08~0.40	150~300	0.05~0.30

# RM16AC(M)6000

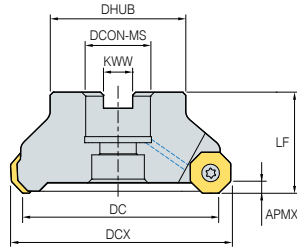


Fig. 1

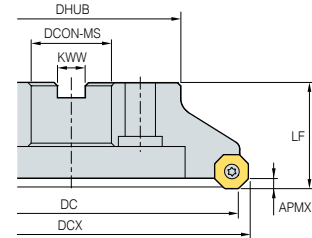


Fig. 2



- GAMP : -6°
- GAMF : -6°

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
RM16ACM 6063HR-M	●	5	63	72.849	49	22	10.4	40	4	0.6	1
RM16AC 6080HR-M	● (●)	6	80	89.772	57	25.4(27)	9.5(12.4)	50	4	1.2	1
(RM16ACM) 6100HR-M	● (●)	7	100	109.845	67	31.75(32)	12.7(14.4)	63	4	1.9	1
6125HR-M	● (●)	8	125	134.843	87	38.1(40)	15.9(16.4)	63	4	3.5	1
6160R-M		10	160	169.842	107	50.8(40)	19(16.4)	63	4	4.3	2
6200R-M		12	200	209.841	130	47.625(60)	25.4(25.7)	63	4	6.1	2
6250R-M		15	250	259.561	180	47.625(60)	25.4(25.7)	63	4	11.8	2
6315R-M		20	315	324.561	240	47.625(60)	25.4(25.7)	63	4	19.1	2
6400R-M		26	400	409.561	260	47.625(60)	25.4(25.7)	80	4	33	2

(mm)

( ) Metric size, ● : Stock item

## Available inserts

		ONHX-MF	ONHX-ML	ONHX-MM	ONHX-W	ONHX-MA	ONMX-MF	ONMX-MM											
Designation		Coated	Coated						Uncoated			Page							
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100		PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
ONHX	060608-MM									●			●	●					
	060608-MF									●			●	●					
	060608-ML												●	●					
	060608-MA																		●
	060608-W									●	●		●	●					
	0606ANN-MM									●			●	●					
	0606ANN-MF									●			●	●					
ONMX	060608-MM									●	●		●	●					
	060608-MF									●	●		●	●					
	0606ANN-MM									●	●		●	●					
	0606ANN-MF									●	●		●	●					

## Available arbors

Designation	Available arbors	
	RM16AC	RM16ACM
RM16AC 6063HR-M		BT□□-FMC22-□□
(RM16ACM) 6080HR-M	BT□□-FMA25.4-□□	BT□□-FMC27-□□
6100HR-M	BT□□-FMA31.75-□□	BT□□-FMC32-□□
6125HR-M	BT□□-FMA38.1-□□	BT□□-FMB40-□□
6160R-M	BT□□-FMA50.8-□□	BT□□-FMC40-□□
6200R-M		
6250R-M		
6315R-M	BT□□-FMA47.625-□□	BT□□-FMB60-□□
6400R-M		

## Parts

Specification		
Ø63~Ø400	FTGA0513	TW20-100

Available inserts **B15** Available arbors and bolt **E94 ~ E96**

# RM16AC(M)8000

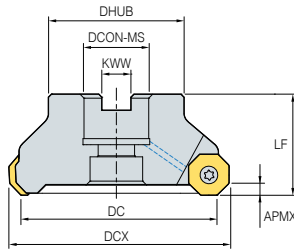


Fig. 1

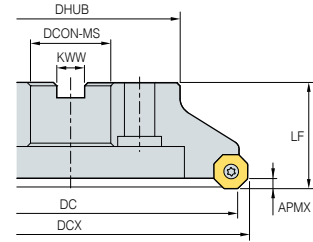


Fig. 2



KAPR  
45°

- GAMP : -6°
- GAMF : -6°

(mm)

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
RM16ACM 8063HR-M	●	5	63	72.849	49	22	10.4	40	5.5	0.6	1
RM16AC 8080HR-M	● (●)	6	80	89.772	57	25.4(27)	9.5(12.4)	50	5.5	1.2	1
(RM16ACM) 8100HR-M	(●)	7	100	109.845	67	31.75(32)	12.7(14.4)	63	5.5	1.9	1
8125HR-M	● (●)	8	125	134.843	87	38.1(40)	15.9(16.4)	63	5.5	3.5	1
8160R-M	● (●)	10	160	169.842	107	50.8(40)	19(16.4)	63	5.5	4.3	2
8200R-M	(●)	12	200	209.841	130	47.625(60)	25.4(25.7)	63	5.5	6.1	2
8250R-M		14	250	259.561	180	47.625(60)	25.4(25.7)	63	5.5	11.8	2
8315R-M		18	315	324.561	240	47.625(60)	25.4(25.7)	63	5.5	19.1	2
8400R-M		24	400	409.561	260	47.625(60)	25.4(25.7)	80	5.5	33	2

( )Metric size, ● : Stock item

## Available inserts



Designation	Cermet		Coated										Uncoated			Page		
	CN80	NC5330	NCM325	NCM335	NCM335	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
ONHX 080608-MM										●			●	●				
080608-MF										●			●	●				
080608-ML													●	●				
080608-MA													●	●				●
080608-W										●			●	●				
0806ANN-MM										●			●	●				
0806ANN-MF										●			●	●				
ONMX 080608-MM						●				●	●		●	●				
080608-MF						●				●	●		●	●				
0806ANN-MM						●				●	●		●	●				
0806ANN-MF						●				●	●		●	●				

## Available arbors

Designation	Available arbors	
	RM16AC	RM16ACM
RM16AC 8063HR-M	-	BT□□-FMC22-□□
(RM16ACM) 8080HR-M	BT□□-FMA25.4-□□	BT□□-FMC27-□□
8100HR-M	BT□□-FMA31.75-□□	BT□□-FMC32-□□
8125HR-M	BT□□-FMA38.1-□□	BT□□-FMB40-□□
8160R-M	BT□□-FMA50.8-□□	BT□□-FMC40-□□
8200R-M		
8250R-M		
8315R-M	BT□□-FMA47.625-□□	BT□□-FMB60-□□
8400R-M		

## Parts

Specification		
Ø63~Ø400	FTGA0513	TW20-100

Available inserts **B15** Available arbors and bolt **E94 ~ E96**

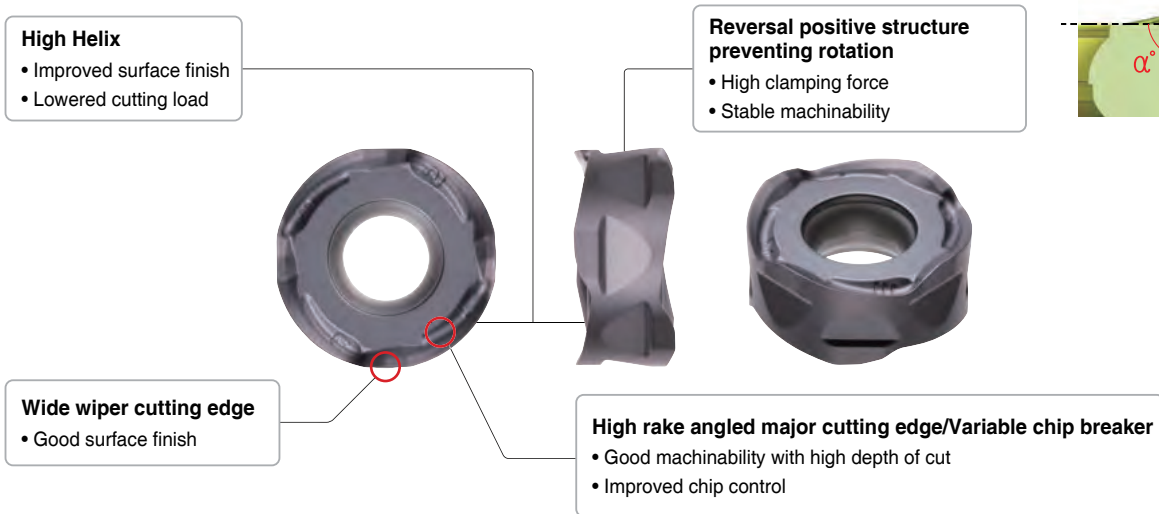


## Rich Mill RMR

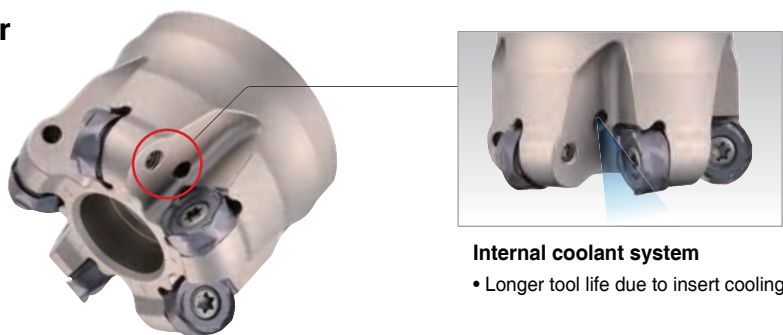
### Features

- 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.

### Features of insert



### Features of cutter



### Recommended grade and cutting dege

Type	Recommended grade and cutting dege by workpiece					
	P		M		K	
	C/B	Grade	C/B	Grade	C/B	Grade
1 <sup>st</sup>	MM	PC3700	ML	PC9540	MM	PC6100
2 <sup>nd</sup>	MM	PC5300	MM	PC9540	MM	PC5300

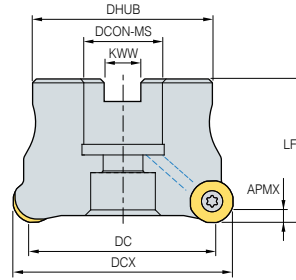
**Rich Mill RMR**
**Recommended cutting conditions**

Workpiece				Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Wear resistance ← • →			Toughness			ML/MM
ISO	Workpiece material	KS	ISO			Grade	C/B		Grade	C/B		
						PC3700	ML	MM	PC5300	ML	MM	
						vc (m/min)	fz (mm/t)	fz (mm/t)	vc (m/min)	fz (mm/t)	fz (mm/t)	ap (mm)
<b>P</b>	Non-ferrous alloy steel Mn < 1.65	SM25C	C25	1500	125	100	0.5	0.5	80	0.5	0.5	1~3
						<b>180</b>	<b>0.3</b>	<b>0.3</b>	<b>140</b>	<b>0.3</b>	<b>0.3</b>	
						250	0.1	0.1	200	0.1	0.1	
		SM45C	C45	1700	190	80	0.5	0.5	80	0.5	0.5	
						<b>180</b>	<b>0.3</b>	<b>0.3</b>	<b>140</b>	<b>0.3</b>	<b>0.3</b>	
						250	0.1	0.1	200	0.1	0.1	
	Low alloy steel ≤ 5%	SCM440	42CrMo4	1700	175	80	0.5	0.5	80	0.5	0.5	
						<b>160</b>	<b>0.3</b>	<b>0.3</b>	<b>120</b>	<b>0.3</b>	<b>0.3</b>	
						230	0.1	0.1	190	0.1	0.1	
	High alloy steel > 5%	STD11 STD61	X40CrMoV5-1	1950	200	120	0.7	0.7	100	0.7	0.7	1
						<b>140</b>	<b>0.5</b>	<b>0.5</b>	<b>120</b>	<b>0.5</b>	<b>0.5</b>	
						280	0.3	0.3	210	0.3	0.3	

Workpiece				Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Grade	C/B	ML
ISO	Workpiece material	KS	ISO			PC9540	ML	
						vc (m/min)	fz (mm/t)	
<b>M</b>	Ferritic/ martensitic	STS405 STS430	X6CrAl13 X6Cr17	1800	200	120	0.3	1~3
						<b>160</b>	<b>0.15</b>	
						200	0.05	
		STS416 STS434	X12CrS13 X6CrMo17-1	2850	330	100	0.3	
						<b>140</b>	<b>0.15</b>	
						180	0.05	
	STS403 STS410	X12Cr13	2350	330	100	0.3		
					<b>140</b>	<b>0.15</b>		
					180	0.05		
	Austenite	STS304 STS316	X5CrNi18-9, X2CrNi18-9 X5CrNiMo17-12-2 XCrNiMo17-12-3	2000	180	90	0.3	
						<b>120</b>	<b>0.15</b>	
						150	0.05	
Austenitic/ ferritic (Duplex)	F51	-	2450	260	60	0.3		
					<b>90</b>	<b>0.15</b>		
					120	0.1		

Workpiece				Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Wear resistance ← • →			Toughness			ML/MM
ISO	Workpiece material	KS	ISO			Grade	C/B		Grade	C/B		
						PC6100	ML	MM	PC5300	ML	MM	
						vc (m/min)	fz (mm/t)	fz (mm/t)	vc (m/min)	fz (mm/t)	fz (mm/t)	ap (mm)
<b>K</b>	Gray cast iron	GC200	200	900	180	140	0.25	0.3	120	0.25	0.3	1~3
						<b>180</b>	<b>0.2</b>	<b>0.2</b>	<b>160</b>	<b>0.2</b>	<b>0.2</b>	
						230	0.1	0.1	200	0.1	0.1	
	Ductile cast iron	GCD500	500-7	870	155	120	0.25	0.3	110	0.25	0.3	
						<b>160</b>	<b>0.2</b>	<b>0.2</b>	<b>145</b>	<b>0.2</b>	<b>0.2</b>	
						200	0.1	0.1	180	0.1	0.1	

# RMRC(M)-RN12



- AR:  $-7^\circ$
- RR:  $-13^\circ$

Designation	Stock	CICT	DCX	DC	APMX	DHUB	DCON-MS	LF	
<b>RMRCM</b>									
050R-22-5-RN12	●	5	50	40.4	3.5	42	22	40	0.28
050R-22-6-RN12	●	6	50	40.4	3.5	42	22	40	0.29
063R-22-6-RN12	●	6	63	53.4	3.5	42	22	40	0.45
063R-22-7-RN12	●	7	63	53.4	3.5	42	22	40	0.46
080R-27-6-RN12	●	6	80	70.4	3.5	60	27	50	0.83
080R-27-8-RN12	●	8	80	70.4	3.5	60	27	50	0.82
100R-32-7-RN12	●	7	100	90.4	3.5	70	32	63	1.67
100R-32-9-RN12	●	9	100	90.4	3.5	70	32	63	1.67
125R-40-10-RN12	●	10	125	115.4	3.5	90	40	63	2.82
125R-40-12-RN12	●	12	125	115.4	3.5	90	40	63	2.83
<b>RMRC</b>									
080R-25.4-6-RN12	●	6	80	70.4	3.5	60	25.4	50	0.85
080R-25.4-8-RN12	●	8	80	70.4	3.5	60	25.4	50	0.85
100R-31.75-7-RN12	●	7	100	90.4	3.5	70	31.75	63	1.71
100R-31.75-9-RN12	●	9	100	90.4	3.5	70	31.75	63	1.71
125R-38.1-10-RN12	●	10	125	115.4	3.5	90	38.1	63	2.88
125R-38.1-12-RN12	●	12	125	115.4	3.5	90	38.1	63	2.88

● : Stock item

## Available inserts

RNMX-ML      RNMX-MM



Designation	Cermet	Coated								Uncoated			Page				
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC5300	PC6100	PC9530		PC9540	ST30A	G10	H01
<b>RNMX</b>																	
1204M0E-ML									●	●			●				
1204M0S-MM									●	●	●						

## Available arbors

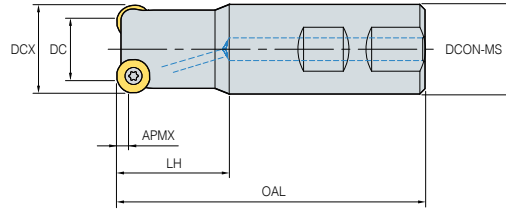
Designation	DCON-MS	Available arbors	Designation	DCON-MS	Available arbors		
<b>RMRCM</b>			<b>RMRC</b>				
050R-22-□-RN12	22	BT□□-FMC22-□□	080R-25.4-□-RN12	25.4	BT□□-FMA25.4-□□		
063R-22-□-RN12			100R-31.75-□-RN12	31.75	BT□□-FMA31.75-□□		
080R-27-□-RN12			27	BT□□-FMC27-□□	125R-38.1-□-RN12	38.1	BT□□-FMA38.1-□□
100R-32-□-RN12			32	BT□□-FMC32-□□			
125R-40-□-RN12			40	BT□□-FMC40-□□			

## Parts

Specification		
Ø50~Ø125	FTNA0411-A	TW15S

Available inserts **B17**      Available arbors and bolt **E96**

# RMRS-RN12



- AR: -7°
- RR: -15°~-13°

Designation		Stock	CICT	DC	DCX	DCON-MS	LH	OAL	APMX	(mm)	
RMRS	032R-2W32-110-RN12	●	2	22.4	32	32	40	110	3.5	0.6	
	032R-3W32-110-RN12	●	3	22.4	32	32	40	110	3.5	0.6	
	032R-2C32-200-RN12	●	2	22.4	32	32	40	200	3.5	1.1	
	032R-3C32-200-RN12	●	3	22.4	32	32	40	200	3.5	1.1	
	040R-3W32-110-RN12	●	3	30.4	40	32	40	110	3.5	0.6	
	040R-4W32-110-RN12	●	4	30.4	40	32	40	110	3.5	0.6	
	040R-3C32-200-RN12	●	3	30.4	40	32	40	200	3.5	1.2	
	040R-4C32-200-RN12	●	4	30.4	40	32	40	200	3.5	1.2	
	050R-5W40-120-RN12			5	40.4	50	40	40	120	3.5	1.1
	050R-6W40-120-RN12			6	40.4	50	40	40	120	3.5	1.1
	050R-5C42-300-RN12			5	40.4	50	42	40	300	3.5	3.1
	050R-6C42-300-RN12			6	40.4	50	42	40	300	3.5	3.1
	063R-6W40-130-RN12			6	53.4	63	40	50	130	3.5	1.4
	063R-7W40-130-RN12			7	53.4	63	40	50	130	3.5	1.4
	063R-6C42-300-RN12			6	53.4	63	42	50	300	3.5	3.3
063R-7C42-300-RN12			7	53.4	63	42	50	300	3.5	3.3	

● : Stock item

## Available inserts

RNMX-ML RNMX-MM



Designation	Cermet	Coated										Uncoated			Page		
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC5300	PC6100	PC9530	PC9540	ST30A		G10	H01
RNMX 1204M0E-ML													●				B17
1204M0S-MM								●	●	●							

## Parts

Specification	Screw	Wrench
Ø32~Ø63	FTNA0411-A	TW15S

Available inserts **B17**

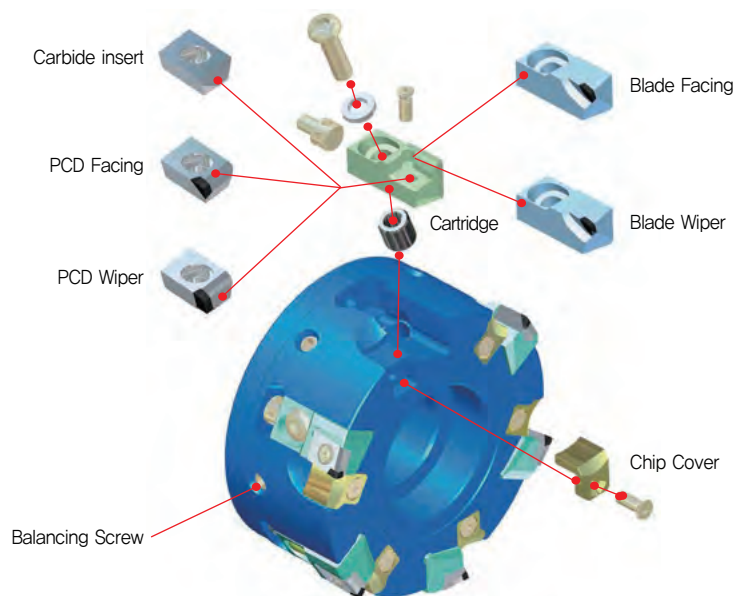
# B Technical Information for Aero Mill

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



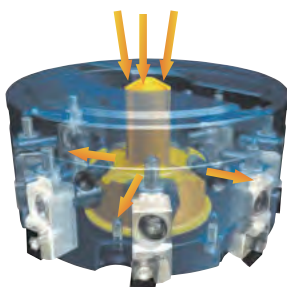
### Features of cutter

- 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

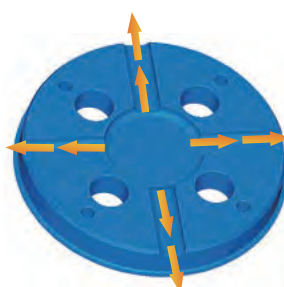
- Specially designed coolant through system provides coolant from the center of the cutter to the insert enhances the cooling rate and chip evacuation.
  - Direction of coolant has designed to focus directly to the insert cutting-edge to maximize chip evacuation and improve tool life
  - Coolant bolt is applicable up to  $\varnothing 160$ , coolant cover is applicable from  $\varnothing 200$  and over.
- Coolant devices are sold separately for through coolant system, through coolant arbor has to be used

#### Coolant Bolt



$\varnothing 80$ – $\varnothing 160$

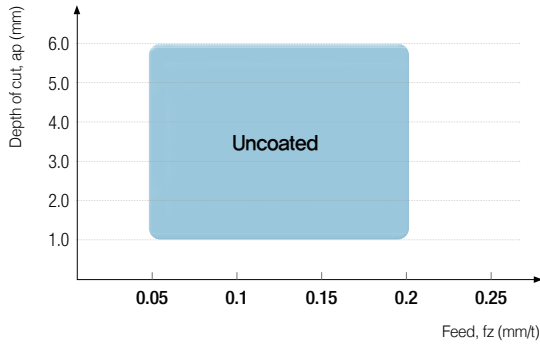
#### Coolant Cover



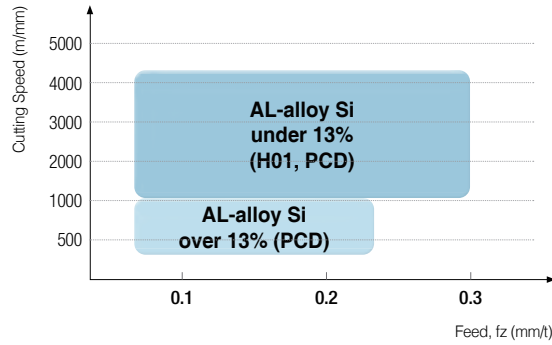
For  $\varnothing 200$  and over

## Aero Mill

### Application range

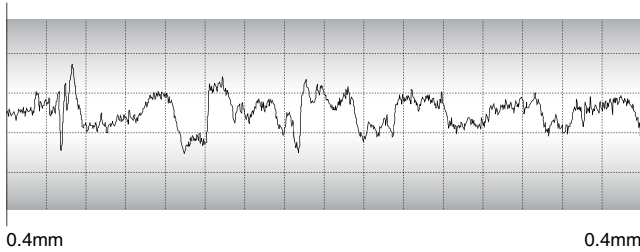


### Recommended cutting conditions



### Surface finish

Workpiece	A6061
Cutting condition	vc = 1570m/min, vf = 3000mm/min, S = 5000rpm, fz = 0.1mm/t, ap = 0.5mm, Machine = PCV620
Tools	Cutter : APD100R-A6Z(6Flutes) Insert : CDEW1204R-XCF(H01)



- Rmax : 2.1  $\mu\text{m}$
- Rz : 1.6  $\mu\text{m}$
- Ra : 0.3  $\mu\text{m}$

### Max. revolution

Diameter (mm)	Max. revolution (rpm)
Ø80	16,000
Ø100	15,000
Ø125	12,500
Ø160	10,000
Ø200	8,000
Ø250	6,500
Ø315	5,000

### Coolant parts

Diameter (mm)	Type	Designation		Shape	Note
Ø80	Coolant Bolt	CBP080-IN/MM			Extra charge
Ø100	Coolant Bolt	CBP100-IN	CBP100-MM-1		
Ø125	Coolant Bolt	CBP125-IN	CBP125-MM-1		
Ø160	Coolant Bolt	CBP160-IN	CBP160-MM		
Ø200	Coolant Cover	CCP200			
Ø250	Coolant Cover	CCP250			
Ø315	Coolant Cover	CCP315			

• Choice: CBP100-IN:APD type, General for unmarked item

## APD(M)-A

Cartridge + insert

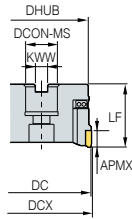
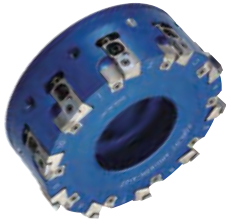


Fig. 1

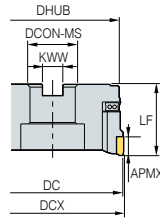


Fig. 2

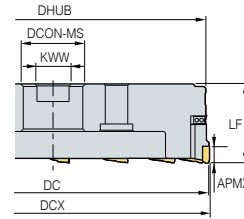


Fig. 3

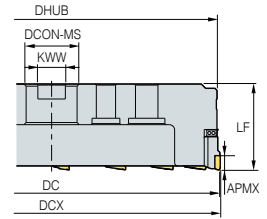


Fig. 4



KAPR  
90°

- GAMP : 6°
- GAMF : 5°~9°

(mm)

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
APD	080R/L-A6Z	● (●)	6	80	80	73	25.4(27)	9.5(12.4)	50	10	0.6	1
(APDM)	100R/L-A6Z	● (●)	6	100	100	80	31.75(32)	12.7(14.4)	50	10	0.9	2
	125R/L-A8Z	● (●)	8	125	125	100	38.1(40)	15.9(16.4)	63	10	1.7	2
	160R/L-A10Z		10	160	160	134	50.8(40)	19.1(16.4)	63	10	2.8	2
	200R/L-A12Z		12	200	200	174	47.625(60)	25.4(25.7)	63	10	3.7	3
	250R/L-A16Z		16	250	250	224	47.625(60)	25.4(25.7)	63	10	6.0	3
	315R/L-A18Z		18	315	315	280	47.625(60)	25.4(25.7)	80	10	11.1	4

( ) Metric size, ● : Stock item

### Available inserts

CDEW-XCF CDEW-XAF,NAF CDEW-XAW,NAW



Designation	Uncoated			PCD DP200	Page
	H01	G10	ST30A		
CDEW	1204R-XCF	●			B7
	1204L-XCF				
	1204R-XAF			●	
	1204L-XAF				
	1204R-NAF			●	
	1204L-NAF				
	1204R-XAW			●	
	1204L-XAW				
	1204R-NAW			●	
	1204L-NAW				

### Available arbors

Designation	General arbors	NC arbors
APD	080R/L NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4
(APDM)	100R/L NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75
	125R/L NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1
	160R/L NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8
	200R/L NT*□□(M/U)-FMA47.625-25,	BT**□□-FMA47.625-□□
	250R/L KCP-8***	
	315R/L KCP-8***(Centering Plug)	-

\*□□ -NT number \*\*□□ -BT number \*\*\*Over milling 5

### Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
Aluminum	1,000~4,000 500~2,500	0.05~0.30 0.05~0.20	DP200 H01

### Parts

Specification								
Ø80~Ø315	LAPDR/L-AJ	CAPDR/L-AJ	PTMA0411	FTNA0411	AZ0514	BHA0619-NYLOK	TW15S	HW50

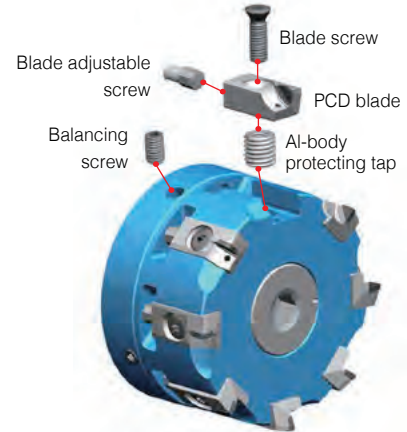
Available inserts B7 Available arbors and bolt E94

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 millin

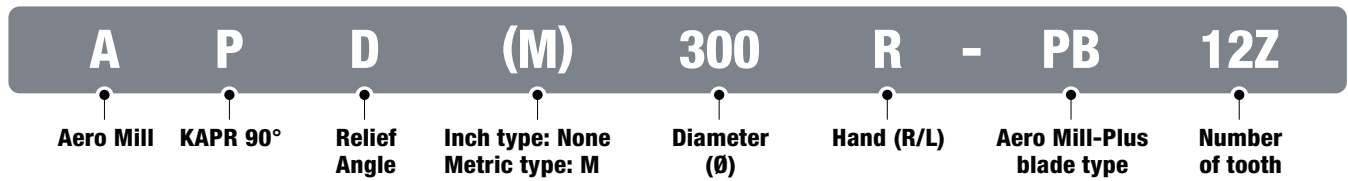
### Assembly structure of cutter



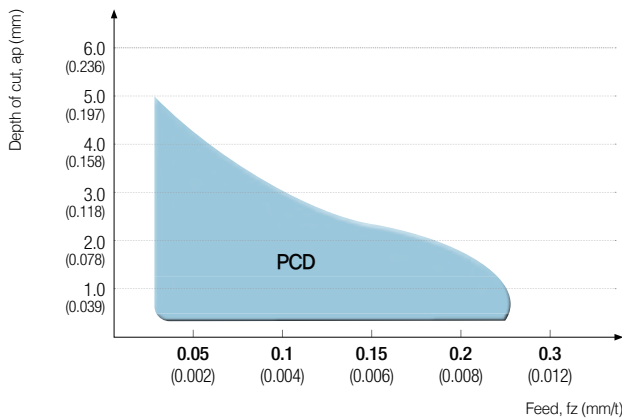
### Features of cutter

- 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

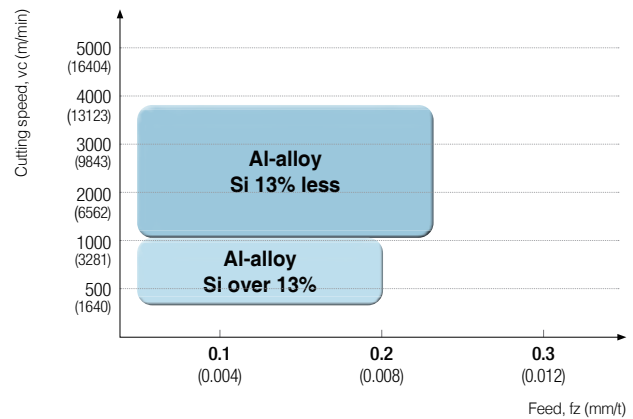
### Code system



### Application range



### Recommended cutting speed



### Max. RPM

Diameter (mm)	Max. revolution (rpm)
Ø80	20,000
Ø100	18,000
Ø125	16,000
Ø160	13,000
Ø200	10,000
Ø250	8,000
Ø315	7,000

### Coolant parts

Diameter (mm)	Type	inch/mm	Designation	Picture	Material	Note
Ø80	Coolant bolt	inch, mm	CB12-AMaP80		Steel	Included
		inch	CB16-AMP100			
		mm	CB16-AMP100M			
		inch	CB20-AMP125			
		mm	CB20-AMP125M			
		inch	CB24-AMP160			
Ø160	Coolant cover	inch, mm	CCV-AMP200		Aluminum	Extra charge
		inch, mm	CCV-AMP250			
		inch, mm	CCV-AMP315			
		inch, mm	CCV-AMP315			



## APD(M)-PB

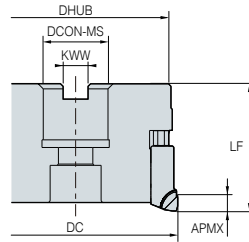
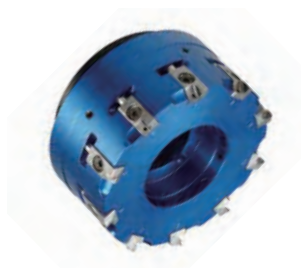


Fig. 1

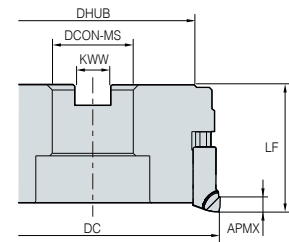


Fig. 2



KAPR  
90°

- GAMP : 6°
- GAMF : -4°~1°

(mm)

Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
	R	L										
APD	●		6	80	80	50	25.4(27)	9.5(12.4)	50	5	0.6	1
(APDM)	●		8	80	80	50	25.4(27)	9.5(12.4)	50	5	0.6	1
	●		6	100	100	60	31.75(32)	12.7(14.4)	50	5	0.9	2
	●		8	100	100	60	31.75(32)	12.7(14.4)	50	5	0.9	2
	●		8	125	125	80	38.1(40)	15.9(16.4)	63	5	1.9	2
	●		10	125	125	80	38.1(40)	15.9(16.4)	63	5	1.9	2
	●		10	160	160	100	50.8(40)	19.1(16.4)	63	5	3.3	2
	●		12	160	160	100	50.8(40)	19.1(16.4)	63	5	3.3	2

( ) Metric size, ● : Stock item

### Available blades

BAMPR-XAF BAMPR-XAW BAMPR-XAWR



Designation	PCD		Page
	DP150		
BAMPR	XAF		B7
	XAW	●	
	XAWR	●	

### Available arbors

Designation	NC arbors
APD-PB	BT□□-FMA25.4(FMC27)-□□
(APDM-PB)	BT□□-FMA31.75(FMC32)-□□
	BT□□-FMA38.1(FMB40)-□□
	BT□□-FMA50.8(FMB/FMC40)-□□

### Parts

Specification						
Ø80~Ø160	ETKA0620	AZ0514-SPN6	UZD1010	KHE0610	SPN-6	TW25-100

Available inserts **B7** Available arbors and bolt **E94**

# APD(M)-PB

Blade

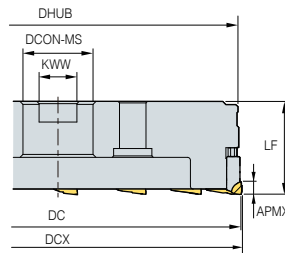
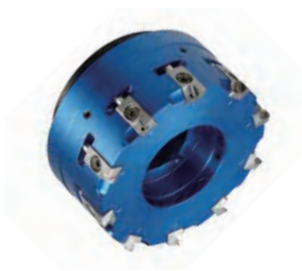


Fig. 1

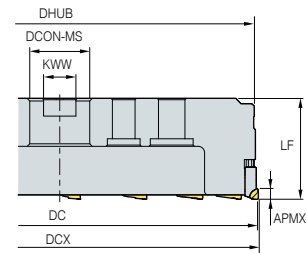


Fig. 2



KAPR  
**90°**

- GAMP : -6°
- GAMF : -39°~-16°

(mm)

	Designation	Stock		CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
		R	L										
APD	200R/L-PB12Z			12	26	200	197	47.625(60)	25.4(25.7)	14	40	63	1
(APDM)	250R/L-PB16Z			16	32	250	247	47.625(60)	25.4(25.7)	14	40	63	1
	315R/L-PB18Z			18	42	315	312	47.625(60)	25.4(25.7)	14	40	63	2

( ) Metric size, ● : Stock item

## Available blades

BAMPR-XAF    BAMPR-XAW    BAMPR-XAWR



Designation	PCD		Page
	DP150		
BAMPR XAF			B7
XAW		●	
XAWR		●	

## Available arbors

Designation	NC arbors
APD-PB 200R/L-PB□□Z	BT□□-FMA47.625(FMB60)-□□
(APDM-PB) 250R/L-PB□□Z	
315R/L-PB□□Z	

## Parts

Specification						
Ø200~Ø315	ETKA0620	AZ0514-SPN6	UZD1010	KHE0610	SPN-6	TW25-100

Available inserts **B7**    Available arbors and bolt **E94**

# B Technical information for Aero Mill Mini

Good performance in small-medium size of operations

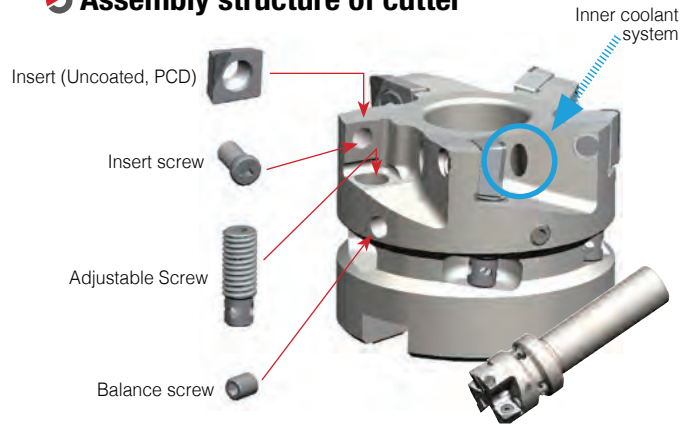
## Aero Mill Mini

- 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

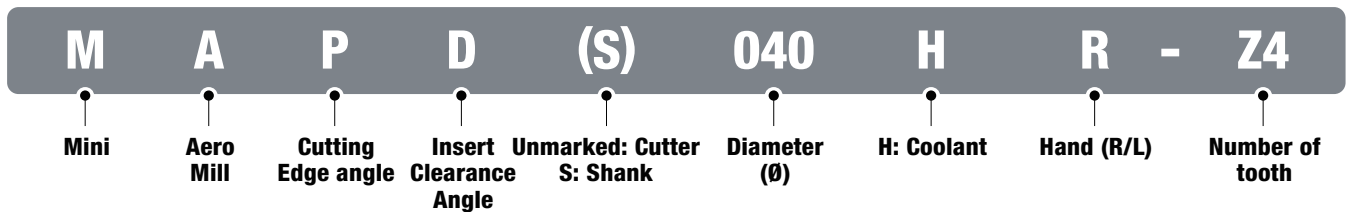
### Features of cutter

- Simple and strong design of Screw-on clamping.
- Adjustable range:  $\pm 0.1$  mm Max
- Adjustable step: Min. 2 micro meter
- Wide chip pocket area for Roughing and Aluminum machining.
- Inner coolant system

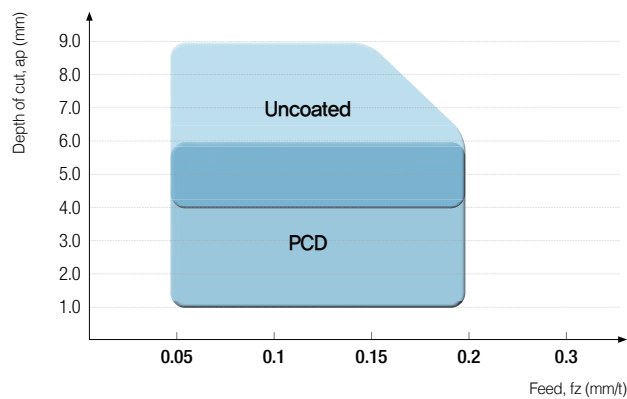
### Assembly structure of cutter



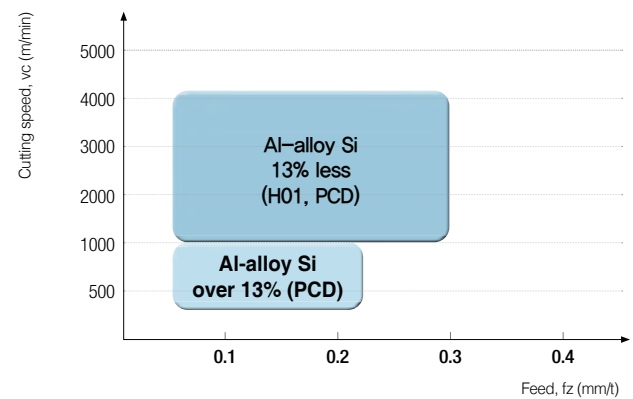
### Code system



### Application range



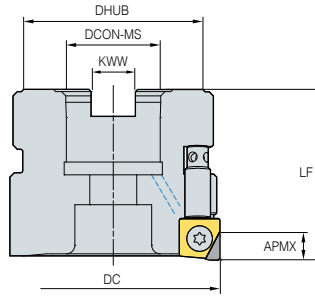
### Recommended cutting conditions



### Max. RPM

Diameter(mm)	Max. RPM(rpm)
Ø32	26,000
Ø40	24,500
Ø50	22,000
Ø63	20,000

# MAPD000HR/L-Z0



※ PCD ap:5mm

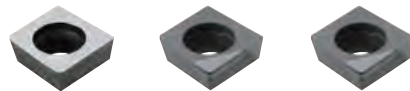
- KAPR 90°
- GAMP : 6°
- GAMF : -1°~12°

	Designation	Stock		CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
		R	L								
MAPD	040HR/L-Z4	●		4	40	34	16	8.4	40	9.5	0.2
	050HR/L-Z5	●		5	50	42	22	10.4	40	9.5	0.3
	063HR/L-Z6	●		6	63	42	22	10.4	40	9.5	0.6

● : Stock item

## Available inserts

SNEW      SNEW-XAF      SNEW-NAF



Strengthened edge

	Designation	Uncoated				PCD	Page
		H01	G10	ST30A	ST20E	DP200	
SNEW	09T3ADFR	●					B24
	09T3ADTR-XAF					●	
	09T3ADTR-XAW					●	
	09T3ADTR-NAF					●	
	09T3ADTR-NAW					●	

## Available arbors

Designation	NC arbors
MAPD 040HR/L-Z4	BT**□□-FMC16-□□
050HR/L-Z5	BT**□□-FMC22-□□
063HR/L-Z6	BT**□□-FMC22-□□

## Recommended cutting conditions

Workpiece	cutting condition		Grade
	vc(m/min)	fz(mm/t)	
Aluminum	1,000~4,000 500~2,500	0.05~0.30 0.05~0.20	DP200 H01

## Coolant bolt (Not included)

Designation	Applicable cutters	Available cutters(Ø)
CB0525	MAPD040HR/L-Z4	Ø40
CB1025	MAPD050HR/L-Z5	Ø50
	MAPD063HR/L-Z6	Ø63

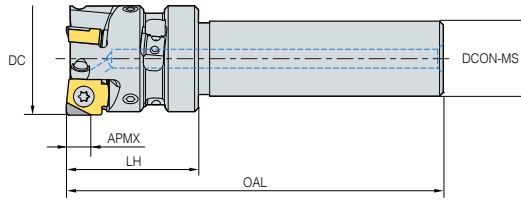
• For detailed information on the coolant bolt, please refer to our catalog

## Parts

Specification					
Ø32~Ø63	FTKA0408	AHX0617F-NYLOK	KHD0405	TW15S	HW20L

Available inserts **B24**    Available arbors and bolt **E96**

## MAPDS000HR/L-Z0



KAPR  
90°

- GAMP : 6°
- GAMF : -4°~1°

※ PCD ap:5mm

Designation	Stock		CICT	DC	DCON-MS	LH	OAL	APMX	(mm)
	R	L							
MAPDS 032HR/L-Z3	●		3	32	20	35	100	9.5	0.3
040HR/L-Z4	●		4	40	20	35	100	9.5	0.4

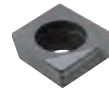
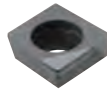
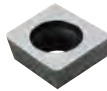
● : Stock item

### Available inserts

SNEW

SNEW-XAF

SNEW-NAF



Strengthened edge

Designation	Uncoated			PCD	Page
	H01	G10	ST30A	DP200	
SNEW 09T3ADFR	●				B24
09T3ADTR-XAF				●	
09T3ADTR-XAW				●	
09T3ADTR-NAF				●	
09T3ADTR-NAW				●	

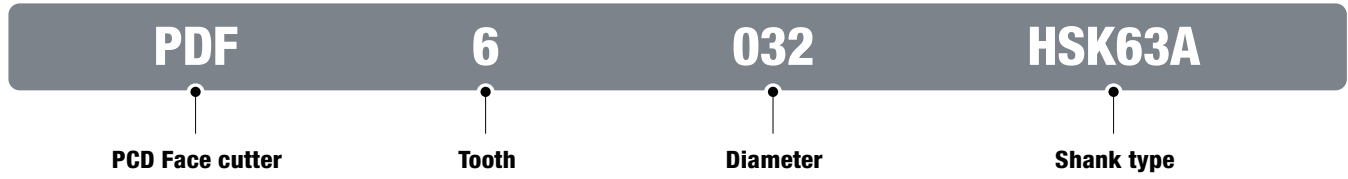
### Parts

Specification					
Ø32~Ø63	FTKA0408	AHX0617F-NYLOK	KHD0405	TW15S	HW20L

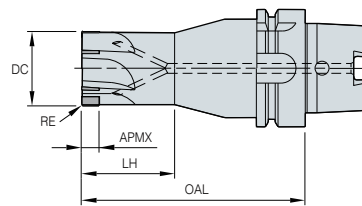
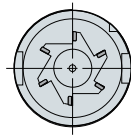
Available inserts B24

PCD Face Cutter

Code system



PCD Face Cutter



KAPR  
90°

- GAMP : 6°
- GAMF : 5°~9°

(mm)

	Designation	Stock	CICT	DC	RE	APMX	LH	OAL
PDF	4032-HSK50A		4	32	0.5	8	50	120
	4040-HSK50A		4	40	0.5	8	50	120
	4032-HSK63A		4	32	0.5	8	50	120
	4040-HSK63A		4	40	0.5	8	50	120
	4050-HSK63A		4	50	0.5	8	50	120
	6063-HSK63A		4	63	0.5	12	-	100
	6063-HSK100A		4	63	0.5	12	-	100

● : Stock item

Recommended cutting conditions

Workpiece	vc(m/min)	fz(mm/t)	ap(mm)
Al, Brass, Alloy	200~2,000	0.02~0.1	0.05~4.0

Special PCD Order Sheet

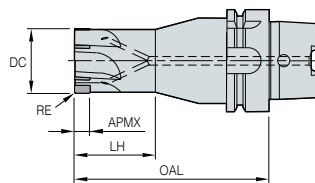
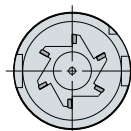


Fig. 1

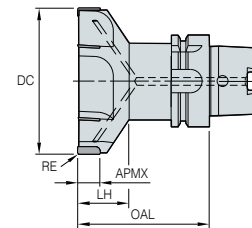


Fig. 2

Designation	Fig.	tooth	Dimension (mm)					Shank spec.
			DC	RE	APMX	LH	OAL	
PDF								

# B Technical Information for Alpha Mill-X

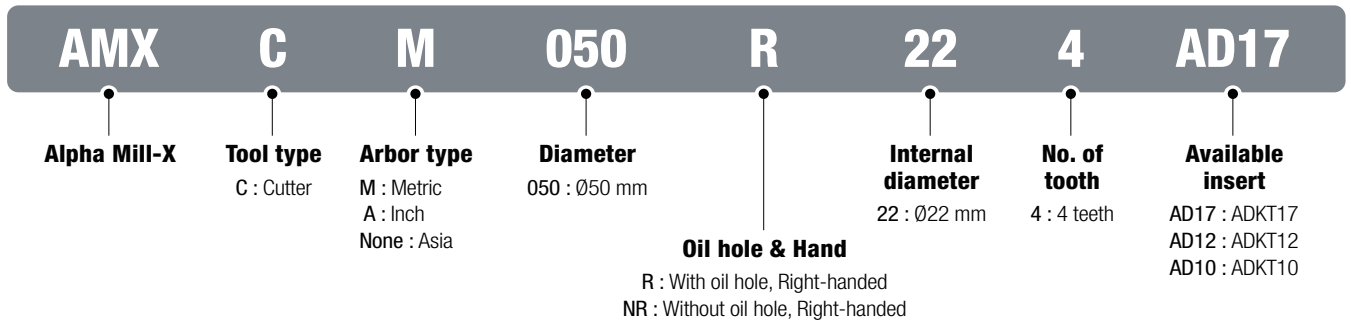
Shoulder milling tool for high helix

## Alpha Mill-X

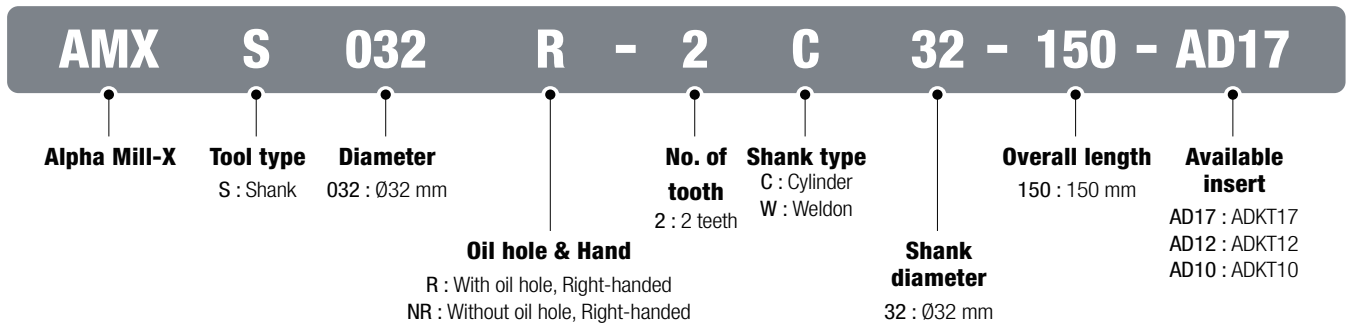
- High helix cutting edge realizes high speed and high feed machining (15% higher speed than conventional tool's machining) and increases 20% higher productivity
- Highly precise cutting edge ensures high quality surface finish in milling

### Code system

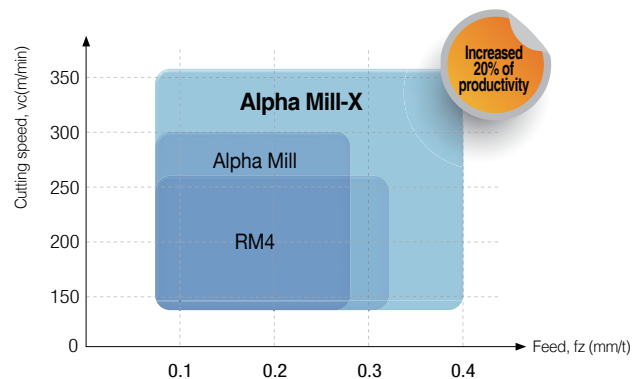
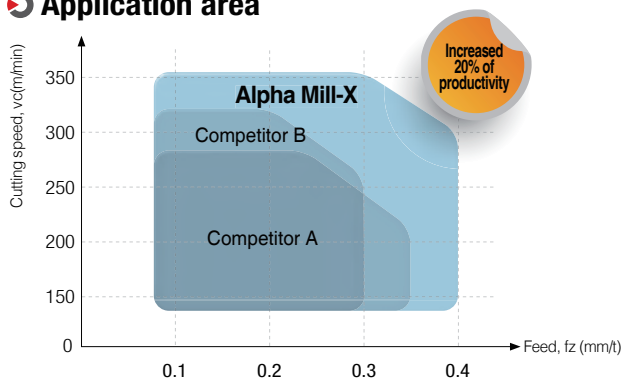
#### • Cutter



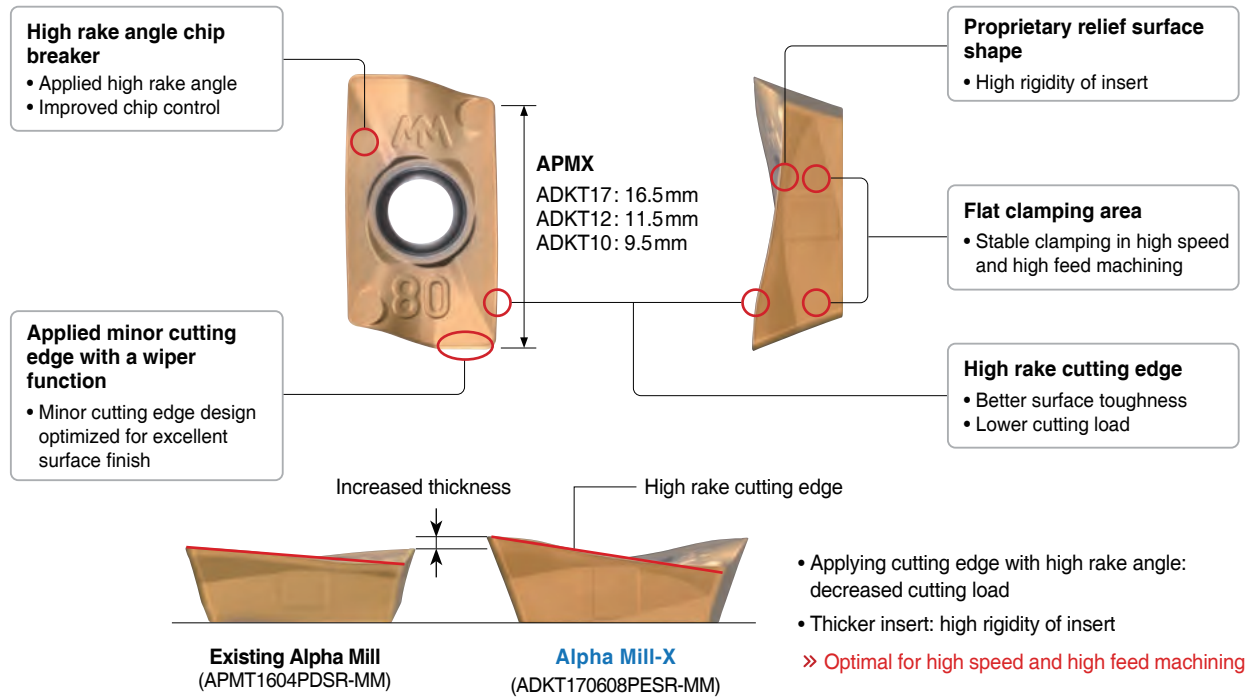
#### • Shank



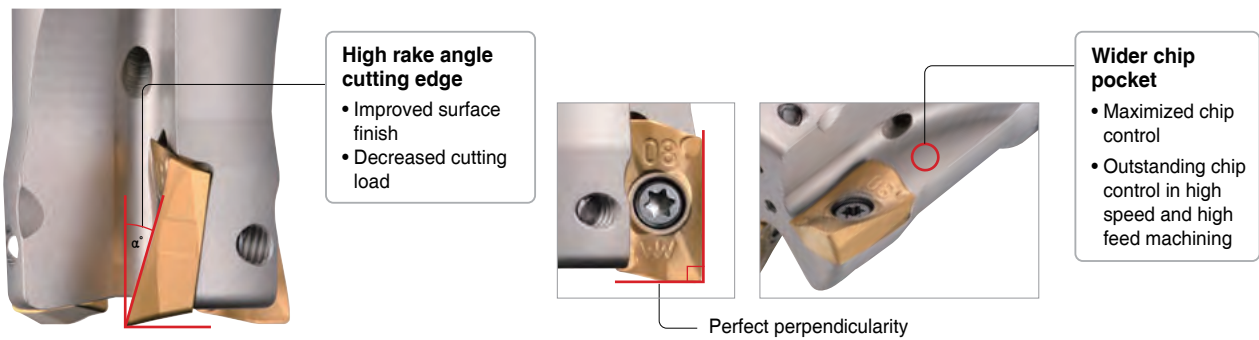
### Application area



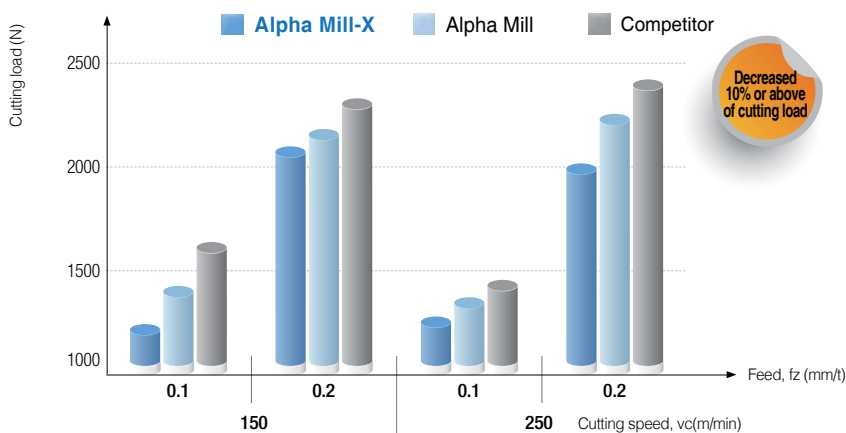
## Features of insert



## Features of Cutter



## Cutting load





# B Technical Information for Alpha Mill-X

## Recommended cutting conditions

### • In face machining and shouldering

Workpiece	Grade	Cutting speed vc (m/min)	Feed, fz (mm/t)		
			ADKT17	ADKT12	ADKT10
P Steel	PC5300	150-240	0.3-0.05	0.25-0.05	0.2-0.05
	PC5400	130-210			
	PC3700	160-270			
	NCM535	250-350			
M Stainless steel	PC5300	90-150	0.25-0.05	0.2-0.05	0.15-0.05
	PC5400	70-120			
	PC9540	50-120			
K Cast iron	PC6100	150-200	0.35-0.08	0.3-0.08	0.25-0.08
	PC5300	120-200			
	NCM535	200-300			
S HRSA	PC5300	40-70	0.2-0.05	0.15-0.05	0.1-0.05
	PC5400	30-50			

※ The above data refer to general cutting conditions and can be adjustable up to 350 m/min and 0.4 mm/t depending on user environment.



### • In grooving, ramping and helical machining

Workpiece	Grade	Cutting speed vc (m/min)	Feed, fz (mm/t)		
			ADKT17	ADKT12	ADKT10
P Steel	PC5300	150-240	0.15-0.05	0.15-0.05	0.15-0.05
	PC5400	130-210			
	PC3700	160-270			
	NCM535	250-350			
M Stainless steel	PC5300	90-150	0.15-0.05	0.15-0.05	0.15-0.05
	PC5400	70-120			
	PC9540	50-120			
K Cast iron	PC6100	150-250	0.2-0.08	0.2-0.08	0.2-0.08
	PC5300	120-200			
	NCM535	200-300			
S HRSA	PC5300	40-70	0.15-0.05	0.15-0.05	0.1-0.05
	PC5400	30-50			

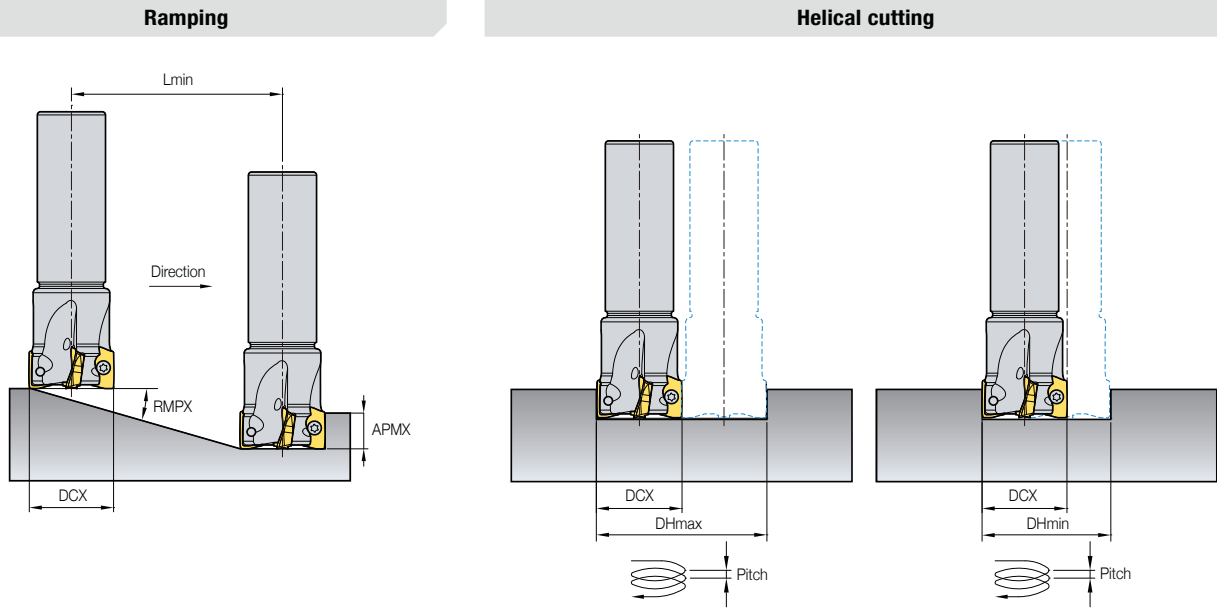
※ In deep grooving, set the ap under 5 mm and use coolant and air.

## 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	-	● PC6100 ○ PC5300 ○ PC5400 ○ NCM535	-	-	●	● PC5300 ○ PC5400
MM		●	● PC3700 ○ PC5300 ○ PC5400 ○ NCM535	●	● PC3700 ○ PC5300 ○ PC5400 ○ NCM535	-	● PC5300 ○ PC5400 ○ PC9540	●	● PC6100 ○ PC5300 ○ PC5400 ○ NCM535	-	-	-	● PC5300 ○ PC5400

## Ramping and helical cutting



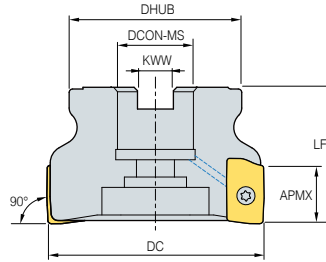
Designation	DCX	APMX	(mm)							
			Ramping		Blind hole helical cutting				Through hole helical cutting	
			RMPX	Lmin	DHmin	Max. pitch dmax	DHmax	Max. pitch dmax	DHmin	Max. pitch dmax
ADKT17	20	16.5	13	71	30	7.0	38	8.9	21	4.8
	25		8.0	117	40	5.7	48	6.8	31	4.3
	32		3.7	255	54	3.5	62	4.0	45	2.9
	33		3.6	262	56	3.5	64	4.1	47	2.9
	40		2.6	363	70	3.2	78	3.6	61	2.8
	50		1.9	497	90	3.0	98	3.3	81	2.7
	63		1.3	727	116	2.6	124	2.8	107	2.4
	80		1.1	859	150	2.9	158	3.0	141	2.7
	100		0.7	1350	190	2.3	198	2.4	181	2.2
	125		0.5	1891	240	2.1	248	2.2	231	2.0
ADKT12	18	11.5	7.0	98	29	3.6	34	4.2	23	2.8
	20		5.5	125	33	3.2	38	3.7	27	2.6
	25		3.5	196	43	2.7	48	3.0	37	2.3
	32		2.5	275	57	2.5	62	2.7	51	2.2
	33		2.4	286	59	2.5	64	2.7	53	2.2
	40		1.5	458	73	1.9	78	2.1	67	1.7
	50		1.2	573	93	2.0	98	2.1	87	1.8
	63		1.0	687	119	2.1	124	2.2	113	2.0
	80		0.7	982	153	1.9	158	1.9	147	1.8
ADKT10	16	9.5	4.5	121	28	2.2	31	2.5	24	1.9
	18		3.5	155	32	2.0	35	2.2	28	1.7
	20		3.0	181	36	1.9	39	2.1	32	1.7
	25		2.2	247	46	1.8	49	1.9	42	1.6
	32		1.5	363	60	1.6	63	1.7	56	1.5
	33		1.4	389	62	1.5	65	1.6	58	1.4
	40		1.2	454	76	1.6	79	1.7	72	1.5
	50		0.8	680	96	1.3	99	1.4	92	1.3
	63		0.6	907	122	1.3	125	1.3	118	1.2
	80		0.5	1089	156	1.4	159	1.4	152	1.3

※ In ramping and helical machining, use coolant and air.

※ Lmin : Cutting length in machining with Min. rake angle  
 RMPX : Rake angle for ramping  
 ap : Depth of cut in axial direction

$$Lmin = \frac{APMX}{\tan(RMPX)} \text{ (mm)}$$

## AMXS-AD10/12



- GAMP : 8°
- GAMF : -10°~3°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	kg
<b>AMXCM</b> 040R-16-5-AD10	●	5	40	35	16	8.4	40	9.5	0.2
040R-16-6-AD10	●	6	40	35	16	8.4	40	9.5	0.2
050R-22-6-AD10	●	6	50	42	22	10.4	40	9.5	0.2
050R-22-7-AD10	●	7	50	42	22	10.4	40	9.5	0.2
063R-22-7-AD10	●	7	63	49	22	10.4	40	9.5	0.2
063R-22-8-AD10	●	8	63	49	22	10.4	40	9.5	0.5
080R-27-8-AD10	●	8	80	57	27	12.4	50	9.5	0.9
080R-27-9-AD10	●	9	80	57	27	12.4	50	9.5	0.9
040R-16-4-AD12	●	4	40	35	16	8.4	40	11.5	0.2
040R-16-5-AD12	●	5	40	35	16	8.4	40	11.5	0.2
050R-22-5-AD12	●	5	50	42	22	10.4	40	11.5	0.2
050R-22-7-AD12	●	7	50	42	22	10.4	40	11.5	0.2
063R-22-6-AD12	●	6	63	49	22	10.4	40	11.5	0.2
063R-22-7-AD12	●	7	63	49	22	10.4	40	11.5	0.5
080R-27-7-AD12	●	7	80	57	27	12.4	50	11.5	0.9
080R-27-8-AD12	●	8	80	57	27	12.4	50	11.5	0.9

● : Stock item

### Available inserts

ADKT-ML ADKT-MM



Type	Designation	Cermet	Coated										Uncoated		Page			
		CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
10 type	ADKT 10T304PEER-ML					●				●	●		●	●	●			B4
	10T304PESR-MM					●				●	●		●	●	●			
	10T308PESR-MM												●	●	●			
	10T312PESR-MM														●	●		
12 type	ADKT 120408PESR-ML					●				●	●		●	●	●			B4
	120408PESR-MM					●				●	●		●	●	●			
	120412PESR-MM									●	●		●	●	●			
	120416PESR-MM									●	●		●	●	●			

### Available arbors

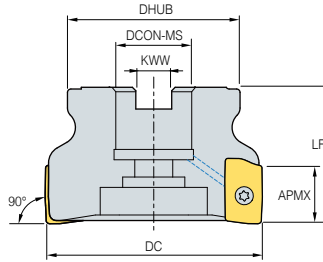
Designation	DCON-MS	Available arbors	Designation	DCON-MS	Available arbors
<b>AMXCM</b> 040R-16-□-AD□□	16	BT□□-FMC16-□□	<b>AMXCM</b> 063R-22-□-AD□□	22	BT□□-FMC22-□□
050R-22-□-AD□□	22	BT□□-FMC22-□□	080R-27-□-AD□□	27	BT□□-FMC27-□□

### Parts

Specification	Screw	Wrench
Ø40~Ø80(10 type)	FTKA02555S	TW08S
Ø40~Ø80(12 type)	FTNA0306	TW08S

Available inserts **B4** Available arbors and bolt **E96**

# AMXCM-AD17



- GAMP : 8°
- GAMF : -10°~-3°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
<b>AMXCM</b> 040R-16-3-AD17	●	3	40	35	16	8.4	40	16.5	0.2
040R-16-4-AD17	●	4	40	35	16	8.4	40	16.5	0.2
050R-22-4-AD17	●	4	50	42	22	10.4	40	16.5	0.2
050R-22-5-AD17	●	5	50	42	22	10.4	40	16.5	0.2
063R-22-5-AD17	●	5	63	49	22	10.4	40	16.5	0.4
063R-22-6-AD17	●	6	63	49	22	10.4	40	16.5	0.5
080R-27-6-AD17	●	6	80	57	27	12.4	50	16.5	0.9
080R-27-7-AD17	●	7	80	57	27	12.4	50	16.5	0.9
100R-32-8-AD17	●	8	100	70	32	14.4	63	16.5	1.8
100R-32-10-AD17	●	10	100	70	32	14.4	63	16.5	1.7
125R-40-8-AD17	●	8	125	90	40	16.4	63	16.5	2.9
125R-40-10-AD17	●	10	125	90	40	16.4	63	16.5	4.8

● : Stock item

## Available inserts

ADKT-ML      ADKT-MM



Designation	Cermet	Coated											Uncoated		Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
ADKT 170608PESR-ML					●				●	●		●	●	●			B4
170604PESR-MM									●			●	●				
170608PESR-MM					●				●	●		●	●				
170616PESR-MM												●	●				
170620PESR-MM												●	●				

## Available arbors

Designation	DCON-MS	Available arbors	Designation	DCON-MS	Available arbors
AMXCM 040R-16-□-AD□□	16	BT□□-FMC16-□□	AMXCM 080R-27-□-AD□□	27	BT□□-FMC27-□□
050R-22-□-AD□□	22	BT□□-FMC22-□□	100R-32-□-AD□□	32	BT□□-FMC32-□□
063R-22-□-AD□□			125R-40-□-AD□□	40	BT□□-FMC40-□□

## Parts

Specification		
Ø40~Ø125	FTKA0408	TW15S

Available inserts **B4**      Available arbors and bolt **E96**

## AMXS-AD10/12

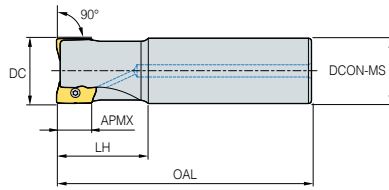


Fig. 1

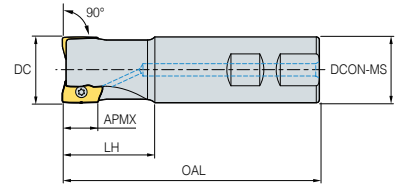


Fig. 2



KAPR  
90°

- GAMP : 8°
- GAMF : -10°~3°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX		Fig.
AMXS	016R-2W16-90-AD10	●	2	16	16	25	90	9.5	0.1	2
	016R-2C16-180-AD10	●	2	16	16	25	180	9.5	0.2	1
	018R-2W16-100-AD10	●	2	18	16	35	100	9.5	0.1	2
	018R-2C16-200-AD10	●	2	18	16	35	200	9.5	0.2	1
	020R-3W20-100-AD10	●	3	20	20	35	100	9.5	0.2	2
	020R-3C20-200-AD10	●	3	20	20	35	200	9.5	0.4	1
	025R-4W25-115-AD10	●	4	25	25	40	115	9.5	0.4	2
	025R-4C25-200-AD10	●	4	25	25	40	200	9.5	0.6	1
	032R-4W32-125-AD10	●	4	32	32	45	125	9.5	0.7	2
	032R-4C32-200-AD10	●	4	32	32	45	200	9.5	1.0	1
	040R-5W32-130-AD10	●	5	40	32	50	130	9.5	1.1	2
	040R-5C32-200-AD10	●	5	40	32	50	200	9.5	1.2	1
	018R-2W16-100-AD12	●	2	18	16	35	100	11.5	0.1	2
	018R-2C16-200-AD12	●	2	18	16	35	200	11.5	0.3	1
	020R-2W20-100-AD12	●	2	20	20	35	100	11.5	0.2	2
	020R-2C20-200-AD12	●	2	20	20	35	200	11.5	0.4	1
	025R-3W25-115-AD12	●	3	25	25	40	115	11.5	0.3	2
	025R-3C25-200-AD12	●	3	25	25	40	200	11.5	0.7	1
	032R-4W32-125-AD12	●	4	32	32	45	125	11.5	0.6	2
	032R-4C32-200-AD12	●	4	32	32	45	200	11.5	1.1	1
040R-4W32-130-AD12	●	4	40	32	50	130	11.5	0.8	2	
040R-4C32-200-AD12	●	4	40	32	50	200	11.5	1.2	1	

● : Stock item

### Available inserts

ADKT-ML

ADKT-MM



Type	Designation	Coated	Coated										Uncoated		Page			
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
10 type	ADKT 10T304PEER-ML					●				●	●		●	●	●			B4
	ADKT 10T304PESR-MM					●				●	●		●	●	●			
	ADKT 10T308PESR-MM													●	●			
	ADKT 10T312PESR-MM														●			
12 type	ADKT 120408PESR-ML					●				●	●		●	●	●			
	ADKT 120408PESR-MM					●				●	●		●	●	●			
	ADKT 120412PESR-MM									●	●			●	●			
	ADKT 120416PESR-MM									●	●			●	●			

### Parts

Specification	Screw	Wrench
Ø16~Ø40(10 type)	FTKA02555S	TW08S
Ø18~Ø40(12 type)	FTNA0306	TW08S

Available inserts B4

# AMXS-AD17

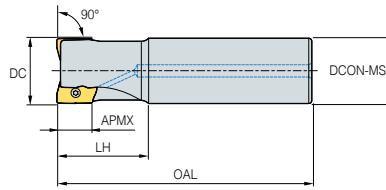


Fig. 1

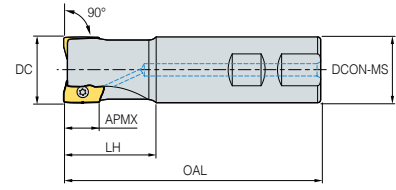


Fig. 2



- GAMP : 8°
- GAMF : -10°~-3°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.
<b>AMXS</b>									
020R-1W20-100-AD17	●	1	20	20	35	100	16.5	0.2	2
020R-1C20-200-AD17	●	1	20	20	35	200	16.5	0.4	1
025R-2W25-115-AD17	●	2	25	25	35	115	16.5	0.4	2
025R-2C25-200-AD17	●	2	25	25	35	200	16.5	0.5	1
032R-3W32-125-AD17	●	3	32	32	45	125	16.5	0.6	2
032R-3C32-200-AD17	●	3	32	32	45	200	16.5	1.1	1
033R-3W32-125-AD17	●	3	33	32	45	125	16.5	0.6	2
033R-3C32-200-AD17	●	3	33	32	45	200	16.5	1.1	1
040R-3W32-130-AD17	●	3	40	32	50	130	16.5	0.8	2
040R-3C32-200-AD17	●	3	40	32	50	200	16.5	1.2	1
040R-4W32-130-AD17	●	4	40	32	50	130	16.5	0.7	2
040R-4C32-200-AD17	●	4	40	32	50	200	16.5	1.1	1

● : Stock item

## Available inserts

ADKT-ML      ADKT-MM



Designation	Cermet						Coated								Uncoated		Page
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10	H01	
ADKT					●				●	●		●	●	●			B4
									●				●				
					●				●	●		●	●	●			
													●	●			
													●	●			

## Parts

Specification		
Ø20~Ø40	FTKA0408	TW15S

Available inserts **B4**

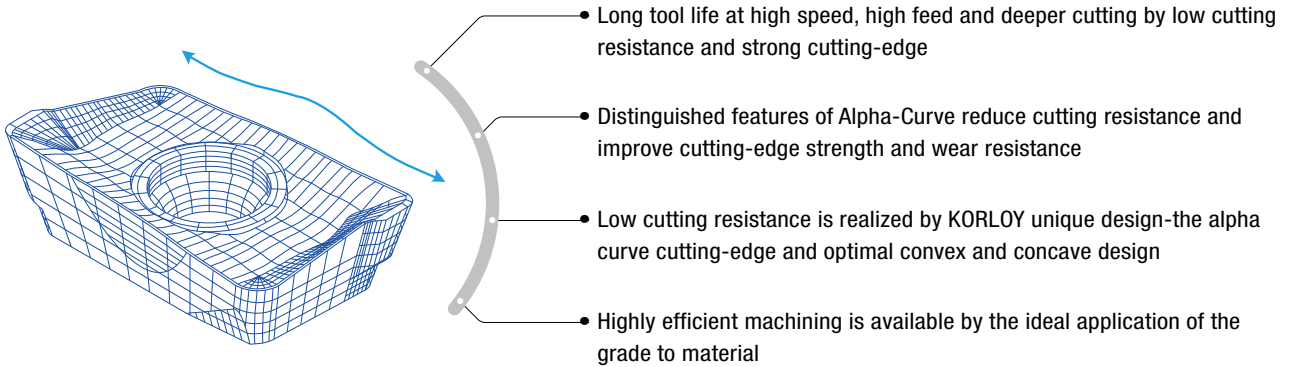
# B Technical Information for Alpha Mill

Various applications are available with multi-functional cutters

## Alpha Mill

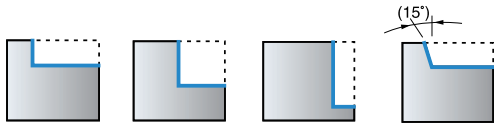
- Innovative curve cutting-edge and chip-breaker design ensures ideal 90-degree cutting, lower cutting resistance, and improved insert life.
- Various applications are available with multi-functional cutters. (Facing, Slotting, Square shoulder milling, etc.)
- Excellent performance ensured at large depth of cut operations due to strong cutting-edge and low cutting resistance.

### Features of insert

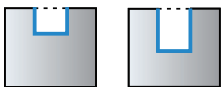


### Application example

#### Shouldering



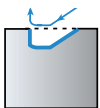
#### Slotting



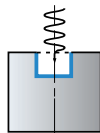
#### Drilling



#### Ramping



#### Helical cutting



## Alpha Mill Nick

- 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






#### Normal types



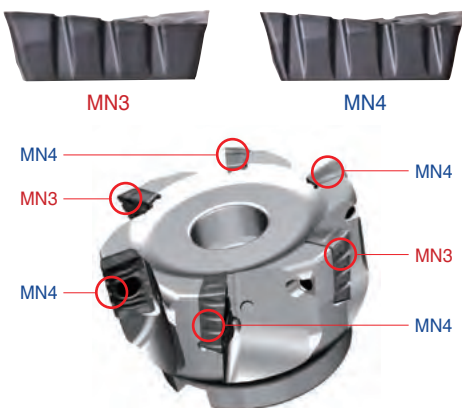
※Nick types require both chip breaker types for application.

※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 <b>APMT16-MN3</b>	 x 10 <b>APMT16-MN4</b>	 x 20 <b>APMT16-MM, MF, ML, MA</b>

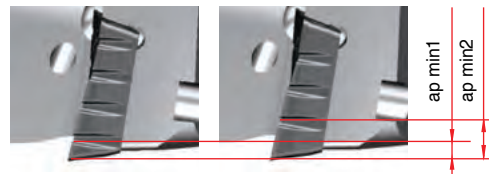
### How to clamp

- 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.

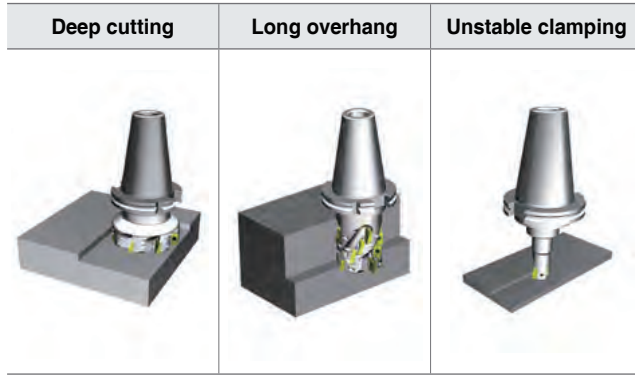


Type	$ap_{min1}$	$ap_{min2}$
<b>APMT11(2000 type)</b>	1.6mm	4.1mm
<b>APMT16(3000 type)</b>	2.2mm	5mm
<b>APMT18(4000 type)</b>	2.3mm	5.5mm

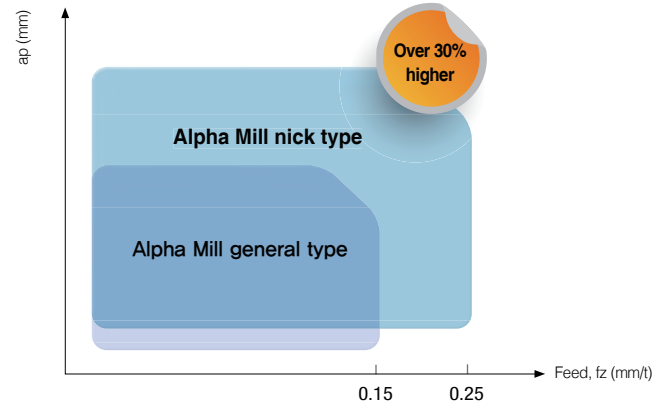


# B Technical Information for Alpha Mill

## Application examples



## Application area



» 30% or higher cutting conditions available compared to normal types

## Recommended cutting conditions

ISO	Grade	APMT 2000 type			APMT 3000 type			APMT 4000 type		
		vc(m/min)	fz(mm/t)	APMX(mm)	vc(m/min)	fz(mm/t)	APMX(mm)	vc(m/min)	fz(mm/t)	APMX(mm)
P	PC3700	180~280	0.05~0.15	11	160~270	0.05~0.18	16	160~270	0.05~0.18	17
	PC5300	150~250	0.05~0.15		150~240	0.05~0.18		150~240	0.05~0.18	
M	PC5300	90~170	0.05~0.15		90~150	0.05~0.18		90~150	0.05~0.18	
K	PC5300	120~240	0.1~0.2		120~200	0.1~0.23		120~200	0.1~0.23	

※ Above cutting conditionSs can be applied up to cutting speed of 300 m/min and feed per tooth of 0.4 mm/t.

## Features of chip breakers






Chip breakers Insert	Cutting-edge	Use	Features
MA		Al	Optimal cutting-edge and buffed surface for aluminum workpieces ensure high performance in machining
ML		Hard-to-cut material	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
<b>APMT</b>	<b>1000 type</b>	0.4	APMT0602PDFR-MA	-
		0.8	APMT060208PDFR-MA	-
	<b>1500 type</b>	0.4	APMT0903PDFR-MA	APMT0903PDER-ML
		0.8	APMT090308PDFR-MA	APMT090308PDER-ML
	<b>2000 type</b>	0.5	APMT11T3PDFR-MA	APMT11T3PDER-ML
		0.8	APMT11T308PDFR-MA	APMT11T308PDER-ML
	<b>3000 type</b>	0.4	APMT160404PDFR-MA	APMT160404PDER-ML
		0.8	APMT1604PDFR-MA	APMT1604PDER-ML
	<b>4000 type</b>	0.4	APMT180604PDFR-MA	APMT180604PDER-ML
		0.8	APMT1806PDFR-MA	APMT1806PDER-ML
		1.2	APMT180612PDFR-MA	APMT180612PDER-ML
		1.6	APMT180616PDFR-MA	APMT180616PDER-ML
		2.0	APMT180620PDFR-MA	APMT180620PDER-ML
		2.4	APMT180624PDFR-MA	APMT180624PDER-ML
		3.0	APMT180630R-MA	APMT180630R-ML

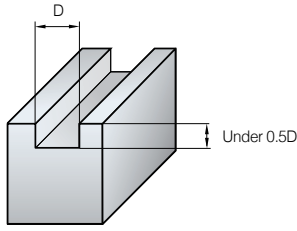
※ The inserts can switch to the APMT type holders.

## Recommended grades and chip breakers by workpiece

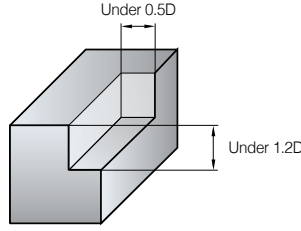
Chip breaker	Cutting edge	Recommended C/B and grade as per workpiece (● : 1 <sup>st</sup> )											
		P				M	K	N		S			
		Low carbon steel/Mild steel		High carbon steel/Mild steel		STS	Cast iron		Aluminum alloy		Ti/Inconel		
		C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
MA		-	-	-	-	-	-	-	-	●	● H01	-	-
ML		-	-	-	-	●	● PC5300 ○ PC5400 ○ PC9530	-	-	-	-	●	● PC5300 ○ PC5400
MF		●	● PC3700 ○ PC5300 ○ PC5400 ○ NCM325 ○ NCM335	-	○ PC3700 ○ NCM325 ○ NCM335	-	● PC5300 ○ PC5400 ○ PC9530	-	● PC6100 ○ PC5300 ○ PC5400	-	-	-	● PC5300 ○ PC5400
MM		-	● PC3700 ○ PC5300 ○ PC5400 ○ NCM325 ○ NCM335	●	● PC3700 ○ PC5300 ○ PC5400 ○ NCM325 ○ NCM335	-	● PC5300 ○ PC5400 ○ PC9530	●	● PC6100 ○ PC5300 ○ PC5400	-	-	-	● PC5300 ○ PC5400
MN		-	● PC3700 ○ PC5300 ○ PC5400	-	-	-	● PC5300 ○ PC5400 ○ PC9530	-	● PC6100 ○ PC5300 ○ PC5400	-	-	-	● PC5300 ○ PC5400

## Recommended depth of cut

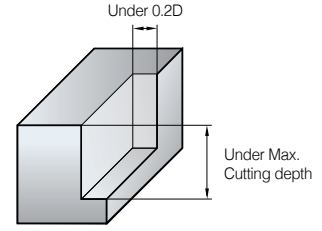
### 1. Slotting



### 2. Shouldering



### 3. Shouldering



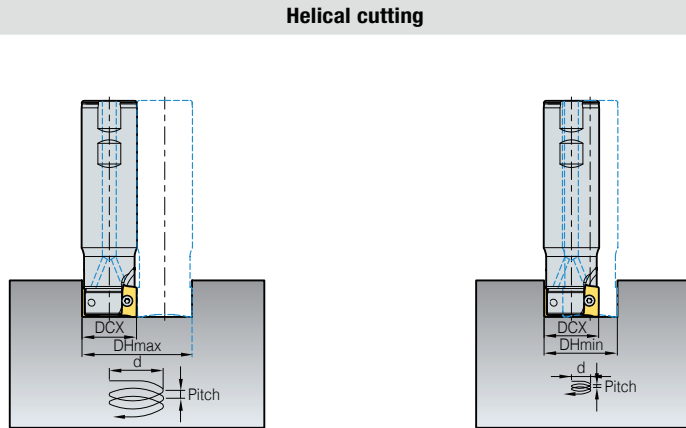
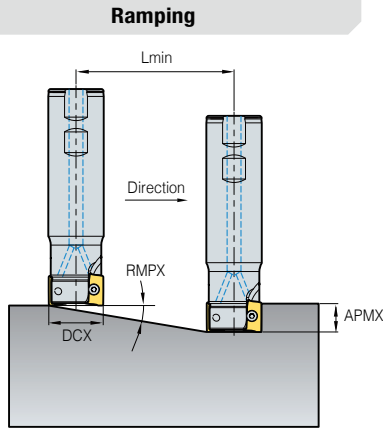
## Recommended cutting conditions (for Multi-edge type)

Workpiece	Grade	Fig.	Tool dia.									
			Ø10, 16		Ø20, 25		Ø32, 40		Ø50, 63		Ø80, 100	
			vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)
Mild steel, Low carbon steel (SS, SM)	NCM535 NCM325 PC5400 PC5300 PC3700	①	50~80	0.05~0.08	80~100	0.05~0.08	100~120	0.05~0.08	100~120	0.05~0.08	100~120	0.05~0.08
		②	65~90	0.08~0.1	100~120	0.08~0.1	120~140	0.08~0.1	120~140	0.08~0.1	120~140	0.08~0.1
		③	65~95	0.1~0.15	100~120	0.1~0.15	120~140	0.1~0.15	120~140	0.1~0.15	130~150	0.1~0.15
High carbon steel, Alloy steel (SM-C, SCM)	NCM535 NCM325 PC5300 PC3700	①	45~60	0.05	60~80	0.05	80~100	0.05	80~100	0.05	80~100	0.05
		②	50~80	0.05~0.08	80~100	0.05~0.08	100~120	0.08~0.1	100~120	0.08~0.1	100~120	0.08~0.1
		③	50~80	0.1~0.15	80~100	0.1~0.15	110~130	0.1~0.15	100~120	0.1~0.15	110~130	0.1~0.15
Alloy tool steel (STD, STF)	PC5300 PC3700 PC2510 PC2505	①	40~55	0.05	50~70	0.05	70~90	0.05	70~90	0.05	70~90	0.05
		②	45~60	0.05~0.08	60~80	0.05~0.08	90~120	0.05~0.08	100~120	0.05~0.08	100~120	0.05~0.08
		③	50~75	0.12~0.18	90~110	0.12~0.18	100~130	0.1~0.15	100~120	0.1~0.15	110~130	0.1~0.15
Stainless steel (STS)	PC5300 PC9530	①	35~50	0.054	50~70	0.054	70~90	0.05	70~90	0.05	70~90	0.05
		②	45~60	0.05~0.08	60~80	0.05~0.08	90~120	0.05~0.08	100~120	0.05~0.08	100~120	0.05~0.08
		③	50~75	0.1~0.15	90~110	0.1~0.15	100~130	0.1~0.15	110~130	0.1~0.15	110~130	0.1~0.15
Cast iron (GC, GCD)	PC6100 PC5300	①	50~70	0.1~0.12	70~90	0.1~0.12	70~90	0.1~0.12	90~120	0.1~0.12	90~120	0.1~0.12
		②	50~80	0.12	80~100	0.12	90~120	0.12	100~140	0.12	100~140	0.12
		③	50~80	0.15~0.2	80~100	0.15~0.2	100~130	0.15~0.2	120~150	0.15~0.2	120~150	0.15~0.2
Aluminum alloy (AL Alloy)	H01	①	160~600	0.1~0.2	200~800	0.1~0.2	300~900	0.1~0.2	400~1,000	0.1~0.2	400~1,000	0.1~0.2
		②	200~650	0.15~0.3	250~900	0.15~0.3	300~950	0.15~0.3	400~1,000	0.1~0.4	400~1,000	0.1~0.4
		③	200~650	0.15~0.3	250~900	0.15~0.3	300~950	0.15~0.3	400~1,000	0.1~0.4	400~1,000	0.1~0.4
Hardened steel	PC5300 PC2510 PC2505	①	35~50	0.03	50~70	0.03	60~90	0.03	60~90	0.03	60~90	0.03
		②	45~60	0.05~0.08	60~80	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08
		③	50~80	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08

## Recommended cutting conditions (for Single-edge type)

Workpiece	Grade	Fig.	Tool dia.									
			Ø10, 16		Ø20, 25		Ø32, 40		Ø50, 63		Ø80, 100	
			vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)
Mild steel, Low carbon steel (SS, SM)	NCM535 NCM325 PC5400 PC5300 PC3700	①	45~60	0.05~0.08	60~80	0.05~0.08	80~120	0.05~0.08	120~200	0.05~0.08	150~200	0.05~0.08
		②	60~90	0.08~0.1	80~120	0.08~0.1	120~180	0.08~0.1	180~250	0.08~0.1	200~250	0.08~0.1
		③	60~90	0.1~0.15	80~120	0.1~0.15	120~180	0.1~0.15	180~250	0.1~0.15	200~250	0.1~0.15
High carbon steel, Alloy steel (SM-C, SCM)	NCM535 NCM325 PC5300 PC3700	①	40~60	0.05	50~80	0.05	80~110	0.05	100~150	0.05	100~150	0.05
		②	50~80	0.05~0.08	80~100	0.05~0.08	110~150	0.05~0.1	150~200	0.05~0.1	150~200	0.05~0.1
		③	50~80	0.1~0.15	80~100	0.1~0.15	120~150	0.1~0.15	180~200	0.1~0.15	180~200	0.1~0.15
Alloy tool steel (STD, STF)	PC5300 PC3700 PC2510 PC2505	①	35~50	0.05	50~70	0.05	80~100	0.05	100~130	0.05	100~130	0.05
		②	45~70	0.05~0.08	70~100	0.05~0.08	100~130	0.05~0.1	130~180	0.05~0.1	130~180	0.05~0.1
		③	45~70	0.1~0.15	70~100	0.1~0.15	100~150	0.1~0.15	130~180	0.1~0.15	130~180	0.1~0.15
Stainless steel (STS)	PC5300 PC9530	①	35~50	0.05	50~70	0.05	80~100	0.05	100~130	0.05	100~130	0.05
		②	45~70	0.05~0.08	70~100	0.05~0.08	100~130	0.05~0.1	130~180	0.05~0.1	130~180	0.05~0.1
		③	45~70	0.1~0.15	70~100	0.1~0.15	100~150	0.1~0.15	130~180	0.1~0.15	130~180	0.1~0.15
Cast iron (GC, GCD)	PC6100 PC5300	①	50~80	0.08~0.12	80~100	0.08~0.12	80~100	0.15	120~150	0.15	120~150	0.15
		②	65~90	0.12~0.15	100~120	0.12~0.15	100~130	0.15~0.18	150~200	0.15~0.18	150~200	0.15~0.18
		③	65~90	0.15~0.2	100~120	0.15~0.2	100~130	0.15~0.2	150~200	0.15~0.2	150~200	0.15~0.2
Aluminum alloy (AL Alloy)	H01	①	200~600	0.15~0.2	250~800	0.15~0.2	300~900	0.15~0.2	400~1,000	0.1~0.2	400~1,000	0.1~0.2
		②	200~650	0.2~0.25	250~900	0.2~0.25	350~950	0.2~0.25	400~1,000	0.2~0.3	400~1,000	0.2~0.3
		③	200~650	0.25~0.3	250~900	0.25~0.3	350~950	0.25~0.3	400~1,000	0.3~0.4	400~1,000	0.3~0.4
Hardened steel	PC5300 PC2510 PC2505	①	35~50	0.03	50~70	0.03	60~90	0.03	60~90	0.03	60~90	0.03
		②	45~65	0.05~0.08	60~80	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08
		③	50~80	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08	80~100	0.05~0.08

## Ramping and helical cutting

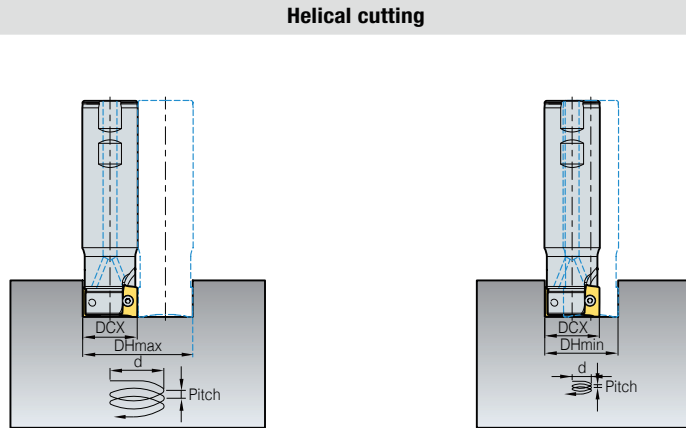
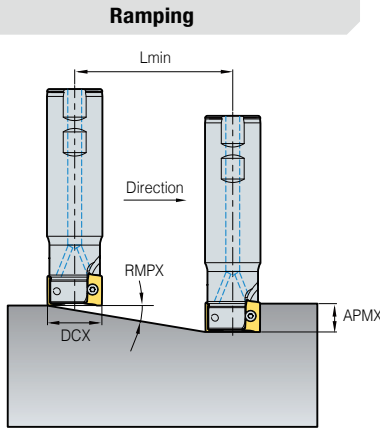


Designation	DCX	ap	Ramping		Helical cutting for blind hole				Helical cutting for through hole	
			RMPX	Lmin	DHmin	Max. pitch dmax	DHmax	Max. pitch dmax	DHmin	Max. pitch dmax
AMS1010HS	10	5	6.5	44	17.6	2.0	18.8	2.1	13	1.5
AMS1011HS	11		5.6	51	19.6	1.9	20.8	2.0	15	1.5
AMS1012HS	12		4.9	58	21.6	1.9	22.8	2.0	17	1.5
AMS1014HS	14		3.9	73	25.6	1.8	26.8	1.8	21	1.4
AMS1015HS	15		3.6	80	27.6	1.7	28.8	1.8	23	1.4
AMS1016HS	16		3.3	87	29.6	1.7	30.8	1.8	25	1.4
AMS1017HS	17		3.0	94	31.6	1.7	32.8	1.7	27	1.4
AMS1018HS	18		2.8	101	33.6	1.7	34.8	1.7	29	1.4
AMS1020HS	20		2.5	115	37.6	1.6	38.8	1.7	33	1.4
AMS1021HS	21		2.3	123	39.6	1.6	40.8	1.7	35	1.4
AMS1022HS	22		2.2	130	41.6	1.6	42.8	1.6	37	1.4
AMS1025HS	25		1.9	151	47.6	1.6	48.8	1.6	43	1.4
AMS1026HS	26		1.8	158	49.6	1.6	50.8	1.6	45	1.4
AMS1032HS	32		1.4	201	61.6	1.5	62.8	1.6	57	1.4
AMS1033HS	33		1.4	208	63.6	1.5	64.8	1.6	59	1.4
AMCM1032HS	32		1.4	201	61.6	1.5	62.8	1.6	57	1.4
AMCM1040HS	40	1.1	258	77.6	1.5	78.8	1.5	73	1.4	
AMCM1050HS	50	0.9	330	97.6	1.5	98.8	1.5	93	1.4	
AMCM1063HS	63	0.7	423	123.6	1.5	124.8	1.5	119	1.4	
AMS1510HS	10	9	7.5	68	17.4	2.3	18.8	2.5	11	1.5
AMS1512HS	12		6.5	79	21.4	2.4	22.8	2.6	15	1.7
AMS1513HS	13		5.7	90	23.4	2.3	24.8	2.5	17	1.7
AMS1514HS	14		6.3	82	25.4	2.8	26.8	2.9	19	2.1
AMS1516HS	16		5.0	102	29.4	2.6	30.8	2.7	23	2.0
AMS1517HS	17		4.6	112	31.4	2.5	32.8	2.6	25	2.0
AMS1518HS	18		4.2	122	33.4	2.5	34.8	2.6	27	2.0
AMS1519HS	19		3.9	132	35.4	2.4	36.8	2.5	29	2.0
AMS1520HS	20		3.6	142	37.4	2.4	38.8	2.5	31	2.0
AMS1521HS	21		3.4	152	39.4	2.3	40.8	2.4	33	2.0
AMS1522HS	22		3.2	162	41.4	2.3	42.8	2.4	35	1.9
AMS1524HS	24		2.8	182	45.4	2.2	46.8	2.3	39	1.9
AMS1525HS	25		2.7	192	47.4	2.2	48.8	2.3	41	1.9
AMS1528HS	28		2.3	222	53.4	2.2	54.8	2.2	47	1.9
AMS1530HS	30		2.1	242	57.4	2.1	58.8	2.2	51	1.9
AMS1532HS	32		2.0	262	61.4	2.1	62.8	2.2	55	1.9
AMS1535HS	35		1.8	292	67.4	2.1	68.8	2.1	61	1.9
AMS1540HS	40		1.5	342	77.4	2.0	78.8	2.1	71	1.9
AMCM15040HS	40		1.5	342	77.4	2.0	78.8	2.1	71	1.9
AMCM15050HS	50		1.2	442	97.4	2.0	98.8	2.0	91	1.9
AMCM15063HS	63	0.9	572	123.4	1.9	124.8	2.0	117	1.8	
AMCM15080HS	80	0.7	742	157.4	1.9	158.8	1.9	151	1.8	
AMCM15100HS	100	0.5	942	197.4	1.9	198.8	1.9	191	1.8	

$$Lmin = \frac{ap}{\tan(RMPX)} \text{ (mm)}$$

# B Technical Information for Alpha Mill

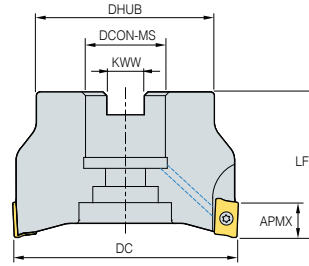
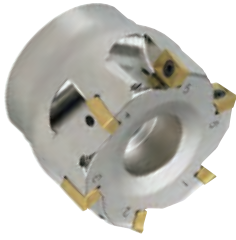
## Ramping and helical cutting



Designation	DCX	ap	Ramping		Helical cutting for blind hole				Helical cutting for through hole		
			RMPX	Lmin	DHmin	Max. pitch dmax	DHmax	Max. pitch dmax	DHmin	Max. pitch dmax	
AMS2010HS	10	10	16.82	33	16.4	5.0	18	5.4	11	3.3	
AMS2012HS	12		11.69	48	20.4	4.2	22	4.6	15	3.1	
AMS2014HS	14		7.55	75	24.4	3.2	26	3.4	19	2.5	
AMS2016HS	16		10.30	55	28	5.1	30	5.5	23	4.2	
AMS2018HS	18		8.23	69	32	4.6	34	4.9	27	3.9	
AMS2020HS	20		5.60	102	36	3.5	38	3.7	31	3.0	
AMS2022HS	22		5.15	111	40	3.6	42	3.8	35	3.2	
AMS2025HS	25		3.92	146	46	3.2	48	3.3	41	2.8	
AMS2032HS	32		2.70	212	60	2.8	62	2.9	55	2.6	
AMS2040HS	40		1.98	289	76	2.6	78	2.7	71	2.5	
AMS2050HS	50		1.48	386	96	2.5	98	2.5	91	2.4	
AMS2063HS	63		1.11	514	122	2.4	124	2.4	117	2.3	
AMCM2040HS	40		1.29	445	76	2.5	78	2.6	71	2.1	
AMCM2050HS	50		0.36	1576	96	0.6	98	0.6	91	0.6	
AMCM2063HS	63		0.27	2104	122	0.6	124	0.6	117	0.6	
AMCM2080HS	80		0.21	2784	156	0.6	158	0.6	151	0.5	
AMCM2100HS	100		0.16	3584	196	0.5	198	0.6	191	0.5	
AMS3025HS	25		10	4.72	121	46	3.8	48	4.0	36	3.0
AMS3032HS	32			3.00	191	60	3.1	62	3.2	50	2.6
AMS3040HS	40			2.29	250	76	3.0	78	3.1	66	2.6
AMS3050HS	50	1.64		350	96	2.7	98	2.8	86	2.5	
AMS3063HS	63	1.22		470	122	2.6	124	2.6	112	2.4	
AMCM3040HS	40	1.99		288	76	2.6	78	2.7	66	2.3	
AMCM3050HS	50	1.67		343	96	2.8	98	2.9	86	2.5	
AMCM3063HS	63	1.22		470	122	2.6	124	2.6	112	2.4	
AMCM3080HS	80	0.90		636	156	2.5	158	2.5	146	2.3	
AMCM3100HS	100	0.69		830	196	2.4	198	2.4	186	2.2	
AMS2025MH	25	10	1.50	764	46	1.2	48	1.3	-	-	
AMS2032MH	32		1.50	1146	60	1.6	62	1.6	-	-	
AMS3040MH	40	16	1.50	1528	76	2.0	78	2.0	-	-	
AMS4020HS	20	16	9.5	98	37.4	6.2	38.8	6.5	31	5.2	
AMS4021HS	21		5.2	179	39.4	3.6	40.8	3.7	33	3.0	
AMS4025HS	25		7.6	122	47.4	6.3	48.8	6.5	41	5.5	
AMS4026HS	26		7.1	130	49.4	6.2	50.8	6.4	43	5.4	
AMS4032HS	32		3.4	276	61.4	3.6	62.8	3.7	55	3.3	
AMS4033HS	33		3.2	288	63.4	3.6	64.8	3.7	57	3.2	
AMS4040HS	40		2.5	376	77.4	3.4	78.8	3.4	71	3.1	
AMS4050HS	50		1.9	502	97.4	3.2	98.8	3.2	91	3.0	
AMS4063HS	63		1.4	665	123.4	3.0	124.8	3.1	117	2.9	
AMCM4050HS	50		1.9	502	97.4	3.2	98.8	3.2	91	3.0	
AMCM4063HS	63		1.4	665	123.4	3.0	124.8	3.1	117	2.9	
AMCM4080HS	80		1.1	878	157.4	2.9	158.8	2.9	151	2.8	
AMCM4100HS	100		0.8	1128	197.4	2.9	198.8	2.9	191	2.8	
AMCM4125HS	125		0.6	1442	247.4	2.8	248.8	2.8	241	2.7	

$$Lmin = \frac{ap}{\tan(RMPX)} \text{ (mm)}$$

# AMCM1000S



• GAMP : 9°~13°  
• GAMF : -14°~5°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
<b>AMCM</b> 1032HS	●	8	32	30	16	8.4	40	5.6	0.1
1040HS-16	●	10	40	34	16	8.4	40	5.6	0.2
1040HS-22		10	40	34	22	10.4	40	5.6	0.2
1050HS	●	12	50	42	22	10.4	40	5.6	0.4
1063HS	●	14	63	49	22	10.4	40	5.6	0.6

● : Stock item

## Available inserts

APMT-MA APMT-MM



Designation	Cermet	Coated												Uncoated		Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10		H01	
<b>APMT</b> 0602PDFR-MA																	●	B5 B6
060208PDFR-MA																		
060202PDSR-MM		●						●					●	●				
0602PDSR-MM		●					●	●	●	●	●		●	●				
060208PDSR-MM		●							●				●	●				
060212R-MM		●											●	●				
060216R-MM													●	●				

## Available arbors

Designation	DCON-MS	NC arbors
<b>AMCM</b> 1032HS	16	BT□□-FMC16-□□
1040HS-16		
1040HS-22		
1050HS	22	BT□□-FMC22-□□
1063HS		

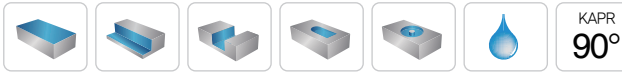
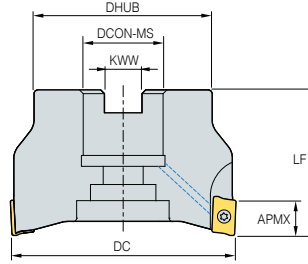
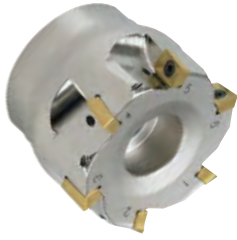
## Parts

Specification		
Ø32~Ø63	FTKA01842	TW06S-A

Available inserts **B5, B6**

Available arbors and bolt **E96**

## AMC(M)1500S



- GAMP : 9°~13°
- GAMF : -14°~5°

(mm)

	Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
AMCM	1504HS	●	5	40	34	16	8.4	40	9	0.2
	1505HS	●	6	50	42	22	10.4	40	9	0.3
	15063HS	●	8	63	49	22	10.4	40	9	0.6
AMC (AMCM)	15080HS	● (●)	10	80	57	25.4(27)	9.5(12.4)	50	9	1.1
	15100HS	●	12	100	67	31.75(32)	12.7(14.4)	63	9	2.1

( ) Metric size, ● : Stock item

### Available inserts

APMT-MA APMT-ML APMT-MM



Designation	Cermet	Coated												Uncoated		Page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10		H01
APMT 0903PDFR-MA																●	B5 B6
090308PDFR-MA																	
0903PDER-ML													●	●			
090308PDER-ML													●	●			
0903PDSR-MM		●					●	●	●	●			●	●			
090308PDSR-MM		●							●				●	●			
090312R-MM									●				●	●			
090316R-MM			●						●				●	●			
090320R-MM									●				●	●			

### Available arbors

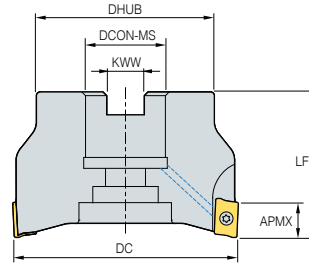
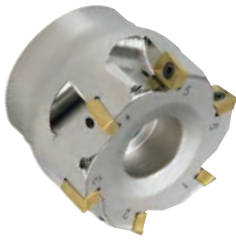
Designation	DCON-MS	NC arbors
AMCM 1504HS	16	BT□□-FMC16-□□
1505HS	22	BT□□-FMC22-□□
15063HS		
AMC (AMCM)	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□

### Parts

Specification		
Ø40~Ø100	FTKA02565S	TW08S

Available inserts B5, B6 Available arbors and bolt E94 ~ E96

# AMC(M)2000S



• GAMP : 9°~13°  
• GAMF : -14°~5°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
<b>AMCM</b> 2040HS	●	5	40	34	16	8.4	40	11	0.2
2050HS	●	6	50	42	22	10.4	40	11	0.3
2063HS	●	8	63	49	22	10.4	40	11	0.5
<b>AMC (AMCM)</b> 2080HS	(●)	8	80	57	25.4(27)	9.5(12.4)	50	11	1
2100HS		10	100	67	31.75(32)	12.7(16.4)	63	11	2.1

( ) Metric size, ● : Stock item

## Available inserts



Designation	Cermet		Coated										Uncoated		Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
<b>APMT</b> 11T3PDFR-MA																	●
11T308PDFR-MA																	
11T3PDER-ML													●	●			
11T308PDER-ML													●	●			
11T3PDSR-MM		●	●		●		●	●	●	●	●		●	●			
11T3PDSR-MF		●						●	●				●	●			
11T308PDSR-MM		●						●		●	●		●	●			
11T312PDSR-MM		●						●		●			●	●			
11T316R-MM		●						●					●	●			
11T318R-MM									●								
11T324R-MM		●							●				●	●			
11T3PDSR-MN2													●				
11T3PDSR-MN3													●				

\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. \* Please use the cutters with even teeth.

B5  
B6

## Available arbors

Designation	DCON-MS	NC arbors
<b>AMCM</b> 2040HS	16	BT□□-FMC16-□□
2050HS	22	BT□□-FMC22-□□
2063HS		
<b>AMC (AMCM)</b> 2080HS	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
	31.75	BT□□-FMA31.75-□□
2100HS	32	BT□□-FMC32-□□

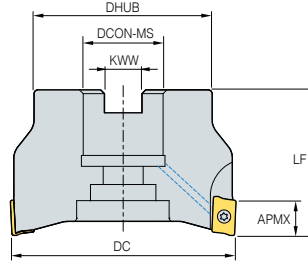
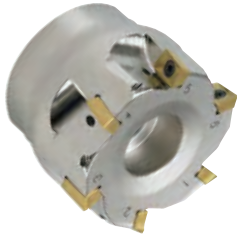
## Parts

Specification		
Ø40~Ø100	FTKA0410	TW15S

Available inserts **B5, B6** Available arbors and bolt **E94 ~ E96**



## AMC(M)3000S



- GAMP : 14°
- GAMF : -12°~8°

(mm)

	Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
AMCM	3040HS	●	4	40	34	16	8.4	40	16	0.2
	3050HS	●	5	50	42	22	10.4	40	16	0.3
	3063HS	●	6	63	49	22	10.4	40	16	0.5
AMC (AMCM)	3080HS	● (●)	7	80	57	25.4(27)	9.5(12.4)	50	16	1
	3100HS	● (●)	8	100	67	31.75(32)	12.7(14.4)	63	16	2

( ) Metric size, ● : Stock item

### Available inserts

		APMT-MA	APMT-ML	APMT-MM	APMT-MF	APMT-MN													
							Cermet	Coated	Uncoated										
Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10	H01	Page	
APMT	1604PDFR-MA																●	B5 B6	
	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.

### Available arbors

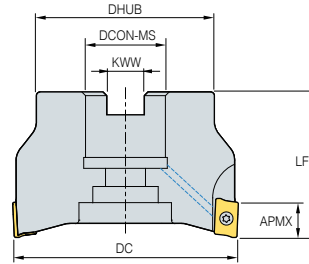
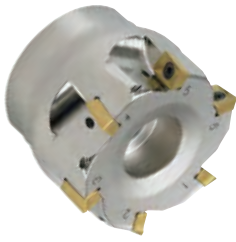
Designation	DCON-MS	NC arbors
AMCM 3040HS	16	BT□□-FMC16-□□
AMCM 3050HS	22	BT□□-FMC22-□□
AMCM 3063HS		
AMC (AMCM)	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□

### Parts

Specification		
∅40~∅100	FTKA0410	TW15S

Available inserts B5, B6 Available arbors and bolt E94 ~ E96

# AMC(M)3000S-K



• GAMP : 14°  
• GAMF : -12°~8°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
<b>AMCM</b> 3040HS-K		4	40	34	16	8.4	40	16	0.2
3050HS-K	●	5	50	42	22	10.4	40	16	0.3
3063HS-K	●	6	63	49	22	10.4	40	16	0.5
<b>AMC (AMCM)</b> 3080HS-K	●	7	80	57	25.4(27)	9.5(12.4)	50	16	1.1
3100HS-K	●	8	100	67	31.75(32)	12.7(14.4)	63	16	2.3

( ) Metric size, ● : Stock item

## Available inserts

		APKT	APKT-MF	APKT-MM	APKT-MA	APKT-MA2	APKT-MA3													
Designation	Cermet	Coated											Uncoated			Page				
		CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD2000		G10	H01	H05	
APKT 1604PDSR			●					●	●											B4
1604PDSR-MF			●																	
1604PDSR-MM			●	●																
1604PDFR-MA															●		●	●		
1604PDFR-MA2																	●			
160416FR-MA2																	●			
160432FR-MA2																				
1604PDFR-MA3																●	●	●		
160420FR-MA3																				

## Available arbors

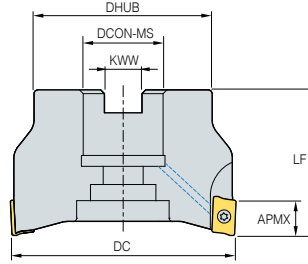
Designation	DCON-MS	NC arbors
<b>AMCM</b> 3040HS-K	16	BT□□-FMC16-□□
3050HS-K	22	BT□□-FMC22-□□
3063HS-K		
<b>AMC (AMCM)</b> 3080HS-K	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
3100HS-K	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□

## Parts

Specification		
Ø40~Ø100	FTKA0410	TW15S

Available inserts **B4** Available arbors and bolt **E94 ~ E96**

## AMC(M)4000S



- GAMP : 13°~15°
- GAMF : -12°~7°

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	kg
<b>AMCM</b> 4050HS	●	5	50	42	22	10.4	40	17	0.3
4063HS	●	6	63	49	22	10.4	40	17	0.5
<b>AMC (AMCM)</b> 4080HS	● (●)	7	80	57	25.4(27)	9.5(12.4)	50	17	1
4100HS	(●)	8	100	67	31.75(32)	12.7(14.4)	63	17	2.1
4125HS	● (●)	9	125	87	38.1(40)	15.9(16.4)	63	17	3.3
4160S		10	160	107	50.8(40)	19(16.4)	63	17	3.6
4200S		10	200	108	47.625(60)	25.4(25.7)	63	17	5.3

( ) Metric size, ● : Stock item

### Available inserts

		APMT-MA	APMT-ML	APMT-MM	APMT-MF	APMT-MN																
Designation	Cermet	Coated							Uncoated	Page	Designation	Cermet	Coated							Uncoated	Page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC3700	PC6100			PC9530	PC9540	PC5300	PC5400	G10	H01	E5	E6	E5		E6
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																						
APMT 180624PDER-ML																						
180630R-ML																						
1806PDSR-MM																						
1806PDSR-MF																						
180612PDSR-MM																						
180616PDSR-MM																						
180620PDSR-MM																						
180624PDSR-MM																						
180630R-MM																						
180632R-MM																						
1806PDSR-MN3																						
1806PDSR-MN4																						

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

### Available arbors

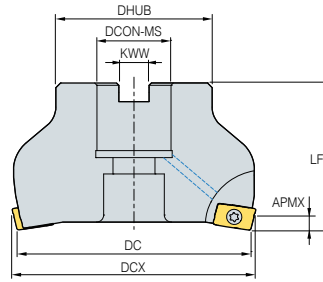
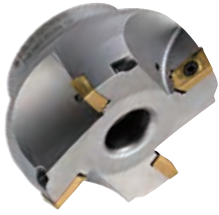
Designation	DCON-MS	NC arbors	Designation	DCON-MS	NC arbors
<b>AMCM</b> 4050HS	22	BT□□-FMC22-□□	<b>AMC (AMCM)</b> 4125HS	38.1	BT□□-FMA38.1-□□
4063HS			40	BT□□-FMC40-□□	
<b>AMC (AMCM)</b> 4080HS	25.4	BT□□-FMA25.4-□□	4160S	50.8	BT□□-FMA50.8-□□
	27	BT□□-FMC27-□□		40	BT□□-FMC40-□□
4100HS	31.75	BT□□-FMA31.75-□□	4200S	47.625	BBT□□-FMA47.625-□□
	32	BT□□-FMC32-□□		60	BT□□-FMB60-□□

### Parts

Specification		
Ø50~Ø200	FTKA0410	TW15S

Available inserts **B5, B6** Available arbors and bolt **E94 ~ E96**

# AMC(M)1000SE/2000SE



KAPR  
**75°**

- GAMP : 45°
- GAMF : 0°

Designation		Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	
AMCM	1040HSE		4	40	41.76	34	16	8.4	40	2.5	0.3
	1050HSE		5	50	51.76	42	22	10.4	40	2.5	0.4
AMC (AMCM)	2080HSE	(●)	5	80	83.79	57	25.4(27)	9.5(10.4)	50	4	1.1
	2100HSE		6	100	102.884	67	31.75(32)	12.7(14.4)	63	4	2.3

(mm)

( ) Metric size, ● : Stock item

## Available inserts

APMT-MM      APMT-MF



Type	Designation	Cermet	Coated												Uncoated		Page	
		CN30	NC5330	NCM325	NCM335	NCM335	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10		H01
1000 type	APMT 060202PDSR-MM		●															
	0602PDSR-MM		●					●	●		●	●		●	●			
	060208PDSR-MM		●							●				●	●			
	060212R-MM		●											●	●			
2000 type	APMT 11T3PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			
	11T3PDSR-MF		●							●	●		●	●				
	11T308PDSR-MM		●							●		●	●	●	●			
	11T312PDSR-MM		●							●		●		●	●			
	11T316R-MM		●							●				●	●			
	11T318R-MM		●															
	11T324R-MM		●							●				●	●			

## Available arbors

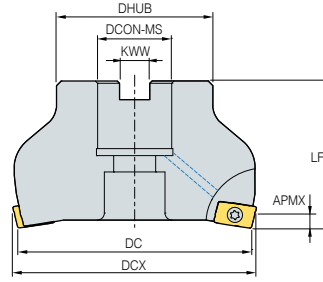
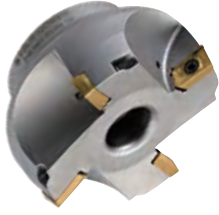
Type	Designation	DCON-MS	NC arbors
1000 type	AMC 1040HSE	16	BT□□-FMC16-□□
	(AMCM) 1050HSE	22	BT□□-FMC22-□□
2000 type	AMC 2080HSE	25.4	BT□□-FMA25.4-□□
		27	BT□□-FMC27-□□
	2100HSE	31.75	BT□□-FMA31.75-□□
		32	BT□□-FMC32-□□

## Parts

Specification			
Ø40~Ø50(1000 type)	FTKA01842	-	TW06S-A
Ø80~Ø100(2000 type)	FTKA02565S	TW08S	-

Available inserts **B5, B6**      Available arbors and bolt **E94 ~ E96**

## AMC(M)3000SE



KAPR  
**75°**

- GAMP : 45°
- GAMF : 0°

Designation		Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	(mm)
AMC	3080HSE		4	80	83.79	57	25.4(27)	9.5(12.4)	50	6	0.9
(AMCM)	3100HSE		5	100	103.786	67	31.75(32)	12.7(14.4)	63	6	1.9

( ) Metric size, ● : Stock item

### Available inserts

APMT-MM      APMT-MF



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 1604PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			B5 B6
1604PDSR-MF		●							●								
160410PDSR-MM									●				●	●			
160416PDSR-MM									●				●	●			
160424R-MM									●				●	●			
160430R-MM									●				●	●			
160432R-MM									●				●	●			

### Available arbors

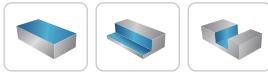
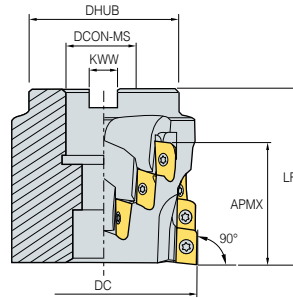
Designation	DCON-MS	NC arbors
AMC 3080HSE	25.4	BT□□-FMA25.4-□□
(AMCM) 3080HSE	27	BT□□-FMC27-□□
3100HSE	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□

### Parts

Specification	Screw	Wrench
Ø80~Ø100	FTKA0410	TW08S

Available inserts **B5, B6**      Available arbors and bolt **E94 ~ E96**

# AMC(M)2000M



KAPR  
90°

- GAMP : 9°
- GAMF : -9°~-5°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	ZEFF	APMX	
AMCM 2050M	●	16	50	40	22	10.4	58	4	39	0.5
AMC 2063M	● (●)	16	63	50	25.4(27)	9.5(12.4)	58	4	39	0.9
(AMCM) 2080M	● (●)	20	80	60	31.75(32)	12.7(14.4)	63	5	39	1.3
2100M	(●)	24	100	80	38.1(40)	15.9(16.4)	63	6	39	2.2

( ) Metric size, ● : Stock item

## Available inserts



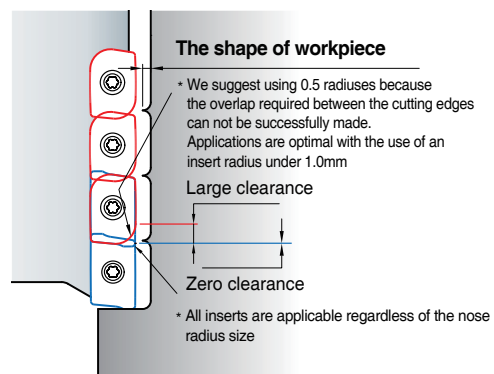
Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 11T3PDFR-MA																	●
11T308PDFR-MA																	
11T3PDER-ML													●	●			
11T308PDER-ML													●	●			
11T3PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			
11T3PDSR-MF		●						●	●				●	●			
11T308PDSR-MM		●								●	●		●	●			
11T312PDSR-MM		●							●		●		●	●			
11T316R-MM		●							●				●	●			
11T318R-MM																	
11T324R-MM		●							●				●	●			
11T3PDSR-MN2													●	●			
11T3PDSR-MN3													●	●			

\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. \* Please use the cutters with even teeth.

## Available arbors

Designation	DCON-MS	NC arbors	
AMC 2050M	22	BT□□-FMC22-□□	BT□□-SMC22-□□
(AMCM) 2063M	25.4	BT□□-FMA25.4-□□	BT□□-SMA25.4-□□
	27	BT□□-FMC27-□□	BT□□-SMC27-□□
2080M	31.75	BT□□-FMA31.75-□□	BT□□-SMA31.75-□□
	32	BT□□-FMC32-□□	BT□□-SMC32-□□
2100M	38.1	BT□□-FMA38.1-□□	BT□□-SMA38.1-□□
	40	BT□□-FMC40-□□	BT□□-SMC40-□□

## Caution when clamping the inserts

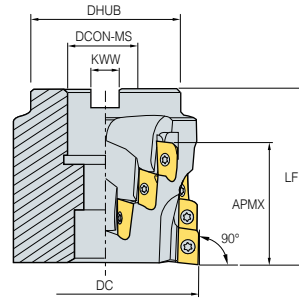


## Parts

Specification		
Ø50~Ø100	FTKA02565S	TW08S

Available inserts **B5, B6** Available arbors and bolt **E94 ~ E96**

## AMC(M)3000M



KAPR  
90°

- GAMP : 9°
- GAMF : -9°~5°

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	ZEFF	APMX	(kg)
AMC 3063M		16	63	57	25.4(27)	9.5(12.4)	85	4	57	1.1
(AMCM) 3080M		20	80	67	31.75(32)	12.7(14.4)	100	4	71	2.1
3100M		30	100	87	38.1(40)	15.9(16.4)	100	6	71	3.6

(mm)

( ) Metric size, ● : Stock item

### Available inserts

APMT-MA

APMT-ML

APMT-MM

APMT-MF

APMT-MN



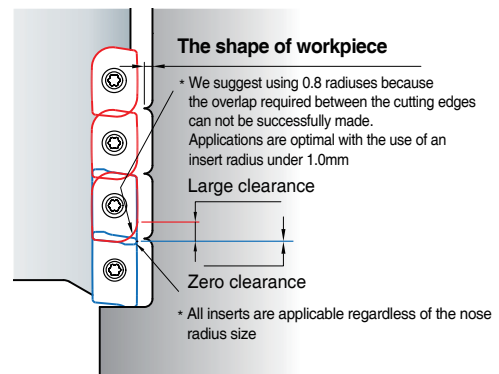
Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 1604PDFR-MA																	●
160404PDFR-MA																	
1604PDER-ML													●	●			
160404PDER-ML													●	●			
1604PDSR-MM		●	●		●	●	●	●	●	●	●	●	●	●			
1604PDSR-MF		●							●	●			●	●			
160410PDSR-MM									●				●	●			
160416PDSR-MM			●						●				●	●			
160424R-MM			●						●				●	●			
160430R-MM									●				●	●			
160432R-MM			●						●				●	●			
1604PDSR-MN3													●				
1604PDSR-MN4													●				

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

### Available arbors

Designation	DCON-MS	NC arbors	
AMC 3063M	25.4	BT□□-FMA25.4-□□	BT□□-SMA25.4-□□
	27	BT□□-FMC27-□□	BT□□-SMC27-□□
3080M	31.75	BT□□-FMA31.75-□□	BT□□-SMA31.75-□□
	32	BT□□-FMC32-□□	BT□□-SMC32-□□
3100M	38.1	BT□□-FMA38.1-□□	BT□□-SMA38.1-□□
	40	BT□□-FMC40-□□	BT□□-SMC40-□□

### Caution when clamping the inserts



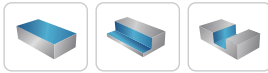
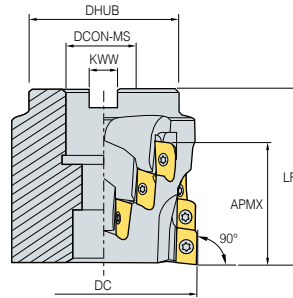
### Parts

Specification	Screw	Wrench
Ø63~Ø100	FTKA0410	TW15S

Available inserts B5, B6

Available arbors and bolt E94 ~ E96

# AMC(M)4000M



KAPR  
**90°**

- GAMP : 9°
- GAMF : -9°~-5°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	ZEFF	APMX	
<b>AMC</b>										
<b>(AMCM)</b> 4063M		16	63	57	25.4(27)	9.5(12.4)	85	4	61.1	1
4080M		20	80	67	31.75(32)	12.7(14.4)	100	4	76.1	2.1
4100M		30	100	87	38.1(40)	15.9(16.4)	100	6	76.1	3.6
4125M		18	125	87	38.1(40)	15.9(16.4)	68	6	46.1	4.1

( ) Metric size, ● : Stock item

## Available inserts

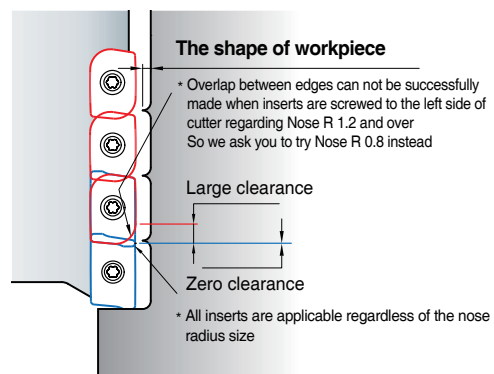
		APMT-MA	APMT-ML	APMT-MM	APMT-MF	APMT-MN												
Designation	Cermet	Coated							Uncoated	Page								
	CN30	NC5330	NCM325	NCM335	NCM335	NCM535	NCM545	PC2505	PC2010		PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10	H01
APMT 1806PDR-MA																	●	
180604PDR-MA																	●	
180612PDR-MA																	●	
180616PDR-MA																	●	
180620PDR-MA																	●	
180624PDR-MA																	●	B5
180630R-MA																	●	B6
1806PDER-ML																	●●	
180604PDER-ML																	●●	
180612PDER-ML																	●●	
180616PDER-ML																	●●	
180620PDER-ML																	●●	
APMT 180624PDER-ML																	●●	
180630R-ML																	●●	
1806PDSR-MM		●						●	●	●	●	●	●	●	●	●	●	
1806PDSR-MF		●							●								●	
180612PDSR-MM		●							●								●	
180616PDSR-MM		●															●	B5
180620PDSR-MM		●															●	B6
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.

## Available arbors

Designation	DCON-MS	NC arbors	
<b>AMC</b> <b>(AMCM)</b> 4063M	25.4	BT□□-FMA25.4-□□	BT□□-SMA25.4-□□
	27	BT□□-FMC27-□□	BT□□-SMC27-□□
4080M	31.75	BT□□-FMA31.75-□□	BT□□-SMA31.75-□□
	32	BT□□-FMC32-□□	BT□□-SMC32-□□
4100M	38.1	BT□□-FMA38.1-□□	BT□□-SMA38.1-□□
	40	BT□□-FMC40-□□	BT□□-SMC40-□□
4125M	38.1	BT□□-FMA38.1-□□	BT□□-SMA38.1-□□
	40	BT□□-FMC40-□□	BT□□-SMC40-□□

## Caution when clamping the inserts



## Parts

Specification		
Ø63-Ø125	FTKA0410	TW15S

Available inserts **B5, B6** Available arbors and bolt **E94 ~ E96**



## AMS1000S

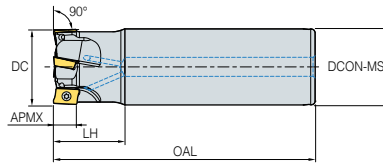


Fig. 1

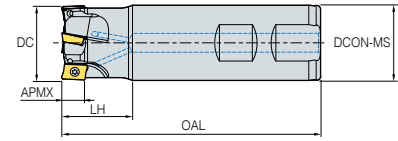



Fig. 2



KAPR  
90°

- GAMP : 7.5°~13°
- GAMF : -17°~-6°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX		Fig.
AMS	1010HS	●	2	10	10	20	80	5.6	0.1	2
	1011HS	●	2	11	10	20	80	5.6	0.1	2
	1012HS-2	●	2	12	12	25	80	5.6	0.1	2
	1012HS-2L12	●	2	12	12	25	120	5.6	0.1	1
	1012HS-3	●	3	12	12	25	80	5.6	0.1	2
	1014HS-2	●	2	14	16	25	90	5.6	0.1	2
	1014HS-2L16		2	14	16	25	140	5.6	0.2	1
	1014HS-3	●	3	14	16	25	90	5.6	0.1	2
	1015HS	●	3	15	16	25	90	5.6	0.1	2
	1015HS-3L16		3	15	16	25	140	5.6	0.2	1
	1016HS-3	●	3	16	16	25	90	5.6	0.1	2
	1016HS-3L16		3	16	16	25	160	5.6	0.2	1
	1016HS-4	●	4	16	16	25	90	5.6	0.1	2
	1017HS	●	4	17	16	25	90	5.6	0.1	2
	1017HS-3L16		3	17	16	25	160	5.6	0.2	1
	1018HS	●	4	18	16	25	90	5.6	0.1	2
	1018HS-4L16		4	18	16	25	180	5.6	0.2	1
	1020HS-4	●	4	20	20	30	110	5.6	0.2	2
	1020HS-4L20		4	20	20	30	200	5.6	0.4	1
	1020HS-5	●	5	20	20	30	110	5.6	0.2	2
	1021HS	●	5	21	20	30	110	5.6	0.2	2
	1021HS-4L20		4	21	20	30	200	5.6	0.4	1
	1022HS	●	5	22	20	30	110	5.6	0.2	2
	1025HS	●	7	25	25	30	120	5.6	0.4	2
	1026HS	●	7	26	25	30	120	5.6	0.4	2
1032HS	●	8	32	32	35	120	5.6	0.6	2	
1033HS	●	8	33	32	35	120	5.6	0.7	2	

● : Stock item

### Available inserts



APMT-MA

APMT-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 0602PDFR-MA																●	B5 B6
060208PDFR-MA																	
060202PDSR-MM		●						●				●	●				
0602PDSR-MM		●					●	●	●	●		●	●				
060208PDSR-MM		●						●				●	●				
060212R-MM		●										●	●				
060216R-MM												●	●				

### Parts

Specification		
Ø10~Ø33	FTKA01842	TW06S-A

Available inserts B5, B6

# AMS1500S

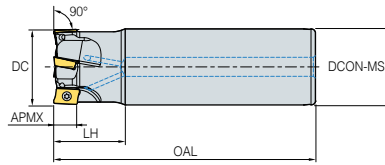


Fig. 1

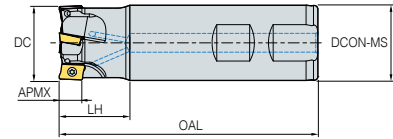


Fig. 2



- GAMP : 7.5°~12.5°
- GAMF : -28°~-14°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.
AMS 15010HS	●	1	10	10	25	80	9	0.1	2
15010HS-1L16		1	10	16	30	160	9	0.2	1
15012HS	●	1	12	16	25	80	9	0.1	2
15012HS-1L16		1	12	16	30	160	9	0.2	1
15013HS	●	1	13	16	25	80	9	0.1	2
15014HS	●	1	14	16	25	80	9	0.1	2
15014HS-1L16		1	14	16	30	160	9	0.2	1
15016HS	●	2	16	16	30	90	9	0.1	2
15016HS-2L16	●	2	16	16	30	160	9	0.2	1
15017HS	●	2	17	16	30	90	9	0.1	2
15017HS-2L16		2	17	16	30	160	9	0.2	1
15018HS	●	2	18	16	30	90	9	0.1	2
15018HS-2L16		2	18	16	30	160	9	0.2	1
15019HS	●	2	19	16	30	90	9	0.1	2
15020HS	●	2	20	20	30	90	9	0.2	2
15020HS-2L20	●	2	20	20	30	160	9	0.3	1
15020HS-3	●	3	20	20	30	90	9	0.2	2
15021HS	●	2	21	20	30	90	9	0.2	2
15021HS-2L20		2	21	20	30	160	9	0.3	1
15021HS-3	●	3	21	20	30	90	9	0.2	2
15022HS	●	3	22	20	30	110	9	0.2	2
15022HS-3L20		3	22	20	30	180	9	0.4	1
15024HS	●	3	24	20	30	110	9	0.2	2
15024HS-4	●	4	24	20	30	110	9	0.2	2
15025HS-3S20	●	3	25	20	30	110	9	0.2	2
15025HS	●	3	25	25	30	110	9	0.3	2
15025HS-3L25	●	3	25	25	30	180	9	0.6	1

● : Stock item

## Available inserts

APMT-MA APMT-ML APMT-MM



Designation	Cermet	Coated											Uncoated		Page		
	CN30	NC5330	NCM325	NCM325	NCM635	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
APMT 0903PDFR-MA																●	
090308PDFR-MA																	
0903PDER-ML													●	●			
090308PDER-ML													●	●			
0903PDSR-MM		●					●	●	●	●			●	●			
090308PDSR-MM		●							●	●			●	●			
090312R-MM									●	●			●	●			
090316R-MM		●							●	●			●	●			
090320R-MM									●	●			●	●			

B5  
B6

## Parts

Specification	Screw	Wrench
Ø10~Ø14	FTKA02555S	TW08S
Ø16~Ø25	FTKA02565S	TW08S

Available inserts B5, B6

## AMS1500S

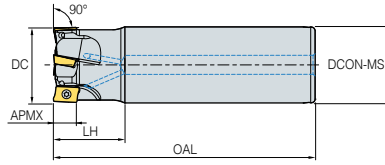


Fig. 1

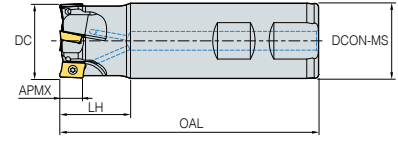


Fig. 2



KAPR  
90°

- GAMP : 7.5°~12.5°
- GAMF : -28°~-14°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX		Fig.
AMS	15025HS-4S20	●	4	25	20	30	110	9	0.2	2
	15025HS-4S25	●	4	25	25	30	110	9	0.3	2
	15028HS	●	4	28	25	30	110	9	0.4	2
	15028HS-4L25		4	28	25	30	180	9	0.6	1
	15028HS-5	●	5	28	25	30	110	9	0.4	2
	15030HS	●	4	30	25	30	110	9	0.4	2
	15030HS-4L25		4	30	25	30	180	9	0.6	1
	15030HS-5		5	30	25	30	110	9	0.4	2
	15032HS		4	32	32	30	110	9	0.6	2
	15032HS-4L32	●	4	32	32	30	180	9	1	1
	15032HS-5		5	32	32	30	110	9	0.6	2
	15035HS	●	5	35	32	30	110	9	0.6	2
	15035HS-6		6	35	32	30	110	9	0.6	2
	15040HS-S32	●	5	40	32	35	130	9	0.8	2
	15040HS-5L32		5	40	32	35	200	9	1.2	1
	15040HS-6S32		6	40	32	35	130	9	0.8	2
	15040HS-S40	●	5	40	40	35	130	9	1.1	2
	15040HS-6S40	●	6	40	40	35	130	9	1.1	2
	15040HS-S42	●	5	40	42	35	130	9	1.2	2
	15040HS-6S42	●	6	40	42	35	130	9	1.2	2

● : Stock item

### Available inserts

APMT-MA      APMT-ML      APMT-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT	0903PDFR-MA															●	B5 B6
	090308PDFR-MA																
	0903PDER-ML												●	●			
	090308PDER-ML												●	●			
	0903PDSR-MM		●				●	●	●	●			●	●			
	090308PDSR-MM		●						●				●	●			
	090312R-MM								●				●	●			
	090316R-MM		●						●				●	●			
	090320R-MM								●				●	●			

### Parts

Specification		
Ø25-Ø40	FTKA02565S	TW08S

Available inserts B5, B6

# AMS2000S

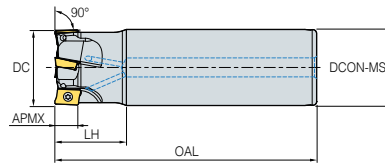


Fig. 1

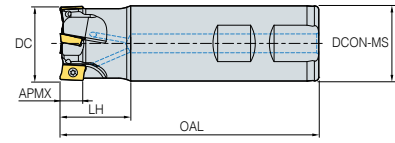


Fig. 2



- GAMP : 3°~14°
- GAMF : -25°~-18°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.
<b>AMS</b> 2010HS	●	1	10	10	20	85	11	0.1	2
2010HS-1L16		1	10	16	30	160	11	0.2	1
2012HS	●	1	12	16	25	85	11	0.1	2
2012HS-1L16		1	12	16	30	160	11	0.2	1
2014HS	●	1	14	16	25	90	11	0.1	2
2014HS-1L16		1	14	16	30	160	11	0.2	1
2016HS	●	2	16	16	25	90	11	0.1	2
2016HS-2L16	●	2	16	16	30	180	11	0.2	1
2018HS	●	2	18	16	25	90	11	0.1	2
2018HS-2L16	●	2	18	16	30	180	11	0.2	1
2020HS	●	2	20	20	30	100	11	0.2	2
2020HS-2L20	●	2	20	20	30	210	11	0.5	1
2022HS	●	3	22	20	35	115	11	0.2	2
2022HS-3L20		3	22	20	35	180	11	0.4	1

● : Stock item

## Available inserts



Designation	Cermet		Coated										Uncoated		Page		
	CN80	NC5330	NCM325	NCM335	NCM635	NCM645	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
APMT 11T3PDFR-MA																	●
11T308PDFR-MA																	
11T3PDER-ML													●	●			
11T308PDER-ML													●	●			
11T3PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			
11T3PDSR-MF		●						●	●				●	●			
11T308PDSR-MM		●							●				●	●			
11T312PDSR-MM		●							●				●	●			
11T316R-MM		●							●				●	●			
11T318R-MM		●							●				●	●			
11T324R-MM		●							●				●	●			
11T3PDSR-MN2													●	●			
11T3PDSR-MN3													●	●			

\* 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
Ø10~Ø14	FTKA02555S	TW08S
Ø16~Ø63	FTKA02565S	TW08S

Available inserts **B5, B6**

## AMS2000S

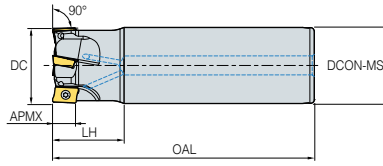


Fig. 1

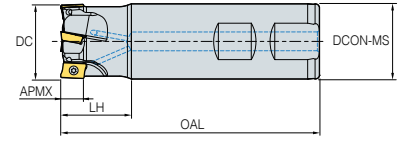


Fig. 2



KAPR  
90°

- GAMP : 3°~14°
- GAMF : -25°~-18°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX		Fig.
AMS	2025HS	●	3	25	25	35	115	11	0.4	2
	2025HS-3L25	●	3	25	25	40	180	11	0.6	1
	2032HS	●	4	32	32	40	125	11	0.7	2
	2032HS-4L32	●	4	32	32	50	180	11	1	1
	2040HS	●	5	40	32	42	130	11	0.8	2
	2040HS-5L32	●	5	40	32	50	200	11	1.3	1
	2040HS-S40		5	40	40	42	130	11	1.1	2
	2040HS-S42		5	40	42	42	130	11	1.1	2
	2050HS	●	6	50	32	45	135	11	1	2
	2050HS-S40		6	50	40	45	135	11	1.3	2
	2050HS-S42		6	50	42	45	135	11	1.3	2
	2063HS		8	63	32	45	135	11	1.3	2
	2063HS-S40		8	63	40	45	135	11	1.6	2
	2063HS-S42		8	63	42	45	135	11	1.7	2

● : Stock item

### Available inserts



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM635	NCM645	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 11T3PDFR-MA																●	B5 B6
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		
Ø10~Ø14	FTKA02555S	TW08S
Ø16~Ø63	FTKA02565S	TW08S

Available inserts B5, B6

# AMS3000S

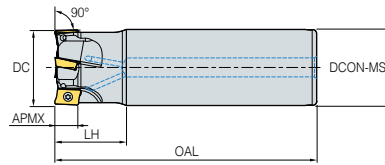


Fig. 1

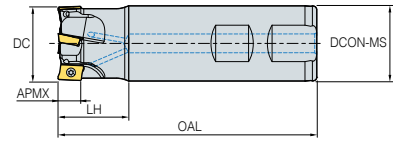


Fig. 2



- GAMP : 3°~14°
- GAMF : -18°~-10°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.
AMS 3025HS	●	2	25	25	35	115	16	0.4	2
3025HS-2M25	●	2	25	25	35	180	16	0.6	1
3025HS-2L25	●	2	25	25	60	220	16	0.7	1
3032HS	●	3	32	32	40	125	16	0.7	2
3032HS-2M32	●	2	32	32	40	200	16	1.1	1
3032HS-2L32		2	32	32	65	260	16	1.5	1
3032HS-3M32		3	32	32	40	200	16	1.1	1
3032HS-3L32	●	3	32	32	65	260	16	1.5	1
3040HS	●	4	40	32	42	130	16	0.8	2
3040HS-3M32	●	3	40	32	42	200	16	1.2	1
3040HS-3L32		3	40	32	42	260	16	1.6	1
3040HS-4M32		4	40	32	42	200	16	1.2	1
3040HS-4L32	●	4	40	32	42	260	16	1.6	1
3040HS-S40		4	40	40	42	130	16	1.1	2
3040HS-S42		4	40	42	42	130	16	1.2	2
3050HS	●	5	50	32	45	135	16	1	2
3050HS-S40		5	50	40	45	135	16	1.3	2
3050HS-S42		5	50	42	45	135	16	1.4	2
3063HS	●	6	63	32	45	135	16	1.2	2
3063HS-S40		6	63	40	45	135	16	1.5	2
3063HS-S42	●	9	96	75	78	468	49	1.54	2

● : Stock item

## Available inserts



Designation	Cermet		Coated										Uncoated		Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
APMT 1604PDR-MA																●	
160404PDR-MA																	
1604PDR-ML													●	●			
160404PDR-ML													●	●			
1604PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			
1604PDSR-MF		●						●	●			●	●	●			
160410PDSR-MM								●	●			●	●	●			
160416PDSR-MM			●					●	●			●	●	●			
160424R-MM			●					●	●			●	●	●			
160430R-MM								●	●			●	●	●			
160432R-MM			●					●	●			●	●	●			
1604PDSR-MN3												●	●				
1604PDSR-MN4												●	●				

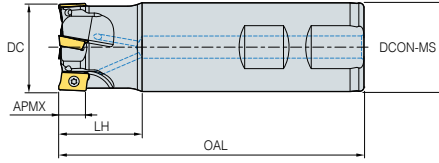
\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. \* Please use the cutters with even teeth.

## Parts

Specification	Screw	Wrench
Ø25	FTKA0408	TW15S
Ø32~Ø63	FTKA0410	TW15S

Available inserts **B5, B6**

## AMS3000S-K



KAPR  
90°

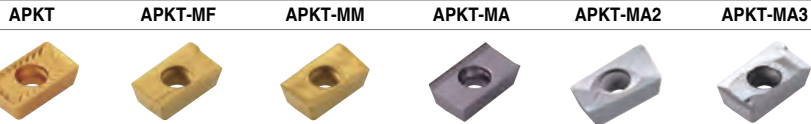
- GAMP : 14°
- GAMF : -18°~-10°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg
AMS	3025HS-K	●	2	25	25	35	115	16	0.4
	3032HS-K	●	3	32	32	40	125	16	0.7
	3040HS-K	●	4	40	32	42	130	16	0.8
	3040HS-K-S40		4	40	40	42	130	16	1.1
	3040HS-K-S42	●	4	40	42	42	130	16	1.2
	3050HS-K		5	50	32	45	135	16	0.9
	3050HS-K-S40	●	5	50	40	45	135	16	1.3
	3050HS-K-S42	●	5	50	42	45	135	16	1.4
	3063HS-K		6	63	32	45	135	16	1.2
	3063HS-K-S40	●	6	63	40	45	135	16	1.3
	3063HS-K-S42	●	6	63	42	45	135	16	1.5

● : Stock item

### Available inserts



Designation	Cermet	Coated											Uncoated			Page		
	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD2000	G10		H01	H05
APKT 1604PDSR		●						●	●									
1604PDSR-MF		●										●						
1604PDSR-MM		●	●					●	●	●		●						
1604PDFR-MA														●		●	●	
1604PDFR-MA2																●		
160416FR-MA2																●		
160432FR-MA2																●		
1604PDFR-MA3															●	●	●	

B4

### Parts

Specification	Screw	Wrench
Ø25	FTKA0408	TW15S
Ø32-Ø63	FTKA0410	TW15S

Available inserts B4

# AMS4000S

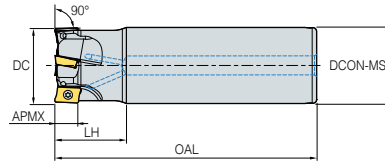


Fig. 1

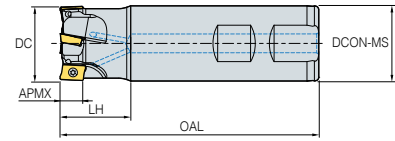


Fig. 2

• GAMP : 7°~13°  
 • GAMF : -20°~-6°  
 KAPR  
**90°**  
 (mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.
AMS	4020HS	●	1	20	20	30	90	17	0.2	2
	4020HS-M		1	20	20	30	160	17	1.6	1
	4021HS		1	21	20	30	90	17	0.2	2
	4021HS-M		1	21	20	30	160	17	0.3	1
	4025HS	●	2	25	25	40	110	17	0.3	2
	4025HS-2M25		2	25	25	40	180	17	0.6	1
	4025HS-2L25	●	2	25	25	40	230	17	0.7	1
	4026HS	●	2	26	25	40	110	17	0.3	2
	4026HS-2M25		2	26	25	40	180	17	0.6	1
	4026HS-2L25		2	26	25	40	230	17	0.7	1
	4032HS	●	3	32	32	40	125	17	0.6	2
	4032HS-2M32		2	32	32	50	200	17	1.2	1
	4032HS-2L32	●	2	32	32	50	260	17	1.5	1
	4032HS-3M32	●	3	32	32	50	200	17	1.1	1
	4032HS-3L32		3	32	32	50	260	17	1.4	1
	4033HS	●	3	33	32	40	125	17	0.6	2
	4033HS-2M32		2	33	32	50	200	17	1.1	1
	4033HS-2L32	●	2	33	32	50	260	17	1.4	1
4033HS-3M32	●	3	33	32	50	200	17	1.1	1	
4033HS-3L32		3	33	32	50	260	17	1.4	1	

● : Stock item

## Available inserts



Designation	Cemented										Page	Designation	Cemented										Page											
	CN30	NC5330	NCM325	NCM335	NCM635	NCM545	PC2505	PC2010	PC3700	PC6100			PC9530	PC9540	PC5300	PC5400	G10	H01	CN30	NC5330	NCM325	NCM335		NCM635	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10
APMT 1806PDRF-MA															●	B5 B6	APMT 180624PDER-ML																●	B5 B6
180604PDRF-MA															●		180630R-ML															●		
180612PDRF-MA															●		1806PDSR-MM	●								●	●	●	●	●	●	●	●	
180616PDRF-MA															●		1806PDSR-MF	●							●								●	
180620PDRF-MA															●		180612PDSR-MM	●							●								●	
180624PDRF-MA															●		180616PDSR-MM	●															●	
180630R-MA															●		180620PDSR-MM	●															●	
1806PDER-ML															●		180624PDSR-MM	●															●	
180604PDER-ML															●		180630R-MM																●	
180612PDER-ML															●		180632R-MM	●															●	
180616PDER-ML															●		1806PDSR-MN3																●	
180620PDER-ML															●		1806PDSR-MN4																●	

\* 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
Ø20~Ø21	FTKA0408	TW15S
Ø25~Ø33	FTKA0410	TW15S

Available inserts **B5, B6**



## AMS4000S

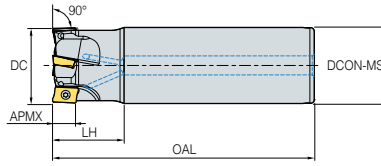


Fig. 1

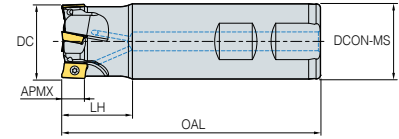


Fig. 2



• GAMP : 7°~13°  
• GAMF : -20°~-6°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	⊗ kg	Fig.
AMS	4040HS-3M32	●	3	40	32	50	200	17	1.2	1
	4040HS-3L32	●	3	40	32	50	260	17	1.6	1
	4040HS-4M32		4	40	32	50	200	17	1.2	1
	4040HS-4L32		4	40	32	50	260	17	1.6	1
	4040HS-S32	●	4	40	32	40	130	17	0.8	2
	4040HS-S40		4	40	40	40	130	17	1.1	2
	4040HS-S42		4	40	42	40	130	17	1.2	2
	4050HS-S32	●	5	50	32	40	135	17	1	2
	4050HS-S40		5	50	40	40	135	17	1.3	2
	4050HS-S42	●	5	50	42	40	135	17	1.4	2
	4063HS-S32	●	6	63	32	40	135	17	1.2	2
	4063HS-S40		6	63	40	40	135	17	1.6	2
	4063HS-S42	●	6	63	42	40	135	17	1.7	2

● : Stock item

### Available inserts

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



Designation	Coated								Uncoated	Page	Designation	Coated								Uncoated	Page													
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010				PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	GT10	H01			CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300
APMT 1806PDFR-MA										●	B5 B6	APMT 180624PDER-ML																						
180604PDFR-MA										●		180630R-ML																				●		
180612PDFR-MA										●		1806PDSR-MM																				●		
180616PDFR-MA										●		1806PDSR-MF																				●		
180620PDFR-MA										●		180612PDSR-MM																				●		
180624PDFR-MA										●		180616PDSR-MM																				●		
180630R-MA										●		180620PDSR-MM																				●		
1806PDER-ML										●		180624PDSR-MM																				●		
180604PDER-ML										●		180630R-MM																				●		
180612PDER-ML										●		180632R-MM																				●		
180616PDER-ML										●		1806PDSR-MN3																				●		
180620PDER-ML										●		1806PDSR-MN4																				●		

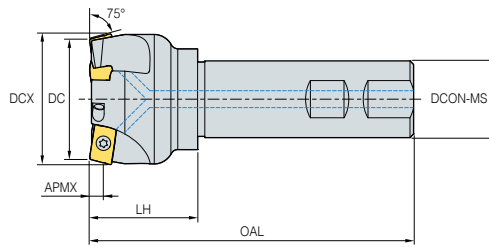
※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※ Please use the cutters with even teeth.

### Parts

Specification	Screw	Wrench
Ø40~Ø63	FTKA0410	TW15S

Available inserts B5, B6

# AMS1000SE/2000SE



KAPR  
75°

- GAMP : -4.5°~-1°
- GAMF : -3°~0°

		(mm)							
	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	
AMS	1025HSE		3	25	25	30	115	2.5	0.4
AMS	2025HSE	●	2	25	25	30	115	4	0.4
	2032HSE	●	3	32	32	40	125	4	0.7
	2040HSE	●	3	40	32	40	130	4	0.8
	2040HSE-S40		3	40	40	40	130	4	1.2
	2040HSE-S42		3	40	42	40	130	4	1.3
	2050HSE		4	50	32	40	135	4	0.9
	2050HSE-S40		4	50	40	40	135	4	1.3
	2050HSE-S42		4	50	42	40	135	4	1.4
	2063HSE		5	63	32	40	135	4	1.2
	2063HSE-S40		5	63	40	40	135	4	1.5
	2063HSE-S42		5	63	42	40	135	4	1.6

● : Stock item

## Available inserts

APMT-MF      APMT-MM



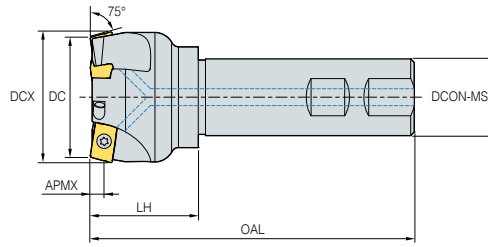
Type	Designation	Cermet	Coated										Uncoated		Page			
		CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
1000 type	APMT 060202PDSR-MM		●							●				●	●			
	0602PDSR-MM		●					●	●	●	●	●		●	●			
	060208PDSR-MM		●							●				●	●			
	060212R-MM		●											●	●			
	060216R-MM													●	●			
2000 type	APMT 11T3PDSR-MM		●	●		●		●	●	●	●	●		●	●			B5
	11T3PDSR-MF		●							●	●			●	●			B6
	11T308PDSR-MM		●							●		●		●	●			
	11T312PDSR-MM		●							●		●		●	●			
	11T316R-MM		●							●				●	●			
	11T318R-MM													●	●			
	11T324R-MM		●							●				●	●			

## Parts

Specification			
Ø25(1000 type)	FTKA01842	-	TW06S-A
Ø25~Ø63(2000 type)	FTKA02565S	TW08S	-

Available inserts **B5, B6**

## AMS3000SE



KAPR  
75°

- GAMP :  $-4.5^{\circ} \sim -1^{\circ}$
- GAMF :  $-3^{\circ} \sim 0^{\circ}$

(mm)										
	Designation	Stock	CICT	DC	DCX	DCON-MS	LH	OAL	APMX	
AMS	3050HSE		3	50	53.8	32	45	135	6	0.9
	3050HSE-S40		3	50	53.8	40	45	135	6	1.3
	3050HSE-S42		3	50	53.8	42	45	135	6	1.4
	3063HSE		4	63	66.794	32	45	135	6	1.2
	3063HSE-S40		4	63	66.794	40	45	135	6	1.5
	3063HSE-S42		4	63	66.794	42	45	135	6	1.7

● : Stock item

### Available inserts

APMT-MF      APMT-MM



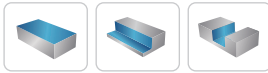
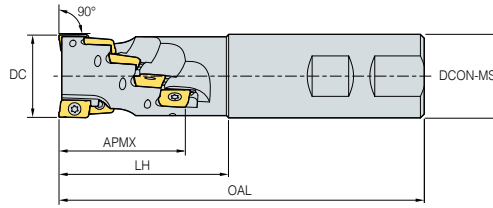
Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 1604PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			B5 B6
1604PDSR-MF		●							●	●			●	●			
160410PDSR-MM									●				●	●			
160416PDSR-MM									●				●	●			
160424R-MM									●				●	●			
160430R-MM									●				●	●			
160432R-MM									●				●	●			

### Parts

Specification		
Ø50~Ø63	FTKA0410	TW15S

Available inserts B5, B6

# AMS1000M/1500M



KAPR  
90°

- GAMP : 7°~9°
- GAMF : -13°~-10°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	ZEFF	APMX	
AMS	1016M		6	16	16	30	80	2	15.5	0.3
	1020M		12	20	20	32	85	3	20.5	0.2
	1025M		20	25	25	39	95	4	25.5	0.3
	15020M		3	20	20	42	105	1	26.5	0.2
	15025M		8	25	25	50	110	2	35	0.3
	15032M		10	32	32	60	120	2	44	0.6

● : Stock item

## Available inserts

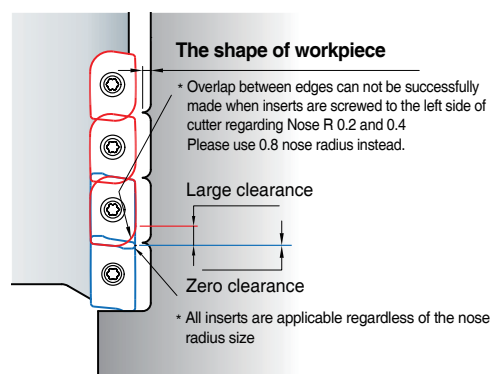
APMT-MA APMT-ML APMT-MM



Type	Designation	Cermet		Coated										Uncoated		Page		
		CN30	NC5330	NCM325	NCM335	NCM635	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
1000 type	APMT 0602PDFR-MA																	●
	060208PDFR-MA																	
	060202PDSR-MM		●						●					●	●			
	0602PDSR-MM		●					●	●	●	●			●	●			
	060208PDSR-MM		●					●	●	●	●			●	●			
	060212R-MM		●											●	●			
1500 type	APMT 0903PDFR-MA																	●
	090308PDFR-MA																	
	0903PDER-ML													●	●			
	090308PDER-ML													●	●			
	0903PDSR-MM		●					●	●	●	●			●	●			
	090308PDSR-MM		●											●	●			
	090312R-MM													●	●			
	090316R-MM		●											●	●			
090320R-MM													●	●				

B5  
B6

## Caution when clamping the inserts

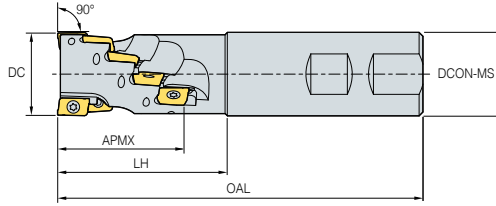


## Parts

Specification			
Ø16~Ø25(1000 type)	FTKA01842	-	TW06S-A
Ø20~Ø32(1500 type)	FTKA02565S	TW08S	-

Available inserts **B5, B6**

## AMS2000M



KAPR  
90°

- GAMP : 7°~9°
- GAMF : -13°~-10°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	ZEFF	APMX	
AMS	2020M	●	3	20	20	45	120	1	29.4	0.3
	2025M	●	8	25	25	55	130	2	38.9	0.4
	2032M	●	10	32	32	65	140	2	48.5	0.7
	2040M	●	14	40	40	75	150	2	58	1.2

● : Stock item

### Available inserts

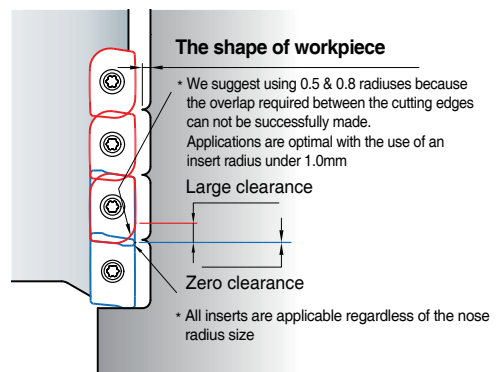
APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 11T3PDFR-MA																●	B5 B6
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

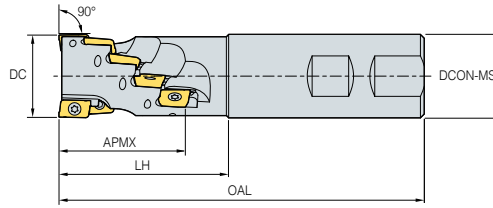


### Parts

Specification		
Ø20~Ø40	FTKA02565S	TW08S

Available inserts B5, B6

# AMS4000M



KAPR  
**90°**  
• GAMP : 7°~9°  
• GAMF : -13°~-10°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	ZEFF	APMX	
<b>AMS</b> 4032M		4	32	32	60	130	2	31	0.7
4040M		6	40	40	70	140	2	46	1.1
4050M-S40		6	50	40	55	125	2	46	1.2
4050M		8	50	40	70	140	2	61	1.4

● : Stock item

## Available inserts

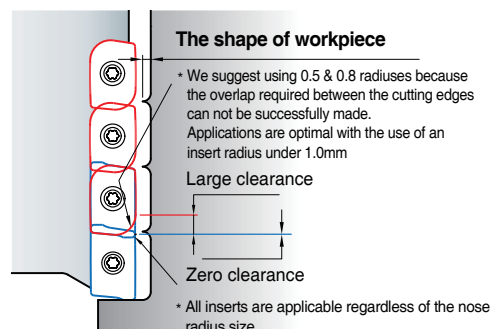


Designation	Cermet		Coated										Uncoated		Page		
	CM30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9630	PC9540	PC5300	PC5400		G10	H01
APMT 1806PDFR-MA																●	
180604PDFR-MA																●	
180612PDFR-MA																●	
180616PDFR-MA																●	
180620PDFR-MA																●	
180624PDFR-MA																●	
180630R-MA																●	
1806PDER-ML												●	●				
180604PDER-ML												●	●				
180612PDER-ML												●	●				
180616PDER-ML												●	●				
180620PDER-ML												●	●				
180624PDER-ML												●	●				
180630R-ML												●	●				
1806PDSR-MM			●				●	●	●	●	●	●	●				
1806PDSR-MF			●					●				●	●				
180612PDSR-MM			●						●			●	●				
180616PDSR-MM			●									●	●				
180620PDSR-MM			●									●	●				
180624PDSR-MM			●									●	●				
180630R-MM			●									●	●				
180632R-MM			●									●	●				
1806PDSR-MN3												●	●				
1806PDSR-MN4												●	●				

B5  
B6

※ 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

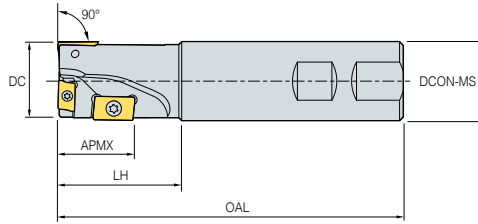


## Parts

Specification		
Ø32~Ø50	FTKA0410	TW15S

Available inserts **B5, B6**

## AMS1000MH/1500MH



KAPR  
90°

- GAMP : 9°~12°
- GAMF : -12°~-10°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	ZEFF	APMX	
AMS	1014MH	●	3	14	12	30	120	2	11	0.1
	1016MH	●	3	16	14	30	140	2	11	0.2
	1018MH	●	3	18	16	30	140	2	11	0.2
AMS	15020MH	●	3	20	20	35	140	2	17	0.3

● : Stock item

### Available inserts

APMT-MA APMT-ML APMT-MM



Type	Designation	Cermet		Coated										Uncoated		Page		
		CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
1000 type	APMT 0602PDFR-MA																●	B5 B6
	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
Ø14~Ø18(1000 type)	FTKA01842	-	TW06S-A
Ø20(1500 type)	FTKA02565S	TW08S	-

	Drilling	Shouldering	Slotting
vc(m/min)	80~200	80~200	80~200
fz(mm/t)	0.03~0.06	0.05~0.25	0.05~0.20
	<ul style="list-style-type: none"> <li>• Please keep the drill depth under 0.25D when you're drilling</li> <li>• Please keep the step depth from 0.2 to 0.3mm</li> </ul>		

Available inserts B5, B6

# AMS2000MH/3000MH(-K)

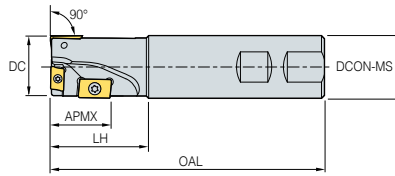


Fig. 1

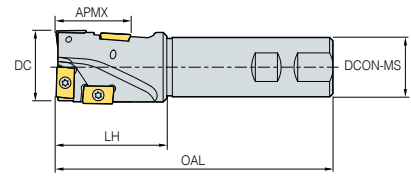


Fig. 2



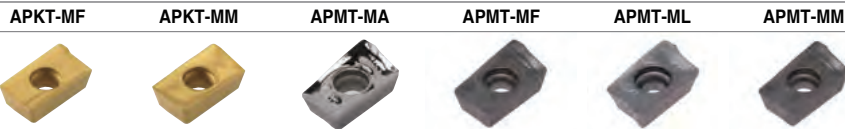
KAPR  
90°  
• GAMP : 9°~12°  
• GAMF : -12°~-10°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	ZEFF	APMX		Fig.
AMS	2025MH	●	3	25	25	40	130	2	20	0.4	1
	2032MH	●	3	32	32	50	140	2	30	0.7	1
	3040MH		4	40	32	60	150	2	40	0.9	2
	3040MH-K	●	4	40	32	60	150	2	40	0.9	2

● : Stock item

## Available inserts



Type	Designation	Cermet										Uncoated	Page			
		CN30	NC5330	NCM325	NCM335	NCM335	NCM545	PC2505	PC2510	PC3700	PC6100			PC9530	PC9540	PC5300
2000 type	APMT 11T3PDFR-MA														●	B4 B5 B6
	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
Ø25(2000 type)	FTKA02565S	TW08S	-
Ø32(2000 type)	FTKA02565S+FTKA0410	TW08S+TW15S	-
Ø40(3000 type)	FTKA0410	TW15S	-

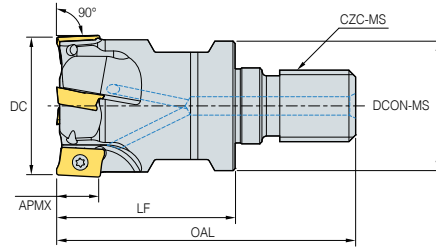
	Drilling	Shouldering	Slotting
vc(m/min)	80~200	80~200	80~200
fz(mm/t)	0.03~0.06	0.05~0.25	0.05~0.20

• Please keep the drill depth under 0.25D when you're drilling  
• Please keep the step depth from 0.2 to

Available inserts B4 ~ B6



## AMM1000



KAPR  
90°

- GAMP : 7,5°~12,5°
- GAMF : -28°~-6°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
AMM	1012HR-M06	●	3	12	11	25	40	M06	5.6	0.1
	1016HR-M08		4	16	14.5	25	42	M08	5.6	0.1
	1020HR-M10	●	5	20	18	30	51	M10	5.6	0.1
	1025HR-M12		7	25	23	35	59	M12	5.6	0.1
	1032HR-M16		8	32	29	40	67	M16	5.6	0.2

● : Stock item

### Available inserts

APMT-MA      APMT-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 0602PDFR-MA																●	B5 B6
060208PDFR-MA																	
060202PDSR-MM		●							●				●	●			
0602PDSR-MM		●					●	●	●	●	●		●	●			
060208PDSR-MM		●							●				●	●			
060212R-MM		●											●	●			
060216R-MM													●	●			

### Available adaptors

Designation	Available adaptors
AMM 1012HR-M06	MAT-M06
1016HR-M08	MAT-M08
1020HR-M10	MAT-M10
1025HR-M12	MAT-M12
1032HR-M16	MAT-M16

Designation : AMM1032HR-M16  
Modular head threading measure size (M16)

||

Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

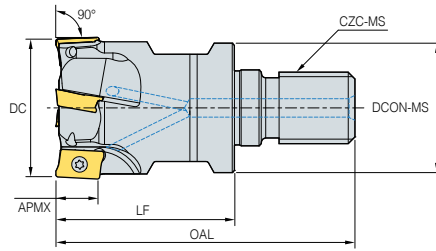
### Parts

Specification		
Ø12~Ø32	FTKA01842	TW06S-A

Available inserts B5, B6

Available adaptors B400

# AMM1500



• GAMP : 7.5°~12.5°  
• GAMF : -28°~-6°

Designation	Stock	CICT	DC	DCON-MS	LF	OAL	CZC-MS	APMX	kg
<b>AMM</b> 15010HR-M06		1	10	9.5	25	40	M06	9	0.1
15012HR-M06		1	12	11	25	40	M06	9	0.1
15016HR-M08	●	2	16	14.5	25	42	M08	9	0.1
15020HR-M10	●	2	20	18	30	51	M10	9	0.1
15025HR-M12	●	3	25	23	35	59	M12	9	0.1
15032HR-M16	●	4	32	29	40	67	M16	9	0.2

● : Stock item

## Available inserts

APMT-MA APMT-ML APMT-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM635	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
<b>APMT</b> 0903PDFR-MA																●	B5 B6
090308PDFR-MA																	
0903PDER-ML													●	●			
090308PDER-ML													●	●			
0903PDSR-MM		●				●	●	●	●				●	●			
090308PDSR-MM		●							●				●	●			
090312R-MM									●				●	●			
090316R-MM		●							●				●	●			
090320R-MM									●				●	●			

## Available adaptors

Designation	Available adaptors
<b>AMM</b> 15010HR-M06	MAT-M06
15012HR-M06	
15016HR-M08	MAT-M08
15020HR-M10	MAT-M10
15025HR-M12	MAT-M12
15032HR-M16	MAT-M16

Designation : AMM15032HR-M16  
Modular head threading measure size (M16)

II

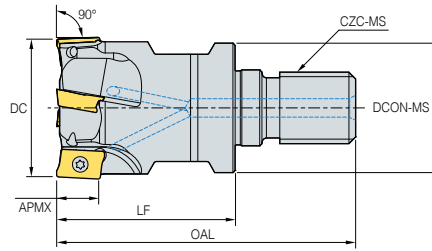
Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

## Parts

Specification	Screw	Wrench
Ø10~Ø14	FTKA02555S	TW08S
Ø16~Ø100	FTKA02565S	TW08S

Available inserts **B5, B6** Available adaptors **B400**

## AMM2000



KAPR  
90°

- GAMP : 7.5°~12.5°
- GAMF : -28°~-6°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
AMM	2016HR-M08		2	16	14.5	25	42	M08	11	0.1
	2020HR-M10		2	20	18	30	51	M10	11	0.1
	2025HR-M12	●	3	25	23	35	59	M12	11	0.1
	2032HR-M16		4	32	29	40	67	M16	11	0.2
	2040HR-M16		5	40	29	40	67	M16	11	0.3

● : Stock item

### Available inserts



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM25	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 11T3PDFR-MA																	●
11T308PDFR-MA																	
11T3PDER-ML													●	●			
11T308PDER-ML													●	●			
11T3PDSR-MM		●	●		●		●	●	●	●			●	●			
11T3PDSR-MF		●					●	●					●	●			
11T308PDSR-MM		●						●		●	●		●	●			
11T312PDSR-MM		●						●		●	●		●	●			
11T316R-MM		●						●					●	●			
11T318R-MM																	
11T324R-MM		●						●					●	●			
11T3PDSR-MN2													●				
11T3PDSR-MN3													●				

B5  
B6

※ Please purchase MN2 / MN3 and use them together. ※ It is recommended to use them to cutters with the even flute number.

### Available adaptors

Designation	Available adaptors
AMM 2016HR-M08	MAT-M08
2020HR-M10	MAT-M10
2025HR-M12	MAT-M12
2032HR-M16	MAT-M16
2040HR-M16	

Designation : AMM2032HR-M16  
Modular head threading measure size (M16)

||

Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

### Parts

Specification		
Ø16~Ø40	FTKA02565S	TW08S

Available inserts B5 ~ B6

Available adaptors B400

Excellent performance in high speed machining, tapping center, low power machine with its Aluminum body

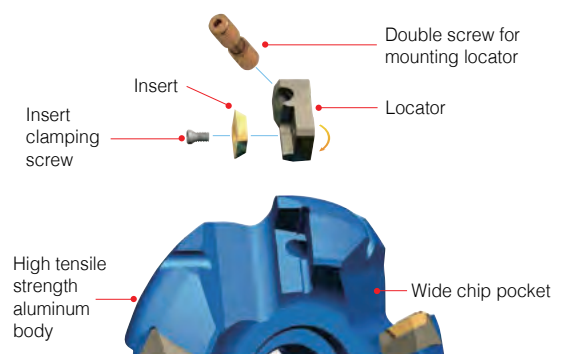
# Future Mill

- 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, and light cutting of Steel and Cast Iron
- Rigid body employs high tensile aluminum
- Locators are applied as the insert seats which ensures excellent durability
- A variety of chip breakers are available for the wide range of the workpiece application
- The high rake angle provides low cutting loads and good surface roughness

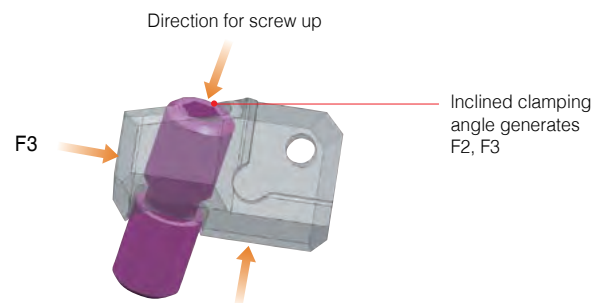
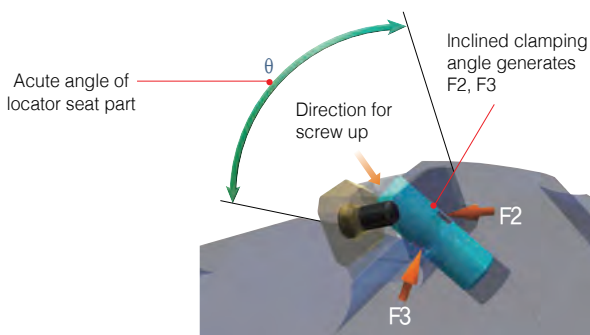
## Features of cutter

- Strong clamping between aluminum body and locator with double screw provides high efficiency machining
- Acute angle of locator seat provides strong clamping even in high speed machining
- Wide chip pocket area provides good chip evacuation and less chip jamming
- High tensile strength aluminum body features to realize excellent performance

## Assembly structure of cutter

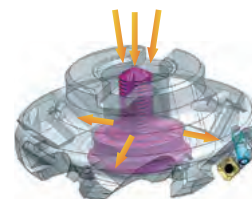


## Assembly structure of locator

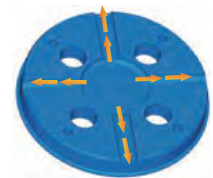


## Through coolant system

- Exclusively designed coolant bolt and cover provide excellent coolant action and chip evacuation for improved tool life
- Exact coolant direction to cutting area
- Coolant bolt covers  $\varnothing 63\sim 160$  and Coolant cover is applied for  $\varnothing 200$  range. Both are sold separately, and Through coolant arbor has to be used together.

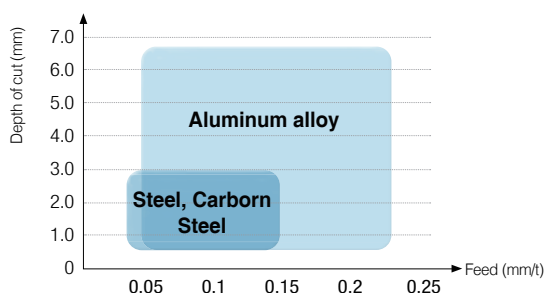


[ Bolt:  $\varnothing 63\sim\varnothing 160$  ]

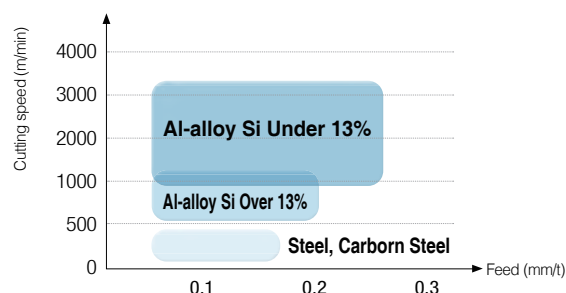


[ Cover: Over  $\varnothing 200$  ]

## Application range



## Cutting speed



# B Technical Information for Future Mill

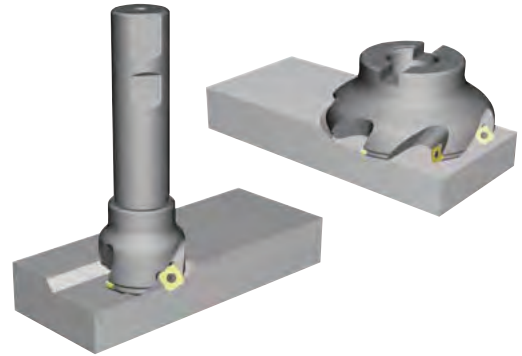
## ➤ Max. available revolution

Cutter diameter	Max. revolution (rpm)
Ø63	20,000
Ø80	16,000
Ø100	13,000
Ø125	10,000
Ø160	8,000
Ø200	6,500
Ø250	5,000
Ø315	4,000

## Future Mill (FMA)

### ➤ 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

Chip breaker Insert	Cutting-edge	Use	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

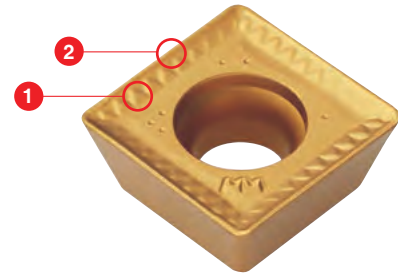
### ➤ Recommended cutting conditions

ISO	Grade	vc(m/min)	MF	MM	MR	MA
			fz(mm/t)	fz(mm/t)	fz(mm/t)	fz(mm/t)
P	NC5330	210~350	0.05~0.20	0.10~0.30	0.10~0.30	-
	NCM325	190~310	0.05~0.20	0.10~0.30	0.10~0.30	-
	PC3700	160~270	0.05~0.20	0.10~0.30	0.10~0.30	-
M	PC9530	90~150	0.05~0.15	0.10~0.30	-	-
	NCM335	70~120	0.05~0.15	0.10~0.30	-	-
K	PC5300	110~180	0.05~0.20	0.10~0.30	-	-
N	H01	260~440	-	-	-	0.10~0.35

## Future Mill (FMP)

### 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

Chip breaker Insert	Cutting edge	Use	Recommended C/B and grade as per workpiece (●: 1 <sup>st</sup> )										
			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	Grade	C/B	Grade	
MF			Low cutting load type	●	○ NCM325 ○ NC5330 ● NCM335		● NCM325 ○ NC5330 ○ NCM335	●	○ NCM325 ○ NC5330 ● NCM335	●	● PC6100 ○ PC215K	-	-
MM			Reinforced cutting edge type		○ NCM325 ○ NC5330 ● NCM335		● NCM325 ○ NC5330 ○ NCM335		○ NCM325 ○ NC5330 ● NCM335		● PC6100 ○ PC215K	-	-
MA			Sharp cutting edge type	-	-	-	-	-	-	-	-	●	○ H01 ○ G10

### Recommended cutting conditions

ISO	Cutting Speed vc (m/min)							
	CVD Coated		PVD Coated					Uncoated
	NCM325	NCM335	PC3700	PC6100	PC5300	PC9530	PC5400	H01
P	190~310	180~290	160~270	-	150~240	-	130~210	-
M	110~180	100~160	-	-	90~150	90~150	70~120	-
K	-	-	-	140~230	120~200	-	100~160	-
N	-	-	-	-	-	-	-	260~440

## FMAC(M)3000

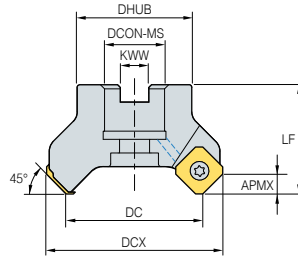


Fig. 1

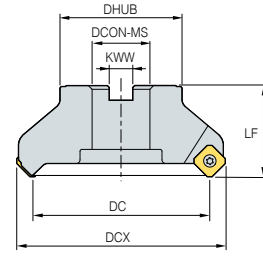


Fig. 2



KAPR  
45°

- GAMP : 21°
- GAMF : -17°~-12°

(mm)

	Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
FMACM	3050HR		4	50	58.39	42	22	10.4	40	4.0	0.4	1
	3050HR-H	●	6	50	58.39	42	22	10.4	40	4.0	0.4	1
	3063HR		5	63	71.42	49	22	10.4	40	4.0	0.5	1
	3063HR-H	●	8	63	71.42	49	22	10.4	40	4.0	0.6	1
FMAC (FMACM)	3080HR	● (●)	6	80	88.47	57	25.4(27)	9.5(12.4)	50	4.0	1.1	1
	3080HR-H	(●)	10	80	88.47	57	25.4(27)	9.5(12.4)	50	4.0	1.2	1
	3100HR		7	100	108.61	67	31.75(32)	12.7(14.4)	50	4.0	1.6	2(1)
	3100HR-H		12	100	108.61	67	31.75(32)	12.7(14.4)	50	4.0	1.7	2(1)
	3125HR		8	125	133.58	87	38.1(40)	15.9(16.4)	63	4.0	3.3	2(1)
	3125HR-H		14	125	133.58	87	38.1(40)	15.9(16.4)	63	4.0	3.3	2(1)

( ) Metric size, ● : Stock item

### Available inserts

	SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW														
Designation	Cermet		Coated								Uncoated				Page						
	CN30		NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01	H05	
SEET	0903AGFN-MA										●	●		●	●			●	●	B21	
	0903AGSN-MF																				B22
	0903AGSN-MM			●							●	●		●	●						
SEXT	0903AGSN-MF									●	●			●	●						
	0903AGSN-MM													●	●						
	0903AGSN-MR																				
SEEW	0903AGTN																				

### Available arbors

Designation	DCON-MS	NC arbors
FMACM 3050HR-□	22	BT□□-FMC22-□□
3063HR-□		
FMAC (FMACM) 3080HR-□	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
3100HR-□	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□
	38.1	BT□□-FMA38.1-□□
3125HR-□	40	BT□□-FMB/FMC40-□□

### Parts

Specification	Screw	Wrench
Ø50~Ø125	FTKA0307	TW09S

Available inserts B21, B22 Available arbors and bolt E94 ~ E96

# FMAC(M)4000

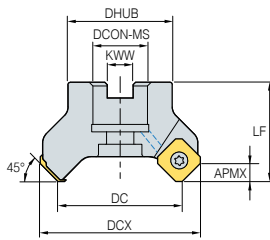


Fig. 1

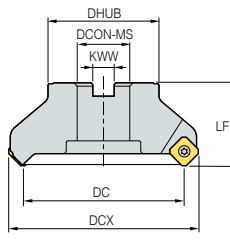


Fig. 2

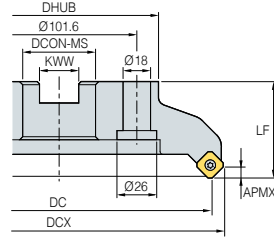


Fig. 3



KAPR  
**45°**

- GAMP : 21°
- GAMF : -17°~-12°

(mm)

	Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
FMACM	4050HR	●	3	50	63.033	42	22	10.4	40	6.5	0.4	1
	4063HR	●	4	63	76.046	49	22	10.4	40	6.5	0.6	1
	4063HR-M		5	63	76.046	49	22	10.4	40	6.5	0.5	1
	4063HR-H	●	6	63	76.046	49	22	10.4	40	6.5	0.6	1
FMAC (FMACM)	4080HR	(●)	5	80	93.08	57	25.4(27)	9.5(12.4)	50	6.5	1	1
	4080HR-M	●	6	80	93.08	57	25.4(27)	9.5(12.4)	50	6.5	1.1	1
	4080HR-H		8	80	93.08	57	25.4(27)	9.5(12.4)	50	6.5	1.1	1
	4100HR	● (●)	5	100	113	67	31.75(32)	12.7(14.4)	63	6.5	2.1	1
	4100HR-M	● (●)	7	100	113	67	31.75(32)	12.7(14.4)	63	6.5	2	1
	4100HR-H		10	100	113	67	31.75(32)	12.7(14.4)	63	6.5	2	1
	4125HR		6	125	138.48	87	38.1(40)	15.9(16.4)	63	6.5	3.1	1
	4125HR-M	● (●)	8	125	138.48	87	38.1(40)	15.9(16.4)	63	6.5	3.2	1
	4125HR-H		12	125	138.48	87	38.1(40)	15.9(16.4)	63	6.5	3.4	1
	4160R	● (●)	7	160	173.16	107	50.8(40)	19(16.4)	63	6.5	5.4	2
	4160R-M	● (●)	10	160	173.16	107	50.8(40)	19(16.4)	63	6.5	5.2	2
	4160R-H	●	16	160	173.16	107	50.8(40)	19(16.4)	63	6.5	5.1	2
	4200R	● (●)	8	200	213.12	130	47.625(60)	25.4(25.7)	63	6.5	6.7	3
	4200R-M	● (●)	12	200	213.12	130	47.625(60)	25.4(25.7)	63	6.5	7.8	3
	4200R-H		18	200	213.12	130	47.625(60)	25.4(25.7)	63	6.5	7.8	3

( ) Metric size, ● : Stock item

## Available inserts

SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW	SEEW-W											
Designation	Cermet	Coated						Uncoated	Page									
	CN30	NC5330	NCM325	NCM335	NCM335	NCM535	NCM545	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	H01	H05	Page
SEET 14M4AGFN-MA																		B21
SEET 14M4AGSN-MF			●		●	●	●											B22
SEET 14M4AGSN-MM			●		●	●	●											B22
SEXT 14M4AGSN-MF					●													B21
SEXT 14M4AGSN-MM			●		●	●	●											B22
SEEW 14M4AGSN-MR																		B21
SEEW 14M4AGTN																		B22
SEEW 14M4AGFN-W																		B21
SEEW 14M4AGSN-W																		B22
SEEW 14M4AGTN-W																		B21

## Available arbors

Designation	DCON-MS	NC arbors
FMACM 4050HR-□	22	BT□□-FMC22-□□
FMACM 4063HR-□		
FMAC (FMACM) 4080HR-□	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
	31.75	BT□□-FMA31.75-□□
4100HR-□	32	BT□□-FMC32-□□

Designation	DCON-MS	NC arbors
FMAC (FMACM) 4125HR-□	38.1	BT□□-FMA38.1-□□
	40	BT□□-FMB40-□□
4160R-□	50.8	BT□□-FMA50.8-□□
	40	BT□□-FMB/FMC40-□□
4200R-□	47.625	BT□□-FMA47.625-□□
	60	BT□□-FMB60-□□

## Parts

Specification					
Ø50~Ø200	FTGA03512	SS42SAF	SHXN0509F	TW15S	HW35L

Available inserts **B21, B22**

Available arbors and bolt **E94 ~ E96**



## FMAC(M)3000-A

Aluminum body

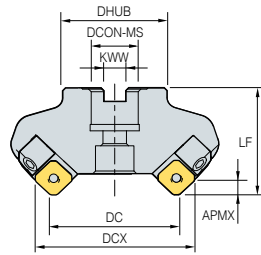


Fig. 1

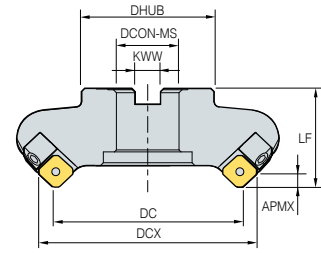


Fig. 2

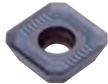


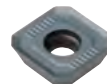




**KAPR**  
**45°**

- GAMP : 21°
- GAMF : -16°~-12°

Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
<b>FMACM</b> 3063R-A		3	63	71.3	49	22	10.4	40	4	0.7	1
<b>FMAC</b> 3080R-A	●	4	80	88.4	57	25.4(27)	9.5(12.4)	50	4	0.7	1
<b>(FMACM)</b> 3100R-A		5	100	108.61	67	31.75(32)	12.7(14.4)	50	4	0.7	2
3100R-25.4-A	●	5	100	108.6	67	25.4	9.5	50	4	0.7	2
3125R-A	●	6	125	133.5	87	38.1(40)	15.9(16.4)	63	4	1.9	2
3125R-25.4-A		6	125	133.5	70	25.4	9.5	63	4	1.4	2

( ) Metric size, ● : Stock item






### Available inserts

	SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW												
																			
Designation	Cermet		Coated							Uncoated				Page					
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01	H05
<b>SEET</b>										●	●		●	●			●	●	B21 B22
			●																
<b>SEXT</b>										●	●		●	●					
<b>SEEW</b>																			

### Available arbors

Designation	DCON-MS	NC arbors
<b>FMACM</b> 3063R-□	22	BT□□-FMC22-□□
<b>FMAC</b> 3080R-□	25.4	BT□□-FMA25.4-□□
<b>(FMACM)</b> 3100R-□	27	BT□□-FMC27-□□
	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□
	38.1	BT□□-FMA38.1-□□
	40	BT□□-FMB40-□□

### Parts

Specification					
	Screw	Insert wrench	Locator wrench	Locator	Locator screw
Ø63~Ø125	FTKA0307	TW09S	HW30L	LFMA3R-A	DHA0620

Available inserts **B21, B22** Available arbors and bolt **E94 ~ E96**

# FMAC(M)4000-A

Aluminum body

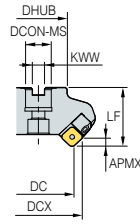


Fig. 1

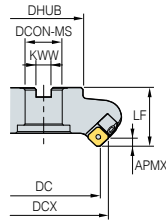


Fig. 2

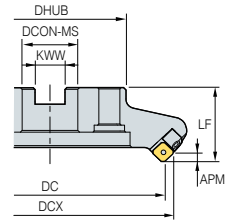


Fig. 3

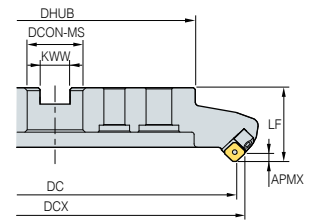


Fig. 4



KAPR  
**45°**

- GAMP : 21°
- GAMF : -16°~-12°

(mm)

	Designation	Stock	CICT	DC	DCX	DHUB	DCON-MS	KWW	LF	APMX		Fig.
FMACM	4063R-A	●	3	63	75.8	49	22	10.4	50	6.5	0.5	1
FMAC	4080R-A	● (●)	4	80	92.9	67	25.4(27)	9.5(12.4)	50	6.5	0.7	1
(FMACM)	4100R-A	● (●)	5	100	113	67	31.75(32)	12.7(14.4)	50	6.5	0.9	2
	4100R-25.4-A	●	5	100	113	60	25.4	9.5	50	6.5	1	2
	4125R-A	●	6	125	138.4	87	38.1(40)	15.9(16.4)	63	6.5	2.3	2
	4125R-25.4-A	●	6	125	138.4	70	25.4	9.5	63	6.5	1.7	2
	4160R-A	●	7	160	172.9	107	50.8(40)	19.1(16.4)	63	6.5	3	2
	4200R-A	● (●)	8	200	213	130	47.625(60)	25.4(25.7)	63	6.5	3.9	3
	4250R-A		10	250	263.1	180	47.625(60)	25.4(25.7)	63	6.5	5.3	3
	4315R-A		12	315	328.2	240	47.625(60)	25.4(25.4)	63	6.5	7.6	4

※ Through coolant is applied to the cutter range within Ø50~Ø125

( )Metric size, ● : Stock item

## Available inserts

SEET-MF

SEET-MM

SEET-MA

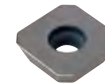
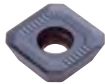
SEXT-MF

SEXT-MM

SEXT-MR

SEEW

SEEW-W



Designation	Cermet		Coated								Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6100	PC9530	PC9540	PC5300	PD2000		PD1010	H01	H05
SEET 14M4AGFN-MA														●	●	B21
14M4AGSN-MF				●				●	●	●						
14M4AGSN-MM				●				●	●	●						
SEXT 14M4AGSN-MF																B22
14M4AGSN-MM																
14M4AGSN-MM				●				●	●	●						

## Available arbors

Designation	DCON-MS	NC arbors
FMACM 4063R-□	22	BT□□-FMC22-□□
FMAC 4080R-□	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
(FMACM) 4100HR-□	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□
4125R-□	38.1	BT□□-FMA38.1-□□

Designation	DCON-MS	NC arbors
FMAC 4125R-□	40	BT□□-FMB40-□□
(FMACM) 4160R-□	50.8	BT□□-FMA50.8-□□
	40	BT□□-FMB/FMC40-□□
4200R-□	47.625	BT□□-FMA47.625-□□
4250R-□	60	BT□□-FMB60-□□
4315R-□	60	BT□□-FMB60-□□

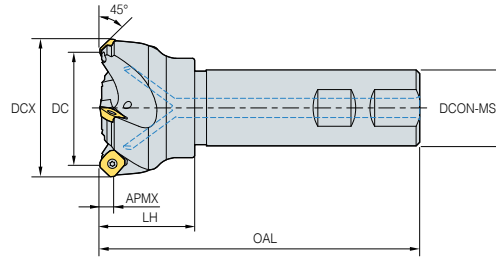
## Parts

Specification					
Ø63~Ø315	FTGA03510	TW15S	HW40L	LFMA4R-A	DHA0830

Available inserts B21, B22

Available arbors and bolt E94 ~ E96

## FMAS3000



KAPR  
45°

- GAMP : 23°
- GAMF : -17°~-13°

Designation	Stock	CICT	DC	DCX	DCON-MS	LH	OAL	APMX	kg
<b>FMAS</b> 3025HR		2	25	33.38	25	35	115	4	0.4
3032HR		3	32	40.44	25	40	125	4	0.5
3032HR-S32		3	32	40.44	32	40	130	4	0.8
3040HR	●	3	40	48.45	32	40	130	4	0.9
3040HR-S40		3	40	48.45	40	40	140	4	1.3
3040HR-S42		3	40	48.45	42	40	140	4	1.4
3050HR		4	50	58.39	32	40	135	4	1
3050HR-S40		4	50	58.39	40	40	140	4	1.4
3050HR-S42		4	50	58.39	42	40	140	4	1.5
3063HR	●	5	63	71.42	32	45	135	4	1.2
3063HR-S40		5	63	71.42	40	45	145	4	1.6
3063HR-S42		5	63	71.42	42	45	145	4	1.7

(mm)

● : Stock item

### Available inserts

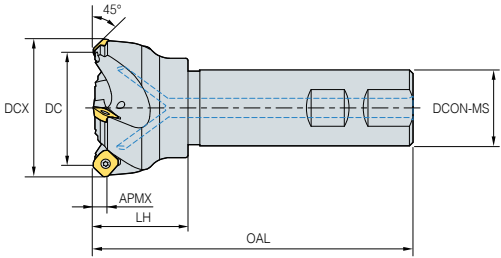
	SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW												
Designation	Cermet		Coated										Uncoated				Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01	H05
SEET 0903AGFN-MA																	●	●	B21
0903AGSN-MF									●	●			●	●					
0903AGSN-MM			●						●				●	●					
SEXT 0903AGSN-MF									●				●	●					B22
0903AGSN-MM								●	●				●	●					
0903AGSN-MR													●	●					
SEEW 0903AGTN																			

### Parts

Specification		
Ø25-Ø63	FTKA0307	TW09S

Available inserts B21, B22

# FMAS4000



KAPR  
**45°**

- GAMP : 23°
- GAMF : -17°~-13°

(mm)

Designation	Stock	CICT	DC	DCX	DCON-MS	LH	OAL	APMX	kg
<b>FMAS</b> 4050HR		3	50	63.03	32	45	135	6.5	1
4050HR-S40		3	50	63.03	40	45	135	6.5	1.3
4050HR-S42		3	50	60.03	42	45	135	6.5	1.5
4063HR		4	63	76.046	32	45	135	6.5	1.2
4063HR-S40		4	63	76.046	40	45	135	6.5	1.5
4063HR-S42		4	63	76.046	42	45	135	6.5	1.6

● : Stock item

## Available inserts

	SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW	SEEW-W												
Designation	Cermet			Coated							Uncoated			Page						
	CN30	NC5330	NCM325	NCM335	NCM335	NCM535	NCM545	PC2505	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	PD2000	PD1010	ST30A	H01	H05
<b>SEET</b>																				
<b>SEXT</b>																				
<b>SEEW</b>																				

B21  
B22

## Parts

Specification					
	Screw	Shim	Shim Screw	Insert wrench	Shim wrench
Ø50~Ø63	FTGA03512	SS42SAF	SHXN0509F	TW15S	HW35L

Available inserts **B21, B22**

## FMPC(M)3000

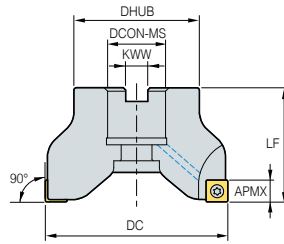


Fig. 1

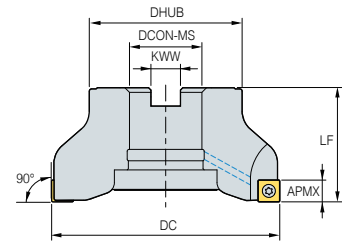


Fig. 2

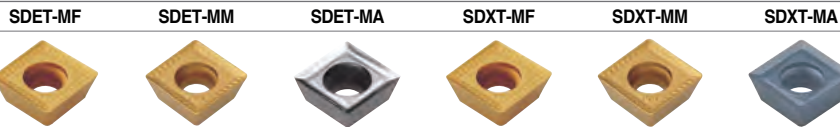


- GAMP : 10°
- GAMF : -9°~-8°

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	(mm)
<b>FMPCM</b> 3050HS	●	5	50	40	22	10.4	40	7	0.3
3063HS	●	6	63	40	22	10.4	40	7	0.4
<b>FMPC (FMPCM)</b> 3080HS	● (●)	7	80	55	25.4	9.5	50	7	1
3100HS	(●)	8	100	67	31.75	12.7	50	7	1.4
3080HS		7	80	55	27	12.4	50	7	1
3100HS		8	100	67	32	14.4	50	7	1.5

( ) Metric size, ● : Stock item

### Available inserts



Designation	Coated	Uncoated				Page														
	CN30	NC5330	NCM325	NCM335	NCM635		NCM645	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A	G10	H01	H05	
<b>SDET</b> 09M402R-MA																				
09M405R-MF																				
09M405R-MM																				
<b>SDXT</b> 09M405R-MF																				B19
09M405L-MF																				B20
09M405R-MM																				
09M405L-MM																				
09M405R-MA																				

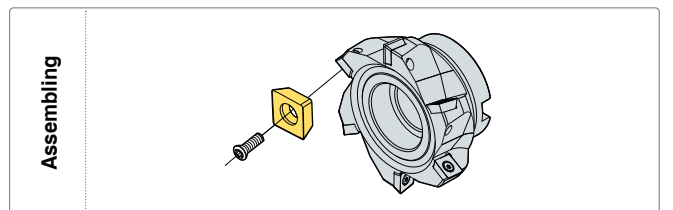
### Available arbors

Designation	DCON-MS	NC arbors
<b>FMPCM</b> 3050HS	22	BT□□-FMC22-□□
3063HS		
<b>FMPC (FMPCM)</b> 3080HS	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
	31.75	BT□□-FMA31.75-□□
3100HS	32	BT□□-FMC32-□□

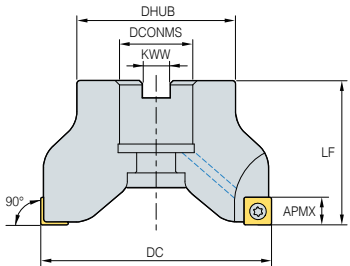
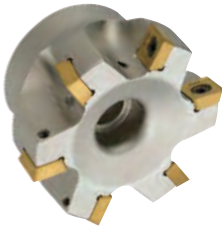
### Parts

Specification	Screw	Wrench
Ø50~Ø100	FTGA03508	TW15S

Available inserts **B19, B20** Available arbors and bolt **E94 ~ E96**



# FMPC(M)4000



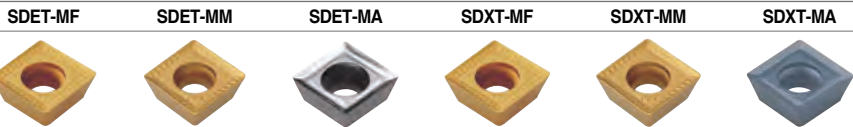
• GAMP : 10°  
• GAMF : -9°~ -8°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
FMPCM 4063HS	●	5	63	49	22	10.4	50	11	0.4
FMPC 4080HS	● (●)	6	80	57	25.4(27)	9.5(12.4)	50	11	0.9
(FMPCM) 4100HS	(●)	7	100	67	31.75(32)	12.7(14.4)	63	11	1.9
4125HS	● (●)	8	125	87	38.1(40)	15.9(16.4)	63	11	3.1

( ) Metric size, ● : Stock item

## Available inserts



Designation	Cermet		Coated								Uncoated				Page				
	CN80	NC5330	NCM325	NCM335	NCM635	NCM645	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD1010		ST30A	G10	H01	H05
SDET 130504R-MA																			
130508R-MF																			
130508R-MM																			
SDXT 130508R-MF				●					●	●		●	●						
130508R-MM				●	●				●	●	●	●	●						
130508R-MA																	●	●	

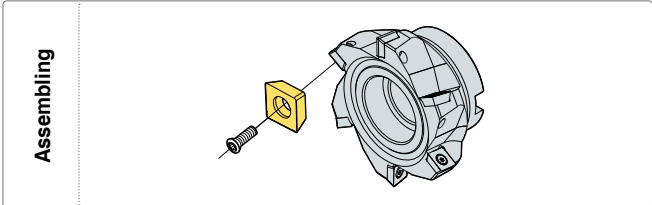
B19  
B20

## Available arbors

Designation	DCON-MS	NC arbors
FMPCM 4063HS	22	BT□□-FMC22-□□
FMPC (FMPCM) 4080HS	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
4100HS	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□
4125HS	38.1	BT□□-FMA38.1-□□
	40	BT□□-FMB/FMC40-□□

## Parts

Specification		
Ø63~Ø125	FTNC04511	TW20S



Available inserts **B19, B20** Available arbors and bolt **E94 ~ E96**

## FMPC(M)3000-A

Aluminum body

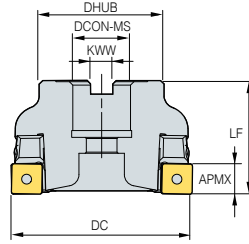
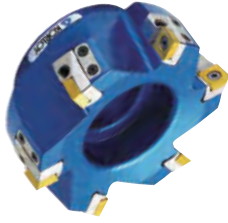


Fig. 1

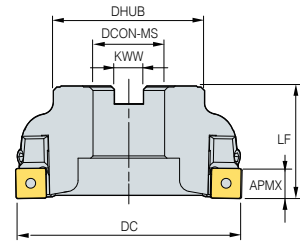


Fig. 2



KAPR  
90°

- GAMP : 10°
- GAMF : -9°~-7.3°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX		Fig.
FMPCM 3063S-A	●	3	63	40	22	10.4	40	7	0.2	1
FMPC 3080S-A	● (●)	4	80	55	25.4(27)	9.5(12.4)	50	7	0.4	1
(FMPCM) 3100S-A	●	5	100	67	31.75(32)	12.7(14.4)	50	7	1	2
3100S-25.4-A	●	5	100	67	25.4	9.5	50	7	0.6	2

( ) Metric size, ● : Stock item

### Available inserts

SDET-MF

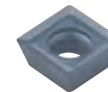
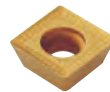
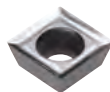
SDET-MM

SDET-MA

SDXT-MF

SDXT-MM

SDXT-MA



Designation	Cermet	Coated										Uncoated				Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A		G10	H01	H05
SDET 09M402R-MA																			
09M405R-MF																			
09M405R-MM																			
SDXT 09M405R-MF			●					●	●	●		●	●						
09M405L-MF																			
09M405R-MM			●	●				●	●	●		●	●						
09M405L-MM									●										
09M405R-MA																	●	●	

### Available arbors

Designation	DCON-MS	NC arbors
FMPCM 3063S-□	22	BT□□-FMC22-□□
FMPC (FMPCM) 3080S-□	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
3100S-□	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□
3100S-25.4-□	25.4	BT□□-FMA25.4-□□

### Parts

Specification							
Ø63	FTGA03508	TW15S	HW30L	LFMP3R-A	DHA0624	CFMP3R14R1-A	PXMA0306
Ø80~Ø100	FTGA03508	TW15S	HW30L	LFMP3R-A	DHA0624	CFMP3R-A	PXMA0306

Available inserts **B19, B20** Available arbors and bolt **E94 ~ E96**

# FMPC(M)4000-A

Aluminum body

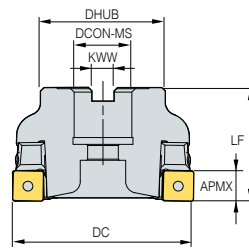
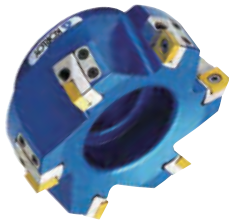


Fig. 1

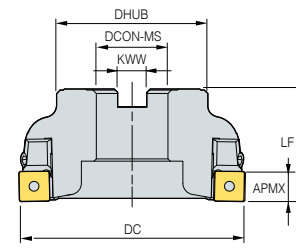
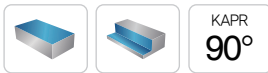


Fig. 2



• GAMP : 10° Fig. 1  
• GAMF : -9°~-7.3°

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>FMPCM</b> 4063S-A	●	3	63	50	22	10.4	50	11	0.6	1
<b>FMPC</b> 4080S-A	● (●)	4	80	55	25.4(27)	9.5(12.4)	50	11	0.5	1
<b>(FMPCM)</b> 4100S-A	● (●)	5	100	67	31.75(32)	12.7(14.4)	50	11	0.6	2
4100S-25.4-A	●	5	100	67	25.4	9.5	50	11	0.6	2
4125S-A	● (●)	6	125	80	38.1(40)	15.9(16.4)	63	11	1.1	2
4125S-25.4-A	●	6	125	80	25.4	9.5	63	11	1.2	2
4160S-A		8	160	107	50.8(40)	19.1(16.4)	63	11	2	2
4200S-A		10	200	130	47.625(60)	25.4(25.7)	63	11	2.4	2
4250S-A		12	250	180	47.625(60)	25.4(25.7)	63	11	4.5	2
4315S-A		15	315	240	47.625(60)	25.4(25.7)	63	11	7	2

(mm)

( )Metric size, ● : Stock item

## Available inserts

	SDET-MF	SDET-MM	SDET-MA	SDXT-MF	SDXT-MM	SDXT-MA													
Designation	Cermet		Coated							Uncoated				Page					
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6100	PC9330	PC9540	PC5300	PC5400		PD1010	ST30A	G10	H01	H05
<b>SDET</b>														●			●	●	B19
130504R-MA																			
130508R-MF																			
																			B20
<b>SDXT</b>				●					●	●		●	●						
130508R-MF				●					●	●		●	●						
130508R-MM				●	●				●	●		●	●						
130508R-MA																	●	●	

## Available arbors

Designation	DCON-MS	NC arbors
<b>FMPCM</b> 4063S-□	22	BT□□-FMC22-□□
<b>FMPC</b> 4080S-□	25.4	BT□□-FMA25.4-□□
<b>(FMPCM)</b> 4100S-□	27	BT□□-FMC27-□□
4100S-□	31.75	BT□□-FMA31.75-□□
4100S-25.4-□	32	BT□□-FMC32-□□
	25.4	BT□□-FMA25.4-□□

Designation	DCON-MS	NC arbors
<b>FMPC</b> 4125S-□	38.1	BT□□-FMA38.1-□□
<b>(FMPCM)</b> 4125S-25.4-□	40	BT□□-FMB40-□□
4125S-25.4-□	25.4	BT□□-FMA25.4-□□
4160S-□	50.8	BT□□-FMA38.1-□□
	40	BT□□-FMB/FMC40-□□
4200S-□	47.625	BT□□-FMA47.625-□□
4250S-□	60	BT□□-FMB60-□□
4315S-□	60	BT□□-FMB60-□□

## Parts

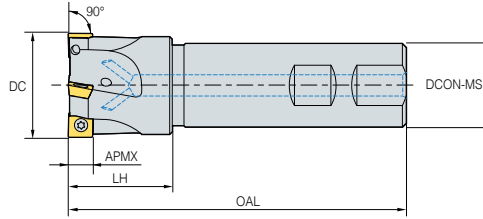
Specification							
	Screw	Insert wrench	Locator wrench	Locator	Locator screw	Chip cover	Chip cover Screw
Ø63~Ø80	FTNC04509	TW20S	HW40L	LFMP4R1-A	DHA0825	CFMP3R14R1-A	PXMA0306
Ø100~Ø315	FTNC04509	TW20S	HW40L	LFMP4R-A	DHA0830	CFMP4R-A	PXMA0306

Available inserts **B19, B20**

Available arbors and bolt **E94 ~ E96**



## FMPS3000



KAPR  
90°

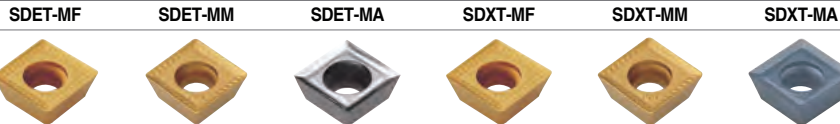
- GAMP : 10°
- GAMF : -9°~-8°

(mm)

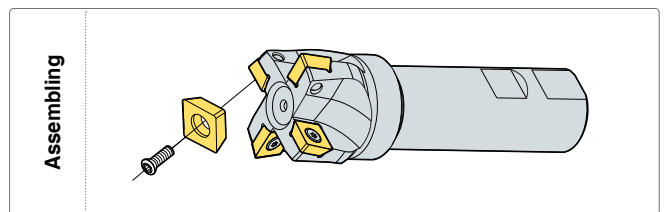
	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	
FMPS	3025HS	●	2	25	25	35	115	7	0.4
	3032HS	●	3	32	25	40	125	7	0.4
	3040HS	●	4	40	32	40	130	7	0.8
	3040HS-S40		4	40	40	45	140	7	1.2
	3040HS-S42		4	40	42	45	140	7	1.3
	3050HS	●	5	50	32	40	135	7	0.9
	3050HS-S40		5	50	40	40	140	7	1.3
	3050HS-S42		5	50	42	40	140	7	1.4
	3063HS	●	6	63	32	45	135	7	1.2
	3063HS-S40		6	63	40	45	145	7	1.6
	3063HS-S42		6	63	42	45	145	7	1.7

● : Stock item

### Available inserts



Designation	Cermet		Coated										Uncoated				Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A	G10		H01	H05
SDET	09M402R-MA														●			●	●
	09M405R-MF																		
	09M405R-MM																		
SDXT	09M405R-MF			●				●	●	●		●	●						
	09M405L-MF																		
	09M405R-MM			●	●			●	●	●		●	●						
	09M405L-MM								●										
	09M405R-MA																●	●	

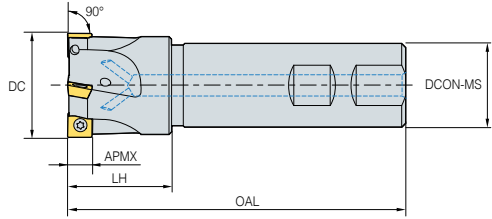


### Parts

Specification		
Ø25~Ø63	FTGA03508	TW15S

Available inserts B19, B20

# FMPS4000

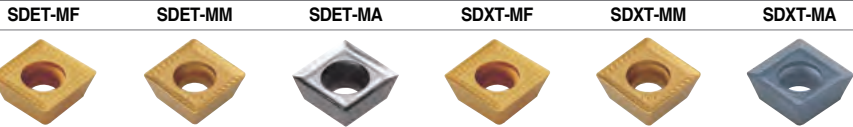


• GAMP : 10°  
• GAMF : -9°~-8°

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	(mm)
<b>FMPS</b> 4040HS	●	3	40	32	40	130	11	0.7
4040HS-S40		3	40	40	40	140	11	1.2
4040HS-S42		3	40	42	40	140	11	1.4
4050HS	●	4	50	32	45	135	11	0.9
4050HS-S40		4	50	40	45	145	11	1.4
4050HS-S42		4	50	42	45	145	11	1.6
4063HS		5	63	32	45	135	11	1.1
4063HS-S40		5	63	40	45	145	11	1.5
4063HS-S42		5	63	42	45	145	11	2.6

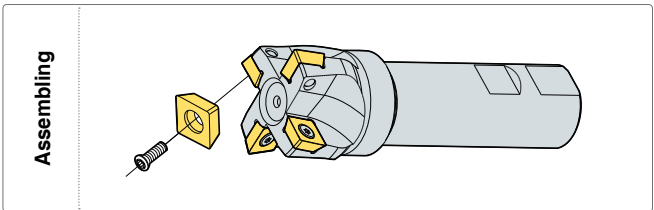
● : Stock item

## Available inserts



Designation	Cermet		Coated								Uncoated				Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD1010		ST30A	G10	H01
<b>SDET</b> 130504R-MA														●			●	●
130508R-MF																		
130508R-MM																		
<b>SDXT</b> 130508R-MF			●						●	●		●	●					
130508R-MM			●	●				●	●	●		●	●					
130508R-MA																	●	●

B19  
B20



## Parts

Specification	Screw	Wrench
Ø40~Ø63	FTNC04511	TW20S

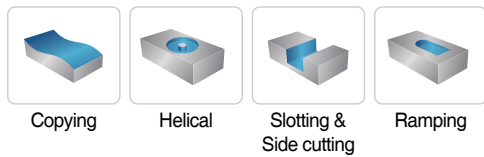
Available inserts **B19, B20**

## 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 and provides better surface roughness
- 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

### Use



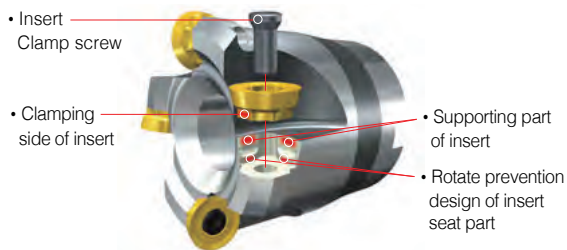
### FMR Insert cutting-edge shape

Designation	RDHW□□□□M0F	RDHW□□□□M0E	RDHW□□□□M0S
Cutting edge shape (G class)			

### Features of chip breaker

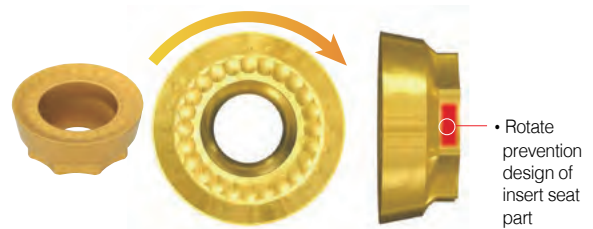
Chip breaker insert	Cutting-edge	Use	Features
MF		Light cutting	Low cutting resistance chip breaker design guarantees long tool life good performance at finishing and difficult-to-cut material machining
MM		General	Suitable for general milling at wide application range
MA		Aluminum	Sharp cutting-edge and buffed top face for aluminum machining prevent welding and control chip flow

### Clamping system



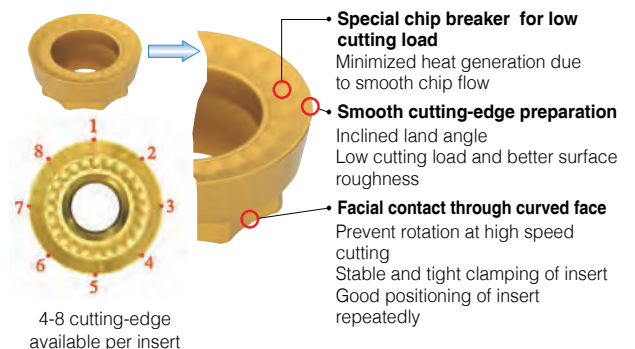
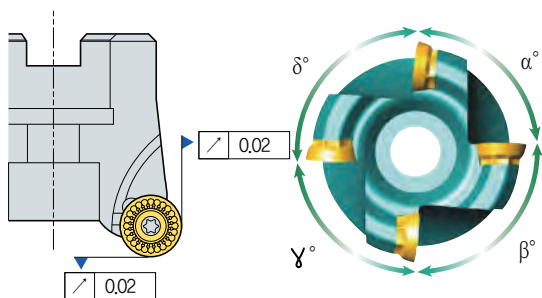
FMR□ 3000 type  
FMR□ 4000 type

FMR□ 5000 type  
FMR□ 6000 type



RDKT10T3M0-□□  
RDKT1204M0-□□

RDKT1605M0-MM  
RDKT2006M0-MM



**Future Mill (FMR)**

**Chip removal rate (cm<sup>3</sup>/min)**

Workpiece	Grade	Ø8	Ø10	Ø12	Ø15	Ø16	Ø20	Ø21	Ø25	Ø26	Ø32	Ø33	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	
<b>P</b> General structure steel (under 200HB) General carbon steel (under 30 HRC) High carbon steel, Alloy steel (30-40 HRC) High carbon steel, Alloy steel (40-50 HRC) Alloy steel (over 50 HRC)	<b>PC3700</b> <b>PC5300</b>	4.97	9.94	9.94	14.92	31.83	31.83	47.74	47.74	47.74	71.61	38.19	95.49	119.36	143.23	167.11	190.98	133.69	509.29	
		vc = 250, fz = 0.25, ap = 0.5, ae = 0.5D		vc = 300, fz = 0.4, ap = 1.0, ae = 0.5D		vc = 250, fz = 0.4, ap = 1.5, ae = 0.5D														vc = 200, fz = 0.5, ap = 4.0, ae = 0.5D
		3.97	7.95	7.95	11.93	25.46	25.46	38.19	38.19	38.19	57.29	38.19	76.39	95.49	114.59	133.69	152.78	133.69	458.36	
		vc = 200, fz = 0.25, ap = 0.5, ae = 0.5D		vc = 250, fz = 0.4, ap = 1.0, ae = 0.5D		vc = 200, fz = 0.4, ap = 1.5, ae = 0.5D														vc = 180, fz = 0.5, ap = 4.0, ae = 0.5D
		2.86	5.72	5.72	8.59	22.91	22.91	34.37	34.37	34.37	51.56	34.37	68.75	85.94	103.13	120.32	137.5	120.32	407.43	
		vc = 180, fz = 0.20, ap = 0.5, ae = 0.5D		vc = 200, fz = 0.4, ap = 1.0, ae = 0.5D		vc = 180, fz = 0.4, ap = 1.5, ae = 0.5D														vc = 160, fz = 0.5, ap = 4.0, ae = 0.5D
		1.24	2.48	2.48	3.72	11.45	11.45	14.32	17.18	14.32	21.48	14.32	28.64	35.8	42.97	50.13	57.29	50.13	249.55	
vc = 130, fz = 0.15, ap = 0.4, ae = 0.5D		vc = 170, fz = 0.3, ap = 0.9, ae = 0.5D		vc = 150, fz = 0.3, ap = 1.0, ae = 0.5D														vc = 140, fz = 0.4, ap = 3.5, ae = 0.5D		
0.95	1.9	1.9	2.86	7.63	7.63	9.54	11.45	9.54	14.32	9.54	19.09	23.87	28.64	33.42	38.19	33.42	152.78			
vc = 100, fz = 0.15, ap = 0.4, ae = 0.5D		vc = 130, fz = 0.3, ap = 0.9, ae = 0.5D		vc = 100, fz = 0.3, ap = 1.0, ae = 0.5D														vc = 100, fz = 0.4, ap = 3.0, ae = 0.5D		
<b>M</b> Stainless steel (STS)	<b>PC5300</b>	2.06	4.13	4.13	6.2	16.55	16.55	12.41	24.82	12.41	18.62	12.41	24.82	31.03	37.24	43.44	49.65	43.44	331.04	
		vc = 130, fz = 0.20, ap = 0.5, ae = 0.5D		vc = 200, fz = 0.2, ap = 1.0, ae = 0.5D		vc = 100, fz = 0.3, ap = 1.0, ae = 0.5D														vc = 130, fz = 0.5, ap = 4.0, ae = 0.5D
<b>K</b> Cast iron (GC, GCD)	<b>PC5300</b>	2.86	5.72	5.72	8.59	14.32	14.32	21.48	21.48	21.48	32.22	21.48	42.97	53.71	64.45	75.2	85.94	75.2	366.69	
		vc = 180, fz = 0.20, ap = 0.5, ae = 0.5D		vc = 180, fz = 0.2, ap = 1.0, ae = 0.5D		vc = 180, fz = 0.2, ap = 1.5, ae = 0.5D														vc = 180, fz = 0.4, ap = 4.0, ae = 0.5D

**Required machine power (PC = 0.75xPhp)**

• RDKT10

Workpiece	Grade	Ø21	Ø25	Ø26	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Cutting conditions			
											vc	fz	ap	ae
<b>P</b> General structure steel (under 200HB) General carbon steel (under 30 HRC) High carbon steel, Alloy steel (30-40 HRC) High carbon steel, Alloy steel (40-50 HRC) Alloy steel (over 50 HRC)	<b>PC3700</b> <b>PC5300</b>	2.2	2.2	2.2	3.3	4.4	5.5	6.6	7.7	8.8	250	0.4	1.5	0.5D
		2.1	2.1	2.1	3.1	4.1	5.2	6.2	7.3	8.3	200	0.4	1.5	0.5D
		2.2	2.2	2.2	3.3	4.5	5.6	6.7	7.9	9	180	0.4	1.5	0.5D
		1.1	1.1	1.1	1.6	2.1	2.6	3.2	3.7	4.2	150	0.3	1.0	0.5D
		0.7	0.7	0.7	1.1	1.4	1.7	2.1	2.4	2.8	100	0.3	1.0	0.5D
<b>M</b> Stainless steel (STS)	<b>PC5300</b>	0.6	0.6	0.6	0.8	1.2	1.5	1.7	2	2.3	130	0.2	1.5	0.5D
<b>K</b> Cast iron (GC, GCD)	<b>PC5300</b>	0.6	0.6	0.6	0.9	1.2	1.5	1.8	2.1	2.4	180	0.2	1.5	0.5D

\* The figures in the above chart means Php value.

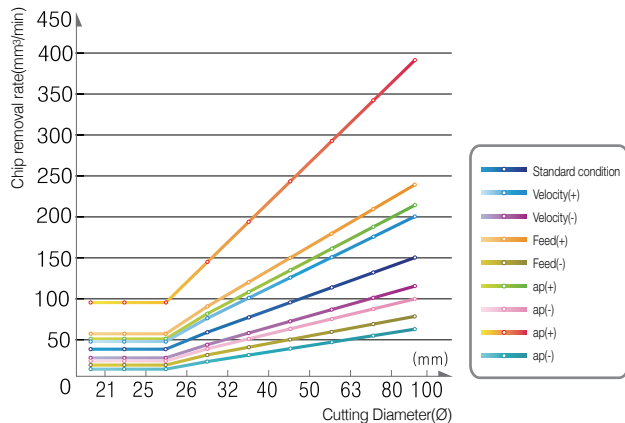
• RDKT12

Workpiece	Grade	Ø32	Ø33	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Cutting conditions			
										vc	fz	ap	ae
<b>P</b> General structure steel (under 200HB) General carbon steel (under 30 HRC) High carbon steel, Alloy steel (30-40 HRC) High carbon steel, Alloy steel (40-50 HRC) Alloy steel (over 50 HRC)	<b>PC3700</b> <b>PC5300</b>	1.7	1.7	2.6	3.5	3.5	4.4	5.3	6.1	200	0.4	1.5	0.5D
		2	2	3.1	4.1	2.6	5.2	6.2	7.2	180	0.4	1.5	0.5D
		2.2	2.2	3.3	4.4	2.8	5.6	6.7	7.8	160	0.4	1.5	0.5D
		1	1	1.5	1.6	2.1	2.6	3.1	3.6	140	0.3	1.0	0.5D
		0.7	0.7	1	1.4	0.8	1.7	2.1	2.4	100	0.3	1.0	0.5D
<b>M</b> Stainless steel (STS)	<b>PC5300</b>	0.5	0.5	0.8	1.1	0.7	1.4	1.7	2	130	0.2	1.5	0.5D
<b>K</b> Cast iron (GC, GCD)	<b>PC5300</b>	0.6	0.6	0.9	1.2	0.7	1.5	1.8	2.1	180	0.2	1.5	0.5D

\* The figures in the above chart means Php value.

**Chip removal rate by cutting conditions**

• Used insert: : RDKT10



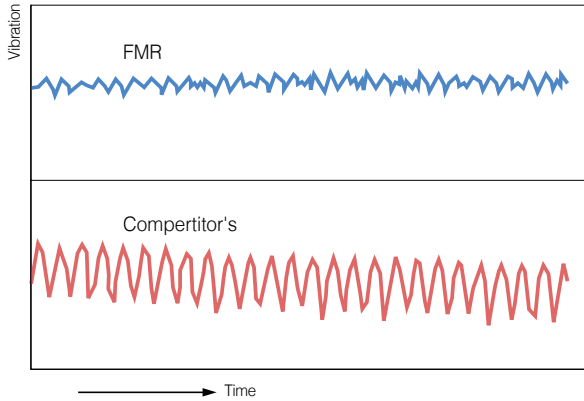
**Variation of cutting conditions**

Standard	ISO			
	vc=200	fz=0.4	ap=1.5	ae=0.5D
Speed(+)	250			
Speed(-)	150			
Feed(+)	0.6			
Feed(-)	0.2			
ap(+)	2			
ap(-)	1			
ae(+)	D			
ae(-)	0.2D			



## Future Mill (FMR)

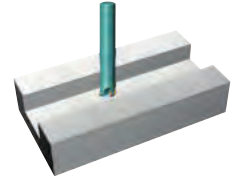
### FMR Vibration test



#### BOLT : Q36 ~ Q160

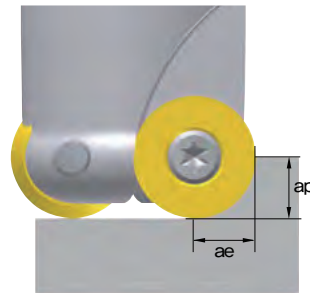
**Workpiece** STD11  
**Cutting condition** vc = 200m/min  
 fz = 0,40mm/t  
 ap = 2,0mm  
 ae = 4,0mm

**Tools** **Insert** : RDKT10T3M0-MM(PC3700)  
**Holder** : FMRS3032RD-S



### Cutting condition formulas for milling

Cutting speed	RPM
$vc = \frac{\pi \times DCX \times n}{1000}$ (m/min)	$n = \frac{vc \times 1000}{\pi \times DCX}$ (min <sup>-1</sup> )
Feed (per tooth)	Feed (per minute)
$fz = \frac{vf}{Z \times n}$ (mm/t)	$vf = fz \times n \times z$ (mm/min)
Chip removal rate	Required machine power
$Q = \frac{ap \times ae \times vf}{1000}$ (cm <sup>3</sup> /min)	$P_{kw} = \frac{Q \times kc}{60 \times 102 \times \eta}$ (kW)
	$Php = \frac{Pc}{0.75}$ (hp)



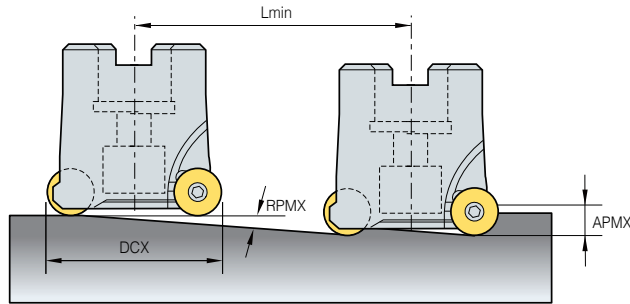
<b>vc</b> = Cutting speed (m/min)	<b>Pkw</b> = Required machine power (kW)
<b>n</b> = Revolution per a minute (min <sup>-1</sup> )	<b>Php</b> = Horsepower requirement (hp)
<b>DCX</b> = Cutting diameter(mm)	<b>Q</b> = Chip removal amount (cm <sup>3</sup> /min)
<b>De</b> = Efficient cutting diameter (mm)	<b>ap</b> = Depth of cut (mm)
<b>vf</b> = Feed per a minute (mm/min)	<b>ae</b> = Width of cut (mm)
<b>fz</b> = Feed per tooth (mm/t)	<b>kc</b> = Specific cutting resistance(kgf/mm <sup>2</sup> )
<b>z</b> = Number of tooth	$\eta$ = Mechanical efficiency (%)
<b>Pc</b> = Power requirement (kW)	

### Feed as per cutting depth

Designation	Chip breaker	Depth of cut (mm)									
		0.2~0.5	0.5~1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	
RDHW0501M0	-	0.25	0.15	-	-	-	-	-	-	-	
RDHW06T1M0	-	0.30	0.20	0.10	-	-	-	-	-	-	
RDHW0702M0	-	0.35	0.25	0.10	0.07	-	-	-	-	-	
RDHW0803M0	-	0.40	0.30	0.15	0.01	-	-	-	-	-	
RDKT10T3M0	MF/MM	-	0.40	0.35	0.30	0.20	-	-	-	-	
RDKT1204M0	MF/MM	-	0.50	0.45	0.30	0.25	0.22	-	-	-	
RDHW1605M0	-	-	0.60	0.50	0.45	0.35	0.30	0.20	0.10	-	
RDHW2006M0	-	-	-	0.60	0.50	0.40	0.30	0.25	0.15	0.10	
RDKT1605M0	MM	-	0.60	0.50	0.45	0.35	0.30	0.20	0.10	-	
RDKT2006M0	MM	-	-	0.60	0.50	0.40	0.30	0.25	0.15	0.10	

## Future Mill (FMR)

### Ramping technical data



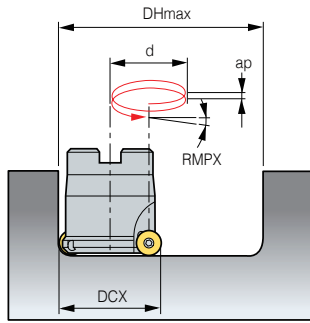
$$Lmin = \frac{APMX}{\tan(RMPX)} \text{ (mm)}$$

- Lmin : Min. inclination cutting length
- ap : Depth of cut
- RMPX : Max. ramping angle

Type	DCX	RMPX	Cutting length Lmin by ramping angle									
			ap = 1	ap = 2	ap = 2.5	ap = 3	ap = 3.5	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
FMR1000	08	18.14	3	6	8	-	-	-	-	-	-	-
	10	11.7	5	10	12	-	-	-	-	-	-	-
	12	8.43	7	13	17	-	-	-	-	-	-	-
	15	5.93	10	19	24	-	-	-	-	-	-	-
FMR1500	10	20.67	21	5	7	8	-	-	-	-	-	-
	12	10.05	10	11	14	17	-	-	-	-	-	-
	16	6.12	6	19	23	28	-	-	-	-	-	-
FMR2000	20	4.36	4	26	33	39	-	-	-	-	-	-
	15	9.42	6	12	15	18	21	-	-	-	-	-
FMR2500	20	5.85	10	20	24	29	34	-	-	-	-	-
	16	13.7	4	8	10	12	14	16	-	-	-	-
FMR3000	20	9.29	6	12	15	18	21	24	-	-	-	-
	25	6.56	9	17	22	26	30	35	-	-	-	-
	25	21.8	3	5	6	8	9	10	13	-	-	-
	32	13.24	4	9	11	13	15	17	21	-	-	-
	40	9.09	6	13	16	19	22	25	31	-	-	-
	50	6.52	9	17	22	26	31	35	44	-	-	-
FMR4000	63	4.76	12	24	30	36	42	48	60	-	-	-
	80	3.52	16	33	41	49	57	65	81	-	-	-
	100	2.69	21	43	53	64	74	85	106	-	-	-
	32	15.95	3	7	9	10	12	14	17	21	-	-
	40	10.3	6	11	14	17	19	22	28	33	-	-
	50	7.13	8	16	20	24	28	32	40	48	-	-
	63	5.08	11	22	28	34	39	45	56	67	-	-
FMR5000	80	3.69	16	31	39	47	54	62	78	93	-	-
	100	2.79	21	41	51	62	72	82	103	123	-	-
	125	2.14	27	54	67	80	94	107	134	161	-	-
	40	7.4	8	15	19	23	27	31	38	46	62	-
	50	5.22	11	22	27	33	38	44	55	66	88	-
	63	3.79	15	30	38	45	53	60	75	91	121	-
FMR6000	80	2.97	19	39	48	58	67	77	96	116	154	-
	100	2.09	27	55	69	82	96	110	137	164	219	-
	125	1.63	35	70	88	105	123	141	176	211	281	-
	40	7.44	8	15	19	23	27	31	38	46	61	77
	50	4.97	11	23	29	34	40	46	57	69	92	46
FMR6000	63	3.69	16	31	39	47	54	62	78	93	124	62
	80	2.72	21	42	53	63	74	84	105	126	168	84
	100	2.12	27	54	68	81	95	108	135	162	216	108
	125	1.57	36	73	91	109	128	146	182	219	292	146

**Future Mill (FMR)**

**Helical cutting technical data - DHmin**



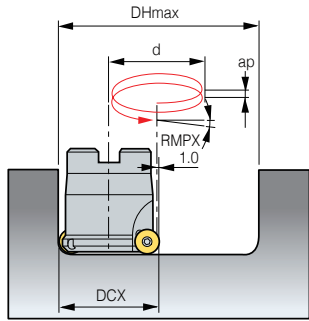
- DCX = Tool dia. (mm), ØDHmin, Max = Min, Max diameter (mm)
- d = Tool path (mm)
- DHmin(Min diameter) = DCXx2-Insert size, DHmax(Max diameter) = DCXx2-2
- d(Tool path) = DHmin, max-DCX

Type	Insert (IC)	DCX	DHmin	d	Ramping angle									
					ap = 1	ap = 2	ap = 2.5	ap = 3	ap = 3.5	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
FMR1000	5	08	11	3	6.11	12.35	15.57	-	-	-	-	-	-	-
	5	10	15	5	3.65	7.34	7.34	-	-	-	-	-	-	-
	5	12	19	7	2.61	5.23	5.23	-	-	-	-	-	-	-
	5	15	25	10	1.83	3.65	3.65	-	-	-	-	-	-	-
FMR1500	6	10	14	4	4.57	9.20	9.20	13.95	-	-	-	-	-	-
	6	12	18	6	3.04	6.11	6.11	9.20	-	-	-	-	-	-
	6	16	26	10	1.83	3.65	3.65	5.49	-	-	-	-	-	-
FMR2000	6	20	34	14	1.30	2.61	2.61	3.92	-	-	-	-	-	-
	7	15	23	8	2.28	4.57	4.57	6.88	8.04	-	-	-	-	-
	7	20	33	13	1.40	2.81	2.81	4.22	4.92	-	-	-	-	-
FMR2500	8	16	24	8	2.28	4.57	4.57	6.88	8.04	9.20	-	-	-	-
	8	20	32	12	1.52	3.04	3.04	4.57	5.34	6.11	-	-	-	-
	8	25	42	17	1.07	2.15	2.15	3.22	3.76	4.30	-	-	-	-
FMR3000	10	25	40	15	1.22	2.43	2.43	3.65	4.27	4.88	6.11	-	-	-
	10	32	54	22	0.83	1.66	1.66	2.49	2.91	3.32	4.15	-	-	-
	10	40	70	30	0.61	1.22	1.22	1.83	2.13	2.43	3.04	-	-	-
	10	50	90	40	0.46	0.91	0.91	1.37	1.60	1.83	2.28	-	-	-
	10	63	116	53	0.34	0.69	0.69	1.03	1.21	1.38	1.72	-	-	-
	10	80	150	70	0.26	0.52	0.52	0.78	0.91	1.04	1.30	-	-	-
FMR4000	10	100	190	90	0.20	0.41	0.41	0.61	0.71	0.81	1.01	-	-	-
	12	32	52	20	0.91	1.83	1.83	2.74	3.20	3.65	4.57	5.49	-	-
	12	40	68	28	0.65	1.30	1.30	1.96	2.28	2.61	3.26	3.92	-	-
	12	50	88	38	0.48	0.96	0.96	1.44	1.68	1.92	2.40	2.88	-	-
	12	63	114	51	0.36	0.72	0.72	1.07	1.25	1.43	1.79	2.15	-	-
	12	80	148	68	0.27	0.54	0.54	0.81	0.94	1.07	1.34	1.61	-	-
FMR5000	12	100	188	88	0.21	0.41	0.41	0.62	0.73	0.83	1.04	1.24	-	-
	12	125	238	113	0.16	0.32	0.32	0.48	0.57	0.65	0.81	0.97	-	-
	16	40	64	24	0.76	1.52	1.52	2.28	2.66	3.04	3.81	4.57	6.11	-
	16	50	84	34	0.54	1.07	1.07	1.61	1.88	2.15	2.69	3.22	4.30	-
	16	63	110	47	0.39	0.78	0.78	1.16	1.36	1.55	1.94	2.33	3.11	-
	16	80	144	64	0.29	0.57	0.57	0.86	1.00	1.14	1.43	1.71	2.28	-
FMR6000	16	100	184	84	0.22	0.43	0.43	0.65	0.76	0.87	1.09	1.30	1.74	-
	16	125	234	109	0.17	0.33	0.33	0.50	0.59	0.67	0.84	1.00	1.34	-
	20	50	80	30	0.61	1.22	1.22	1.83	2.13	2.43	3.04	3.65	4.88	6.11
	20	63	106	43	0.42	0.85	0.85	1.27	1.49	1.70	2.12	2.55	3.40	4.25
	20	80	140	60	0.30	0.61	0.61	0.91	1.06	1.22	1.52	1.83	2.43	3.04
	20	100	180	80	0.23	0.46	0.46	0.68	0.80	0.91	1.14	1.37	1.83	2.28
FMR6000	20	125	230	105	0.17	0.35	0.35	0.52	0.61	0.70	0.87	1.04	1.39	1.74
	20	160	300	140	0.13	0.26	0.26	0.39	0.46	0.52	0.65	0.78	1.04	1.30



## Future Mill (FMR)

### Helical cutting technical data - DHmin

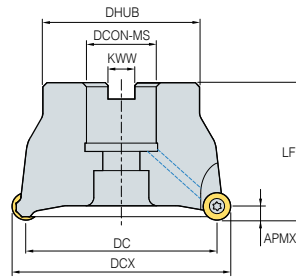


- **DCX** = Tool dia. (mm),  $\varnothing$ DHmin, Max = Min, Max diameter (mm)
- **d** = Tool path (mm)
- **DHmin(Min diameter)** = DCX $\times$ 2-Insert size, **DHmax(Max diameter)** = DCX $\times$ 2-2
- **d(Tool path)** = DHmin, max-DCX

Type	Insert (IC)	DCX	DHmin	d	Ramping angle									
					ap = 1	ap = 2	ap = 2.5	ap = 3	ap = 3.5	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
FMR1000	5	08	14	6	3.04	6.11	7.65	-	-	-	-	-	-	-
	5	10	18	8	2.28	4.57	5.72	-	-	-	-	-	-	-
	5	12	22	10	1.83	3.65	4.57	-	-	-	-	-	-	-
	5	15	28	13	1.40	2.81	3.51	-	-	-	-	-	-	-
FMR1500	6	10	18	8	2.28	4.57	5.72	6.88	-	-	-	-	-	-
	6	12	22	10	1.83	3.65	4.57	5.49	-	-	-	-	-	-
	6	16	30	14	1.30	2.61	3.26	3.92	-	-	-	-	-	-
	6	20	38	18	1.01	2.03	2.54	3.04	-	-	-	-	-	-
FMR2000	7	15	28	13	1.40	2.81	3.51	4.22	4.92	-	-	-	-	-
	7	20	38	18	1.01	2.03	2.54	3.04	3.55	-	-	-	-	-
FMR2500	8	16	30	14	1.30	2.61	3.26	3.92	4.57	5.23	-	-	-	-
	8	20	38	18	1.01	2.03	2.54	3.04	3.55	4.06	-	-	-	-
	8	25	48	23	0.79	1.59	1.98	2.38	2.78	3.18	-	-	-	-
FMR3000	10	25	48	23	0.79	1.59	1.98	2.38	2.78	3.18	3.97	-	-	-
	10	32	62	30	0.61	1.22	1.52	1.83	2.13	2.43	3.04	-	-	-
	10	40	78	38	0.48	0.96	1.20	1.44	1.68	1.92	2.40	-	-	-
	10	50	98	48	0.38	0.76	0.95	1.14	1.33	1.52	1.90	-	-	-
	10	63	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	-	-	-
	10	80	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	-	-	-
	10	100	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	-	-	-
FMR4000	12	32	62	30	0.61	1.22	1.52	1.83	2.13	2.43	3.04	3.65	-	-
	12	40	78	38	0.48	0.96	1.20	1.44	1.68	1.92	2.40	2.88	-	-
	12	50	98	48	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	-	-
	12	63	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	-	-
	12	80	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	-	-
	12	100	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	-	-
	12	125	248	123	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	-	-
FMR5000	16	40	78	38	0.48	0.96	1.20	1.44	1.68	1.92	2.40	2.88	3.85	-
	16	50	98	48	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	3.04	-
	16	63	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	2.39	-
	16	80	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	1.87	-
	16	100	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	1.49	-
	16	125	248	123	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	1.19	-
FMR6000	20	50	98	48	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	3.04	3.81
	20	63	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	2.39	2.99
	20	80	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	1.87	2.34
	20	100	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	1.49	1.86
	20	125	248	123	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	1.19	1.48
	20	160	318	158	0.12	0.23	0.29	0.35	0.40	0.46	0.58	0.69	0.92	1.16

(mm)

# FMRC(M)3000



- GAMP : 5°
- GAMF : -5°

(mm)

	Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
FMRCM	3040HRD		3	40	30	36	16	8.4	40	5	0.2
	3040HRD-H		4	40	30	36	16	8.4	40	5	0.2
	3050HRD	●	4	50	40	42	22	10.4	40	5	0.3
	3050HRD-H	●	5	50	40	42	22	10.4	40	5	0.3
	3063HRD		5	63	53	49	22	10.4	50	5	0.6
	3063HRD-H	●	6	63	53	49	22	10.4	50	5	0.6
FMRC (FMRCM)	3080HRD		6	80	70	57	25.4(27)	9.5(12.4)	50	5	1.1
	3080HRD-H		7	80	70	57	25.4(27)	9.5(12.4)	50	5	1.1
	3100HRD		7	100	90	67	31.75(32)	12.7(14.4)	63	5	2.1
	3100HRD-H		8	100	90	67	31.75(32)	12.7(14.4)	63	5	2.1

Note) Inner diameter is based on Metric standard for both FMRC/FMRCM if its cutting diameter range within Ø40~Ø63

( )Metric size, ● : Stock item

## Available inserts

RDKT-MF      RDKT-MM      RDCT-MA



Designation	Cermet	Coated										Uncoated		Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01
RDCT 10T3M0-MA															●	B16 B17
RDKT 10T3M0-MF																
RDKT 10T3M0-MM			●					●	●	●		●				

## Available arbors

Designation	DCON-MS	NC arbors
FMRCM 3040HRD	16	BT□□-FMC16-□□
FMRCM 3040HRD-H		
FMRCM 3050HRD	22	BT□□-FMC22-□□
FMRCM 3050HRD-H		
FMRCM 3063HRD		
FMRCM 3063HRD-H		
FMRC 3080HRD	25.4	BT□□-FMA/FMB25.4-□□
FMRC (FMRCM) 3080HRD-H	27	BT□□-FMB/FMC27-□□
FMRC 3100HRD	31.75	BT□□-FMA31.75-□□
FMRC 3100HRD-H	32	BT□□-FMC32-□□

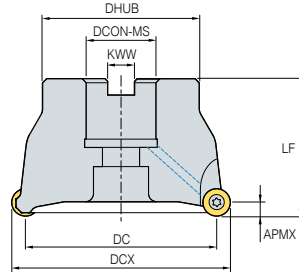
## Parts

Specification		
Ø40~Ø100	FTGA03508	TW15S

Available inserts **B16, B17**

Available arbors and bolt **E94 ~ E96**

## FMRC(M)4000



- GAMP : 5°
- GAMF : -5°

Designation		Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	(mm)
FMRCM	4050HRD	●	4	50	38	42	22	10.4	50	6	0.3
	4063HRD	●	4	63	51	49	22	10.4	50	6	0.6
	4063HRD-M		5	63	51	49	22	10.4	50	6	0.6
FMRC (FMRCM)	4080HRD	●	5	80	68	57	25.4(27)	9.5(12.4)	50	6	1
	4080HRD-M	(●)	6	80	68	57	25.4(27)	9.5(12.4)	50	6	1
	4100HRD		6	100	88	67	31.75(32)	12.7(14.4)	63(50)	6	1.9
	4100HRD-M		7	100	88	67	31.75(32)	12.7(14.4)	63(50)	6	1.9
	4125HRD		7	125	113	87	38.1(40)	15.9(16.4)	63	6	3.1
	4125HRD-M		8	125	113	87	38.1(40)	15.9(16.4)	63	6	3.1

Note) Inner diameter is based on Metric standard for both FMRC/FMRCM if its cutting diameter range within Ø50~Ø63

( ) Metric size, ● : Stock item

### Available inserts

		RDKT-MF			RDKT-MM			RDCT-MA								
Designation	Cermet	Coated										Uncoated		Page		
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A
RDCT	1204M0-MA														●	B16
RDKT	1204M0-MF							●		●		●				B17
	1204M0-MM		●					●	●	●		●				

### Available arbors

Designation	DCON-MS	Available arbors
FMRCM	4063HRD	BT□□-FMC22-□□
	4063HRD-M	
FMRC	4080HRD	BT□□-FMA/FMB25.4-□□
(FMRCM)	4080HRD-M	BT□□-FMB/FMC27-□□
	4100HRD	BT□□-FMA31.75-□□
	4100HRD-M	BT□□-FMC32-□□
	4125HRD	BT□□-FMA/FMB38.1-□□
	4125HRD-M	BT□□-FMB/FMC40-□□

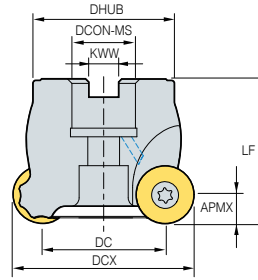
### Parts

Specification		
Ø50~Ø125	FTKA0410	TW15S

Available inserts **B16, B17**

Available arbors and bolt **E94 ~ E96**

# FMRC(M)5000



- GAMP : 5°
- GAMF : -5°

(mm)

	Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
FMRCM	5050HRD		3	50	34	42	22	10.4	50	8	0.3
	5063HRD		4	63	47	49	22	10.4	50	8	0.5
	5063HRD-H		5	63	47	49	22	10.4	50	8	0.5
FMRC (FMRCM)	5080HRD	● (●)	5	80	64	57	25.4(27)	9.5(12.4)	50	8	0.9
	5080HRD-H		6	80	64	57	25.4(27)	9.5(12.4)	50	8	0.9
	5100HRD	● (●)	6	100	84	67	31.75(32)	12.7(14.4)	63(50)	8	1.9
	5100HRD-H		7	100	84	67	31.75(32)	12.7(14.4)	63(50)	8	1.9
	5125HRD	(●)	7	125	109	87	38.1(40)	15.9(16.4)	63	8	3
	5125HRD-H		8	125	109	87	38.1(40)	15.9(16.4)	63	8	3

Note) Inner diameter is based on Metric standard for both FMRC/FMRCM if its cutting diameter range within Ø50~Ø63

( )Metric size, ● : Stock item

## Available inserts

RDHW-E,F,S      RDKT-MF      RDKT-ML      RDKT-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN80	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01	
RDHW	1605M0E																B16
	1605M0F																
	1605M0S																
RDKT	1605M0-MM							●									B17
	1605M0-MF																
	1605M0-ML																

## Available arbors

Designation	DCON-MS	Available arbors
FMRCM	5050HRD	BT□□-FMC22-□□
	5063HRD	
	5063HRD-H	
FMRC (FMRCM)	5080HRD	BT□□-FMA/FMB25.4-□□
	5080HRD-H	BT□□-FMB/FMC27-□□
	5100HRD	BT□□-FMA31.75-□□
	5100HRD-H	BT□□-FMC32-□□
	5125HRD	BT□□-FMA/FMB38.1-□□
	5125HRD-H	BT□□-FMB/FMC40-□□

## Parts

Specification		
Ø50~Ø125	FTGA0513-P	TW20-100

Available inserts **B16, B17**

Available arbors and bolt **E94 ~ E96**

## FMRC(M)6000

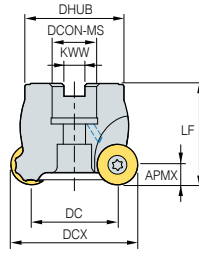


Fig. 1

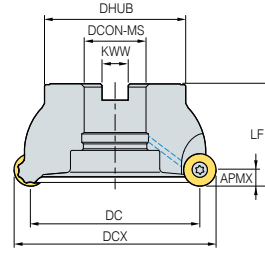


Fig. 2

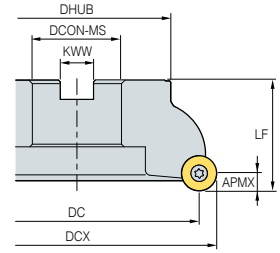


Fig. 3



- GAMP : 5°
- GAMF : -5°

(mm)

Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	kg	Fig.
<b>FMRCM</b> 6063HRD		3	63	43	49	22	10.4	50	10	0.5	1
6063HRD-M		4	63	43	49	22	10.4	50	10	0.5	1
<b>FMRC (FMRCM)</b> 6080HRD	(●)	4	80	60	57	25.4(27)	9.5(12.4)	50	10	0.8	1
6080HRD-M		5	80	60	57	25.4(27)	9.5(12.4)	50	10	0.8	1
6100HRD	● (●)	5	100	80	67	31.75(32)	12.7(14.4)	63	10	1.6	1
6100HRD-M		6	100	80	67	31.75(32)	12.7(14.4)	63	10	1.6	1
6125HRD	●	6	125	105	87	38.1(40)	15.9(16.4)	63	10	2.6	2(1)
6125HRD-M		7	125	105	87	38.1(40)	15.9(16.4)	63	10	2.7	2(1)
6160RD	(●)	8	160	140	107	50.8(40)	19(16.4)	63	10	4.4	3
6160RD-M		8	160	140	107	50.8(40)	19(16.4)	63	10	4.4	3

( ) Metric size, ● : Stock item

### Available inserts

RDHW-E,F,S      RDKT-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01	
<b>RDHW</b> 2006MOE																	B16
2006MOF																	
2006MOS																	
<b>RDKT</b> 2006M0-MM								●									

### Available arbors

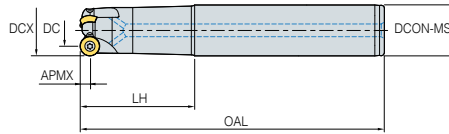
Designation	DCON-MS	Available arbors
<b>FMRCM</b> 6063HRD	22	BT□□-FMC22-□□
6063HRD-M		
<b>FMRC (FMRCM)</b> 6080HRD	25.4	BT□□-FMA/FMB25.4-□□
6080HRD-M	27	BT□□-FMB/FMC27-□□
6100HRD	31.75	BT□□-FMA31.75-□□
6100HRD-M	32	BT□□-FMC32-□□
6125HRD	38.1	BT□□-FMA/FMB38.1-□□
6125HRD-M	40	BT□□-FMB/FMC40-□□
6160RD	50.8	BT□□-FMA50.8-□□
6160RD-M	40	BT□□-FMB/FMC40-□□

### Parts

Specification	Screw	Wrench
Ø63~Ø160	FTGA0515-P	TW20-100

Available inserts **B16, B17**      Available arbors and bolt **E94 ~ E96**

# FMRS1000/1500



- GAMP : 5°
- GAMF : -5°~-1°

Designation		Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	(mm)
FMRS	1008HRD-M		1	8	2.97	10	30	80	2.5	0
	1008HRD-L		1	8	2.97	10	50	100	2.5	0.1
	1010HRD-M		2	10	5	12	44	100	2.5	0.8
	1010HRD-L		2	10	5	12	64	120	2.5	0.8
	1012HRD-M	●	2	12	7	12	44	100	2.5	0.1
	1012HRD-L		2	12	7	16	80	160	2.5	0.2
	1015HRD-M		3	15	10	16	80	160	2.5	0.2
	1015HRD-L		3	15	10	16	90	200	2.5	0.3
FMRS	1510HRD-M		1	10	3.9	12	44	100	3	0.7
	1510HRD-L		1	10	3.9	12	64	120	3	0.1
	1512HRD-M		2	12	6	12	54	110	3	0.1
	1512HRD-L	●	2	12	6	16	80	160	3	0.2
	1516HRD-M		3	16	10	16	60	130	3	0.2
	1516HRD-L		3	16	10	20	90	180	3	0.4
	1520HRD-M		3	20	14	20	80	150	3	0.3
	1520HRD-L		3	20	14	20	90	200	3	0.4

● : Stock item

## Available inserts

RDHW-E,F,S      RDKW



Type	Designation	Cermet		Coated										Uncoated		Page		
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		H01	
1000 type	RDHW 0501M0E																	B16 B17
	0501M0F																	
	0501M0S																	
RDKW 0501M0E																		
1500 type	RDHW 06T1M0E																	
	06T1M0F																	
	06T1M0S																	
RDKW 06T1M0E																		

## Parts

Specification	Screw	Wrench
Ø8~Ø15(1000 type)	FTNA0203	TW06P
Ø10~Ø20(1500 type)	FTNA02205	TW06P

Available inserts **B16, B17**

## FMRS2000/2500

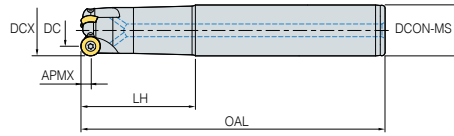


Fig. 1

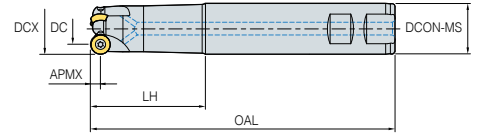


Fig. 2



- GAMP : 5°
- GAMF : -5°~-1°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		Fig.
FMRS	2015HRD-S		2	15	8	16	55	115	3.5	0.1	2
	2015HRD-M	●	2	15	8	20	80	150	3.5	0.3	1
	2015HRD-L		2	15	8	20	90	200	3.5	0.4	1
	2020HRD-S		3	20	14	20	65	125	3.5	0.3	2
	2020HRD-M		3	20	14	20	80	150	3.5	0.3	1
	2020HRD-L		3	20	14	25	90	200	3.5	0.6	1
FMRS	2516HRD-S		2	16	8	16	65	125	4	0.2	2
	2516HRD-M		2	16	8	16	80	150	4	0.2	1
	2516HRD-L		2	16	8	20	90	200	4	0.4	1
	2520HRD-S		2	20	12	20	65	125	4	0.2	2
	2520HRD-M	●	2	20	12	20	80	150	4	0.4	1
	2520HRD-L	●	2	20	12	20	90	200	4	0.6	1
	2525HRD-S	●	3	25	17	25	55	125	4	0.4	2
	2525HRD-M		3	25	17	25	90	200	4	0.7	1
	2525HRD-L		3	25	17	32	110	250	4	1.3	1

● : Stock item

### Available inserts

RDHW-E,F,S      RDKW



Type	Designation	Cermet		Coated								Uncoated		Page		
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A
2000 type	RDHW 0702M0E										●					
	RDHW 0702M0F															
	RDHW 0702M0S															
	RDKW 0702M0E								●							
2500 type	RDHW 0803M0E										●					
	RDHW 0803M0F															
	RDHW 0803M0S															
	RDKW 0803M0E								●							

### Parts

Specification		
Ø15~Ø20(2000 type)	FTNA02555	TW07S
Ø16~Ø25(2500 type)	FTNA0305 FTNA0306(Ø20 over)	TW09S

Available inserts **B16, B17**

# FMRS3000

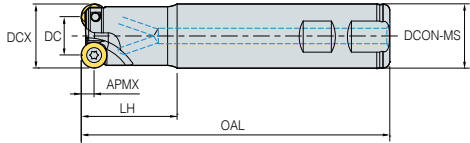


Fig. 1

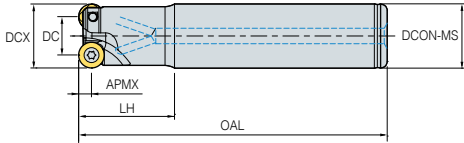


Fig. 2



- GAMP : 5°
- GAMF : -8°~-5°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		Fig.
FMRS	3021HRD-M		1	21	11	20	40	150	5	0.3	1
	3021HRD-M2		2	21	11	20	40	150	5	0.3	1
	3021HRD-L		1	21	11	20	50	200	5	0.4	1
	3021HRD-L2	●	2	21	11	20	50	200	5	0.4	1
	3025HRD-S	●	2	25	15	25	35	115	5	0.4	2
	3025HRD-M	●	2	25	15	25	70	200	5	0.6	1
	3025HRD-L	●	2	25	15	25	100	250	5	0.8	1
	3026HRD-M	●	2	26	16	25	70	200	5	0.6	1
	3026HRD-L		2	26	16	25	100	250	5	0.8	1
	3032HRD-S	●	3	32	22	32	40	125	5	0.7	2
	3032HRD-M	●	3	32	22	32	70	200	5	1.1	1
	3032HRD-L		3	32	22	32	150	300	5	1.6	1
	3040HRD-S		4	40	30	32	40	125	5	0.7	2
	3040HRD-M	●	4	40	30	32	70	200	5	1.1	1
3040HRD-L		4	40	30	32	150	300	5	1.7	1	

● : Stock item

## Available inserts

RDKT-MF      RDKT-MM      RDCT-MA



Designation	Cermet		Coated										Uncoated		Page	
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		H01
RDCT 10T3M0-MA															●	B16 B17
RDKT 10T3M0-MF																
10T3M0-MM			●					●	●	●		●				

## Parts

Specification		
Ø21	FTGA03507	TW15S
Ø25~Ø40	FTGA03508	TW15S

Available inserts **B16, B17**



# FMRS4000

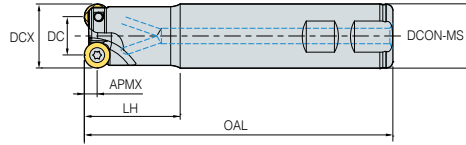


Fig. 1

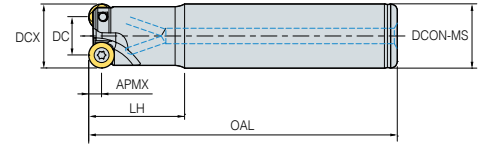


Fig. 2



- GAMP : 5°
- GAMF : -8°~ -5°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		Fig.
FMRS	4032HRD-S	●	2	32	20	32	40	125	6	0.6	2
	4032HRD-M	●	2	32	20	32	70	200	6	1	1
	4032HRD-L		2	32	20	32	150	300	6	1.6	1
	4033HRD-S		2	33	21	32	40	125	6	0.7	2
	4033HRD-M	●	2	33	21	32	70	200	6	1.1	1
	4033HRD-L		2	33	21	32	150	300	6	1.6	1
	4040HRD-S		3	40	28	32	40	125	6	0.7	2
	4040HRD-M	●	3	40	28	32	70	200	6	1.1	1
	4040HRD-L	●	3	40	28	32	150	300	6	1.6	1
	4040HRD-S40		3	40	28	40	40	125	6	1.1	2
	4040HRD-M40		3	40	28	40	70	200	6	1.6	1
	4040HRD-L40		3	40	28	40	150	300	6	2.3	1
	4040HRD-S42		3	40	28	42	40	125	6	1.6	2
	4040HRD-M42		3	40	28	42	70	200	6	1.7	1
	4040HRD-L42		3	40	28	42	150	300	6	2.4	1
	4050HRD-S	●	4	50	38	42	50	150	6	1.5	2
	4050HRD-M	●	4	50	38	42	50	250	6	2.1	1
	4050HRD-L		4	50	38	42	50	300	6	2.9	1
	4050HRD-S40		4	50	38	40	50	150	6	1.4	2
	4050HRD-M40		4	50	38	40	50	250	6	2.3	1
4050HRD-L40		4	50	38	40	50	300	6	2.9	1	

● : Stock item

## Available inserts

RDKT-MF      RDKT-MM      RDCT-MA



Designation	Cermet	Coated										Uncoated		Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9630	PC9540	PC5300	PC5400		ST30A	H01
RDCT 1204M0-MA															●	B16 B17
RDKT 1204M0-MF								●		●		●				
RDKT 1204M0-MM			●					●	●	●		●				

## Parts

Specification		
Ø32~Ø50	FTKA0410	TW15S

Available inserts **B16, B17**

# FMRS5000

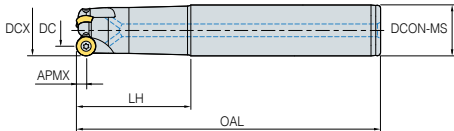


Fig. 1

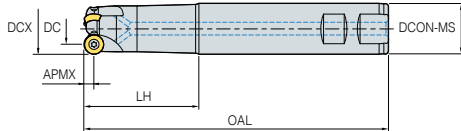


Fig. 2



- GAMP : 5°
- GAMF : -8°~-5°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		Fig.
FMRS	5040HRD-S		2	40	24	32	43	125	8	1.4	2
	5040HRD-M		2	40	24	32	70	200	8	1.1	1
	5040HRD-L		2	40	24	32	150	300	8	1.7	1
	5040HRD-S40		2	40	24	40	40	125	8	1	2
	5040HRD-M40		2	40	24	40	70	200	8	2.3	1
	5040HRD-L40		2	40	24	40	150	300	8	2.3	1
	5040HRD-S42		2	40	24	42	40	125	8	0	2
	5040HRD-M42		2	40	24	42	70	200	8	2.4	1
	5040HRD-L42		2	40	24	42	150	300	8	2.4	1
	5050HRD-S40		3	50	34	40	50	150	8	1.4	2
	5050HRD-M40		3	50	34	40	50	250	8	1.7	1
	5050HRD-L40		3	50	34	40	50	300	8	3	1
	5050HRD-S		3	50	34	42	50	150	8	1.4	2
	5050HRD-M		3	50	34	42	50	250	8	1.8	1
	5050HRD-L		3	50	34	42	50	300	8	3	1
	5063HRD-S40		4	63	47	40	50	150	8	1.6	2
	5063HRD-M40		4	63	47	40	50	250	8	2.5	1
	5063HRD-L40		4	63	47	40	50	300	8	3	1
5063HRD-S		4	63	47	42	50	150	8	1.6	2	
5063HRD-M		4	63	47	42	50	250	8	2.7	1	
5063HRD-L		4	63	47	42	50	300	8	3.2	1	

● : Stock item

## Available inserts

RDHW-E,F,S      RDKT-MF      RDKT-ML      RDKT-MM



Designation	Cermet		Coated										Uncoated		Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		H01	
RDHW	1605M0E																B16
	1605M0F																
	1605M0S																
RDKT	1605M0-MF							●									B17
	1605M0-MM																
	1605M0-ML																

## Parts

Specification		
Ø40~Ø63	FTGA0513-P	TW20-100

Available inserts **B16, B17**

# FMRS6000

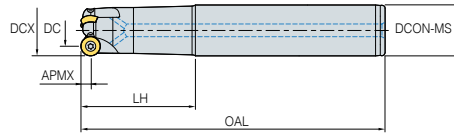


Fig. 1

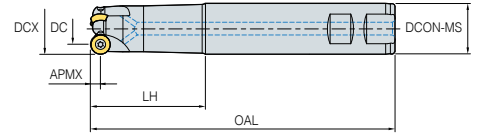


Fig. 2



- GAMP : 5°
- GAMF : -8°~-5°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		Fig.
FMRS	6050HRD-S40		3	50	31	40	50	150	10	1.3	2
	6050HRD-S42		3	50	31	42	50	150	10	0	2
	6050HRD-M40		3	50	31	40	50	250	10	2.2	1
	6050HRD-M42		3	50	31	42	50	250	10	2.4	1
	6050HRD-L40		3	50	31	40	50	300	10	2.7	1
	6050HRD-L42		3	50	31	42	50	300	10	1.3	1
	6063HRD-S40		4	63	44	40	50	150	10	1.5	2
	6063HRD-S42		4	63	44	42	50	150	10	1.3	2
	6063HRD-M40		4	63	44	40	50	250	10	2.5	1
	6063HRD-M42		4	63	44	42	50	250	10	2.7	1
	6063HRD-L40		4	63	44	40	50	300	10	3	1
	6063HRD-L42		4	63	44	42	50	300	10	3.2	1

● : Stock item

## Available inserts

RDHW-E,F,S      RDKT-MM



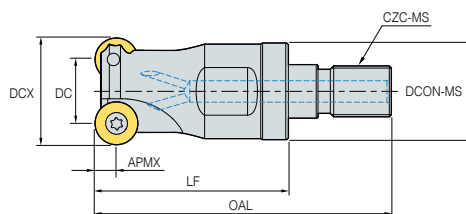
Designation	Cermet		Coated										Uncoated		Page	
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		H01
RDHW	2006MOE															B16
	2006MOF															
	2006MOS															
RDKT	2006M0-MM							●								

## Parts

Specification		
Ø50~Ø63	FTGA0515-P	TW20-100

Available inserts **B16, B17**

# FMRM1000/1500



- GAMP : 0°~5°
- GAMF : -5°~-1°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
FMRM	1008HRD-M06		1	8	2.97	9.5	25	40	M06	2.5	0.1
	1010HRD-M06		2	10	5	9.5	25	40	M06	2.5	0.1
	1012HRD-M06		2	12	7	11	25	40	M06	2.5	0.1
	1015HRD-M08		3	15	10	14.5	30	47	M08	2.5	0.1
FMRM	1510HRD-M06		1	10	3.9	9.5	25	40	M06	3	0.1
	1512HRD-M06	●	2	12	6	11	25	40	M06	3	0.1
	1516HRD-M08		3	16	10	14.5	30	47	M08	3	0.1
	1520HRD-M10		3	20	14	18	35	56	M10	3	0.1

● : Stock item

## Available inserts

RDHW-E,F,S      RDKW



Type	Designation	Cermet	Coated										Uncoated		Page		
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01
1000 type	RDHW 0501M0E																B16
	0501M0F																
	0501M0S																
	RDKW 0501M0E																B17
1500 type	RDHW 06T1M0E																
	06T1M0F																
	06T1M0S																
	RDKW 06T1M0E																

## Available adaptors

	Designation	Available adaptors
FMRM	1008HRD-M06	MAT-M06
	1010HRD-M06	
	1012HRD-M06	
	1015HRD-M08	MAT-M08
	1510HRD-M06	MAT-M06
	1512HRD-M06	
	1515HRD-M08	MAT-M08
	1520HRD-M10	MAT-M10

Designation : FMRM1008HRD-M06  
Modular head threading measure size (M06)

||

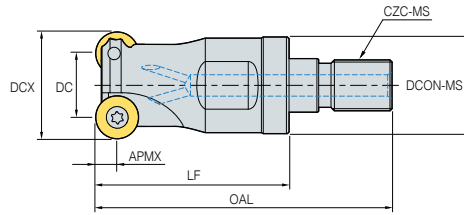
Adaptor spec.: MAT-M06-020-S10S  
Adaptor threading measure (M06)

## Parts

Specification		
Ø8~Ø15(1000 type)	FTNA0203	TW06P
Ø10~Ø20(1500 type)	FTNA02205	TW06P

Available inserts **B16, B17**      Available adaptors **B400**

## FMRM2000/2500



- GAMP : 0°~5°
- GAMF : -5°~-1°

	Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CXC-MS	APMX	(mm)
FMRM	2015HRD-M08		2	15	8	14.5	30	47	M08	3.5	0.1
	2020HRD-M10		3	20	13	18	35	56	M10	3.5	0.1
FMRM	2516HRD-M08		2	16	8	14.5	30	47	M08	4	0.1
	2520HRD-M10		2	20	12	18	35	56	M10	4	0.1
	2525HRD-M12		3	25	17	22.5	45	69	M12	4	0.1

● : Stock item

### Available inserts

RDHW-E,F,S      RDKW



Type	Designation	Cermet		Coated										Uncoated		Page	
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		H01
2000 type	RDHW 0702M0E																B16
	0702M0F																
	0702M0S																
2500 type	RDKW 0702M0E																B17
	RDHW 0803M0E																
	0803M0F																
	0803M0S																
RDKW 0803M0E																	

### Available adaptors

	Designation	Available adaptors
FMRM	2015HRD-M08	MAT-M08
	2020HRD-M10	MAT-M10
	2516HRD-M08	MAT-M08
	2520HRD-M10	MAT-M10
	2525HRD-M12	MAT-M12

Designation : FMRM2015HRD-M08  
Modular head threading measure size (M08)

II

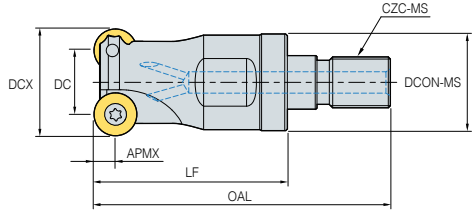
Adaptor spec.: MAT-M08-020-S16S  
Adaptor threading measure (M08)

### Parts

Specification	Screw	Wrench
Ø15~Ø20(2000 type)	FTNA02555	TW07S
Ø16~Ø25(2500 type)	FTNA0305	TW09S

Available inserts **B16, B17**      Available adaptors **B400**

# FMRM3000



- GAMP : 5°
- GAMF : -8°~-5°

(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
<b>FMRM</b> 3021HRD-M10		2	21	11	18	35	56	M10	5	0.1
3025HRD-M12	●	2	25	15	22.5	45	69	M12	5	0.1
3032HRD-M16		3	32	22	29	50	77	M16	5	0.2
3042HRD-M16		4	42	32	29	50	77	M16	5	0.3

● : Stock item

## Available inserts

		RDHW-E,F,S	RDCT-MA	RDKT-MF	RDKT-ML	RDKT-MM											
Designation		Cermet	Coated								Uncoated		Page				
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	H01
RDCT	10T3M0-MA															●	B16
RDKT	10T3M0-MF									●		●					B17
	10T3M0-MM		●					●	●	●		●					

## Available adaptors

Designation	Available adaptors
<b>FMRM</b> 3021HRD-M10	MAT-M10
3025HRD-M12	MAT-M12
3032HRD-M16	MAT-M16
3042HRD-M16	

Designation : FMRM3021HRD-M10  
 Modular head threading measure size (M10)

II

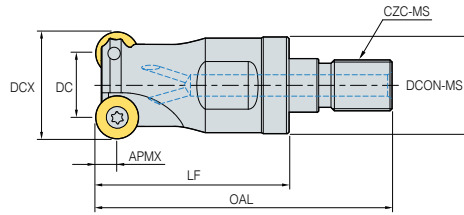
Adaptor spec.: MAT-M10-030-S20S  
 Adaptor threading measure (M10)

## Parts

Specification		
Ø21	FTGA03507	TW15S
Ø25~Ø42	FTGA03508	TW15S

Available inserts **B16, B17** Available adaptors **B400**

## FMRM4000/5000



- GAMP : 5°
- GAMF : -8°~ -5°

Designation		Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	kg
FMRM	4025HRD-M12		2	25	13	22.5	45	69	M12	6	0.1
	4032HRD-M16		2	32	20	29	50	77	M16	6	0.2
	4040HRD-M16		3	40	28	29	50	77	M16	6	0.3
	4042HRD-M16		4	42	30	29	50	77	M16	6	0.3
FMRM	5040HRD-M16		2	40	24	29	50	77	M16	8	0.2

(mm)

● : Stock item

### Available inserts

		RDHW-E	RDCT-MA	RDKT-MF	RDKT-ML	RDKT-MM											
Type	Designation	Cermet	Coated							Uncoated	Page						
		CN80	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6100		PC9530	PC9540	PC5300	PC5400	ST30A	H01
4000 type	RDCT 1204M0-MA															●	B16 B17
	RDKT 1204M0-MF							●		●		●					
	1204M0-MM			●				●	●	●		●					
5000 type	RDHW 1605M0-E																
	RDKT 1605M0-MF																
	1605M0-ML																
	1605M0-MM							●									

### Available adaptors

	Designation	Available adaptors
FMRM	4025HRD-M12	MAT-M12
	4032HRD-M16	
	4040HRD-M16	
	4042HRD-M16	MAT-M16
	5040HRD-M16	

Designation : FMRM4025HRD-M12  
Modular head threading measure size (M12)

II

Adaptor spec.: MAT-M12-030-S25S  
Adaptor threading measure (M12)

### Parts

Specification		
Ø25~Ø42(4000 type)	FTKA0410	TW15S
Ø40(5000 type)	FTGA0513-P	TW20-100

Available inserts B16, B17

Available adaptors B400

Future Mill series for mold making











# FMR P-Positive

- Enhanced rigidity and Damped vibration
- 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
- **Chip breaker** → Concave shape ensures wide chip pocket and lowers cutting temperature
- **Through-coolant system** - Superb chip evacuation - Low cutting heat ensures long tool life
- **Clearance face for preventing rotation** - Prevents rotation in machining
  - Prevents interference in high-feed machining
  - Divides corners
  - Ensures stable clamping
- Optimal grades and chip breakers for various workpieces

## Features of chip breaker

Chip breaker insert	Cutting-edge	Use	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



# B Technical Information for FMR P-Positive

## Recommended cutting conditions

\* Recommended chip breaker: ● First ○ Second

Workpiece	Hardness	Grade	Cutting conditions				Chip breaker						
			vc (m/min)	fz (mm/t)	ap (mm)	ae (mm)	MA	ML	MF	MM	None 1 2	C/B	
P	Low carbon steel	HB80~180	PC5400	100~250	0.12~0.70	0.3~6.0	0.7D~0.1D	-	-	●	○	-	-
	High carbon steel	HB180~280	PC5400	100~220	0.12~0.70	0.3~6.0	0.7D~0.1D	-	-	●	○	-	-
	Low alloy steel	Under H <sub>R</sub> C27	PC3700	180~290	0.20~0.60	0.3~6.0	0.7D~0.1D	-	-	-	●	○	-
			PC5400/PC5300	100~200	0.20~0.60	0.3~6.0	0.7D~0.1D	-	-	-	●	○	-
	Low pre-hardened steel	H <sub>R</sub> C20~50	PC3700	130~250	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	-	●	○
			PC2510/PC5300	50~150	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	-	●	○
	High alloy steel	Under H <sub>R</sub> C27	PC3700	130~250	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	●	○	-
PC5300			100~220	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	●	○	-	
High pre-hardened steel	H <sub>R</sub> C20~48	PC2510/PC5300	50~150	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	-	●	○	
M	Stainless steel	Under HB270	PC5300/PC5400	100~150	0.20~0.60	0.3~6.0	0.7D~0.1D	-	-	○	●	-	-
K	Gray cast iron, Ductile cast iron	Under 350MPa	PC5300	120~210	0.20~0.60	0.3~6.0	0.7D~0.1D	-	-	○	●	-	-
N	Aluminum	-	H01	300~800	0.30~0.60	0.3~6.0	0.7D~0.1D	●	-	-	-	-	-
S	Heat resistant alloy	Fe	H <sub>R</sub> C20~30	PC5300/PC5400	35~60	0.30~0.50	~ 0.5	0.7D~0.1D	-	●	○	-	-
		Ni or Co	H <sub>R</sub> C40~45	PC5300/PC5400	30~50	0.30~0.50	~ 0.5	0.7D~0.1D	-	●	○	-	-
	Titanium	H <sub>R</sub> C35~45	PC5300/PC5400	40~70	0.30~0.50	~ 1.5	0.7D~0.1D	-	●	○	-	-	
H	High hardened materials	Over H <sub>R</sub> C50	PC2505/PC2510	30~50	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	-	●	○

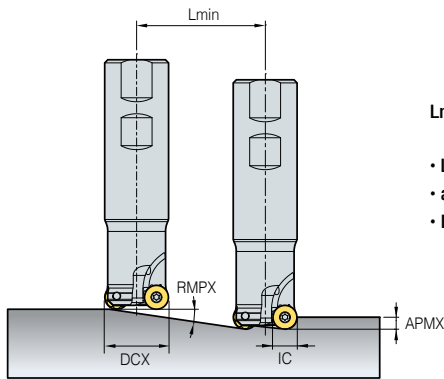
## Feed per tooth according to ap (fz, mm/t)

(mm)

Type	Insert size (IC)	Feed per tooth according to ap							
		ap = 1	ap = 2	ap = 3	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
RPMT08	8	0.30	0.22	0.18	0.15	-	-	-	-
RPMT10	10	0.40	0.28	0.25	0.20	0.12	-	-	-
RPMT12	12	0.60	0.45	0.35	0.30	0.25	0.20	-	-
RPMT16	16	0.65	0.45	0.40	0.32	0.30	0.28	0.23	-
RPMT20	20	0.70	0.50	0.42	0.35	0.32	0.29	0.25	0.22

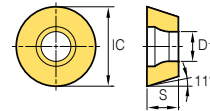
**FMR P-Positive**

**Maximum angle table for ramping machining**



$$L_{min} = \frac{APMX}{\tan(RMPX)} \text{ (mm)}$$

- **Lmin** = Maximum angle table for ramping machining
- **ap** : Depth of cut
- **RMPX** : Max. ramping angle

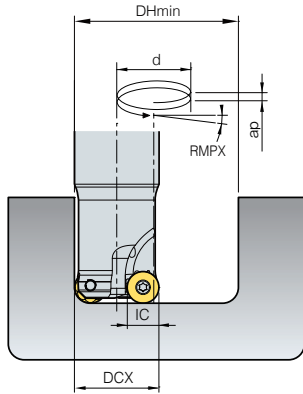


Type	Insert size (IC)	DCX	RMPX	Cutting length L (mm) by ap									
				ap=1	ap=2	ap=2.5	ap=3	ap=3.5	ap=4	ap=5	ap=6	ap=8	ap=10
FMR2500	8	17	4.7	12	24	30	36	42	48	-	-	-	-
	8	18	4.1	14	28	34	41	48	55	-	-	-	-
	8	20	15.4	4	7	9	11	13	14	-	-	-	-
	8	21	13.9	4	8	10	12	14	16	-	-	-	-
	8	25	9.8	6	12	14	17	20	23	-	-	-	-
FMR3000	8	26	9.2	6	12	16	19	22	25	-	-	-	-
	10	25	13.8	4	8	10	12	14	16	20	-	-	-
	10	26	12.6	4	9	11	13	16	18	22	-	-	-
	10	32	8.4	7	14	17	20	24	27	34	-	-	-
	10	33	8.0	7	14	18	21	25	29	36	-	-	-
	10	40	5.8	10	20	25	30	34	39	49	-	-	-
	10	50	4.2	14	27	34	41	48	55	68	-	-	-
FMR4000	10	63	3.1	19	37	47	56	65	75	93	-	-	-
	10	66	2.9	20	40	50	60	69	79	99	-	-	-
	12	25	4.5	13	25	32	38	44	51	63	76	-	-
	12	26	4.1	14	28	35	42	49	56	70	84	-	-
	12	32	14.7	4	8	10	11	13	15	19	23	-	-
	12	33	13.8	4	8	10	12	14	16	20	24	-	-
	12	40	9.6	6	12	15	18	21	24	30	36	-	-
	12	50	6.7	9	17	21	26	30	34	43	51	-	-
FMR5000	12	63	4.8	12	24	30	36	42	48	60	72	-	-
	12	66	4.5	13	26	32	38	45	51	64	77	-	-
	12	80	3.5	17	33	41	50	58	66	83	99	-	-
	12	100	2.6	22	44	55	65	76	87	109	131	-	-
	16	40	17.8	3	6	8	9	11	12	16	19	25	-
	16	50	11.3	5	10	13	15	18	20	25	30	40	-
	16	63	7.6	7	15	19	22	26	30	37	45	60	-
	16	66	7.1	8	16	20	24	28	32	40	48	64	-
FMR6000	16	80	5.3	11	21	27	32	37	43	53	64	85	-
	16	100	4.0	14	29	36	43	51	58	72	87	116	-
	16	125	3.0	19	38	48	58	67	77	96	115	154	-
	16	160	2.2	26	52	65	78	90	103	129	155	207	-
	20	50	17.8	3	6	8	9	11	12	16	19	25	31
	20	63	11.1	5	10	13	15	18	20	25	30	41	51
	20	80	7.4	8	15	19	23	27	31	38	46	61	77
	20	100	5.3	11	21	27	32	37	43	53	64	85	107
FMR6000	20	125	4.0	14	29	36	43	51	58	72	87	116	145
	20	160	2.9	20	40	49	59	69	79	99	119	158	198
	20	200	2.2	26	52	65	78	90	103	129	155	207	258
	20	250	1.7	33	67	84	100	117	134	167	200	267	334

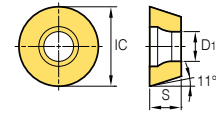
\* Insert size (IC): Please refer page B17, B18 applicable insert drawing.

## FMR P-Positive

### Minimum hole diameter table for helical machining (ØDHmin)



- DCX = Tool dia. (mm), DHmin, max = DCX(mm)
- IC = Tool Path, mm
- DHmin(Minimum hole diameter) = DCX×2-Insert size
- DHmax(Maximum hole diameter) = DCX×2-2
- d(Tool path, mm) = DHmin, max- DCX



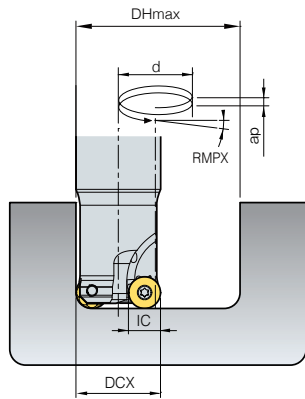
(mm)

Type	Insert size (IC)	DCX	RMPX	ØDH min	d	Ramping angle									
						ap=1	ap=2	ap=2.5	ap=3	ap=3.5	ap=4	ap=5	ap=6	ap=8	ap=10
FMR2500	8	17	4.7	26	9	2.03	4.06	-	-	-	-	-	-	-	-
	8	18	4.1	28	10	1.83	3.65	-	-	-	-	-	-	-	-
	8	20	15.4	32	12	1.52	3.04	3.81	4.57	5.34	6.11	-	-	-	-
	8	21	13.9	34	13	1.40	2.81	3.51	4.22	4.92	5.63	-	-	-	-
	8	25	9.8	42	17	1.07	2.15	2.69	3.22	3.76	4.30	-	-	-	-
FMR3000	8	26	9.2	44	18	1.01	2.03	2.54	3.04	3.55	4.06	-	-	-	-
	10	25	13.8	40	15	1.22	2.43	3.04	3.65	4.27	4.88	-	-	-	-
	10	26	12.6	42	16	1.14	2.28	2.85	3.43	4.00	4.57	-	-	-	-
	10	32	8.4	54	22	0.83	1.66	2.07	2.49	2.91	3.32	-	-	-	-
	10	33	8.0	56	23	0.79	1.59	1.98	2.38	2.78	3.18	-	-	-	-
	10	40	5.8	70	30	0.61	1.22	1.52	1.83	2.13	2.43	-	-	-	-
	10	50	4.2	90	40	0.46	0.91	1.14	1.37	1.60	1.83	-	-	-	-
	10	63	3.1	116	53	0.34	0.69	0.86	1.03	1.21	1.38	-	-	-	-
FMR4000	10	66	2.9	122	56	0.33	0.65	0.81	0.98	1.14	1.30	-	-	-	-
	12	25	4.5	38	13	1.40	2.81	3.51	-	-	-	-	-	-	-
	12	26	4.1	40	14	1.30	2.61	3.26	-	-	-	-	-	-	-
	12	32	14.7	52	20	0.91	1.83	2.28	2.74	3.20	3.65	4.57	5.49	-	-
	12	33	13.8	54	21	0.87	1.74	2.17	2.61	3.04	3.48	4.35	5.23	-	-
	12	40	9.6	68	28	0.65	1.30	1.63	1.96	2.28	2.61	3.26	3.92	-	-
	12	50	6.7	88	38	0.48	0.96	1.20	1.44	1.68	1.92	2.40	2.88	-	-
	12	63	4.8	114	51	0.36	0.72	0.89	1.07	1.25	1.43	1.79	2.15	-	-
	12	66	4.5	120	54	0.34	0.68	0.84	1.01	1.18	1.35	1.69	2.03	-	-
FMR5000	12	80	3.5	148	68	0.27	0.54	0.67	0.81	0.94	1.07	1.34	1.61	-	-
	12	100	2.6	188	88	0.21	0.41	0.52	0.62	0.73	0.83	1.04	1.24	-	-
	16	40	17.8	64	24	0.76	1.52	1.90	2.28	2.66	3.04	3.81	4.57	6.11	-
	16	50	11.3	84	34	0.54	1.07	1.34	1.61	1.88	2.15	2.69	3.22	4.30	-
	16	63	7.6	110	47	0.39	0.78	0.97	1.16	1.36	1.55	1.94	2.33	3.11	-
	16	66	7.1	116	50	0.36	0.73	0.91	1.09	1.28	1.46	1.83	2.19	2.92	-
	16	80	5.3	144	64	0.29	0.57	0.71	0.86	1.00	1.14	1.43	1.71	2.28	-
	16	100	4.0	184	84	0.22	0.43	0.54	0.65	0.76	0.87	1.09	1.30	1.74	-
FMR6000	16	125	3.0	234	109	0.17	0.33	0.42	0.50	0.59	0.67	0.84	1.00	1.34	-
	16	160	2.2	304	144	0.13	0.25	0.32	0.38	0.44	0.51	0.63	0.76	1.01	-
	20	50	17.8	80	30	0.61	1.22	1.52	1.83	2.13	2.43	3.04	3.65	4.88	6.11
	20	63	11.1	106	43	0.42	0.85	1.06	1.27	1.49	1.70	2.12	2.55	3.40	4.25
	20	80	7.4	140	60	0.30	0.61	0.76	0.91	1.06	1.22	1.52	1.83	2.43	3.04
	20	100	5.3	180	80	0.23	0.46	0.57	0.68	0.80	0.91	1.14	1.37	1.83	2.28
	20	125	4.0	230	105	0.17	0.35	0.43	0.52	0.61	0.70	0.87	1.04	1.39	1.74
	20	160	2.9	300	140	0.13	0.26	0.33	0.39	0.46	0.52	0.65	0.78	1.04	1.30
20	200	2.2	380	180	0.10	0.20	0.25	0.30	0.35	0.41	0.51	0.61	0.81	1.01	
20	250	1.7	480	230	0.08	0.16	0.20	0.24	0.28	0.32	0.40	0.48	0.63	0.79	

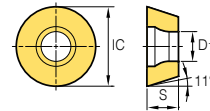
\* Insert size (IC): Please refer page B17, B18 applicable insert drawing.

**FMR P-Positive**

**Maximum hole diameter table for helical machining (ØDHmax)**



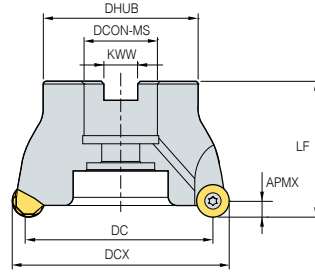
- DCX = Tool dia. (mm), DHmin, max = DCX(mm)
- d = Tool Path, mm
- DHmin(Minimum hole diameter) = DCX×2-Insert size
- DHmax(Maximum hole diameter) = DCX×2-2
- d(Tool path, mm) = DHmin, max- DCX



Type	Insert size (IC)	DCX	RMPX	ØDH min	d	Ramping angle									
						ap=1	ap=2	ap=2.5	ap=3	ap=3.5	ap=4	ap=5	ap=6	ap=8	ap=10
FMR2500	8	17	4.7	32	15	1.22	2.43	3.04	3.65	-	-	-	-	-	-
	8	18	4.1	34	16	1.14	2.28	2.85	3.43	-	-	-	-	-	-
	8	20	15.4	38	18	1.01	2.03	2.54	3.04	3.55	4.06	-	-	-	-
	8	21	13.9	40	19	0.96	1.92	2.40	2.88	3.37	3.85	-	-	-	-
	8	25	9.8	48	23	0.79	1.59	1.98	2.38	2.78	3.18	-	-	-	-
FMR3000	8	26	9.2	50	24	0.76	1.52	1.90	2.28	2.66	3.04	-	-	-	-
	10	25	13.8	48	23	0.79	1.59	1.98	2.38	2.78	3.18	-	-	-	-
	10	26	12.6	50	24	0.76	1.52	1.90	2.28	2.66	3.04	-	-	-	-
	10	32	8.4	62	30	0.61	1.22	1.52	1.83	2.13	2.43	-	-	-	-
	10	33	8.0	64	31	0.59	1.18	1.47	1.77	2.06	2.36	-	-	-	-
	10	40	5.8	78	38	0.48	0.96	1.20	1.44	1.68	1.92	-	-	-	-
	10	50	4.2	98	48	0.38	0.76	0.95	1.14	1.33	1.52	-	-	-	-
	10	63	3.1	124	61	0.30	0.60	0.75	0.90	1.05	1.20	-	-	-	-
FMR4000	10	66	2.9	130	64	0.29	0.57	0.71	0.86	1.00	1.14	-	-	-	-
	12	25	4.5	48	23	0.79	1.59	1.98	2.38	2.78	3.18	-	-	-	-
	12	26	4.1	50	24	0.76	1.52	1.90	2.28	2.66	3.04	-	-	-	-
	12	32	14.7	62	30	0.61	1.22	1.52	1.83	2.13	2.43	3.04	3.65	-	-
	12	33	13.8	64	31	0.59	1.18	1.47	1.77	2.06	2.36	2.95	3.54	-	-
	12	40	9.6	78	38	0.48	0.96	1.20	1.44	1.68	1.92	2.40	2.88	-	-
	12	50	6.7	98	48	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	-	-
	12	63	4.8	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	-	-
	12	66	4.5	130	64	0.29	0.57	0.71	0.86	1.00	1.14	1.43	1.71	-	-
FMR5000	12	80	3.5	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	-	-
	12	100	2.6	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	-	-
	16	40	17.8	78	38	0.48	0.96	1.20	1.44	1.68	1.92	2.40	2.88	3.85	-
	16	50	11.3	98	48	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	3.04	-
	16	63	7.6	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	2.39	-
	16	66	7.1	130	64	0.29	0.57	0.71	0.86	1.00	1.14	1.43	1.71	2.28	-
	16	80	5.3	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	1.87	-
	16	100	4.0	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	1.49	-
FMR6000	16	125	3.0	248	123	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	1.19	-
	16	160	2.2	318	158	0.12	0.23	0.29	0.35	0.40	0.46	0.58	0.69	0.92	-
	20	50	17.8	98	48	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	3.04	3.81
	20	63	11.1	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	2.39	2.99
	20	80	7.4	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	1.87	2.34
	20	100	5.3	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	1.49	1.86
	20	125	4.0	248	123	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	1.19	1.48
FMR6000	20	160	2.9	318	158	0.12	0.23	0.29	0.35	0.40	0.46	0.58	0.69	0.92	1.16
	20	200	2.2	398	198	0.09	0.18	0.23	0.28	0.32	0.37	0.46	0.55	0.74	0.92
	20	250	1.7	498	248	0.07	0.15	0.18	0.22	0.26	0.29	0.37	0.44	0.59	0.74

\* Insert size (IC): Please refer page B17, B18 applicable insert drawing.

## FMRCM3000



- GAMP : 5°
- GAMF : -4° ~ 0°

Designation		Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	(mm)
FMRCM	3040HRP-5	●	5	40	30	37.8	16	8.4	40	5	0.2
	3050HRP-6	●	6	50	40	45	22	10.4	40	5	0.4
	3052HRP-6		6	52	42	45	22	10.4	40	5	0.4
	3063HRP-6	●	6	63	53	50	22	10.4	40	5	0.6
	3063HRP-7	●	7	63	53	50	22	10.4	40	5	0.6
	3066HRP-7		7	66	56	50	22	10.4	40	5	0.6

● : Stock item

### Available inserts

		RPCT-MA	RPET-ML	RPMT-MF	RPMT-MM	RPMW											
Designation		Cermet	Coated										Uncoated		Page		
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01
RPCT	10T3M0-MA															●	B17 B18
RPET	10T3M0E-ML												●	●			
RPMT	10T3M0E-MF												●	●			
	10T3M0S-MM					●	●	●					●	●			
RPMW	10T3M0E1					●	●						●	●			

### Available arbors

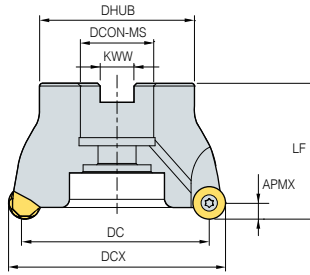
Designation	DCON-MS	Available arbors
FMRCM 3040HRP-5	16	BT□□-FMC16-□□
3050HRP-6		
3052HRP-6		
3063HRP-6	22	BT□□-FMC22-□□
3063HRP-7		
3066HRP-7		

### Parts

Specification		
Ø40~Ø66	FTGA03508	TW15S

Available inserts **B17, B18** Available arbors and bolt **E96**

# FMRC(M)4000



- GAMP : 5°
- GAMF : -2° ~ 0°

(mm)

Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
<b>FMRCM</b>										
4050HRP-4	●	4	50	38	45	22	10.4	40	6	0.3
4050HRP-5	●	5	50	38	45	22	10.4	40	6	0.3
4052HRP-5		5	52	40	45	22	10.4	40	6	0.3
<b>FMRC (FMRCM)</b>										
4063HRP-5	● (●)	5	63	51	50	22	10.4	40	6	0.4
4063HRP-6	● (●)	6	63	51	50	22	10.4	40	6	0.5
4066HRP-6	● (●)	6	66	54	50	22	10.4	40	6	0.5
4080HRP-6	● (●)	6	80	68	57	25.4(27)	9.5(12.4)	50	6	0.9
4080HRP-7	● (●)	7	80	68	57	25.4(27)	9.5(12.4)	50	6	0.5
4100HRP-7		7	100	88	67	31.75(32)	12.7(14.4)	63(53)	6	1.5

( ) Metric size, ● : Stock item

## Available inserts



Designation	Cermet		Coated								Uncoated		Page				
	CN30		NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	H01
RPCT 1204M0-MA																●	B17 B18
RPET 1204M0E-ML													●	●			
RPMT 1204M0E-MF													●	●	●		
1204M0S-MM							●	●	●				●	●	●		
RPMW 1204M0S1							●	●	●				●	●			
1204M0S2													●	●			

## Available arbors

Designation	DCON-MS	Available arbors
<b>FMRCM</b>		
4050HRP-4	22	BT□□-FMC22-□□
4050HRP-5		
4052HRP-5		
4063HRP-5		
4063HRP-6		
4066HRP-6		
<b>FMRC (FMRCM)</b>		
4080HRP-6	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
4080HRP-7	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
4100HRP-7	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□

## Parts

Specification		
Ø50~Ø100	FTKA0410	TW15S

Available inserts **B17, B18** Available arbors and bolt **E94 ~ E96**

# FMRC(M)5000

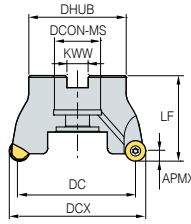


Fig. 1

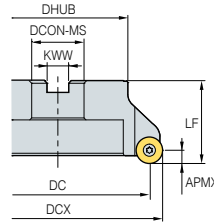


Fig. 2

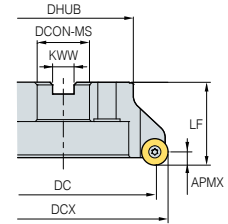


Fig. 3



- GAMP : 5°
- GAMF : -1° ~ 0°

(mm)

	Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX		Fig.
FMRCM	5063HRP-4	●	4	63	47	50	22	10.4	40	8	0.4	1
	5063HRP-5	●	5	63	47	50	22	10.4	40	8	0.5	1
	5066HRP-5		5	66	50	50	22	10.4	40	8	0.5	1
FMRC (FMRCM)	5080HRP-5	● (●)	5	80	64	57	25.4(27)	9.5(12.4)	50	8	0.8	1
	5080HRP-6	● (●)	6	80	64	57	25.4(27)	9.5(12.4)	50	8	0.8	1
	5100HRP-6	● (●)	6	100	84	67	31.75(32)	12.7(14.4)	63(55)	8	1.4	1
	5125HRP-7	● (●)	7	125	109	87	38.1(40)	15.9(16.4)	68(63)	8	2.8	1
	5125HRP-8	● (●)	8	125	109	87	38.1(40)	15.9(16.4)	68(63)	8	2.8	1
	5160RP-8		8	160	144	107	50.8(40)	19(16.4)	68(63)	8	0.82	2(3)

( ) Metric size, ● : Stock item

## Available inserts



Designation	Cermet	Coated										Uncoated		Page		
	CN30	NC5330	NCM325	NCM635	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01
RPCT 1606M0-MA															●	B17
RPET 1606M0E-ML												●	●			
RPMT 1606M0E-MF												●	●			B18
1606M0S-MM						●	●	●				●	●			
RPMW 1606M0S1						●	●					●	●			

## Available arbors

Designation	DCON-MS	Available arbors
FMRCM 5063HRP-4	22	BT□□-FMC22-□□
5063HRP-5		
5066HRP-5		
FMRC (FMRCM) 5080HRP-5	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
5080HRP-6	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
5100HRP-6	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□
5125HRP-7	38.1	BT□□-FMA38.1-□□
	40	BT□□-FMC40-□□
5125HRP-8	38.1	BT□□-FMA38.1-□□
	40	BT□□-FMC40-□□
5160RP-8	50.8	BT□□-FMA50.8-□□
	40	BT□□-FMC40-□□

## Parts

Specification		
Ø63~Ø160	FTGA0512-P	TW20-100

Available inserts **B17, B18** Available arbors and bolt **E94 ~ E96**

# FMRC(M)6000

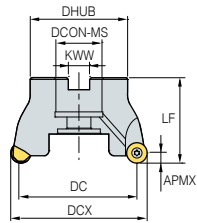


Fig. 1

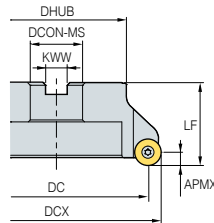


Fig. 2

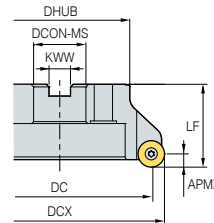


Fig. 3

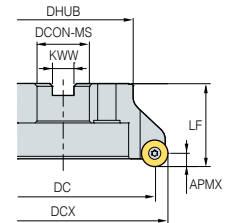


Fig. 4



- GAMP : 5°
- GAMF : 0°

(mm)

Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>FMRCM</b> 6063HRP-4	●	4	63	43	50	22	10.4	40	10	0.4	1
<b>FMRC</b> 6080HRP-5	● (●)	5	80	60	57	25.4(27)	9.5(12.4)	50	10	0.9	1
<b>(FMRCM)</b> 6100HRP-5	● (●)	5	100	80	67	31.75(32)	12.7(14.4)	63(55)	10	1.3	1
6100HRP-6	● (●)	6	100	80	67	31.75(32)	12.7(14.4)	63(55)	10	1.4	1
6125HRP-5	● (●)	5	125	105	87	38.1(40)	15.9(16.4)	68(63)	10	2.8	1
6125HRP-7	● (●)	7	125	105	87	38.1(40)	15.9(16.4)	68(63)	10	2.8	1
6160RP-6	(●)	6	160	140	107	50.8(40)	19(16.4)	63	10	3.6	2(3)
6160RP-8	(●)	8	160	140	107	50.8(40)	19(16.4)	63	10	3.5	2(3)
6200RP-8	(●)	8	200	180	130	47.625(60)	25.4(25.7)	63	10	5.2	4
6250RP-9	(●)	9	250	230	180	47.625(60)	25.4(25.7)	63	10	9.7	4

( )Metric size, ● : Stock item

## Available inserts

		RPCT-MA	RPET-ML	RPMT-MF	RPMT-MM	RPMW											
Designation		Coated										Uncoated		Page			
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
RPCT	2007M0-MA																
RPET	2007M0E-ML																
RPMT	2007M0E-MF																B17
	2007M0S-MM																B18
RPMW	2007M0S1																

## Available arbors

Designation	DCON-MS	NC arbors	Designation	DCON-MS	NC arbors
<b>FMRCM</b> 6063HRP-4	22	BT□□-FMC22-□□	<b>FMRC</b> <b>(FMRCM)</b> 6125HRP-7	38.1	BT□□-FMA38.1-□□
<b>FMRC</b> 6080HRP-5	25.4	BT□□-FMA25.4-□□		40	BT□□-FMC40-□□
<b>(FMRCM)</b> 6100HRP-5	27	BT□□-FMC27-□□	6160RP-6	50.8	BT□□-FMA50.8-□□
	31.75	BT□□-FMA31.75-□□		40	BT□□-FMC40-□□
	32	BT□□-FMC32-□□	6160RP-8	50.8	BT□□-FMA50.8-□□
	31.75	BT□□-FMA31.75-□□		40	BT□□-FMC40-□□
	32	BT□□-FMC32-□□	6200RP-8	47.625	BT□□-FMA47.625-□□
	38.1	BT□□-FMA38.1-□□		60	BT□□-FMC60-□□
	40	BT□□-FMC40-□□	6250RP-9	47.625	BT□□-FMA47.625-□□
				60	BT□□-FMC60-□□

## Parts

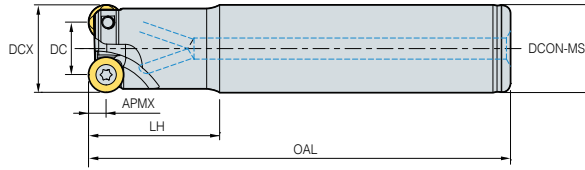
Specification		
Ø63~Ø160	FTKA0615-P	TW25-100

Available inserts **B17, B18**

Available arbors and bolt **E94 ~ E96**



## FMRS2500



- GAMP :  $-4^\circ$
- GAMF :  $-4^\circ \sim -1^\circ$

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
FMRS	2517HRP-2S16	●	2	17	9	16	35	90	4	0.1
	2517HRP-2M16	●	2	17	9	16	35	150	4	0.2
	2517HRP-2L16	●	2	17	9	16	35	200	4	0.3
	2518HRP-2M16		2	18	10	16	35	150	4	0.2
	2518HRP-2L16		2	18	10	16	35	200	4	0.3
	2520HRP-3S20	●	3	20	12	20	35	130	4	0.3
	2520HRP-3M20	●	3	20	12	20	100	180	4	0.4
	2520HRP-3L20	●	3	20	12	20	130	250	4	0.5
	2521HRP-3S20	●	3	21	13	20	35	130	4	0.3
	2521HRP-3M20	●	3	21	13	20	35	180	4	0.4
	2521HRP-3L20	●	3	21	13	20	35	250	4	0.6
	2525HRP-4S25	●	4	25	17	25	35	150	4	0.5
	2525HRP-4M25	●	4	25	17	25	60	180	4	0.6
	2525HRP-4L25	●	4	25	17	25	130	250	4	0.8
	2526HRP-4S25	●	4	26	18	25	35	150	4	0.5
	2526HRP-4L25	●	4	26	18	25	130	250	4	0.9

● : Stock item

### Available inserts

		RPET-ML	RPMT-MF	RPMT-MM	RPMW											
Designation		Cermet	Coated								Uncoated		Page			
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A
RPET	0803M0E-ML											●	●			
RPMT	0803M0E-MF											●	●			
	0803M0S-MM					●	●					●	●			
RPMW	0803M0E1											●	●			

### Parts

Specification		
	Screw	Wrench
Ø17	FTNA0305	TW09S
Ø18~Ø26	FTNA0306	TW09S

Available inserts B17, B18

# FMRS3000

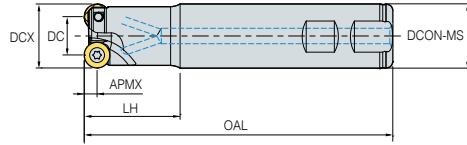


Fig. 1

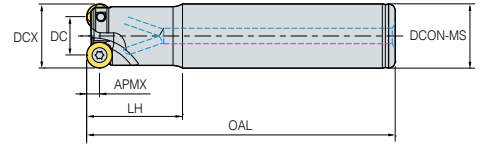


Fig. 2



- GAMP : -4°
- GAMF : -1°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		Fig.
FMRS	3025HRP-2M20	●	2	25	15	20	40	170	5	0.4	2
	3025HRP-2S25	●	2	25	15	25	40	120	5	0.4	1
	3025HRP-2M25	●	2	25	15	25	60	160	5	0.5	2
	3025HRP-2L25	●	2	25	15	25	130	250	5	0.8	2
	3026HRP-2L25	●	2	26	16	25	30	200	5	0.7	2
	3032HRP-3S32	●	3	32	22	32	40	125	5	0.7	1
	3032HRP-3L32	●	3	32	22	32	60	200	5	1.1	2
	3032HRP-4S32	●	4	32	22	32	40	125	5	0.7	1
	3032HRP-4L25	●	4	32	22	25	60	200	5	0.7	2
	3033HRP-4S32	●	4	33	23	32	40	125	5	0.7	1
	3033HRP-4M32	●	4	33	23	32	60	180	5	1.0	2
	3033HRP-4L32	●	4	33	23	32	180	300	5	1.6	2

● : Stock item

## Available inserts

		RPCT-MA	RPET-ML	RPMT-MF	RPMT-MM	RPMW											
Designation		Cermet										Uncoated		Page			
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
RPCT	10T3M0-MA															●	B17 B18
RPET	10T3M0E-ML																
RPMT	10T3M0E-MF																
	10T3M0S-MM						●	●	●								
RPMW	10T3M0E1						●	●									

## Parts

Specification		
	Screw	Wrench
Ø25~Ø26	FTGA03507	TW15S
Ø32~Ø33	FTGA03508	TW15S

Available inserts **B17, B18**

## FMRS4000

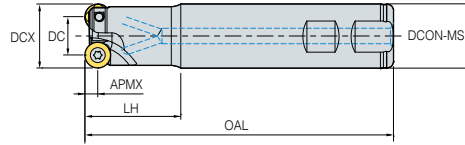


Fig. 1

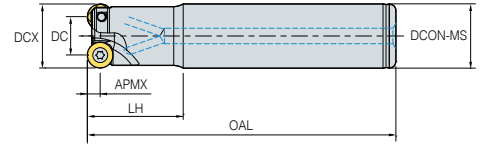


Fig. 2



- GAMP :  $-4^\circ$
- GAMF :  $-2^\circ \sim 0^\circ$

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		Fig.
FMRS	4025HRP-2S25	●	2	25	13	25	60	160	6	0.5	1
	4026HRP-2L25	●	2	26	14	25	60	200	6	0.7	2
	4032HRP-2L25	●	2	32	20	25	40	190	6	0.7	2
	4032HRP-2S32	●	2	32	20	32	50	125	6	0.6	1
	4032HRP-2L32	●	2	32	20	32	50	250	6	1.4	2
	4032HRP-3S32	●	3	32	20	32	50	125	6	0.6	1
	4032HRP-3M32	●	3	32	20	32	60	160	6	0.9	2
	4033HRP-3M32	●	3	33	21	32	60	200	6	1.1	2
	4033HRP-3L32	●	3	33	21	32	60	300	6	1.7	2
	4040HRP-3S32	●	3	40	28	32	35	105	6	0.6	1
	4040HRP-3M32	●	3	40	28	32	50	160	6	1	2
	4040HRP-4S32	●	4	40	28	32	35	105	6	0.6	1
	4040HRP-4M32	●	4	40	28	32	35	150	6	0.9	2
	4040HRP-4L32	●	4	40	28	32	35	250	6	14.7	2
	4050HRP-4M32	●	4	50	38	32	50	150	6	1.1	2
	4050HRP-4M40	●	4	50	38	40	50	150	6	1.4	2
	4050HRP-4M42	●	4	50	38	42	50	150	6	1.6	2

● : Stock item

### Available inserts

	RPCT-MA	RPET-ML	RPMT-MF	RPMT-MM	RPMW											
Designation	Cermet	Coated								Uncoated		Page				
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	H01
RPCT	1204M0-MA														●	B17 B18
RPET	1204M0E-ML															
RPMT	1204M0E-MF															
	1204MOS-MM					●	●	●			●	●				
RPMW	1204MOS1					●	●	●				●				
	1204MOS2											●	●			

### Parts

Specification		
	Screw	Wrench
Ø25~Ø26	FTKA0408	TW15S
Ø32~Ø50	FTKA0410	TW15S

Available inserts B17, B18

# FMRS5000/6000

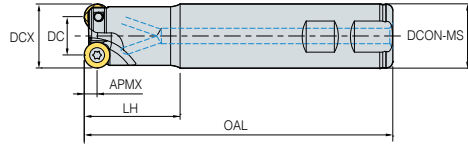


Fig. 1

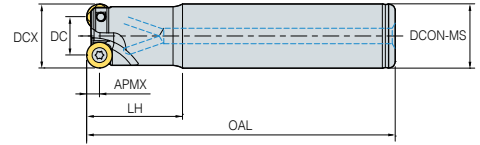


Fig. 2



- GAMP :  $-4^\circ$
- GAMF :  $0^\circ$

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		Fig.
FMRS	5040HRP-2M32	●	2	40	24	32	50	160	8	0.9	2
	5040HRP-2L32	●	2	40	24	32	50	250	8	1.5	2
	5050HRP-3M40	●	3	50	34	40	50	160	8	1.5	2
	5050HRP-3L40	●	3	50	34	40	50	300	8	2.9	2
FMRS	6050HRP-3S32	●	3	50	30	32	50	160	10	1.1	1
	6050HRP-3M32	●	3	50	30	32	50	200	10	1.3	2
	6050HRP-3S40	●	3	50	30	40	50	125	10	1.5	1
	6050HRP-3M40	●	3	50	30	40	50	200	10	1.9	2

● : Stock item

## Available inserts



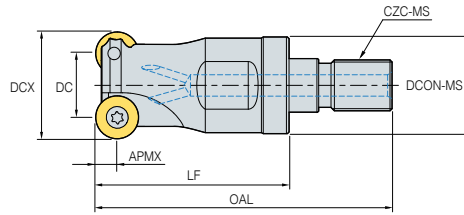
Type	Designation	Cermet		Coated										Uncoated		Page		
		CN80	NC5330	NCM325	NCM535	NCM645	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		H01	
5000 type	RPCT 1606M0-MA																●	B17 B18
	RPET 1606M0E-ML																● ●	
	RPMT 1606M0E-MF																● ●	
	1606M0S-MM																● ●	
RPMW 1606M0S1																●		
6000 type	RPCT 2007M0-MA																●	
	RPET 2007M0E-ML																● ●	
	RPMT 2007M0E-MF																● ●	
	2007M0S-MM																● ●	
RPMW 2007M0S1																● ●		

## Parts

Specification		
Ø40~Ø50(5000 type)	FTGA0511-P	TW20-100
Ø50(6000 type)	FTKA0615-P	TW25-100

Available inserts **B17, B18**

## FMRM2500



- GAMP :  $-4^\circ$
- GAMF :  $-4^\circ \sim 0^\circ$

Designation		Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	(mm)
FMRM	2517HRP-M08		2	17	9	14.5	25	42	M08	4	0.1
	2521HRP-M10		3	21	13	18	30	51	M10	4	0.1
	2526HRP-M12		4	26	18	23	35	59	M12	4	0.1
	2533HRP-M16		4	33	25	29	40	67	M16	4	7.5
	2540HRP-M16		5	40	32	29	40	67	M16	4	0.3

● : Stock item

### Available inserts

RPCT-MA    RPET-ML    RPMT-MF    RPMT-MM    RPMW



Designation	Cermet	Coated										Uncoated		Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01
RPET 0803M0E-ML												●	●			B17 B18
RPMT 0803M0E-MF												●	●			
0803M0S-MM						●	●					●	●			
RPMW 0803M0E1												●	●			

### Available adaptors

Designation	Available adaptors
FMRM 2517HRP-M08	MAT-M08
2521HRP-M10	MAT-M10
2526HRP-M12	MAT-M12
2533HRP-M16	MAT-M16
2540HRP-M16	

Designation : FMRM2517HRp-M08  
Modular head threading measure size (M08)

||

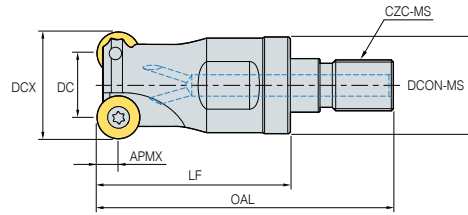
Adaptor spec.: MAT-M08-020-S16S  
Adaptor threading measure (M08)

### Parts

Specification	Screw	Wrench
Ø17	FTNA0305	TW09S
Ø21~Ø40	FTNA0306	TW09S

Available inserts B17, B18    Available adaptors B400

# FMRM3000



- GAMP :  $-4^\circ$
- GAMF :  $-1^\circ \sim 0^\circ$

Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
<b>FMRM</b> 3026HRP-M12		2	26	16	23	35	59	M12	5	0.1
3033HRP-M16		3	33	23	29	40	67	M16	5	0.2
3035HRP-M16		3	35	25	29	40	67	M16	5	0.2
3040HRP-M16		3	40	30	29	40	67	M16	5	0.3
3042HRP-M16		3	42	32	29	40	67	M16	5	0.3

● : Stock item

## Available inserts



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01	
RPCT 10T3M0-MA																●	B17 B18
RPET 10T3M0E-ML												●	●				
RPMT 10T3M0E-MF												●	●				
10T3M0S-MM						●	●	●				●	●				
RPMW 10T3M0E1						●	●					●	●				

## Available adaptors

Designation	Available adaptors
<b>FMRM</b> 3026HRP-M12	MAT-M12
3033HRP-M16	MAT-M16
3035HRP-M16	
3040HRP-M16	
3042HRP-M16	

Designation : FMRM3026HRP-M12  
Modular head threading measure size (M12)

II

Adaptor spec.: MAT-M12-030-S25S  
Adaptor threading measure (M12)

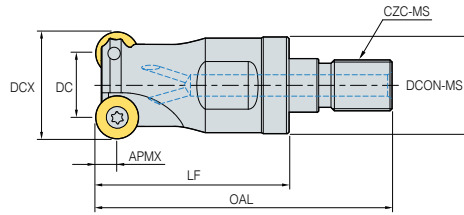
## Parts

Specification		
Ø26	FTGA03507	TW15S
Ø33~Ø42	FTGA03508	TW15S

Available inserts **B17, B18**

Available adaptors **B400**

## FMRM4000



- GAMP :  $-4^\circ$
- GAMF :  $-4^\circ \sim 0^\circ$

	Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	(mm)
FMRM	4026HRP-M12		2	26	14	23	35	59	M12	6	0.1
	4033HRP-M16		3	33	21	29	40	67	M16	6	0.2
	4035HRP-M16		3	35	23	29	40	67	M16	6	0.2
	4040HRP-M16		4	40	28	29	40	67	M16	6	0.2
	4042HRP-M16		4	42	30	29	40	67	M16	6	0.3

● : Stock item

### Available inserts

		RPCT-MA	RPET-ML	RPMT-MF	RPMT-MM	RPMW											
Designation		Coated	Coated					Uncoated		Page							
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700		PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	H01
RPCT	1204M0-MA															●	
RPET	1204M0E-ML											●	●				
RPMT	1204M0E-MF										●	●	●				
	1204M0S-MM					●	●	●			●	●					
RPMW	1204M0S1					●	●	●				●	●				
	1204M0S2											●	●				

### Available adaptors

	Designation	Available adaptors
FMRM	4026HRP-M12	MAT-M12
	4033HRP-M16	
	4035HRP-M16	
	4040HRP-M16	MAT-M16
	4042HRP-M16	

Designation : FMRM4026HRP-M12  
Modular head threading measure size (M12)

||

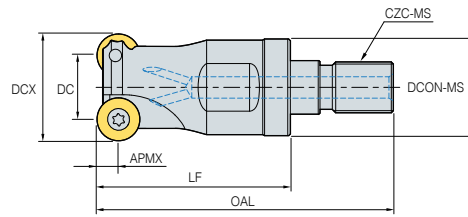
Adaptor spec.: MAT-M12-030-S25S  
Adaptor threading measure (M12)

### Parts

Specification		
	Screw	Wrench
Ø26	FTKA0408	TW15S
Ø33~Ø42	FTKA0410	TW15S

Available inserts **B17, B18** Available adaptors **B400**

# FMRM5000



- GAMP : -4°
- GAMF : 0°

Designation		Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	(mm)
FMRM	5040HRP-M16		2	40	24	29	40	67	M16	8	0.2
	5042HRP-M16		2	42	26	29	40	67	M16	8	2.3

● : Stock item

## Available inserts

		RPCT-MA	RPET-ML	RPMT-MF	RPMT-MM	RPMW											
Designation		Cermet	Coated										Uncoated		Page		
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	H01
RPCT	1606M0-MA															●	B17 B18
RPET	1606M0E-ML																
RPMT	1606M0E-MF																
	1606M0S-MM					●	●	●									
RPMW	1606M0S1					●	●										

## Available adaptors

Designation	Available adaptors
FMRM 5040HRP-M16 5042HRP-M16	MAT-M16

Designation : FMRM5040HRP-M16  
Modular head threading measure size (M16)

II

Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

## Parts

Specification			
Ø40~Ø42	FTGA0511-P	-	TW20-100

Available inserts **B17, B18**

Available adaptors **B400**



# B Technical Information for Triple Mill

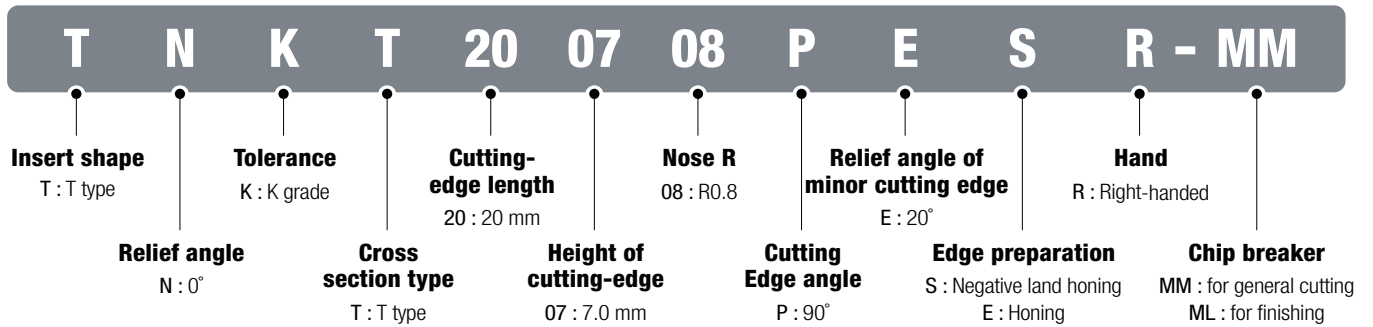
High depth of cut milling tool with 3 corners for perpendicularity

## Triple Mill

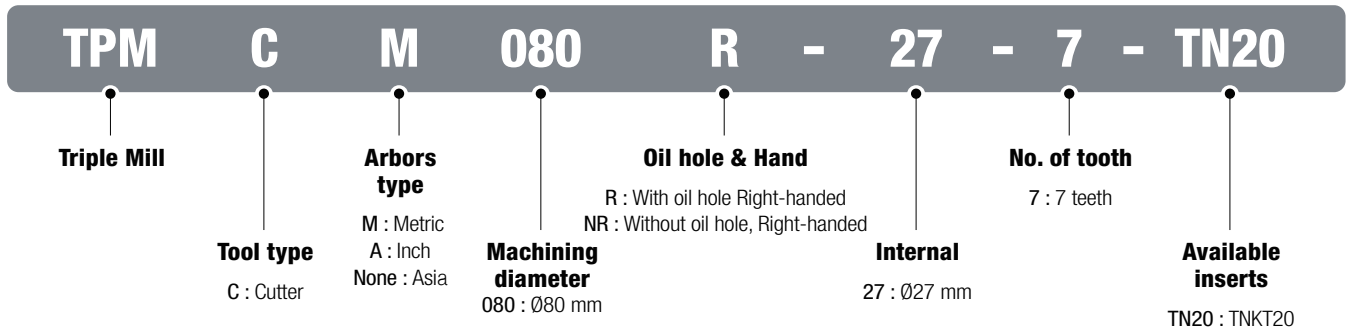
- Economical milling tool with 3 corners with positive cutting edge for high depth of cut machining
- Stable machinability in high feed machining due to enhanced chip evacuation and thicker insert
- High precision machining from less cutting load due to high helix and sharp cutting edge

### Code system

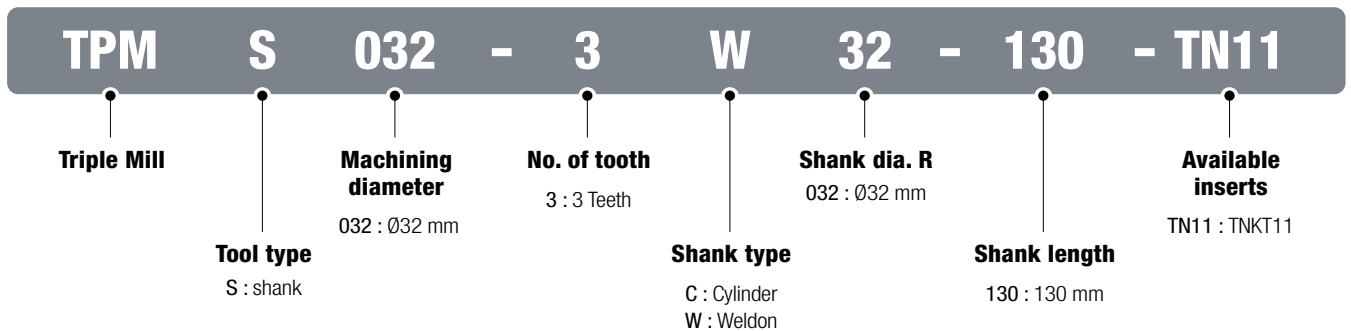
#### • Insert



#### • Cutter

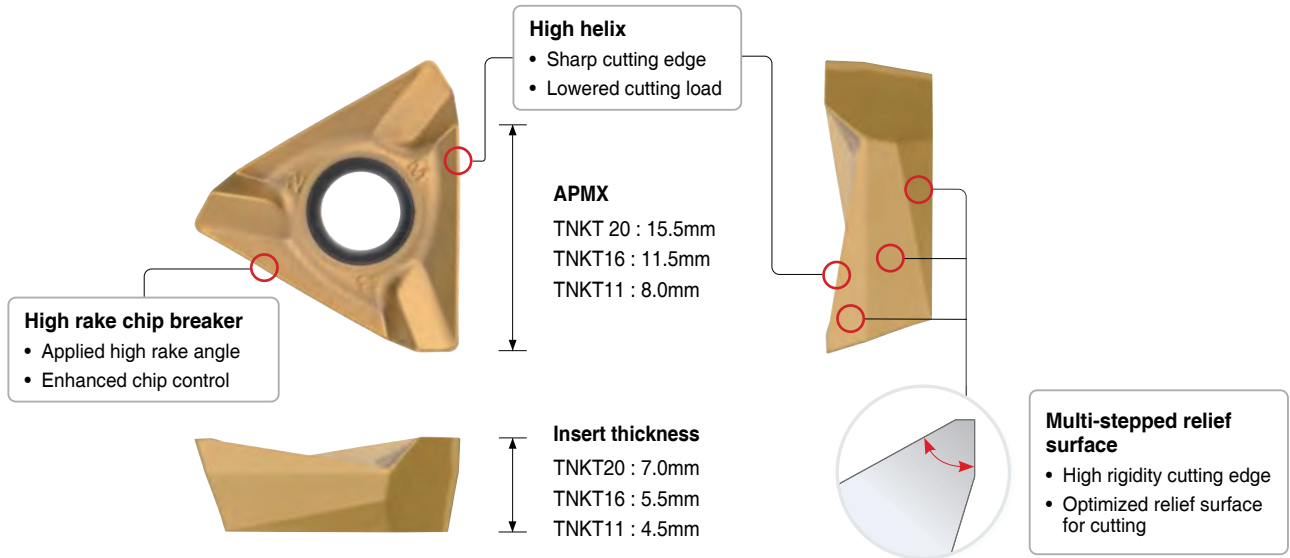


#### • Shank

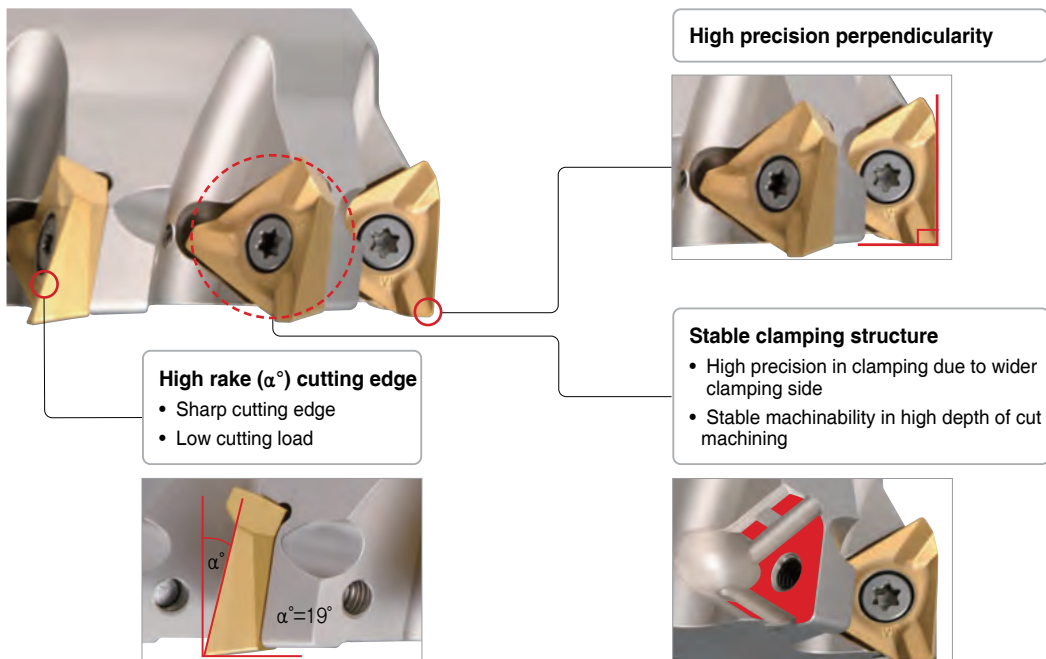


## Features of insert

- 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



## Features of cutter



# B Technical Information for Triple Mill

## Recommended grade and chip breaker

(● : 1<sup>st</sup> Recommendation)

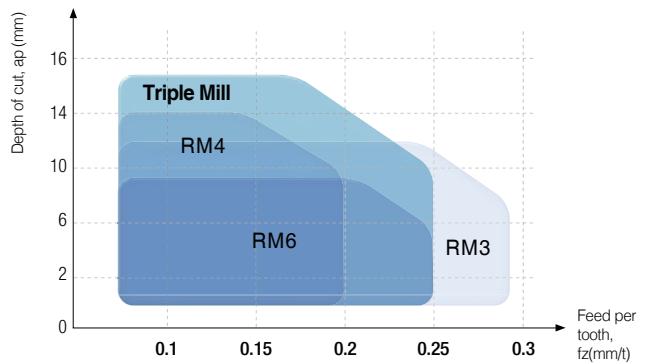
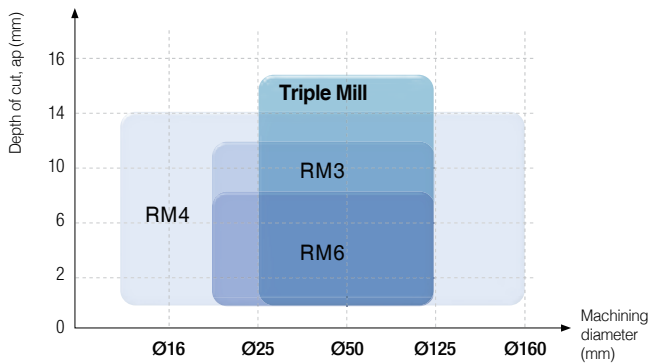
C/B	Cutting edge	P				M		K		S	
		Low carbon steel/ Mild steel		High carbon steel/ Alloy steel		Stainless steel		Cast iron		HRSA	
		C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
ML		-	● PC3700 ○ PC5300 ○ PC5400	-	● PC3700 ○ PC5300 ○ PC5400	●	● PC5300 ○ PC5400 ○ PC9540	-	● PC6100 ○ PC5300 ○ PC5400	-	○ PC5300 ○ PC5400
MM		●	● PC3700 ○ PC5300 ○ PC5400	●	● PC3700 ○ PC5300 ○ PC5400	-	● PC5300 ○ PC5400 ○ PC9540	●	● PC6100 ○ PC5300 ○ PC5400	-	○ PC5300 ○ PC5400

## Recommended cutting conditions

Workpiece	Grade	Cutting speed vc(m/min)	TNKT11		TNKT16		TNKT20	
			fz (mm/t)	APMX (mm)	fz (mm/t)	APMX (mm)	fz (mm/t)	APMX (mm)
P Steel	PC3700	160-270	0.25-0.1	8.0	0.25-0.1	11.5	0.25-0.1	15.5
	PC5300	140-240	0.25-0.1	8.0	0.25-0.1	11.5	0.25-0.1	15.5
M Stainless steel	PC5300	90-150	0.2 - 0.05	8.0	0.2-0.05	11.5	0.2-0.05	15.5
	PC5400	70-120	0.2 - 0.05	8.0	0.2-0.05	11.5	0.2-0.05	15.5
	PC9540	70-120	0.2-0.05	8.0	0.2-0.05	11.5	0.2-0.05	15.5
K Cast iron	PC6100	150-250	0.3-0.1	8.0	0.3-0.10	11.5	0.3-0.1	15.5
S HRSA	PC5300	20-50	0.15-0.05	8.0	0.15-0.05	11.5	0.15-0.05	15.5

\* The above data refer to general cutting conditions and can be adjustable to the speed of 350 m/min and the feed per tooth of 0.3 mm/t depending on user environment.

## Application range



# TPMCM-TN16

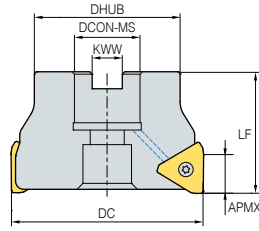


Fig. 1

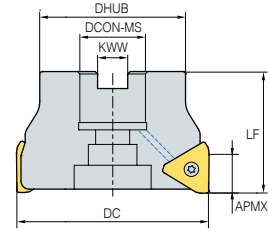


Fig. 2



- GAMP : 10°
- GAMF : -11°~-13.5°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX		Fig.
TPMCM 050R-22-4-TN16		4	50	42	22	10.4	40	11.5	0.3	1
050R-22-5-TN16	●	5	50	42	22	10.4	40	11.5	0.3	1
063R-22-4-TN16		4	63	50	22	10.4	40	11.5	0.5	1
063R-22-6-TN16	●	6	63	50	22	10.4	40	11.5	0.5	1
080R-27-6-TN16		6	80	60	27	12.4	50	11.5	1.0	1
080R-27-8-TN16	●	8	80	60	27	12.4	50	11.5	1.0	1
100R-32-8-TN16		8	100	70	32	14.4	63	11.5	1.8	2
100R-32-10-TN16	●	10	100	70	32	14.4	63	11.5	1.8	2
125R-40-12-TN16		12	125	90	40	16.4	63	11.5	3.1	2
125R-40-14-TN16	●	14	125	90	40	16.4	63	11.5	3.1	2

● : Stock item

## Available inserts

TNKT-ML TNKT-MM



Designation	Cermet	Coated											Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400
TNKT 160608PEER-ML									●				●		B28
160608PESR-MM								●	●			●			

## Available arbors

Designation	DCON-MS	NC arbors
TPMCM 050R-22-□-TN□□	22	BT□□-FMC22-□□
063R-22-□-TN□□		
080R-27-□-TN□□	27	BT□□-FMC27-□□
100R-32-□-TN□□	32	BT□□-FMC32-□□
125R-40-□-TN□□	40	BT□□-FMC40-□□

## Parts

Specification		
Ø50~Ø125	FTKA0410	TW15S

Available inserts **B28** Available arbors and bolt **E96**

## TPMCM-TN20

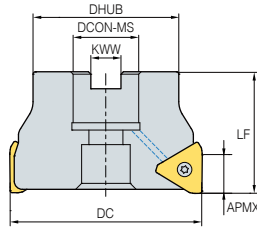


Fig. 1

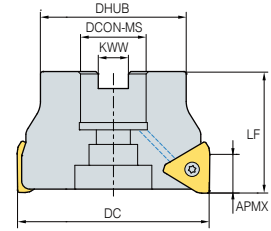


Fig. 2



KAPR  
90°

- GAMP : 10°
- GAMF : -10.5°~ -14°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>TPMCM</b> 063R-22-5-TN20	●	5	63	50	22	10.4	50	15.5	0.6	1
063R-22-6-TN20	●	6	63	50	22	10.4	50	15.5	0.6	1
080R-27-5-TN20	●	5	80	60	27	12.4	50	15.5	0.9	1
080R-27-7-TN20	●	7	80	60	27	12.4	50	15.5	0.8	1
100R-32-7-TN20	●	7	100	70	32	14.4	50	15.5	1.8	2
100R-32-9-TN20	●	9	100	70	32	14.4	50	15.5	1.7	2
125R-40-8-TN20		8	125	90	40	16.4	63	15.5	3.1	2
125R-40-11-TN20	●	11	125	90	40	16.4	63	15.5	3.0	2

● : Stock item

### Available inserts

TNKT-ML

TNKT-MM



Designation	Cermet	Coated										Page		
	CN30	NC5330	NCM325	NCM635	NCM545	PC2505	PC2010	PC2015	PC3700	PC6100	PC9530		PC9540	PC5300
TNKT 200708PEER-ML									●			●	●	
200708PESR-MM									●	●			●	

B28

### Available arbors

Designation	DCON-MS	NC arbors
TPMCM 063R-22-□-TN□□	22	BT□□-FMC22-□□
080R-27-□-TN□□	27	BT□□-FMC27-□□
100R-32-□-TN□□	32	BT□□-FMC32-□□
125R-40-□-TN□□	40	BT□□-FMC40-□□

### Parts

Specification		
Ø63~Ø125	FTGA0511-P	TW20-100

Available inserts **B28**

Available arbors and bolt **E96**

# TPMS-TN16

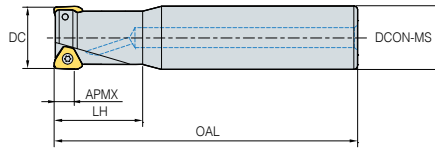


Fig. 1

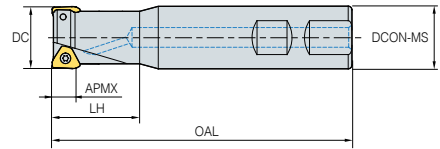


Fig. 2



• GAMP : 10°  
• GAMF : -13.5°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.
<b>TPMS</b> 032R-2W32-130-TN16	●	2	32	32	40	130	11.5	0.7	1
032R-2C32-200-TN16	●	2	32	32	40	200	11.5	1.1	2
040R-3W40-130-TN16		3	40	40	40	130	11.5	1.1	1
040R-3C40-200-TN16	●	3	40	40	40	200	11.5	1.8	2
040R-4W40-130-TN16	●	4	40	40	40	130	11.5	1.1	1

● : Stock item

## Available inserts

TNKT-ML TNKT-MM



Designation	Cermet	Coated										Page			
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6100	PC9530		PC9540	PC5300	PC5400
TNKT 160608PEER-ML									●				●		B28
160608PESR-MM								●	●				●		

## Parts

Specification		
Ø32-Ø40	FTKA0410	TW15S

Available inserts **B28**

## TPMS-TN11

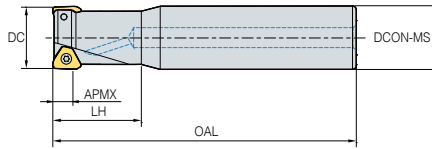


Fig. 1

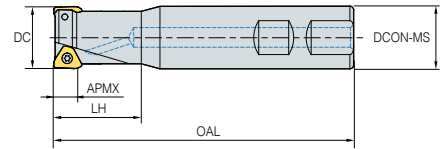


Fig. 2



- GAMP : 8°~10°
- GAMF : -14°~-15°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg	Fig.
<b>TPMS</b> 025R-2W25-120-TN11		2	25	25	35	120	8	0.4	1
025R-2C25-200-TN11	●	2	25	25	35	200	8	0.7	2
025R-3W25-120-TN11	●	3	25	25	35	120	8	0.4	1
025R-3C25-200-TN11	●	3	25	25	35	200	8	0.6	2
032R-2W32-130-TN11		2	32	32	40	130	8	0.7	1
032R-2C32-200-TN11		2	32	32	40	200	8	1.1	2
032R-3W32-130-TN11		3	32	32	40	130	8	0.7	1
032R-3C32-200-TN11	●	3	32	32	40	200	8	1.1	2
032R-4W32-130-TN11	●	4	32	32	40	130	8	0.7	1
032R-4C32-200-TN11	●	4	32	32	40	200	8	1.1	2
040R-4W40-130-TN11		4	40	40	40	130	8	1.1	1
040R-5W40-130-TN11	●	5	40	40	40	130	8	1.1	1

● : Stock item

### Available inserts

TNKT-ML TNKT-MM



Designation	Cermet	Coated										Page			
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6100	PC9530		PC9540	PC5300	PC5400
TNKT 110508PEER-ML									●			●	●		B28
110508PESR-MM								●	●			●			

### Parts

Specification	Screw	Wrench
Ø25~Ø40	FTKA0307	TW09S

Available inserts **B28**

High Feed Milling Tool with 4 Corners for Small Diameter

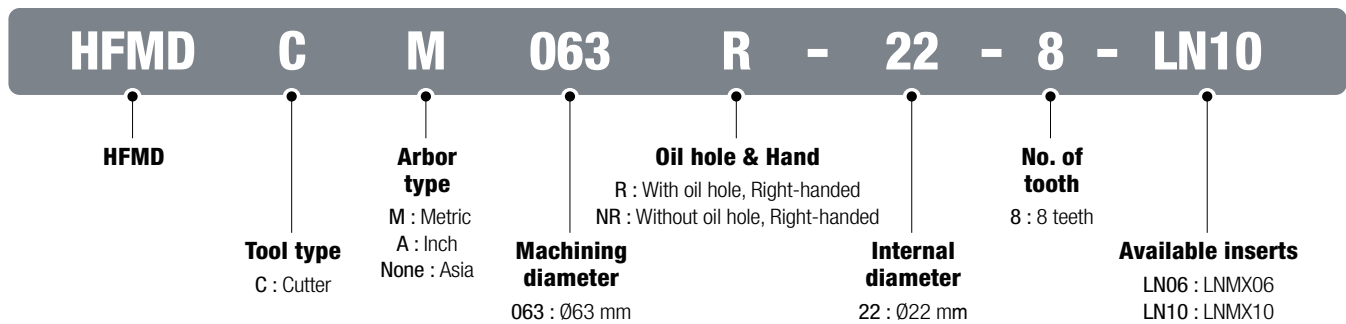
# HFMD

## High Feed Mill Double

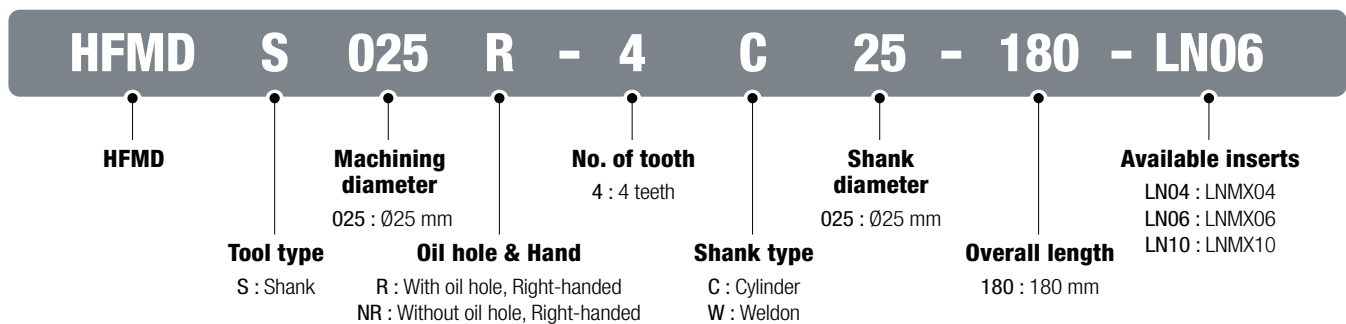
- Economical 4-corner double sided insert
- Increased productivity due to thinner and elongated shape of the insert which makes fine pitch available
- Insert designed for low cutting resistance with high rake angle and helix angle which reduces cutting load
- Inhibiting chipping and breakage due to concave clamping system and stronger screw

### Code system

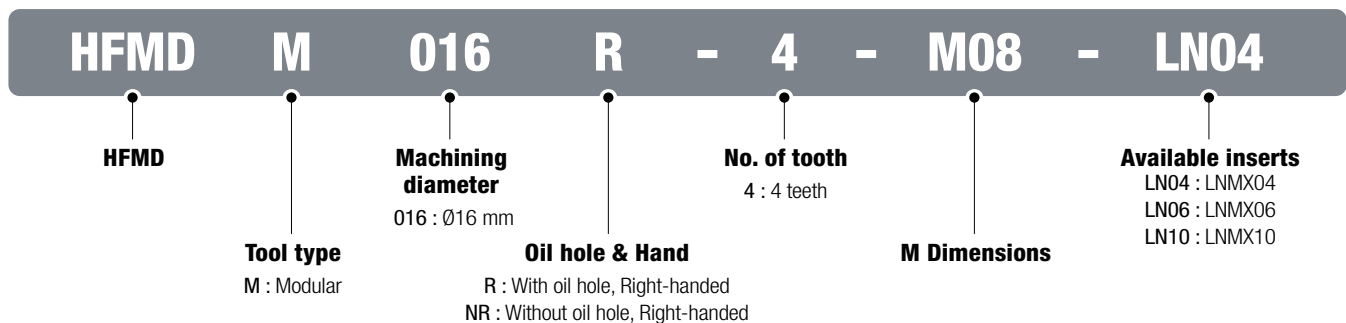
• Cutter



• Shank



• Modular

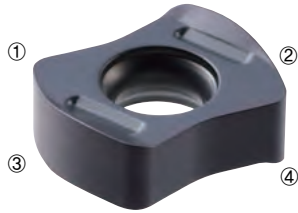




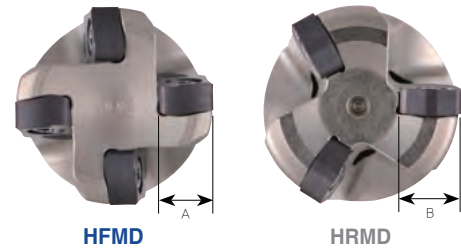
# B Technical Information for HFMD

## Features

• **Economical 4-corner insert**  
 - Can use 4 corners with 1 insert by utilizing front/back face; High feed due to finer pitch



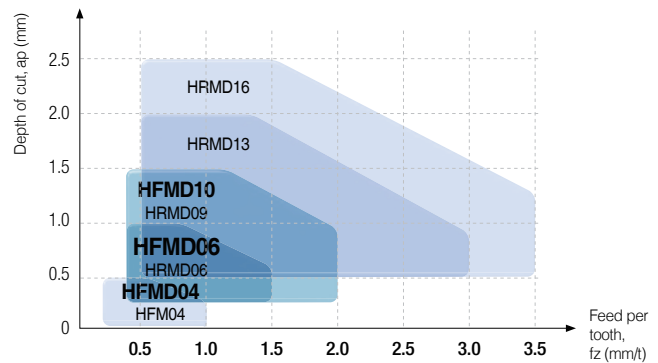
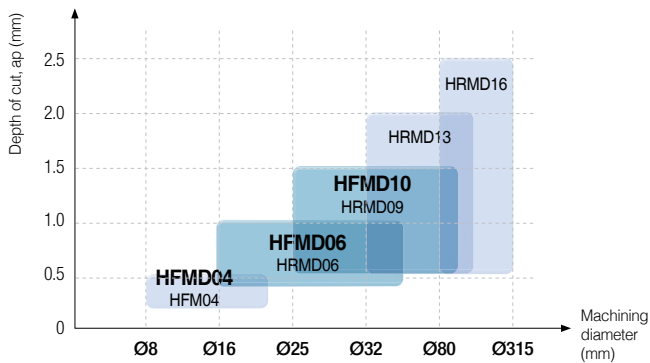
• **Highly efficient insert due to fine pitch**  
 - Able to use fine pitch at the same machining diameter with typical types of milling cutters due to smaller inscribed circle ( $A < B$ )



## Features of chip breaker

Insert	Cutting-edge	Use	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



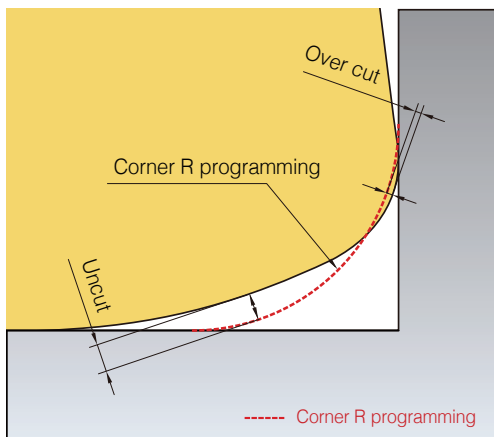


## Recommended cutting conditions

※ Recommended chip breaker: ● 1st ○ 2nd

Workpiece				Grade	vc (m/min)	LNMX04		LNMX06		LNMX10		ae	Available chip breaker			
ISO	Workpiece materials	KS	HB (HRC)			fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)		ML	MF	MM	
<b>P</b>	Mild steel	SM20C	120 - 180	PC5400 (PC5300)	100-240	1.2-0.3	0.2-0.5	1.2-0.3	0.2-1.0	1.4-0.3	0.3-1.5	0.7D-0.1D	○	●		
	Carbon steel	SM45C	200	PC5400 (PC5300)	100-240	1.2-0.3	0.2-0.5	1.2-0.3	0.2-1.0	1.4-0.3	0.3-1.5	0.7D-0.1D	○	●		
	Alloy steel	SCM440	270 (28)	PC3700 (PC5300)	100-220	1.2-0.3	0.2-0.5	1.2-0.3	0.2-1.0	1.4-0.3	0.3-1.5	0.7D-0.1D		●	○	
	Pre-hardened steel	KP4M	300 (32)	PC3700 (PC5300)	100-200	1.0-0.3	0.2-0.4	1.0-0.3	0.2-0.8	1.2-0.3	0.3-1.2	0.7D-0.1D		○	●	
		NIMAX	370 (40)	PC3700 (PC5300)	100-200	1.0-0.3	0.2-0.4	1.0-0.3	0.2-0.8	1.2-0.3	0.3-1.2	0.7D-0.1D		○	●	
		CENA1	370 (40)	PC3700 (PC5300)	100-200	1.0-0.3	0.2-0.4	1.0-0.3	0.2-0.8	1.2-0.3	0.3-1.2	0.7D-0.1D		○	●	
		NAK80	400 (43)	PC5300 (PC3700)	100-200	1.0-0.3	0.2-0.4	1.0-0.3	0.2-0.8	1.2-0.3	0.3-1.2	0.7D-0.1D		○	●	
STAVAX	510 (52)	PC3700 (PC2510)	80-160	0.7-0.3	0.2-0.4	0.7-0.3	0.2-0.8	0.9-0.3	0.3-1.2	0.7D-0.1D		○	●			
Alloy tool steel	STD11 STD61	- (40-50)	PC2510 (PC5300)	80-130	0.7-0.3	0.2-0.3	0.65-0.3	0.2-0.6	0.8-0.3	0.3-0.9	0.7D-0.1D		○	●		
<b>M</b>	Stainless steel	STS316	Under 270	PC9540 (PC5400)	90-180	0.8-0.3	0.2-0.5	0.8-0.3	0.2-0.8	1.0-0.3	0.3-1.2	0.7D-0.1D	●	○		
<b>K</b>	Grey cast iron, Ductile cast iron	GCD450	Tensile Strength Over 450Mpoa	PC5300 (PC5400)	130-220	0.9-0.3	0.2-0.5	0.9-0.3	0.2-1.0	1.2-0.3	0.3-1.5	0.7D-0.1D		●	○	
<b>S</b>	HRSA	Fe series	Incoroy901	- (25-35)	PC9540 (PC5300)	30-100	0.7-0.3	0.2-0.3	0.6-0.3	0.2-0.6	0.7-0.3	0.3-0.9	0.7D-0.4D	●	○	
		Ni or Co series	Inconel718	- (35-45)	PC9540 (PC5300)	30-45	0.7-0.3	0.2-0.3	0.7-0.3	0.2-0.6	0.8-0.3	0.3-0.9	0.7D-0.4D	○	●	
	Titanium	Ti-6AL-4V	- (40-45)	PC9540 (PC5300)	30-50	0.8-0.3	0.2-0.3	1.0-0.3	0.2-0.6	1.2-0.3	0.3-0.9	0.7D-0.1D	●	○		

## Corner R programming

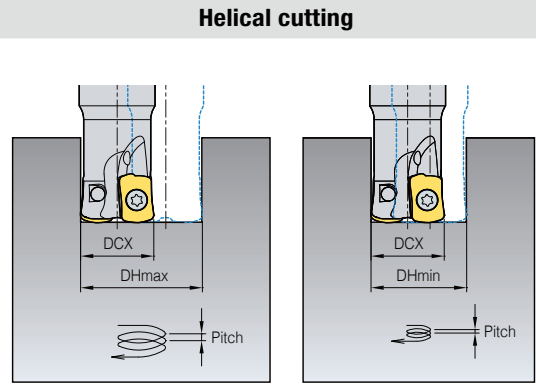
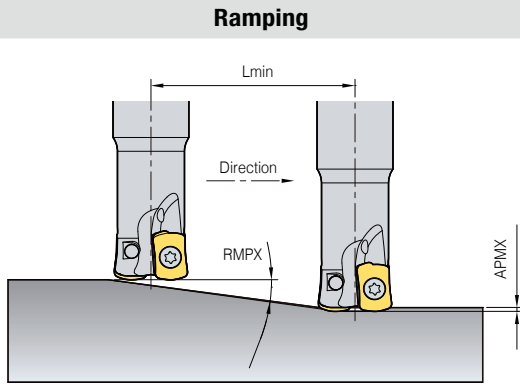


Insert	Corner R programming	Cutting conditions		Over Cut	Uncut
		Nose R	APMX		
LNMX040205R-ML LNMX040205R-MM	R0.8	0.5	0.5	0	0.27
	R0.9(Standard)			0	0.24
	R1.0			0.01	0.22
LNMX060310R-ML LNMX060310R-MF LNMX060310R-MM	R1.5	1.0	1.0	0	0.41
	R1.6(Standard)			0	0.41
	R2.0			0.06	0.38
LNMX100412R-ML LNMX100412R-MF LNMX100412R-MM	R2.0	1.2	1.5	0	0.84
	R2.5(Standard)			0	0.60
	R3.0			0.06	0.51

- 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

# B Technical Information for HFMD

## Ramping and helical cutting



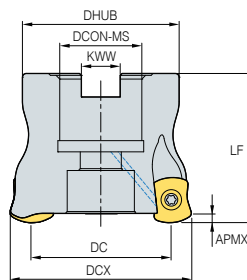
Designation	DCX	APMX	Ramping		Blind hole helical cutting				Thru hole helical cutting	
			RMPX	Lmin	DHmax	Max pitch	DHmin	Max pitch	DHmin	Max pitch
LNMx04	8	0.4	0.5	45	12	0.2	10	0.2	9	0.2
	10		0.6	37	16	0.3	14	0.3	13	0.3
	11		0.8	37	18	0.3	15	0.3	15	0.3
	12		1.0	28	20	0.4	17	0.4	17	0.4
	13	1.0	27	22	0.4	19	0.4	19	0.4	
	16	1.0	28	28	0.5	25	0.5	25	0.5	
	17	1.0	29	30	0.5	27	0.5	27	0.5	
	20	0.5	0.9	33	36	0.5	33	0.5	33	0.5
	21		0.7	44	38	0.5	35	0.5	35	0.5
	25		0.7	43	46	0.5	43	0.5	43	0.5
	32		0.5	57	60	0.5	57	0.5	57	0.5
	33		0.4	74	62	0.5	59	0.5	59	0.5
35	0.4		79	66	0.5	63	0.5	63	0.5	
LNMx06	16	0.7	3.0	13	30	0.7	22	0.7	21	0.7
	17		2.3	25	32	1.0	24	1.0	22	1.0
	18		2.1	27	34	1.0	26	1.0	24	1.0
	19		1.9	30	36	1.0	28	1.0	26	1.0
	20	1.5	37	38	1.0	30	1.0	28	1.0	
	21	1.5	39	40	1.0	32	1.0	30	1.0	
	25	1.4	40	48	1.0	40	1.0	38	1.0	
	26	1.4	42	50	1.0	42	1.0	40	1.0	
	30	1.0	1.1	51	58	1.0	50	1.0	48	1.0
	32		1.0	55	62	1.0	54	1.0	52	1.0
	33		1.0	57	64	1.0	56	1.0	54	1.0
	35		0.9	61	68	1.0	60	1.0	58	1.0
	40		0.8	71	78	1.0	70	1.0	68	1.0
	42		0.8	76	82	1.0	74	1.0	72	1.0
	50		0.6	92	98	1.0	90	1.0	88	1.0
	52		0.6	96	102	1.0	94	1.0	92	1.0
63	0.5	119	124	1.0	116	1.0	114	1.0		
66	0.5	126	130	1.0	122	1.0	120	1.0		
LNMx10	25	1.5	2.9	30	42	1.5	35	1.5	32	1.5
	26		2.7	32	44	1.5	37	1.5	34	1.5
	30		2.2	39	52	1.5	45	1.5	42	1.5
	32		2.0	43	56	1.5	49	1.5	46	1.5
	33		1.9	45	58	1.5	51	1.5	48	1.5
	35		1.8	49	62	1.5	55	1.5	52	1.5
	40		1.5	58	72	1.5	65	1.5	62	1.5
	42		1.4	62	76	1.5	69	1.5	66	1.5
	50		1.1	77	92	1.5	85	1.5	82	1.5
	52		1.1	81	96	1.5	89	1.5	86	1.5
	63		0.8	101	118	1.5	111	1.5	108	1.5
	66		0.8	107	124	1.5	117	1.5	114	1.5
80	0.6	133	152	1.5	145	1.5	142	1.5		
100	0.5	171	192	1.5	185	1.5	182	1.5		

- When ramping and helical milling, table feed, vf (mm/min) 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.

$$Lmin = \frac{APMX}{\tan(RMPX)} \text{ (mm)}$$

- Lmin : length of ramping
- ap : Depth of cut
- RMPX : Max. rake angle in ramping

# HFMDCM-LN06



- GAMP : -9°
- GAMF : -12°~-10°

Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
HFMDCM 032R-16-5-LN06		5	32	24.6	30	16	8.4	40	1.0	0.1
040R-16-6-LN06	●	6	40	32.6	34	16	8.4	40	1.0	0.2
050R-22-6-LN06		6	50	42.6	42	22	10.4	40	1.0	0.3
050R-22-7-LN06		7	50	42.6	42	22	10.4	40	1.0	0.3
050R-22-8-LN06	●	8	50	42.6	42	22	10.4	40	1.0	0.3
052R-22-7-LN06		7	52	44.6	42	22	10.4	40	1.0	0.4
052R-22-8-LN06		8	52	44.6	42	22	10.4	40	1.0	0.3
063R-22-8-LN06		8	63	55.6	49	22	10.4	40	1.0	0.5
063R-22-9-LN06	●	9	63	55.6	49	22	10.4	40	1.0	0.5
066R-22-8-LN06		8	66	58.6	49	22	10.4	40	1.0	0.6
066R-22-9-LN06		9	66	58.6	49	22	10.4	40	1.0	0.6

● : Stock item

## Available inserts

LNMX-ML LNMX-MF LNMX-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN80	NC5330	NCM325	NCM335	NCM635	NCM645	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 060310R-ML													●	●			B12
060310R-MF								●	●				●	●			
060310R-MM								●	●				●	●			

## Available arbors

Designation	DCON-MS	Available arbors
HFMDCM 032R-16-□-LN06	Ø32	BT□□-FMC16-□□
040R-16-□-LN06	Ø40	
050R-22-□-LN06	Ø50	BT□□-FMC22-□□

Designation	DCON-MS	Available arbors
HFMDCM 052R-22-□-LN06	Ø52	BT□□-FMC22-□□
063R-22-□-LN06	Ø63	
066R-22-□-LN06	Ø66	

## Parts

Specification		
Ø32~Ø66	FTNA0306	TW09S

Available inserts B12 Available arbors and bolt E96

# HFMD C(M)-LN10

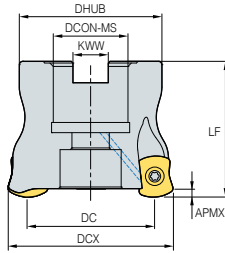


Fig. 1

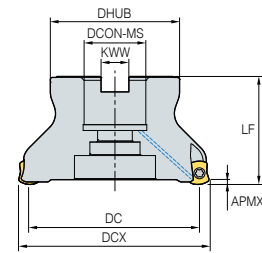


Fig. 2



- GAMP : -9°
- GAMF : -16° ~ -13°

(mm)

Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX		Fig.
<b>HFMD C M</b>											
040R-16-4-LN10		4	40	29	38	16	8.4	40	1.5	0.2	1
040R-16-5-LN10	●	5	40	29	38	16	8.4	40	1.5	0.2	1
042R-16-4-LN10		4	42	31	38	16	8.4	40	1.5	0.2	1
042R-16-5-LN10	●	5	42	31	38	16	8.4	40	1.5	0.2	1
050R-22-6-LN10	●	6	50	39	42	22	10.4	40	1.5	0.3	1
050R-22-7-LN10	●	7	50	39	42	22	10.4	40	1.5	0.3	1
052R-22-6-LN10		6	52	41	42	22	10.4	40	1.5	0.3	1
052R-22-7-LN10	●	7	52	41	42	22	10.4	40	1.5	0.3	1
063R-22-7-LN10	●	7	63	52	49	22	10.4	40	1.5	0.5	1
063R-22-8-LN10	●	8	63	52	49	22	10.4	40	1.5	0.5	1
066R-22-7-LN10		7	66	55	49	22	10.4	40	1.5	0.5	1
066R-22-8-LN10	●	8	66	55	49	22	10.4	40	1.5	0.5	1
080R-27-9-LN10		9	80	69	60	27	12.4	50	1.5	0.8	2
080R-27-10-LN10	●	10	80	69	60	27	12.4	50	1.5	0.8	2
100R-32-10-LN10		10	100	89	67	32	14.4	56	1.5	1.5	2
100R-32-11-LN10	●	11	100	89	67	32	14.4	56	1.5	1.5	2
100R-32-12-LN10		12	100	89	67	32	14.4	56	1.5	1.5	2
<b>HFMD C</b>											
080R-25.4-9-LN10		9	80	69	60	25.4	9.5	50	1.5	0.9	2
080R-25.4-10-LN10		10	80	69	60	25.4	9.5	50	1.5	0.9	2
100R-31.75-10-LN10		10	100	89	67	31.75	12.7	56	1.5	1.5	2
100R-31.75-11-LN10		11	100	89	67	31.75	12.7	56	1.5	1.5	2
100R-31.75-12-LN10		12	100	89	67	31.75	12.7	56	1.5	1.5	2

● : Stock item

## Available inserts

LNMX-ML      LNMX-MF      LNMX-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 100412R-ML												●	●	●			B12
100412R-MF								●	●			●	●	●			
100412R-MM								●	●			●	●				

## Available arbors

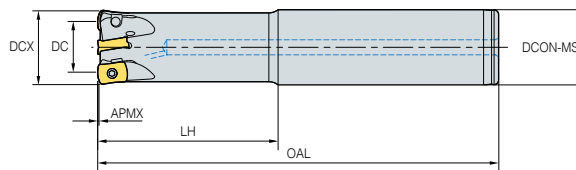
Designation	DCON-MS	Available arbors	Designation	DCON-MS	Available arbors
HFMD C M 040R-16-□-LN10	Ø40	BT□□-FMC16-□□	HFMD C M 066R-22-□-LN10	Ø66	BT□□-FMC22-□□
042R-16-□-LN10	Ø42		HFMD C M 080R-27-□-LN10	Ø80	BT□□-FMC27-□□
050R-22-□-LN10	Ø50		HFMD C M 100R-32-□-LN10	Ø100	BT□□-FMC32-□□
052R-22-□-LN10	Ø52	BT□□-FMC22-□□	HFMD C 080R-25.4-□-LN10	Ø80	BT□□-FMA25.4-□□
063R-22-□-LN10	Ø63		HFMD C 100R-31.75-□-LN10	Ø100	BT□□-FMA31.75-□□

## Parts

Specification		
Ø40~Ø100	FTNA0408	TW15S

Available inserts **B12**      Available arbors and bolt **E94 ~ E96**

# HFMD5-LN04



- GAMP : -8°~-7°
- GAMF : -19°~-15°

(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
HFMD5 008NR-1C08-080-LN04		1	8	3.68	8	20	80	0.5	0.1
008NR-1C10-100-LN04		1	8	3.68	10	20	100	0.5	0.1
010NR-2C08-080-LN04		2	10	5.68	8	20	80	0.5	0.1
010NR-2C10-100-LN04		2	10	5.68	10	20	100	0.5	0.1
010NR-2C10-150-LN04		2	10	5.68	10	40	150	0.5	0.1
011NR-2C10-100-LN04		2	11	6.68	10	20	100	0.5	0.1
011NR-2C10-150-LN04		2	11	6.68	10	20	150	0.5	0.1
008R-1C08-080-LN04		1	8	3.68	8	20	80	0.5	0.1
008R-1C10-100-LN04	●	1	8	3.68	10	20	100	0.5	0.1
010R-2C08-080-LN04	●	2	10	5.68	8	20	80	0.5	0.1
010R-2C10-080-LN04	●	2	10	5.68	10	35	80	0.5	0.1
010R-2C10-100-LN04	●	2	10	5.68	10	20	100	0.5	0.1
010R-2C10-150-LN04	●	2	10	5.68	10	40	150	0.5	0.1
011R-2C10-100-LN04		2	11	6.68	10	20	100	0.5	0.1
011R-2C10-150-LN04	●	2	11	6.68	10	20	150	0.5	0.1
012R-3C12-100-LN04	●	3	12	7.68	12	50	100	0.5	0.1
012R-3C12-105-LN04	●	3	12	7.68	12	20	105	0.5	0.1
012R-3C12-150-LN04	●	3	12	7.68	12	40	150	0.5	0.1

● : Stock item

## Available inserts

LNX-ML LNX-MM



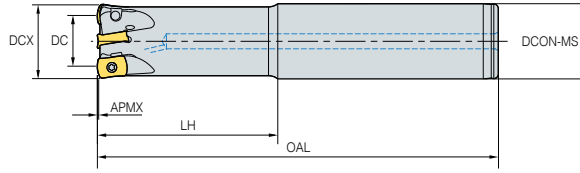
Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNX 040205R-ML													●	●			B12
040205R-MM							●	●					●	●			

## Parts

Specification		
Ø8~Ø12	FTKA01844-A	TW06S-A

Available inserts **B12**

# HFMD S-LN04



- GAMP : -8°
- GAMF : -14°~ -13°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
HFMD S	013R-3C12-100-LN04		3	13	8.68	12	20	100	0.5	0.1
	013R-3C12-120-LN04	●	3	13	8.68	12	20	120	0.5	0.1
	013R-3C12-150-LN04	●	3	13	8.68	12	20	150	0.5	0.1
	016R-4C16-100-LN04	●	4	16	11.68	16	50	100	0.5	0.1
	016R-4C16-120-LN04	●	4	16	11.68	16	70	120	0.5	0.2
	016R-4C16-150-LN04	●	4	16	11.68	16	80	150	0.5	0.2
	016R-4C16-200-LN04	●	4	16	11.68	16	120	200	0.5	0.3
	017R-4C16-100-LN04		4	17	12.68	16	20	100	0.5	0
	017R-4C16-150-LN04	●	4	17	12.68	16	20	150	0.5	0.2
	017R-4C16-200-LN04	●	4	17	12.68	16	20	200	0.5	0.3
	020R-5C20-100-LN04	●	5	20	15.68	20	20	100	0.5	0.2
	020R-5C20-150-LN04	●	5	20	15.68	20	40	150	0.5	0.3
	020R-5C20-200-LN04	●	5	20	15.68	20	80	200	0.5	0.4
	021R-5C20-100-LN04		5	21	16.68	20	20	100	0.5	0.2
	021R-5C20-150-LN04	●	5	21	16.68	20	20	150	0.5	0.3
021R-5C20-200-LN04	●	5	21	16.68	20	20	200	0.5	0.5	

● : Stock item

## Available inserts

LNMX-ML      LNMX-MM



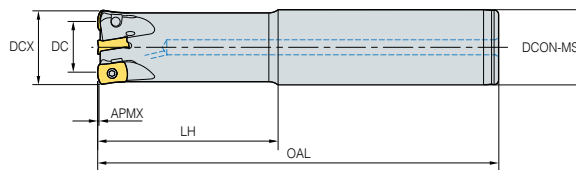
Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 040205R-ML													●	●			B12
040205R-MM							●	●					●	●			

## Parts

Specification		
Ø13~Ø21	FTKA01844-A	TW06S-A

Available inserts **B12**

# HFMD5-LN06



- GAMP : -9°
- GAMF : -14°~ -13°

(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	kg
HFMD5 016R-2C16-100-LN06	●	2	16	9	16	30	100	0.7	0.1
016R-2C16-150-LN06	●	2	16	8.6	16	50	150	0.7	0.2
017R-2C16-100-LN06	●	2	17	9.6	16	30	100	1	0.1
017R-2C16-150-LN06	●	2	17	9.6	16	40	150	1	0.2
017R-2C16-200-LN06		2	17	9.6	16	40	200	1	0.3
018R-2C16-100-LN06		2	18	10.6	16	40	100	1	0.1
018R-2C16-160-LN06		2	18	10.6	16	40	160	1	0.1
018R-2C16-200-LN06		2	18	10.6	16	40	200	1	0.3
019R-2C16-100-LN06		2	19	11.6	16	40	100	1	0.2
019R-2C16-160-LN06		2	19	11.6	16	40	160	1	0.2
019R-2C16-200-LN06		2	19	11.6	16	40	200	1	0.3
020R-3C20-100-LN06		3	20	12.6	20	40	100	1	0.2
020R-3C20-130-LN06	●	3	20	12.6	20	50	130	1	0.3
020R-3C20-160-LN06	●	3	20	12.6	20	80	160	1	0.3
020R-3C20-200-LN06	●	3	20	12.6	20	120	200	1	0.4
021R-3C20-100-LN06		3	21	13.6	20	30	100	1	0.2
021R-3C20-130-LN06		3	21	13.6	20	40	130	1	0.3
021R-3C20-160-LN06	●	3	21	13.6	20	40	160	1	0.3
021R-3C20-200-LN06	●	3	21	13.6	20	40	200	1	0.3

● : Stock item

## Available inserts

LNMX-ML LNMX-MF LNMX-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 060310R-ML													●	●			B12
060310R-MF							●	●					●	●			
060310R-MM							●	●					●	●			

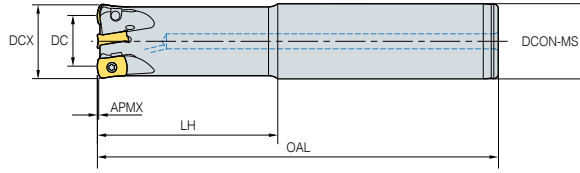
## Parts

Specification	Screw	Wrench
Ø16~Ø21	FTNA0306	TW09S

Available inserts B12



# HFMD S-LN06



- GAMP : -9°
- GAMF : -12°~10°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
HFMD S	025R-4C25-100-LN06	●	4	25	17.6	25	40	100	1.0	0.3
	025R-4C25-140-LN06	●	4	25	17.6	25	60	140	1.0	0.5
	025R-4C25-180-LN06	●	4	25	17.6	25	100	180	1.0	0.6
	025R-4C25-250-LN06		4	25	17.6	25	150	250	1.0	0.8
	026R-4C25-100-LN06		4	26	18.6	25	30	100	1.0	0.3
	026R-4C25-140-LN06	●	4	26	18.6	25	40	140	1.0	0.5
	026R-4C25-180-LN06	●	4	26	18.6	25	40	180	1.0	0.6
	026R-4C25-250-LN06	●	4	26	18.6	25	40	250	1.0	0.7
	032R-5C32-150-LN06	●	5	32	24.6	32	70	150	1.0	1.1
	032R-5C32-200-LN06	●	5	32	24.6	32	120	200	1.0	0.8
	032R-5C32-250-LN06		5	32	24.6	32	150	250	1.0	1.3
	033R-5C32-150-LN06		5	33	25.6	32	40	150	1.0	0.8
	033R-5C32-200-LN06	●	5	33	25.6	32	40	200	1.0	1.1
	033R-5C32-250-LN06	●	5	33	25.6	32	40	250	1.0	1.1
	035R-5C32-150-LN06		5	35	27.6	32	40	150	1.0	1.2
	035R-5C32-200-LN06		5	35	27.6	32	40	200	1.0	1.2
	035R-5C32-250-LN06		5	35	27.6	32	40	250	1.0	1.4
	040R-6C32-150-LN06		6	40	32.6	32	40	150	1.0	1.0
	040R-6C32-200-LN06		6	40	32.6	32	40	200	1.0	1.2
	040R-6C32-250-LN06		6	40	32.6	32	40	250	1.0	1.5

● : Stock item

## Available inserts

LNMX-ML      LNMX-MF      LNMX-MM



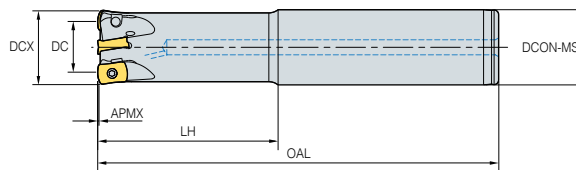
Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 060310R-ML													●	●			B12
060310R-MF							●	●					●	●			
060310R-MM							●	●					●	●			

## Parts

Specification		
Ø25~Ø40	FTNA0306	TW09S

Available inserts **B12**

# HFMD5-LN10



- GAMP : -9°
- GAMF : -16°~ -13°

(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
HFMD5 025R-2C25-150-LN10	●	2	25	14	25	70	150	1.5	0.5
025R-2C25-200-LN10	●	2	25	14	25	100	200	1.5	0.6
025R-3C25-150-LN10	●	3	25	14	25	70	150	1.5	0.5
025R-3C25-200-LN10	●	3	25	14	25	100	200	1.5	0.6
026R-3C25-150-LN10	●	3	26	15	25	40	150	1.5	0.5
026R-3C25-200-LN10	●	3	26	15	25	40	200	1.5	0.7
030R-3C32-150-LN10	●	3	30	19	32	70	150	1.5	0.7
030R-3C32-200-LN10	●	3	30	19	32	100	200	1.5	0.9
032R-4C32-150-LN10	●	4	32	21	32	70	150	1.5	0.8
032R-4C32-200-LN10	●	4	32	21	32	100	200	1.5	1
032R-4C32-250-LN10	●	4	32	21	32	150	250	1.5	1.3
033R-4C32-150-LN10	●	4	33	22	32	40	150	1.5	0.8
033R-4C32-200-LN10	●	4	33	22	32	40	200	1.5	1
033R-4C32-250-LN10	●	4	33	22	32	40	250	1.5	1.4
035R-4C32-150-LN10		4	35	24	32	40	150	1.5	0
035R-4C32-200-LN10		4	35	24	32	40	200	1.5	0
035R-4C32-250-LN10		4	35	24	32	40	250	1.5	0
040R-4C32-150-LN10		4	40	29	32	40	150	1.5	0.9
040R-4C32-200-LN10		4	40	29	32	40	200	1.5	1.2
040R-4C32-250-LN10	●	4	40	29	32	40	250	1.5	1.5
040R-5C32-150-LN10		5	40	29	32	40	150	1.5	0.9
040R-5C32-200-LN10		5	40	29	32	40	200	1.5	1.2
040R-5C32-250-LN10	●	5	40	29	32	40	250	1.5	1.3
042R-5C32-150-LN10		5	42	31	32	40	150	1.5	0.9
042R-5C32-200-LN10		5	42	31	32	40	200	1.5	1.2
042R-5C32-250-LN10	●	5	42	31	32	40	250	1.5	1.5

● : Stock item

## Available inserts

LNMX-ML LNMX-MF LNMX-MM



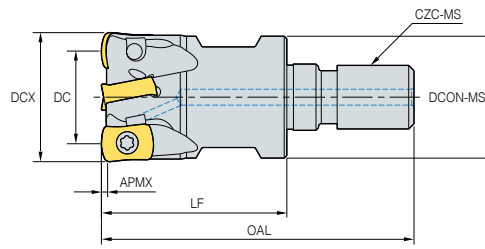
Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 100412R-ML												●	●	●			B12
100412R-MF								●	●			●	●	●			
100412R-MM								●	●			●	●				

## Parts

Specification		
Ø25~Ø42	FTNA0408	TW15S

Available inserts B12

# HFMDM-LN04



- GAMP : -8°
- GAMF : -16°~-10°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
HFMDM	010R-2-M06-LN04	●	2	10	5.68	9.5	22	37	M6	0.5	0.1
	011R-2-M06-LN04	●	2	11	6.68	11	22	37	M6	0.5	0.1
	012R-3-M06-LN04	●	3	12	7.68	11	22	37	M6	0.5	0.1
	013R-3-M06-LN04	●	3	13	8.68	11	22	37	M6	0.5	0.2
	016R-4-M08-LN04	●	4	16	11.68	14.5	22	39	M8	0.5	0.1
	017R-4-M08-LN04	●	4	17	12.68	14.5	22	39	M8	0.5	0.1
	020R-5-M10-LN04	●	5	20	15.68	18	30	51	M10	0.5	0.1
	025R-7-M12-LN04	●	7	25	20.68	18	30	54	M12	0.5	0.1
	032R-8-M16-LN04	●	8	32	27.68	29	35	62	M16	0.5	0.2
	033R-8-M16-LN04	●	8	33	28.68	29	35	62	M16	0.5	0.2
	035R-9-M16-LN04	●	9	35	30.68	29	35	62	M16	0.5	0.2

● : Stock item

## Available inserts

LNMX-ML LNMX-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 040205R-ML													●	●			B12
040205R-MM							●	●					●	●			

## Available adaptors

Designation	Available adaptors
HFMDM 010R-2-M06-LN04	MAT-M06
011R-2-M06-LN04	
012R-3-M06-LN04	
013R-3-M06-LN04	
016R-4-M08-LN04	
017R-4-M08-LN04	MAT-M08

Designation	Available adaptors
HFMDM 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 : HFMDM016R-4-M08-LN04  
Modular head threading measure size (M08)

||

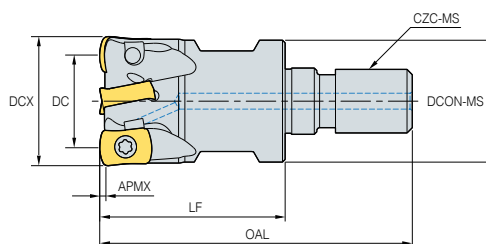
Adaptor spec.: MAT-M08-040-S16T  
Adaptor threading measure (M08)

## Parts

Specification		
Ø10~Ø35	FTKA01844-A	TW06S-A

Available inserts **B12** Available adaptors **B400**

# HFMDM-LN06



- GAMP : -9°
- GAMF : -15°~ -10°

Designation		Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
HFMDM	016R-2-M08-LN06	●	2	16	8.6	14.5	25	42	M08	0.7	0.1
	017R-2-M08-LN06	●	2	17	9.6	14.5	25	42	M08	1	0.1
	018R-2-M08-LN06		2	18	10.6	14.5	25	42	M08	1	0.1
	019R-2-M08-LN06		2	19	11.6	14.5	25	42	M08	1	0.1
	020R-3-M10-LN06	●	3	20	12.6	18	30	51	M10	1	0.1
	021R-3-M10-LN06	●	3	21	13.6	18	30	51	M10	1	0.1
	025R-4-M12-LN06	●	4	25	17.6	23	35	59	M12	1	0.1
	026R-4-M12-LN06		4	26	18.6	23	35	59	M12	1	0.4
	032R-5-M16-LN06	●	5	32	24.6	29	40	67	M16	1	0.2
	033R-5-M16-LN06		5	33	25.6	29	40	67	M16	1	0.2
	035R-5-M16-LN06	●	5	35	27.6	29	40	67	M16	1	0.2
	040R-6-M16-LN06		6	40	32.6	29	40	67	M16	1	0.3
	042R-6-M16-LN06		6	42	34.6	29	40	67	M16	1	0.3

● : Stock item

## Available inserts

LNMX-ML LNMX-MF LNMX-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 060310R-ML													●	●			B12
060310R-MF							●	●					●	●			
060310R-MM							●	●					●	●			

## Available adaptors

Designation	Available adaptors
HFMDM 016R-□-M08-LN06	MAT-M08
017R-□-M08-LN06	
018R-□-M08-LN06	
019R-□-M08-LN06	
020R-□-M10-LN06	MAT-M10
021R-□-M10-LN06	
025R-□-M12-LN06	MAT-M12

Designation	Available adaptors
HFMDM 026R-□-M12-LN06	MAT-M12
030R-□-M16-LN06	
032R-□-M16-LN06	MAT-M16
033R-□-M16-LN06	
040R-□-M16-LN06	
042R-□-M16-LN06	

Designation : HFMDM025R-□-M12-LN06  
Modular head threading measure size (M12)

||

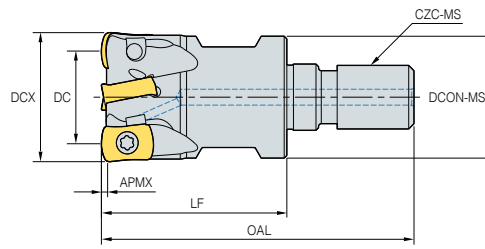
Adaptor spec.: MAT-M12-050-S25T  
Adaptor threading measure (M12)

## Parts

Specification		
Ø16~Ø42	FTNA0306	TW09S

Available inserts B12 Available adaptors B400

# HFMDM-LN10



- GAMP : -9°
- GAMF : -16°~-13°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
HFMDM	025R-2-M12-LN10	●	2	25	14	23	35	59	M12	1.5	0.1
	025R-3-M12-LN10	●	3	25	14	23	35	59	M12	1.5	0.1
	026R-3-M12-LN10	●	3	26	15	23	35	59	M12	1.5	0.1
	030R-4-M16-LN10	●	4	30	19	29	40	67	M16	1.5	0.2
	032R-3-M16-LN10		3	32	21	29	40	67	M16	1.5	0.2
	032R-4-M16-LN10	●	4	32	21	29	40	67	M16	1.5	0.2
	033R-4-M16-LN10	●	4	33	22	29	40	67	M16	1.5	0.2
	035R-3-M16-LN10		3	35	24	29	40	67	M16	1.5	0.2
	035R-4-M16-LN10	●	4	35	24	29	40	67	M16	1.5	0.2
	040R-4-M16-LN10		4	40	29	29	40	67	M16	1.5	0.2
	040R-5-M16-LN10	●	5	40	29	29	40	67	M16	1.5	0.2
	042R-4-M16-LN10		4	42	31	29	40	67	M16	1.5	0.3
	042R-5-M16-LN10	●	5	42	31	29	40	67	M16	1.5	0.3

● : Stock item

## Available inserts

LNMX-ML      LNMX-MF      LNMX-MM



Designation	Cermet	Coated										Uncoated		Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	H01
LNMX 100412R-ML												●	●				B12
100412R-MF							●	●				●	●				
100412R-MM							●	●				●	●				

## Available adaptors

Designation	Available adaptors
HFMDM 025R-□-M12-LN10	MAT-M12
026R-□-M12-LN10	
030R-□-M16-LN10	MAT-M16
032R-□-M16-LN10	

Designation	Available adaptors
HFMDM 033R-□-M16-LN10	MAT-M16
035R-□-M16-LN10	
040R-□-M16-LN10	
042R-□-M16-LN10	

Designation : HFMDM035R-□-M16-LN10  
Modular head threading measure size (M16)

||

Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

## Parts

Specification		
Ø25~Ø42	FTNA0408	TW15S

Available inserts **B12**      Available adaptors **B400**

Stable machining, high efficiency milling tools for small diameter machining

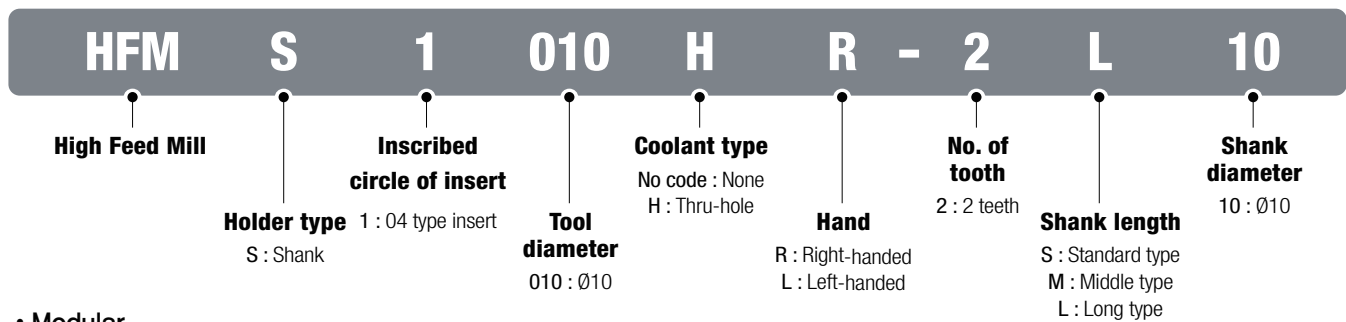
# HFM

## High Feed Mill

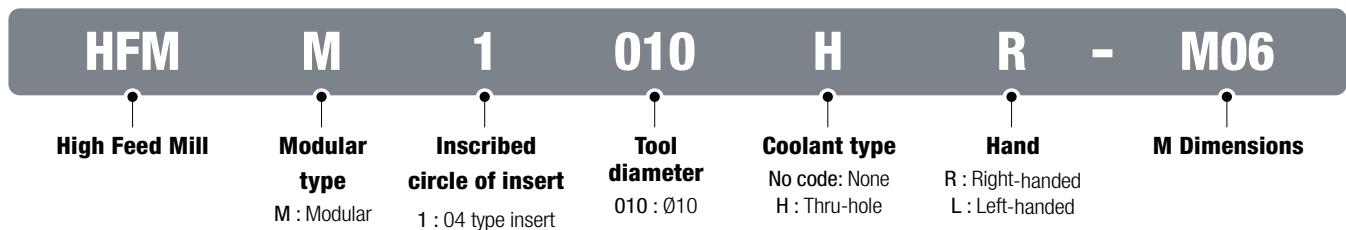
- Increase productivity through improved insert shape and size, high feed per tooth, and many cutting-edges, for small diameter machining
- Stable tool life through the combination of the reinforced toughness on corner and suitable grades of high hardness in the area of high speed and high hardness

### Code system

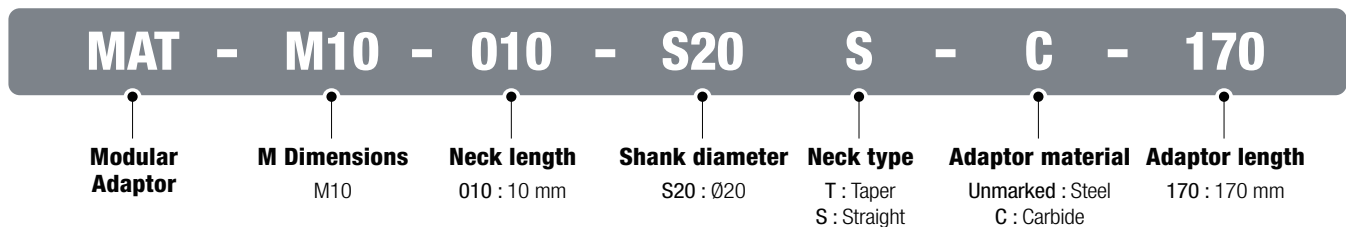
- Shank



- Modular



- Modular adapter

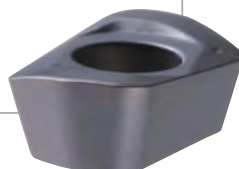


### Features

- 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) Ø20 (2 flutes) → HFM Ø20 (5 flutes)

- **Major cutting-edge**
  - Improved sharpness of principle edge
  - Improved toughness of corner edge
- **Relief angle**
  - 11, 13 double relief angle increase rigidity and prevent interference



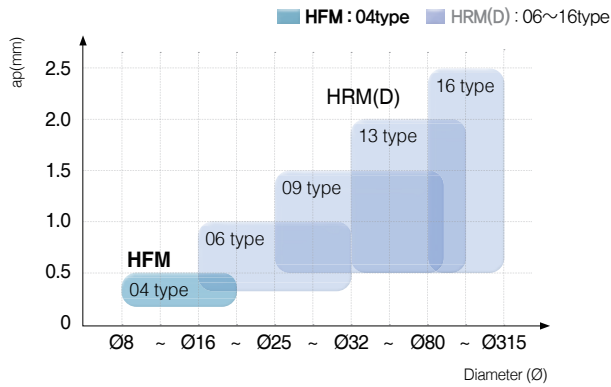
# B Technical Information for HFM

## Features of chip breaker

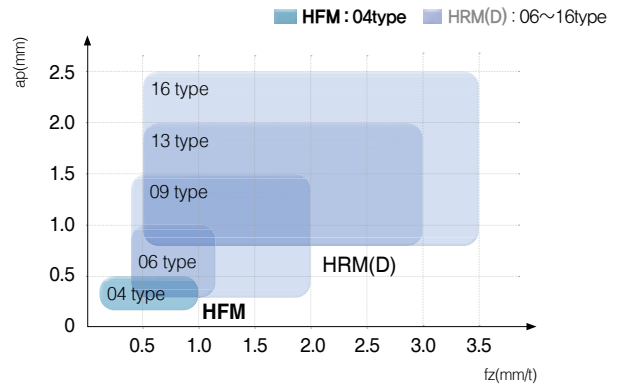
Insert	Cutting-edge	Use	Features
MF			Light cutting Titanium & Inconel machining
None			Super hard material machining

## Application area

Application area (ap & Diameter)



Application area (ap & fz)



## Recommended cutting conditions

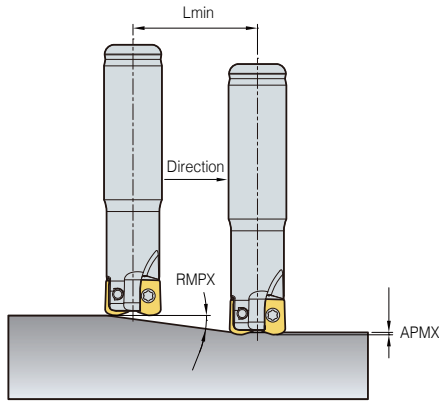
※ Recommended chip breaker: ● 1st ○ 2nd



Workpiece				HB (HRC)	Grade	Cutting conditions				Chip breaker			
Workpiece	KS	AISI	ISO			vc (m/min)	fz (mm/t)	ap (mm)	ae (mm)	MF	None C/B		
P	Mild steel	SM20C	1020	C22	120~180	PC5400 (PC5300)	100~220	0.5~1.0	~0.5	0.7D~0.1D	●	-	
	Carbon steel	SM45C	1045	C45	200	PC5400 (PC5300)	100~200	0.5~1.0	~0.5	0.7D~0.1D	●	-	
	Alloy steel	SCM440	4140	41CrMo4	270(28)	PC5300	100~200	0.5~1.0	~0.5	0.7D~0.1D	●	-	
	Pre-hardened steel	KP4M	P20 (Improved)	1.2738 (Improved)	300(32)	PC5300 (PC2510)	100~180	0.5~0.9	~0.4	0.7D~0.1D	●	○	
		NIMAX	P21 (Improved)	-	370(40)	PC5300 (PC2510)	100~180	0.5~0.9	~0.4	0.7D~0.1D	●	○	
		CENA1	P21 (Improved)	-	370(40)	PC5300 (PC2510)	100~180	0.5~0.9	~0.4	0.7D~0.1D	●	○	
		NAK80	P21 (Improved)	-	400(43)	PC5300	100~160	0.5~0.7	~0.4	0.7D~0.1D	○	-	
	Alloy tool steel	STD11 STD61	D2 H13	X155CrVMo12-1 X40CrMoV5-1	(40~50)	PC2510 (PC2505)	80~130	0.3~0.55	~0.3	0.7D~0.1D	-	●	
		STD11 (Cold forging)	D2	X155CrVMo12-1	630(60)	PC2505	30~75	0.3~0.5	~0.2	0.7D~0.1D	-	●	
M	Stainless steel	STS316	316	X5CrNiMo17-12-2	Under 270	PC5400 (PC5300)	70~150	0.5~0.7	~0.5	0.7D~0.1D	●	-	
K	Gray cast iron, Ductile cast iron	GCD450	65-45-12	GGG40.3	Tensile Strength Over 450Mpa	PC5300	130~220	0.6~0.8	~0.5	0.7D~0.1D	●	-	
S	HRSA	Fe series	Incoloy901	N09901	- (WS 2.4662)	- (25~35)	PC5300 (PC5400)	30~100	0.3~0.5	~0.3	0.4D~0.7D	●	○
		Ni or Co series	Inconel718	N07718	NiCr19FeNbMo (WS 2.4668)	- (35~45)	PC5300 (PC5400)	20~50	0.3~0.6	~0.3	0.4D~0.7D	●	○
	Titanium	Ti-6Al-4V	R56400	TiAl6V4	- (40~45)	PC5300	30~50	0.4~1.0	~0.3	0.7D~0.1D	●	-	

## Ramping and helical cutting

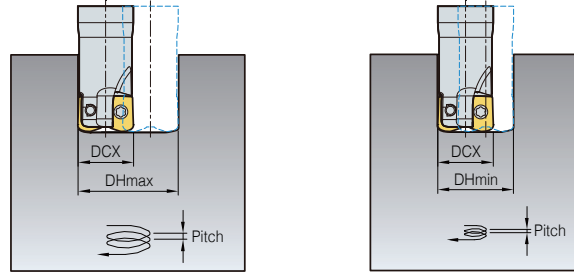
### Ramping



$$Lmin = \frac{APMX}{\tan(RMPX)} \text{ (mm)}$$

- Lmin = Min. inclination cutting length
- ap : Depth of cut
- RMPX : Max. ramping angle

### Helical cutting



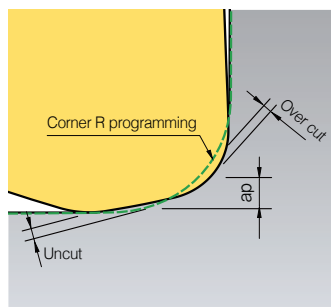
- DCX = Tool dia. (mm)
- d(Tool Path, mm) = DHmin, max-DCX
- DHmin(Min diameter, mm) = DCX×2-5.4
- DHmax(Max diameter, mm) = DCX×2-2

(mm)

Designation	DCX	APMX	Ramping		Helical cutting		
			RMPX	Lmin	DHmax	DHmin	Max pitch dmax
HFMS1010HR	10	0.4~0.5	3.5	7	18	15	0.4
HFMS1011HR	11	0.4~0.5	3.1	8	20	17	0.4
HFMS1012HR	12	0.4~0.5	2.7	9	22	19	0.4
HFMS1013HR	13	0.4~0.5	2.4	10	24	21	0.4
HFMS1014HR	14	0.4~0.5	2.2	11	26	23	0.4
HFMS1015HR	15	0.4~0.5	2.0	12	28	25	0.4
HFMS1016HR	16	0.4~0.5	1.8	13	30	27	0.4
HFMS1017HR	17	0.4~0.5	1.7	14	32	29	0.4
HFMS1018HR	18	0.4~0.5	1.6	15	34	31	0.4
HFMS1019HR	19	0.4~0.5	1.5	16	36	33	0.4
HFMS1020HR	20	0.4~0.5	1.4	17	38	35	0.4
HFMS1021HR	21	0.4~0.5	1.3	18	40	37	0.4
HFMM1025HR	25	0.4~0.5	1.1	22	48	45	0.4
HFMM1026HR	26	0.4~0.5	1.0	23	50	47	0.4
HFMM1030HR	30	0.4~0.5	0.9	27	58	55	0.4
HFMM1032HR	32	0.4~0.5	0.8	29	62	59	0.4
HFMM1033HR	33	0.4~0.5	0.8	30	64	61	0.4

- Adjust feed to under 70% of recommended cutting conditions 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



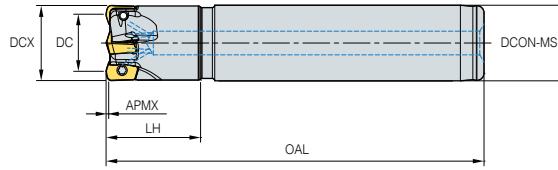
Insert	Corner R programming	Cutting conditions		Over Cut	Uncut
		Nose R	APMX		
LPMT040210R-MF	R1.0 (Standard)	1.0	0.4	0	0.17
LPMW040210R	R1.5			0.10	0.08
LPEW040210R	R2.0			0.31	0
LPMT040220R-MF	R1.0	2.0	0.5	0	0.41
LPMW040220R	R1.5			0	0.2
LPEW040220R	R2.0 (Standard)			0	0

(mm)

- 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



# HFMS1000



KAPR  
**13°**

- GAMP : -4°
- GAMF : -14°~-7°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
HFMS	1008HR-1S10		1	8	4.4	10	20	80	0.5	0.1
	1008HR-1M10		1	8	4.4	10	25	100	0.5	0.1
	1008HR-1L10	●	1	8	4.4	10	35	120	0.5	0.1
	1010HR-2S08		2	10	6.2	8	20	80	0.5	0.1
	1010HR-2M08		2	10	6.2	8	25	100	0.5	0.1
	1010HR-2L08	●	2	10	6.2	8	35	120	0.5	0.1
	1010HR-2S10		2	10	6.2	10	20	80	0.5	0.1
	1010HR-2M10		2	10	6.2	10	25	105	0.5	0.1
	1010HR-2L10	●	2	10	6.2	10	35	120	0.5	0.1
	1011HR-2S10	●	2	11	7.2	10	20	80	0.5	0.1
	1011HR-2M10	●	2	11	7.2	10	25	105	0.5	0.1
	1011HR-2L10	●	2	11	7.2	10	35	120	0.5	0.1
	1012HR-3S10		3	12	8.2	10	20	80	0.5	0.1
	1012HR-3M10		3	12	8.2	10	25	105	0.5	0.1
	1012HR-3L10	●	3	12	8.2	10	35	120	0.5	0.1
	1012HR-3S12		3	12	8.2	12	20	80	0.5	0.1
	1012HR-3M12		3	12	8.2	12	25	105	0.5	0.1
	1012HR-3L12	●	3	12	8.2	12	35	120	0.5	0.1
	1013HR-3S12	●	3	13	9.2	12	20	80	0.5	0.1
	1013HR-3M12	●	3	13	9.2	12	25	105	0.5	0.1
1013HR-3L12	●	3	13	9.2	12	40	120	0.5	0.1	
1014HR-3S12		3	14	10.2	12	20	80	0.5	0.1	
1014HR-3M12		3	14	10.2	12	25	105	0.5	0.1	
1014HR-3L12	●	3	14	10.2	12	40	120	0.5	0.1	

● : Stock item

## Available inserts

LPMT-MF      LPMW      LPEW



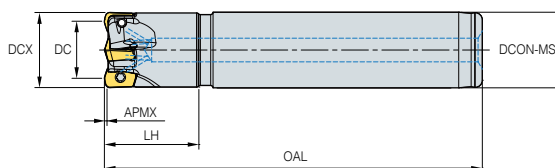
Designation	Cermet	Coated										Uncoated			Page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
LPMT 040210R-MF							●	●					●	●				B12 B13
040220R-MF							●	●					●	●				
LPMW 040210R							●	●					●	●				
040220R							●	●					●	●				
LPEW 040210R							●	●					●	●				
040220R							●	●					●	●				

## Parts

Specification	Screw	Wrench
Ø8~Ø10	FTKA01840	TW06S-A
Ø11~Ø14	FTKA01842	TW06S-A

Available inserts **B12, B13**

# HFMS1000



• GAMP : -4°  
• GAMF : -6° ~ -3°

(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
<b>HFMS</b> 1015HR-4S12		4	15	11.2	12	20	80	0.5	0.1
1015HR-4M12		4	15	11.2	12	25	105	0.5	0.1
1015HR-4L12	●	4	15	11.2	12	40	120	0.5	0.1
1016HR-4S16		4	16	12.2	16	20	80	0.5	0.1
1016HR-4M16		4	16	12.2	16	25	105	0.5	0.1
1016HR-4L16	●	4	16	12.2	16	40	120	0.5	0.2
1017HR-4S16	●	4	17	13.2	16	20	80	0.5	0.1
1017HR-4M16	●	4	17	13.2	16	25	105	0.5	0.2
1017HR-4L16	●	4	17	13.2	16	40	120	0.5	0.2
1018HR-4S16		4	18	14.2	16	20	80	0.5	0.1
1018HR-4M16		4	18	14.2	16	25	105	0.5	0.2
1018HR-4L16	●	4	18	14.2	16	40	120	0.5	0.2
1019HR-4S16		4	19	15.2	16	20	80	0.5	0.1
1019HR-4M16		4	19	15.2	16	25	105	0.5	0.2
1019HR-4L16	●	4	19	15.2	16	40	120	0.5	0.2
1020HR-4S20		4	20	16.2	20	20	80	0.5	0.2
1020HR-4M20		4	20	16.2	20	25	105	0.5	0.2
1020HR-4L20	●	4	20	16.2	20	40	120	0.5	0.3
1020HR-5S20		5	20	16.2	20	20	80	0.5	0.3
1020HR-5M20		5	20	16.2	20	25	105	0.5	0.2
1020HR-5L20	●	5	20	16.2	20	40	120	0.5	0.3
1021HR-5S20	●	5	21	17.2	20	20	80	0.5	0.2
1021HR-5M20	●	5	21	17.2	20	25	105	0.5	0.2
1021HR-5L20	●	5	21	17.2	20	40	120	0.5	0.3

● : Stock item

## Available inserts

LPMT-MF      LPMW      LPEW



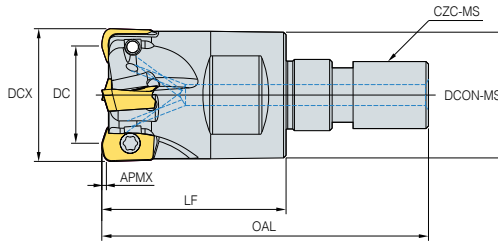
Designation	Cermet	Coated										Uncoated			Page			
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
LPMT 040210R-MF							●	●					●	●				B12
040220R-MF							●	●	●				●	●				
LPMW 040210R							●	●					●	●				B13
040220R							●	●					●	●				
LPEW 040210R							●	●					●	●				
040220R							●	●					●	●				

## Parts

Specification		
Ø15~Ø21	FTKA01842	TW06S-A

Available inserts **B12, B13**

## HFMM



KAPR  
13°

- GAMP : -4°
- GAMF : -14° ~ -3°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
HFMM	1008HR-M06	●	1	8	4.4	9.5	17	32	M06	0.5	0.1
	1010HR-M06	●	2	10	6.2	9.5	17	32	M06	0.5	0.1
	1011HR-M06	●	2	11	7.2	9.5	17	32	M06	0.5	0.1
	1012HR-M06	●	3	12	8.2	11	19	34	M06	0.5	0.1
	1013HR-M06	●	3	13	9.2	11	19	34	M06	0.5	0.1
	1016HR-M08	●	4	16	12.2	14.5	22	39	M08	0.5	0.1
	1017HR-M08	●	4	17	13.2	14.5	22	39	M08	0.5	0.1
	1020HR-M10	●	5	20	16.2	18	25	46	M10	0.5	0.1
	1021HR-M10	●	5	21	17.2	18	25	46	M10	0.5	0.1
	1025HR-M12	●	6	25	21.2	23	27	51	M12	0.5	0.1
	1026HR-M12	●	6	26	22.2	23	27	51	M12	0.5	0.1
	1030HR-M16	●	7	30	26.2	29	30	60	M16	0.5	0.1
	1032HR-M16	●	8	32	28.2	29	30	60	M16	0.5	0.2
	1033HR-M16	●	8	33	29.2	29	30	60	M16	0.5	0.2

● : Stock item

### Available inserts

LPMT-MF      LPMW      LPEW



Designation	Coated	Uncoated			Page													
	CN30	NC5330	NCM325	NCM335		NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
LPMT 040210R-MF								●	●				●	●				
LPMT 040220R-MF								●	●				●	●				
LPMW 040210R							●	●					●	●				
LPMW 040220R							●	●					●	●				
LPEW 040210R							●	●					●	●				
LPEW 040220R							●	●					●	●				

### Available adaptors

Designation	Available adaptors
HFMM 1008HR-M06	MAT-M06
1010HR-M06	
1011HR-M06	
1012HR-M06	
1013HR-M06	
1016HR-M08	
1017HR-M08	MAT-M08

Designation	Available adaptors
HFMM 1020HR-M10	MAT-M10
1021HR-M10	
1025HR-M12	
1026HR-M12	MAT-M12
1030HR-M16	
1032HR-M16	MAT-M16
1033HR-M16	

Designation : HFMM1008HR-M06  
Modular head threading measure size (M06)

||

Adaptor spec.: MAT-M06-020-S10S  
Adaptor threading measure (M06)

### Parts

Specification		
Ø8~Ø10	FTKA01840	TW06S-A
Ø11~Ø33	FTKA01842	TW06S-A

Available inserts B12, B13

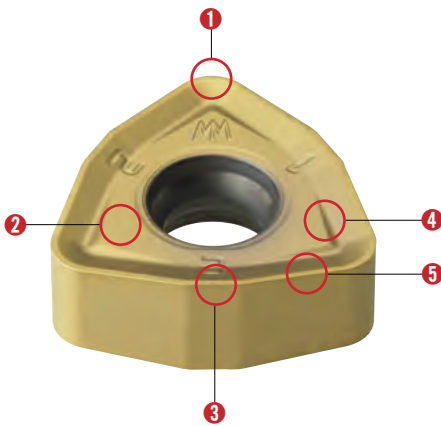
Available adaptors B400

Economical high feed milling tool with Negative type 6 corner cutting edges

# 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
- With its unique design, HRMD insert can be used both right and left hand cutters and it ensures low cutting load machining

## Features of insert



### 1 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

### 2 Clamping surface

- Design for stable clamping
- Prevention of friction by chip

### 3 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

### 4 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

### 5 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

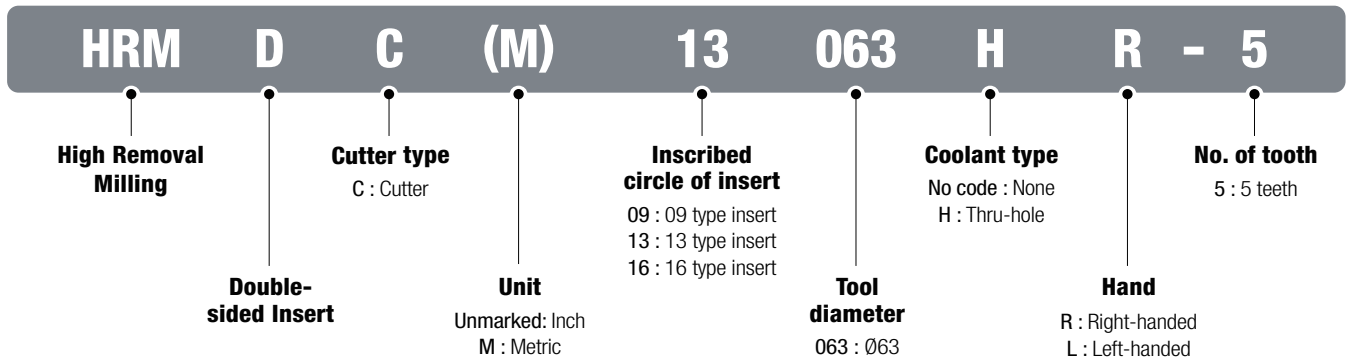
### >> Simple screw on system

- Strong clamping of screw on system
- Convenient clamping system
- Wide chip pocket for better chip evacuation

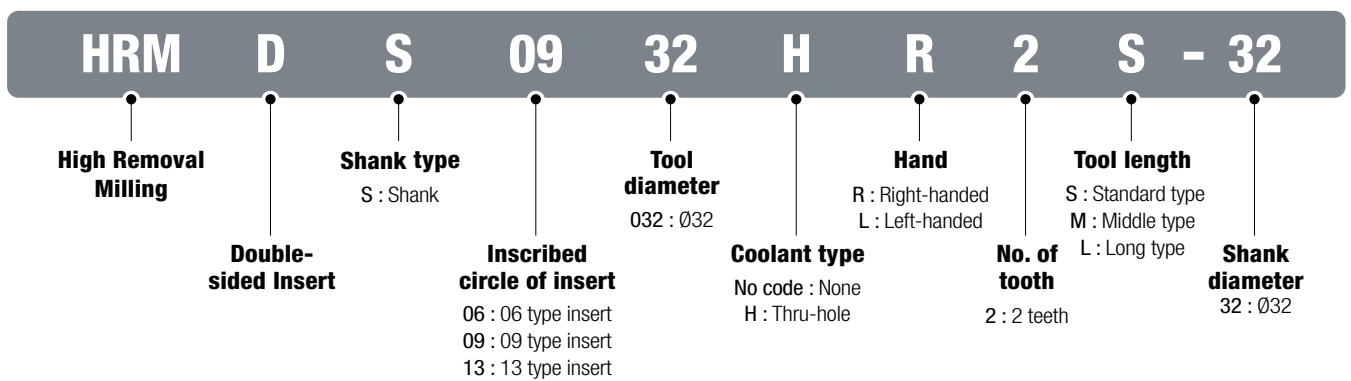
# B Technical Information for HRMDouble

## Code system

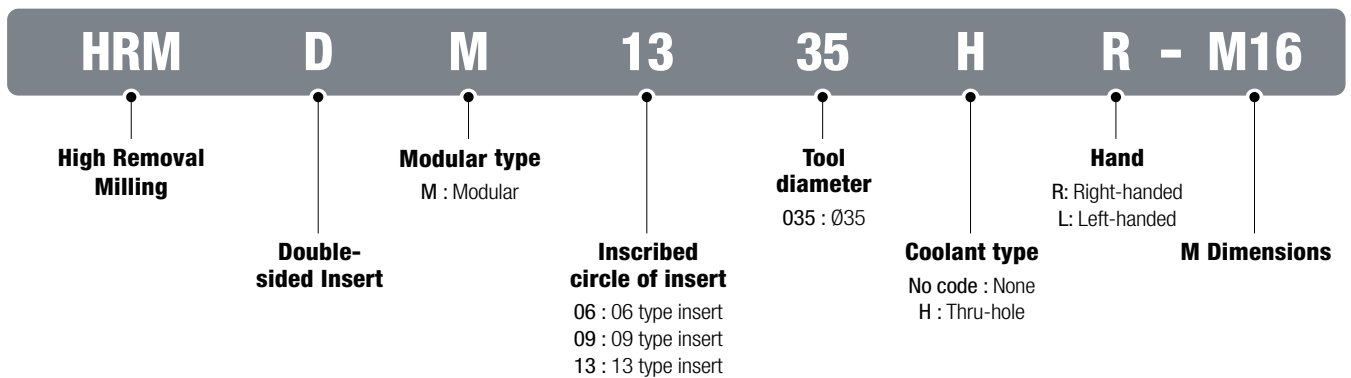
### • Cutter



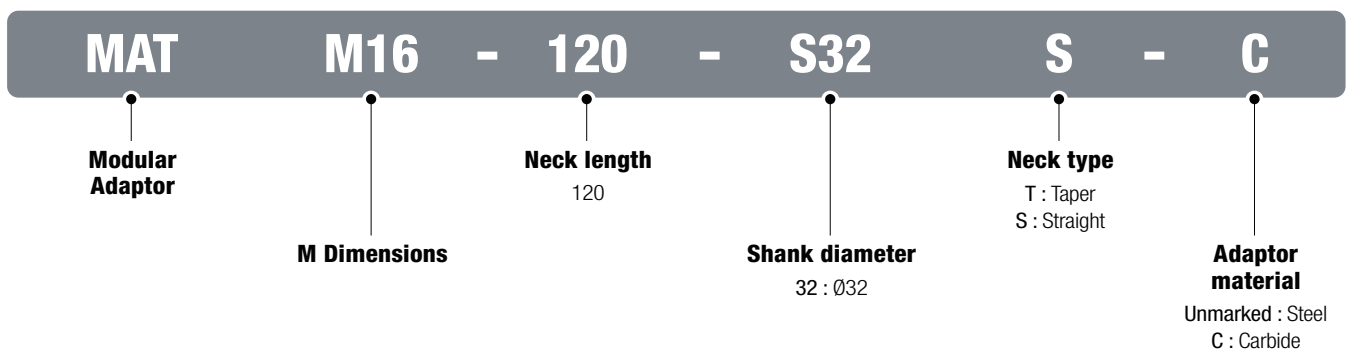
### • Shank



### • Modular head



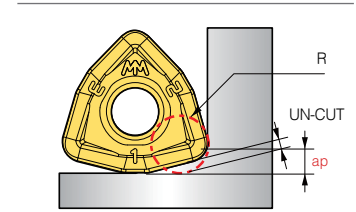
### • Modular adaptor



## Corner R programming

Designation	Cutting conditions		Approx. R (mm)	
	Max.ap(APMX)	Max.fz(mm/t)	Input. R	Uncut
WNMX060312ZNN-□□	1.0	1.2	1.8	0.4
WNMX09T316ZNN-□□	1.5	2.0	2.5	0.6
WNMX130520ZNN-□□	2.0	3.0	3.0	0.8
WNMX160720ZNN-□□	2.5	3.5	3.5	1.2

\* Information for uncut part by using "Input.R" for CAM program

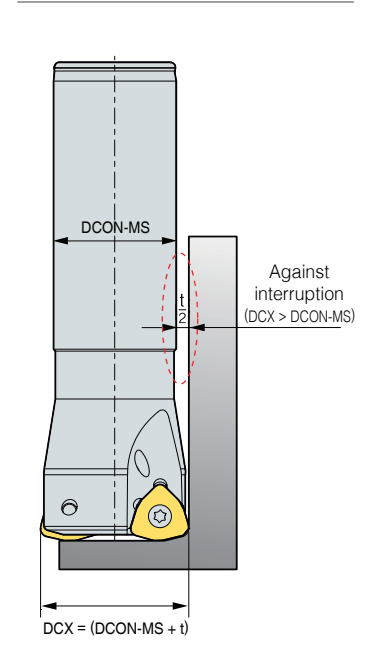


\* Uncut part can be changed by poor machine conditions or weak clamp of workpiece, etc.

## Interference prevent system

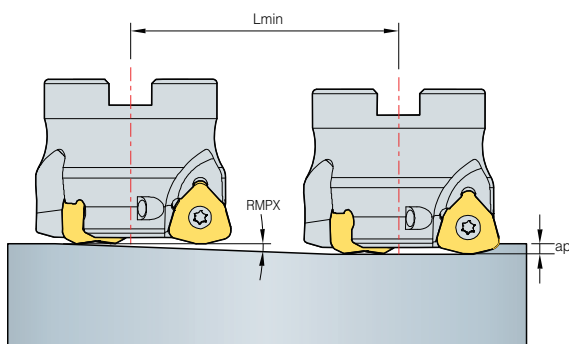
Designation	DCX(mm)	DCON-MS	t(mm)
HRMDS0617HR-2□16	17	16	1
HRMDS0618HR-2□16	18	16	2
HRMDS0621HR-2□20	21	20	1
HRMDS0626HR-3□25	26	25	1
HRMDS0633HR-4□32	33	32	1
HRMDS0926HR-2□25	26	25	1
HRMDS0933HR-3□32	33	32	1
HRMDS0935HR-4□32	35	32	3
HRMDS0940HR-4□32	40	32	8
HRMDS0950HR-5□32	50	32	18
HRMDS0950HR-5□40	50	40	10
HRMDS0950HR-5□42	50	42	8
HRMDS1333HR-3□32	33	32	1
HRMDS1335HR-4□32	35	32	3
HRMDS1340HR-4□30	40	30	8
HRMDS1350HR-4□32	50	32	18
HRMDS1350HR-4□40	50	40	10
HRMDS1350HR-4□42	50	42	8
HRMDS1363HR-5□32	63	32	31
HRMDS1363HR-5□40	63	40	23
HRMDS1363HR-5□42	63	42	21

\* The side clearance prevents to interference between tool and workpiece even in deep hole machining

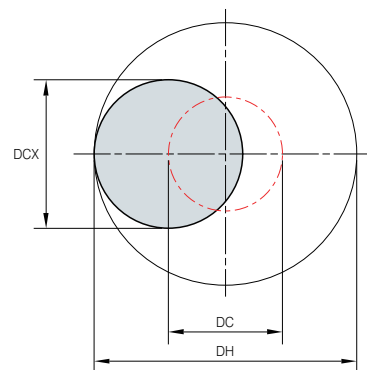


## Ramping & helical cutting technical data

### Ramping



### Helical cutting



# B Technical Information for HRMDouble

$$L_{min} = \frac{APMX}{\tan(RMPX)} \quad (\text{mm})$$

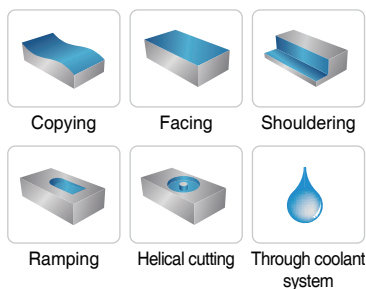
$$DC = DH - DCX$$

DC = Tool pass of tool center  
 DH = Desirable hole diameter on workpiece  
 DCX = Tool diameter

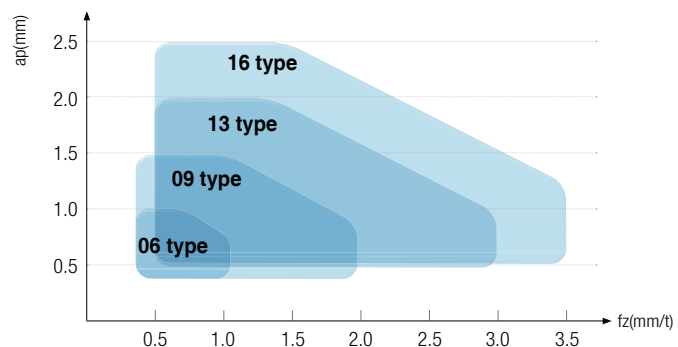
- Note)** - Adjust feed to under 70% of Recommended cutting conditions when ramping & helical cutting  
 - In helical ramping, max. cutting depth per 1 helical revolution of cutter should not exceed max. cutting depth as per insert size  
 - in ramping, max. cutting depth for 1 ramping process should not exceed max. depth of cut as per used insert size

Designation	DCX	Ramping			Helical ramping	
		APMX	RMPX	Lmin	Dh Min. Cutting diameter	Dh Max. Cutting diameter
HRMDS0616HR	16	1	4.8	11	23.8	29.6
HRMDS0617HR	17	1	4.1	13	25.8	31.6
HRMDS0618HR	18	1	3.5	16	27.8	33.6
HRMDS0620HR	20	1	2.5	22	31.8	37.6
HRMDS0621HR	21	1	2.2	26	33.8	39.6
HRMDS0625HR	25	1	1.3	44	41.8	47.6
HRMDS0626HR	26	1	1.2	47	43.8	49.6
HRMDS0632HR	32	1	0.6	95	55.8	61.6
HRMDS0633HR	33	1	0.5	114	57.8	63.6
HRMDS0925HR	25	1.5	5.4	15.8	37.6	46.8
HRMDS0926HR	26	1.5	5.0	17.0	39.6	48.8
HRMDS0930HR	30	1.5	3.9	22.0	47.6	56.8
HRMDS0932HR	32	1.5	3.5	24.5	51.6	60.8
HRMDS0933HR	33	1.5	3.3	25.8	53.6	62.8
HRMDS0935HR	35	1.5	3.0	28.3	57.6	66.8
HRMDS0940HR	40	1.5	2.5	34.5	67.6	76.8
HRMDS0950HR	50	1.5	1.8	47.0	87.6	96.8
HRMDS1332HR	32	2	5.7	20.0	47	60
HRMDS1333HR	33	2	5.4	21.3	49	62
HRMDS1335HR	35	2	4.8	24.0	53	66
HRMDS1340HR	40	2	3.7	30.7	63	76
HRMDS1350HR	50	2	2.6	44.0	83	96
HRMDS1363HR	63	2	1.9	61.3	109	122
HRMDCM09040HR	40	1.5	2.5	34.5	67.6	76.8
HRMDCM09050HR	50	1.5	1.8	47.0	87.6	96.8
HRMDCM09063HR	63	1.5	1.4	63.3	113.6	122.8
HRMDC(M)09080HR	80	1.5	1.0	84.5	147.6	156.8
HRMDC(M)09100HR	100	1.5	0.8	109.5	187.6	196.8
HRMDCM13050HR	50	2	2.6	44.0	83	96
HRMDCM13063HR	63	2	1.9	61.3	109	122
HRMDC(M)13080HR	80	2	1.4	84.0	143	156
HRMDC(M)13100HR	100	2	1.0	110.7	183	196
HRMDC(M)13125HR	125	2	0.8	144.0	233	246
HRMDC(M)16080HR	80	2.5	1.4	102	138	156
HRMDC(M)16100HR	100	2.5	1	143	178	196
HRMDC(M)16125HR	125	2.5	0.7	204	228	246
HRMDC(M)16160R	160	2.5	0.5	286	298	316
HRMDC(M)16200R	200	2.5	0.3	477	378	396
HRMDC(M)16250R	250	2.5	0.2	716	478	496
HRMDC(M)16315R	315	2.5	0.1	1432	608	626

## Use



## Application area

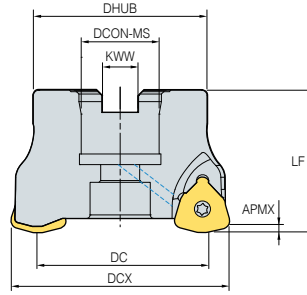


**Recommended cutting conditions**

ISO	Workpiece	Material	Grade	Cutting speed, vc (m/min)	
P	Carbon steel	Low carbon steel	SUM22, C = 0.1~25	PC5300 280	
				PC5400 245	
		General carbon steel	C = 0.30~55	PC5300 255	
				PC5400 220	
		High carbon steel	C = 0.55~80	PC5300 240	
				PC5400 205	
	Low alloy steel (Alloy constituent < 5%)	-	SCM415(H), SCM420, SCM440	PC5300 195	
				PC5400 170	
		Hardened		PC5300 115	
				PC5400 100	
		High alloy steel (Alloy constituent > 5%)	Annealed	SKD61	PC5300 150
					PC5400 130
Hardened	SKH51, SKH55		PC5300 120		
			PC5400 105		
M	Stainless steel	Ferritic / Martensitic	SUS410, SUS420, SUS430	PC5300 160	
				PC5400 135	
		Austenitic	SUS303, SUS304, SUS316	PC5300 130	
				PC5400 110	
		Duplex (Austenitic / Ferritic)	F51	PC5300 100	
				PC5400 85	
K	Gray cast iron	Low tensile	GC200, GC250	PC5300 170	
				PC5400 150	
		High tensile	GC300, GC350	PC5300 150	
				PC5400 130	
	Ductile cast iron	Ferritic	GCD400, GCD500	PC5300 170	
				PC5400 150	
		Pearlitic	GCD600, GCD700	PC5300 150	
				PC5400 130	
S	Fe Base	-	Incoloy	PC5300 60	
				PC5400 50	
	Ni Base	-	Inconel, Nimonic, Hastelloy	PC5300 55	
				PC5400 45	
	Co Base	-	stellite	PC5300 25	
				PC5400 20	
	Titanium alloys	-	pure Ti	PC5300 130	
				PC5400 105	
			alloy(TiAl6V4)	PC5300 65	
				PC5400 55	



## HRMDC(M)09



KAPR  
14°

- GAMP : -7°
- GAMF : -12°~-18°

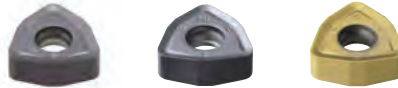
(mm)

	Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
HRMDCM	09040HR-3		3	40	30.26	34	16	8.4	40	1.5	0.2
	09040HR-4	●	4	40	30.26	34	16	8.4	40	1.5	0.2
	09050HR-4	●	4	50	40.31	42	22	10.4	40	1.5	0.3
	09050HR-5	●	5	50	40.31	42	22	10.4	40	1.5	0.3
	09063HR-5	●	5	63	53.24	49	22	10.4	40	1.5	0.5
	09063HR-6	●	6	63	53.24	49	22	10.4	40	1.5	0.5
	09080HR-6		6	80	70.12	57	27	12.4	50	1.5	1
	09080HR-7	●	7	80	70.12	57	27	12.4	50	1.5	0.9
	09100HR-7	●	7	100	90.1	67	32	14.4	50	1.5	1.6
HRMDC	09100HR-8		8	100	90.1	67	32	14.4	50	1.5	1.5
	09080HR-6		6	80	70.12	57	25.4	9.5	50	1.5	1.1
	09080HR-7		7	80	70.12	57	25.4	9.5	50	1.5	1.1
	09080HR-31.75-6		6	80	70.12	67	31.75	12.7	63	1.5	1.5
	09080HR-31.75-7		7	80	70.12	67	31.75	12.7	63	1.5	1.5
	09100HR-7		7	100	90.1	67	31.75	12.7	63	1.5	2.1
	09100HR-8		8	100	90.1	67	31.75	12.7	63	1.5	2.1

● : Stock item

### Available inserts

WNMX-MF      WNMX-ML      WNMX-MM

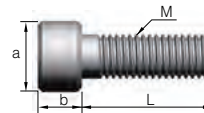


Designation	Cermet	Coated								Uncoated			Page				
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
WNMX 09T316ZNN-MF								●				●	●				B30
09T316ZNN-ML												●	●				
09T316ZNN-MM						●	●	●		●		●	●				

### Available arbors

Designation	NC arbors	
HRMDCM	09040HR-□	BT□□-FMC16-□□ SK□□-FMC16-□□
	09050HR-□	BT□□-FMC22-□□
	09063HR-□	SK□□-FMC22-□□
	09080HR-□	BT□□-FMC27-□□ SK□□-FMC27-□□
	09100HR-□	BT□□-FMC32-□□ SK□□-FMC32-□□
	HRMDC	09080HR-□
09080HR-31.75-□		BT□□-FMA31.75-□□
09100HR-□		SK□□-FMA31.75-□□

### Bolt



Designation	Dimensions (mm)				
	M	a	b	L	pitch
SB0825	M08	13	8	25	1.25
SB1025	M10	16	10	25	1.5
SB1230	M12	18	12	30	1.75
SB1630	M16	24	16	30	2.0

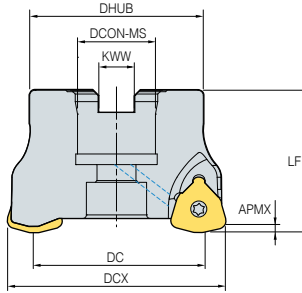
### Parts

Specification		
Ø40~Ø100	FTKA0307	TW09S

Available inserts B30

Available arbors and bolt E94 ~ E96

# HRMDC(M)13



KAPR  
**14°**  
• GAMP : -7°  
• GAMF : -12° ~ -4°

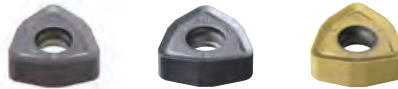
(mm)

	Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
HRMDCM	13050HR-3	●	3	50	19.53	42	22	10.4	40	2	0.3
	13050HR-4	●	4	50	20.53	42	22	10.4	40	2	0.2
	13063HR-4	●	4	63	22.53	49	22	10.4	40	2	0.5
	13063HR-5	●	5	63	27.36	49	22	10.4	40	2	0.4
	13080HR-5	●	5	80	37.11	57	27	12.4	50	2	0.9
	13080HR-6	●	6	80	37.11	57	27	12.4	50	2	0.9
	13100HR-6	●	6	100	50.11	67	32	14.4	50	2	1.4
	13100HR-7	●	7	100	50.11	67	32	14.4	50	2	1.5
	13125HR-7	●	7	125	67.06	87	40	16.4	63	2	3.2
	13125HR-8	●	8	125	67.06	87	40	16.4	63	2	3.0
HRMDC	13080HR-5	●	5	80	67.06	57	25.4	9.5	50	2	1.0
	13080HR-6	●	6	80	67.06	57	25.4	9.5	50	2	0.9
	13080HR-31.75-5	●	5	80	67.06	67	31.75	12.7	63	2	1.4
	13080HR-31.75-6	●	6	80	67.06	67	31.75	12.7	63	2	1.4
	13100HR-6	●	6	100	89.96	67	31.75	12.7	63	2	2.0
	13100HR-7	●	7	100	89.96	67	31.75	12.7	63	2	1.9
	13125HR-7	●	7	125	111.95	87	38.1	15.9	63	2	3.2
	13125HR-8	●	8	125	111.95	87	38.1	15.9	63	2	3.2

● : Stock item

## Available inserts

WNMX-MF      WNMX-ML      WNMX-MM



Designation	Cermet	Coated								Uncoated			Page				
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
WNMX 130520ZNN-MF												●	●				B30
130520ZNN-ML												●	●				
130520ZNN-MM						●	●	●		●	●	●	●				

## Available arbors

Designation	NC arbors	
HRMDCM	13050HR-□	BT□□-FMC22-□□ SK□□-FMC22-□□
	13063HR-□	BT□□-FMC22-□□
	13080HR-□	SK□□-FMC27-□□
	13100HR-□	BT□□-FMC32-□□ SK□□-FMC32-□□
	13125HR-□	BT□□-FMC40-□□ SK□□-FMC40-□□
	HRMDC	13080HR-□
13080HR-31.75-□		BT□□-FMA31.75-□□ SK□□-FMA31.75-□□
13100HR-□		BT□□-FMA38.1-□□ SK□□-FMA38.1-□□
13125HR-□		BT□□-FMA38.1-□□ SK□□-FMA38.1-□□
		SK□□-FMA38.1-□□

## Bolt

Fig. 1

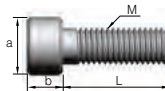
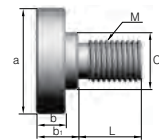


Fig. 2



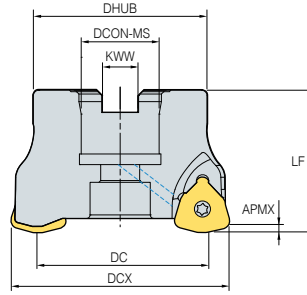
Designation	Dimensions (mm)							Fig.
	M	a	b	b1	C	L	pitch	
SB1025	M10	16	10	-	-	25	1.5	1
SB1230	M12	18	12	-	-	30	1.75	1
SB1630	M16	24	16	-	-	30	2.0	1
SB2040	M20	30	20	-	-	40	2.5	1
MBA-M20	M20	50	14	20	27	30	2.5	2

## Parts

Specification		
Ø50~Ø125	FTKA0412B	TW15S

Available inserts **B30**      Available arbors and bolt **E94 ~ E96**

# HRMDC(M)16



KAPR  
**14°**  
• GAMP : -7°  
• GAMF : -12°~-4°

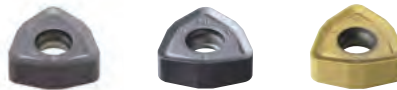
(mm)

Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
<b>HRMDC</b>										
<b>(HRMDCM)</b>										
16080HR-4		4	80	63.41	65	25.4(27)	9.5(12.4)	50	2.5	1.0
16080HR-5		5	80	63.41	65	25.4(27)	9.5(12.4)	50	2.5	0.9
16100HR-5		5	100	83.4	85	31.75(32)	12.7(14.4)	63(50)	2.5	2.3
16100HR-6	(●)	6	100	83.4	85	31.75(32)	12.7(14.4)	63(50)	2.5	2.3
16125HR-6		6	125	108.4	100	38.1(40)	15.9(16.4)	63	2.5	3.3
16125HR-7	(●)	7	125	108.4	100	38.1(40)	15.9(16.4)	63	2.5	3.3
16160R-7		7	160	143.4	107	50.8(40)	19(16.4)	63	2.5	3.9
16160R-8	(●)	8	160	143.4	107	50.8(40)	19(16.4)	63	2.5	3.9
16200R-8		8	200	183.38	145	47.625(60)	25.4(25.7)	63	2.5	6.8
16200R-10		10	200	183.38	145	47.625(60)	25.4(25.7)	63	2.5	6.9
16250R-10		10	250	233.4	190	47.625(60)	25.4(25.7)	63	2.5	11.3
16250R-12		12	250	233.4	190	47.625(60)	25.4(25.7)	63	2.5	11.3
16315R-12		12	315	298.39	250	47.625(60)	25.4(25.7)	63	2.5	18.6
16315R-14		14	315	298.39	250	47.625(60)	25.4(25.7)	63	2.5	18.6

( ) Metric size, ● : Stock item

## Available inserts

WNMX-MF      WNMX-ML      WNMX-MM



Designation	Coated	Coated						Uncoated			Page						
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530		PC9540	PC5300	PC5400	ST30A	G10	H01
WNMX																	
160720ZNN-MF																	
160720ZNN-ML																	
160720ZNN-MM																	

## Available arbors

Designation	HRMDC	HRMDCM
<b>HRMDC</b>		
<b>(HRMDCM)</b>		
16080HR-4	BT□□-FMA25.4-□□	BT□□-FMC27-□□
16080HR-5		
16100HR-5	BT□□-FMA31.75-□□	BT□□-FMC32-□□
16100HR-6		
16125HR-6	BT□□-FMA38.1-□□	BT□□-FMB40-□□
16125HR-7		BT□□-FMC40-□□
16160R-7	BT□□-FMA50.8-□□	
16160R-8		
16200R-8		
16200R-10		
16250R-10	BT□□-FMA47.625-□□	BT□□-FMB60-□□
16250R-12		
16315R-12		
16315R-14		

## Bolt

Fig. 1

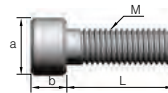
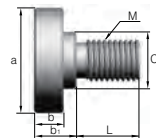


Fig. 2



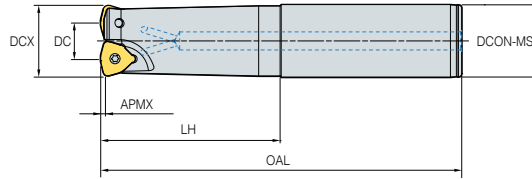
Designation	Dimensions (mm)							Fig.
	M	a	b	b1	C	L	pitch	
<b>SB1025</b>	M10	16	10	-	-	25	1.5	1
<b>SB1230</b>	M12	18	12	-	-	30	1.75	1
<b>SB1630</b>	M16	24	16	-	-	30	2.0	1
<b>SB2040</b>	M20	30	20	-	-	40	2.5	1
<b>MBA-M20</b>	M20	50	14	20	27	30	2.5	2
<b>MBA-M24</b>	M24	65	14	24	37	36	3.0	2

## Parts

Specification		
Ø80~Ø315	FTGA0513-P	TW20-100

Available inserts **B30**      Available arbors and bolt **E94 ~ E96**

# HRMDS06



KAPR  
**14°**

- GAMP : -7°
- GAMF : -17°~ -25°

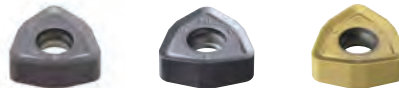
(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
<b>HRMDS</b> 0616HR-2S16	●	2	16	9.73	16	30	110	1.0	0.1
0616HR-2M16	●	2	16	9.73	16	70	150	1.0	0.2
0616HR-2L16		2	16	9.73	16	100	200	1.0	0.3
0617HR-2S16	●	2	17	10.62	16	20	110	1.0	0.1
0617HR-2M16	●	2	17	10.62	16	20	150	1.0	0.2
0617HR-2L16		2	17	10.62	16	20	200	1.0	0.3
0618HR-2S16		2	18	11.65	16	20	110	1.0	0.2
0618HR-2M16	●	2	18	11.65	16	20	150	1.0	0.2
0618HR-2L16		2	18	11.65	16	20	200	1.0	0.3
0620HR-2S20	●	2	20	13.6	20	50	130	1.0	0.3
0620HR-2M20	●	2	20	13.6	20	100	180	1.0	0.4
0620HR-2L20		2	20	13.6	20	130	250	1.0	0.5
0621HR-2S20		2	21	14.59	20	20	130	1.0	0.3
0621HR-2M20	●	2	21	14.59	20	20	180	1.0	0.4
0621HR-2L20	●	2	21	14.59	20	20	250	1.0	0.6
0625HR-3S25	●	3	25	18.5	25	60	140	1.0	0.4
0625HR-3M25	●	3	25	18.5	25	80	180	1.0	0.6
0625HR-3L25	●	3	25	18.5	25	120	250	1.0	0.8
0626HR-3S25		3	26	19.5	25	30	140	1.0	0.5
0626HR-3M25	●	3	26	19.5	25	30	180	1.0	0.6
0626HR-3L25	●	3	26	19.5	25	30	250	1.0	0.8
0632HR-4S32		4	32	25.49	32	70	150	1.0	0.8
0632HR-4M32	●	4	32	25.49	32	100	200	1.0	1.1
0632HR-4L32	●	4	32	25.49	32	180	300	1.0	1.7
0633HR-4S32		4	33	26.49	32	40	200	1.0	1.1
0633HR-4M32	●	4	33	26.49	32	40	250	1.0	1.4
0633HR-4L32	●	4	33	26.49	32	40	300	1.0	1.7

● : Stock item

## Available inserts

WNMX-MF      WNMX-ML      WNMX-MM



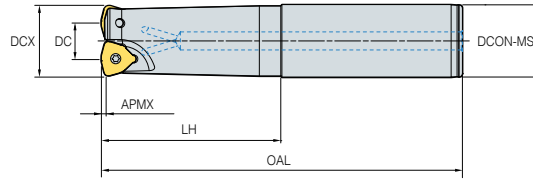
Designation	Cermet		Coated								Uncoated			Page				
	CN30		NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
WNMX 060312ZNN-MF													●	●				B30
060312ZNN-ML													●	●				
060312ZNN-MM							●	●	●				●	●				

## Parts

Specification		
Ø16~Ø33	Screw ETNA02506	Wrench TW07S

Available inserts **B30**

# HRMDS09



KAPR  
**14°**  
• GAMP : -7°  
• GAMF : -17°~-25°

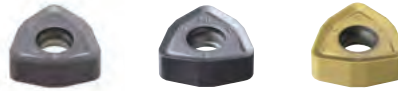
(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		
HRMDS	0925HR-2S25	●	2	25	15.64	25	60	140	1.5	0.4	
	0925HR-2M25	●	2	25	15.64	25	120	200	1.5	0.6	
	0925HR-2L25	●	2	25	15.64	25	180	300	1.5	1.0	
	0926HR-2S25	●	2	26	16.65	25	60	140	1.5	0.4	
	0926HR-2M25	●	2	26	16.65	25	60	200	1.5	0.6	
	0926HR-2L25	●	2	26	16.5	25	60	300	1.5	1.0	
	0930HR-3S32	●	3	30	20.56	32	70	150	1.5	0.8	
	0930HR-3M32	●	3	30	20.56	32	120	200	1.5	1.0	
	0930HR-3L32			3	30	20.56	32	180	300	1.5	1.5
	0932HR-3S32	●	3	32	22.48	32	70	150	1.5	0.8	
	0932HR-3M32	●	3	32	22.48	32	120	200	1.5	1.1	
	0932HR-3L32			3	32	22.48	32	180	300	1.5	1.6
	0933HR-3S32			3	33	23.48	32	70	150	1.5	0.8
	0933HR-3M32	●	3	33	23.48	32	70	200	1.5	1.1	
	0933HR-3L32	●	3	33	23.48	32	70	300	1.5	1.7	
	0935HR-4S32	●	4	35	25.57	32	50	150	1.5	0.8	
	0935HR-4M32	●	4	35	25.57	32	50	200	1.5	1.1	
	0935HR-4L32	●	4	35	25.57	32	50	300	1.5	1.7	
	0940HR-4S32	●	4	40	30.35	32	50	150	1.5	0.9	
	0940HR-4M32	●	4	40	30.35	32	50	250	1.5	1.5	
0940HR-4L32	●	4	40	30.35	32	50	300	1.5	1.8		
0940HR-4S40			4	40	30.35	40	60	150	1.5	1.3	

● : Stock item

## Available inserts

WNMX-MF      WNMX-ML      WNMX-MM



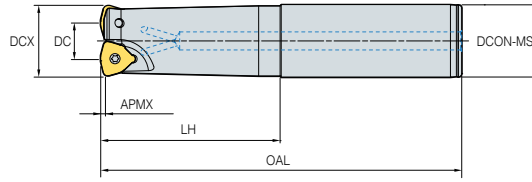
Designation	Cermet	Coated								Uncoated			Page				
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
WNMX 09T316ZNN-MF								●				●	●				B30
09T316ZNN-ML												●	●				
09T316ZNN-MM						●	●	●		●		●	●				

## Parts

Specification		
Ø25~Ø40	FTKA0307	TW09S

Available inserts **B30**

# HRMDS09



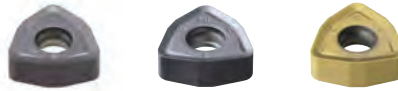
- GAMP :  $-7^\circ$
- GAMF :  $-17^\circ \sim -25^\circ$

Designation		Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	kg
HRMDS	0940HR-4M40		4	40	30.35	40	130	250	1.5	2.2
	0940HR-4L40		4	40	30.35	40	180	300	1.5	2.7
	0940HR-4S42		4	40	30.35	42	60	150	1.5	1.4
	0940HR-4M42		4	40	30.35	42	130	250	1.5	2.3
	0940HR-4L42		4	40	30.35	42	180	300	1.5	2.8
	0950HR-4S32		4	50	40.31	32	40	150	1.5	1.1
	0950HR-4M32		4	50	40.31	32	40	250	1.5	1.6
	0950HR-4L32		4	50	40.31	32	40	300	1.5	2
	0950HR-4S40		4	50	40.31	40	40	150	1.5	1.4
	0950HR-4M40		4	50	40.31	40	40	250	1.5	2.4
	0950HR-4L40		4	50	40.31	40	40	300	1.5	2.9
	0950HR-4S42		4	50	40.31	42	40	150	1.5	1.6
	0950HR-4M42	●	4	50	40.31	42	40	250	1.5	2.6
	0950HR-4L42		4	50	40.31	42	40	300	1.5	3.1
	0950HR-5S32		5	50	40.31	32	40	150	1.5	1.1
	0950HR-5M32		5	50	40.31	32	40	250	1.5	1.6
	0950HR-5L32		5	50	40.31	32	40	300	1.5	2
	0950HR-5S40		5	50	40.31	40	40	150	1.5	1.4
	0950HR-5M40		5	50	40.31	40	40	250	1.5	2.4
	0950HR-5L40		5	50	40.31	40	40	300	1.5	2.9
0950HR-5S42		5	50	40.31	42	40	150	1.5	1.6	
0950HR-5M42		5	50	40.31	42	40	250	1.5	2.6	
0950HR-5L42		5	50	40.31	42	40	300	1.5	3.1	

● : Stock item

## Available inserts

WNMX-MF      WNMX-ML      WNMX-MM



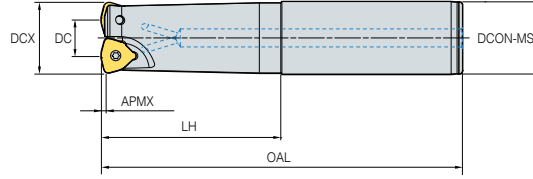
Designation	Cermet	Coated										Uncoated			Page		
	CN80	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
WNMX 09T316ZNN-MF								●				●	●				B30
09T316ZNN-ML												●	●				
09T316ZNN-MM						●	●	●		●		●	●				

## Parts

Specification	Screw	Wrench
Ø40~Ø50	FTKA0307	TW09S

Available inserts **B30**

# HRMDS13



KAPR  
**14°**  
• GAMP : -7°  
• GAMF : -14°~ -16°

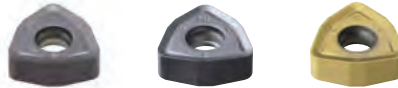
(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
<b>HRMDS</b> 1332HR-2S32	●	2	32	19.53	32	70	150	2	0.8
1332HR-2M32	●	2	32	19.53	32	120	200	2	1.1
1332HR-2L32	●	2	32	19.53	32	180	300	2	1.6
1333HR-2S32	●	2	33	20.53	32	70	150	2	0.8
1333HR-2M32	●	2	33	20.53	32	70	200	2	1.1
1333HR-2L32		2	33	20.53	32	70	300	2	1.7
1335HR-2S32		2	35	22.53	32	50	150	2	0.8
1335HR-2M32	●	2	35	22.53	32	50	200	2	1.1
1335HR-2L32	●	2	35	22.53	32	50	300	2	1.7
1340HR-3S32	●	3	40	27.36	32	50	150	2	0.8
1340HR-3M32	●	3	40	27.36	32	50	200	2	1.4
1340HR-3L32	●	3	40	27.36	32	50	300	2	1.7
1340HR-3S40		3	40	27.36	40	60	150	2	1.3
1340HR-3M40		3	40	27.36	40	130	250	2	2.2
1340HR-3L40		3	40	27.36	40	180	300	2	2.6
1340HR-3S42		3	40	27.36	42	60	150	2	1.3
1340HR-3M42		3	40	27.36	42	130	250	2	2.3
1340HR-3L42		3	40	27.36	42	180	300	2	2.7
1350HR-3S32		3	50	37.11	32	50	150	2	1.1
1350HR-3M32		3	50	37.11	32	50	250	2	1.7
1350HR-3L32		3	50	37.11	32	50	300	2	2.0
1350HR-3S40		3	50	37.11	40	50	150	2	1.5
1350HR-3M40		3	50	37.11	40	50	250	2	2.4
1350HR-3L40		3	50	37.11	40	50	300	2	2.9
1350HR-3S42		3	50	37.11	42	50	150	2	1.6
1350HR-3M42		3	50	37.11	42	50	250	2	2.6
1350HR-3L42		3	50	37.11	42	50	300	2	3.1

● : Stock item

## Available inserts

WNMX-MF      WNMX-ML      WNMX-MM



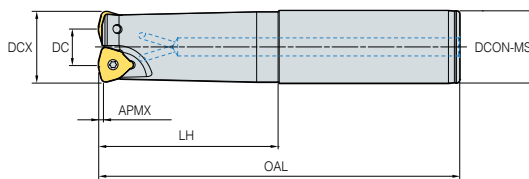
Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
WNMX 130520ZNN-MF												●	●				B30
130520ZNN-ML												●	●				
130520ZNN-MM						●	●	●		●	●	●	●				

## Parts

Specification		
Ø32~Ø50	FTKA0412B	TW15S

Available inserts **B30**

# HRMDS13



KAPR  
**14°**  
• GAMP : -7°  
• GAMF : -14°~ -16°

(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
<b>HRMDS</b> 1350HR-4S32		4	50	37.11	32	50	150	2	1.1
1350HR-4M32		4	50	37.11	32	50	250	2	1.7
1350HR-4L32		4	50	37.11	32	50	300	2	2
1350HR-4S40		4	50	37.11	40	50	150	2	1.5
1350HR-4M40		4	50	37.11	40	50	250	2	2.4
1350HR-4L40		4	50	37.11	40	50	300	2	2.9
1350HR-4S42		4	50	37.11	42	50	150	2	1.5
1350HR-4M42		4	50	37.11	42	50	250	2	2.5
1350HR-4L42		4	50	37.11	42	50	300	2	3.1
1363HR-4S32		4	63	50.11	32	50	150	2	1.4
1363HR-4M32		4	63	50.11	32	50	250	2	2.1
1363HR-4L32		4	63	50.11	32	50	300	2	2.4
1363HR-4S40		4	63	50.11	40	50	150	2	1.8
1363HR-4M40		4	63	50.11	40	50	250	2	2.8
1363HR-4L40		4	63	50.11	40	50	300	2	3.2
1363HR-4S42		4	63	50.11	42	50	150	2	1.9
1363HR-4M42		4	63	50.11	42	50	250	2	1.6
1363HR-4L42		4	63	50.11	42	50	300	2	3.5
1363HR-5S32		5	63	50.11	32	50	150	2	1.5
1363HR-5M32		5	63	50.11	32	50	250	2	2
1363HR-5L32		5	63	50.11	32	50	300	2	2.3
1363HR-5S40		5	63	50.11	40	50	150	2	1.8
1363HR-5M40		5	63	50.11	40	50	250	2	2.8
1363HR-5L40		5	63	50.11	40	50	300	2	3.2
1363HR-5S42		5	63	50.11	42	50	150	2	1.9
1363HR-5M42		5	63	50.11	42	50	250	2	3
1363HR-5L42		5	63	50.11	42	50	300	2	3.4

● : Stock item

## Available inserts

WNMX-MF      WNMX-ML      WNMX-MM



Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
<b>WNMX</b> 130520ZNN-MF																	B30
130520ZNN-ML												●	●				
130520ZNN-MM						●	●	●		●	●	●	●				

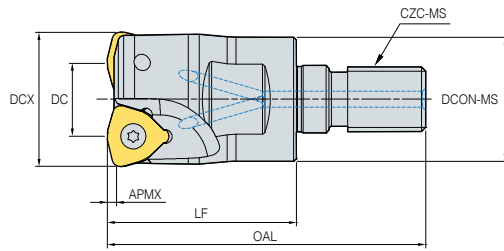
## Parts

Specification		
Ø50~Ø63	FTKA0412B	TW15S

Available inserts **B30**



## HRMDM06



KAPR  
**14°**

• GAMP : -7°  
• GAMF : -18°~-25°

Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
<b>HRMDM</b> 0616HR-M08	●	2	16	9.73	14.5	25	42	M08	1.0	0.1
0617HR-M08		2	17	10.62	14.5	25	42	M08	1.0	0.1
0618HR-M08		2	18	11.65	14.5	25	42	M08	1.0	0.1
0620HR-M10		2	20	13.6	18	30	51	M10	1.0	0.1
0621HR-M10		2	21	14.59	18	30	51	M10	1.0	0.1
0625HR-M12	●	3	25	18.5	23	35	59	M12	1.0	0.1
0626HR-M12		3	26	19.5	23	35	59	M12	1.0	0.1
0632HR-M16		4	32	25.49	29	40	67	M16	1.0	0.2
0633HR-M16		4	33	26.49	29	40	67	M16	1.0	0.2

(mm)

● : Stock item

### Available inserts



Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
<b>WNMX</b> 060312ZNN-MF												●	●				B30
060312ZNN-ML												●	●				
060312ZNN-MM						●	●	●		●	●	●	●				

### Available adaptors

Designation	Available adaptors	Designation	Available adaptors
<b>HRMDM</b> 0616HR-M08	MAT- M08	<b>HRMDM</b> 0625HR-M12	MAT- M12
0617HR-M08		0626HR-M12	
0618HR-M08		MAT- M10	0632HR-M16
0620HR-M10	0633HR-M16		
0621HR-M10			

Designation : HRMDM0625HR-M12  
Modular head threading measure size (M12)

II

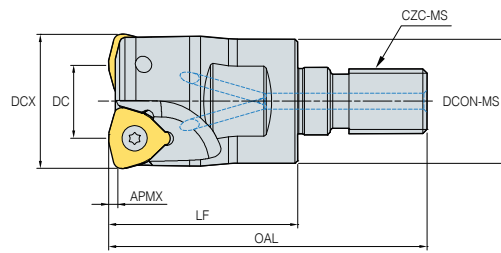
Adaptor spec.: MAT-M12-030-S25S  
Adaptor threading measure (M12)

### Parts

Specification		
Ø16-Ø33	ETNA02506	TW07S

Available inserts **B30** Available adaptors **B400**

# HRMDM09



KAPR  
**14°**

- GAMP : -7°
- GAMF : -18°~-25°

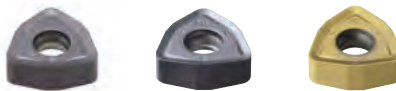
(mm)

Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
<b>HRMDM</b> 0925HR-M12	●	2	25	15.64	23	35	59	M12	1.5	0.1
0926HR-M12	●	2	26	16.65	23	35	59	M12	1.5	0.1
0930HR-M16	●	3	30	20.56	29	40	67	M16	1.5	0.2
0932HR-M16	●	3	32	22.48	29	40	67	M16	1.5	0.2
0933HR-M16		3	33	23.48	29	40	67	M16	1.5	0.2
0935HR-M16	●	4	35	25.57	29	40	67	M16	1.5	0.2
0940HR-M16	●	4	40	30.35	29	40	67	M16	1.5	0.2

● : Stock item

## Available inserts

WNMX-MF      WNMX-ML      WNMX-MM



Designation	Cermet	Coated								Uncoated			Page				
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
<b>WNMX</b> 09T316ZNN-MF								●				●	●				B30
09T316ZNN-ML												●	●				
09T316ZNN-MM						●	●		●			●	●				

## Available adaptors

Designation	Available adaptors
<b>HRMDM</b> 0925HR-M12	MAT- M12
0926HR-M12	
0930HR-M16	MAT- M16
0932HR-M16	
0933HR-M16	
0935HR-M16	
0940HR-M16	

Designation : HRMDM0932HR-M16  
Modular head threading measure size (M16)

II

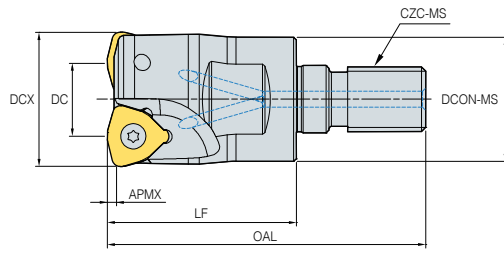
Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

## Parts

Specification		
Ø25~Ø40	FTKA0307	TW09S

Available inserts **B30**    Available adaptors **B400**

# HRMDM13



KAPR  
**14°**

- GAMP : -7°
- GAMF : -18°~-25°

Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
HRMDM 1332HR-M16	●	2	32	89.96	29	40	67	M16	2.0	0.2
1333HR-M16		2	33	89.96	29	40	67	M16	2.0	0.2
1335HR-M16		2	35	111.95	29	40	67	M16	2.0	0.2
1340HR-M16		3	40	111.95	29	45	72	M16	2.0	0.2

(mm)

● : Stock item

## Available inserts



Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
WNMX 130520ZNN-MF												●	●				B30
130520ZNN-ML												●	●				
130520ZNN-MM						●	●	●		●	●	●	●				

## Available adaptors

Designation	Available adaptors
HRMDM 1332HR-M16	MAT-M16
1333HR-M16	
1335HR-M16	
1340HR-M16	

Designation : HRMDM1332HR-M16  
Modular head threading measure size (M16)

II

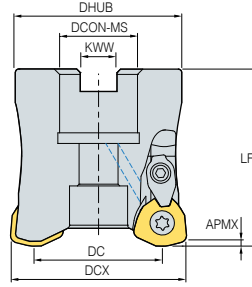
Adaptor spec.: MAT-M16-120-S32T  
Adaptor threading measure (M16)

## Parts

Specification		
Ø32~Ø40	FTKA0412B	TW15S

Available inserts **B30** Available adaptors **B400**

# HRMC(M)13



KAPR  
**15°**  
• GAMP : 7°  
• GAMF : -15°~5°

(mm)

Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
HRMC 13050HR-3	(●)	3	50	36.75	47	22.225(22)	8.0(10.4)	50	2	0.4
(HRMCM) 13050HR-4	●(●)	4	50	36.75	47	22.225(22)	8.0(10.4)	50	2	0.3
13063HR-4	(●)	4	63	49.73	60	22.225(22)	8.0(10.4)	50	2	0.7
13080HR-5	(●)	5	80	66.72	76	31.75(27)	12.7(12.4)	70	2	1.6

( ) Metric size, ● : Stock item

## Available inserts

WDKT-MH



Designation	Cermet	Coated								Uncoated			Page				
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
WDKT 130520ZDSR-MH						●	●	●	●	●	●	●	●				B29

## Available arbors

Designation	HRMDC	HRMDCM
HRMC 13050HR-3		
(HRMCM) 13050HR-4	BT□□-FMA22.225-□□	BT□□-FMC22-□□
13063HR-4		SK□□-FMC22-□□
13080HR-5	BT□□-FMA31.75-□□	BT□□-FMC27-□□
	SK□□-FMA31.75-□□	SK□□-FMC27-□□

## Bolt

Fig. 1

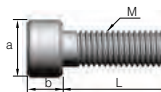
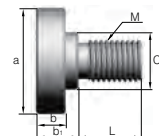


Fig. 2



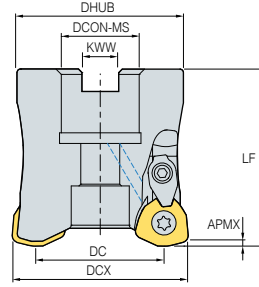
Designation	Dimensions (mm)							Fig.
	M	a	b	b1	C	L	pitch	
SB1035	M10	16	10	-	-	35	1.5	1
SB1245	M12	18	12	-	-	45	1.75	1
SB1645	M16	24	16	-	-	45	2.0	1
SB2040	M20	30	20	-	-	40	2.5	1
MBA-M20	M20	50	14	20	27	30	2.5	2
MBA-M24	M24	65	14	24	37	36	3.0	2

## Parts

Specification					
Ø50~Ø80	FTGA0513-P	CHH4.5R1	CTX04513H	CR03	TW20-100

Available inserts **B29** Available arbors and bolt **E94 ~ E96**

# HRMC(M)15



KAPR  
**15°**  
• GAMP : 7°  
• GAMF : -15°~-5°

Designation	Stock	CICT	DCX	DC	DHUB	DCON-MS	KWW	LF	APMX	
<b>HRMC</b>										
<b>(HRMCM)</b>										
15063HR-3	(●)	3	63	48.16	60	22.225(22)	8(10.4)	50	2.5	0.6
15080HR-4	● (●)	4	80	65.11	76	31.75(27)	12.7(12.4)	70	2.5	1.5
15100HR-5		5	100	85.14	96	31.75(32)	12.7(14.4)	70	2.5	2.7
15100HR-6	●	6	100	85.14	96	31.75(32)	12.7(14.4)	70	2.5	3.1
15125HR-6		6	125	110.13	98	38.1(40)	15.9(16.4)	63	2.5	0
15160R-7		7	160	145.12	100	50.8(40)	19(16.4)	63	2.5	4.3

( ) Metric size, ● : Stock item

## Available inserts

WDKT-MH



Designation	Coated	Coated			Uncoated			Page									
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510		PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
WDKT	150625ZDSR-MH							●	●	●		●	●				B29

## Available arbors

Designation	HRMDC	HRMDCM
<b>HRMC</b>		
<b>(HRMCM)</b>		
15063HR-3	BT□□-FMA22.225-□□	BT□□-FMC22-□□ SK□□-FMC22-□□
15080HR-4	BT□□-FMA31.75-□□	BT□□-FMC27-□□ SK□□-FMC27-□□
15100HR-5	SK□□-FMA31.75-□□	BT□□-FMC32-□□ SK□□-FMC32-□□
15100HR-6		
15125HR-6	BT□□-FMA38.1-□□ SK□□-FMA38.1-□□	BT□□-FMC40-□□ SK□□-FMC40-□□
15160R-7	BT□□-FMA50.8-□□	SK□□-FMC40-□□

## Bolt

Fig. 1

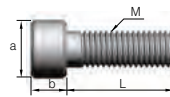
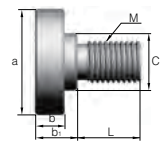


Fig. 2



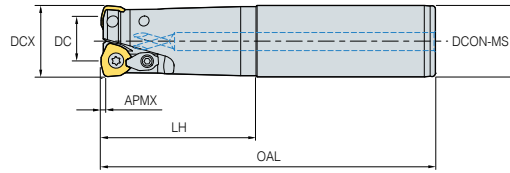
Designation	Dimensions (mm)							Fig.
	M	a	b	b1	C	L	pitch	
<b>SB1035</b>	M10	16	10	-	-	35	1.5	1
<b>SB1245</b>	M12	18	12	-	-	45	1.75	1
<b>SB1645</b>	M16	24	16	-	-	45	2.0	1
<b>SB2040</b>	M20	30	20	-	-	40	2.5	1
<b>MBA-M20</b>	M20	50	14	20	27	30	2.5	2
<b>MBA-M24</b>	M24	65	14	24	37	36	3.0	2

## Parts

Specification					
Ø63~Ø160	FTGA0513-P	CHH5.5R1	CTX0515	CR04	TW200-100

Available inserts **B29** Available arbors and bolt **E94 ~ E96**

# HRMS08/10



- GAMP : 7°
- GAMF : -11°~ -5°

		(mm)									
	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX		
HRMS	0820HR-2S20	●	2	20	12.29	20	50	130	1.0	0.3	
	0820HR-2M20	●	2	20	12.29	20	100	180	1.0	0.4	
	0820HR-2L20	●	2	20	12.29	20	130	250	1.0	0.5	
	0821HR-2S20	●	2	21	13.28	20	50	130	1.0	0.3	
	0821HR-2M20	●	2	21	13.28	20	50	180	1.0	0.4	
	0821HR-2L20		2	21	13.28	20	50	250	1.0	0.5	
	1025HR-2S25	●	2	25	15.52	25	60	140	1.5	0.4	
	1025HR-2M25	●	2	25	15.52	25	120	200	1.5	0.6	
	1025HR-2L25	●	2	25	15.52	25	180	300	1.5	0.9	
	1026HR-2S25	●	2	26	16.51	25	60	140	1.5	0.4	
	1026HR-2M25	●	2	26	16.51	25	60	200	1.5	0.6	
	1026HR-2L25	●	2	26	16.51	25	60	300	1.5	1.0	
	1030HR-2S32	●	2	30	20.5	32	70	150	1.5	0.7	
	1030HR-2M32		2	30	20.5	32	120	200	1.5	1.0	
1030HR-2L32		2	30	20.5	32	180	300	1.5	1.5		

● : Stock item

## Available inserts

WDKT-MH



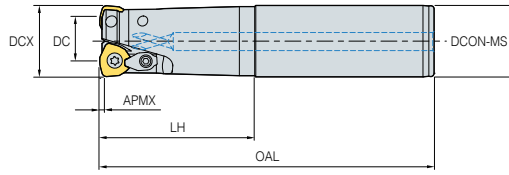
Type	Designation	Cermet		Coated										Uncoated			Page				
		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01			
08 type	WDKT 080316ZDSR-MH																				
10 type	WDKT 10T320ZDSR-MH																				B29

## Parts

Specification					
	Screw	Clamp	Clamp Screw	C-ring	Wrench
Ø20~Ø21(08 type)	FTNA0306	-	-	-	TW09P
Ø25~Ø30(10 type)	FTKA0408	CHH3.5R1	CTX03510	CR03	TW15S

Available inserts **B29**

# HRMS13



KAPR  
**15°**

- GAMP : 7°
- GAMF : -11°~-5°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
HRMS	1332HR-2S32	●	2	32	18.86	32	70	150	2.0	0.7
	1332HR-2M32	●	2	32	18.86	32	120	200	2.0	1.0
	1332HR-2L32	●	2	32	18.86	32	180	300	2.0	1.6
	1333HR-2S32		2	33	19.85	32	70	150	2.0	0.8
	1333HR-2M32	●	2	33	19.85	32	70	200	2.0	1.1
	1333HR-2L32	●	2	33	19.85	32	70	300	2.0	1.7
	1335HR-2S32	●	2	35	21.84	32	50	150	2.0	0.8
	1335HR-2M32	●	2	35	21.84	32	50	200	2.0	1.1
	1335HR-2L32		2	35	21.84	32	50	300	2.0	1.7
	1340HR-3S32	●	3	40	27.08	32	50	150	2.0	0.8
	1340HR-3M32	●	3	40	27.08	32	50	250	2.0	1.4
	1340HR-3L32		3	40	27.08	32	50	300	2.0	1.7
	1340HR-3S40		3	40	27.08	40	60	150	2.0	0.0
	1340HR-3M40		3	40	27.08	40	130	250	2.0	2.1
	1340HR-3L40		3	40	27.08	40	180	300	2.0	1.2
	1340HR-3S42		3	40	27.08	42	60	150	2.0	1.4
1340HR-3M42		3	40	27.08	42	130	250	2.0	2.3	
1340HR-3L42		3	40	27.08	42	180	300	2.0	2.7	

● : Stock item

## Available inserts

WDKT-MH



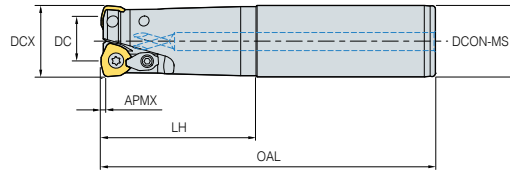
Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
WDKT 130520ZDSR-MH						●	●		●	●		●	●				B29

## Parts

Specification					
	Screw	Clamp	Clamp Screw	C-ring	Wrench
Ø32,33,35	FTGA0510-P	CHH4.5R1	CTX04513H	CR03	TW20
Ø40	FTGA0512-P	CHH4.5R1	CTX04513H	CR03	TW20

Available inserts **B29**

# HRMS15



KAPR **15°**  
 • GAMP : 7°  
 • GAMF : -8°~-6°

Designation	Stock	CICT	DCX	DC	DCON-MS	LH	OAL	APMX	
<b>HRMS</b> 1550HR-3S32		3	50	35.22	32	50	150	2.5	1
1550HR-3M32		3	50	35.22	32	50	250	2.5	0.5
1550HR-3L32		3	50	35.22	32	50	300	2.5	1.9
1550HR-3S40		3	50	35.22	40	50	150	2.5	1.4
1550HR-3M40		3	50	35.22	40	50	250	2.5	2.3
1550HR-3L40		3	50	35.22	40	50	300	2.5	2.8
1550HR-3S42	●	3	50	35.22	42	50	150	2.5	1.5
1550HR-3M42		3	50	35.22	42	50	250	2.5	2.5
1550HR-3L42		3	50	35.22	42	50	300	2.5	3
1563HR-4S32		4	63	48.26	32	50	150	2.5	1.9
1563HR-4M32		4	63	48.26	32	50	250	2.5	1.9
1563HR-4L32		4	63	48.26	32	50	300	2.5	1.7
1563HR-4S40		4	63	48.26	40	50	150	2.5	1.7
1563HR-4M40		4	63	48.26	40	50	250	2.5	2.6
1563HR-4L40		4	63	48.26	40	50	300	2.5	3.1
1563HR-4S42		4	63	48.26	42	50	150	2.5	1.8
1563HR-4M42		4	63	48.26	42	50	250	2.5	2.8
1563HR-4L42		4	63	48.26	42	50	300	2.5	3.3

● : Stock item

## Available inserts

WDKT-MH



Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
WDKT 150625ZDSR-MH								●	●	●		●	●				B29

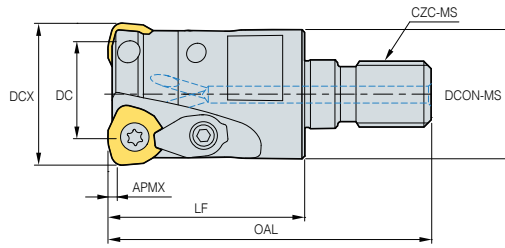
## Parts

Specification					
Ø50~Ø63	FTGA0513-P	CHH5.5R1	CTX0515	CR04	TW20

Available inserts **B29**



# HRMM08



KAPR  
**15°**  
• GAMP : 7°  
• GAMF : -11°~-5°

Designation		Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	(mm)
HRMM	0820HR-M10	●	2	20	12.29	18	30	51	M10	1	0.1
	0821HR-M10		2	21	13.28	18	30	51	M10	1	0.1
	0825HR-M12	●	3	25	17.28	23	35	59	M12	1	0.1
	0826HR-M12	●	3	26	18.28	23	35	59	M12	1	0.1
	0828HR-M12		3	28	20.28	23	35	59	M12	1	0.1
	0832HR-M16		4	32	24.45	29	40	67	M16	1	0.2
	0833HR-M16	●	4	33	25.45	29	40	67	M16	1	0.2
	0835HR-M16		4	35	27.27	29	40	67	M16	1	0.2
	0840HR-M16		5	40	32.04	29	40	67	M16	1	0.2

● : Stock item

## Available inserts

### WDKT-MH



Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
WDKT 080316ZDSR-MH						●	●	●	●	●	●	●	●				B29

## Available adaptors

Designation	Available adaptors
HRMM 0820HR-M10	MAT-M10
0821HR-M10	
0825HR-M12	MAT-M12
0826HR-M12	
0828HR-M12	MAT-M16
0832HR-M16	
0833HR-M16	
0835HR-M16	
0840HR-M16	

Designation : HRMM0820HR-M10  
Modular head threading measure size (M10)

||

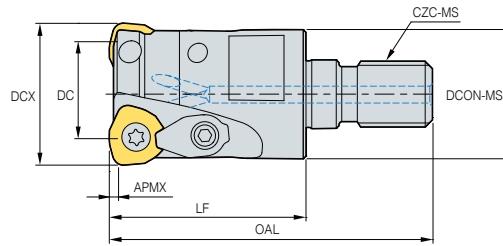
Adaptor spec.: MAT-M10-030-S20S  
Adaptor threading measure (M10)

## Parts

Specification						
Ø20~Ø40	FTNA0306	-	-	-	TW09S	-

Available inserts **B29** Available adaptors **B400**

# HRMM10/13



KAPR  
**15°**  
• GAMP : 7°  
• GAMF : -11°~5°

(mm)

	Designation	Stock	CICT	DCX	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
HRMM	1025HR-M12		2	25	15.52	22.5	35	59	M12	1.5	0.1
	1026HR-M12		2	26	16.51	23	35	59	M12	1.5	0.1
	1030HR-M16		2	30	20.5	29	40	67	M16	1.5	0.2
	1032HR-M16		3	32	22.76	29	45	72	M16	1.5	0.2
	1035HR-M16		3	35	25.52	29	45	72	M16	1.5	0.2
	1040HR-M16		4	40	30.79	29	45	72	M16	1.5	0.2
	1332HR-M16	●	2	32	18.86	29	40	67	M16	2	0.2
	1333HR-M16		2	33	19.85	29	40	67	M16	2	0.2
	1335HR-M16		2	35	21.84	29	40	67	M16	2	0.2
	1340HR-M16	●	3	40	27.08	29	45	72	M16	2	0.2

● : Stock item

## Available inserts

WDKT-MH



Type	Designation	Cermet		Coated										Uncoated			Page	
		CN30	NC5330	NCM325	NCM635	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01
10 type	WDKT 10T320ZDSR-MH							●	●	●	●	●	●	●				B29
13 type	WDKT 130520ZDSR-MH					●	●	●	●	●	●	●	●					

## Available adaptors

	Designation	Available adaptors
HRMM	1025HR-M12	MAT-M12
	1026HR-M12	
	1030HR-M16	MAT-M16
	1032HR-M16	
	1035HR-M16	
	1040HR-M16	
	1332HR-M16	
	1333HR-M16	MAT-M16
	1335HR-M16	
	1340HR-M16	

Designation : HRMM1030HR-M16  
Modular head threading measure size (M16)

II

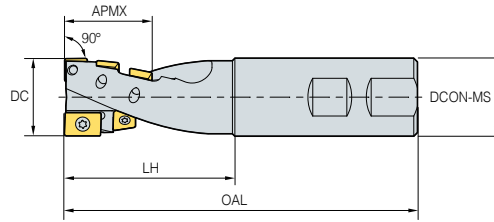
Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

## Parts

Specification						
	Screw	Clamp	Clamp Screw	C-ring	Wrench	Wrench
Ø25~Ø40(10 type)	FTKA0408	CHH3.5R1	CTX03510	CR03	TW15S	-
Ø32, 33, 35(13 type)	FTGA0510-P	CHH4.5R1	CTX04513H	CR03	-	TW20
Ø40(13 type)	FTGA0512-P	CHH5.5R1	CTX04513H	CR03	-	TW20

Available inserts **B29** Available adaptors **B400**

## THE



• GAMP : 5°, 10°  
• GAMF : -5°

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	ZEFF	APMX	kg	Available inserts	
										Lower cutting-edge	External cutting-edge
THE 25R		5	25	25	55	120	2	25	0.4	APLT070304R 1z	SPMT060304 4z
THE 32R		6	32	32	70	145	2	40	0.7	ADLT150308R 1z	SDMT090308-MM 5z
THE 40R	●	6	40	42	88	175	2	54	1.4	ZPMT1504PPSR-MM 1z	SPMT120408-MM 5z
THE 50R	●	12	50	42	85	175	4	54	1.7	ZPMT1504PPSR-MM 2z	SPMT120408-MM 10z

(mm)

● : Stock item

### Available inserts

Designation	Cermet	Coated										Uncoated			Page				
		CN30	NCM325	NCM335	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	ST30A	G10	H01
SPMT 060304		●																	
SDMT 090308-MM														●					B4
SPMT 120408-MM														●					B5
APLT 070304R														●					B20
ADLT 150308R		●												●					B27
ZPMT 1504PPSR-MM														●					B33

### Recommended cutting conditions




#### • Grooving

Workpiece	cutting conditions		Grade
	vc(m/min)	fz(mm/t)	
P	90~140	0.05~0.2	PC5300
M	50~90	0.05~0.2	PC5300
K	70~120	0.05~0.25	PC5300

#### • Side cutting

Workpiece	cutting conditions		Grade
	vc(m/min)	fz(mm/t)	
P	150~240	0.05~0.2	PC5300
M	90~150	0.05~0.2	PC5300
K	120~200	0.10~0.25	PC5300

### Parts

Specification	 Screw	 Wrench	 Wrench
Ø25	ETNA02506	TW07P	-
Ø32	ETNA0408	-	TW15S
Ø40	ETNA0511	-	TW20S
Ø50	ETNA0511	-	TW20S

Available inserts B4, B5, B20, B27, B33

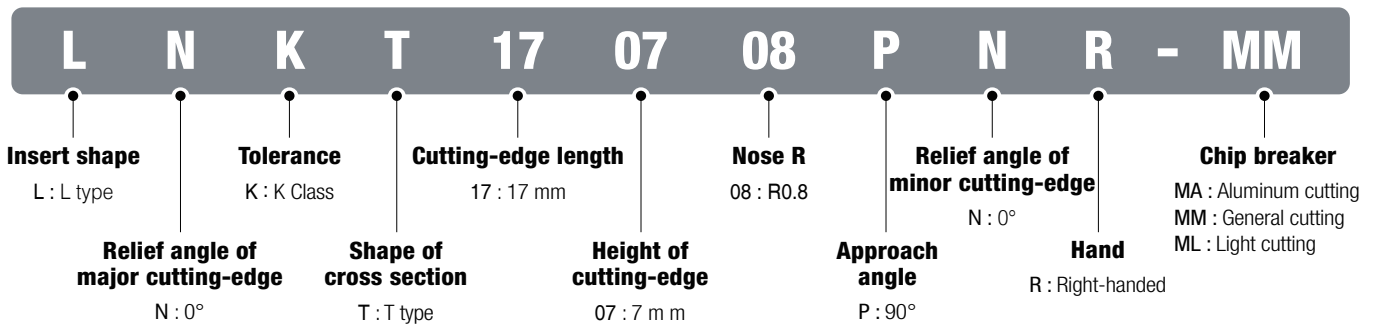
This milling tool series with its tangential clamping system increases stable machining and productivity, while improving perpendicularity

# Tangen-Pro TP2P

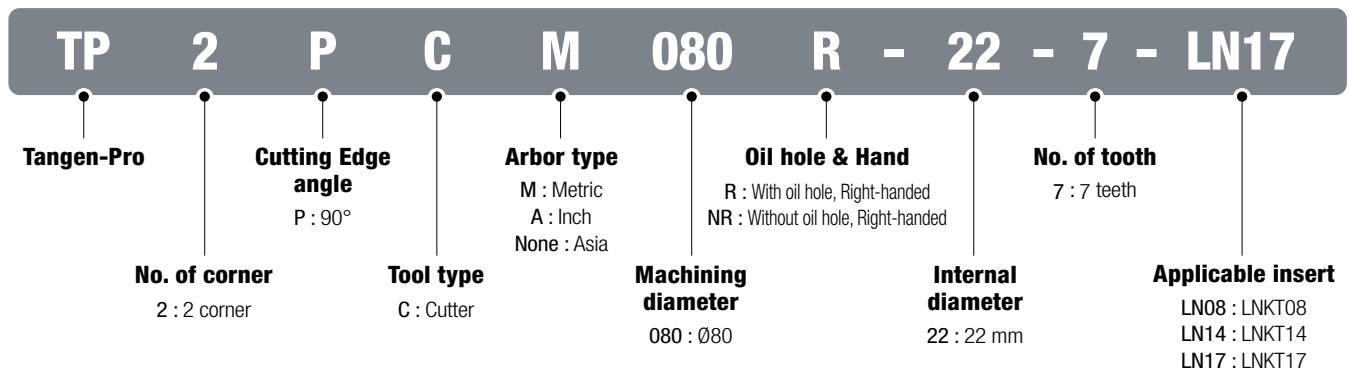
- Clamping stability gained through tangential clamping system and wedge-shaped inserts
- Excellent surface finish nearly perfect perpendicularity, and highly even flank surface compared to competitors' designs
- Improved productivity due to High-rake angles and sharp cutting-edges which lead to lower cutting resistance  
→ Ideally suited for high speed and high feed machining

## Code system

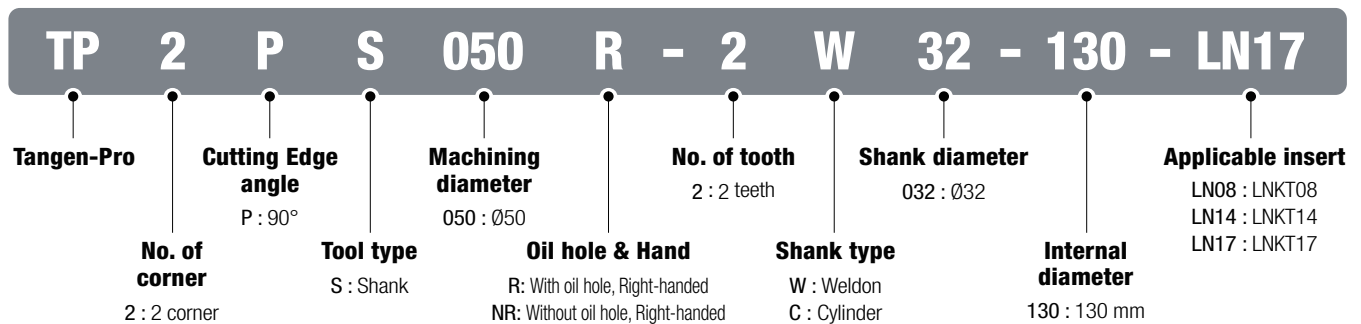
### • Insert



### • Cutter

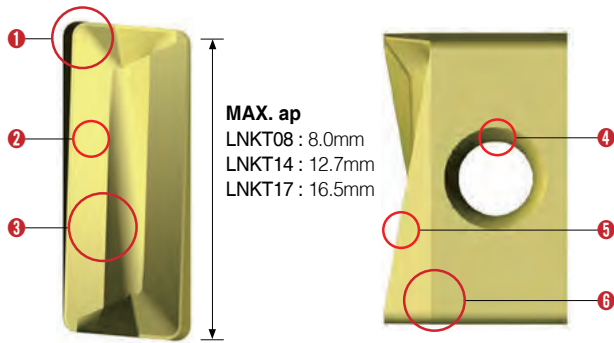


### • Shank



# B Technical Information for TP2P

## Features of insert



### 1 Wedge type clamping area

- Clamping in wedge form on seats  
→ Creates strong clamping force

### 4 Side hole (tangential type)

- Higher clamping stability

### 2 High-rake angle chip breaker

- High-rake angle applied
- Produces smooth chip flow  
→ Extended insert life

### 5 High-rake angle cutting-edges

- Improves cutting performance while reducing cutting load

### 3 Convex projection

- Improved chip evacuation
- Minimized cutting load  
→ Decreased cutting resistance

### 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

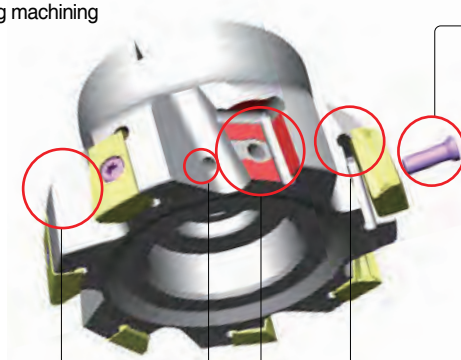
## Features of cutter

### 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 slotting or deep shouldering



### Tangential clamping

- Multi-corner use  
→ High feed machining availability



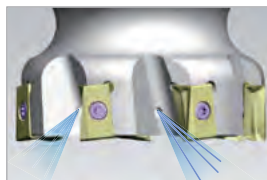
### Streamlined holder design

- 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







- Ensures stable insert tool life



## Application guideline for grade

Workpiece		P		K	N
		Carbon steel	Alloy steel	Cast iron	Aluminum
Grade	High speed cutting	PC5300	PC5300	PC6100	H01
	General cutting	PC5400	PC5300	PC6100	H01
	Interrupted cutting	PC5400	PC5400	PC5300	H01

### Features of chip breaker

Insert	Cutting-edge	Use	Features	
<b>MA</b>			Aluminum	Exclusive sharp cutting edge for aluminum machining ensures good chip flow due to surface buffing treatment and high welding resistance.
<b>ML</b>			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
<b>MM</b>			General cutting	Universal design for general shoulder milling operations, highly suitable in most applications

### Recommended cutting conditions

#### • LNKT08

Workpiece	Grade	vc (m/min)	fz (mm/t)	APMX(mm)	Applicable insert
<b>P</b> Steel	<b>PC5300</b>	150~240	0.25~0.05	8.0	LNKT0804□□PNR-MM
	<b>PC5400</b>	130~210	0.25~0.05	8.0	
<b>K</b> Cast iron	<b>PC6100</b>	100~250	0.25~0.05	8.0	LNKT0804□□PNR-ML
	<b>PC5300</b>	100~200	0.25~0.05	8.0	
<b>N</b> Aluminum	<b>H01</b>	500~1000	0.25~0.05	8.0	LNKT0804□□PNR-MA

#### • LNKT14

Workpiece	Grade	vc (m/min)	fz (mm/t)	APMX(mm)	Applicable insert
<b>P</b> Steel	<b>PC5300</b>	150~240	0.25~0.05	12.7	LNKT1406□□PNR-MM
	<b>PC5400</b>	130~210	0.25~0.05	12.7	
<b>K</b> Cast iron	<b>PC6100</b>	100~250	0.25~0.05	12.7	LNKT1406□□PNR-ML
	<b>PC5300</b>	100~200	0.25~0.05	12.7	
<b>N</b> Aluminum	<b>H01</b>	500~1000	0.25~0.05	12.7	LNKT1406□□PNR-MA

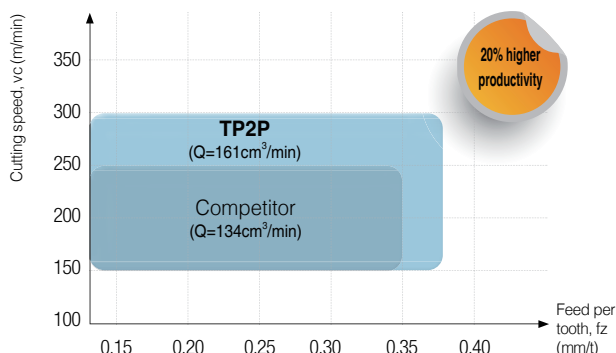
#### • LNKT17

Workpiece	Grade	vc (m/min)	fz (mm/t)	APMX(mm)	Applicable insert
<b>P</b> Steel	<b>PC5300</b>	150~240	0.25~0.05	16.5	LNKT1707□□PNR-MM
	<b>PC5400</b>	130~210	0.25~0.05	16.5	
<b>K</b> Cast iron	<b>PC6100</b>	100~250	0.25~0.05	16.5	LNKT1707□□PNR-ML
	<b>PC5300</b>	100~200	0.25~0.05	8.0	
<b>N</b> Aluminum	<b>H01</b>	500~1000	0.25~0.05	16.5	LNKT1707□□PNR-MA

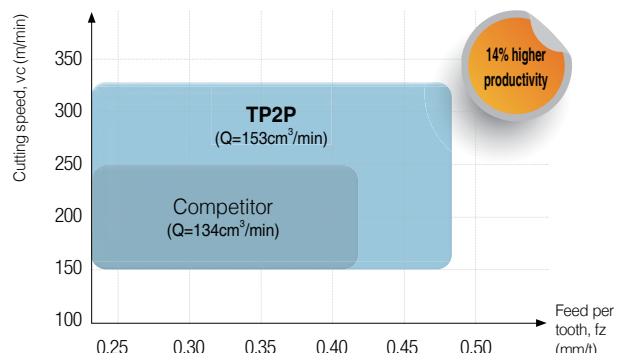
### Application area

» Higher speed and feed machining than competitor's increases machinability.

• Application area : ap(mm) = 14, ae(mm) = 10

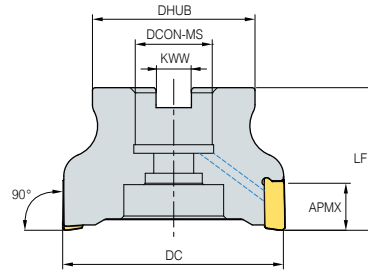


• Application area : ap(mm) = 8, ae(mm) = 10



# B Tangen-Pro (TP2P)

## TP2PCM-LN08



KAPR  
90°  
• GAMP : -6°  
• GAMF : -26° ~ -22°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	kg
TP2PCM 040R-16-6-LN08		6	40	35	16	8.4	40	8	0.2
040R-16-7-LN08		7	40	35	16	8.4	40	8	0.2
050R-22-7-LN08		7	50	41	22	10.4	40	8	0.3
050R-22-10-LN08		10	50	41	22	10.4	40	8	0.3
063R-22-10-LN08		10	63	49	22	10.4	40	8	0.5
063R-22-11-LN08		11	63	49	22	10.4	40	8	0.5

● : Stock item

### Available inserts

LNKT-MA LNKT-ML LNKT-MM



Designation	Cermet	Coated											Uncoated			Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
LNKT 080404PNR-MA																		B10 B11
080408PNR-MA																		
080412PNR-MA																		
080416PNR-MA																		
080404PNR-ML																		
080408PNR-ML																		
080412PNR-ML																		
080416PNR-ML																		
080404PNR-MM																		
080408PNR-MM																		
080412PNR-MM																		
080416PNR-MM																		

### Available arbors

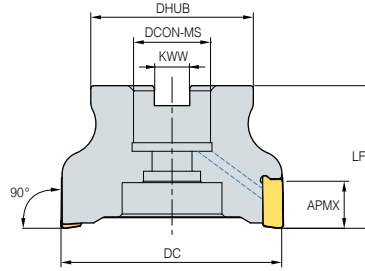
Designation	Available arbors
TP2PCM 040R-16-6-LN08	BT□□-FMC16-□□
040R-16-7-LN08	
050R-22-7-LN08	
050R-22-10-LN08	
063R-22-10-LN08	BT□□-FMC22-□□
063R-22-11-LN08	

### Parts

Specification	Screw	Wrench
Ø40~Ø63	FTKA02565	TW07S

Available inserts **B10, B11** Available arbors and bolt **E96**

# TP2PC(M)-LN14



KAPR  
**90°**

- GAMP : -6°
- GAMF : -22° ~ -12°

(mm)

	Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
TP2PCM	040R-16-4-LN14		4	40	35	16	8.4	40	12.7	0.2
	040R-16-5-LN14		5	40	35	16	8.4	40	12.7	0.2
	050R-22-5-LN14		5	50	42	22	10.4	40	12.7	0.3
	050R-22-6-LN14		6	50	42	22	10.4	40	12.7	0.3
	063R-22-6-LN14		6	63	49	22	10.4	40	12.7	0.5
	063R-22-8-LN14		8	63	49	22	10.4	40	12.7	0.5
	080R-27-7-LN14		7	80	57	27	12.4	50	12.7	0.9
	080R-27-10-LN14		10	80	57	27	12.4	50	12.7	0.9
	100R-32-8-LN14		8	100	70	32	14.4	63	12.7	1.7
	100R-32-13-LN14		13	100	70	32	14.4	63	12.7	1.7
	125R-40-9-LN14		9	125	90	40	16.4	63	12.7	3.0
	125R-40-17-LN14		17	125	90	40	16.4	63	12.7	3.0
TP2PC	080R-25.4-7-LN14		7	80	57	25.4	9.5	50	12.7	1.0
	080R-25.4-10-LN14		10	80	57	25.4	9.5	50	12.7	1.0
	100R-31.75-8-LN14		8	100	70	31.75	12.7	63	12.7	1.8
	100R-31.75-13-LN14		13	100	70	31.75	12.7	63	12.7	1.8
	125R-38.1-9-LN14		9	125	90	38.1	15.9	63	12.7	3.0
	125R-38.1-17-LN14		17	125	90	38.1	15.9	63	12.7	3.1

● : Stock item

## Available inserts

LNKT-MA LNKT-ML LNKT-MM



Designation	Cermet										Page	Designation	Cermet										Page											
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100			PC9530	PC9540	PC5300	PC5400	ST30A	H01	CN30	NC5330	NCM325	NCM335		NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A
LNKT 140604PNR-MA													B10	LNKT 140612PNR-ML																			B11	
140608PNR-MA													B11	140616PNR-ML																				B11
140612PNR-MA														140604PNR-MM																				
140616PNR-MA														140608PNR-MM																				
140604PNR-ML														140612PNR-MM																				
140608PNR-ML														140616PNR-MM																				

## Available arbors

Designation	Available arbors
TP2PCM 040R-16-4-LN14	BT□□-FMC16-□□
040R-16-5-LN14	
050R-22-5-LN14	BT□□-FMC22-□□
050R-22-6-LN14	
063R-22-6-LN14	
063R-22-8-LN14	
080R-27-7-LN14	BT□□-FMC27-□□
080R-27-10-LN14	

Designation	Available arbors
TP2PCM 100R-32-8-LN14	BT□□-FMC32-□□
100R-32-13-LN14	
125R-40-9-LN14	
125R-40-17-LN14	BT□□-FMC40-□□
TP2PC 080R-25.4-7-LN14	BT□□-FMA25.4-□□
080R-25.4-10-LN14	
100R-31.75-8-LN14	BT□□-FMA31.75-□□
100R-31.75-13-LN14	
125R-38.1-9-LN14	BT□□-FMA38.1-□□
125R-38.1-17-LN14	

## Parts

Specification		
Ø40~Ø125	FTKA03510	TW15S

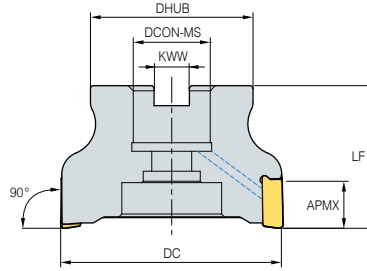
Available inserts B10, B11

Available arbors and bolt E94 ~ E96



# B Tangen-Pro (TP2P)

## TP2PC(M)-LN17



KAPR  
90°  
• GAMP : -6°  
• GAMF : -21°~ -15°

(mm)

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	kg
TP2PCM	●	3	40	35	16	8.4	40	16.5	0.2
		4	40	35	16	8.4	40	16.5	0.2
	●	4	50	41	22	10.4	40	16.5	0.3
		5	50	41	22	10.4	40	16.5	0.3
	●	6	63	49	22	10.4	40	16.5	0.5
		7	63	49	22	10.4	40	16.5	0.5
	●	7	80	57	27	12.4	50	16.5	0.9
		8	80	57	27	12.4	50	16.5	0.9
	●	8	100	67	32	14.4	63	16.5	3.1
		9	100	67	32	14.4	63	16.5	3.1
	●	10	125	90	40	16.4	63	16.5	3.1
	11	125	90	40	16.4	63	16.5	3.1	
TP2PC		7	80	57	25.4	9.5	50	16.5	1.0
		8	80	57	25.4	9.5	50	16.5	1.0
		8	100	67	31.75	12.7	63	16.5	1.8
		9	100	67	31.75	12.7	63	16.5	1.8
		10	125	90	38.1	15.9	63	16.5	3.1
		11	125	90	38.1	15.9	63	16.5	3.1

● : Stock item

### Available inserts



Designation	Cermet									Page	Designation	Cermet									Page										
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700			PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	H01	CN30	NC5330		NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540
LNKT 170704PNR-MA											B10	LNKT 170716PNR-ML																			
LNKT 170708PNR-MA											B11	LNKT 170720PNR-ML																			
LNKT 170712PNR-MA												LNKT 170704PNR-MM																			
LNKT 170716PNR-MA												LNKT 170708PNR-MM																			
LNKT 170720PNR-MA												LNKT 170712PNR-MM																			
LNKT 170704PNR-ML												LNKT 170716PNR-MM																			
LNKT 170708PNR-ML												LNKT 170720PNR-MM																			
LNKT 170712PNR-ML																															

### Available arbors

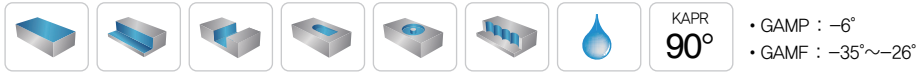
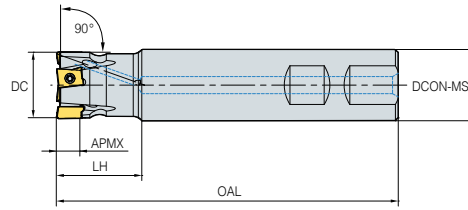
Designation	Available arbors	Designation	Available arbors
TP2PCM	040R-16-3-LN17	TP2PCM	100R-32-8-LN17
	040R-16-4-LN17		100R-32-9-LN17
	050R-22-4-LN17		125R-40-10-LN17
	050R-22-5-LN17		125R-40-11-LN17
	063R-22-6-LN17	TP2PC	080R-25.4-7-LN17
	063R-22-7-LN17		080R-25.4-8-LN17
	080R-27-7-LN17		100R-31.75-8-LN17
	080R-27-8-LN17		100R-31.75-9-LN17
080R-27-8-LN17		125R-38.1-10-LN17	
		125R-38.1-11-LN17	

### Parts

Specification	Screw	Wrench
Ø40~Ø125	FTKA0412B	TW15S

Available inserts B10, B11 Available arbors and bolt E94, E96

# TP2PS-LN08



Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	
TP2PS 020R-2W20-120-LN08		2	20	20	30	120	8	0.3
020R-3W20-120-LN08		3	20	20	30	120	8	0.3
025R-3W25-120-LN08		3	25	25	30	120	8	0.4
025R-4W25-120-LN08		4	25	25	30	120	8	0.4

● : Stock item

## Available inserts

LNKT-MA LNKT-ML LNKT-MM



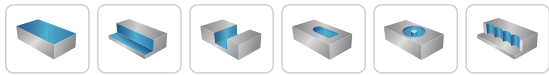
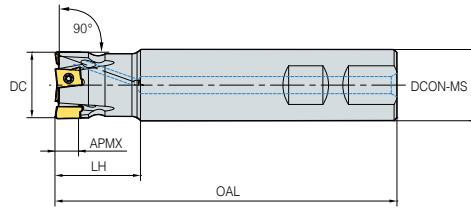
Designation	Cermet	Coated												Uncoated			Page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01
LNKT 080404PNR-MA																		B10 B11
080408PNR-MA																		
080404PNR-ML																		
080408PNR-ML																		
080404PNR-MM																		
080408PNR-MM																		

## Parts

Specification		
Ø16~Ø25	FTKA02565	TW07S

Available inserts **B10, B11**

## TP2PS-LN14



KAPR  
90°

- GAMP : -6°
- GAMF : -21° ~ -18°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg
TP2PS	025R-2W25-130-LN14		2	25	25	40	130	12.7	0.4
	032R-3W32-130-LN14		3	32	32	40	130	12.7	0.7
	040R-3W32-130-LN14		3	40	32	40	130	12.7	0.8
	040R-4W32-130-LN14		4	40	32	40	130	12.7	0.8
	050R-4W32-130-LN14		4	50	32	40	130	12.7	0.9
	050R-5W32-130-LN14		5	50	32	40	130	12.7	0.8

● : Stock item

### Available inserts

LNKT-MA

LNKT-ML

LNKT-MM



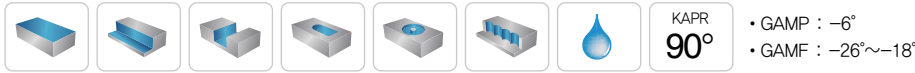
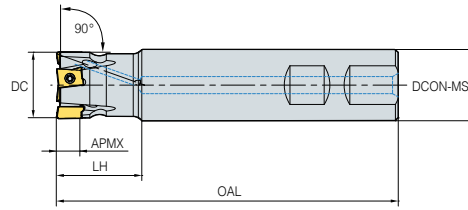
Designation	Cermet	Coated											Uncoated			Page		
	CN30	NC5330	NCM325	NCM335	NCM635	NCM645	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
LNKT 140608PNR-MA																		B10 B11
140608PNR-ML																		
140608PNR-MM																		

### Parts

Specification	Screw	Wrench
Ø25 ~ Ø50	FTKA03510	TW15S

Available inserts **B10, B11**

# TP2PS-LN17



Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	(mm)	
TP2PS	032R-2W32-130-LN17	●	2	32	32	42	130	16.5	0.7
	032R-3W32-130-LN17		3	32	32	42	130	16.5	0.7
	040R-3W32-130-LN17	●	3	40	32	42	130	16.5	0.8
	040R-4W32-130-LN17		4	40	32	42	130	16.5	0.8
	050R-4W32-130-LN17	●	4	50	32	42	130	16.5	0.9
	050R-5W32-130-LN17		5	50	32	42	130	16.5	0.9

● : Stock item

## Available inserts



LNKT-MA LNKT-ML LNKT-MM



Designation	Cermet	Coated										Uncoated			Page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10
LNKT 170704PNR-MA																	
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																	

B10  
B11

## Parts

Specification	 Screw	 Wrench
Ø32~Ø50	FTKA0412B	TW15S

Available inserts **B10, B11**

# B Technical Information for TP8P

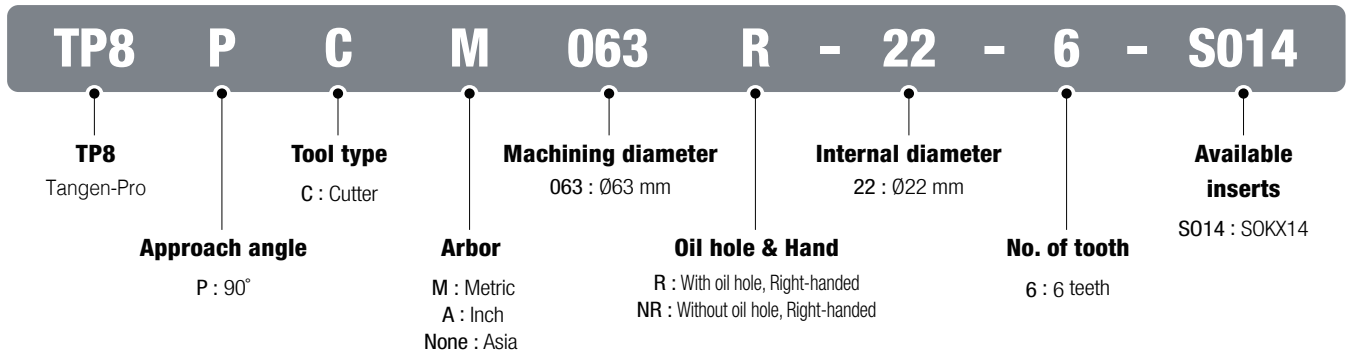
Right angle Milling tool with tangential double-sided 8 corners

## Tangen-Pro TP8P

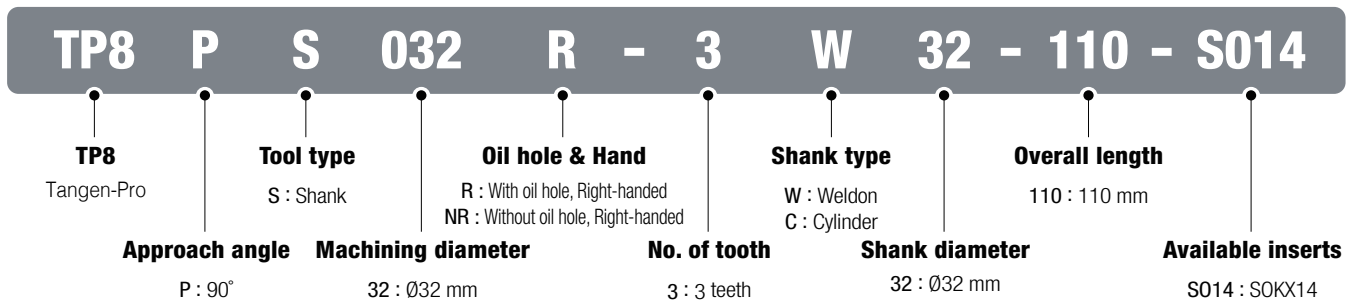
- Double-sided insert with 8 corners realizes high cost efficiency thanks to right angle milling with high depth of cut.
- Excellent for productivity improvement because tangential type insert ensures rigid clamping and allows more flutes (extra close pitch) in accordance with a cutter diameter

### Code system

#### • Cutter

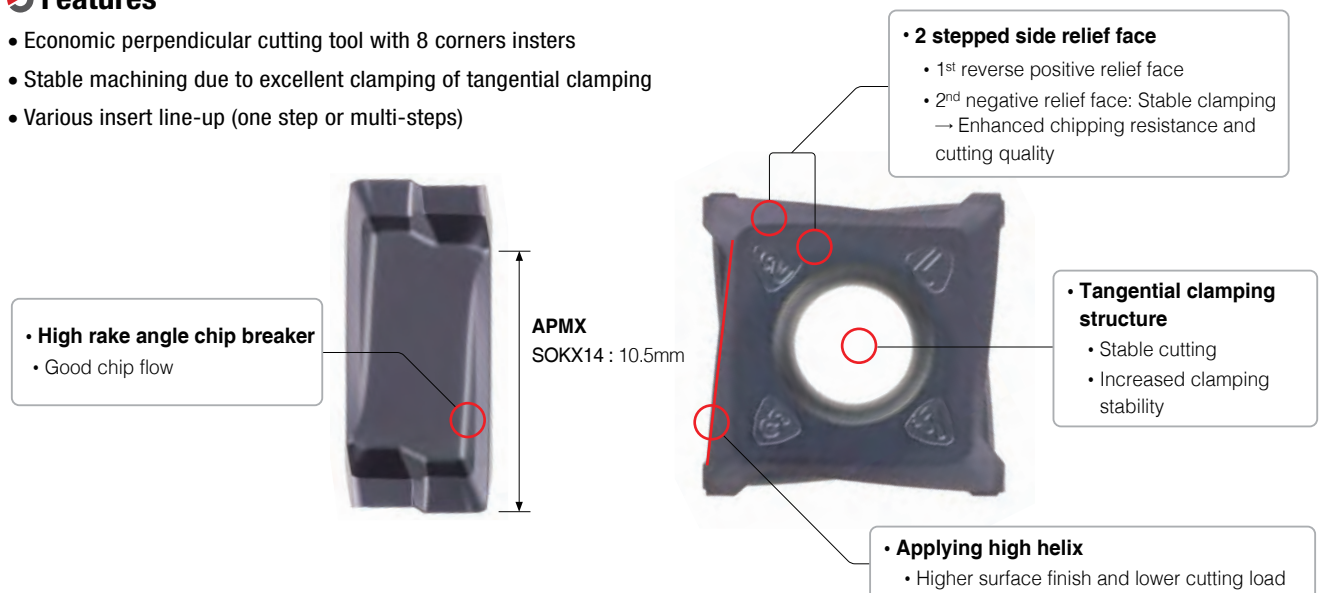


#### • Shank

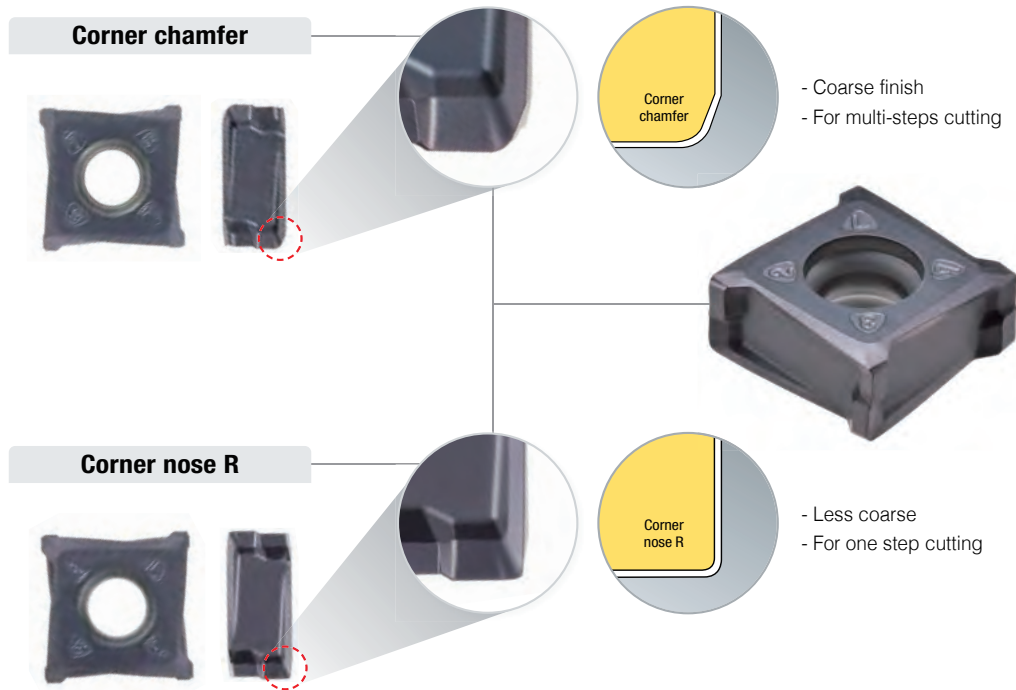


### Features

- Economic perpendicular cutting tool with 8 corners insters
- Stable machining due to excellent clamping of tangential clamping
- Various insert line-up (one step or multi-steps)



Features of insert



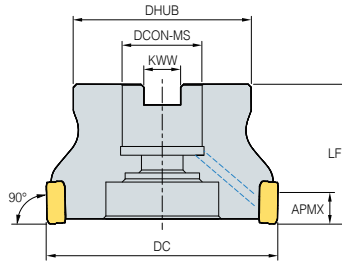
Recommended grade and cutting edge

Chip breaker	Cutting edge	Recommended grade and cutting shape by workpiece materials (● : 1 <sup>st</sup> Recommendation)	
		P	K
		Grade	Grade
ML		● PC5300	● PC5300

Recommended cutting conditions

ISO	Workpiece			Specific cutting force (N/mm <sup>2</sup> )	HrC	Grade	Chip breaker	
	Workpiece material	KS	ISO			PC5300	ML	
						vc (m/min)	fz (mm/t)	ap (mm)
P	Carbon steel	SM15C SM25C SM35C	C15E4 C15M2 C25	1500	Under 10	150	0.15	2~7
						200	<b>0.20</b>	
		250	0.15					
		150	0.10					
	Alloy steel	SM45C SM58C SMn438(H)	C45 C60	1700	10~30	200	<b>0.20</b>	
						250	0.15	
	Die steel	KP4M	-	2020	27~30	150	0.20	
						200	0.15	
K	Gray cast iron	GC250 GC350	250 350	900	Under 23	110	0.15	2~7
						<b>160</b>	<b>0.12</b>	
						180	0.10	
	Ductile cast iron	GCD400 GCD500 GCD600	400-15 150-10 600-3	870	Under 10	150	0.20	
						200	0.15	

## TP8PC(M)-SO14



KAPR  
90°

- GAMP : - 6°
- GAMF : - 23° ~ - 18°

(mm)

	Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
TP8PCM	040R-16-3-SO14	●	3	40	34	16	8.4	40	11	0.2
	040R-16-4-SO14	●	4	40	34	16	8.4	40	11	0.2
	050R-22-4-SO14	●	4	50	45	22	10.4	40	11	0.3
	050R-22-5-SO14	●	5	50	45	22	10.4	40	11	0.3
	050R-22-6-SO14	●	6	50	45	22	10.4	40	11	0.3
	063R-22-6-SO14	●	6	63	49	22	10.4	40	11	0.4
	063R-22-7-SO14	●	7	63	49	22	10.4	40	11	0.5
	063R-22-8-SO14	●	8	63	49	22	10.4	40	11	0.5
	080R-27-6-SO14	●	6	80	60	27	12.4	50	11	0.9
	080R-27-7-SO14	●	7	80	60	27	12.4	50	11	0.9
	080R-27-9-SO14	●	9	80	60	27	12.4	50	11	0.9
	100R-32-8-SO14	●	8	100	70	32	14.4	63	11	1.8
	100R-32-12-SO14	●	12	100	70	32	14.4	63	11	1.8
	125R-40-9-SO14	●	9	125	90	40	16.4	63	11	3
125R-40-15-SO14	●	15	125	90	40	16.4	63	11	3	
TP8PC	080R-25.4-6-SO14	●	6	80	60	25.4	9.5	50	11	0.9
	080R-25.4-7-SO14	●	7	80	60	25.4	9.5	50	11	0.9
	080R-25.4-9-SO14	●	9	80	60	25.4	9.5	50	11	0.9
	100R-31.75-8-SO14	●	8	100	70	31.75	12.7	63	11	1.8
	100R-31.75-12-SO14	●	12	100	70	31.75	12.7	63	11	1.8
	125R-38.1-9-SO14	●	9	125	90	38.1	15.9	63	11	3
	125R-38.1-15-SO14	●	15	125	90	38.1	15.9	63	11	3

● : Stock item

### Available inserts

SOKX-ML SOKX-MM



Designation	Coated	Page
	PC5300	
SOKX 1406XPNR-ML	●	B26
140608PNR-ML	●	
1406XPNR-MM	●	
140608PNR-MM	●	

### Available arbors

	Designation	DCON-MS	Available arbors
TP8PCM	040R-16-□-SO14	16	BT□□-FMC16-□□
	050R-22-□-SO14	22	BT□□-FMC22-□□
	063R-22-□-SO14		
	080R-27-□-SO14	27	BT□□-FMC27-□□
	100R-32-□-SO14	32	BT□□-FMC32-□□
	125R-40-□-SO14	40	BT□□-FMC40-□□
TP8PC	080R-25.4-□-SO14	25.4	BT□□-FMA25.4-□□
	100R-31.75-□-SO14	31.75	BT□□-FMA31.75-□□
	125R-38.1-□-SA14	38.1	BT□□-FMA38.1-□□

### Parts

Specification		
Ø40	FTGA0511-P	TW20-100
Ø50~Ø125	FTGA0513-P	TW20-100

Available inserts **B26**

Available arbors and bolt **E94, E96**

# TP8PS-SO14

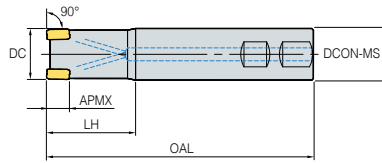


Fig. 1

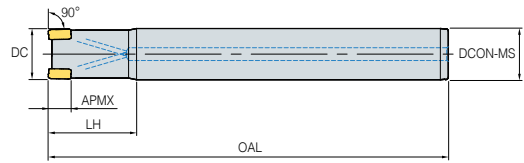


Fig. 2



KAPR  
90°

- GAMP : - 6°
- GAMF : - 29° ~ - 23°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX		Fig.
TP8PS	032R-2W32-130-SO14	●	2	32	32	40	130	11	0.7	1
	032R-3W32-130-SO14	●	3	32	32	40	130	11	0.7	1
	032R-2C32-250-SO14	●	2	32	32	50	250	11	0.9	2
	032R-3C32-250-SO14	●	3	32	32	50	250	11	1.4	2
	040R-3W32-130-SO14	●	3	40	32	40	130	11	0.8	1
	040R-4W32-130-SO14	●	4	40	32	40	130	11	0.8	1
	040R-3C32-250-SO14	●	3	40	32	50	250	11	1.5	2
	040R-4C32-250-SO14	●	4	40	32	50	250	11	1.5	2

※W:Weldon, C:Cylinder ●: Stock item

## Available inserts

SOKX-ML SOKX-MM



Designation	Coated		Page
	PC5300		
SOKX 1406XPNR-ML	●		B26
140608PNR-ML	●		
1406XPNR-MM	●		
140608PNR-MM	●		

## Parts

Specification	Screw	Wrench
Ø32	FTGA0511-P	TW20-100
Ø40	FTGA0513-P	TW20-100

Available inserts **B26**

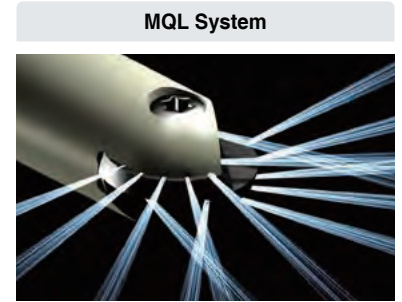


# B Technical Information for Laser Mill

**Longer tool life guaranteed thanks to the excellent cutting performance of our grades**

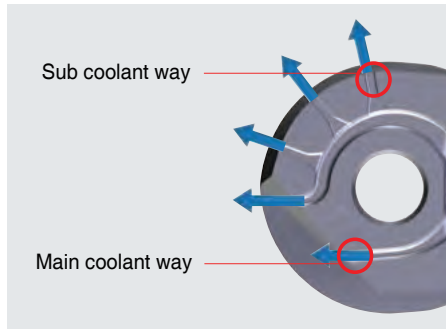
## Laser Mill

- 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

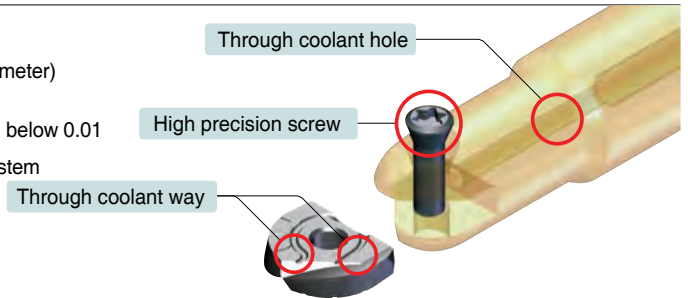


- MQL System**
- Environmental friendly system
  - Decreased coolant cost
  - Lubrication of cutting-edge
  - Improved chip control property
  - Increased tool life & improved surface quality

### Clamping system



- High precision (ground internal diameter)  
Run-out: 0.02 mm  
Accuracy of 'R part: below 0.01
- Through coolant system



### Features of insert

**LBE**  
LBS, LR Order-made items



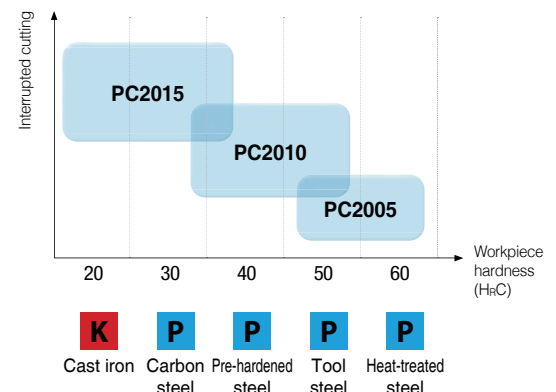
- Six types of inserts are available with one holder
- Single screw for clamping of insert: Easy clamping system
- Various types of holders (Steel shank, Carbide shank, Modular type)
- MQL applicable- environmentally responsible with longer tool life & improved surface quality.

LBH-Ball	LRH-Corner radius	LFH-High feed	LCF-Chamfer	LBS-Ball type	LR-Corner R type
<ul style="list-style-type: none"> <li>• Helical cutting-edge</li> <li>• Suitable for harder material with high feed</li> </ul>	<ul style="list-style-type: none"> <li>• Helical cutting-edge</li> <li>• Variety of nose-R</li> </ul>	<ul style="list-style-type: none"> <li>• Helical cutting-edge</li> <li>• Suitable for high feed</li> </ul>	<ul style="list-style-type: none"> <li>• Straight cutting-edge</li> <li>• Center drilling and chamfering</li> </ul>	<ul style="list-style-type: none"> <li>• Straight cutting-edge</li> <li>• Suitable for precise</li> </ul>	<ul style="list-style-type: none"> <li>• Straight cutting-edge</li> <li>• Variety of nose-R</li> </ul>

### Features of Laser Mill grades

<b>PC2005</b>	<ul style="list-style-type: none"> <li>• Extremely high hardness grade</li> <li>• The harmony between improved blade design and strong chip breaker</li> <li>• Optimized for machining heat-treated steel and high hardness steel</li> </ul>
<b>PC2010</b>	<ul style="list-style-type: none"> <li>• High wear resistance and excellent toughness</li> <li>• The harmony between excellent thermal shock resistance and strong cutting-edges</li> <li>• Optimized for machining tool steel and pre-hardened steel</li> </ul>
<b>PC2015</b>	<ul style="list-style-type: none"> <li>• High welding resistance and excellent toughness</li> <li>• The harmony between tough grade and excellent cutting-edge design</li> <li>• Optimized for machining carbon steel</li> </ul>

### 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			
<b>Standard</b> (For general cutting)				
	<ul style="list-style-type: none"> <li>• Proper to general cutting</li> <li>• Insert shape for uniform performance</li> </ul>			
<b>KH</b> (For high hardness steel)				
	<ul style="list-style-type: none"> <li>• Center shaper proper for machining high hardness workpiece and uniformed tool life at center part</li> <li>• Improved cutting-edge design by higher rake angle (<math>\alpha_i^\circ</math>)</li> <li>• Lower relief angle (<math>\beta^\circ</math>) increases strength of cutting-edges than universal inserts.</li> </ul>			
<b>KF</b> (For carbon steel)				
	<ul style="list-style-type: none"> <li>• Smaller chisel improves wear resistance at center for machining carbon steel.</li> <li>• Improved cutting-edge design by higher rake angle (<math>\alpha_i^\circ</math>)</li> <li>• Longer tool life and better cutting performance with the use of excellent blade design</li> </ul>			

## Recommended cutting conditions

	Workpiece			Grade	Chip breaker	Recommended cutting conditions			
	ISO	Workpiece material	HB (HrC)			vc (m/min)	fz (mm/t)	ap (mm)	ae (mm)
<b>K</b>	Gray cast iron	GC250	180 (8)	PC2015 PC2010 PC2005	KF	130~210	0.2~0.5	0.07D	0.07D
	Ductile cast iron	GCD600	250 (24)			170~250	0.2~0.5	0.07D	0.07D
<b>P</b>	Carbon steel	S20C~S50C	150	PC2010 PC2015 PC210F	KH	130~210	0.1~0.3	0.7D	0.7D
	Alloy steel	SCM21~SCM5H	270 (28)			100~160	0.1~0.3	0.5D	0.5D
		KP4M	300 (32)						
		NIMAX	370 (40)						
		CENA1	370 (40)						
	NAK80	400 (43)							
	STAVAX	510 (52)							
High speed tool steel	SKH51~SKH59	550 (55)	80~130	0.1~0.2	0.3D	0.3D			
Alloy tool steel	STD61 (Hot forging)	630 (60)	70~120	0.1~0.2	0.3D	0.3D			
	STD11 (Cold forging)								

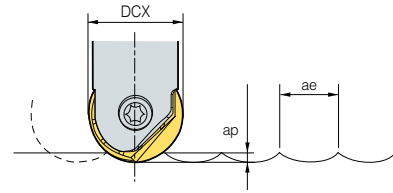
Overhang	vc(m/min)	fz(mm/t)
Under 3D	100%	100%
3D~5D	70%	70%

Overhang	vc(m/min)	fz(mm/t)
5D~8D	60%	60%
8D~10D	50%	50%

# B Technical Information for Laser Mill

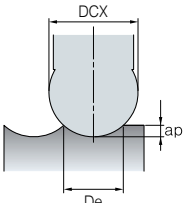
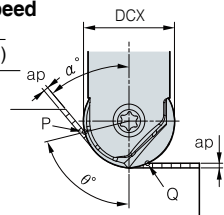
## ➤ Cutting speed calculation formulas

Practical cutting speed	RPM
$V_{Ce} = \frac{\pi \times De \times n}{1000}$ (m/min)	$n = \frac{V_{Ce} \times 1000}{\pi \times De}$ (min <sup>-1</sup> )
Feed per tooth	Feed per minute
$fz = \frac{vf}{Z \times n}$ (mm/t)	$vf = fz \times n \times z$ (mm/min)
Chip removal amount	Power requirement
$Q = \frac{ap \times ae \times vf}{1000}$ (cm <sup>3</sup> /min)	$P_{kw} = \frac{Q \times kc}{60 \times 102 \times \eta}$ (kW)
	$P_{hp} = \frac{P_c}{0.75}$ (hp)



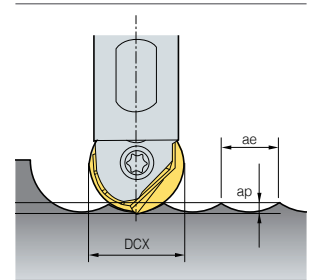
<b>vc</b> = Cutting speed (m/min)	<b>Pkw</b> = Power requirement (kW)
<b>vce</b> = Practical cutting speed (m/min)	<b>Php</b> = Horsepower requirement (hp)
<b>n</b> = Revolution per minute (min <sup>-1</sup> )	<b>Q</b> = Chip removal amount (cm <sup>3</sup> /min)
<b>D</b> = Cutting diameter (mm)	<b>ap</b> = Depth of cut (mm)
<b>De</b> = Actual diameter (mm)	<b>ae</b> = Width of cut (mm)
<b>vf</b> = Feed per minute (mm/min)	<b>kc</b> = Specific cutting resistance (kg/mm <sup>2</sup> )
<b>fz</b> = Feed per tooth (mm/t)	<b>η</b> = Mechanical efficiency (%)
<b>z</b> = Number of tooth	

## ➤ Practical cutting speed calculation formulas

1 Formula of actual diameter	2 θ° Using: Calculating cutting speed at P point (Cutting speed according to depth of cut when ramping)	3 In case of using ap: Calculating cutting speed at Q point
<p>• Formula : Actual diameter</p> $De = 2\sqrt{ap(D - ap)}$ 	<p>• Formula : Practical cutting speed</p> $v_{ce} = \frac{\pi D \sin\theta \times n}{1000}$ (m/min) $\theta = \cos^{-1}\left(\frac{D - 2ap}{D}\right) + (90 - \theta^\circ)$	<p>• Formula : Practical cutting speed</p> $v_{ce} = \frac{2\pi n \sqrt{ap(D - ap)}}{1000}$ 

## ➤ Theoretical surface roughness

		h (surface roughness) (μm)									
R(mm)	ae(mm)	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	DCX	Ø08	Ø10	Ø12	Ø16	Ø20	Ø25	Ø30	Ø32
0.1		1.8	2.0	2.2	2.5	2.8	3.2	3.5	3.6
0.2		2.5	2.8	3.1	3.6	4.0	4.5	4.9	5.0
0.3		3.0	3.4	3.7	4.3	4.9	5.4	6.0	6.2
0.5		3.9	4.4	4.8	5.6	6.2	7.0	7.7	7.9
1.0		5.3	6.0	6.6	7.7	8.7	9.8	10.8	11.1
1.5		6.2	7.1	7.9	9.3	10.5	11.9	13.1	13.5
2.0		6.9	8.0	8.9	10.6	12.0	13.6	15.0	15.5
2.5		7.4	8.7	9.7	11.6	13.2	15.0	16.6	17.2
3.0		7.7	9.2	10.4	12.5	14.3	16.2	18.0	18.7
3.5		7.9	9.5	10.9	13.2	15.2	17.3	19.3	20.0
4.0		8.0	9.8	11.3	13.9	16.0	18.3	20.4	21.2
5.0				11.8	14.8	17.3	20.0	22.4	23.2
6.0				12.0	15.5	18.3	21.4	24.0	25.0
7.0					15.9	19.1	22.4	25.4	26.5
8.0					16.0	19.6	23.3	26.5	27.7
10.0						20.0	24.5	28.3	29.7

## Available inserts

Holder	LBH (Ball type)	LRH (Corner radius type)	LFH (High feed type)	LCF (Chamfer type)	LBS (Ball type)	LR (Corner radius type)
<b>Holders</b>	 R accuracy $\pm 0.005$	 Corner R $\pm 0.015$	 R accuracy $\pm 0.005$	 Corner R $\pm 0.015$	 R accuracy $\pm 0.005$	 Corner R $\pm 0.015$
<b>LBE080</b>	LBH080 LBH090 LBH080-KF LBH090-KF LBH080-KH LBH090-KH				LBS080 LBS090	
<b>LBE100</b> <b>LRE100</b>	LBH100 LBH110 LBH100-KF LBH110-KF LBH100-KH LBH110-KH	LRH100-R05 LRH100-R10 LRH110-R05 LRH100-R20	LFH100		LBS100 LBS110	LR100-R05 LR100-R20 LR100-R10 LR110-R05
<b>LBE120</b> <b>LRE120</b>	LBH120 LBH130 LBH120-KF LBH130-KF LBH120-KH LBH130-KH	LRH120-R05 LRH120-R10 LRH130-R05 LRH120-R20	LFH120		LBS120 LBS130	LR120-R05 LR120-R20 LR120-R10 LR130-R05
<b>LBE160</b> <b>LRE160</b>	LBH160 LBH170 LBH160-KF LBH170-KF LBH160-KH LBH170-KH	LRH160-R05 LRH160-R10 LRH170-R05 LRH160-R20 LRH160-R30	LFH160	LCF160-D90	LBS160 LBS170	LR160-R05 LR160-R30 LR160-R10 LR170-R05 LR160-R20
<b>LBE200</b> <b>LRE200</b>	LBH200 LBH210 LBH200-KF LBH210-KF LBH200-KH LBH210-KH	LRH200-R05 LRH200-R10 LRH210-R05 LRH200-R20 LRH200-R30	LFH200	LCF200-D90	LBS200 LBS210	LR200-R05 LR200-R30 LR200-R10 LR210-R05 LR200-R20
<b>LBE250</b> <b>LRE250</b>	LBH250 LBH260 LBH250-KF LBH260-KF LBH250-KH LBH260-KH	LRH250-R05 LRH250-R10 LRH260-R05 LRH250-R20 LRH250-R30	LFH250	LCF250-D90	LBS250 LBS260	LR250-R05 LR250-R30 LR250-R10 LR260-R05 LR250-R20
<b>LBE300</b> <b>LRE300</b>	LBH300 LBH310 LBH300-KF LBH310-KF LBH300-KH LBH310-KH	LRH300-R10 LRH300-R20 LRH310-R05 LRH300-R30	LFH300		LBS300 LBS310	LR300-R10 LR300-R30 LR300-R20 LR310-R05
<b>LBE320</b> <b>LRE320</b>	LBH320 LBH330 LBH320-KF LBH330-KF LBH320-KH LBH330-KH	LRH320-R10 LRH330-R10 LRH320-R20 LRH330-R20 LRH320-R30 LRH330-R30	LFH320		LBS320	LR320-R10 LR320-R30 LR320-R20

\* LBH for general cutting, LBH-KF for carbon steel, and LBH-KH for high hardened steel.

## LBE08/10/12/16/20/25/30/32

Straight type

Carbide Shank (Ball type)

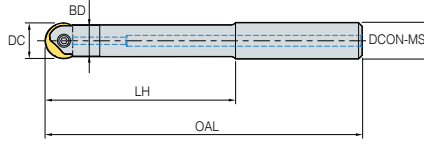


Fig. 1

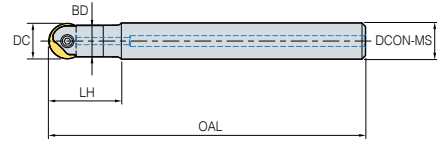


Fig. 2



Designation	Stock	Dimension					Part		Available inserts(Ø)	Fig.
		DCX	DCON-MS	BDX	LH	OAL	Clamp screw	Wrench		
LBE 080080S-S08C	●	8	8	7.5	80	136	ETND02506F	TWP07S	8, 9	1
080100S-S08C	●	8	8	7.5	100	156				
080020S-S08C-130	●	8	8	7.5	20	130	ETND02506F	TWP07S	8, 9	2
080020S-S08C-150	●	8	8	7.5	20	150				
100080S-S10C	●	10	10	9.5	80	136	ETND0307F	TWP08S	10, 11	1
100120S-S10C	●	10	10	9.5	120	176				
100023S-S10C-130	●	10	10	9.5	23	130	ETND0307F	TWP08S	10, 11	2
100023S-S10C-170	●	10	10	9.5	23	170				
120100S-S12C	●	12	12	11.5	100	156	ETND03509	TWP10S	12, 13	1
120150S-S12C	●	12	12	11.5	150	206				
120025S-S12C-150	●	12	12	11.5	25	150	ETND03509	TWP10S	12, 13	2
120025S-S12C-200	●	12	12	11.5	25	200				
160100S-S16C	●	16	16	15.5	100	160	ETND0413	TWP15S	16, 17	1
160150S-S16C	●	16	16	15.5	150	210				
160030S-S16C-160	●	16	16	15.5	30	160	ETND0413	TWP15S	16, 17	2
160030S-S16C-210	●	16	16	15.5	30	210				
200120S-S20C	●	20	20	19.5	120	190	ETKD0516	TWP20	20, 21	1
200170S-S20C	●	20	20	19.5	170	240				
200035S-S20C-190	●	20	20	19.5	35	190	ETKD0516	TWP20	20, 21	2
200035S-S20C-240	●	20	20	19.5	35	240				
250140S-S25C		25	25	24.5	140	220	ETKD0620	TWP25	25, 26	1
250170S-S25C		25	25	24.5	170	250				
250040S-S25C-220		25	25	24.5	40	220	ETKD0620	TWP25	25, 26	2
250040S-S25C-250		25	25	24.5	40	250				
300140S-S32C		30	32	29.5	140	230	ETGD0825	TWP40	30, 31	1
300170S-S32C		30	32	29.5	170	260				
300050S-S32C-230		30	32	29.5	50	230	ETGD0825	TWP40	30, 31	2
300050S-S32C-260		30	32	29.5	50	260				
320140S-S32C		32	32	31.5	140	230	ETGD0825	TWP40	32, 33	1
320170S-S32C	●	32	32	31.5	170	260				
320050S-S32C-230		32	32	31.5	50	230	ETGD0825	TWP40	32, 33	2
320050S-S32C-260		32	32	31.5	50	260				

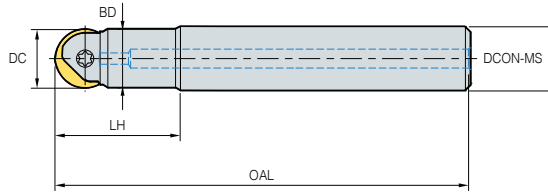
Available inserts B8 ~ B10

● : Stock item

# LBE08/10/12/16/20/25/30/32

Taper type

Steel Shank (Ball type)



Designation	Stock	Dimension					Part		Available inserts(Ø)
		DCX	DCON-MS	BDX	LH	OAL	Clamp screw	Wrench	
LBE 080035T-S12	●	8	12	7.5	35	91	ETND02506F	TWP07S	8, 9
080055T-S12	●	8	12	7.5	55	111			
080075T-S12	●	8	12	7.5	75	131			
100035T-S12	●	10	12	9.5	35	91	ETND0307F	TWP08S	10, 11
100055T-S12	●	10	12	9.5	55	111			
100075T-S12	●	10	12	9.5	75	131			
120055T-S12	●	12	12	10.4	55	111	ETND03509	TWP10S	12, 13
120085T-S16	●	12	16	11.5	85	145			
160065T-S16	●	16	16	14	65	125	ETND0413	TWP15S	16, 17
160100T-S20	●	16	20	15.5	100	170			
200075T-S20	●	20	20	17.5	75	145	ETKD0516	TWP20	20, 21
200115T-S25	●	20	25	19.5	115	195			
250090T-S25	●	25	25	22	90	170	ETKD0620	TWP25	25, 26
250135T-S32	●	25	32	24.5	135	225			
300105T-S32	●	30	32	24.5	105	195	ETGD0825	TWP40	30, 31
300160T-S32	●	30	32	24.5	160	250			
320105T-S32	●	32	32	29	105	195	ETGD0825	TWP40	32, 33
320160T-S32	●	32	32	29	160	250			

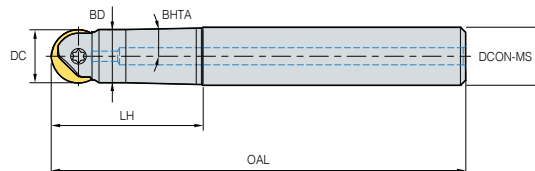
Available inserts B8 ~ B10

● : Stock item

# LBE12/16/20/25/30/32

Straight type

Steel Shank (Ball type)



Designation	Stock	Dimension					Part		Available inserts(Ø)
		DCX	DCON-MS	BDX	LH	OAL	Clamp screw	Wrench	
LBE 120035S-S12	●	12	12	11.5	35	91	ETND03509	TWP10S	12, 13
160035S-S16	●	16	16	15.5	35	95	ETND0413	TWP15S	16, 17
200040S-S20	●	20	20	19.5	40	110	ETKD0516	TWP20	20, 21
250045S-S25	●	25	25	24.5	45	125	ETKD0620	TWP25	25, 26
300055S-S32	●	30	32	29.5	55	145	ETGD0825	TWP40	30, 31
320055S-S32	●	32	32	31.5	55	145	ETGD0825	TWP40	32, 33

Available inserts B8 ~ B10

● : Stock item

## LRE10/12/16/20/25/30/32

Carbide Shank (Corner R type)

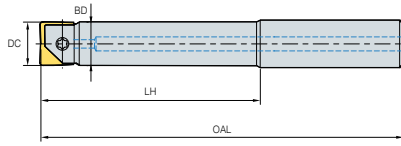


Fig. 1

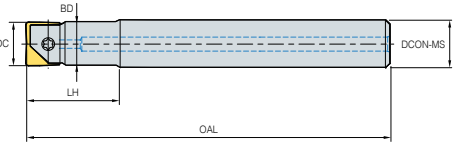


Fig. 2



LRE	Designation	Stock	Dimension					Part		Available inserts(Ø)	Fig.
			DCX	DCON-MS	BDX	LH	OAL	Clamp screw	Wrench		
	100080S-S10C		10	10	9.5	80	136	ETND0307F	TWP08S	10, 11	1
	100120S-S10C		10	10	9.5	120	176				
	100023S-S10C-130		10	10	9.5	23	130	ETND0307F	TWP08S	10, 11	2
	100023S-S10C-170		10	10	9.5	23	170				
	120100S-S12C		12	12	11.5	100	156	ETND03509	TWP10S	12, 13	1
	120150S-S12C		12	12	11.5	150	206				
	120025S-S12C-150		12	12	11.5	25	150	ETND03509	TWP10S	12, 13	2
	120025S-S12C-200		12	12	11.5	25	200				
	160100S-S16C		16	16	15.5	100	160	ETND0413	TWP15S	16, 17	1
	160150S-S16C		16	16	15.5	150	210				
	160030S-S16C-160		16	16	15.5	30	160	ETND0413	TWP15S	16, 17	2
	160030S-S16C-210		16	16	15.5	30	210				
	200120S-S20C		20	20	19.5	120	190	ETKD0516	TWP20	20, 21	1
	200170S-S20C		20	20	19.5	170	240				
	200035S-S20C-190		20	20	19.5	35	190	ETKD0516	TWP20	20, 21	2
	200035S-S20C-240		20	20	19.5	35	240				
	250140S-S25C		25	25	24.5	140	220	ETKD0620	TWP25	25, 26	1
	250170S-S25C		25	25	24.5	170	250				
	250040S-S25C-220		25	25	24.5	40	220	ETKD0620	TWP25	25, 26	2
	250040S-S25C-250		25	25	24.5	40	250				
	300140S-S32C		30	32	29.5	140	230	ETGD0825	TWP40	30, 31	1
	300170S-S32C		30	32	29.5	170	260				
	300050S-S32C-230		30	32	29.5	50	230	ETGD0825	TWP40	30, 31	2
	300050S-S32C-260		30	32	29.5	50	260				
	320140S-S32C		32	32	31.5	140	230	ETGD0825	TWP40	32, 33	1
	320170S-S32C		32	32	31.5	170	260				
	320050S-S32C-230		32	32	31.5	50	230	ETGD0825	TWP40	32, 33	2
	320050S-S32C-260		32	32	31.5	50	260				

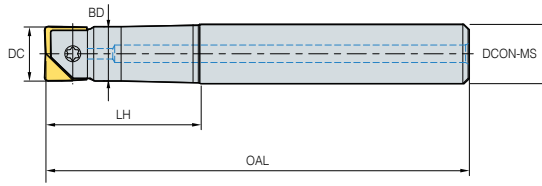
Available inserts B8 ~ B10

● : Stock item

# LRE10/12

Taper type

Steel Shank (Corner R type)



Designation	Stock	Dimension					Part		Available inserts(Ø)
		DCX	DCON-MS	BD	LH	OAL	Clamp screw	Wrench	
LRE	100025T-S12	10	12	9.5	25	111	ETND0307F	TWP08S	10, 11
	100050T-S12	10	12	9.5	50	150			
	120060T-S16	12	16	11.5	60	160	ETND03509	TWP10S	12, 13

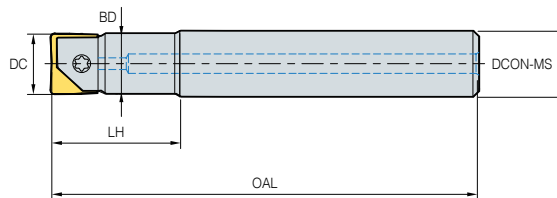
Available inserts **B8 - B10**

● : Stock item

# LRE12/16/25/30/32

Straight type

Steel Shank (Corner R type)



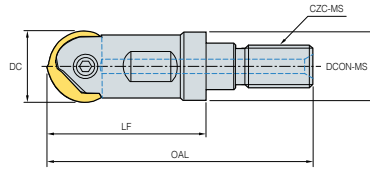
Designation	Stock	Dimension					Part		Available inserts(Ø)
		DCX	DCON-MS	BD	LH	OAL	Clamp screw	Wrench	
LRE	120030S-S12	12	12	11.5	30	111	ETND03509	TWP10S	12, 13
	160050S-S16	16	16	15.5	50	131			
	160060S-S16	16	16	15.5	60	160			
	200060S-S20	20	20	19.5	60	145	ETKD0516	TWP20	20, 21
	200080S-S20	20	20	19.5	80	180			
	250070S-S25	25	25	24.5	70	145	ETKD0620	TWP25	25, 26
	250100S-S25	25	25	24.5	100	225			
	300070S-S32	30	32	29.5	70	160			
	300100S-S32	30	32	29.5	100	225	ETGD0825	TWP40	30, 31
	320080S-S32	32	32	31.5	80	160			
	320100S-S32	32	32	31.5	100	225			

Available inserts **B8 - B10**

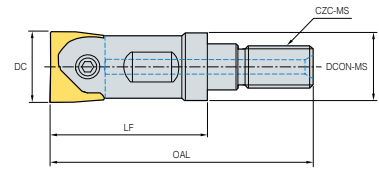
● : Stock item



## LBE-MHD



LBH



LRH



Designation	Stock	Dimension						Part		Available inserts(Ø)
		CZC-MS	DCX	OAL	LF	DCON-MS	Clamp screw	Wrench		
<b>LBE 100-MHD-M06</b>	●	M06	10, 11	40	9.5	6.5	ETND0307F	TWP08S	10, 11	
<b>120-MHD-M06</b>	●	M06	12, 13	40	11	6.5	ETND03509	TWP10S	12, 13	
<b>160-MHD-M08</b>	●	M08	16, 17	47	14.5	8.5	ETND0413	TWP15S	16, 17	
<b>200-MHD-M10</b>	●	M10	20, 21	56	18	10.5	ETKD0516	TWP20	20, 21	
<b>250-MHD-M12</b>	●	M12	25, 26	69	22.5	12.5	ETKD0620	TWP25	25, 26	
<b>300-MHD-M16</b>	●	M16	30, 31	77	28	17	ETGD0825	TWP40	30, 31	
<b>320-MHD-M16</b>	●	M16	32	77	29	17	ETGD0825	TWP40	32, 33	

(mm)

Available inserts **B8 ~ B10** Available adaptor **B400**

● : Stock item

Designation: LBE320-MHD-M16  
Modular head threading measure size (M16)

=

Adaptor spec.: MAT-M16-035-S32S  
Adaptor threading measure (M16)

# BFE

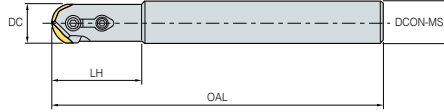


Fig. 1

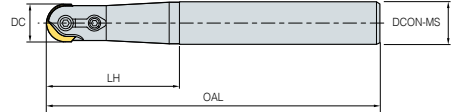


Fig. 2



(mm)

	Designation	Stock	DCX	DCON-MS	LH	OAL	APMX	Fig.
BFE	16-S	●	16	16	36	140	8.0	1
	16-M	●	16	20	65	170	8.0	2
	16-L	●	16	25	65	200	8.0	2
	20-S	●	20	20	45	160	10.0	1
	20-M	●	20	25	80	200	10.0	2
	20-L	●	20	25	80	250	10.0	2
	25-S		25	25	45	160	12.5	1
	25-M	●	25	32	90	210	12.5	2
	25-L		25	32	90	300	12.5	2
	30-S		30	32	65	175	15.0	2
	30-M		30	32	100	250	15.0	2
	30-L		30	32	100	350	15.0	2
	32-S		32	32	56	175	16.0	1
	32-M	●	32	32	100	250	16.0	1
32-L	●	32	32	100	350	16.0	1	

● : Stock item

## Available inserts

RC



	Designation	Coated	page
		PC210F	
RC	16	●	B16
	20	●	
	25	●	
	30		
	32	●	

## Recommended cutting conditions

	Workpiece	Cutting conditions	
		vc(m/min)	fz(mm/t)
P	General steel (SS41, SM25C) Over HB180	150 ~ 250	0.10 ~ 0.30
	Alloy steel (SM55C, SCM) Under HB300	100 ~ 200	0.10 ~ 0.20
K	Cast iron Under HB300	100 ~ 200	0.10 ~ 0.30

## Parts

Specification	Screw	Clamp	Clamp screw	Stopper Ring	Wrench
Ø16	FTGA0513	CBH4.5R1	CTX04513	ER03	TW20
Ø20	FTGA0517	CBH4.5R2	CTX04513	ER03	TW20
Ø25	FTGA0621	CBH5R1	CTX0517	ER04	TW20
Ø30, 32	FTGA0826	CBH6R1	CTX0621	ER05	TW25

Available inserts B16

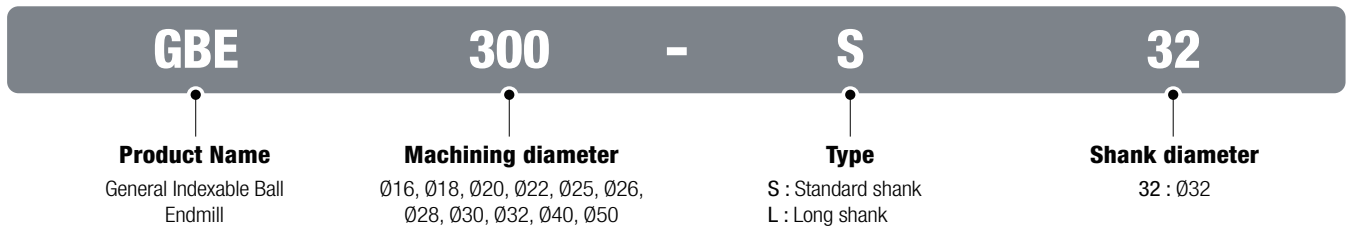
# B Technical Information for GBE





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

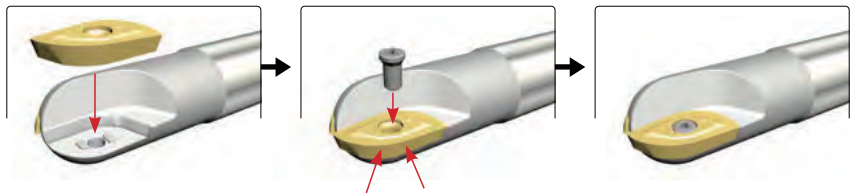
### Code system



Internal	External	
		<ul style="list-style-type: none"> <li>• High accuracy machining &amp; large depth of cut applications                             <ul style="list-style-type: none"> <li>- Run-out: within 0.05 mm</li> <li>- R accuracy: within 0.05 mm</li> </ul> </li> <li>• Various diameters (Ø16, Ø18, Ø20, Ø22, Ø25, Ø26, Ø28, Ø30, Ø32, Ø40, Ø50)</li> <li>• Minimal cutting resistance due to Helical cutting-edge</li> <li>• Anti-rotation of insert due to concave bottom &amp; stable setting by flank support</li> <li>• Long tool life &amp; better processing due to 2 cutting inserts</li> <li>• Better tool life with new grade</li> </ul>
		
Flank support	Concave bottom	

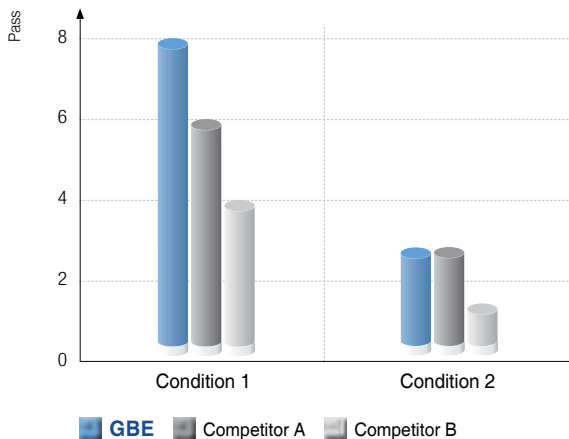
Multi-edge type	Single-edge type	Modular type	
			<ul style="list-style-type: none"> <li>• Various diameters (Ø16, Ø18, Ø20, Ø22, Ø25, Ø26, Ø28, Ø30, Ø32, Ø40, Ø50)</li> <li>• Improved chip treatment with internal coolant (cutting-edge portion)</li> <li>• Long tool life &amp; better processing</li> <li>• Easy insert setting with projection part to prevent vibration during processing</li> </ul>
			Projection

**How to set insert**



1. Set the insert onto the holder projection seat
2. Push the insert into the pocket as shown by red arrows and screw down with wrench

**Performance evaluation**



**Cutting conditions**

Class	Cutting speed (vc)	Feed (fz)	Depth of cut (ap)	Depth of cut (ae)	Workpiece	Etc.
Condition 1	150 m/min	0.15 mm/t	5 mm	8 mm	STD61 (HRC50) + SCM440 (HRC20)	Dry
Condition 2	100 m/min	0.1 mm/t	8 mm	8 mm		

**Inserts/Parts**

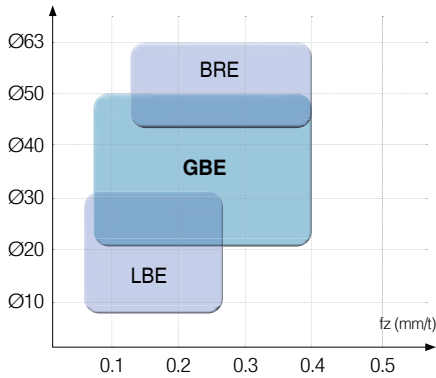
Type	Available inserts			Part			
	Internal	External	Ext. main	Screw		Wrench	
Dia.	Internal	External	Ext. main	Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type
Ø16	ZPET080M-MM	ZPET080S-MM	-	FTKA02555S	-	TW08S	-
Ø18	ZPET090M-MM	ZPET090S-MM	-	FTKA0307	-	TW09S	-
Ø20	ZPET100M-MM	ZPET100S-MM	SPMT060304	FTKA0307	ETNA02506	TW09S	TW07P
Ø22	ZPET110M-MM	ZPET110S-MM	SPMT060304	FTKA0408	ETNA02506	TW15S	TW07P
Ø25	ZPET125M-MM	ZPET125S-MM	SPMT060304	FTKA0409	ETNA02506	TW15S	TW07P
Ø26	ZPET130M-MM	ZPET130S-MM	SDMT090308-MM	FTKA0409	ETNA0408	TW15S	TW15S
Ø28	ZPET140M-MM	ZPET140S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20	TW15S
Ø30	ZPET150M-MM	ZPET150S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S
Ø32	ZPET160M-MM	ZPET160S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S
Ø40	ZPET200M-MM	ZPET200S-MM	SPMT120408-MM	FTGA0614	ETNA0511	TW20-100	TW20S
Ø50	ZPET250M-MM	ZPET250S-MM	SPMT120408-MM	FTGA0818	ETNA0511	TW25S	TW20S

# B Technical Information for GBE

## Recommended cutting conditions

Workpiece	Machining type	Hardness (HRC)	vc (m/min)	fz (mm/t)	ap (mm)	ae (mm)
Carbon, Alloy steel	Flank	Under 25	160~250	0.1~0.5	0.3~0.5D	0.2~0.3D
	Groove		120~200	0.1~0.5	0.3~0.5D	-
	Deep flank		160~250	0.1~0.5	1.0~1.5D	0.1~0.2D
Carbon, Alloy steel	Flank	Under 45	120~200	0.1~0.5	0.3~0.5D	0.2~0.3D
	Groove		120~160	0.1~0.5	0.3~0.5D	-
	Deep flank		120~200	0.1~0.5	1.0~1.5D	0.1~0.2D
Mold Alloy steel	Flank	30~40	120~200	0.1~0.3	0.3~0.5D	0.2~0.3D
	Groove		120~160	0.1~0.3	0.3~0.5D	-
	Deep flank		120~200	0.1~0.3	1.0~1.5D	0.1~0.2D
Cast iron (GC, GCD)	Flank	20~30	150~300	0.2~0.7	0.3~0.5D	0.2~0.3D
	Groove		150~300	0.2~0.7	0.3~0.5D	-
	Deep flank		150~300	0.2~0.7	1.0~1.5D	0.1~0.2D
Heat-treated steel	Flank	50~60	40~100	0.1~0.3	0.3~0.5D	0.2~0.3D
	Groove		40~100	0.1~0.3	0.3~0.5D	-
	Deep flank		40~100	0.1~0.3	1.0~1.5D	0.1~0.2D




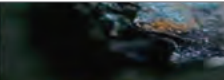











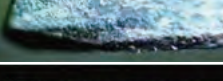




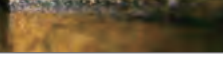


## Line-up for indexable ball endmill



Type	Application				
	Quality	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 conditions		Wear resistance photos		
 <p><b>Workpiece</b> KP4M(HRC33), Dry  <b>Condition</b> vc = 280m/min            fz = 0.25mm/t            ap = 5~10mm            ae = 5~10mm            vf = 1,486mm/min            n = 2,971rpm</p> <p><b>Tool</b>            Holder : GBE300-S32            Insert : ZPET150M-MM(PC3700)            ZPET150S-MM(PC3700)</p> <p><b>Cutting time : 4 Pass</b></p>	<p><b>Top</b></p> <p>Internal</p> <p>External</p> <p><b>Flank</b></p> <p>Internal</p> <p>External</p>	<b>GBE</b>	Com.A	Com.B
				
				
				
 <p><b>Workpiece</b> STD11(HRC20), Dry  <b>Condition</b> vc = 250m/min            fz = 0.2mm/t            ap = 5mm            ae = 5mm            vf = 1,062mm/min            n = 2,653rpm</p> <p><b>Tool</b>            Holder : GBE300-S32            Insert : ZPET150M-MM(PC3700)            ZPET150S-MM(PC3700)</p> <p><b>Cutting time : 4 Pass</b></p>	<p><b>Top</b></p> <p>Internal</p> <p>External</p> <p><b>Flank</b></p> <p>Internal</p> <p>External</p>	<b>GBE</b>	Com.A	Com.B
				
				
				
				

**GBE**(Single-edge)

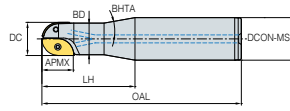


Fig. 1

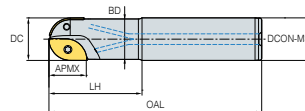


Fig. 2

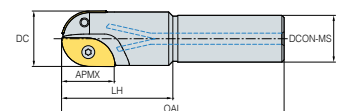


Fig. 3



Designation	Stock	Dimension					Available inserts		Part		Fig.
		DCX	DCON-MS	BD	LH	OAL	Internal	External	Screw	Wrench	
									Int./Ext. type	Int./Ext. type	
GBE 160-S20		16	20	15	50	130	ZPET080M-MM	ZPET080S-MM	FTKA02555S	TW08S	1
		16	20	15	90	200	ZPET080M-MM	ZPET080S-MM	FTKA02555S	TW08S	
		18	20	16.2	60	130	ZPET090M-MM	ZPET090S-MM	FTKA0307	TW09S	
		18	20	16.2	80	200	ZPET090M-MM	ZPET090S-MM	FTKA0307	TW09S	
	●	20	25	18.6	60	140	ZPET100M-MM	ZPET100S-MM	FTKA0307	TW09S	
	●	20	25	18.6	80	250	ZPET100M-MM	ZPET100S-MM	FTKA0307	TW09S	
		22	25	20.7	70	140	ZPET110M-MM	ZPET110S-MM	FTKA0408	TW15S	
		22	25	20.7	100	250	ZPET110M-MM	ZPET110S-MM	FTKA0408	TW15S	
	●	25	32	23.2	70	150	ZPET125M-MM	ZPET125S-MM	FTKA0409	TW15S	
	●	25	32	23.2	100	300	ZPET125M-MM	ZPET125S-MM	FTKA0409	TW15S	
260-S32		26	32	24.4	70	150	ZPET130M-MM	ZPET130S-MM	FTKA0409	TW15S	1
		26	32	24.4	100	300	ZPET130M-MM	ZPET130S-MM	FTKA0409	TW15S	
280-S32		28	32	26.2	70	150	ZPET140M-MM	ZPET140S-MM	FTGA0511-P	TW20	1
		28	32	26.2	120	300	ZPET140M-MM	ZPET140S-MM	FTGA0511-P	TW20	
300-S32		30	32	27.8	70	160	ZPET150M-MM	ZPET150S-MM	FTGA0511-P	TW20-100	1
	●	30	32	27.8	120	350	ZPET150M-MM	ZPET150S-MM	FTGA0511-P	TW20-100	
320-S32	●	32	32	29.8	70	160	ZPET160M-MM	ZPET160S-MM	FTGA0511-P	TW20-100	2
	●	32	32	29.8	120	350	ZPET160M-MM	ZPET160S-MM	FTGA0511-P	TW20-100	
400-S42	●	40	42	37.8	100	200	ZPET200M-MM	ZPET200S-MM	FTGA0614	TW20-100	2
		40	42	37.8	150	350	ZPET200M-MM	ZPET200S-MM	FTGA0614	TW20-100	
500-S42		50	42	47.4	100	200	ZPET250M-MM	ZPET250S-MM	FTGA0818	TW25-100	3
		50	42	47.4	100	350	ZPET250M-MM	ZPET250S-MM	FTGA0818	TW25-100	

Available inserts **B33**

● : Stock item

## GBE(Multi-edge)

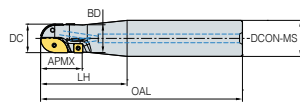


Fig. 1

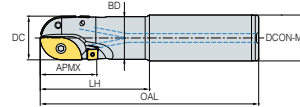


Fig. 2

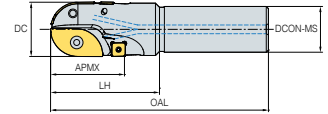


Fig. 3



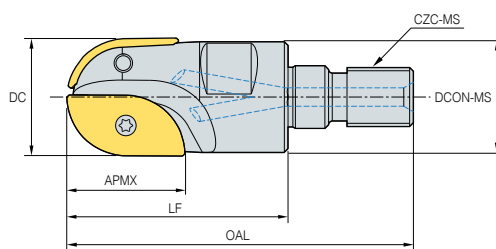
(mm)

Designation	Stock	Dimension					Available inserts			Part				Fig.
		DCX	DCON-MS	BD	LH	OAL	Internal	External	Ext. main	Screw		Wrench		
										Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type	
<b>GBE 200M-S25</b>	●	20	25	18.6	70	150	ZPET100M-MM	ZPET100S-MM	SPMT060304	FTKA0307	ETNA02506	TW09S	TW07P	1
<b>200M-L25</b>	●	20	25	18.6	70	250	ZPET100M-MM	ZPET100S-MM	SPMT060304	FTKA0307	ETNA02506	TW09S	TW07P	
<b>220M-S25</b>		22	25	20.7	80	150	ZPET110M-MM	ZPET110S-MM	SPMT060304	FTKA0408	ETNA02506	TW15S	TW07P	
<b>220M-L25</b>		22	25	20.7	80	250	ZPET110M-MM	ZPET110S-MM	SPMT060304	FTKA0408	ETNA02506	TW15S	TW07P	
<b>250M-S32</b>		25	32	23.2	80	180	ZPET125M-MM	ZPET125S-MM	SPMT060304	FTKA0409	ETNA02506	TW15S	TW07P	
<b>250M-L32</b>	●	25	32	23.2	80	300	ZPET125M-MM	ZPET125S-MM	SPMT060304	FTKA0409	ETNA02506	TW15S	TW07P	
<b>260M-S32</b>		26	32	24.4	80	180	ZPET130M-MM	ZPET130S-MM	SDMT090308-MM	FTKA0409	ETNA0408	TW15S	TW15S	
<b>260M-L32</b>		26	32	24.4	80	300	ZPET130M-MM	ZPET130S-MM	SDMT090308-MM	FTKA0409	ETNA0408	TW15S	TW15S	
<b>280M-S32</b>		28	32	26.2	80	180	ZPET140M-MM	ZPET140S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20	TW15S	
<b>280M-L32</b>		28	32	26.2	80	300	ZPET140M-MM	ZPET140S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20	TW15S	
<b>300M-S32</b>	●	30	32	27.8	100	200	ZPET150M-MM	ZPET150S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
<b>300M-L32</b>	●	30	32	27.8	100	350	ZPET150M-MM	ZPET150S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
<b>320M-S32</b>	●	32	32	29.8	100	200	ZPET160M-MM	ZPET160S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
<b>320M-L32</b>	●	32	32	29.8	100	350	ZPET160M-MM	ZPET160S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
<b>400M-S42</b>		40	42	37.8	100	200	ZPET200M-MM	ZPET200S-MM	SPMT120408-MM	FTGA0614	ETNA0511	TW20-100	TW20S	2
<b>400M-L42</b>		40	42	37.8	100	350	ZPET200M-MM	ZPET200S-MM	SPMT120408-MM	FTGA0614	ETNA0511	TW20-100	TW20S	
<b>500M-S42</b>		50	42	47.4	100	200	ZPET250M-MM	ZPET250S-MM	SPMT120408-MM	FTGA0818	ETNA0511	TW25-100	TW20S	3
<b>500M-L42</b>		50	42	47.4	100	350	ZPET250M-MM	ZPET250S-MM	SPMT120408-MM	FTGA0818	ETNA0511	TW25-100	TW20S	

Available inserts **B20, B27, B33**

● : Stock item

# GBEM

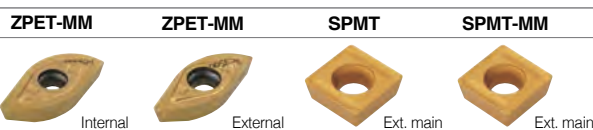


(mm)

Designation	Stock	Dimension					Available inserts	
		CZC-MS	DCX	OAL	LF	DCON-MS	Internal	External
<b>GBEM 160-M08</b>		M08	16	47	30	15	ZPET080M-MM	ZPET080S-MM
<b>200-M10</b>		M10	20	56	35	18.6	ZPET100M-MM	ZPET100S-MM
<b>250-M12</b>		M12	25	69	45	23.2	ZPET125M-MM	ZPET125S-MM
<b>300-M16</b>		M16	30	77	50	27.8	ZPET150M-MM	ZPET150S-MM
<b>320-M16</b>		M16	32	77	50	29.8	ZPET160M-MM	ZPET160S-MM

● : Stock item

## Available inserts



Designation	Coated				page	Designation	Coated				page
	NCM325	PC2510	PC3700	PC5300			NCM325	PC2510	PC3700	PC5300	
<b>SPMT 060304</b>	●				B27	<b>ZPET 080S-MM</b>				B33	
<b>120408-MM</b>			●	●		<b>090S-MM</b>					
<b>SDMT 090308-MM</b>			●	●	<b>100S-MM</b>		●	●	●		
<b>ZPET 080M-MM</b>					<b>110S-MM</b>						
<b>090M-MM</b>					<b>125S-MM</b>		●	●	●		
<b>100M-MM</b>		●	●	●	<b>130S-MM</b>						
<b>110M-MM</b>					<b>140S-MM</b>						
<b>125M-MM</b>		●	●	●	<b>150S-MM</b>			●	●		
<b>130M-MM</b>					<b>160S-MM</b>		●	●	●		
<b>140M-MM</b>					<b>200S-MM</b>			●			
<b>150M-MM</b>			●	●	<b>250S-MM</b>						
<b>160M-MM</b>		●	●	●							
<b>200M-MM</b>			●								
<b>250M-MM</b>											

## Parts

Specification	Screw		Wrench	
	Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type
Ø16	FTKA0255S	-	TW08S	-
Ø18, Ø20	FTKA0307	ETNA02506	TW09S	TW07P
Ø25	FTKA0409	ETNA02506	TW15S	TW07P
Ø30	FTGA0511-P	ETNA0408	TW20-100	TW15S
Ø32	FTGA0511-P	ETNA0408	TW20-100	TW15S

Designation: **GBEM320-M16**  
Modular head threading measure size (M16)

II

Adaptor spec.: **MAT-M16-035-S32S**  
Adaptor threading measure (M16)

Available inserts **B20, B27, B33** Available adaptor **B400**



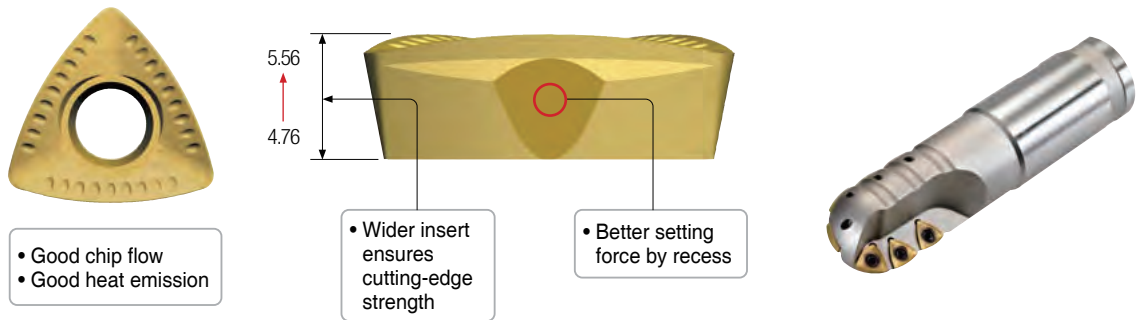
# B Technical Information for BRE

Better tool life with its anti-breakage special surface treatment

## BRE

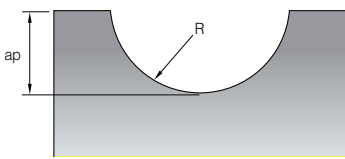
- **Cutting performance:** Good chip control & Superior cutting performance with optimal cutting-edge line
- **High rigidity body:** Better tool life and special surface treatment to strengthen the holder
  - Easy to set and good durability with TCRX screw
  - Good chip control with our 3D flute design & improved external quality
- **Insert:** Grade available for high speed & feed applications due to its 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



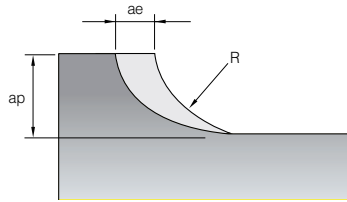
### ➤ BRE machining type for roughing & Recommended cutting conditions

#### Machining type 1



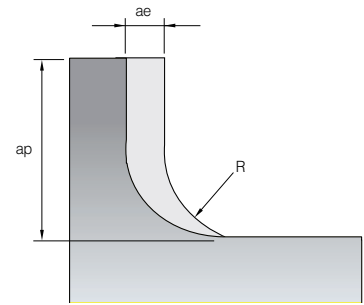
•  $ap = 0.3D \sim 0.5D$

#### Machining type 2



•  $ae = 0.2D \sim 0.3D$  •  $ap = 0.3D \sim 0.5D$

#### Machining type 3



•  $ae = 0.1D \sim 0.5D$  •  $ap = 1.2D \sim 1.5D$

Workpiece	Machining type	Cutting speed (m/min)	Feed (mm/t)	Grade
Carbon/alloy steel	1	120~220	0.1~0.4	NCM325
	2	120~220	0.2~0.4	NCM325
	3	100~180	0.1~0.3	NCM325
Alloy steel	1	100~200	0.1~0.4	NCM325
	2	100~200	0.2~0.4	NCM325
	3	80~160	0.1~0.3	NCM325
Tool steel	1	80~150	0.1~0.3	NCM325
	2	80~150	0.15~0.35	NCM325
	3	60~120	0.1~0.3	NCM325
High hardness material (HRC35~45)	1	60~120	0.1~0.3	NCM325
	2	60~120	0.1~0.3	NCM325
	3	50~80	0.1~0.2	NCM325
Cast iron	1	100~180	0.2~0.5	NCM325
	2	100~180	0.2~0.5	NCM325
	3	80~160	0.15~0.4	NCM325

# BRE

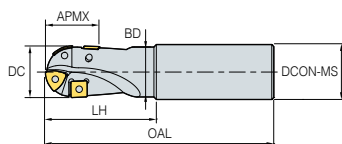


Fig. 1

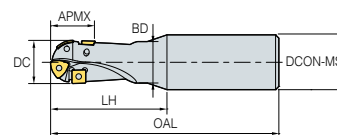


Fig. 2

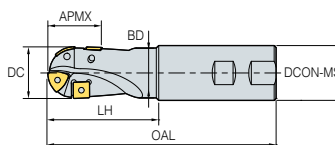


Fig. 3



• GAMP : 0°~10°  
• GAMF : -3°~0°

Designation	Stock	Dimension						Available inserts		Part		kg	Fig.
		DCX	DCON-MS	BD	LH	OAL	Internal	Ext. main	Screw	Wrench			
BRE	20R-S	●	20	20	18.9	50	125	ZDMT080310R-MM	SPMT060304	ETNA02506	TW07P	0.25	1
	20R-M	●	20	20	18.9	75	150					0.31	
	20R-L		20	25	18.9	100	200					0.57	2
	20R-SL	●	20	25	18.9	65	125					0.33	3
	25R-S	●	25	25	23.9	70	150	ZDMT110312.5R-MM	SPMT060304	ETNA02506	TW07P	0.47	1
	25R-M	●	25	25	23.9	95	175					0.56	
	25R-L	●	25	32	23.9	100	200					0.92	2
	25R-SL		25	25	23.9	75	135					0.41	3
	32R-S	●	32	32	30.3	85	175	ZDMT130416R-MM	SDMT090308-MM	ETNA0408	TW15S	0.87	1
	32R-M	●	32	32	30.3	100	200					1.02	
32R-L	●	32	32	30.3	150	250	1.3						
32R-SL		32	32	30.3	75	150	0.71					3	

● : Stock item

## Available inserts

SPMT      ZDMT-R-MM



Designation	Coated					page
	NCM325	PC3700	PC5300	PC5400	PC6100	
SPMT 060304	●					B27
ZDMT 080310R-MM		●	●			B33
110312.5R-MM			●			
130416R-MM		●	●			

## Parts

Specification			
Ø20~Ø25	ETNA02506	-	TW07P
Ø32	ETNA0408	TW15S	-

Available inserts B27, B33

## BRE

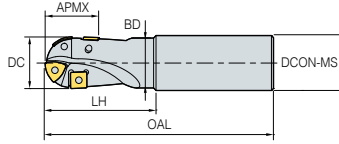


Fig. 1

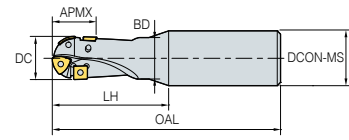


Fig. 2

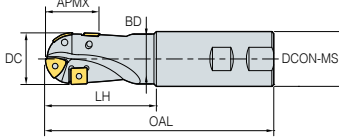


Fig. 3

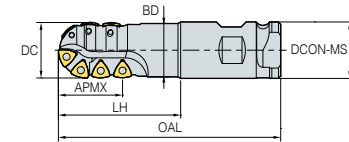


Fig. 4



Designation	Stock	Dimension					Available inserts		Part		kg	Fig.	
		DCX	DCON-MS	BD	LH	OAL	Internal	Ext. main	Screw	Wrench			
BRE 40R-S	●	40	42	38.3	85	175	ZPMT160520R-MM	SPMT120408-MM SPMT120508-MMN	ETNA0511	TW20-100	1.37	1	
40R-S-40		40	40	38.3	85	175					1.35		
40R-M	●	40	42	38.3	100	200					1.62		
40R-M-40		40	40	38.3	100	200					1.6		
40R-L	●	40	42	38.3	150	250					2.1		
40R-L-40		40	40	38.3	150	250					2		
40R-SL		40	42	38.3	80	160					1.21		3
40R-SL-40		40	40	38.3	80	160					1.2		
50R-S	●	50	42	48	100	200	ZPMT160525R-MM	SPMT120408-MM SPMT120508-MMN	ETNA0511	TW20-100	2.02	1	
50R-S-40		50	40	48	100	200					1.93		
50R-L		50	42	48	100	300					3.1		
50R-L-40		50	40	48	100	300					2.92		
50R-SL	●	50	42	48	100	250					2.56		
50R-SL-40		50	40	48	100	250					2.5		
63R-S		63	42	61	100	200	ZPMT160531.5R-MM	SPMT120408-MM SPMT120508-MMN	ETNA0511	TW20-100	2.41	1	
63R-S-40		63	40	61	100	200					2.4		
63R-L		63	42	61	100	300					3.5		
63R-L-40		63	40	61	100	300					3.3		
63R-SL	●	63	42	61	100	250					2.95		
63R-SL-40		63	40	61	100	250					2.9		
40XR-SC40		40	40	38.3	110	200	ZPMT160520R-MM	ETNA0511	TW20-100	1.43	4		
40XR-LC40	●	40	40	38.3	150	250				1.89			
50XR-SC50.8	●	50	50.8	48	110	200	ZPMT160525R-MM ZPMT160525R-MR	ETNA0511	TW20-100	2.34	4		
50XR-LC50.8		50	50.8	48	150	250				3.06			

● : Stock item

### Available inserts

SDMT-MM    SPMT-MM    ZPMT-R-MM    ZPMT-R-MR



Designation	Coated					page
	NCM325	PC3700	PC5300	PC5400	PC6100	
SDMT 090308-MM		●	●			B20
SPMT 120408-MM		●	●			B27
120508-MMN						
ZPMT 160520R-MM		●	●			B33
160525R-MM		●	●			
160525R-MR						
160531.5R-MM			●			

### Parts

Specification	Screw	Wrench
Ø40~Ø63	ETNA0511	TW20-100

Available inserts B20, B27, B33

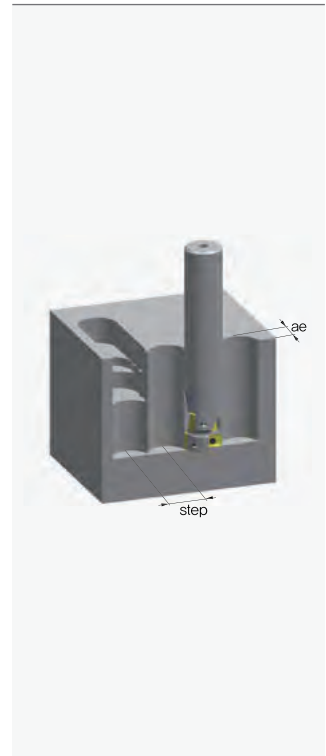
Multifunctional milling tool for mold making

# HAVE

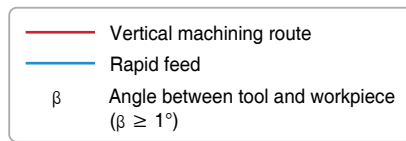
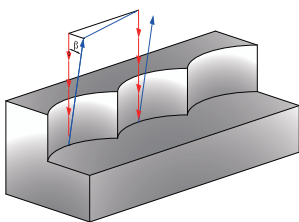
- Tools for Z-axis feed plunge machining to cut faster and more effectively in vertical machining
- Able to utilize the full diameter of the tools, thanks to the position and design of the inserts

➤ **Maximum step in vertical machining**

ae	Diameter(mm)										
	16	17	20	21	25	26	32	33	35	40	50
	max step(mm)										
1	7.7	8	8.7	8.9	9.7	10	11.1	11.3	11.6	12.4	14
2	10.5	10.9	12	12.3	13.5	13.8	15.4	15.7	16.2	17.4	19.5
3	12.4	12.9	14.2	14.6	16.2	16.6	18.6	18.9	19.5	21	23.7
4	13.8	14.4	16	16.4	18.3	18.7	21.1	21.5	22.2	24	27.1
5	14.8	15.4	17.3	17.8	20	20.4	23.2	23.6	24.4	26.4	30
6	15.4	16.2	18.3	18.9	21.3	21.9	24.9	25.4	26.3	28.5	32.4
7	15.8	16.7	19	19.7	22.4	23	26.4	26.9	28	30.3	34.6
8	16	16.9	19.5	20.3	23.3	24	27.7	28.2	29.3	32	36.6
9	15.8	16.9	19.9	20.7	24	24.7	28.7	29.3	30.5	33.4	38.4
10	15.4	16.7	20	20.9	24.4	25.2	29.6	30.3	31.6	34.6	40
11	14.8	16.2	19.9	20.9	24.8	25.6	30.3	31.1	32.4	35.7	41.4
12	13.8	15.4	19.5	20.7	24.9	25.9	30.9	31.7	33.2	36.6	42.7
13	12.4	14.4	19	20.3	24.9	26	31.4	32.2	33.8	37.4	43.8
14	10.5	12.9	18.3	19.7	24.8	25.9	31.7	32.6	34.2	38.1	44.9
15	7.7	10.9	17.3	18.9	24.4	25.6	31.9	32.8	34.6	38.7	45.8
16	-	8	16	17.8	24	25.2	32	32.9	34.8	39.1	46.6
17	-	-	14.2	16.4	23.3	24.7	31.9	32.9	34.9	39.5	47.3
18	-	-	12	14.6	22.4	24	31.7	32.8	34.9	39.7	48
19	-	-	8.7	12.3	21.3	23	31.4	32.6	34.8	39.9	48.5
20	-	-	-	8.9	20	21.9	30.9	32.2	34.6	40	48.9
21	-	-	-	-	18.3	20.4	30.3	31.7	34.2	39.9	49.3
22	-	-	-	-	16.2	18.7	29.6	31.1	33.8	39.7	49.6
23	-	-	-	-	13.5	16.6	28.7	30.3	33.2	39.5	49.8
24	-	-	-	-	9.7	13.8	27.7	29.3	32.4	39.1	49.9
25	-	-	-	-	-	10	26.4	28.2	31.6	38.7	50



➤ **Programming in vertical cutting**



- Reduce 30% of feed till 3 mm machining
- Have the tool be away from the workpiece more than  $1^\circ$  ( $\beta$ ) after finishing the machining or when moving the tool to the next step.

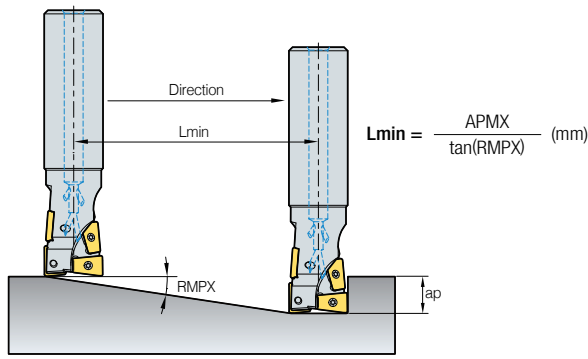
➤ **Cutting conditions**

Designation	Hardness	Grade	Cutting conditions	Ø16, 17		Ø20, 21		Ø25, 26		Ø32, 33		Ø35		Ø40		Ø50		
				vc (m/min)	Feed (mm/rev)	Step (mm)	Feed (mm/rev)	Step (mm)	Feed (mm/rev)	Step (mm)	Feed (mm/rev)	Step (mm)	Feed (mm/rev)	Step (mm)	Feed (mm/rev)	Step (mm)		
P	Mild steel, Low Carbon steel (SS400)	Under 200HB	PC3700	200 (150~250)	0.03	0.20	0.04	0.30	0.05	0.30	0.05	0.30	0.06	0.30	0.06	0.30	0.07	0.30
	Carbon steel, Alloy steel (SM50C, SCM440)	Under 100HrC	PC3700	180 (120~220)	0.03	0.20	0.04	0.30	0.05	0.30	0.05	0.30	0.05	0.30	0.06	0.30	0.06	0.30
M	Stainless steel (STS)	Under 270HB	PC5300	160 (120~200)	0.03	0.15	0.04	0.25	0.05	0.25	0.05	0.25	0.05	0.25	0.06	0.25	0.06	0.25
K	Cast iron (GC, GCD)	350N/mm <sup>2</sup>	PC5300	200 (150~250)	0.04	0.40	0.05	0.50	0.06	0.50	0.06	0.50	0.06	0.50	0.07	0.50	0.07	0.50
H	Hardened steel	40~55HrC	PC5300	80 (50~120)	0.03	0.15	0.03	0.25	0.04	0.25	0.04	0.25	0.04	0.25	0.04	0.25	0.05	0.25

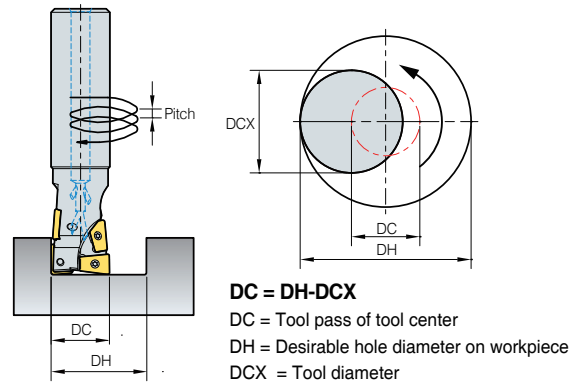
※ Please note - Step machining is required for aspect ratio under 0.5D or initial drilling

# B Technical Information for HAVE

## 1. Ramping



## 2. Helical cutting



### ▶ Cutting conditions for ramping and helical operation

Designation	Hardness	Grade	Cutting Speed vc (m/min)	Ø16, 17				Ø20, 21				Ø25, 26				Ø32, 33				Ø35				Ø40				Ø50			
				ØDh (mm)	ap (mm/t)	fz (mm/t)	max pitch (mm)	ØDh (mm)	ap (mm/t)	fz (mm/t)	max pitch (mm)	ØDh (mm)	ap (mm/t)	fz (mm/t)	max pitch (mm)	ØDh (mm)	ap (mm/t)	fz (mm/t)	max pitch (mm)	ØDh (mm)	ap (mm/t)	fz (mm/t)	max pitch (mm)	ØDh (mm)	ap (mm/t)	fz (mm/t)	max pitch (mm)	ØDh (mm)	ap (mm/t)	fz (mm/t)	max pitch (mm)
P	≤ 200HB	Mild steel, Low Carbon steel (SS400)	200 (150-250)	19	0.5D	0.15	0.35	23	0.5D	0.18	0.35	29	0.5D	0.2	0.46	37	0.5D	0.25	0.58	41	0.5D	0.28	0.69	47	0.5D	0.3	0.81	58	0.5D	0.35	0.92
		Carbon steel, Alloy Steel (SM50C, SCM440)	180 (120-220)	19	0.5D	0.15	0.26	23	0.5D	0.16	0.26	29	0.5D	0.18	0.35	37	0.5D	0.2	0.44	41	0.5D	0.22	0.53	47	0.5D	0.25	0.61	58	0.5D	0.28	0.70
M	≤ 270HB	Stainless steel (STS)	160 (120-200)	19	0.2D	0.13	0.18	23	0.2D	0.15	0.18	29	0.2D	0.18	0.24	37	0.2D	0.2	0.24	41	0.2D	0.22	0.36	47	0.2D	0.25	0.42	58	0.2D	0.28	0.48
K	≤ 350N/mm²	Cast iron (GC, GCD)	200 (150-250)	19	0.7D	0.17	0.43	23	0.7D	0.2	0.42	29	0.7D	0.2	0.57	37	0.7D	0.25	0.71	41	0.7D	0.28	0.86	47	0.7D	0.3	1.0	58	0.7D	0.35	1.14
H	40-55HRC	Hardened steel	80 (50-120)	19	0.2D	0.1	0.18	23	0.2D	0.12	0.18	29	0.2D	0.13	0.24	37	0.2D	0.15	0.30	41	0.2D	0.17	0.36	47	0.2D	0.18	0.42	58	0.2D	0.2	0.48

### ▶ Recommended cutting conditions for shouldering operation

Designation	Hardness	Grade	Cutting Speed vc (m/min)	Ø16, 17			Ø20, 21			Ø25, 26			Ø32, 33			Ø35			Ø40			Ø50		
				APMX (mm)	APMXEFW (mm)	max fz (mm/t)	APMX (mm)	APMXEFW (mm)	max fz (mm/t)	APMX (mm)	APMXEFW (mm)	max fz (mm/t)	APMX (mm)	APMXEFW (mm)	max fz (mm/t)	APMX (mm)	APMXEFW (mm)	max fz (mm/t)	APMX (mm)	APMXEFW (mm)	max fz (mm/t)	APMX (mm)	APMXEFW (mm)	max fz (mm/t)
P	≤ 200HB	Mild steel, Low Carbon steel (SS400)	200 (150-250)	17	8	0.25	22	10	0.3	27	13	0.35	35	16	0.4	40	18	0.45	44	20	0.5	55	25	0.6
		Carbon steel, Alloy Steel (SM50C, SCM440)	180 (120-220)	17	8	0.2	22	10	0.25	27	13	0.3	35	16	0.35	40	18	0.4	44	20	0.4	55	25	0.5
M	≤ 270HB	Stainless steel (STS)	160 (120-200)	17	8	0.2	22	10	0.25	27	13	0.3	35	16	0.35	40	18	0.4	44	20	0.4	55	25	0.5
K	≤ 350N/mm²	Cast iron (GC, GCD)	200 (150-250)	17	8	0.25	22	10	0.3	27	13	0.35	35	16	0.4	40	18	0.45	44	20	0.5	55	25	0.6
H	40-55HRC	Hardened steel	80 (50-120)	17	5	0.15	22	6	0.2	27	7	0.22	35	8	0.25	40	9	0.3	44	10	0.3	55	14	0.35

### ▶ Recommended cutting conditions for grooving operation

Designation	Hardness	Grade	Cutting Speed vc (m/min)	Ø16, 17		Ø20, 21		Ø25, 26		Ø32, 33		Ø35		Ø40		Ø50	
				APMX (mm)	max fz (mm/t)	APMX (mm)	max fz (mm/t)	APMX (mm)	max fz (mm/t)	APMX (mm)	max fz (mm/t)	APMX (mm)	max fz (mm/t)	APMX (mm)	max fz (mm/t)	APMX (mm)	max fz (mm/t)
P	≤ 200HB	Mild steel, Low Carbon steel (SS400)	200 (150-250)	17	0.15	22	0.18	27	0.2	35	0.25	40	0.27	44	0.3	55	0.35
		Carbon steel, Alloy Steel (SM50C, SCM440)	180 (120-220)	17	0.15	22	0.15	27	0.18	35	0.2	40	0.22	44	0.25	55	0.3
M	≤ 270HB	Stainless steel (STS)	160 (120-200)	17	0.15	22	0.15	27	0.18	35	0.2	40	0.22	44	0.25	55	0.3
K	≤ 350N/mm²	Cast iron (GC, GCD)	200 (150-250)	17	0.15	22	0.18	27	0.2	35	0.25	40	0.27	44	0.3	55	0.35
H	40-55HRC	Hardened steel	80 (50-120)	12	0.1	14	0.12	17	0.15	22	0.15	25	0.18	28	0.18	35	0.22

# HAVE(Single-edge)

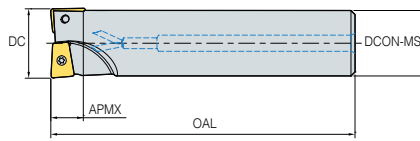


Fig. 1

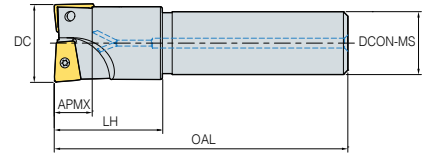


Fig. 2

KAPR 90° • GAMP : 7°~12°  
 • GAMF : -12°~-4°

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	WT	kg	Fig.
<b>HAVE</b>										
0816HR-S16		2	16	16	30	120	7.5	0.2	0.16	1
0816HR-L16		2	16	16	30	200	7.5		0.3	
0817HR-S16		2	17	16	30	120	7.5		0.2	2
0817HR-L16		2	17	16	30	200	7.5	0.3		
1020HR-S20		2	20	20	35	130	9.5	0.3	0.28	1
1020HR-L20		2	20	20	35	210	9.5		0.5	
1021HR-S20		2	21	20	35	130	9.5		0.3	2
1021HR-L20		2	21	20	35	210	9.5	0.5		
1325HR-S25		2	25	25	45	140	12	0.4	0.44	1
1325HR-L25		2	25	25	45	220	12		0.7	
1326HR-S25		2	26	25	45	140	12		0.5	2
1326HR-L25		2	26	25	45	220	12	0.8		
1632HR-S32		2	32	32	50	150	15.4	0.8	0.77	1
1632HR-L32		2	32	32	50	250	15.4		1.4	
1633HR-S32		2	33	32	50	150	15.4		0.8	2
1633HR-L32		2	33	32	50	250	15.4	1.4		
1835HR-S32		2	35	32	50	150	16.7	0.8	0.81	1
1835HR-L32		2	35	32	50	230	16.7		1.3	
2040HR-S32		2	40	32	55	160	19.3	0.9	0.95	2
2040HR-L32		2	40	32	55	240	19.3		1.4	
2550HR-S42		2	50	42	70	170	24	1.7	1.68	2
2550HR-L42		2	50	42	70	250	24		2.5	

● : Stock item

## Available inserts

### XPMT-MM



Designation	Cermet	Coated								Uncoated			page						
	CN30	NC5330	NCM325	NCM335	NCM335	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	G10	H01	
XPMT													●						B32
0802ER-MM													●						
1003ER-MM									●				●						
13T3ER-MM													●						
1604ER-MM													●						
1805ER-MM													●						
2006ER-MM													●						
2507ER-MM													●						

## Parts

Specification	Screw	Wrench
Ø16~Ø17	FTNA0204	TW06S
Ø20~Ø21	FTNA02205	TW09S
Ø25~Ø26	FTKA0307	TW15S
Ø32~Ø33	FTKA0408	TW15S
Ø35		
Ø40	FTGA0511-P	TW20S
Ø50	FTNA0615	

Available inserts **B32**

# B HAVE(Multi-edge)

## HAVE(Multi-edge)

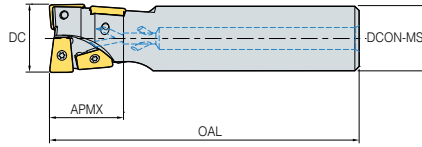


Fig. 1

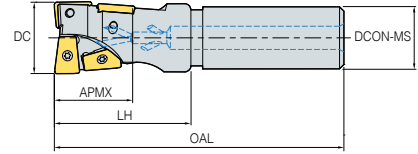


Fig. 2



• GAMP : 7°~12°  
• GAMF : -12°~-4°

Designation		Stock	CICT	DC	DCON-MS	LH	OAL	APMX	WT	kg	Fig.
HAVE	0816HR-S16M		4	16	16	30	120	17.6	0.1	0.15	1
	0816HR-L16M		4	16	16	30	200	17.6		0.3	
	0817HR-S16M		4	17	16	30	120	17.6		0.2	2
	0817HR-L16M		4	17	16	30	200	17.6		0.3	
	1020HR-S20M		4	20	20	35	130	22	0.3	0.26	1
	1020HR-L20M		4	20	20	35	210	22		0.4	
	1021HR-S20M		4	21	20	35	130	22		0.3	2
	1021HR-L20M		4	21	20	35	210	22	0.5		
	1325HR-S25M		4	25	25	45	140	27	0.4	0.41	1
	1325HR-L25M		4	25	25	45	220	27		0.7	
	1326HR-S25M		4	26	25	45	140	27		0.5	2
	1326HR-L25M		4	26	25	45	220	27		0.7	
	1632HR-S32M		4	32	32	50	150	35.2	0.7	0.72	1
	1632HR-L32M		4	32	32	50	250	35.2		1.3	
	1633HR-S32M		4	33	32	50	150	35.2		0.8	2
	1633HR-L32M		4	33	32	50	250	35.2		1.3	
	1835HR-S32M		4	35	32	50	150	40	0.8	0.75	1
	1835HR-L32M		4	35	32	50	230	40		1.2	
	2040HR-S32M		4	40	32	55	160	44	0.9	0.74	2
	2040HR-L32M		4	40	32	55	240	44		1.4	
2550HR-S42M		4	50	42	70	170	55	1.5	1.53	2	
2550HR-L42M		4	50	42	70	250	55		2.4		

● : Stock item

### Available inserts

#### XPMT-MM



Designation	Coated	Coated										Uncoated			page				
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01	
XPMT	0802ER-MM												●						B32
	1003ER-MM								●				●						
	13T3ER-MM												●						
	1604ER-MM												●						
	1805ER-MM												●						
	2006ER-MM												●						
	2507ER-MM												●						

### Parts

Specification	Screw	Wrench
Ø16~Ø17	FTNA0204	TW06S
Ø20~Ø21	FTNA02205	
Ø25~Ø26	FTKA0307	TW09S
Ø32~Ø33	FTKA0408	TW15S
Ø35		
Ø40	FTGA0511-P	TW20S
Ø50	FTNA0615	

Available inserts B32

Guarantee strong constrain force by 2-side constraint

# BT/HSK Tooling System

## Code system

• Single • Multi-edge

<b>BT50</b>	<b>HAT</b>	<b>4</b>	<b>063</b>	<b>114</b>	<b>-</b>	<b>4</b>	<b>F</b>
<b>Arbor type</b> BT30/40/50 HSK40/50/63/100	<b>Item Name</b> AM HAT RM	<b>Type</b> 1000 type 1500 type 2000 type 3000 type 4000 type	<b>Diameter</b> 063 : Ø63	<b>Length (ap)</b> Length : 114 HS : Coolant + Single		<b>No. of flute</b> No. of flute : 4 No. of tooth : 4	<b>Front piece or total length</b> Front Piece (Y/N) Y : F No code : No L : Long type

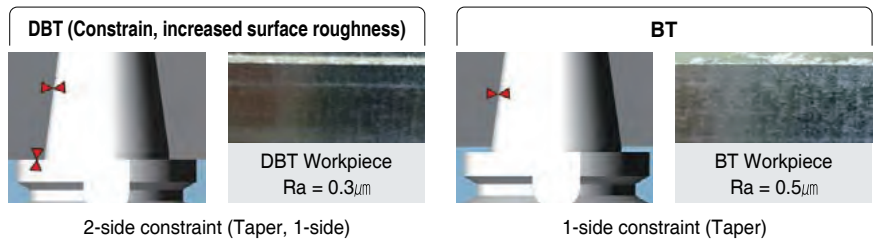
• Modular

<b>BT50</b>	<b>HAT</b>	<b>M16</b>	<b>092</b>
<b>Arbor type</b> BT30/40/50 HSK40/50/63/100	<b>Item category</b> MAT	<b>M Dimension</b> M16	<b>Total length (L)</b> 092 : 92

## DBT System

### Feature of (D)BT arbor

- Guaranteed strong force by 2-side constraint
- Guarantee strengthen cutting at high speed
- Guaranteed superior surface roughness



## HSK System

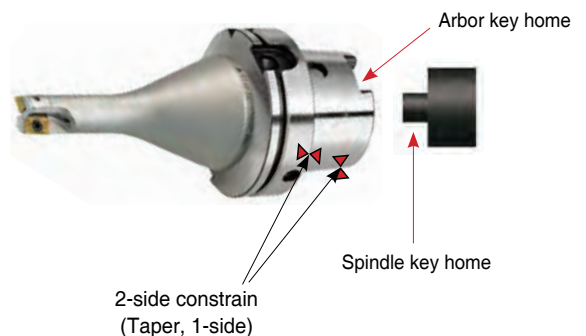
### Feature of HSK arbor

- Guaranteed strong constrain force by 2-side constraint
- Guaranteed strengthened cutting at high speeds
- Guaranteed superior surface roughness
- Guaranteed repeatability at axle direction and repeated direction

### HSK tolerance comparison

Arbor type	Max. tolerance	Min. tolerance	Available facility
HSK-T	0.075	0.035	Multi-tasking machine
HSK-A	0.33	0.08 (General)	MCT

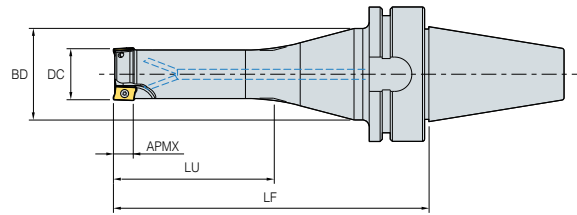
### HSK A: HSK T key tolerance comparison





# B BT Tooling System (Alpha Mill)

## BT30 AM1000HS



• GAMP : 7,5°~13°  
• GAMF : -28°~-7°

(mm)

	Designation	Stock	CICT	DC	BD	LU	LF	APMX
BT30	AM1010HS-2		2	10	41	35	112	5.6
	AM1012HS-2		2	12	41	35	112	5.6
	AM1012HS-3		3	12	41	35	112	5.6
	AM1016HS-3		3	16	41	35	112	5.6
	AM1016HS-4		4	16	41	35	112	5.6
	AM1020HS-4		4	20	41	45	112	5.6
	AM1020HS-5		5	20	41	45	112	5.6

● : Stock item

### Available inserts

APMT-MA APMT-MM



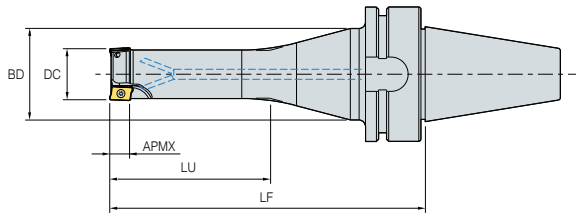
Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 0602PDFR-MA																	●
060208PDFR-MA																	
060202PDSR-MM		●							●				●	●			
0602PDSR-MM		●					●	●	●	●	●		●	●			
060208PDSR-MM		●							●				●	●			
060212R-MM		●											●	●			
060216R-MM													●	●			

### Parts

Specification	Screw	Wrench	Wrench
Ø10~Ø20	FTKA01842	-	TW06S-A

Available inserts B5, B6

# BT40 AM1500HS



• GAMP : 7.5°~13°  
• GAMF : -28°~-7°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
<b>BT40</b>							
AM15016HS-2		2	16	50	45	117	9
AM15016HS-2L		2	16	50	35	152	9
AM15020HS-2		2	20	50	60	132	9
AM15020HS-3		3	20	50	60	132	9
AM15020HS-2L		2	20	50	50	152	9
AM15025HS-3		3	25	50	75	147	9
AM15025HS-4		4	25	50	75	147	9
AM15025HS-3L		3	25	50	65	167	9
AM15032HS-4		4	32	50	80	147	9
AM15032HS-5		5	32	50	80	147	9
AM15032HS-4L		4	32	50	70	167	9
AM15040HS-5		5	40	50	60	132	9
AM15040HS-6		6	40	50	60	132	9
AM15040HS-5L		5	40	50	50	132	9

● : Stock item

## Available inserts

APMT-MA APMT-ML APMT-MM



Designation	Cermet	Coated											Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01	
APMT																	●	B4 B5
0903PDFR-MA																		
090308PDFR-MA																		
0903PDER-ML													●	●				
090308PDER-ML													●	●				
0903PDSR-MM		●					●	●	●	●			●	●				
090308PDSR-MM		●								●			●	●				
090312R-MM										●			●	●				
090316R-MM		●								●			●	●				
090320R-MM										●			●	●				

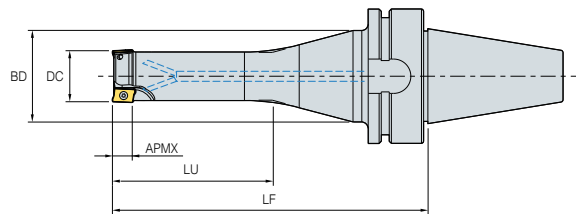
## Parts

Specification			
Ø16~Ø40	FTKA02565S	TW08S	-

Available inserts B5, B6

# B BT Tooling System (Alpha Mill)

## BT40 AM2000HS



KAPR  
90°

- GAMP : 7°~10°
- GAMF : -20°~-7°

(mm)

	Designation	Stock	CICT	DC	BD	LU	LF	APMX
BT40	AM2016HS-2		2	49	50	45	117	11
	AM2016HS-2L		2	16	50	35	152	11
	AM2020HS-2		2	20	50	60	132	11
	AM2020HS-2L		2	20	50	50	152	11
	AM2025HS-3		3	25	50	75	147	11
	AM2025HS-3L		3	25	50	65	167	11
	AM2032HS-4		4	32	50	80	147	11
	AM2032HS-4L		4	32	50	70	167	11
	AM2040HS-5		5	40	50	60	132	11
	AM2040HS-5L		5	40	50	50	152	11
	AM2050HS-6		6	50	50	60	132	11
	AM2050HS-6L		6	50	50	50	152	11

● : Stock item

### Available inserts

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN





Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 11T3PDFR-MA																●	
11T308PDFR-MA																	
11T3PDER-ML													●	●			
11T308PDER-ML													●	●			
11T3PDSR-MM		●	●		●		●	●	●	●			●	●			
11T3PDSR-MF		●						●	●				●	●			
11T308PDSR-MM		●						●		●	●		●	●			
11T312PDSR-MM		●						●			●		●	●			
11T316R-MM		●						●					●	●			
11T318R-MM		●						●					●	●			
11T324R-MM		●						●					●	●			
11T3PDSR-MN2													●				
11T3PDSR-MN3													●				

B5  
B6

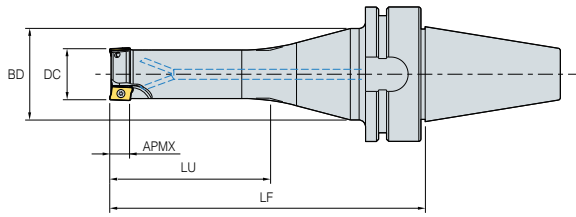
\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. \* Please use the cutters with even teeth.

### Parts

Specification	 Screw	 Wrench
Ø16-Ø50	FTKA02565S	TW08S

Available inserts B5, B6

# BT50 AM3000HS



• GAMP : 7°~10°  
• GAMF : -20°~-7°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
<b>BT50</b>							
AM3025HS-2		2	25	80	65	158	16
AM3025HS-2L		2	25	80	55	168	16
AM3032HS-3		3	32	80	70	158	16
AM3032HS-3L		3	32	80	60	168	16
AM3040HS-4		4	40	80	50	143	16
AM3040HS-4L		4	40	80	40	153	16
AM3050HS-5		5	50	80	50	143	16
AM3050HS-5L		5	50	80	40	153	16

● : Stock item

## Available inserts



Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 1604PDFR-MA																	●
160404PDFR-MA																	
1604PDER-ML													●	●			
160404PDER-ML													●	●			
1604PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			
1604PDSR-MF		●						●	●				●	●			
160410PDSR-MM									●				●	●			
160416PDSR-MM			●						●				●	●			
160424R-MM			●						●				●	●			
160430R-MM									●				●	●			
160432R-MM			●						●				●	●			
1604PDSR-MN3													●				
1604PDSR-MN4													●				

\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers.\* Please use the cutters with even teeth.

B5  
B6

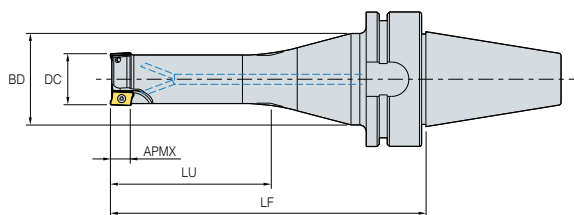
## Parts

Specification	Screw	Wrench
Ø25	FTKA0408	TW15S
Ø32~Ø50	FTKA0410	TW15S

Available inserts **B5, B6**

# B BT Tooling System (Alpha Mill)

## BT50 AM4000HS



- GAMP : 7°~10°
- GAMF : -20°~-7°

(mm)

	Designation	Stock	CICT	DC	BD	LU	LF	APMX
BT50	AM4020HS-1		1	20	80	50	143	17
	AM4025HS-2		2	25	80	65	158	17
	AM4032HS-3		3	32	80	70	158	17
	AM4032HS-3L		3	32	80	60	168	17
	AM4040HS-4		4	40	80	50	143	17
	AM4040HS-4L		4	40	80	40	153	17
	AM4050HS-5		5	50	80	50	143	17
	AM4050HS-5L		5	50	80	40	153	17

● : Stock item

### Available inserts



Designation	Cermet	Coated										Uncoated		page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10
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													●	●		

B5  
B6

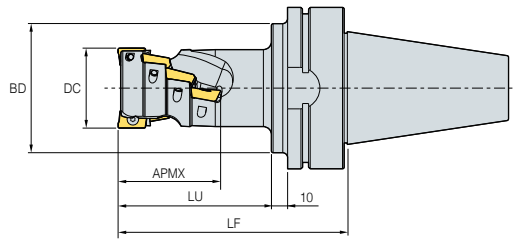
\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. \* Please use the cutters with even teeth.

### Parts

Specification	Screw	Wrench
Ø20~Ø25	FTKA0408	TW15S
Ø32~Ø50	FTKA0410	TW15S

Available inserts B5, B6

# BT30/40 AM1000



KAPR  
90°  
• GAMP : -12.5°~13°  
• GAMF : -17°~-6°

Designation		Stock	CICT	DC	BD	LU	LF	APMX
BT30	AM1016015-2		6	16	41	30	62	15.5
	AM1020020-3		12	20	41	32	64	20.5
	AM1025025-4		20	25	41	39	71	25.5
BT40	AM1016015-2		6	16	50	30	67	15.5
	AM1020020-3		12	20	50	32	69	20.5
	AM1025025-4		20	25	50	39	76	25.5

● : Stock item

## Available inserts

APMT-MA      APMT-MM



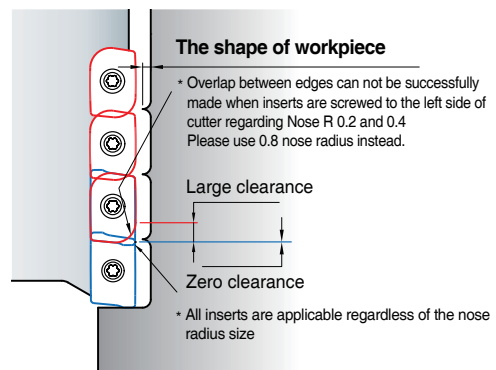
Designation	Cermet	Coated												Uncoated		page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10		H01	
APMT 0602PDFR-MA																	●	B5 B6
060208PDFR-MA																		
060202PDSR-MM		●						●					●	●				
0602PDSR-MM		●					●	●	●	●			●	●				
060208PDSR-MM		●								●			●	●				
060212R-MM		●											●	●				
060216R-MM													●	●				

## Parts

Specification			
Ø16~Ø25	FTKA01842	-	TW06S-A

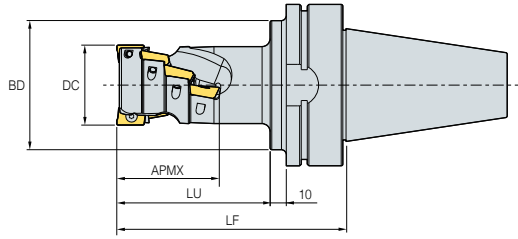
Available inserts **B5, B6**

## Caution when clamping the inserts



# B BT Tooling System (Mono Tool)

## BT30/40 AM1500



KAPR  
90°

- GAMP :  $-12.5^{\circ} \sim 13^{\circ}$
- GAMF :  $-17^{\circ} \sim -6^{\circ}$

(mm)

	Designation	Stock	CICT	DC	BD	LU	LF	APMX
BT30	AM15020026-1		3	20	41	42	74	26.5
	AM15025035-2		8	25	41	50	62	35
	AM15032044-2		10	32	41	60	92	44
BT40	AM15020026-1		3	20	50	42	79	26.5
	AM15025035-2		8	25	50	50	87	35
	AM15032044-2		10	32	50	60	97	44

● : Stock item

### Available inserts

APMT-MA APMT-ML APMT-MM



Designation	Cermet	Coated											Uncoated		page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
APMT 0903PDFR-MA																	●
090308PDFR-MA																	
0903PDER-ML													●	●			
090308PDER-ML													●	●			
0903PDSR-MM		●					●	●	●	●			●	●			
090308PDSR-MM		●											●	●			
090312R-MM													●	●			
090316R-MM													●	●			
090320R-MM									●				●	●			

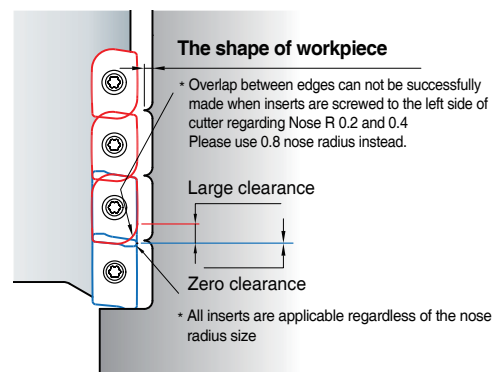
B5  
B6

### Parts

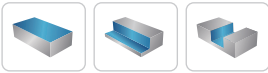
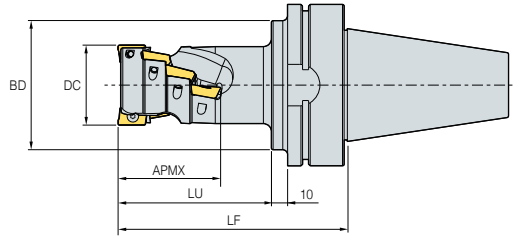
Specification			
Ø20~Ø32	FTKA02565S	TW08S	-

Available inserts B5, B6

### Caution when clamping the inserts



# BT30/40 AM2000



KAPR  
90°

- GAMP : -9°
- GAMF : -13°~ -8°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
<b>BT30</b>							
AM2020029-1		3	20	41	45	77	29.4
AM2025038-2		8	25	45	55	87	38.9
AM2032048-2		10	32	45	65	97	48.5
AM2040058-2		14	40	45	75	107	58
AM2050039-4		16	50	45	58	90	39
AM2063039-4		16	63	45	58	90	39
AM2080039-5		20	80	45	63	95	39
AM2100039-6		24	100	45	63	95	39
<b>BT40</b>							
AM2020029-1		3	20	50	45	82	29.4
AM2025038-2		8	25	50	55	92	38.9
AM2032048-2		10	32	50	65	102	48.5
AM2040058-2		14	40	50	75	112	58
AM2050039-4		16	50	50	58	95	39
AM2063039-4		16	63	50	58	95	39
AM2080039-5		20	80	50	63	100	39
AM2100039-6		24	100	50	63	100	39

● : Stock item

## Available inserts

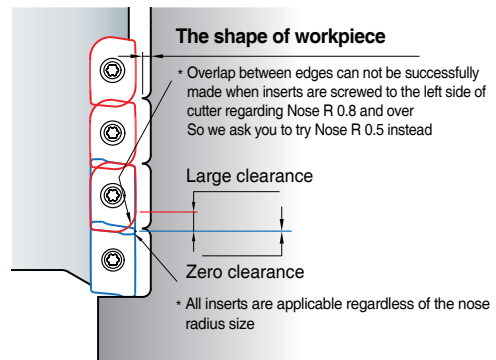


Designation	Cermet		Coated										Uncoated		page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC3300	PC5400		G10	H01
APMT																	●
11T3PDFR-MA																	
11T308PDFR-MA																	
11T3PDER-ML													●	●			
11T308PDER-ML													●	●			
11T3PDSR-MM		●	●		●		●	●	●	●			●	●			
11T3PDSR-MF		●							●				●	●			
11T308PDSR-MM		●							●			●	●	●			
11T312PDSR-MM		●							●			●	●	●			
11T316R-MM		●							●			●	●	●			
11T318R-MM		●							●			●	●	●			
11T324R-MM		●							●			●	●	●			
11T3PDSR-MN3													●	●			
11T3PDSR-MN4													●	●			

B5  
B6

- ※ 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



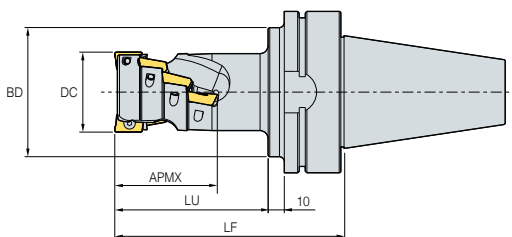
## Parts

Specification	Screw	Wrench
Ø20~Ø100	FTKA02565S	TW08S

Available inserts **B5, B6**



## BT50 AM3000



KAPR  
90°

- GAMP : 13°~15°
- GAMF : -11°~-4°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
BT50	AM3050043-2	6	50	80	72	120	43
	AM3063057-4	16	63	80	86	134	57
	AM3080071-4	20	80	80	100	148	71
	AM3100071-6	30	100	80	100	148	71

● : Stock item

### Available inserts

APMT-MA APMT-ML APMT-MM APMT-MN



Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 1604PDFR-MA																	●
160404PDFR-MA																	
1604PDER-ML													●	●			
160404PDER-ML													●	●			
1604PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			
1604PDSR-MF		●							●	●			●	●			
160410PDSR-MM													●	●			
160416PDSR-MM		●							●				●	●			
160424R-MM		●							●				●	●			
160430R-MM									●				●	●			
160432R-MM		●							●				●	●			
1604PDSR-MN3													●	●			
1604PDSR-MN4													●	●			

※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers.

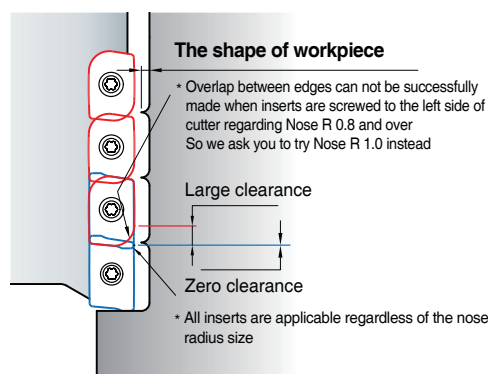
※ Please use the cutters with even teeth.

### Parts

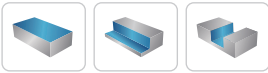
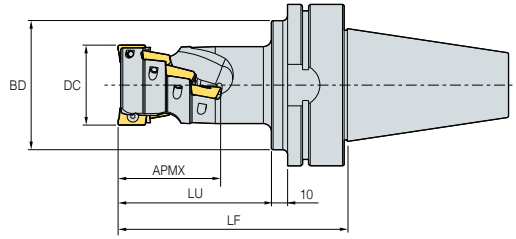
Specification	Screw	Wrench
Ø50~Ø100	FTKA0410	TW15S

Available inserts B5, B6

### Caution when clamping the inserts



# BT50 AM4000



KAPR  
90°

- GAMP : 13°~15°
- GAMF : -11°~-4°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
<b>BT50</b> AM4040046-2		6	40	80	75	123	46
AM4050061-2		8	50	80	95	143	61
AM4063061-4		16	63	80	90	138	61
AM4080076-4		20	80	90	105	153	76
AM4100076-6		30	100	80	105	153	76

● : Stock item

## Available inserts

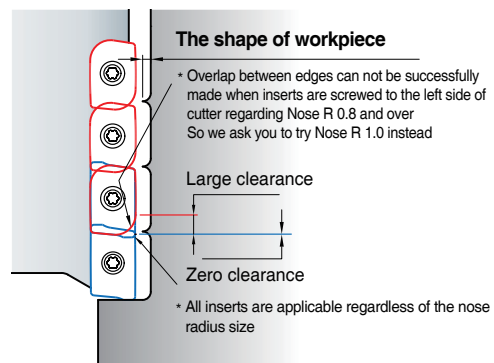


Designation	Cermet		Coated										Uncoated		page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
APMT 1806PDFR-MA																	●
180604PDFR-MA																	●
180612PDFR-MA																	●
180616PDFR-MA																	●
180620PDFR-MA																	●
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																	●

B5  
B6

- ※ 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

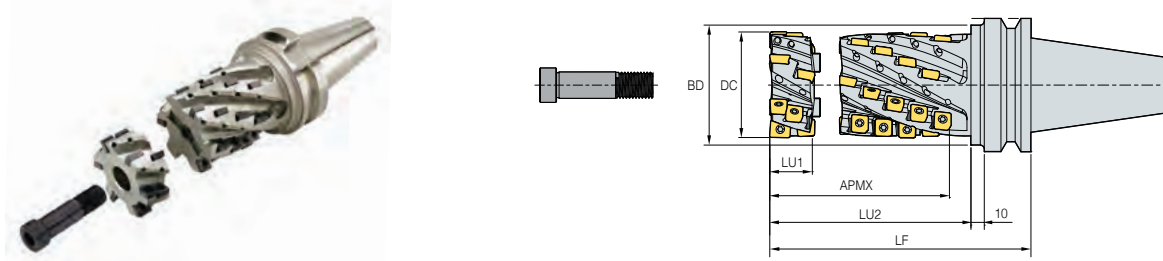


## Parts

Specification	Screw	Wrench
Ø40~Ø100	FTKA0410	TW15S

Available inserts **B5, B6**

## BT50 HAT4000



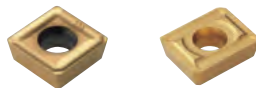
Designation	Stock	CICT		DC	LU	LF	APMX	Application
		SPMT	ZPMT					
BT50- (Set)	HAT4050094-2F	10	1	50	119	160	94	HAT4050032-2F
	HAT4050104-2F	11	1	50	129	170	104	
	HAT4050114-2F	12	1	50	139	180	114	
	HAT4063094-4F	20	2	63	119	160	94	HAT4063032-4F
	HAT4063104-4F	22	2	63	129	170	104	
	HAT4063114-4F	24	2	63	139	180	114	
	HAT4080094-4F	20	2	80	119	160	94	HAT4080033-4F
	HAT4080104-4F	22	2	80	129	170	104	
HAT4080114-4F	24	2	80	139	180	114		
(Front Piece)	HAT4050032-2F	3	1	50	32	-	32	-
	HAT4063032-4F	6	2	63	32	-	32	
	HAT4080033-4F	6	2	80	33	-	33	

(mm)

● : Stock item

### Available inserts

SPMT-MMN      ZPMT-MMN




Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM25	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
SPMT 120508-MMN																	B27
ZPMT 1505PPSR-MMN																	B33

### Set specification

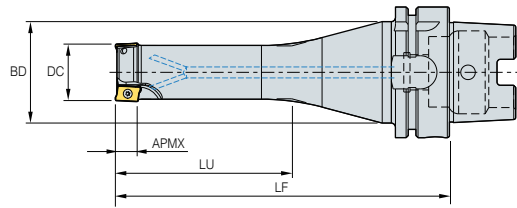
Set Designation	Designation	Front Piece	Clamping Bolt
HAT4050094-2F HAT4050104-2F HAT4050114-2F	HAT4050062-2F HAT4050072-2F HAT4050082-2F	HAT4050032-2F	HSB1255
HAT4063094-4F HAT4063104-4F HAT4063114-4F	HAT4063062-4F HAT4063072-4F HAT4063082-4F	HAT4063032-4F	HSB1670
HAT4080094-4F HAT4080104-4F HAT4080114-4F	HAT4080061-4F HAT4080071-4F HAT4080081-4F	HAT4080033-4F	HSB1682

### Parts

Specification	 Screw	 Wrench
Ø50~Ø80	ETNA0511	TW20

Available inserts B27, B33

# HSK63A AM1000HS



- GAMP : 7,5°~13°
- GAMF : -28°~-7°

(mm)

	Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK63A	AM1010HS-2		2	10	53	83	116	5.6
	AM1012HS-2		2	12	53	83	116	5.6
	AM1012HS-3		3	12	53	83	116	5.6
	AM1016HS-3		3	16	53	83	116	5.6
	AM1016HS-4		4	16	53	83	116	5.6
	AM1020HS-4		4	20	53	98	131	5.6
	AM1020HS-5		5	20	53	98	131	5.6

● : Stock item

## Available inserts

APMT-MA APMT-MM



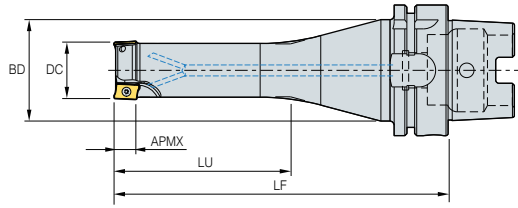
Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9630	PC9540	PC5300		PC5400	G10	H01
APMT 0602PDFR-MA																	●
060208PDFR-MA																	
060202PDSR-MM		●						●				●	●				
0602PDSR-MM		●					●	●	●	●	●	●	●				
060208PDSR-MM		●							●			●	●				
060212R-MM		●										●	●				
060216R-MM												●	●				

## Parts

Specification			
Ø10~Ø20	FTKA01842	-	TW06S-A

Available inserts **B5, B6**

## HSK63A AM1500HS



• GAMP : 7,5°~13°  
• GAMF : -28°~-7°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK63A AM15016HS-2		2	16	53	83	116	9
AM15016HS-2L		2	16	53	118	151	9
AM15020HS-2		2	20	53	98	131	9
AM15020HS-3		3	20	53	98	131	9
AM15020HS-2L		2	20	53	118	151	9
AM15025HS-3		3	25	53	113	146	9
AM15025HS-4		4	25	53	113	146	9
AM15025HS-3L		3	25	53	133	166	9
AM15032HS-4		4	32	53	113	146	9
AM15032HS-5		5	32	53	113	146	9
AM15032HS-4L		4	32	53	133	166	9
AM15040HS-5		5	40	53	98	131	9
AM15040HS-6		6	40	53	98	131	9
AM15040HS-5L		5	40	53	118	151	9

● : Stock item

### Available inserts

APMT-MA APMT-ML APMT-MM



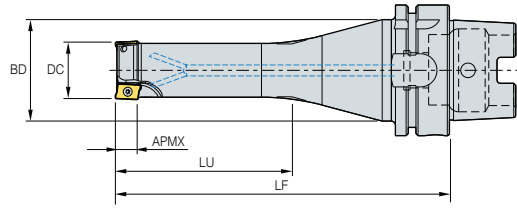
Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 0903PDFR-MA																●	B5 B6
090308PDFR-MA																	
0903PDER-ML													●	●			
090308PDER-ML													●	●			
0903PDSR-MM		●					●	●	●	●			●	●			
090308PDSR-MM		●							●				●	●			
090312R-MM									●				●	●			
090316R-MM			●						●				●	●			
090320R-MM									●				●	●			

### Parts

Specification			
Ø16-Ø40	FTKA02565S	TW08S	-

Available inserts B5, B6

# HSK63A AM2000HS



• GAMP : 7°~10°  
• GAMF : -20°~-7°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
<b>HSK63A</b> AM2016HS-2		2	16	53	83	116	11
AM2016HS-2L		2	16	53	118	151	11
AM2020HS-2		2	20	53	98	131	11
AM2020HS-2L		2	20	53	118	151	11
AM2025HS-3		3	25	53	113	146	11
AM2025HS-3L		3	25	53	133	166	11
AM2032HS-4		4	32	53	113	146	11
AM2032HS-4L		4	32	53	133	166	11
AM2040HS-5		5	40	53	98	131	11
AM2040HS-5L		5	40	53	118	151	11
AM2050HS-6		6	50	53	98	131	11
AM2050HS-6L		6	50	53	118	151	11

● : Stock item



## Available inserts



Designation	Cermet		Coated											Uncoated		page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10		H01
APMT 11T3PDFR-MA																	●
11T308PDFR-MA																	
11T3PDER-ML													●	●			
11T308PDER-ML													●	●			
11T3PDSR-MM		●	●		●		●	●	●	●	●		●	●			
11T3PDSR-MF		●						●	●				●	●			
11T308PDSR-MM		●						●		●	●		●	●			
11T312PDSR-MM		●						●		●			●	●			
11T316R-MM		●						●					●	●			
11T318R-MM		●						●					●	●			
11T324R-MM		●						●					●	●			
11T3PDSR-MN2													●	●			
11T3PDSR-MN3													●	●			

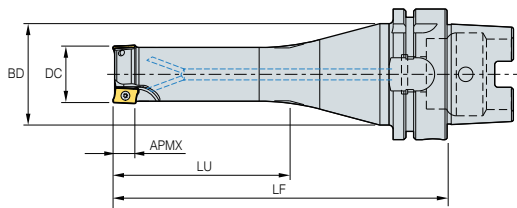
\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. \*Please use the cutters with even teeth.

## Parts

Specification	 Screw	 Wrench
Ø16~Ø50	FTKA02565S	TW08S

Available inserts **B5, B6**

## HSK63A AM3000HS



- GAMP : 7°~10°
- GAMF : -20°~-7°

(mm)

	Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK63A	AM3025HS-2		2	25	53	113	146	16
	AM3025HS-2L		2	25	53	123	156	16
	AM3032HS-3		3	32	53	113	146	16
	AM3032HS-3L		3	32	53	123	156	16
	AM3040HS-4		4	40	53	98	131	16
	AM3040HS-4L		4	40	53	108	141	16
	AM3050HS-5		5	50	53	98	131	16
	AM3050HS-5L		5	50	53	108	141	16

● : Stock item

### Available inserts

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN





Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 1604PDFR-MA																	●
160404PDFR-MA																	
1604PDER-ML													●	●			
160404PDER-ML													●	●			
1604PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			
1604PDSR-MF		●							●	●			●	●			
160410PDSR-MM													●	●			
160416PDSR-MM		●								●			●	●			
160424R-MM		●								●			●	●			
160430R-MM										●			●	●			
160432R-MM			●							●			●	●			
1604PDSR-MN3													●	●			
1604PDSR-MN4													●	●			

B5  
B6

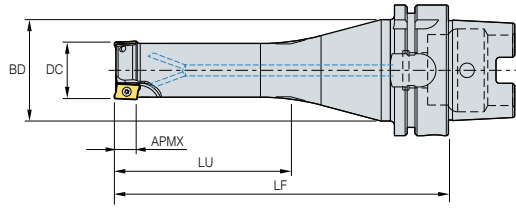
※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. ※Please use the cutters with even teeth.

### Parts

Specification	 Screw	 Wrench
Ø25	FTKA0408	TW15S
Ø32~Ø50	FTKA0410	TW15S

Available inserts B5, B6

# HSK63A AM4000HS



• GAMP : 7°~10°  
• GAMF : -20°~-7°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
<b>HSK63A</b> AM4020HS-1		1	20	53	98	131	17
AM4025HS-2		2	25	53	113	146	17
AM4032HS-3		3	32	53	113	146	17
AM4032HS-3L		3	32	53	123	156	17
AM4040HS-4		4	40	53	98	131	17
AM4040HS-4L		4	40	53	108	141	17
AM4050HS-5		5	50	53	98	131	17
AM4050HS-5L		5	50	53	108	141	17

● : Stock item

## Available inserts



Designation	Cermet		Coated										Uncoated		page		
	CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	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.

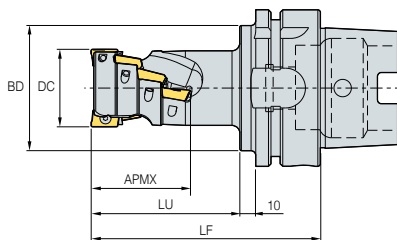
## Parts

Specification	Screw	Wrench
Ø20~Ø25	FTKA0408	TW15S
Ø32~Ø50	FTKA0410	TW15S

Available inserts **B5, B6**



## HSK63A AM1000



KAPR  
90°  
• GAMP : -12.5°~13°  
• GAMF : -17°~-6°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK63A AM1016015-2		6	16	53	30	66	15.5
AM1020020-3		12	20	53	32	68	20.5
AM1025025-4		20	25	53	39	75	25.5

● : Stock item

### Available inserts

APMT-MA APMT-MM



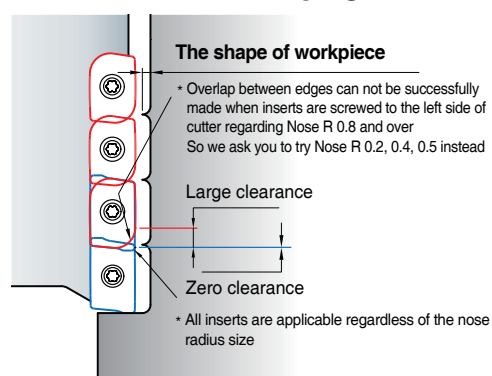
Designation	Cermet	Coated										Uncoated		page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 0602PDFR-MA																●	
060208PDFR-MA																	
060202PDSR-MM		●							●				●	●			
0602PDSR-MM		●					●	●	●	●	●		●	●			B5
060208PDSR-MM		●							●				●	●			B6
060212R-MM		●											●	●			
060216R-MM													●	●			

### Parts

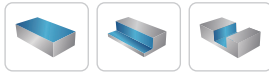
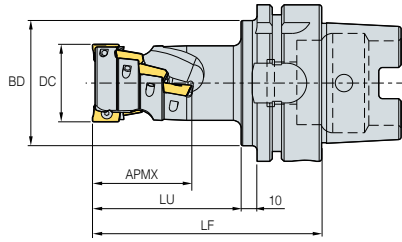
Specification			
Ø16~Ø25	FTKA01842	-	TW06S-A

Available inserts B5, B6

### Caution when clamping the inserts



# HSK63A AM1500



KAPR  
90°

- GAMP :  $-12.5^{\circ} \sim 13^{\circ}$
- GAMF :  $-17^{\circ} \sim -6^{\circ}$

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK63A AM15020026-1		3	20	53	42	78	26.5
AM15025035-2		8	25	53	50	86	35
AM15032044-2		10	32	53	60	96	44

● : Stock item

## Available inserts

APMT-MA APMT-ML APMT-MM



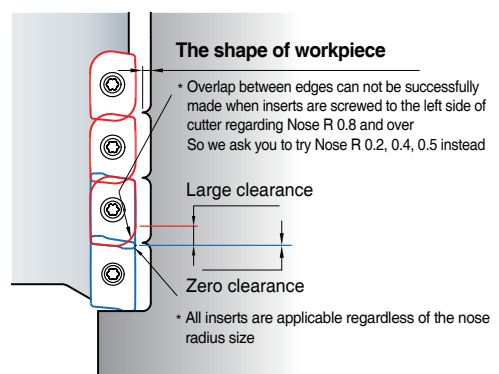
Designation	Cermet	Coated												Uncoated		page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	G10		H01	
APMT 0903PDFR-MA																	●	B5 B6
090308PDFR-MA																		
0903PDER-ML													●	●				
090308PDER-ML													●	●				
0903PDSR-MM		●					●	●	●	●			●	●				
090308PDSR-MM		●											●	●				
090312R-MM										●			●	●				
090316R-MM		●								●			●	●				
090320R-MM										●			●	●				

## Parts

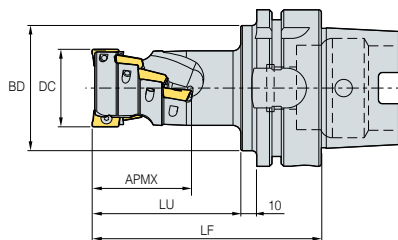
Specification			
Ø20~Ø32	FTKA02565S	TW08S	-

Available inserts **B5, B6**

## Caution when clamping the inserts



## HSK63A AM2000



KAPR  
90°

- GAMP :  $-12.5^{\circ} \sim 13^{\circ}$
- GAMF :  $-17^{\circ} \sim -6^{\circ}$

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK63A AM2020029-1		3	20	53	45	81	29.4
AM2025038-2		8	25	53	55	91	38.9
AM2032048-2		10	32	53	65	101	48.5
AM2040058-2		14	40	53	75	111	58
AM2050039-4		16	50	53	58	94	39
AM2063039-4		16	63	53	58	94	39
AM2080039-5		20	80	53	63	99	39
AM2100039-6		24	100	53	63	99	39

● : Stock item

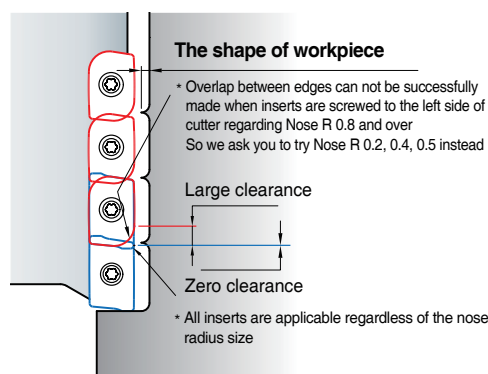
### Available inserts



Designation	Cermet	Coated											Uncoated		page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		G10	H01
APMT 11T3PDFR-MA																	●
11T308PDFR-MA																	
11T3PDER-ML													●	●			
11T308PDER-ML													●	●			
11T3PDSR-MM		●			●		●	●	●	●	●		●	●			
11T3PDSR-MF		●							●				●	●			
11T308PDSR-MM		●									●	●	●	●			
11T312PDSR-MM		●									●		●	●			
11T316R-MM		●											●	●			
11T318R-MM		●											●	●			
11T324R-MM		●						●					●	●			
11T3PDSR-MN3													●				
11T3PDSR-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

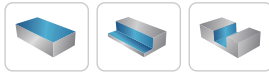
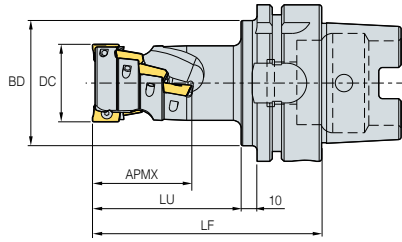


### Parts

Specification	Screw	Wrench
Ø20~Ø100	FTKA02565S	TW08S

Available inserts B5, B6

# HSK100A AM3000



KAPR  
90°

- GAMP :  $-13^{\circ} \sim 15^{\circ}$
- GAMF :  $-11^{\circ} \sim -4^{\circ}$

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK100A AM3050043-2		6	50	88	72	111	43
AM3063057-4		16	63	88	86	125	57
AM3080071-4		20	80	88	100	139	71
AM3100071-6		30	100	88	100	139	71

● : Stock item

## Available inserts



Designation	Cermet	Coated										Uncoated		page			
	CN80	NC5380	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300		PC5400	G10	H01
APMT 1604PDFR-MA																	●
160404PDFR-MA																	
1604PDER-ML													●	●			
160404PDER-ML													●	●			
1604PDSR-MM		●	●		●		●	●	●	●	●	●	●	●			
1604PDSR-MF		●						●	●				●	●			
160410PDSR-MM													●	●			
160416PDSR-MM		●							●				●	●			
160424R-MM		●							●				●	●			
160430R-MM									●				●	●			
160432R-MM		●							●				●	●			
1604PDSR-MN3													●	●			
1604PDSR-MN4													●	●			

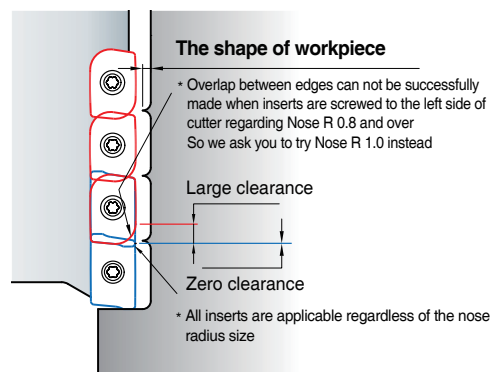
- ※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers.
- ※ Please use the cutters with even teeth.

## Parts

Specification	Screw	Wrench
Ø50~Ø100	FTKA0410	TW15S

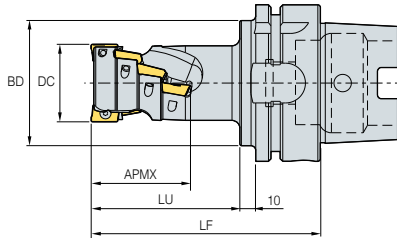
Available inserts **B5, B6**

## Caution when clamping the inserts



# B HSK Tooling System (Mono Tool)

## HSK100A AM4000



Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK100A AM4040046-2		6	40	88	75	114	46
AM4050061-2		8	50	88	95	134	61
AM4063061-4		16	63	88	90	129	61
AM4080076-4		20	80	88	105	144	76
AM4100076-6		30	100	88	105	144	76

● : Stock item

### Available inserts



Designation	Cement								page	Designation	Cement								page														
	CN30	NC5330	NCM325	NCM335	NCM635	NCM545	PC2505	PC2010			PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	GT10	H01		CN30	NC5330	NCM325	NCM335	NCM635	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400
APMT 1806PDFR-MA										B5	APMT 180624PDER-ML											B6											
180604PDFR-MA											180630R-ML																						
180612PDFR-MA											1806PDSR-MM																						
180616PDFR-MA											1806PDSR-MF																						
180620PDFR-MA											180612PDSR-MM																						
180624PDFR-MA											180616PDSR-MM																						
180630R-MA											180620PDSR-MM																						
1806PDER-ML											180624PDSR-MM																						
180604PDER-ML											180630R-MM																						
180612PDER-ML											180632R-MM																						
180616PDER-ML											1806PDSR-MN3																						
180620PDER-ML											1806PDSR-MN4																						

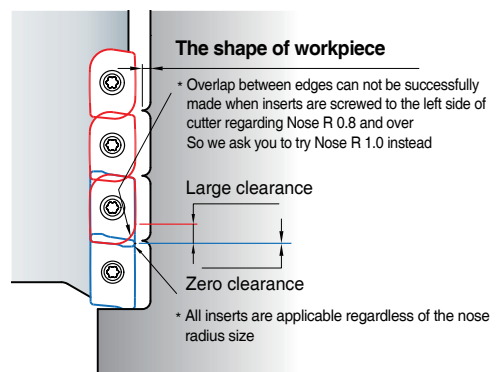
※ Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers.  
 ※ Please use the cutters with even teeth.

### Parts

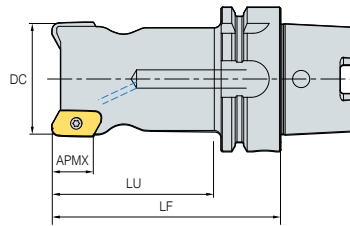
Specification	Screw	Wrench
∅40~∅100	FTKA0410	TW15S


Available inserts B5, B6

### Caution when clamping the inserts



# HSK63A PAV-XD19




 KAPR **90°**

- GAMP : 9° ~ 13°
- GAMF : -11° ~ -13°

Designation	Stock		CICT	DC	BD	LU	LF	APMX
	A	B						
HSK63A- PAV032R-3-100-XD19-A			3	32	63	60	100	17
PAV050R-3-100-XD19-A			3	50	63	72	100	17
PAV032R-3-100-XD19-B			3	32	63	60	100	17
PAV050R-3-100-XD19-B			3	50	63	72	100	17

※ Type A Use Insert Nose R 0.4~3.2, and Type B Use Nose R 4.0~5.0 ● : Stock item  
 ※ 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



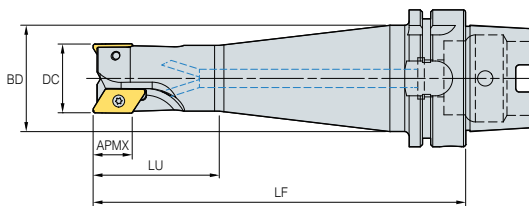
Designation	Coated								Uncoated	page	Designation	Coated								Uncoated	page						
	CN30	NC5330	NCM325	NCM335	NCM535	NCM645	PC3700	PC6100				PC9530	PC9540	PC5300	PC5400	PD1005	PD1010	CN30	NC5330			NCM325	NCM335	NCM535	NCM645	PC3700	PC6100
XDET 190504PEFR-MA									● ●	B31	XDET 190524PEFR-MA										● ●	B31					
190508PEFR-MA									● ●		190530PEFR-MA										● ●						
190512PEFR-MA									● ●		190532PEFR-MA										● ●						
190516PEFR-MA									● ●		190540PEFR-MA										● ●						
190520PEFR-MA									● ●		190550PEFR-MA										● ●						

## Parts

Specification	 Screw	 Wrench
Ø32~Ø50	PTKA0408-A	TW15S

Available inserts **B31**

## HSK63A/100A PAX5000



KAPR  
90°

- GAMP : 5°~17.5°
- GAMF : -14°~-5°

(mm)

Designation	Stock	CICT	DC	BD	LU	LF	APMX
HSK63A PAX5032HR-A, B		2	32	53	58	163	17
HSK100A PAXCM5080HR-A, B		5	80	-	66	95	17
PAXCM5100HR-A, B		6	100	-	66	95	17

※ Type A Use Insert Nose R 0.4~3.2, and Type B Use Nose R 4.0~5.0

※ When using a spindle at high speed, please check the balance of tool and use it after replacing with the new screw.

● : Stock item

### Available inserts

XEKT-MA XEKT-ML



Designation	Cermet	Coated							Uncoated			page	Designation	Cermet	Coated							Uncoated			page											
		CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540				PC5400	PD2000	PD1010	ST30A	G10	H01	H05	CN30	NC5330	NCM535		NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5400	PD2000	PD1010	ST30A
XEKT 19M504FR-MA											●	●	●	B31	XEKT 19M504ER-ML																					B31
19M508FR-MA											●	●	●		19M508ER-ML																					
19M512FR-MA											●	●	●		19M512ER-ML																					
19M516FR-MA											●	●	●		19M516ER-ML																					
19M518FR-MA												●	●		19M518ER-ML																					
19M520FR-MA											●	●	●		19M520ER-ML																					
19M530FR-MA											●	●	●		19M530ER-ML																					
19M532FR-MA											●	●	●		19M532ER-ML																					
19M540FR-MA											●	●	●		19M540ER-ML																					
19M550FR-MA											●	●	●		19M550ER-ML																					

### Parts

Specification	 Screw	 Wrench
Ø32~Ø100	PTKA0407 PTKA0408	TW15S

Available inserts B31

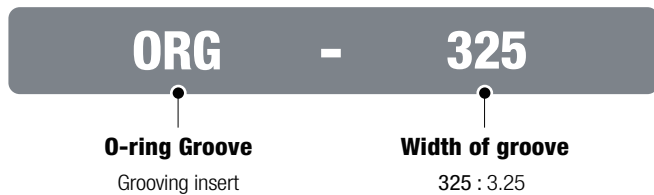
High productivity with optimized grade for high speed machining

# O-ring Cutters

- Optimized for grooving the seat of an O-ring in a plastic mold
- Guarantees superior surface roughness compared to HSS and brazed tool
- High productivity with optimized grade for high speed machining
- Reduced time for regrinding and tool alignment
- Special types are available for quotation

## Code system

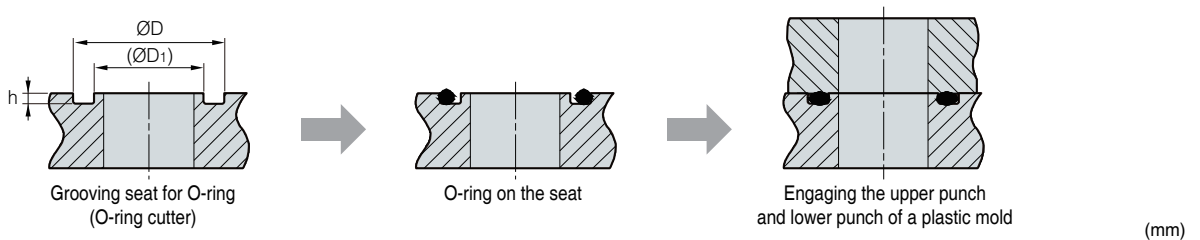
• Insert



• Holder



## Grooving and assembly of O-ring



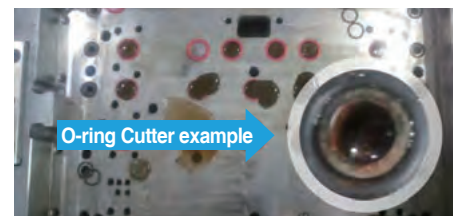
O-ring size	ØD	(ØD <sub>1</sub> )	h ± 0.05
P08	11.0	5.8	1.40
P09	12.0	6.8	
P10	13.0	7.8	
P11	15.0	8.5	
P12	16.0	9.5	
P14	18.0	11.5	1.80
P15	19.0	12.5	
P16	20.0	13.5	
P18	22.0	15.5	
P20	24.0	17.5	
P21	25.0	18.5	2.70
P22	26.0	19.5	
P24	30.0	20.6	
P25	31.0	21.6	

O-ring size	ØD	(ØD <sub>1</sub> )	h ± 0.05
P26	32.0	22.6	2.70
P28	34.0	24.6	
P29	35.0	25.6	
P30	36.0	26.6	
P31	37.0	27.6	
P32	38.0	28.6	
P34	40.0	30.6	
P35	41.0	31.6	
P38	44.0	34.6	
P40	46.0	36.6	
G25	30.0	21.8	2.40
G30	35.0	26.8	
G35	40.0	31.8	
G40	45.0	36.8	

## Recommended cutting conditions

Workpiece	fz (mm/t)	vc (m/min)
		Coating PC3700
Stainless Steel (STS304)	0.03~0.12	60~130
Carbon Steel (SM□□C)	0.05~0.15	80~150
Alloy Steel (SCM)	0.05~0.15	80~150
Hardened Steel (STD, NAK)	0.03~0.12	60~130

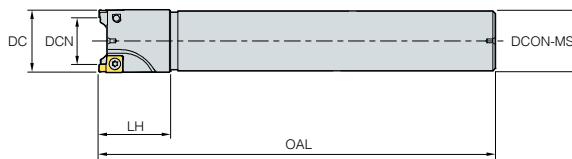
## Machining Example





# B O-ring Cutter

## ORC



(mm)

Designation	Stock	CICT	DC	DCN	DCON-MS	LH	OAL	Available inserts	O-ring size
ORC -	P08	1	11	5.7	16	30	150	ORG265	P08
	P09	1	12	6.7	16	30	150	ORG265	P09
	P10	1	13	7.7	16	30	150	ORG265	P10
	P11	1	15	8.5	16	30	150	ORG325	P11
	P12	2	16	9.5	16	30	200	ORG325	P12
	P14	2	18	11.5	20	30	200	ORG325	P14
	P15	2	19	12.5	20	30	200	ORG325	P15
	P16	2	20	13.5	20	30	200	ORG325	P16
	P18	2	22	15.5	20	30	200	ORG325	P18
	P20	2	24	17.5	25	30	200	ORG325	P20
	P21	2	25	18.5	25	30	200	ORG325	P21
	P22	2	26	19.5	25	30	200	ORG325	P22
	P24	2	30	20.6	32	40	250	ORG470	P24
	P25	2	31	21.6	32	40	250	ORG470	P25
	P26	2	32	22.6	32	40	250	ORG470	P26
	P28	2	34	24.6	32	40	250	ORG470	P28
	P29	2	35	25.6	32	40	250	ORG470	P29
	P30	2	36	26.6	32	40	250	ORG470	P30
	P31	2	37	27.6	32	40	250	ORG470	P31
	P32	2	38	28.6	32	40	250	ORG470	P32
P34	2	40	30.6	42	40	250	ORG470	P34	
P35	2	41	31.6	42	40	250	ORG470	P35	
P38	2	44	34.6	42	40	250	ORG470	P38	
P40	2	46	36.6	42	40	250	ORG470	P40	
ORC -	G25	2	30	21.9	32	40	250	ORG405	G25
	G30	2	35	26.9	32	40	250	ORG405	G30
	G35	2	40	31.9	42	40	250	ORG405	G35
	G40	2	45	36.9	42	40	250	ORG405	G40

● : Stock item



### Available inserts

ORG



Cutter Designation	Designation	Cermet		Coated										Uncoated			page		
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
ORC-P08~P10	ORG 265																		B15
ORC-P11~P22	325																		
ORC-P24~P40	470																		
ORC-G25~G40	405																		

### Parts

Specification	 Screw	 Wrench
Ø11~Ø26	FTKA0307	TW09S
Ø30~Ø46	FTGA03508	TW15S
Ø30~Ø45	FTGA03508	TW15S

Available inserts B15

All applications for chamfers

# Chamfer Tool

- Chamfer angles 15°, 30°, 45°, 60° for a variety of customer's needs
- The long cutting-edge provides a wide chamfering range

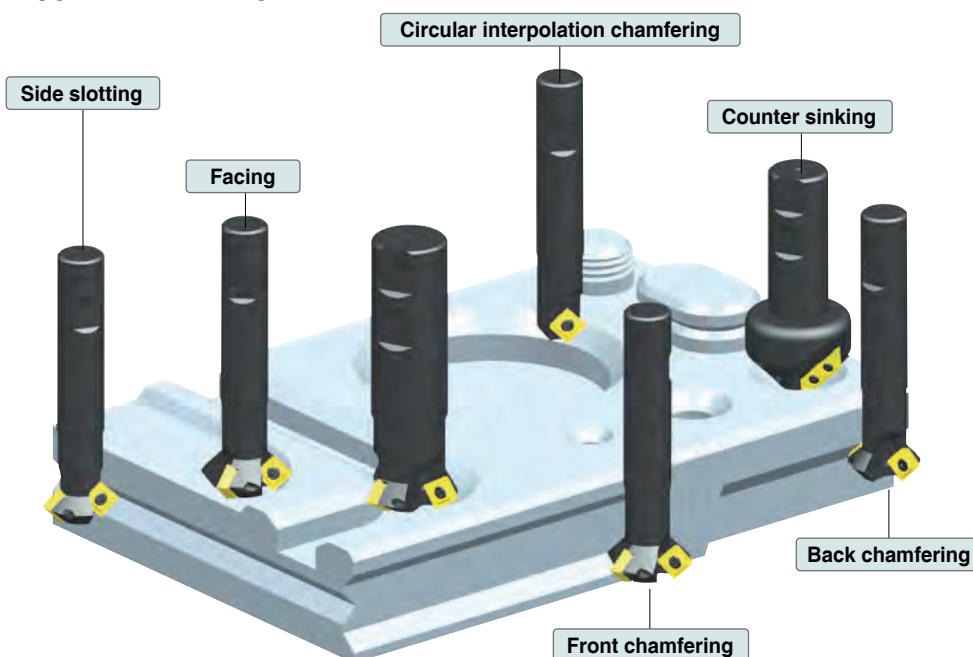
## Code system

<b>CE</b>	<b>45</b>	<b>-</b>	<b>11</b>	<b>25</b>	<b>R</b>	<b>-</b>	<b>S</b>	<b>20</b>
<b>Chamfer Endmill</b>	<b>Chamfer angle</b> 45°		<b>Inscribed circle of insert</b> 11 : SPMT110408-KC 12 : SPMN120308 31 : XCET310404ER-KC	<b>Min. Cutting diameter</b> Ø25	<b>Hand</b> R : Right-handed L : Left-handed		<b>Overall length</b> S : Standard M : Middle L : Long	<b>Shank diameter</b> Ø20

## Recommended cutting conditions

Workpiece	Grade	DCX (Ø5~Ø20)		DCX (Ø25~Ø35)	
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)
P	PC3700	160~270	0.05~0.25	160~270	0.05~0.25
	PC5300	190~310		190~310	
	ST30A	60~100		60~100	
M	PC5300	100~160	0.05~0.20	100~160	0.10~0.30
	PC5400	70~120		70~120	
K	PC5300	110~180	0.10~0.30	110~180	0.30~0.50
	G10	50~90		50~90	

## Application example



Back & Front Chamfer Tools



Long Chamfer Tools



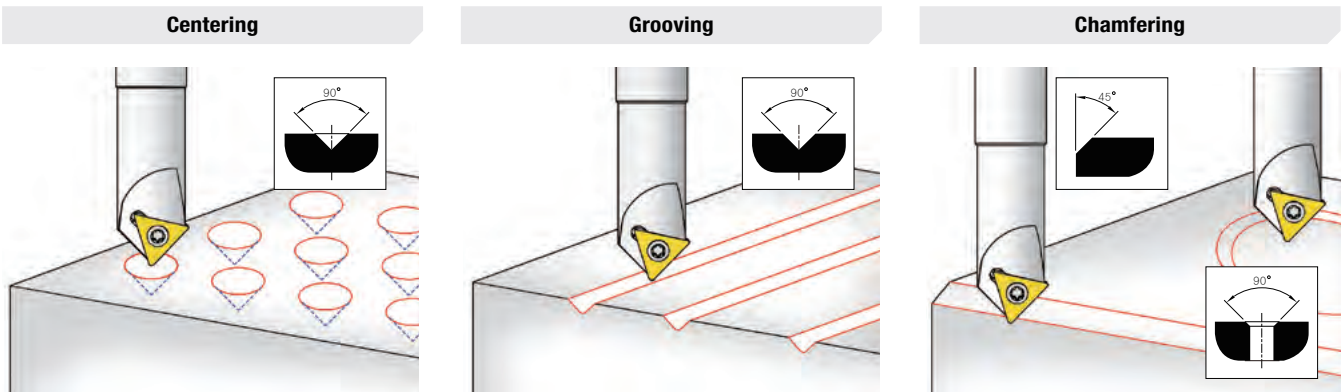
# B Technical Information for Chamfer Tool

## Multi-Functional Chamfer Tool

### Code system

<b>CE</b>	<b>45</b>	<b>-</b>	<b>16</b>	<b>00</b>	<b>R</b>	<b>-</b>	<b>S</b>	<b>20</b>
<b>Chamfer Endmill</b>	<b>Chamfer angle</b> 45°		<b>Inscribed circle of insert</b> 16 : TWX16R-KC 22 : TWX22R-KC	<b>Min. Cutting diameter</b> Ø0	<b>Hand</b> R : Right-handed L : Left-handed		<b>Overall length</b> S = 90, 110 L = 200	<b>Shank diameter</b> Ø12 Ø20 Ø25

### Application area and recommended cutting conditions



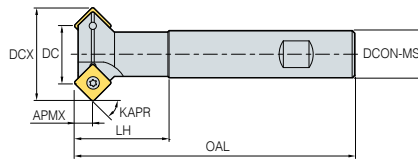
Workpiece	Hardness (HRC)	Centering, Grooving		Chamfering	
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)
Carbon Steel, Alloy Steel	Under Hrc 30	80~200	0.01~0.04	100~250	0.04~0.06
Carbon Steel, Alloy Steel	Hrc 30~40	150~250	0.02~0.06	150~300	0.05~0.10
Aluminum, Copper(Al, Copper)	-	150~300	0.04~0.08	150~350	0.05~0.10
Cast iron(GC, GCD)	-	80~150	0.02~0.06	100~250	0.05~0.10
Stainless Steel	-	60~120	0.01~0.03	60~150	0.03~0.06
Ti, Ti-alloy	-	60~80	0.01~0.03	60~100	0.03~0.06

Note) Please keep fz. backtouch & chipping one caused by wrong fz

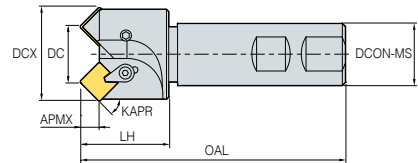
### Machining example



# CE(Back & front)



• GAMP : 0°  
• GAMF : 0°



• GAMP : 0°  
• GAMF : -12°~0°

Fig. 1

Fig. 2



(mm)

Designation	Stock	CICT	DC	DCX	DCON-MS	APMX	Fig.	Available inserts	KAPR(°)		Machining range (Min-Max)	Use	
									Front	Back			
<b>CE</b>	15-1125R-S20	●	2	25	30.5	20	9.5	SPMT110408-KC	15°	-	Ø25~Ø30	Front chamfering	
	30-1125R-S20	●	2	25	35.5	20	8.5		30°	60°	Ø25~Ø35	Front, Back chamfering	
	45-1107R-S20	●	1	7	21.9	20	7		45°	-	Ø7~Ø21	Front chamfering	
	45-1119R-S20	●	2	19	33.9	20	7		45°	45°	Ø19~Ø33	Front, Back chamfering	
	45-1125R-S20	●	3	25	39.9	20	7		45°	45°	Ø25~Ø39	Front, Back chamfering	
	60-1125R-S32	●	3	25	43.3	32	5		60°	30°	Ø25~Ø42	Front, Back chamfering	
	45-1207R-S32	●	1	7	23.3	32	7.8	2	SPMN120308	45°	-	Ø7~Ø22	Front chamfering
	45-1220R-S32	●	2	20	37.3	32	7.8	2		45°	-	Ø21~Ø36	Front chamfering
	45-1225R-S32	●	2	25	42.3	32	7.8	2		45°	-	Ø26~Ø41	Front chamfering
	45-1235R-S32	●	2	35	52.3	32	7.8	2		45°	-	Ø36~Ø51	Front chamfering

● : Stock item

## Available inserts

SPMT-KC      SPMN



Designation	Cermet	Coated										Uncoated			page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10
SPMT 110408-KC									●						●	●	
SPMN 120308															●		

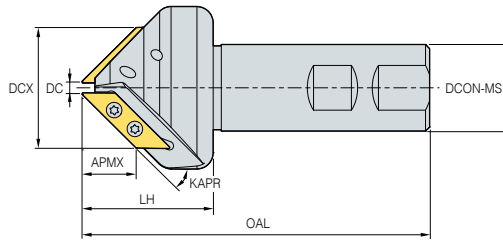
## Parts

Specification	Screw	Clamp	C-Ring	Wrench	Wrench
Ø7~Ø25(1100 type)	FTKA0408	-	-	TW15S	-
Ø7~Ø35(1200 type)	CHX0617L	CH6R2N	CR05	-	HW30L

Available inserts **B27**

# B Chamfer Tools

## CE (Long chamfer)



- GAMP :  $-5^{\circ} \sim 1^{\circ}$
- GAMF :  $0^{\circ}$

										(mm)
	Designation	Stock	CICT	DC	DCX	DCON-MS	APMX	KAPR	Machining range (Min-Max)	Use
CE	30-3105R-S32	●	1	5	35	32	26	30	$\varnothing 5 - \varnothing 35$	Front chamfering
	45-3105R-S32	●	2	5	48	32	21	45	$\varnothing 5 - \varnothing 48$	Front chamfering
	60-3105R-S32	●	2	5	57	32	15	60	$\varnothing 5 - \varnothing 57$	Front chamfering

● : Stock item



### Available inserts

XCET-KC



Designation	Cermet	Coated										Uncoated			page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
XCET 310404ER-KC								●							●	●		B31

### Parts

Specification	 Screw	 Wrench
$\varnothing 5$	FTKA03510	TW15S

Available inserts **B31**

## CE (Multi-functional)

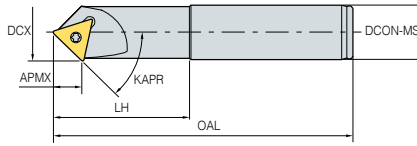


Fig. 1

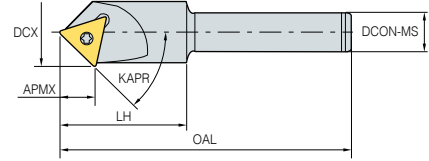


Fig. 2



- GAMP :  $-12^{\circ} \sim 15^{\circ}$
- GAMF :  $0^{\circ}$

Designation		Stock	DCX	DCON-MS	LF	OAL	APMX	Fig.	Available inserts	Machining range (Min-Max)	Use
CE	45-1600R-S12	●	21.2	12	40	90	10	2	TWX16R-KC	$\varnothing 0 \sim \varnothing 20$	Centering Grooving Chamfering
	45-1600R-S20	●	21.2	20	50	110	10	1	TWX16R-KC	$\varnothing 0 \sim \varnothing 20$	
	45-1600R-L20	●	21.2	20	60	200	10	1	TWX16R-KC	$\varnothing 0 \sim \varnothing 20$	
	45-2200R-S12	●	28.8	12	40	90	14	2	TWX22R-KC	$\varnothing 0 \sim \varnothing 27$	
	45-2200R-S25	●	28.8	25	50	10	14	1	TWX22R-KC	$\varnothing 0 \sim \varnothing 27$	
	45-2200R-L25	●	28.8	25	60	200	14	1	TWX22R-KC	$\varnothing 0 \sim \varnothing 27$	

(mm)

● : Stock item



### Available inserts

#### TWX-KC



Designation	Cermet	Coated											Uncoated			page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
TWX 16R-KC								●					●					B29
TWX 22R-KC								●										

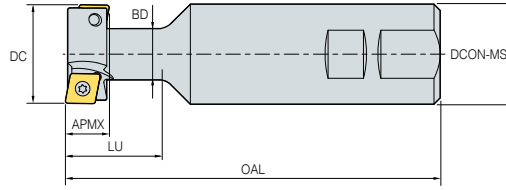
### Parts

Specification	 Screw	 Wrench
$\varnothing 22 \sim \varnothing 29$	FTNA0408	TW15L

Available inserts **B29**

# B T-Cutter

## TFE



KAPR  
90°

- GAMP : 5°
- GAMF : -5°

	Designation	Stock		CICT	DC	DCON-MS	DN	LH	OAL	APMX	Available inserts
		R	L								
TFE	2125R/L	●		2	21	25	10.5	40	109	9	CPMT06
	2525R/L	●		2	25	25	12.5	41	112	11	CPMT08
	3232R/L	●		2	32	32	16.5	48	120	14	CPMT09
	4032R/L	●		2	40	32	20.5	50	130	18	CPMH12
	5032R/L	●		4	50	32	26.5	63	140	22	CPMH12

(mm)

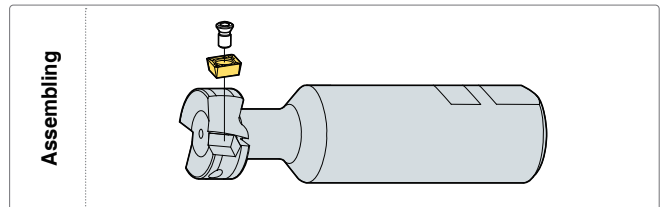
● : Stock item

### Available inserts



CPMT CPMH



Designation	Cermet	Coated										Uncoated			page				
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01	
CPMT 060204-MM									●										
080308-MM									●										B7
09T308-MM									●										B8
CPMH 120408-MM									●										



### Parts

Specification	 Screw	 Wrench
Ø21	FTNA02555	TW08S
Ø25	FTNA0306	TW09S
Ø32	FTNA0407	TW15S
Ø40	PTMA0511A	TW15S
Ø50	PTMA0511A	TW15S

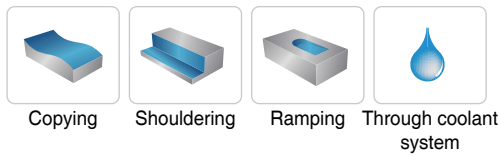
Available inserts B7, B8

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

## Use



## Pro-A Mill series

Type		Available inserts and tool holders	Through coolant system
Application of small-sized Aluminum machining	Pro-A 2000	<ul style="list-style-type: none"> <li>• Modular: Ø12-Ø42</li> <li>• Shank: Ø12-Ø42</li> <li>• Insert: VDKT11T210N-MA VDKT11T220N-MA</li> </ul>	○
General application of Aluminum machining	Pro-A 4000	<ul style="list-style-type: none"> <li>• cutter: Ø40-Ø100</li> <li>• Shank: Ø32-Ø40</li> <li>• Insert: VCKT220530N-MA</li> </ul>	○

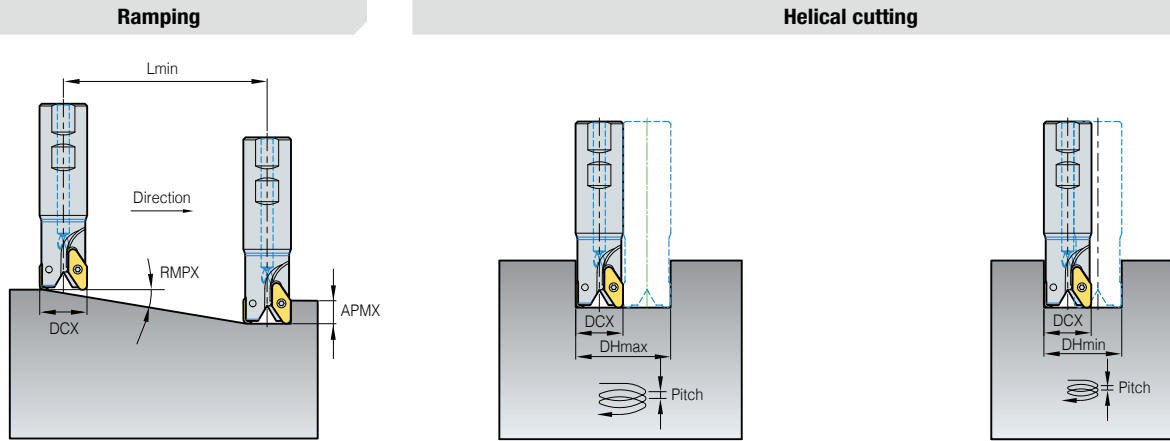
## Recommended cutting conditions

Workpiece		Cutting speed $v_c$ (m/min)
Aluminum alloy	Rm < 280 MPa	1000
	Rm > 280 MPa	800
Copper alloy	Long chip	250
Thermo plastic	-	300
Aluminum alloy	Si < 12%	800
Copper alloy	Short chip	400
Magnesium alloy	-	400
Duroplastics	-	150



# B Technical Information for Pro-A Mill

## Pro-A Mill ramping & helical cutting technical data



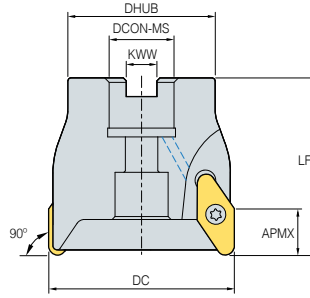
(mm)

Designation	DCX	Ramping		Blind hole helical cutting				Thru hole helical cutting	
		RMPX	Lmin	DHmin	Max pitch	DHmax	Max pitch	DHmin	Max pitch
PAS2012HR	12	11.9	38	21	4.4	23	4.8	19	4.0
PAS2016HR	16	12.5	36	29	6.4	31	6.9	27	6.0
PAS2020HR	20	9.7	47	37	6.3	39	6.7	35	6.0
PAS2025HR	25	7.6	60	47	6.3	49	6.5	45	6.0
PAS2032HR	32	5.8	79	61	6.2	63	6.4	59	6.0
PAS2042HR	42	4.3	105	81	6.2	83	6.3	79	6.0
PAS4032HR	32	24.4	22	54	15.0	59	26.8	40	15.0
PAS4040HR	40	18.4	30	70	15.0	75	25.0	56	15.0
PAS4050HR	50	14.0	40	90	15.0	95	23.8	76	15.0
PAS4063HR	63	10.7	53	116	15.0	121	22.8	102	15.0
PAC(M)4080HR	80	8.1	70	150	15.0	155	22.1	136	15.0
PAC(M)4100HR	100	6.3	90	190	15.0	195	21.7	176	15.0

- Lmin: When ap = 8 mm
- Lmin: Minimum inclination cutting length
- RMPX: Max. ramping angle
- ap: Depth of cut

$$Lmin = \frac{APMX}{\tan(RMPX)} \text{ (mm)}$$

# PAC(M)2000/4000



KAPR  
**90°**  
• GAMP : 0°  
• GAMF : -3°

(mm)

	Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
PACM	2040HR		3	40	34	16	8.4	40	8	0.2
	2050HR		4	50	42	22	10.4	50	8	0.4
	2063HR		5	63	49	22	10.4	50	8	0.6
	2080HR		5	80	57	27	12.4	50	8	0.9
	2100HR		6	100	67	32	14.4	63	8	1.9
	4040HR	●	3	40	34	16	8.4	55	15	0.2
	4050HR	●	3	50	42	22	10.4	55	15	0.3
	4063HR	●	4	63	49	22	10.4	60	15	0.6
	4080HR		4	80	57	27	12.4	60	15	1
	4100HR	●	5	100	67	32	14.4	60	15	1.6
PAC	2080HR		5	80	57	25.4	9.5	50	8	0.9
	2100HR		6	100	67	31.75	12.7	63	8	1.9
	4080HR		4	80	60	25.4	9.5	60	15	1
	4100HR		5	100	80	31.75	12.7	60	15	1.6

● : Stock item

## Available inserts

### VCKT-MA



Type	Designation	Cermet		Coated											Uncoated			page	
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01
2000type	VDKT 11T210N-MA																	●	B29
4000type	VCKT 220530N-MA																	●	

## Available arbors

Cutter Designation	DCON-MS	NC arbors	Cutter Designation	DCON-MS	NC arbors		
PAC (PACM)	2040HR	16	BT□□-FMC16-□□	PAC (PACM)	4040HR	16	BT□□-FMC16-□□
	2050HR	22	BT□□-FMC22-□□		4050HR	22	BT□□-FMC22-□□
	2063HR	22	BT□□-FMC22-□□		4063HR	22	BT□□-FMC22-□□
	2080HR	25.4	BT□□-FMC25.4-□□		4080HR	25.4	BT□□-FMC25.4-□□
		27	BT□□-FMC27-□□			27	BT□□-FMC27-□□
2100HR	31.75	BT□□-FMC31.75-□□	4100HR	31.75	BT□□-FMC31.75-□□		
	32	BT□□-FMC32-□□		32	BT□□-FMC32-□□		

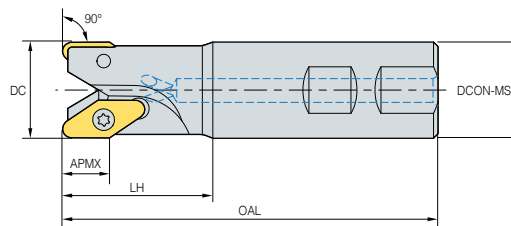
## Parts

Specification			Arbor Bolt
Ø40~Ø100(2000 type)	ETNA02506	TW07S	
Ø40~Ø100(4000 type)	FTNC04509(Ø40)	TW20S	PHMA0834(Ø40)
	FTNC04511		

Available inserts **B29** Available arbors and bolt **E96**

\* For PAS2012-2016

## PAS2000/4000



KAPR  
90°

- GAMP : 0°~7°
- GAMF : -21°~-3°

(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg
PAS	2012HR	●	1	12	16	25	85	8	0.1
	2016HR	●	2	16	16	25	90	8	0.1
	*2016HR-R2.0		2	16	16	25	90	6	0.1
	2020HR	●	2	20	20	30	100	8	0.2
	*2020HR-R2.0		2	20	20	30	100	6	0.2
	2025HR	●	3	25	25	35	115	8	0.4
	2032HR		4	32	32	40	125	8	0.7
	2042HR		5	42	32	42	130	8	0.8
	4032HR	●	2	32	32	50	125	15	0.6
	4040HR	●	3	40	32	50	140	15	0.8
	4040HR-S40		3	40	40	60	150	15	1.2
	4040HR-S42		3	40	42	60	150	15	1.2

\* Holders marked with an asterisk (\*) are only for VDKT11T220N-MA.

● : Stock item

### Available inserts

VDKT-MA

VCKT-MA



Type	Designation	Cermet	Coated										Uncoated			page			
		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
2000type	VDKT 11T210N-MA																	●	B29
	VDKT 11T220N-MA																		
4000type	VCKT 220530N-MA																	●	

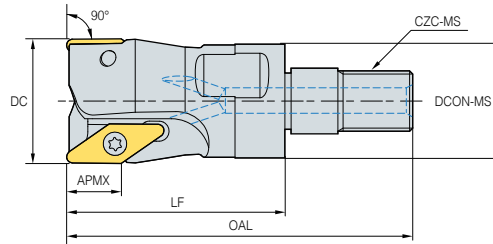
### Parts

Specification	Screw	Wrench
Ø12~Ø42(2000 type)	ETNA02505* ETNA02506	TW07S
Ø32~Ø40(4000 type)	FTNC04509	TW20S

Available inserts **B29**

\* For PAS2012-2016

# PAM2000



KAPR  
**90°**  
• GAMP : 7°~10°  
• GAMF : -21°~-9°

(mm)

Designation	Stock	CICT	DC	DCON-MS	LF	OAL	CZC-MS	APMX	
<b>PAM</b> 2012HR-M06		1	12	11	33	48	M06	8	0.1
2016HR-M08	●	2	16	14.5	36	53	M08	8	0.1
2020HR-M10	●	2	20	18	36	57	M10	8	0.1
2025HR-M12	●	3	25	22.5	41	65	M12	8	0.1
2032HR-M16		4	32	29	45	72	M16	8	0.2
2042HR-M16		5	42	29	45	72	M16	8	0.3

● : Stock item

## Available inserts

VDKT-MA



Designation	Cermet	Coated										Uncoated			page			
	CN80	NC5380	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
VDKT 11T210N-MA																	●	B29

## Available adaptors

Designation	Available adaptors
<b>PAM</b> 2012HR-M06	MAT-M06
2016HR-M08	MAT-M08
2020HR-M10	MAT-M10
2025HR-M12	MAT-M12
2032HR-M16	MAT-M16
2042HR-M16	MAT-M16

Designation: PAM2012HR-M06  
Modular head threading measure size (M06)

||

Adaptor spec.: MAT-M06-030-S20S  
Adaptor threading measure (M06)

## Parts

Specification		
Ø12~Ø42	ETNA02505* ETNA02506	TW07S

Available inserts **B29** Available adaptor **E400**

\* For PAS2012-2016

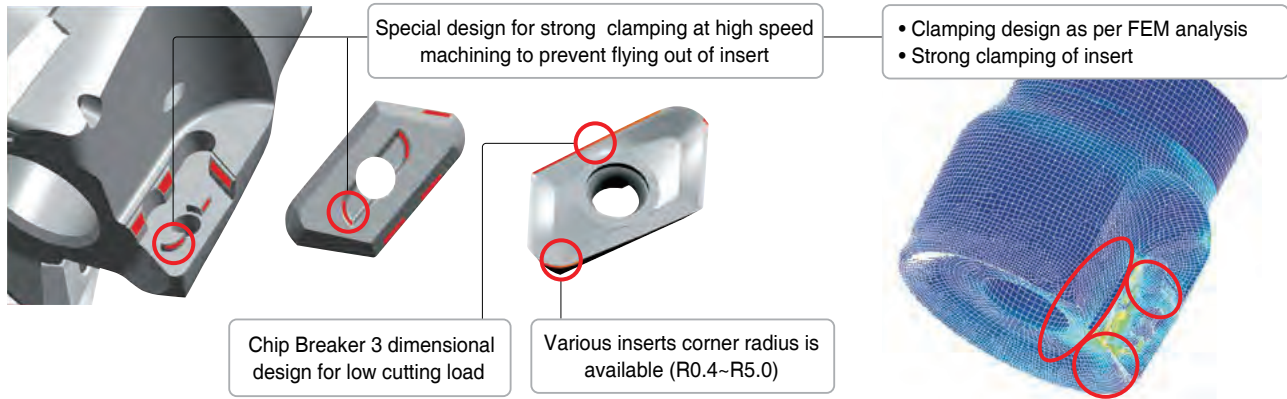
# B Technical Information for Pro-X Mill

Features a strong clamping provided by the concave grooves on the back surface of the inserts

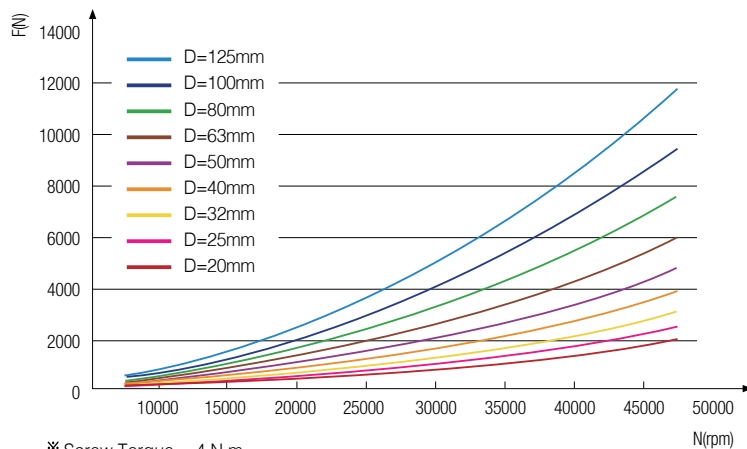
## Pro-X Mill

- 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

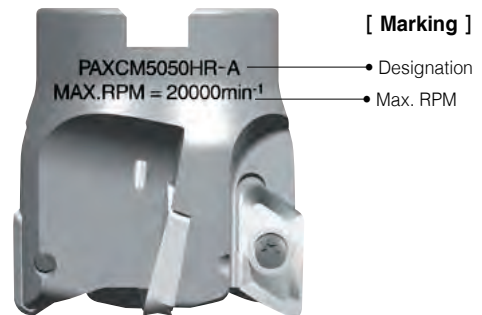
### Clamping system for high speed



### Centrifugal force as per RPM



\* Screw Torque = 4 N·m  
\* Indexable insert: 6.8g



### Max. RPM as per cutting diameter

Cutting diameter DC	5000 type		6000 type	
	n(min <sup>-1</sup> )	vc(m/min)	n(min <sup>-1</sup> )	vc(m/min)
20	14,000	879	-	-
25	28,000	2,199	15,000	1,178
32	25,000	2,513	23,000	2,312
40	22,000	2,764	20,000	2,513
50	20,000	3,141	18,000	2,827
63	18,000	3,562	16,000	3,166
80	16,000	4,021	14,000	3,518
100	14,000	4,398	13,000	4,084
125	13,000	5,105	11,000	4,319

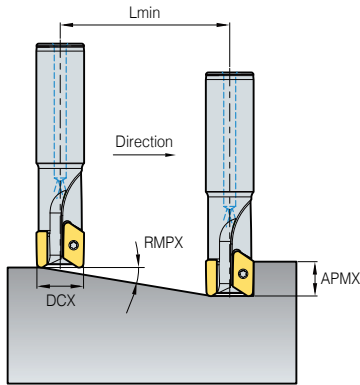
\* In case of actual machining accidental breakage of insert or tool could happen even under the written RPM special cover or door is necessary to prevent damage from broken insert or broken tool

### Recommended cutting conditions

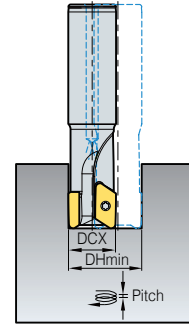
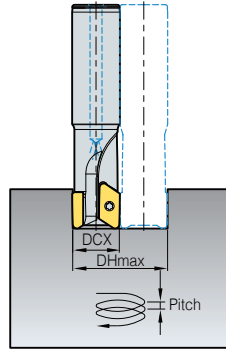
Workpiece		Cutting Speed vc(m/min)	Feed fz(mm/t)
Aluminum alloy	Rm280 < MPa	1200	0.30
	Rm280 > MPa	1000	0.25
Copper alloy Thermo plastic	Long chipping	400	0.20
	-	350	0.15
Aluminum alloy	Si < 12%	1000	0.25
	Si ≥ 12%	300	0.23
Copper alloy	Short chipping	500	0.20
Magnesium alloy	-	450	0.20
Duroplastics	-	200	0.15

## Pro-X Mill ramping & helical cutting technical data

### Ramping



### Helical cutting



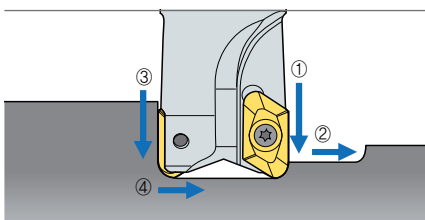
Designation	DCX	Ramping		Blind hole Helical cutting				Thru hole Helical cutting	
		RMPX	Lmin	DHmin	Max pitch	DHmax	Max pitch	DHmin	Max pitch
PAXS5020HR	20	8.4	68	32	4.7	34	5.0	27	4.0
PAXS5025HR	25	13.2	43	42	9.9	44	10.4	34	8.0
PAXS5032HR	32	9.5	60	56	9.3	58	9.7	48	8.0
PAXS5040HR	40	7.1	80	72	9.0	74	9.3	64	8.0
PAXCM5050HR	50	5.4	105	92	8.8	94	9.0	84	8.0
PAXCM5063HR	63	4.2	138	118	8.6	120	8.7	110	8.0
PAXC(M)5080HR	80	3.2	180	152	8.4	154	8.6	144	8.0
PAXC(M)5100HR	100	2.5	230	192	8.3	194	8.4	184	8.0
PAXC(M)5125HR	125	2.0	293	242	8.3	244	8.3	234	8.0
PAXS6025HR	25	9.0	63	42	6.6	44	6.9	38	6.0
PAXS6032HR	32	6.6	87	56	6.5	58	6.7	52	6.0
PAXS6040HR	40	12.1	47	72	15.4	74	15.9	56	12.0
PAXCM6050HR	50	9.0	63	92	14.5	94	14.8	76	12.0
PAXCM6063HR	63	6.7	85	118	13.9	120	14.1	102	12.0
PAXC(M)6080HR	80	5.0	113	152	13.4	154	13.6	136	12.0
PAXC(M)6100HR	100	3.9	147	192	13.1	194	13.2	176	12.0
PAXC(M)6125HR	125	3.0	188	242	12.8	244	13.0	226	12.0

(mm)

$$Lmin = \frac{APMX}{\tan(RMPX)} \text{ (mm)}$$

- Lmin = Minimum inclination cutting length
- ap : Depth of cut
- RMPX : Max. ramping angle

## Plunging, slotting, drilling technical data



- When drilling, grooving machining sequence is ① → ② → ③ → ④
- When drilling, grooving, decrease the feed and cutting speed 30%~50% from the recommended data

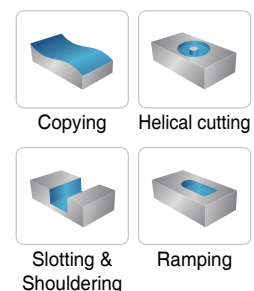
### • Cutting conditions for drilling

Holder	ap(mm)	
	5000 type	6000 type
Ø20	8	-
Ø25	4	11
Ø32	4	6
Ø40~125	4	6

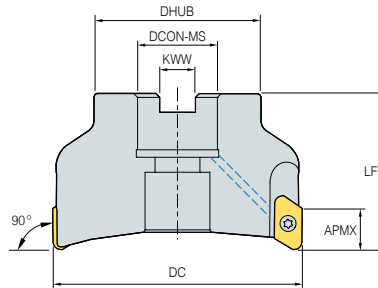
Insert	ap(mm)
XEKT19	4
XEKT25	6

### Use





# PAXC(M)6000



• GAMP : 8°~17.5°  
• GAMF : -9.5°~-5°

(mm)

Designation	Stock		CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	
	A	B								
PAXCM 6050HR-A,B			2	50	42	16	8.4	50	23	0.4
	●		3	63	49	22	10.4	50	23	0.5
PAXC (PAXCM) 6080HR-A,B	●	(●)	4	80	57	25.4(27)	9.5(12.4)	50	23	0.8
	●		5	100	67	31.75(32)	12.7(14.4)	63	23	1.6
6125HR-A,B			6	125	87	38.1(40)	15.9(16.4)	63	23	2.6

• A type: Insert Nose R 0.4~3.2, B type: Insert Nose R 4.0~5.0

( ) Metric size, ● : Stock item

## Available inserts

XEKT-MA XEKT-ML



Designation	Cermet										page	Designation	Cermet										page													
	CN30	Coated					Uncoated						CN30	Coated					Uncoated																	
		NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540		PC5300	PC5400	ST30A	G10	H01	H05		NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01
XEKT 250604FR-MA																	●●		XEKT 250604ER-ML																	
250608FR-MA																	●●		250608ER-ML																	
250612FR-MA																	●●		250612ER-ML																	
250616FR-MA																	●●		250616ER-ML																	
250620FR-MA																	●●	B31	250620ER-ML																	
250630FR-MA																	●●		250630ER-ML																	
250632FR-MA																	●●		250632ER-ML																	
250640FR-MA																	●●		250640ER-ML																	
250650FR-MA																	●●		250650ER-ML																	

## Available arbors

Cutter Designation	DCON-MS	Available arbors
PAXCM 6050HR-A,B	16	BT□□-FMC16-□□
	22	BT□□-FMC22-□□
PAXC (PAXCM) 6080HR-A,B	25.4	BT□□-FMA25.4-□□
	27	BT□□-FMC27-□□
6100HR-A,B	31.75	BT□□-FMA31.75-□□
	32	BT□□-FMC32-□□
6125HR-A,B	38.1	BT□□-FMA38.1-□□
	40	BT□□-FMC40-□□

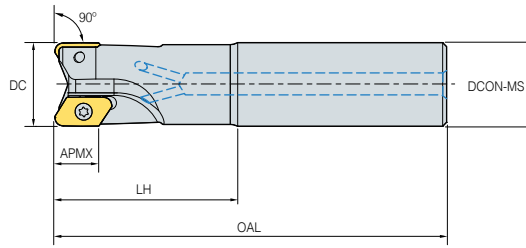
## Parts

Specification		
Ø50~Ø125	FTGA0513-P	TW20-100

Available inserts **B31**



## PAXS5000



KAPR  
90°

- GAMP : 5°~10°
- GAMF : -14°~-5°

(mm)

Designation	Stock		CICT	DC	DCON-MS	LH	OAL	APMX	
	A	B							
PAXS	5020HR-A,B	● ●	1	20	20	60	130	17	0.2
	5025HR-A,B	● ●	2	25	25	60	140	17	0.4
	5025HR-A,B-L200	●	2	25	25	60	200	17	0.6
	5032HR-A,B	● ●	2	32	32	70	150	17	0.7
	5032HR-A,B-L220		2	32	32	70	220	17	1.2
	5040HR-A,B-S32		3	40	32	70	160	17	1
	5040HR-A,B-L220		3	40	32	70	220	17	1.3
	5040HR-A,B-S40		3	40	40	70	160	17	1.3
	5040HR-A,B-S42		3	40	42	70	160	17	1.4

• A type: Insert Nose R 0.4~3.2, B type: Insert Nose R 4.0~5.0

● : Stock item

### Available inserts

XEKT-MA XEKT-ML



Designation	Material										page	Designation	Material										page																
	Cermet		Coated						Uncoated				Cermet		Coated						Uncoated																		
	CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	G10	H01	H05		CN30	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	G10	H01	H05		
XEKT 19M504FR-MA											●	●			●	●			XEKT 19M504ER-ML																				
19M508FR-MA											●	●			●	●			19M508ER-ML																				
19M512FR-MA											●	●			●	●			19M512ER-ML																				
19M516FR-MA											●	●			●	●			19M516ER-ML																				
19M518FR-MA											●	●			●	●			19M518ER-ML																				
19M520FR-MA											●	●			●	●			19M520ER-ML																				
19M530FR-MA											●	●			●	●			19M530ER-ML																				
19M532FR-MA											●	●			●	●			19M532ER-ML																				
19M540FR-MA											●	●			●	●			19M540ER-ML																				
19M550FR-MA											●	●			●	●			19M550ER-ML																				

### Parts

Specification		
Ø20	PTKA0407	TW15S
Ø25~Ø40	PTKA0408	TW15S

Available inserts B31



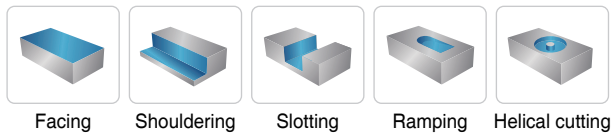


New indexable milling tool for the machining of high quality workpieces

# Pro-L Mill

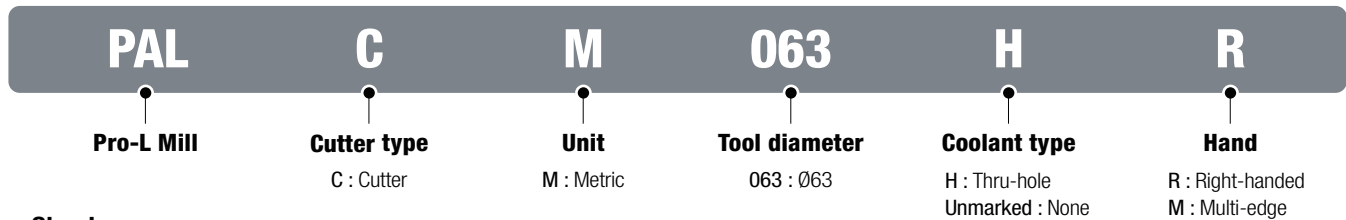
- Improved perpendicularity and lower cutting resistance due to the combined design of the clearance face and high helix edge of these inserts
- Strong clamping design by adaption of double screw on system
- Improved chip flow due to helical type design of chip pocket and application of coolant system

## Use

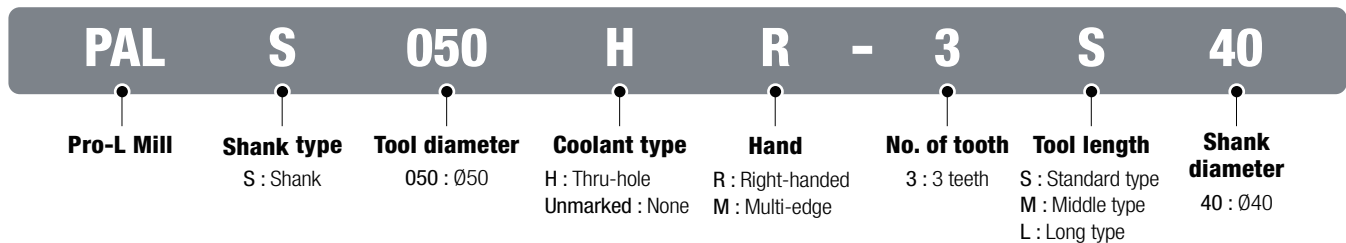


## Code system

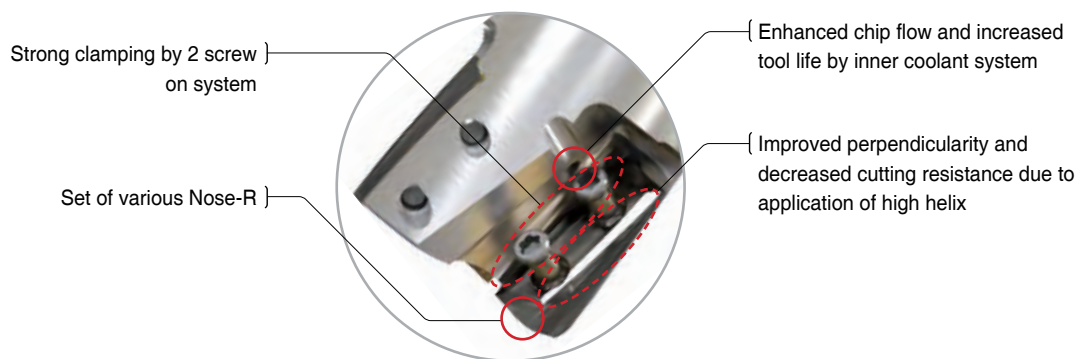
### • Cutter



### • Shank



## Features



## Features of chip breakers

Insert	Cutting-edge	Use	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

# B Technical Information for Pro-L Mill

## Selection of grades and chip breaker

Category	M (Stainless steel)	N (Aluminum alloy)	S (HRSA)
Grade	PC5300/PC5400	H01	PC5300/PC5400
MA	-	○	-
ML	○	-	○

## Application examples

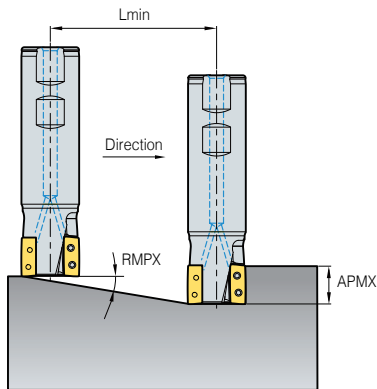
Al6061 (HrC30)

**Cutting condition**  $vc = 500 \text{ m/min}$ ,  $fz = 0.2 \text{ mm/t}$ ,  $ap = 30\text{--}60 \text{ mm}$ ,  
 $ae = 1\text{--}5 \text{ mm}$  (finishing: 1 mm, roughing: 5 mm),  $z = 3$

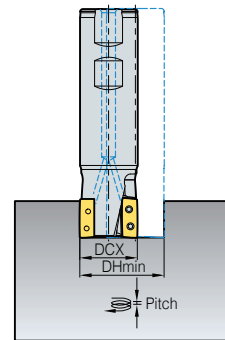
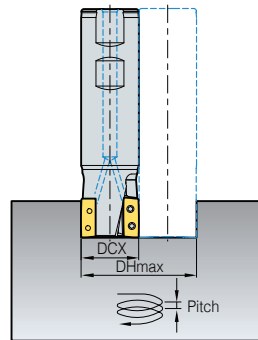


## Pro-L Mill ramping & helical cutting technical data

### Ramping



### Helical cutting

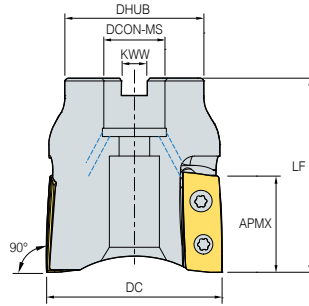


Designation	DCX	Ramping		Blind hole helical cutting				Thru hole helical cutting	
		RMPX	Lmin	DHmin	Max pitch	DHmax	Max pitch	DHmin	Max pitch
PALS032HR-2S20	32	3.37	170	60	3.5	62	3.6	55	3.2
PALS032HR-2S25	32	3.37	170	60	3.5	62	3.6	55	3.2
PALS032HR-2S32	32	3.37	170	60	3.5	62	3.6	55	3.2
PALS040HR-2S32	40	2.12	270	76	2.8	78	2.9	71	2.6
PALS040HR-2S40	40	2.12	270	76	2.8	78	2.9	71	2.6
PALS040HR-2S42	40	2.12	270	76	2.8	78	2.9	71	2.6
PALS040HR-3S32	40	2.12	270	76	2.8	78	2.9	71	2.6
PALS040HR-3S40	40	2.12	270	76	2.8	78	2.9	71	2.6
PALS040HR-3S42	40	2.12	270	76	2.8	78	2.9	71	2.6
PALS050HR-3S32	50	2.08	275	96	3.5	98	3.6	91	3.3
PALS050HR-3S40	50	2.08	275	96	3.5	98	3.6	91	3.3
PALS050HR-3S42	50	2.08	275	96	3.5	98	3.6	91	3.3
PALS063HR-4S32	63	1.76	325	122	3.8	124	3.8	117	3.6
PALS063HR-4S40	63	1.76	325	122	3.8	124	3.8	117	3.6
PALS063HR-4S42	63	1.76	325	122	3.8	124	3.8	117	3.6
PALS063HM-4S32	63	1.76	325	122	3.8	124	3.8	117	3.6
PALS063HM-4S40	63	1.76	325	122	3.8	124	3.8	117	3.6
PALS063HM-4S42	63	1.76	325	122	3.8	124	3.8	117	3.6
PALCM063HR	63	1.76	325	122	3.8	124	3.8	117	3.6

$$Lmin = \frac{APMX}{\tan(RMPX)} \text{ (mm)}$$

- Lmin = Minimum inclination cutting length
- ap : Depth of cut
- RMPX : Max. ramping angle

# PALCM



KAPR  
**90°**  
• GAMP : 16°  
• GAMF : -8°

Designation	Stock	CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	(mm)
PALCM 063HR	●	4	63	50	22	10.4	70	34	0.8

● : Stock item

## Available inserts

LXET-MA LXET-ML



Designation	Cermet		Coated										Uncoated			page		
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01
LXET 340504PEFR-63-MA																		
3405PEFR-63-MA																		●
340512PEFR-63-MA																		
340516PEFR-63-MA																		
340504PEER-63-ML																		
3405PEER-63-ML																		
340512PEER-63-ML																		
340516PEER-63-ML																		

B13

## Available arbors

Cutter Designation	DCON-MS	Available arbors
PALCM 063HR	22	BT□□-FMC22-□□

## Parts

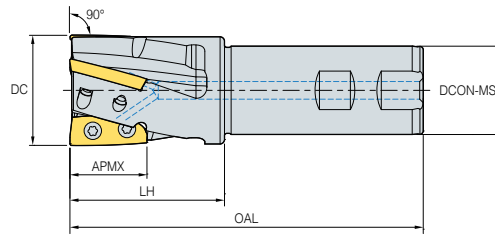
Specification	Screw	Wrench
Ø63	FTGA0511-P	TW20-100

Available inserts **B13**

Available arbors and bolt **E96**

# B Pro-L Mill (Single-edge)

## PALS (Single-edge)



KAPR  
90°

- GAMP : 12°~16°
- GAMF : -5°~-9°

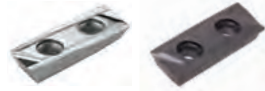
(mm)

	Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg
PALS	032HR-2S20	●	2	32	20	50	140	25	0.4
	032HR-2S25	●	2	32	25	50	140	25	0.5
	032HR-2S32	●	2	32	32	50	140	25	0.7
	040HR-2S32		2	40	32	50	140	25	0.8
	040HR-2S40		2	40	40	50	140	25	1.2
	040HR-2S42		2	40	42	50	140	25	1.3
	040HR-3S32	●	3	40	32	50	140	25	0.7
	040HR-3S40		3	40	40	50	140	25	1.2
	040HR-3S42		3	40	42	50	140	25	1.2

● : Stock item

### Available inserts

LXET-MA LXET-ML



Type	Designation	Cermet		Coated										Uncoated			page			
		CN80	NC5330	NCM825	NCM835	NCM635	NCM645	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A		G10	H01	
Ø32	LXET 250404PEFR-32-MA																			
	2504PEFR-32-MA																		●	
	250412PEFR-32-MA																			
	250416PEFR-32-MA																			
	250404PEER-32-ML																			
	2504PEER-32-ML																			
	250412PEER-32-ML																			
	250416PEER-32-ML																			
Ø40	LXET 250404PEFR-40-MA																			
	2504PEFR-40-MA																			
	250412PEFR-40-MA																			
	250416PEFR-40-MA																			
	250404PEER-40-ML																			
	2504PEER-40-ML																			
	250412PEER-40-ML																			
	250416PEER-40-ML																			

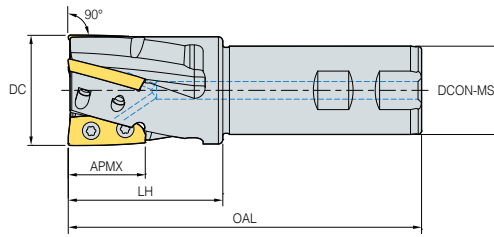
B13

### Parts

Specification	Screw	Wrench
Ø32	FTKA0408	TW15S
Ø40	FTKA0410	TW15S

Available inserts B13

# PALS (Single-edge)



KAPR  
**90°**  
• GAMP : 12°~16°  
• GAMF : -5°~-9°

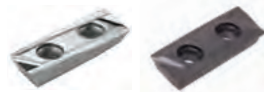
(mm)

Designation	Stock	CICT	DC	DCON-MS	LH	OAL	APMX	
<b>PALS</b> 050HR-3S32	●	3	50	32	70	160	34	1.1
050HR-3S40	●	3	50	40	70	160	34	1.5
050HR-3S42		3	50	42	70	160	34	1.5
063HR-4S32		4	63	32	70	160	34	1.5
063HR-4S40		4	63	40	70	160	34	2.0
063HR-4S42		4	63	42	70	160	34	2.0

● : Stock item

## Available inserts

LXET-MA LXET-ML



Type	Designation	Cermet	Coated										Uncoated			page		
		CN80	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10
Ø50	LXET 340504PEFR-50-MA																	●
	3405PEFR-50-MA																	●
	340512PEFR-50-MA																	
	340516PEFR-50-MA																	
	340504PEER-50-ML																	
	3405PEER-50-ML													●				
	340512PEER-50-ML																	
	340516PEER-50-ML																	
Ø63	LXET 340504PEFR-63-MA																	
	3405PEFR-63-MA																	●
	340512PEFR-63-MA																	
	340516PEFR-63-MA																	
	340504PEER-63-ML																	
	3405PEER-63-ML																	
	340512PEER-63-ML																	
	340516PEER-63-ML																	

B13

## Parts

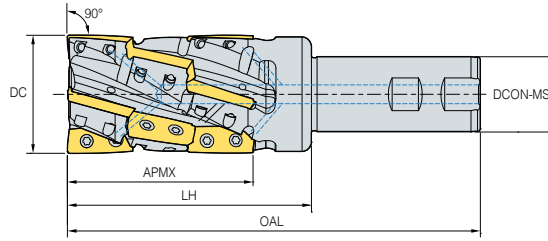
Specification		
Ø50	FTGA0510-P	TW20-100
Ø63	FTGA0511-P	TW20-100

Available inserts **B13**



# B Pro-L Mill (Multi-edge)

## PALS(Multi-edge)



KAPR  
90°

- GAMP : 16°
- GAMF : -8°

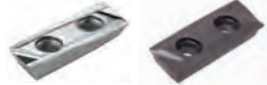
Designation		Stock	CICT	DC	DCON-MS	LH	OAL	APMX	kg
PALS	063HM-4S32	●	12	63	32	130	220	96	2.2
	063HM-4S40		12	63	40	130	220	96	2.5
	063HM-4S42		12	63	42	130	220	96	2.0

(mm)

● : Stock item

### Available inserts



LXET-MA LXET-ML



Designation	Cermet	Coated												Uncoated			page	
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400	ST30A	G10		H01
LXET 340504PEFR-63-MA																		
3405PEFR-63-MA																		●
340512PEFR-63-MA																		
340516PEFR-63-MA																		
340504PEER-63-ML																		
3405PEER-63-ML																		
340512PEER-63-ML																		
340516PEER-63-ML																		

B13

### Parts

Specification	 Screw	 Wrench
Ø63	FTGA0511-P	TW20-100

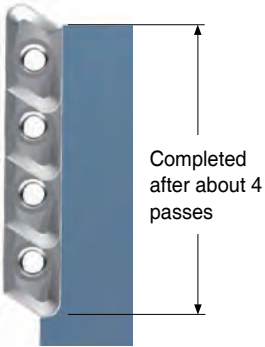
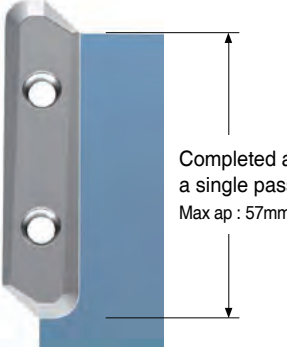
Available inserts B13

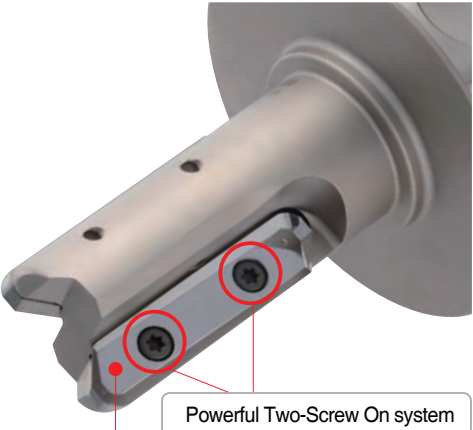
Deep cutting milling tools to maximize productivity in aluminum machining

# Pro-XL Mill

- **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

Existing cutters	Pro-XL Mill
 <p>Completed after about 4 passes</p>	 <p>Completed after a single pass Max ap : 57mm</p>
	<ul style="list-style-type: none"> <li>• 4 times shorter cutting time</li> <li>• Satisfactory surface finish of side faces with no need for further processing</li> </ul>



Powerful Two-Screw On system

Improved chip flow and inhibited built-up edges thanks to mirror-like finishing of inserts

## Application examples

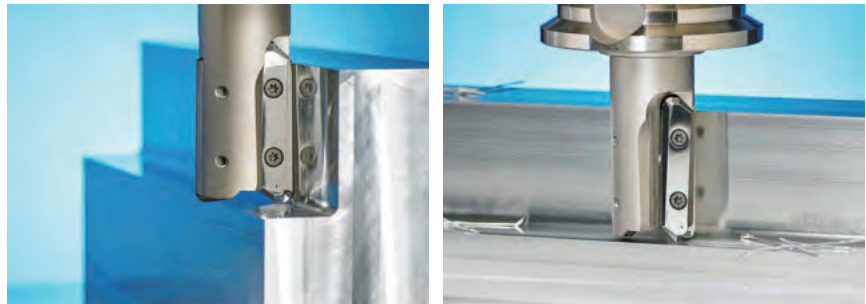
### Al7075

**Cutting condition**

vc = 500m/min, fz = 0.25mm/t  
ap = 56mm, ae = 1mm, z = 2

**Tools**

**Insert** LDET650550PPFR-MA (H01)  
**Holder** BT50-PXL04090HR-2F (ØD = 40mm)



## PXL

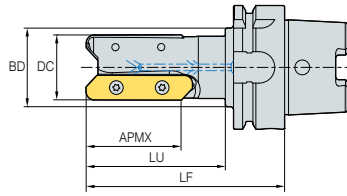


Fig. 1

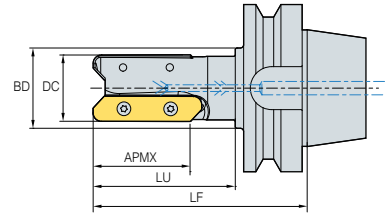


Fig. 2



- GAMP : 5°~17.5°
- GAMF : -14°~-5°

(mm)

Designation	Stock		CIC	DC	BD	LU	LF	APMX	Fig.
	R	L							
HSK63A PXL04090HR-2F			2	40	48	85	116	57	1
HSK100A PXL04090HR-3F			3	40	70	90	129	57	1
PXL08090HR-5F			5	80	77	90	119	57	1
BT50 PXL04090HR-2F			2	40	48	85	129	57	2

● : Stock item

### Available inserts

LDET-MA



Designation	Cermet	Coated										Uncoated			page			
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400		ST30A	G10	H01
LDET 650540PPFR-MA 650550PPFR-MA																		B10

### Parts

Specification	Screw	Wrench
Ø40~80	FTGA0511-P	TW20-100

Available inserts **B10**

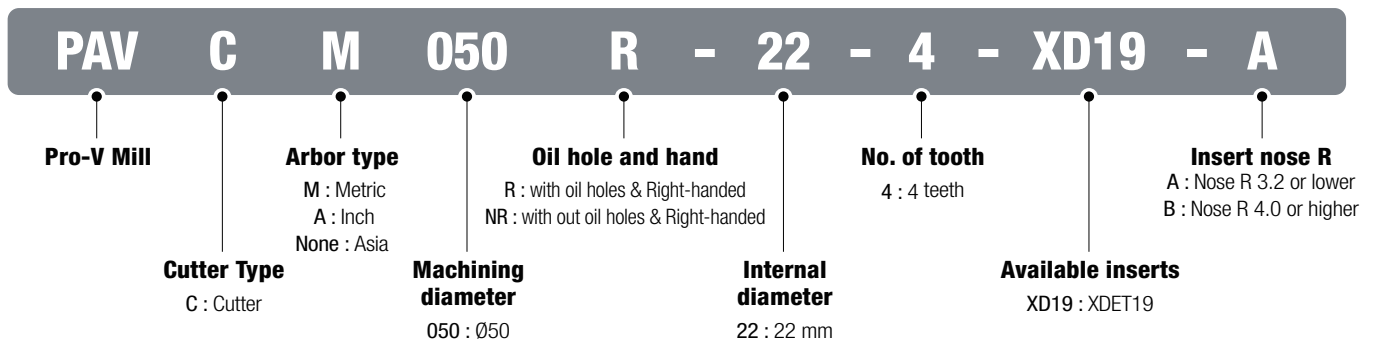
The Premium High-Speed Milling Tool for Aluminum

# Pro-V Mill

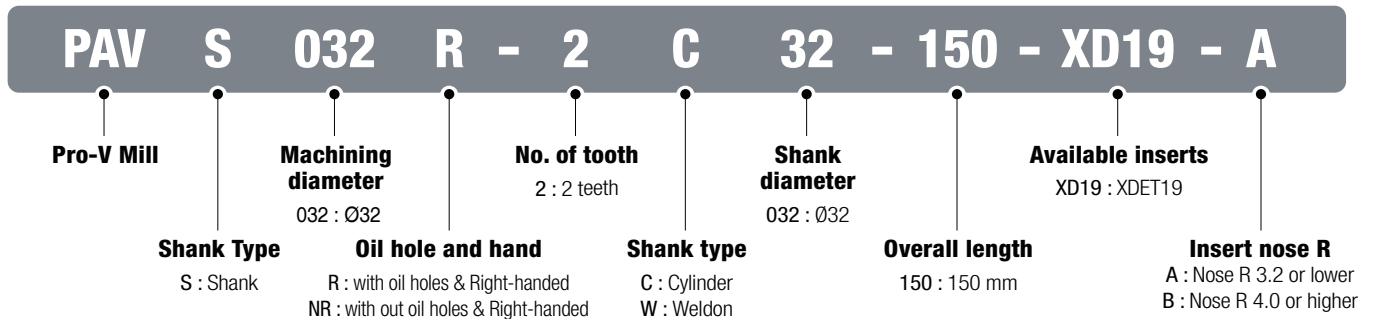
- **Enhanced productivity**- Increased productivity due to high speed capability
- **Improved surface finish**- Excellent surface finish and perpendicularity with high-precision products
- **Excellent clamping stability**- Satisfactory clamping force of inserts by the use of the key shape

## Code system

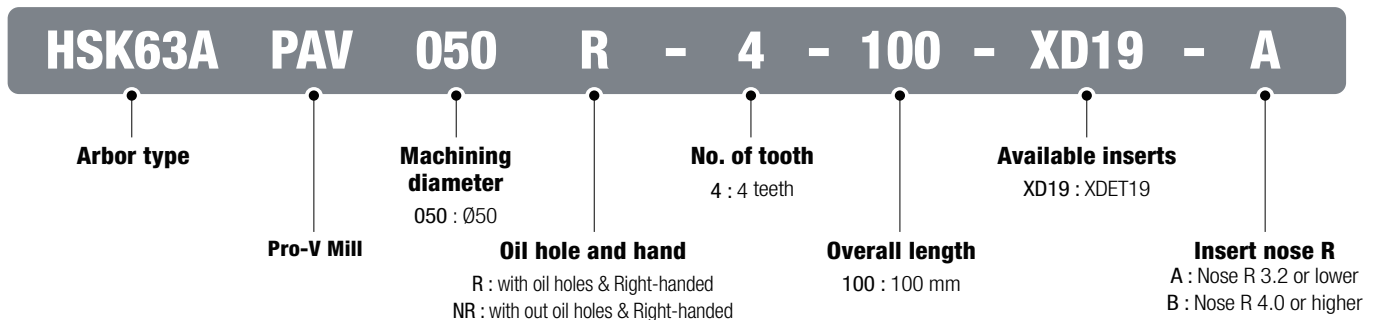
### • Cutter



### • Shank



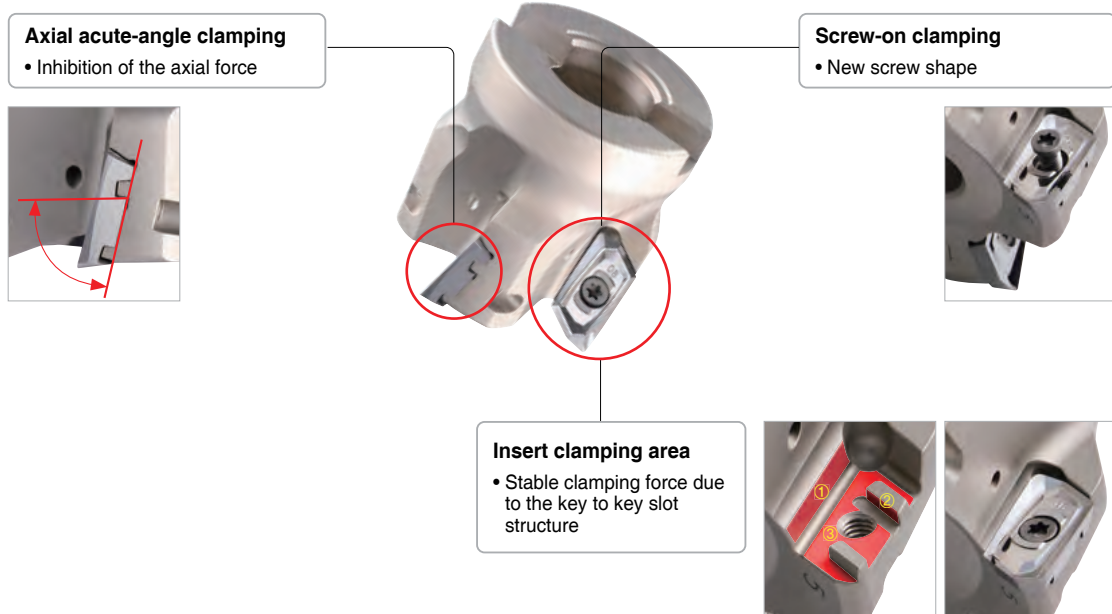
### • Tooling System



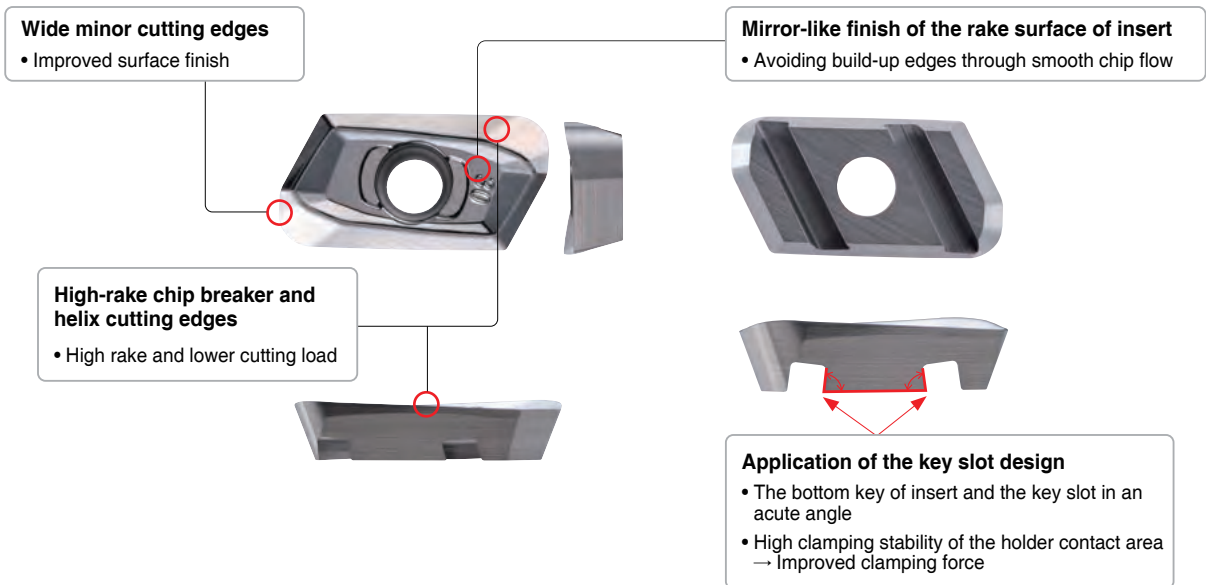
# B Technical Information for Pro-V Mill

## Features of cutter


- 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



## Features of insert



## Features of chip breaker

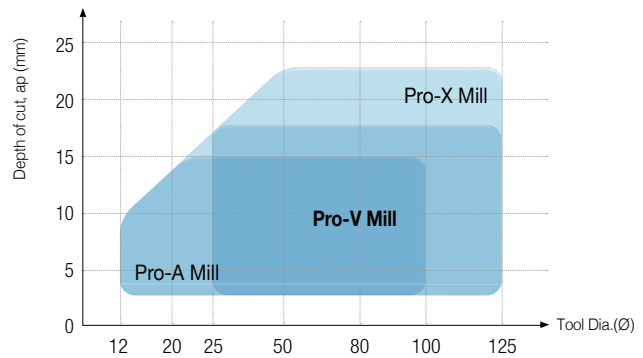
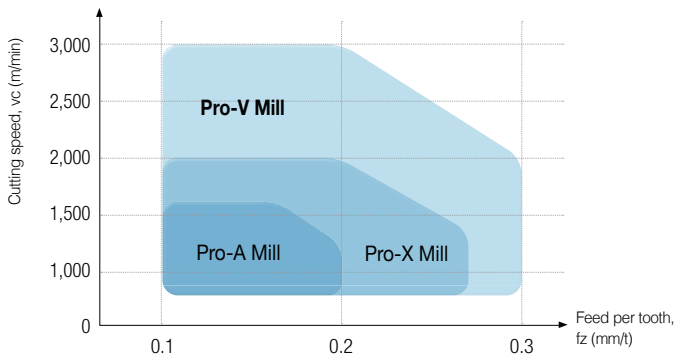
Insert	Cutting-edge	Use	Features
MA		For non-ferrous metals	Ensuring satisfactory machining quality with the application of mirror-like cutting edges optimized for aluminum machining

## Recommended cutting conditions

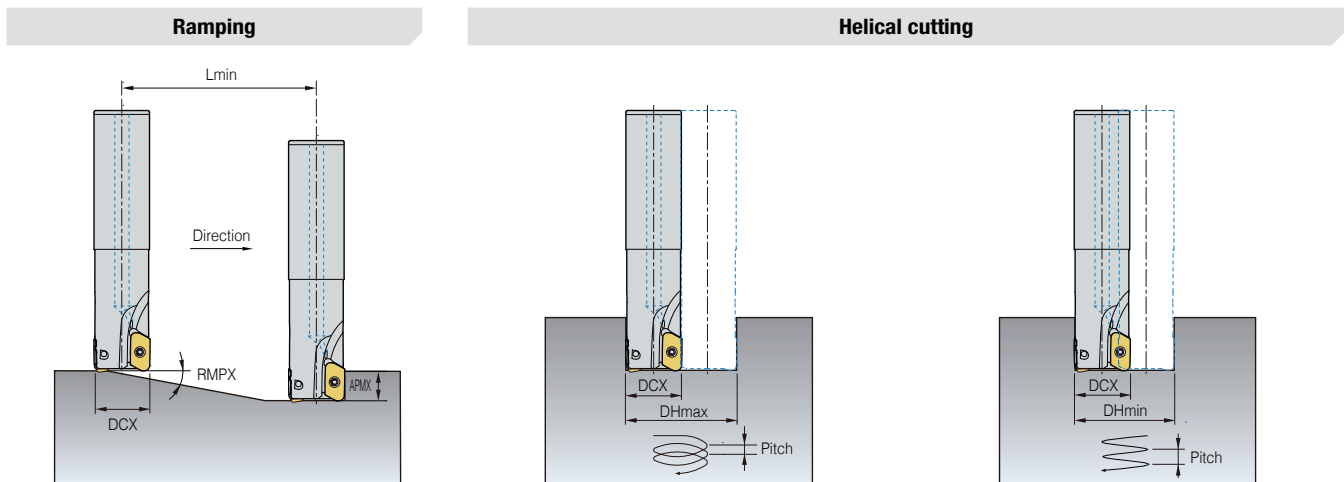
Workpiece		Grade	vc (m/min)	APMX (mm)
<b>N</b>	Aluminum	Si ≤ 5%	H01	17
			H05	
			PD1005	
		Si ≤ 10%	PD1010	

※ 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



DCX	Ramping		Blind hole helical cutting				Thru hole helical cutting	
	RMPX	Lmin	DHmin	Max pitch	DHmax	Max pitch	DHmin	Max pitch
25	15.0	59	41	13.0	44	15.5	27	2.0
32	10.0	99	55	11.0	58	12.5	41	4.5
40	7.0	142.5	71	10.5	74	11.5	57	6.0
50	5.0	200	91	10.0	94	10.5	77	6.5
63	3.5	286	117	9.2	120	9.5	103	7.0
80	2.6	385	151	9.0	154	9.5	137	7.3
100	2.0	501	191	9.0	194	9.0	177	7.6
125	1.5	668	241	8.5	244	8.5	227	7.5

• When ramping and helical milling, table feed,  $v_f$  (mm/min) should be lower than 70% of the recommended cutting conditions.

• When helical milling, Max. pitch,  $DH_{max}$  should be lower than  $APMX$ .

• When ramping, the depth of cut should be lower than  $APMX$ .

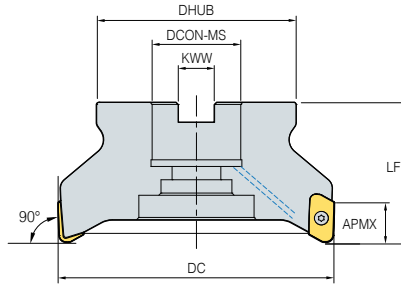
$$L_{min} = \frac{APMX}{\tan(RMPX)} \quad (\text{mm})$$

•  $L_{min}$  : Minimum inclination cutting length

•  $ap$  : Depth of cut

•  $RMPX$  : Max. ramping angle

## PAVCM-XD19



KAPR  
**90°**  
• GAMP : 11°~14°  
• GAMF : -11°~-9°

(mm)

Designation	Stock		CICT	DC	DHUB	DCON-MS	KWW	LF	APMX	kg
	A	B								
PAVCM	040R-16-3-XD19-A,B	●	3	40	34	16	8.4	45	17	0.2
	050R-22-4-XD19-A,B	●	4	50	47	22	10.4	50	17	0.3
	063R-22-5-XD19-A,B	●	5	63	48	22	10.4	50	17	0.5
	080R-27-5-XD19-A,B	●	5	80	60	27	12.4	50	17	0.8
	100R-32-6-XD19-A,B	●	6	100	70	32	14.4	50	17	1.7
	125R-40-7-XD19-A,B	●	7	125	90	40	16.4	63	17	2.8

- Type A Use Insert Nose R 0.4~3.2, and Type B Use Nose R 4.0~5.0
- When using a spindle at high speed, please check the balance of tool and use it after replacing with the new screw.

● : Stock item

### Available inserts

#### XDET-MA



Designation	Cermet	Coated										page	Designation	Cermet	Coated										page						
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6100	PC9530	PC9540	PC5300			PC5400	PD1005	PD1010	H01	H05	CN30	NC5330	NCM325	NCM335	NCM535	NCM545		PC3700	PC6100	PC9530	PC9540	PC5300	PC5400
XDET 190504PEFR-MA															●●	XDET 190524PEFR-MA															●●
190508PEFR-MA															●●	190530PEFR-MA															●●
190512PEFR-MA															●●	190532PEFR-MA															●●
190516PEFR-MA															●●	190540PEFR-MA															●●
190520PEFR-MA															●●	190550PEFR-MA															●●

### Available arbors

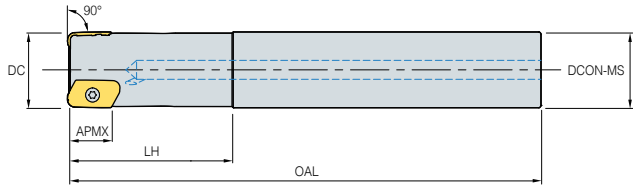
Cutter Designation	Available arbors
PAVCM 040R-16-3-XD19	BT□□-FMC16-□□
050R-22-4-XD19	BT□□-FMC22-□□
063R-22-5-XD19	BT□□-FMC22-□□
080R-27-5-XD19	BT□□-FMC27-□□
100R-32-6-XD19	BT□□-FMC32-□□
125R-40-7-XD19	BT□□-FMC40-□□

### Parts

Specification	Screw	Wrench
Ø40~Ø125	PTKA0408-A	TW15S

- Available inserts **B31**
- Available arbors and bolt **E96**

# PAVS-XD19



KAPR  
**90°**

- GAMP : 8°~11°
- GAMF : -14°~-11°

Designation	Stock		CIC	DC	DCON-MS	LH	OAL	APMX	kg
	A	B							
<b>PAVS</b>	●		2	25	25	60	140	17	0.4
	●		2	32	32	70	150	17	0.8
	●		2	32	32	70	200	17	0.8
	●		3	40	40	70	200	17	1.7

• Type A Use Insert Nose R 0.4~3.2, and Type B Use Nose R 4.0~5.0 ● : Stock item  
 • 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								
	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6100	PC9530	PC9540			PC5300	PC5400	PD1005	PD1010	H01	H05	CN30	NC5330	NCM325	NCM335		NCM535	NCM545	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400
XDET 190504PEFR-MA											●	●	B31	XDET 190524PEFR-MA											●	●	B31				
190508PEFR-MA											●	●		190530PEFR-MA											●	●					
190512PEFR-MA											●	●		190532PEFR-MA											●	●					
190516PEFR-MA											●	●		190540PEFR-MA											●	●					
190520PEFR-MA											●	●		190550PEFR-MA											●	●					

## Parts

Specification			
Ø25~Ø40	PTKA0408-A	TW15S	

Available inserts **B31**



## MAT (Steel shank type)

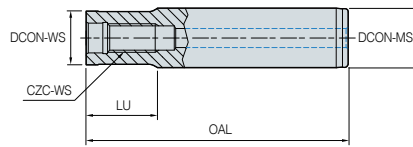


Fig. 1

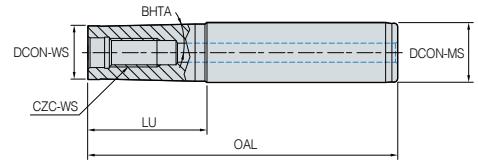


Fig. 2

(mm)

Designation	Stock	DCON-WS	DCON-MS	LU	OAL	CZC-WS	Fig.
MAT- M06-020-S10S	●	9	5	6.5	20	M06	1
M6B-020-S12S	●	11	12	20	76	M06	1
M6B-040-S12S	●	11	12	40	96	M06	1
M08-020-S16S	●	14.5	16	20	80	M08	1
M10-030-S20S	●	18	20	30	10	M10	1
M12-030-S25S	●	22.5	25	29	11	M12	1
M16-035-S32S	●	28.5	32	35	12	M16	1
M06-040-S12T	●	9.5	12	40	96	M06	2
M06-065-S16T	●	9.5	16	65	125	M06	2
M6B-065-S16T	●	11	16	65	125	M06	2
M6B-080-S16T	●	11	16	80	140	M06	2
M08-040-S16T	●	14.5	16	40	100	M08	2
M08-065-S16T	●	14.5	16	65	125	M08	2
M08-080-S20T	●	14.5	20	80	150	M08	2
M08-110-S25T	●	14.5	25	110	190	M08	2
M10-050-S20T	●	18	20	50	120	M10	2
M10-070-S20T	●	18	20	70	140	M10	2
M10-090-S25T	●	18	25	90	170	M10	2
M10-110-S25T	●	18	25	110	190	M10	2
M10-130-S32T	●	18	32	130	220	M10	2
M12-050-S25T	●	22.5	25	50	130	M12	2
M12-070-S25T	●	22.5	25	70	150	M12	2
M12-090-S25T	●	22.5	25	90	170	M12	2
M12-110-S32T	●	22.5	32	110	200	M12	2
M12-175-S40T	●	22.5	40	175	300	M12	2
M16-055-S32T	●	28.5	32	55	145	M16	2
M16-080-S32T	●	28.5	32	80	170	M16	2
M16-120-S32T	●	28.5	32	120	210	M16	2
M16-175-S40T	●	28.5	40	175	300	M16	2

• S: straight neck adaptor • T: taper neck adaptor

● : Stock item

<b>FMRM type</b>  ⌚ B235 ~ B238	<b>LBE-MHD type</b>  ⌚ B328	<b>PAM/PAXM type</b>  ⌚ B379, B386	<b>AMM type</b>  ⌚ B200 ~ B202	<b>RM3PM type</b>  ⌚ B85	<b>RM4PM/RM4ZM type</b>  ⌚ B98
<b>RM6PM type</b>  ⌚ B114, B115	<b>HFMDM type</b>  ⌚ B274 ~ B276	<b>HFMM type</b>  ⌚ B282	<b>HRMM type</b>  ⌚ B304, B305	<b>HRMDM type</b>  ⌚ B296 ~ B298	<b>GBEM type</b>  ⌚ B335

# MAT-C (Carbide shank type)

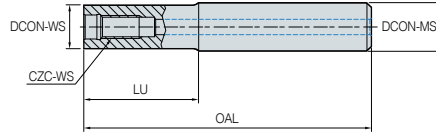


Fig. 1

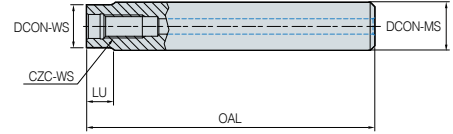


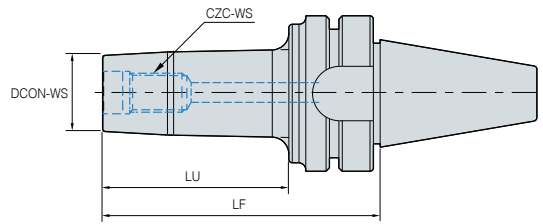
Fig. 2

(mm)

Designation	Stock	DCON-WS	DCON-MS	LU	OAL	CZC-WS	Fig.
<b>MAT-</b> M06-030-S10S-C-80		9.5	10	30	80	M06	1
M06-050-S10S-C-100		9.5	10	50	100	M06	1
M06-080-S10S-C-130		9.5	10	80	130	M06	1
M6B-030-S12S-C-80		11	12	30	80	M06	1
M6B-050-S12S-C-100		11	12	50	100	M06	1
M6B-080-S12S-C-130		11	12	80	130	M06	1
M08-080-S16S-C	●	14.5	16	80	150	M08	1
M08-110-S16S-C	●	14.5	16	110	180	M08	1
M08-150-S16S-C		14.5	16	150	250	M08	2
M08-010-S16S-C-150		14.5	16	10	150	M08	2
M08-010-S16S-C-180		14.5	16	10	180	M08	2
M08-010-S16S-C-250		14.5	16	10	250	M08	1
M10-090-S20S-C	●	18	20	90	170	M10	1
M10-110-S20S-C	●	18	20	110	200	M10	1
M10-175-S20S-C		18	20	175	300	M10	2
M10-010-S20S-C-170	●	18	20	10	170	M10	2
M10-010-S20S-C-200	●	18	20	10	200	M10	2
M10-010-S20S-C-300		18	20	10	300	M10	1
M12-090-S25S-C	●	22.5	25	90	170	M12	1
M12-110-S25S-C		22.5	25	110	200	M12	1
M12-175-S25S-C		22.5	25	175	300	M12	2
M12-015-S25S-C-170		22.5	25	15	170	M12	2
M12-015-S25S-C-200		22.5	25	15	200	M12	2
M12-015-S25S-C-300		22.5	25	15	300	M12	1
M16-090-S32S-C	●	28.5	32	90	180	M16	1
M16-120-S32S-C		28.5	32	120	210	M16	1
M16-175-S32S-C		28.5	32	175	300	M16	2
M16-020-S32S-C-180		28.5	32	20	180	M16	2
M16-020-S32S-C-210		28.5	32	20	210	M16	2
M16-020-S32S-C-300	●	28.5	32	20	300	M16	2

<p><b>FMRM type</b></p>  <p>⊕ B235 ~ B238</p>	<p><b>LBE-MHD type</b></p>  <p>⊕ B328</p>	<p><b>PAM/PAXM type</b></p>  <p>⊕ B379, B386</p>	<p><b>AMM type</b></p>  <p>⊕ B200 ~ B202</p>	<p><b>RM3PM type</b></p>  <p>⊕ B85</p>	<p><b>RM4PM/RM4ZM type</b></p>  <p>⊕ B98</p>
<p><b>RM6PM type</b></p>  <p>⊕ B114, B115</p>	<p><b>HFMDM type</b></p>  <p>⊕ B274 ~ B276</p>	<p><b>HFMM type</b></p>  <p>⊕ B282</p>	<p><b>HRMM type</b></p>  <p>⊕ B304, B305</p>	<p><b>HRMDM type</b></p>  <p>⊕ B296 ~ B298</p>	<p><b>GBEM type</b></p>  <p>⊕ B335</p>

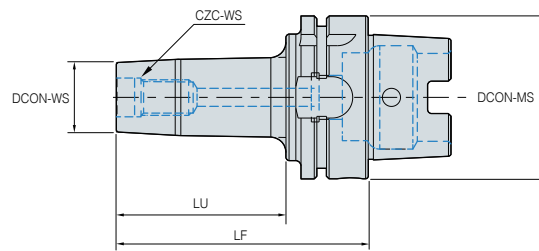
## BT30/BT40/BT50



		(mm)						
	Designation	Stock	DCON-WS	BD	BDX	LU	LF	CZC-WS
BT30-	MAT-M06-053		11	11.7	30	21	53	M06*1.0
	MAT-M08-057		14.5	15.7	35	25	57	M08*1.25
	MAT-M10-062		18	19.7	38	30	62	M10*1.5
	MAT-M12-067		23	24.7	41	35	67	M12*1.75
	MAT-M16-067		29	31.7	41	35	67	M16*2.0
BT40-	MAT-M06-062		11	14	5	25	62	M06*1.0
	MAT-M06-077		11	11.7	40	40	77	M06*1.0
	MAT-M06-092		11	11.7	40	55	92	M06*1.0
	MAT-M08-067		14.5	15.7	44	30	67	M08*1.25
	MAT-M08-082		14.5	15.7	44	45	82	M08*1.25
	MAT-M08-097		14.5	15.7	44	60	97	M08*1.25
	MAT-M10-072		18	19.7	50	35	72	M10*1.5
	MAT-M10-087		18	19.7	50	50	87	M10*1.5
	MAT-M10-102		18	19.7	50	65	102	M10*1.5
	MAT-M12-077		23	24.7	55	40	77	M12*1.75
	MAT-M12-092		23	24.7	55	55	92	M12*1.75
	MAT-M12-107		23	24.7	55	70	107	M12*1.75
	MAT-M16-077		29	31.7	55	40	77	M16*2.0
	MAT-M16-092		29	31.7	55	55	92	M16*2.0
	MAT-M16-107		29	31.7	55	70	107	M16*2.0
BT50-	MAT-M06-083		11	15	5	35	83	M06*1.0
	MAT-M06-098		11	11.7	40	65	113	M06*1.0
	MAT-M06-113		14.5	15.7	45	40	88	M08*1.25
	MAT-M08-088		14.5	15.7	45	55	103	M08*1.25
	MAT-M08-103		14.5	15.7	45	70	118	M08*1.25
	MAT-M08-118		18	19.7	55	45	93	M10*1.5
	MAT-M10-093		18	19.7	55	65	113	M10*1.5
	MAT-M10-113		18	19.7	55	80	128	M10*1.5
	MAT-M10-128		23	24.7	65	55	103	M12*1.75
	MAT-M12-103		23	24.7	65	70	118	M12*1.75
	MAT-M12-118		23	24.7	65	85	133	M12*1.75
	MAT-M12-133		29	31.7	85	55	103	M16*2.0
	MAT-M16-103		29	31.7	85	70	118	M16*2.0
	MAT-M16-118		29	31.7	85	85	133	M16*2.0
	MAT-M16-133		29.0	31.7	41.0	85	133	M16*2.0

● : Stock item

# HSK63A/HSK100A



(mm)






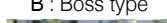
	Designation	Stock	DCON-WS	BD	BDX	LU	LF	CZC-WS
HSK63A-	MAT-M06-061		11	11.7	40	25	61	M06*1.0
	MAT-M06-076		11	11.7	40	40	76	M06*1.0
	MAT-M06-091		11	11.7	40	55	91	M06*1.0
	MAT-M08-066		14.5	15.7	44	30	66	M08*1.25
	MAT-M08-081		14.5	15.7	44	45	81	M08*1.25
	MAT-M08-096		14.5	15.7	44	60	96	M08*1.25
	MAT-M10-071		18	19.7	50	35	71	M10*1.5
	MAT-M10-086		18	19.7	50	50	86	M10*1.5
	MAT-M10-101		18	19.7	50	65	101	M10*1.5
	MAT-M12-076		23	24.7	55	40	76	M12*1.75
	MAT-M12-091		23	24.7	55	55	91	M12*1.75
	MAT-M12-106		23	24.7	55	70	106	M12*1.75
	MAT-M16-076		29	31.7	55	40	76	M16*2.0
	MAT-M16-091		29	31.7	55	55	91	M16*2.0
MAT-M16-106		29	31.7	55	70	106	M16*2.0	
HSK100A-	MAT-M06-074		11	11.7	40	35	74	M06*1.0
	MAT-M06-089		11	11.7	40	50	89	M06*1.0
	MAT-M06-104		11	11.7	40	65	104	M06*1.0
	MAT-M08-079		14.5	15.7	45	40	79	M08*1.25
	MAT-M08-094		14.5	15.7	45	55	94	M08*1.25
	MAT-M08-109		14.5	15.7	45	70	109	M08*1.25
	MAT-M10-084		18	19.7	55	45	84	M10*1.5
	MAT-M10-104		18	19.7	55	65	104	M10*1.5
	MAT-M10-119		18	19.7	55	80	119	M10*1.5
	MAT-M12-094		23	24.7	65	55	94	M12*1.75
	MAT-M12-109		23	24.7	65	70	109	M12*1.75
	MAT-M12-124		23	24.7	65	85	124	M12*1.75
	MAT-M16-094		29	31.7	85	55	94	M16*2.0
	MAT-M16-109		29	31.7	85	70	109	M16*2.0
MAT-M16-124		29	31.7	85	85	124	M16*2.0	

● : Stock item

# B Technical Information for Side Milling Cutters

## Adjusting Side Cutter

### Code system

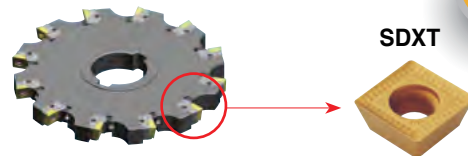
<b>R</b>	<b>A</b>	<b>FC</b>	<b>B</b>	<b>125</b>	<b>14</b>	<b>18</b>	<b>-</b>	<b>R</b>									
<b>Insert clamping way</b>		<b>Insert configuration</b>		<b>Cutter diameter</b>	<b>Min. width of cutter</b>			<b>Hand</b>									
 <p>R: Radial type (Using SDXT)</p>  <p>T: Tangential type (Using CNHQ)</p>		 <p>FC Full side cutter</p>  <p>HC Half side cutter</p>						<table border="1"> <tr> <td>Unmarked</td> <td>R</td> <td>L</td> </tr> <tr> <td>Neutral</td> <td>Right</td> <td>Left</td> </tr> <tr> <td>Full side cutter (Plane)</td> <td colspan="2">Half side cutter Boss type</td> </tr> </table>	Unmarked	R	L	Neutral	Right	Left	Full side cutter (Plane)	Half side cutter Boss type	
Unmarked	R	L															
Neutral	Right	Left															
Full side cutter (Plane)	Half side cutter Boss type																
	<b>Adjusting</b>		<b>Cutter type</b>			<b>Max. width of cutter</b>											
	A: Adjusting side cutter		 <p>P: Plane type</p>  <p>B: Boss type</p>			For half side cutter, minimum width of the cutter will be written only											

### Tangential type (High rigidity)



- Medium/Roughing
- Excellent performance at medium to roughing range (14~30 mm)
- 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)

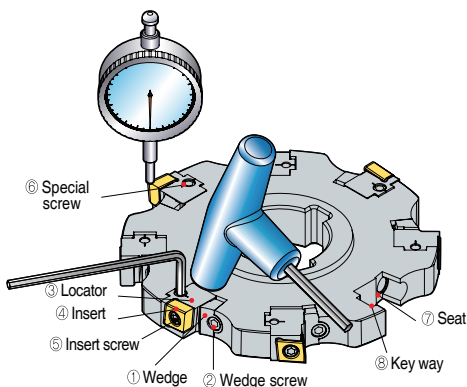


- Medium/Finishing
- Suitable for small width cutting operation (12~24 mm)
- 3 dimensional chip breaker provides smooth cutting operation
- Different chip breakers available depending on the application (MF, MM, FA)
- Economical insert using 4 cutting-edges per insert

### Features of insert

- Precise adjustable side cutter can control the width of the cutter by 5  $\mu\text{m}$  unit
- Since the width of the cutter is adjustable up to  $\pm 1.5$  mm, 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 so that it 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

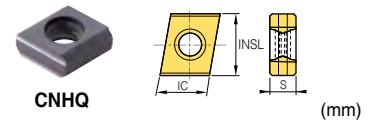


#### How to assemble the adjusting side cutter

1. Clamp ① wedge slightly on ⑦ locator-wedge pocket by using ② wedge screw
2. Put ③ locator on ⑦ locator-wedge pocket along with the ⑧ key-way
3. Tighten the ⑥ taper screw little bit to set proper position of locator
4. Tighten the ② wedge screw tightly by using 70~80N.m torque
5. Lastly, put the ④ insert on insert pocket of ③ locator, clamp it with ⑤ insert screw.

#### How to adjust Run-out & cutting width

1. Settle the adjusting side cutter after cleaning the jig for measurement
2. Un-screw the ② Wedge screw first, then tighten ① wedge slightly again by using 8N.m torque
3. Adjust the height of cutting-edge by using a dial gauge to set the width of the cutter
4. Tighten the ② wedge screw tightly by using 70~80N.m torque
5. To finish the setting, tighten the ⑥ taper screw for strong clamp

**Tangential Type**

**➤ Cutting width per insert & type of cutter**

Designation	Coated		Cutting width for half side cutter (ap)	Cutting width for full side cutter (ap)	INSL	IC	S
	NCM535	PC6100					
CNHQ1005 - C0.5 - R0.5 - C1.0 - R1.0			9.0	14~18	10	10	5.4
			8.5	14~17			
CNHQ1305 - C0.5 - R0.5 - C1.0 - R1.0 - C1.5 - R1.5			12	18~21/21~24	12.7	10	5.4
			11.5	18~21/21~23			
			11	18~21/21~22			
CNHQ1606 - C0.5 - R0.5 - C1.0 - R1.0 - C1.5 - R1.5 - C2.0 - R2.0			15	24~27/27~30	16	12	6.4
			14.5	24~27/27~29			
			14	24~27/27~28			
			13.5	24~27			

 ➤ Applicable cutter **B7**

● : Stock item

**➤ Recommended cutting conditions**

ISO	Grade	vc(m/min)	fz(mm/t)
P	NCM535	190~310	0.10~0.30
	PC3700	160~270	
M	PC5300	90~150	0.10~0.30
	NCM335	180~290	
K	PC6100	140~230	0.10~0.30

**Radial type**

**➤ Cutting width per insert & type of cutter**

Designation	Coated											Uncoated		Cutting width for half side cutter (ap)	Cutting width for full side cutter (ap)	IC	S		
	NC330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6100	PC9530	PC9540	PC5300	PC5400					H01	H05
SDXT 09M405R-MA 09M405L-MA 09M405R-MF 09M405L-MF 09M405R-MM 09M405L-MM														●	●	8	12~14 14~16	9.525	4
			●						●	●		●	●						
			●						●	●		●	●						
									●										
130508R-MA 130508L-MA 130508R-MF 130508L-MF 130508R-MM 130508L-MM														●	●	10.5	16~18 18~20 20~22 22~24	13.5	5.56
			●						●	●		●	●						
			●						●	●		●	●						
									●										

 ➤ Applicable insert **B20**

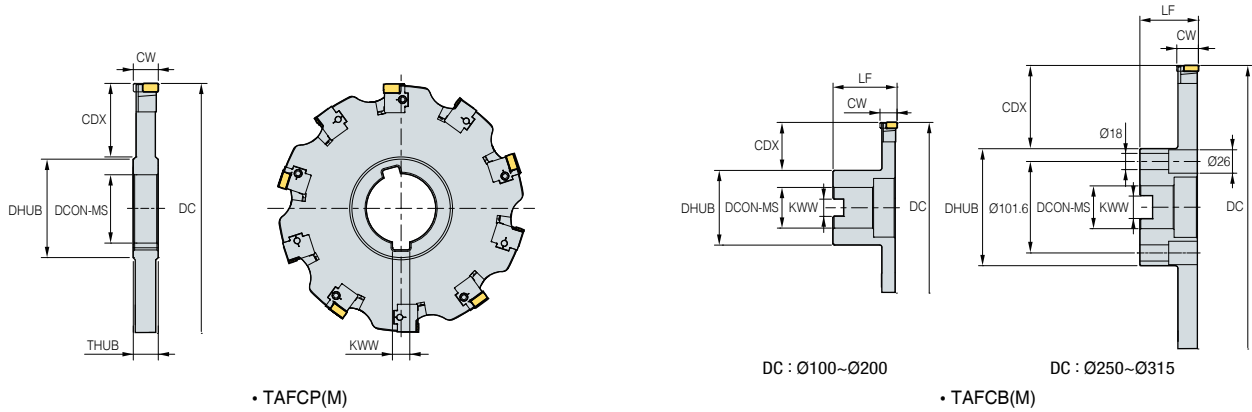
● : Stock item

**➤ Recommended cutting conditions**

ISO	Grade	vc(m/min)	fz(mm/t)
P	NCM325	190~310	0.08~0.30
	NCM335	180~290	0.08~0.25
	PC3700	160~270	0.10~0.25
M	PC9530	90~150	0.10~0.25
	PC5300	90~150	
K	PC8110	140~230	0.10~0.25
	PC6100	140~230	

# B Side Milling Cutter

## Tangential Type (Full side cutter)



• TAFCP(M)

• TAFCB(M)

(mm)

Designation	DCON-MS	THUB	DHUB	KWW	CDX	Designation	DCON-MS	LF	DHUB	KWW	CDX	DC	Dimension				
													CWN	CWX	CICT		
<b>TAFCP (M)</b>	<b>1001418</b>	31.75(32)	14	48	7.92(8)	35.2	<b>TAFCB (M)</b>	<b>1001418R/L</b>	31.75(32)	50	54	12.7(14.4)	8	28	14	18	6
	<b>1251418</b>	38.1(40)	14	56	9.52(10)	42.3		<b>1251418R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	14	18	8
	<b>1601418</b>	38.1(40)	14	56	9.52(10)	42.3		<b>1601418R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	14	18	10
	<b>2001418</b>	50.8(50)	14	72	12.7(12)	55.8		<b>2001418R/L</b>	50.8(40)	65	90	19.0(16.4)	11	30	14	18	12
	<b>2501418</b>	50.8(50)	14	72	12.7(12)	55.8		<b>2501418R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	14	18	16
<b>3151418</b>	50.8(50)	14	72	12.7(12)	55.8	<b>3151418R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	14	18	20		
<b>TAFCP (M)</b>	<b>1001821</b>	31.75(32)	18	48	7.92(8)	35.2	<b>TAFCB (M)</b>	<b>1001821R/L</b>	31.75(32)	50	50	12.7(14.4)	8	28	18	21	6
	<b>1251821</b>	38.1(40)	18	56	9.52(10)	42.3		<b>1251821R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	18	21	8
	<b>1601821</b>	38.1(40)	18	56	9.52(10)	42.3		<b>1601821R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	18	21	10
	<b>2001821</b>	50.8(50)	18	72	12.7(12)	55.8		<b>2001821R/L</b>	50.8(40)	65	90	19.0(16.4)	11	30	18	21	12
	<b>2501821</b>	50.8(50)	18	72	12.7(12)	55.8		<b>2501821R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	18	21	16
<b>3151821</b>	50.8(50)	18	72	12.7(12)	55.8	<b>3151821R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	18	21	20		
<b>TAFCP (M)</b>	<b>1002124</b>	31.75(32)	21	48	7.92(8)	35.2	<b>TAFCB (M)</b>	<b>1002124R/L</b>	31.75(32)	50	54	12.7(14.4)	8	28	21	24	6
	<b>1252124</b>	38.1(40)	21	56	9.52(10)	42.3		<b>1252124R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	21	24	8
	<b>1602124</b>	38.1(40)	21	56	9.52(10)	42.3		<b>1602124R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	21	24	10
	<b>2002124</b>	50.8(50)	21	72	12.7(12)	55.8		<b>2002124R/L</b>	50.8(40)	65	90	19.0(16.4)	11	30	21	24	12
	<b>2502124</b>	50.8(50)	21	72	12.7(12)	55.8		<b>2502124R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	21	24	16
<b>3152124</b>	50.8(50)	21	72	12.7(12)	55.8	<b>3152124R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	21	24	20		
<b>TAFCP (M)</b>	<b>1252427</b>	38.1(40)	24	56	9.52(10)	42.3	<b>TAFCB (M)</b>	<b>1252427R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	24	27	8
	<b>1602427</b>	38.1(40)	24	56	9.52(10)	42.3		<b>1602427R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	24	27	10
	<b>2002427</b>	50.8(50)	24	72	12.7(12)	55.8		<b>2002427R/L</b>	50.8(40)	65	90	19.0(16.4)	11	30	24	27	12
	<b>2502427</b>	50.8(50)	24	72	12.7(12)	55.8		<b>2502427R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	24	27	16
	<b>3152427</b>	50.8(50)	24	72	12.7(12)	55.8		<b>3152427R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	24	27	20
<b>TAFCP (M)</b>	<b>1252730</b>	38.1(40)	27	56	9.52(10)	42.3	<b>TAFCB (M)</b>	<b>1252730R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	27	30	8
	<b>1602730</b>	38.1(40)	27	56	9.52(10)	42.3		<b>1602730R/L</b>	38.1(40)	60	70	15.9(16.4)	10	30	27	30	10
	<b>2002730</b>	50.8(50)	27	72	12.7(12)	55.8		<b>2002730R/L</b>	50.8(40)	65	90	19.0(16.4)	11	30	27	30	12
	<b>2502730</b>	50.8(50)	27	72	12.7(12)	55.8		<b>2502730R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	27	30	16
	<b>3152730</b>	50.8(50)	27	72	12.7(12)	55.8		<b>3152730R/L</b>	47.625(60)	65	130	25.4(25.7)	14	38	27	30	20

Available inserts and Recommended Cutting conditions **B405**

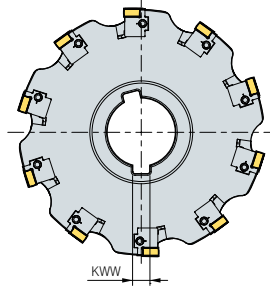
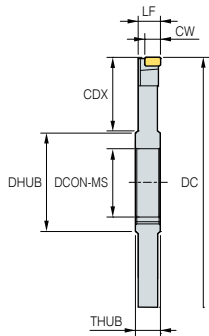
The ap (Maximum width of cutter) size written above is the number when using ( )Metric size, ● : Stock item insert having corner size C0.5 or R0.5

### Parts

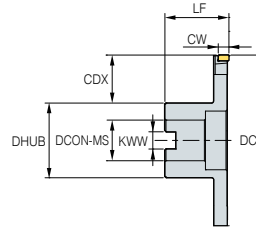
Specification	Insert	Locator	Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge Wrench	Locator Wrench
Edge width TAFCP(B)									
□□□1418R/L	CNHQ1005-□□□	LSA-CH10R/L	WSA10N	FTKA0410	DHA0617	SHGA0411	TW15S	HW30	-
□□□1821R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	SHGA0411	TW15S	HW40	HW30L
□□□2124R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	SHGA0411	TW15S	HW40	HW30L
□□□2427R/L	CNHQ1606-□□□	LSA-CH16R/L	WSA13N	FTGA0513-P	DHA0821F	SHGA0411	TW20S	HW40	HW30L
□□□2730R/L	CNHQ1606-□□□	LSA-CH16R/L	WSA13N	FTGA0513-P	DHA0821F	SHGA0411	TW20S	HW40	HW30L

Note) The Wedge screw for 1001821, 1002124 cutter is DHA0818F

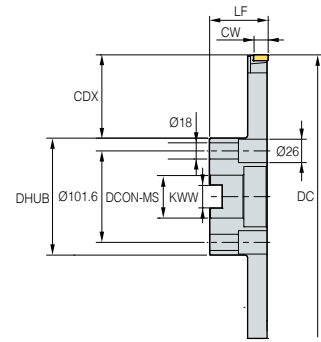
## Tangential Type (Half side cutter)



• TAHC(P)(M)



DC : Ø100-Ø200



DC : Ø250-Ø315

• TAHC(B)(M)

Designation	DCON-MS	THUB	DHUB	KWW	CDX	Designation	DCON-MS	LF	DHUB	KWW	CDX	DC	Dimension			
													CW	CICT		
TAHCP (M)	10014R/L	31.75(32)	14	48	7.92(8)	24	TAHCB (M)	10014R/L	31.75(32)	50	54	12.7(14.4)	21	100	9	6
	12514R/L	38.1(40)	14	56	9.52(10)	32		12514R/L	38.1(40)	60	70	15.9(16.4)	25	125	9	8
	16014R/L	38.1(40)	14	56	9.52(10)	50		16014R/L	38.1(40)	60	70	15.9(16.4)	43	160	9	10
	20014R/L	50.8(50)	14	72	12.7(12)	61		20014R/L	50.8(40)	65	90	19.1(16.4)	53	200	9	12
	25014R/L	50.8(50)	14	72	12.7(12)	86		25014R/L	47.625(60)	65	130	25.4(25.7)	58	250	9	16
	31514R/L	50.8(50)	14	72	12.7(12)	118		31514R/L	47.625(60)	65	130	25.4(25.7)	90	315	9	20
TAHCP (M)	10018R/L	31.75(32)	18	48	7.92(8)	24	TAHCB (M)	10018R/L	31.75(32)	50	54	12.7(14.4)	21	100	12	6
	12518R/L	38.1(40)	18	56	9.52(10)	32		12518R/L	38.1(40)	60	70	15.9(16.4)	25	125	12	8
	16018R/L	38.1(40)	18	56	9.52(10)	50		16018R/L	38.1(40)	60	70	15.9(16.4)	43	160	12	10
	20018R/L	50.8(50)	18	72	12.7(12)	61		20018R/L	50.8(40)	65	90	19.1(16.4)	53	200	12	12
	25018R/L	50.8(50)	18	72	12.7(12)	86		25018R/L	47.625(60)	65	130	25.4(25.7)	58	250	12	16
	31518R/L	50.8(50)	18	72	12.7(12)	118		31518R/L	47.625(60)	65	130	25.4(25.7)	90	315	12	20
TAHCP (M)	10021R/L	31.75(32)	21	48	7.92(8)	24	TAHCB (M)	10021R/L	31.75(32)	50	54	12.7(14.4)	21	100	12	6
	12521R/L	38.1(40)	21	56	9.52(10)	32		12521R/L	38.1(40)	60	70	15.9(16.4)	25	125	12	8
	16021R/L	38.1(40)	21	56	9.52(10)	50		16021R/L	38.1(40)	60	70	15.9(16.4)	43	160	12	10
	20021R/L	50.8(50)	21	72	12.7(12)	61		20021R/L	50.8(40)	65	90	19.1(16.4)	53	200	12	12
	25021R/L	50.8(50)	21	72	12.7(12)	86		25021R/L	47.625(60)	65	130	25.4(25.7)	58	250	12	16
	31521R/L	50.8(50)	21	72	12.7(12)	118		31521R/L	47.625(60)	65	130	25.4(25.7)	90	315	12	20
TAHCP (M)	12524R/L	38.1(40)	24	56	9.52(10)	32	TAHCB (M)	12524R/L	38.1(40)	60	70	15.9(16.4)	25	125	15	8
	16024R/L	38.1(40)	24	56	9.52(10)	50		16024R/L	38.1(40)	60	70	15.9(16.4)	43	160	15	10
	20024R/L	50.8(50)	24	72	12.7(12)	61		20024R/L	50.8(40)	65	90	19.1(16.4)	53	200	15	12
	25024R/L	50.8(50)	24	72	12.7(12)	86		25024R/L	47.625(60)	65	130	25.4(25.7)	58	250	15	16
	31524R/L	50.8(50)	24	72	12.7(12)	118		31524R/L	47.625(60)	65	130	25.4(25.7)	90	315	15	20
	TAHCP (M)	12527R/L	38.1(40)	27	56	9.52(10)		32	TAHCB (M)	12527R/L	38.1(40)	60	70	15.9(16.4)	25	125
16027R/L		38.1(40)	27	56	9.52(10)	50	16027R/L	38.1(40)		60	70	15.9(16.4)	43	160	15	10
20027R/L		50.8(50)	27	72	12.7(12)	61	20027R/L	50.8(40)		65	90	19.1(16.4)	53	200	15	12
25027R/L		50.8(50)	27	72	12.7(12)	86	25027R/L	47.625(60)		65	130	25.4(25.7)	58	250	15	16
31527R/L		50.8(50)	27	72	12.7(12)	118	31527R/L	47.625(60)		65	130	25.4(25.7)	90	315	15	20

➤ Available inserts and Recommended Cutting conditions **B405**

• The ap (Maximum width of cutter) size written above is the number when using ( ) Metric size, ● : Stock item insert having corner size C0.5 or R0.5

### Parts

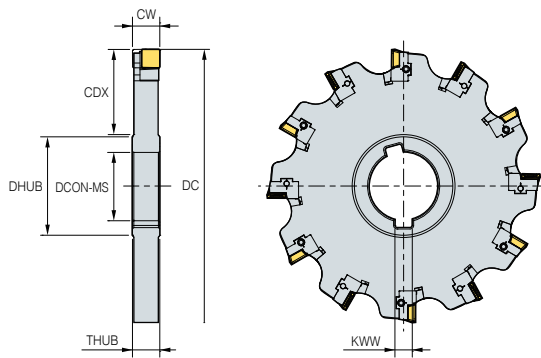
Specification	Insert	Locator	Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge Wrench	Locator Wrench
□□□1418R/L	CNHQ1005-□□□	LSA-CH10R/L	WSA10N	FTKA0410	DHA0617	SHGA0411	TW15S	HW30	-
□□□1821R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	SHGA0411	TW15S	HW40	HW30L
□□□2124R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	SHGA0411	TW15S	HW40	HW30L
□□□2427R/L	CNHQ1606-□□□	LSA-CH16R/L	WSA13N	FTGA0513-P	DHA0821F	SHGA0411	TW20S	HW40	HW30L
□□□2730R/L	CNHQ1606-□□□	LSA-CH16R/L	WSA13N	FTGA0513-P	DHA0821F	SHGA0411	TW20S	HW40	HW30L

Note) The Wedge screw for 1001821, 1002124 cutter is DHA0818F

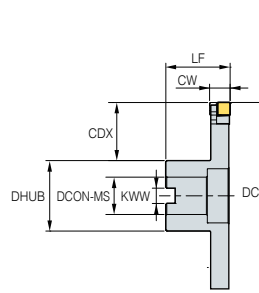


# B Side Milling Cutter

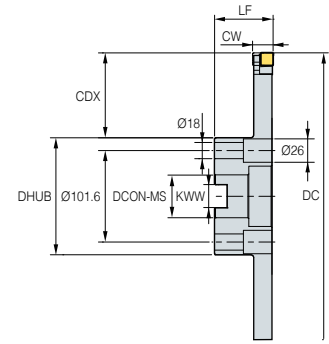
## Radial Type (Full side cutter)



• RAFCP(M)



DC : Ø100~Ø200



DC : Ø250~Ø315

• RAFCB(M)

(mm)

Designation	DCON-MS	THUB	DHUB	KWW	CDX	Designation	DCON-MS	LF	DHUB	KWW	CDX	DC	Dimension				
													CWN	CWX	CICT		
RAFCP (M)	1001214	31.75(32)	12	48	7.92(8)	24	RAFCB (M)	1001214R/L	31.75(32)	50	54	12.7(14.4)	21	100	12	14	6
	1251214	38.1(40)	12	56	9.52(10)	32		1251214R/L	38.1(40)	60	70	15.9(16.4)	25	125	12	14	8
	1601214	38.1(40)	12	56	9.52(10)	50		1601214R/L	38.1(40)	60	70	15.9(16.4)	43	160	12	14	10
	2001214	50.8(50)	12	72	12.7(12)	61		2001214R/L	50.8(40)	65	90	19.1(16.4)	53	200	12	14	12
	2501214	50.8(50)	12	72	12.7(12)	86		2501214R/L	47.625(60)	65	130	25.4(25.7)	58	250	12	14	16
3151214	50.8(50)	12	72	12.7(12)	118	3151214R/L	47.625(60)	65	130	25.4(25.7)	90	315	12	14	20		
RAFCP (M)	1001416	31.75(32)	14	48	7.92(8)	24	RAFCB (M)	1001416R/L	31.75(32)	50	54	12.7(14.4)	21	100	14	16	6
	1251416	38.1(40)	14	56	9.52(10)	32		1251416R/L	38.1(40)	60	70	15.9(16.4)	25	125	14	16	8
	1601416	38.1(40)	14	56	9.52(10)	50		1601416R/L	38.1(40)	60	70	15.9(16.4)	43	160	14	16	10
	2001416	50.8(50)	14	72	12.7(12)	61		2001416R/L	50.8(40)	65	90	19.1(16.4)	53	200	14	16	12
	2501416	50.8(50)	14	72	12.7(12)	86		2501416R/L	47.625(60)	65	130	25.4(25.7)	58	250	14	16	16
3151416	50.8(50)	14	72	12.7(12)	118	3151416R/L	47.625(60)	65	130	25.4(25.7)	90	315	14	16	20		
RAFCP (M)	1251618	38.1(40)	16	56	9.52(10)	32	RAFCB (M)	1251618R/L	38.1(40)	60	70	15.9(16.4)	25	125	16	18	8
	1601618	38.1(40)	16	56	9.52(10)	50		1601618R/L	38.1(40)	60	70	15.9(16.4)	43	160	16	18	10
	2001618	50.8(50)	16	72	12.7(12)	61		2001618R/L	50.8(40)	65	90	19.1(16.4)	53	200	16	18	12
	2501618	50.8(50)	16	72	12.7(12)	86		2501618R/L	47.625(60)	65	130	25.4(25.7)	58	250	16	18	16
	3151618	50.8(50)	16	72	12.7(12)	118		3151618R/L	47.625(60)	65	130	25.4(25.7)	90	315	16	18	20
RAFCP (M)	1251820	38.1(40)	18	56	9.52(10)	32	RAFCB (M)	1251820R/L	38.1(40)	60	70	15.9(16.4)	25	125	18	20	8
	1601820	38.1(40)	18	56	9.52(10)	50		1601820R/L	38.1(40)	60	70	15.9(16.4)	43	160	18	20	10
	2001820	50.8(50)	18	72	12.7(12)	61		2001820R/L	50.8(40)	65	90	19.1(16.4)	53	200	18	20	12
	2501820	50.8(50)	18	72	12.7(12)	86		2501820R/L	47.625(60)	65	130	25.4(25.7)	58	250	18	20	16
	3151820	50.8(50)	18	72	12.7(12)	118		3151820R/L	47.625(60)	65	130	25.4(25.7)	90	315	18	20	20
RAFCP (M)	1252022	38.1(40)	20	56	9.52(10)	32	RAFCB (M)	1252022R/L	38.1(40)	60	70	15.9(16.4)	25	125	20	22	8
	1602022	38.1(40)	20	56	9.52(10)	50		1602022R/L	38.1(40)	60	70	15.9(16.4)	43	160	20	22	10
	2002022	50.8(50)	20	72	12.7(12)	61		2002022R/L	50.8(40)	65	90	19.1(16.4)	53	200	20	22	12
	2502022	50.8(50)	20	72	12.7(12)	86		2502022R/L	47.625(60)	65	130	25.4(25.7)	58	250	20	22	16
	3152022	50.8(50)	20	72	12.7(12)	118		3152022R/L	47.625(60)	65	130	25.4(25.7)	90	315	20	22	20
RAFCP (M)	1252224	38.1(40)	22	56	9.52(10)	32	RAFCB (M)	1252224R/L	38.1(40)	60	70	15.9(16.4)	25	125	22	24	8
	1602224	38.1(40)	22	56	9.52(10)	50		1602224R/L	38.1(40)	60	70	15.9(16.4)	43	160	22	24	10
	2002224	50.8(50)	22	72	12.7(12)	61		2002224R/L	50.8(40)	65	90	19.1(16.4)	53	200	22	24	12
	2502224	50.8(50)	22	72	12.7(12)	86		2502224R/L	47.625(60)	65	130	25.4(25.7)	58	250	22	24	16
	3152224	50.8(50)	22	72	12.7(12)	118		3152224R/L	47.625(60)	65	130	25.4(25.7)	90	315	22	24	20

Available inserts and Recommended Cutting conditions **B405**

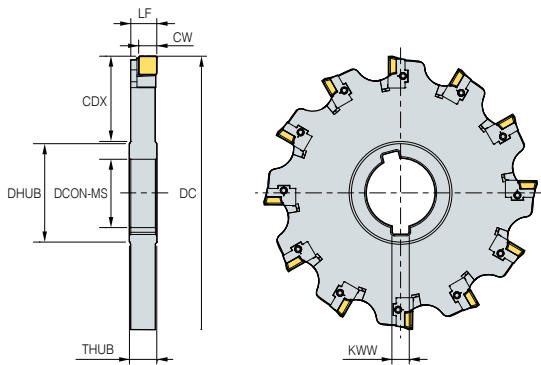
- The ap (Maximum width of cutter) size written above is the number when using insert having corner size R0.5. The ap is subject to change as per insert corner size
- The ap (Maximum width of cutter) size written above is the number when using SDXT09M405R-MM. The ap is subject to change as per insert corner size

( ) Metric size  
● : Stock item

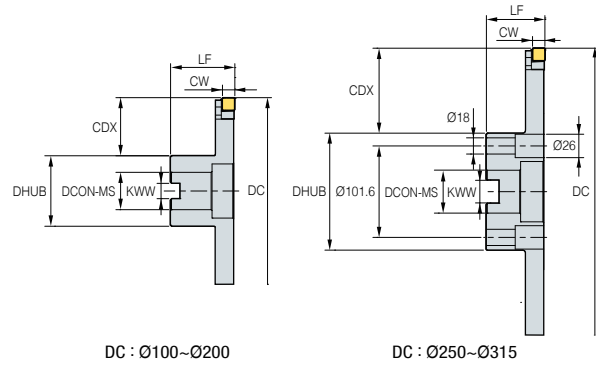
### Parts

Specification	Insert	Locator	WSD09N	WSA10N	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge, locator wrench
□□□1214R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	WSA10N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□1416R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□1618R/L	SDXT13050□R/L	LSD13R/L	WSD09N	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□1820R/L	SDXT13050□R/L	LSD13R/L	WSD09N	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□2022R/L	SDXT13050□R/L	LSD13R/L	WSD09N	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□2224R/L	SDXT13050□R/L	LSD13R/L	WSD09N	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30

## Radial Type (Half side cutter)



• RAHCP(M)



• RAHCB(M)

Designation	DCON-MS	THUB	DHUB	KWW	CDX	Designation	DCON-MS	LF	DHUB	KWW	CDX	DC	Dimension	
													CW	CICT
<b>RAHCP (M)</b> 10012R	31.75(32)	12	48	7.92(8)	24	<b>RAHCB (M)</b> 10012R/L	31.75(32)	50	54	12.7(14.4)	21	100	8	6
12512R	38.1(40)	12	56	9.52(10)	32	12512R/L	38.1(40)	60	70	15.9(16.4)	25	125	8	8
16012R	38.1(40)	12	56	9.52(10)	50	16012R/L	38.1(40)	60	70	15.9(16.4)	43	160	8	10
20012R	50.8(50)	12	72	12.7(12)	61	20012R/L	50.8(40)	65	90	19(16.4)	53	200	8	12
25012R	50.8(50)	12	72	12.7(12)	86	25012R/L	47.625(60)	65	130	25.4(25.7)	58	250	8	16
31512R	50.8(50)	12	72	12.7(12)	118	31512R/L	47.625(60)	65	130	25.4(25.7)	90	315	8	20
<b>RAHCP (M)</b> 10014R	31.75(32)	14	48	7.92(8)	24	<b>RAHCB (M)</b> 10014R/L	31.75(32)	50	50	12.7(14.4)	21	100	8	6
12514R	38.1(40)	14	56	9.52(10)	32	12514R/L	38.1(40)	60	70	15.9(16.4)	25	125	8	8
16014R	38.1(40)	14	56	9.52(10)	50	16014R/L	38.1(40)	60	70	15.9(16.4)	43	160	8	10
20014R	50.8(50)	14	72	12.7(12)	61	20014R/L	50.8(40)	65	90	19(16.4)	53	200	8	12
25014R	50.8(50)	14	72	12.7(12)	86	25014R/L	47.625(60)	65	130	25.4(25.7)	58	250	8	16
31514R	50.8(50)	14	72	12.7(12)	118	31514R/L	47.625(60)	65	130	25.4(25.7)	90	315	8	20
<b>RAHCP (M)</b> 12516R	38.1(40)	16	56	9.52(10)	32	<b>RAHCB (M)</b> 12516R/L	38.1(40)	60	70	15.9(16.4)	25	125	10.5	8
16016R	38.1(40)	16	56	9.52(10)	50	16016R/L	38.1(40)	60	70	15.9(16.4)	43	160	10.5	10
20016R	50.8(50)	16	72	12.7(12)	61	20016R/L	50.8(40)	65	90	19(16.4)	53	200	10.5	12
25016R	50.8(50)	16	72	12.7(12)	86	25016R/L	47.625(60)	65	130	25.4(25.7)	58	250	10.5	16
31516R	50.8(50)	16	72	12.7(12)	118	31516R/L	47.625(60)	65	130	25.4(25.7)	90	315	10.5	20
<b>RAHCP (M)</b> 12518R	38.1(40)	18	56	9.52(10)	32	<b>RAHCB (M)</b> 12518R/L	38.1(40)	60	70	15.9(16.4)	25	125	10.5	8
16018R	38.1(40)	18	56	9.52(10)	50	16018R/L	38.1(40)	60	70	15.9(16.4)	43	160	10.5	10
20018R	50.8(50)	18	72	12.7(12)	61	20018R/L	50.8(40)	65	90	19(16.4)	53	200	10.5	12
25018R	50.8(50)	18	72	12.7(12)	86	25018R/L	47.625(60)	65	130	25.4(25.7)	58	250	10.5	16
31518R	50.8(50)	18	72	12.7(12)	118	31518R/L	47.625(60)	65	130	25.4(25.7)	90	315	10.5	20
<b>RAHCP (M)</b> 12520R	38.1(40)	20	56	9.52(10)	32	<b>RAHCB (M)</b> 12520R/L	38.1(40)	60	70	15.9(16.4)	25	125	10.5	8
16020R	38.1(40)	20	56	9.52(10)	50	16020R/L	38.1(40)	60	70	15.9(16.4)	43	160	10.5	10
20020R	50.8(50)	20	72	12.7(12)	61	20020R/L	50.8(40)	65	90	19(16.4)	53	200	10.5	12
25020R	50.8(50)	20	72	12.7(12)	86	25020R/L	47.625(60)	65	130	25.4(25.7)	58	250	10.5	16
31520R	50.8(50)	20	72	12.7(12)	118	31520R/L	47.625(60)	65	130	25.4(25.7)	90	315	10.5	20
<b>RAHCP (M)</b> 12522R	38.1(40)	22	56	9.52(10)	32	<b>RAHCB (M)</b> 12522R/L	38.1(40)	60	70	15.9(16.4)	25	125	10.5	8
16022R	38.1(40)	22	56	9.52(10)	50	16022R/L	38.1(40)	60	70	15.9(16.4)	43	160	10.5	10
20022R	50.8(50)	22	72	12.7(12)	61	20022R/L	50.8(40)	65	90	19(16.4)	53	200	10.5	12
25022R	50.8(50)	22	72	12.7(12)	86	25022R/L	47.625(60)	65	130	25.4(25.7)	58	250	10.5	16
31522R	50.8(50)	22	72	12.7(12)	118	31522R/L	47.625(60)	65	130	25.4(25.7)	90	315	10.5	20

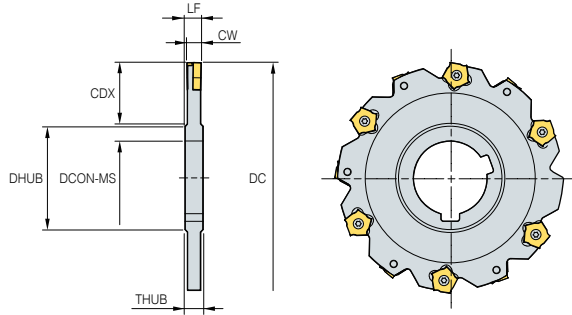
Available inserts and Recommended Cutting conditions **B405**

- The ap (Maximum width of cutter) size written above is the number when using insert having corner size R0.5. 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
- ( ) Metric size
- : Stock item

### Parts

Specification	Insert	Locator	WSD09N Wedge	WSA10N Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge, locator wrench
□□□1214R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	WSA10N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□1416R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	WSA10N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□1618R/L	SDXT13050□R/L	LSD13R/L	WSD09N	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□1820R/L	SDXT13050□R/L	LSD13R/L	WSD09N	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□2022R/L	SDXT13050□R/L	LSD13R/L	WSD09N	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□2224R/L	SDXT13050□R/L	LSD13R/L	WSD09N	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30

## SPP(M)



- GAMP :  $-2^\circ$
- GAMF :  $-28^\circ$

Designation	Stock	CICT	DC	CW	CDX	DCON-MS	KWW	THUB	DHUB	Insert	Screw	Wrench
<b>SPP</b>												
<b>(SPPM)</b>												
080-04	●	8	80	4	20	25.4(27)	6.35(7)	28.04(29.8)	8	PNEJ1223N	PTMA0403F	TW15S
080-05	●	8	80	5	20	25.4(27)	6.35(7)	28.04(29.8)	8	PNEJ1230N	PTMA0404F	TW15S
080-06		8	80	6	20	25.4(27)	6.35(7)	28.04(29.8)	8	PNEJ1235N	PTMA0405F	TW15S
100-04		10	100	4	24	31.75(32)	7.94(8)	35.18(34.8)	8	PNEJ1223N	PTMA0403F	TW15S
100-05	●	10	100	5	24	31.75(32)	7.94(8)	35.18(34.8)	8	PNEJ1230N	PTMA0404F	TW15S
100-06	●	10	100	6	25	31.75(32)	7.94(8)	35.18(34.8)	8	PNEJ1235N	PTMA0405F	TW15S
100-07		10	100	7	25	31.75(32)	7.94(8)	35.18(34.8)	10	PNEJ1240N	PTMA0406F	TW15S
100-08		10	100	8	25	31.75(32)	7.94(8)	35.18(34.8)	10	PNEJ1245N	PTKA0407F	TW15S
100-09		10	100	9	25	31.75(32)	7.94(8)	35.18(34.8)	12	PNEJ1250N	PTKA0408F	TW15S
100-10		10	100	10	25	31.75(32)	7.94(8)	35.18(34.8)	12	PNEJ1255N	PTKA0409F	TW15S
125-04		12	125	4	30	38.1(40)	9.53(10)	42.32(43.5)	8	PNEJ1223N	PTMA0403F	TW15S
125-05		12	125	5	32	38.1(40)	9.53(10)	42.32(43.5)	8	PNEJ1245N	PTKA0407F	TW15S
125-06	●	12	125	6	32	38.1(40)	9.53(10)	42.32(43.5)	8	PNEJ1235N	PTMA0405F	TW15S
125-07	●	12	125	7	32	38.1(40)	9.53(10)	42.32(43.5)	10	PNEJ1240N	PTMA0406F	TW15S
125-08	●	12	125	8	32	38.1(40)	9.53(10)	42.32(43.5)	10	PNEJ1245N	PTKA0407F	TW15S
125-09		12	125	9	32	38.1(40)	9.53(10)	42.32(43.5)	12	PNEJ1250N	PTKA0408F	TW15S
125-10		12	125	10	32	38.1(40)	9.53(10)	42.32(43.5)	12	PNEJ1255N	PTKA0409F	TW15S
160-04		16	160	4	45	38.1(40)	9.53(10)	42.32(43.5)	8	PNEJ1223N	PTMA0403F	TW15S
160-05		16	160	5	45	38.1(40)	9.53(10)	42.32(43.5)	8	PNEJ1230N	PTMA0404F	TW15S
160-06		16	160	6	45	38.1(40)	9.53(10)	42.32(43.5)	8	PNEJ1235N	PTMA0405F	TW15S
160-07		16	160	7	45	38.1(40)	9.53(10)	42.32(43.5)	10	PNEJ1240N	PTMA0406F	TW15S
160-08	●	16	160	8	45	38.1(40)	9.53(10)	42.32(43.5)	10	PNEJ1245N	PTKA0407F	TW15S
160-09		16	160	9	45	38.1(40)	9.53(10)	42.32(43.5)	12	PNEJ1250N	PTKA0408F	TW15S
160-10	●	16	160	10	45	38.1(40)	9.53(10)	42.32(43.5)	12	PNEJ1255N	PTKA0409F	TW15S
160-11		16	160	11	45	38.1(40)	9.53(10)	42.32(43.5)	14	PNEJ1260N	PTKA0410F	TW15S
160-12		16	160	12	45	38.1(40)	9.53(10)	42.32(43.5)	14	PNEJ1265N	PTKA0411F	TW15S
160-13		16	160	13	45	38.1(40)	9.53(10)	42.32(43.5)	16	PNEJ1270N	PTKA0412F	TW15S
160-14		16	160	14	45	38.1(40)	9.53(10)	42.32(43.5)	16	PNEJ1275N	PTKA0413F	TW15S
200-06		18	200	6	60	50.8(50)	12.7(12)	55.83(53.5)	8	PNEJ1235N	PTMA0405F	TW15S
200-07		18	200	7	60	50.8(50)	12.7(12)	55.83(53.5)	10	PNEJ1240N	PTMA0406F	TW15S
200-08	●	18	200	8	60	50.8(50)	12.7(12)	55.83(53.5)	10	PNEJ1245N	PTKA0407F	TW15S
200-09		18	200	9	60	50.8(50)	12.7(12)	55.83(53.5)	12	PNEJ1250N	PTKA0408F	TW15S
200-10	●	18	200	10	60	50.8(50)	12.7(12)	55.83(53.5)	12	PNEJ1255N	PTKA0409F	TW15S
200-11		18	200	11	60	50.8(50)	12.7(12)	55.83(53.5)	14	PNEJ1260N	PTKA0410F	TW15S
200-12		18	200	12	60	50.8(50)	12.7(12)	55.83(53.5)	14	PNEJ1265N	PTKA0411F	TW15S
200-13		18	200	13	60	50.8(50)	12.7(12)	55.83(53.5)	16	PNEJ1270N	PTKA0412F	TW15S
200-14		18	200	14	60	50.8(50)	12.7(12)	55.83(53.5)	16	PNEJ1275N	PTKA0413F	TW15S

Available inserts **B16**

( ) Metric size, ● : Stock item

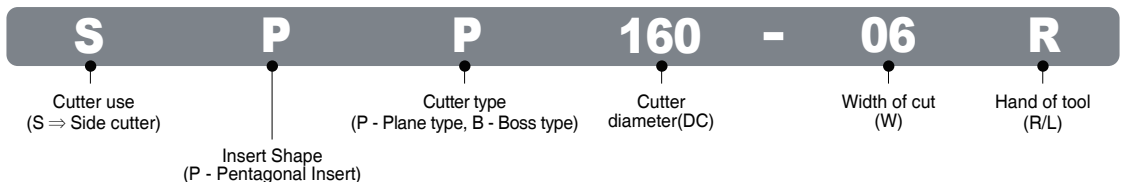
### Available arbors

Cutter Designation	NC arbors		
	BT30	BT40	BT50
<b>SPP</b> 080-04~06	BT30-SCA25.4-60	BT40-SCA25.4-75/120	BT50-SCA25.4-90/135
100-04~10	-	BT40-SCA31.75-105	BT50-SCA31.75-90/135
125-04~09	-	-	BT50-SCA38.1-90/135
160-04~14	-	-	BT50-SCA38.1-90/135
200-06~14	-	-	-
<b>SPPM</b> 080-04~06	-	BT40-SCA27-75/120	BT50-SCA27-90/135
100-04~10	-	BT40-SCA32-105	BT50-SCA32-90/135
125-04~09	-	-	BT50-SCA40-90/135
160-04~14	-	-	BT50-SCA40-90/135
200-06~14	-	-	-

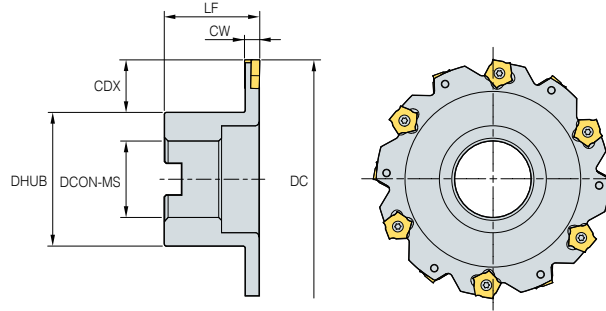
### Recommended cutting conditions

Workpiece	Cutting conditions		Grade
	vc(m/min)	fz(mm/t)	
<b>P</b>	190~310	0.10~0.25	<b>NCM325</b> <b>PC3700</b> <b>ST30A</b>
	160~270	0.10~0.30	
	60~100	0.10~0.25	
<b>M</b>	90~150	0.10~0.25	<b>PC9530</b>
<b>K</b>	140~230	0.10~0.35	<b>PC6100</b> <b>G10</b>
	50~90	0.10~0.40	

### Code system



# SPB(M)



- GAMP : -2°
- GAMF : 28°

Designation	Stock		CICT	DC	CW	CDX	DHUB	DCON-MS	KWW	LF	Insert	Screw	Wrench
	R	L											
SPB			8	80	4	18	40	25.4(27)	9.5(12.4)	6(7)	PNEJ1223N	PTMA0403F	TW15S
(SPBM)			8	80	5	18	40	25.4(27)	9.5(12.4)	6(7)	PNEJ1230N	PTMA0404F	TW15S
			8	80	6	18	40	25.4(27)	9.5(12.4)	6(7)	PNEJ1235N	PTMA0405F	TW15S
			10	100	4	21	54	31.75(32)	12.7(14.4)	8(8)	PNEJ1223N	PTMA0403F	TW15S
			10	100	5	21	54	31.75(32)	12.7(14.4)	8(8)	PNEJ1230N	PTMA0404F	TW15S
			10	100	6	21	54	31.75(32)	12.7(14.4)	8(8)	PNEJ1235N	PTMA0405F	TW15S
			10	100	7	21	54	31.75(32)	12.7(14.4)	8(8)	PNEJ1240N	PTMA0406F	TW15S
			10	100	8	21	54	31.75(32)	12.7(14.4)	8(8)	PNEJ1245N	PTMA0407F	TW15S
			10	100	9	21	54	31.75(32)	12.7(14.4)	8(8)	PNEJ1250N	PTMA0408F	TW15S
			10	100	10	21	54	31.75(32)	12.7(14.4)	8(8)	PNEJ1255N	PTMA0409F	TW15S
			12	125	4	25	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1223N	PTMA0403F	TW15S
			12	125	5	25	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1230N	PTMA0404F	TW15S
			12	125	6	25	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1235N	PTMA0405F	TW15S
			12	125	7	25	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1240N	PTMA0406F	TW15S
			12	125	8	25	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1245N	PTMA0407F	TW15S
			12	125	9	25	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1250N	PTMA0408F	TW15S
			12	125	10	25	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1255N	PTMA0409F	TW15S
			16	160	4	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1223N	PTMA0403F	TW15S
			16	160	5	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1230N	PTMA0404F	TW15S
			16	160	6	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1235N	PTMA0405F	TW15S
			16	160	7	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1240N	PTMA0406F	TW15S
			16	160	8	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1245N	PTMA0407F	TW15S
			16	160	9	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1250N	PTMA0408F	TW15S
			16	160	10	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1255N	PTMA0409F	TW15S
			16	160	11	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1260N	PTMA0410F	TW15S
			16	160	12	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1265N	PTMA0411F	TW15S
			16	160	13	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1270N	PTMA0412F	TW15S
			16	160	14	43	70	38.1(40)	15.9(16.4)	10(9)	PNEJ1275N	PTMA0413F	TW15S
			18	200	6	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1235N	PTMA0405F	TW15S
			18	200	7	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1240N	PTMA0406F	TW15S
			18	200	8	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1245N	PTMA0407F	TW15S
			18	200	9	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1250N	PTMA0408F	TW15S
			18	200	10	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1255N	PTMA0409F	TW15S
			18	200	11	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1260N	PTMA0410F	TW15S
			18	200	12	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1265N	PTMA0411F	TW15S
			18	200	13	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1270N	PTMA0412F	TW15S
			18	200	14	53	90	50.8(40)	19(16.4)	11(9)	PNEJ1275N	PTMA0413F	TW15S

Available inserts **B16**

( ) Metric size, ● : Stock item

## 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

## Recommended cutting conditions

Workpiece	Cutting conditions		Grade
	vc(m/min)	fz(mm/t)	
P	190~310	0.10~0.25	NCM325 PC3700 ST30A
	160~270	0.10~0.30	
	60~100	0.10~0.25	
M	90~150	0.10~0.25	PC9530
K	140~230	0.10~0.35	PC6100 G10
		0.10~0.40	

## SPS

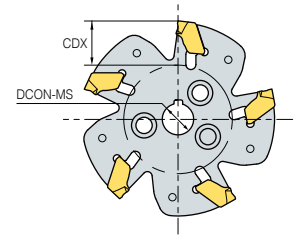
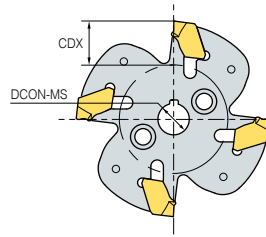
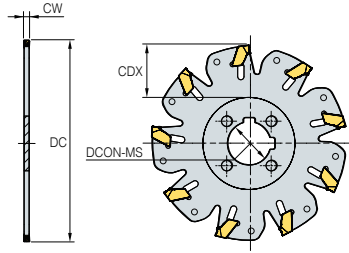


Fig. 1

Fig. 2

Fig. 3

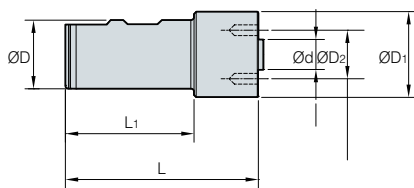


Designation	Stock	CICT	DC	CW	CDX	DCON-MS	KWW	OAL	Fig.	Insert	Adaptor		Wrench
											WS	DF	
SPS 050-0204-08R		4	50	2.2	11	8	2	1.8	2	SPFN 200 ( )	WS2528-M4	-	SW17P (separately ordered)
063-0205-10R		5	63	2.2	15.5	10	3	1.8	3		WS2532-M5	-	
080-0207-22R/F		7	80	2.2	17	22	6	1.8	1		WS3240-M5	DF22-46	
100-0209-22R/F		9	100	2.2	27	22	6	1.8	1		WS3240-M5	DF22-46	
125-0211-32F		11	125	2.2	35	32	8	1.8	1		-	DF32-55	
160-0214-32F		14	160	2.2	52.5	32	8	1.8	3		-	DF32-55	
063-0305-10R		5	63	3	15.5	10	3	2.55	1		WS2532-M5	-	
080-0307-22R/F		7	80	3	17	22	6	2.55	1	SPFN 300 ( )	WS3240-M5	DF22-46	
100-0309-22R/F		9	100	3	27	22	6	2.55	1	-	DF32-55		
125-0311-32F		11	125	3	35	32	8	2.55	1	-	DF32-55		
160-0314-32F		14	160	3	52.5	32	8	2.55	1	-	DF32-55		
200-0318-40F		18	200	3	60	40	10	2.55	1	-	DF40-80		
080-0406-22R/F		6	80	4	17	22	6	3.4	1	SPFN 400 ( )	WS3240-M5	DF22-46	
100-0408-22R/F		8	100	4	27	22	6	3.4	1	-	DF22-46		
125-0410-32F		10	125	4	35	32	8	3.4	1	-	DF32-55		
160-0413-32F		13	160	4	52.5	32	8	3.4	1	-	DF32-55		
200-0417-40F		17	200	4	60	40	10	3.4	1	-	DF40-80		

Available inserts **B26**

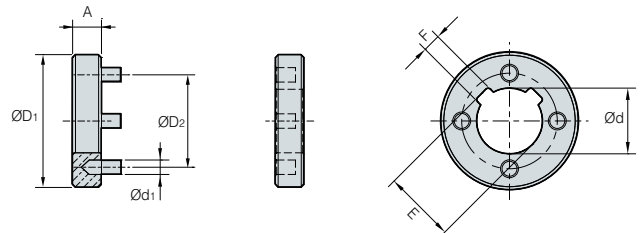
( ) Metric size, ● : Stock item

### WS( )-( ) (Weldon Shank)



Designation	L	L1	D	D1	D2	d	Screw
WS2528-M4	110	85	25	28	18	8	PTKA0408
WS2532-M5	110	85	25	32	22	10	PTKA0515
WS3240-M5	120	90	32	40	32	22	PTKA0515

### DF( )-( ) (Drive Flange set)



Designation	D1	D2	d	d1	A	E	F
DF22-46	46	32	22	5	10	24.1	6
DF32-55	55	45	32	6	10	34.8	8
DF40-80	80	63	40	11	12	43.5	10
DF50-110	110	80	50	14	14	53.6	12

### Recommended cutting conditions

Workpiece	Cutting conditions		Grade
	vc(m/min)	fz(mm/t)	
P	160~270	0.13~0.25	PC3700
M	90~150	0.10~0.22	PC5300
K	110~180	0.10~0.25	PC6100

For slotting workpieces with corner radii of varying sizes and widths

# Wind Mill

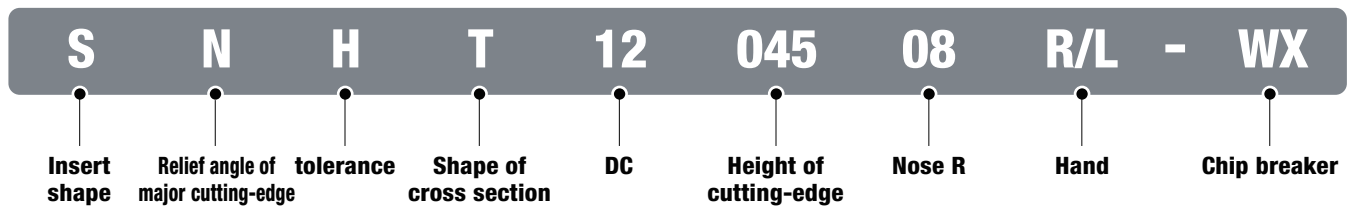
- Optimal machining for slotting applications
- A unique recess design on the minor cutting-edge reduces cutting load and improves tool life
- Special clamping system prevents incorrect clamping and fracture

## Item description

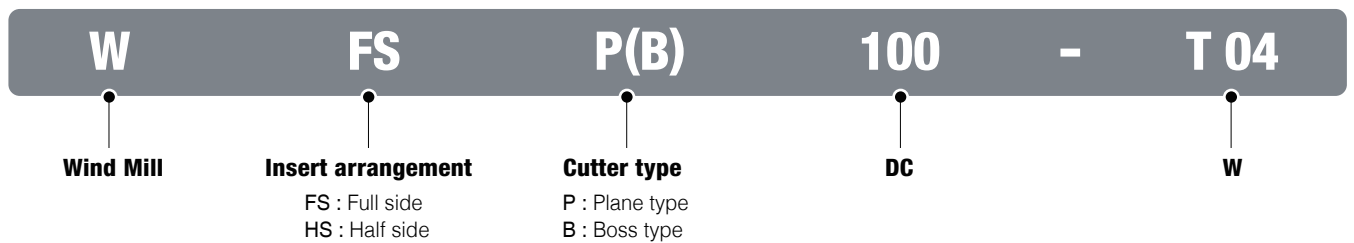


## Code system

### • Insert

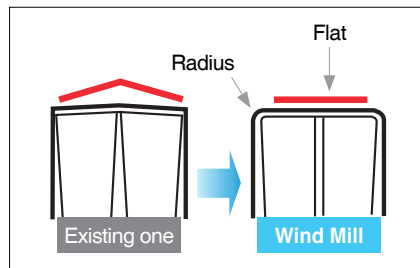


### • Cutter

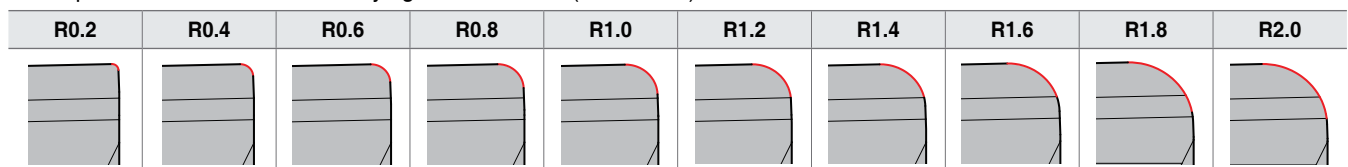


## Features

- Ideal geometry for superior surface roughness and extended tool life
- Perpendicular slot
- Protruded part on tip seat prevents wrong clamping and fracture



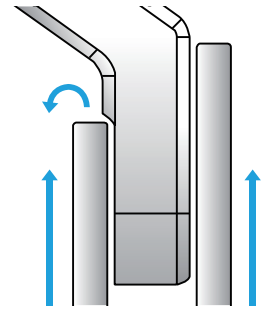
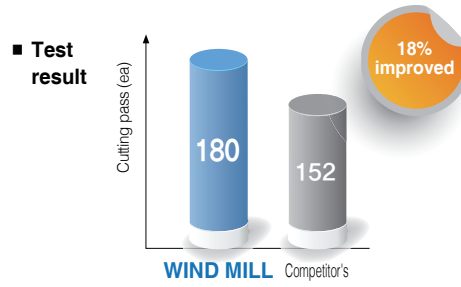
- Workpieces with corner radii of varying size and width (R0.2~R2.0)



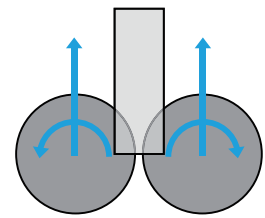
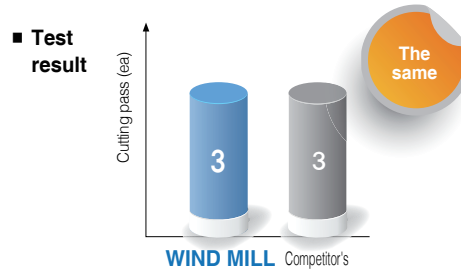
# B Technical Information for Wind Mill

## Application example

<b>Workpiece</b>	FCD500K (Carriers for Motor Vehicles)
<b>Cutting condition</b>	vc(m/min) = 200 fz(mm/t) = 0.2 vf(mm/min) = 600 ap(mm) = 2~3
<b>Tools</b>	KSF140R-T14-HM-2 SNHT1205408R/L-WX(PC5300)

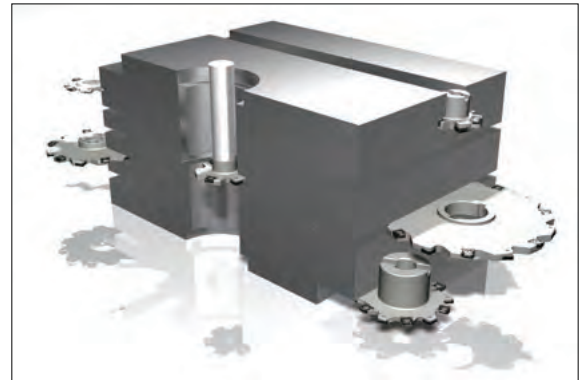


<b>Workpiece</b>	Mild steel(Lug for Vessel)
<b>Cutting condition</b>	vc(m/min) = 560 fz(mm/t) = 0.09 vf(mm/min) = 750 ap(mm) = 6
<b>Tools</b>	WFSP178R/L-T06 SNHT1203508R/L-WX(PC5300)



## Recommended cutting conditions

Workpiece	Cutting conditions		Grade
	vc(m/min)	fz(mm/t)	
<b>P</b>	150~250	0.10~0.25	<b>PC5300</b>
<b>M</b>	120~200	0.10~0.30	<b>PC5300</b>
<b>K</b>	100~150	0.10~0.30	<b>PC5300</b>



## Available inserts

Designation	Coated PC5300	Dimension(mm)			RE	Configuration
		IC	S	CW		
SNHT 1102308R/L-WX	●	11.0	2.30	4.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6	
110308R/L-WX	●	11.0	3.00	5.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6	
1203508R/L-WX	●	12.7	3.54	6.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	
120408R/L-WX	●	12.7	4.00	7.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	
1204508R/L-WX	●	12.7	4.54	8.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	
120508R/L-WX	●	12.7	5.00	9.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	
1205408R/L-WX	●	12.7	5.47	10.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	
120608R/L-WX	●	12.7	6.00	11.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	
1206508R/L-WX	●	12.7	6.50	12.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	
120708R/L-WX	●	12.7	7.00	13.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	
1207508R/L-WX	●	12.7	7.50	14.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	

• Available cutter stock requires to be asked separately

# WFSB(M) (Boss type)



- GAMP : -2°
- GAMF : -12°

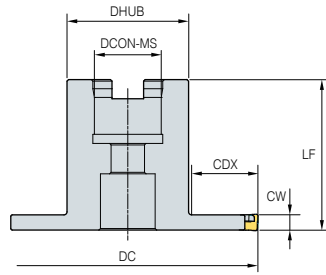


Fig. 1

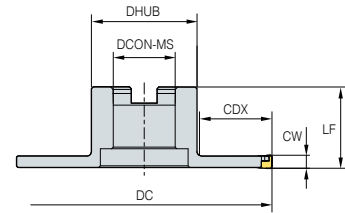


Fig. 2

Designation	Stock		CICT	DC	CW	CDX	DHUB	DCON-MS	KWW	LF	Insert	Screw	Wrench
	R	L											
WFSBM	080R/L-T04		8	80	4	19	40	22	10.4	50	SNHT11023R/L-WX	PTMA03503	TW09S
	080R/L-T05		8	80	5	19	40	22	10.4	50	SNHT1103R/L-WX	PTMA03504	TW09S
	080R/L-T06		8	80	6	19	40	22	10.4	50	SNHT12035R/L-WX	PTMA04045F	TW15S
WFSB (WFSBM)	100R/L-T04		10	100	4	24	50(48)	25.4(27)	9.5(12.4)	50	SNHT11023R/L-WX	PTMA03503	TW09S
	100R/L-T05		10	100	4	24	50(48)	25.4(27)	9.5(12.4)	50	SNHT1103R/L-WX	PTMA03504	TW09S
	100R/L-T06		10	100	5	24	50(48)	25.4(27)	9.5(12.4)	50	SNHT12035R/L-WX	PTMA04045F	TW15S
	100R/L-T07		10	100	6	24	50(48)	25.4(27)	9.5(12.4)	50	SNHT1204R/L-WX	PTMA0405F	TW15S
	100R/L-T08		10	100	7	24	50(48)	25.4(27)	9.5(12.4)	50	SNHT12045R/L-WX	PTMA0406F	TW15S
	100R/L-T09		10	100	8	24	50(48)	25.4(27)	9.5(12.4)	50	SNHT1205R/L-WX	PTMA0407F	TW15S
	100R/L-T10		10	100	9	24	50(48)	25.4(27)	9.5(12.4)	50	SNHT12054R/L-WX	PTMA0408F	TW15S
	125R/L-T04		10	100	10	24	50(48)	25.4(27)	9.5(12.4)	50	SNHT11023R/L-WX	PTMA03503	TW09S
	125R/L-T05		12	125	4	31	60(58)	31.75(32)	12.7(14.4)	50	SNHT1103R/L-WX	PTMA03504	TW09S
	125R/L-T06		12	125	5	31	60(58)	31.75(32)	12.7(14.4)	50	SNHT12035R/L-WX	PTMA04045F	TW15S
	125R/L-T07		12	125	6	31	60(58)	31.75(32)	12.7(14.4)	50	SNHT1204R/L-WX	PTMA0405F	TW15S
	125R/L-T08		12	125	7	31	60(58)	31.75(32)	12.7(14.4)	50	SNHT12045R/L-WX	PTMA0406F	TW15S
	125R/L-T09		12	125	8	31	60(58)	31.75(32)	12.7(14.4)	50	SNHT1205R/L-WX	PTMA0407F	TW15S
	125R/L-T10		12	125	9	31	60(58)	31.75(32)	12.7(14.4)	50	SNHT12054R/L-WX	PTMA0408F	TW15S
	160R/L-T04		12	125	10	31	60(58)	31.75(32)	12.7(14.4)	50	SNHT11023R/L-WX	PTMA03503	TW09S
	160R/L-T05		16	160	4	44	70	38.1(40)	15.9(16.4)	60	SNHT1103R/L-WX	PTMA03504	TW09S
	160R/L-T06		16	160	5	44	70	38.1(40)	15.9(16.4)	60	SNHT12035R/L-WX	PTMA04045F	TW15S
	160R/L-T07		16	160	6	44	70	38.1(40)	15.9(16.4)	60	SNHT1204R/L-WX	PTMA0405F	TW15S
	160R/L-T08		16	160	7	44	70	38.1(40)	15.9(16.4)	60	SNHT12045R/L-WX	PTMA0406F	TW15S
	160R/L-T09		16	160	8	44	70	38.1(40)	15.9(16.4)	60	SNHT1205R/L-WX	PTMA0407F	TW15S
	160R/L-T10		16	160	9	44	70	38.1(40)	15.9(16.4)	60	SNHT12054R/L-WX	PTMA0408F	TW15S
	160R/L-T11		16	160	10	44	70	38.1(40)	15.9(16.4)	60	SNHT1206R/L-WX	PTMA0409F	TW15S
	160R/L-T12		16	160	11	44	70	38.1(40)	15.9(16.4)	60	SNHT12065R/L-WX	PTMA0410F	TW15S
	160R/L-T13		16	160	12	44	70	38.1(40)	15.9(16.4)	60	SNHT1207R/L-WX	PTMA0411F	TW15S
	160R/L-T14		16	160	13	44	70	38.1(40)	15.9(16.4)	60	SNHT12075R/L-WX	PTMA0412F	TW15S
	200R/L-T06		16	160	14	44	70	38.1(40)	15.9(16.4)	60	SNHT12035R/L-WX	PTMA04045F	TW15S
	200R/L-T07		18	200	6	54	90	50.8(40)	19.1(16.4)	65	SNHT1204R/L-WX	PTMA0405F	TW15S
	200R/L-T08		18	200	7	54	90	50.8(40)	19.1(16.4)	65	SNHT12045R/L-WX	PTMA0406F	TW15S
200R/L-T09		18	200	8	54	90	50.8(40)	19.1(16.4)	65	SNHT1205R/L-WX	PTMA0407F	TW15S	
200R/L-T10		18	200	9	54	90	50.8(40)	19.1(16.4)	65	SNHT12054R/L-WX	PTMA0408F	TW15S	
200R/L-T11		18	200	10	54	90	50.8(40)	19.1(16.4)	65	SNHT1206R/L-WX	PTMA0409F	TW15S	
200R/L-T12		18	200	11	54	90	50.8(40)	19.1(16.4)	65	SNHT12065R/L-WX	PTMA0410F	TW15S	
200R/L-T13		18	200	12	54	90	50.8(40)	19.1(16.4)	65	SNHT1207R/L-WX	PTMA0411F	TW15S	
200R/L-T14		18	200	13	54	90	50.8(40)	19.1(16.4)	65	SNHT12075R/L-WX	PTMA0412F	TW15S	
250R/L-T06		18	200	14	54	90	50.8(40)	19.1(16.4)	65	SNHT12035R/L-WX	PTMA04045F	TW15S	
250R/L-T07		20	250	6	74	100(90)	50.8(40)	19.1(16.4)	65	SNHT1204R/L-WX	PTMA0405F	TW15S	
250R/L-T08		20	250	7	74	100(90)	50.8(40)	19.1(16.4)	65	SNHT12045R/L-WX	PTMA0406F	TW15S	
250R/L-T09		20	250	8	74	100(90)	50.8(40)	19.1(16.4)	65	SNHT1205R/L-WX	PTMA0407F	TW15S	
250R/L-T10		20	250	9	74	100(90)	50.8(40)	19.1(16.4)	65	SNHT12054R/L-WX	PTMA0408F	TW15S	
250R/L-T11		20	250	10	74	100(90)	50.8(40)	19.1(16.4)	65	SNHT1206R/L-WX	PTMA0409F	TW15S	
250R/L-T12		20	250	11	74	100(90)	50.8(40)	19.1(16.4)	65	SNHT12065R/L-WX	PTMA0410F	TW15S	
250R/L-T13		20	250	12	74	100(90)	50.8(40)	19.1(16.4)	65	SNHT1207R/L-WX	PTMA0411F	TW15S	
250R/L-T14		20	250	13	74	100(90)	50.8(40)	19.1(16.4)	65	SNHT12075R/L-WX	PTMA0412F	TW15S	

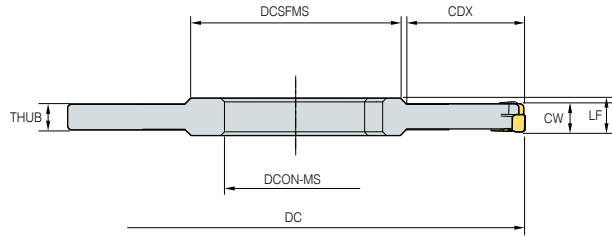
Available inserts **B25**

• Ø80: Fig.1, Ø100~Ø250: Fig.2

( ) Metric size, ● : Stock item



## WFSP(M) (Plane type)



- GAMP :  $-2^\circ$
- GAMF :  $-12^\circ$

Designation	Stock	CICT	DC	CW	CDX	DHUB	DCON-MS	KWW	THUB	Insert	Screw	Wrench	
WFSP (WFSPM)	080-T04	●	8	80	4	17	45.4	25.4(27)	6.35(7)	8	SNHT11023R/L-WX	PTMA03503	TW09S
	080-T05	●	8	80	5	17	45.4	25.4(27)	6.35(7)	8	SNHT1103R/L-WX	PTMA03504	TW09S
	080-T06	●	8	80	6	17	45.4	25.4(27)	6.35(7)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	100-T04	●	10	100	4	24	52	31.75(32)	7.92(8)	8	SNHT11023R/L-WX	PTMA03503	TW09S
	100-T05	●	10	100	5	24	52	31.75(32)	7.92(8)	8	SNHT1103R/L-WX	PTMA03504	TW09S
	100-T06	●	10	100	6	24	52	31.75(32)	7.92(8)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	100-T07		10	100	7	24	51.4	31.75(32)	7.92(8)	10	SNHT1204R/L-WX	PTMA0405F	TW15S
	100-T08		10	100	8	24	50.4	31.75(32)	7.92(8)	10	SNHT12045R/L-WX	PTMA0406F	TW15S
	100-T09		10	100	9	24	50.4	31.75(32)	7.92(8)	12	SNHT1205R/L-WX	PTMA0407F	TW15S
	100-T10		10	100	10	24	50.4	31.75(32)	7.92(8)	12	SNHT12054R/L-WX	PTMA0408F	TW15S
	125-T04		12	125	4	32	59.4	38.1(40)	9.52(10)	8	SNHT11023R/L-WX	PTMA03503	TW09S
	125-T05		12	125	5	32	59.4	38.1(40)	9.52(10)	8	SNHT1103R/L-WX	PTMA03504	TW09S
	125-T06	●	12	125	6	32	59.4	38.1(40)	9.52(10)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	125-T07		12	125	7	32	59.4	38.1(40)	9.52(10)	10	SNHT1204R/L-WX	PTMA0405F	TW15S
125-T08	●	12	125	8	32	59.4	38.1(40)	9.52(10)	10	SNHT12045R/L-WX	PTMA0406F	TW15S	
125-T09		12	125	9	32	59.4	38.1(40)	9.52(10)	12	SNHT1205R/L-WX	PTMA0407F	TW15S	
125-T10	●	12	125	10	32	59.4	38.1(40)	9.52(10)	12	SNHT12054R/L-WX	PTMA0408F	TW15S	
160-T04		16	160	4	44	71.4	38.1(50)	9.52(10)	8	SNHT11023R/L-WX	PTMA03503	TW09S	
160-T05		16	160	5	44	70.4	38.1(50)	9.52(10)	8	SNHT1103R/L-WX	PTMA03504	TW09S	
160-T06		16	160	6	44	69.4	38.1(50)	9.52(10)	8	SNHT12035R/L-WX	PTMA04045F	TW15S	
160-T07		16	160	7	44	69.4	38.1(50)	9.52(10)	10	SNHT1204R/L-WX	PTMA0405F	TW15S	
160-T08	●	16	160	8	44	69.4	38.1(50)	9.52(10)	10	SNHT12045R/L-WX	PTMA0406F	TW15S	
160-T09		16	160	9	44	70.4	38.1(50)	9.52(10)	12	SNHT1205R/L-WX	PTMA0407F	TW15S	
160-T10	●	16	160	10	44	69.4	38.1(50)	9.52(10)	12	SNHT12054R/L-WX	PTMA0408F	TW15S	
160-T11		16	160	11	44	69.4	38.1(50)	9.52(10)	14	SNHT1206R/L-WX	PTKA0409F	TW15S	
160-T12		16	160	12	44	69.4	38.1(50)	9.52(10)	14	SNHT12065R/L-WX	PTKA0410F	TW15S	
160-T13		16	160	13	44	69.4	38.1(50)	9.52(10)	16	SNHT1207R/L-WX	PTKA0411F	TW15S	
160-T14		16	160	14	44	69.4	38.1(50)	9.52(10)	16	SNHT12075R/L-WX	PTKA0412F	TW15S	
200-T06		18	200	6	63	73.4	50.8(50)	12.7(12)	8	SNHT12035R/L-WX	PTMA04045F	TW15S	
200-T07		18	200	7	63	72.5	50.8(50)	12.7(12)	10	SNHT1204R/L-WX	PTMA0405F	TW15S	
200-T08	●	18	200	8	63	73.4	50.8(50)	12.7(12)	10	SNHT12045R/L-WX	PTMA0406F	TW15S	
200-T09		18	200	9	63	73.4	50.8(50)	12.7(12)	12	SNHT1205R/L-WX	PTMA0407F	TW15S	
200-T10	●	18	200	10	63	73.4	50.8(50)	12.7(12)	12	SNHT12054R/L-WX	PTMA0408F	TW15S	
200-T11		18	200	11	63	73.4	50.8(50)	12.7(12)	14	SNHT1206R/L-WX	PTKA0409F	TW15S	
200-T12		18	200	12	63	73.4	50.8(50)	12.7(12)	14	SNHT12065R/L-WX	PTKA0410F	TW15S	
200-T13		18	200	13	63	73.4	50.8(50)	12.7(12)	16	SNHT1207R/L-WX	PTKA0411F	TW15S	
200-T14		18	200	14	63	73.4	50.8(50)	12.7(12)	16	SNHT12075R/L-WX	PTKA0412F	TW15S	
250-T06		20	250	6	88	73.4	50.8(50)	12.7(12)	8	SNHT12035R/L-WX	PTMA04045F	TW15S	
250-T07		20	250	7	88	73.4	50.8(50)	12.7(12)	10	SNHT1204R/L-WX	PTMA0405F	TW15S	
250-T08		20	250	8	88	73.4	50.8(50)	12.7(12)	10	SNHT12045R/L-WX	PTMA0406F	TW15S	
250-T09		20	250	9	88	73.4	50.8(50)	12.7(12)	12	SNHT1205R/L-WX	PTMA0407F	TW15S	
250-T10		20	250	10	88	73.4	50.8(50)	12.7(12)	12	SNHT12054R/L-WX	PTMA0408F	TW15S	
250-T11		20	250	11	88	73.4	50.8(50)	12.7(12)	14	SNHT1206R/L-WX	PTKA0409F	TW15S	
250-T12		20	250	12	88	73.4	50.8(50)	12.7(12)	14	SNHT12065R/L-WX	PTKA0410F	TW15S	
250-T13		20	250	13	88	73.4	50.8(50)	12.7(12)	16	SNHT1207R/L-WX	PTKA0411F	TW15S	
250-T14		20	250	14	88	73.4	50.8(50)	12.7(12)	16	SNHT12075R/L-WX	PTKA0412F	TW15S	

Available inserts B25

( ) Metric size, ● : Stock item

High feed cutter with extra pitch for cast iron and light alloy steels

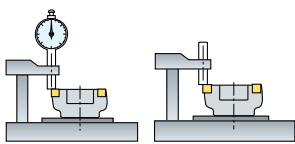
# High feed Cutter

- 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  $\varnothing 160$ , 2 piece types for cutter size over  $\varnothing 200$

## Guide of insert setting

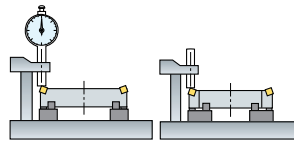
- Special equipment has to be used to get precise run out with high feed cutter.

### Adaptor type



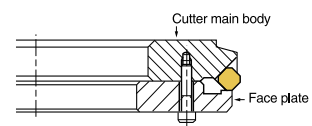
- Mainly under  $\varnothing 160$  diameter is used in 1 piece type
- Available for fixed size of cutter and assembling & checking can be done at the same time

### Roller type



- Mainly over  $\varnothing 200$  diameter is used in 2 piece type
- Due to 3 adjustable guide rollers, variety size of cutter can be assembled

### Plate type

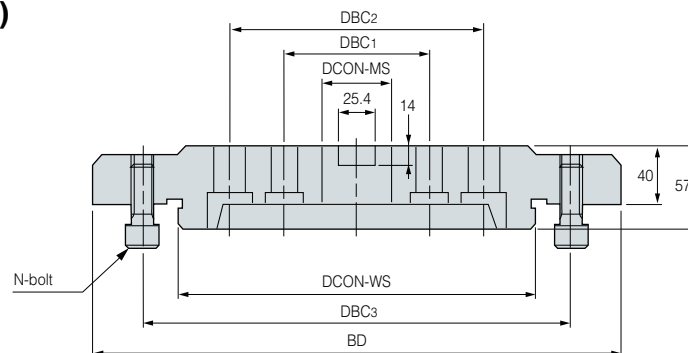


- Suitable for small size cutter due to the simple structure
- It is unnecessary to unclamp the cutter from the machine, it's possible to reassemble the cutter as it mounted on the machine
- You should make plate by yourself

### 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 an insert loosen wedge and adjust run-out. (for roughing 10~20  $\mu$ , for finishing 5~10  $\mu$ )
7. Tighten (torque 7-8 N.m) wedge
8. Measure the final run-out by dial gauge

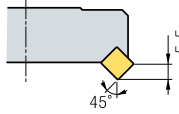
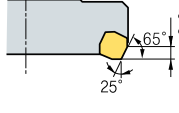
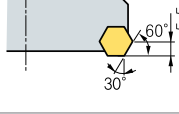
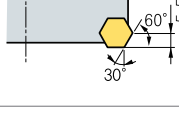
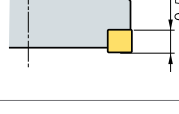
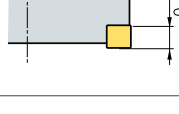
## Adaptor ( $\varnothing 200 \sim \varnothing 450$ )



Designation	BD	DCON-MS	DCON-WS	DBC3	DBC1	DBC2	N	Cutter
APR 200	180	47.625	80	120	101.6	-	4	$\varnothing 200$
250	230	47.625	120	170	101.6	-	4	$\varnothing 250$
315	295	47.625	180	230	101.6	177.8	6	$\varnothing 315$
355	335	63.5	220	270	101.6	177.8	6	$\varnothing 355$
400	370	63.5	250	300	101.6	177.8	8	$\varnothing 400$
450	420	63.5	300	350	101.6	177.8	8	$\varnothing 450$

# B Technical Information for High feed Cutter

## 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	Ø100~Ø450	Cast iron Roughing	25Z		-5°	-6°	SNCN1204ENN SNCN1504ENN
CDH4000 CDH5000	Ø100~Ø450	Cast iron Roughing Finishing	18Z		+10°	+5°	SDCN42R SDCN53R
DEH5000	Ø100~Ø450	Al alloy Roughing	20Z		+14°	+6°	HECN090408FN
DPH5000	Ø100~Ø450	Cast iron Roughing Finishing	12Z		+5°	-3°	HPEN090408 HPEN090408-WC
PNH4000 PNH5000	Ø125~Ø450	Cast iron Finishing	12Z		-5°	-6°	SNEF435 SNEF535
PPH4000	Ø125~Ø450	Cast iron Finishing	12Z		+5°	-5°	SPEN120416-WC

## Recommended cutting conditions

Workpiece	Cutting conditions		Grade	Remark
	vc (m/min)	fz (mm/t)		
Cast iron	100~230	0.05~0.20	PC6100	PVD Coated
	80~150	0.05~0.20	H01, G10	Uncoated
Al alloy	400	0.10~0.30	PC6100	PVD Coated
	400	0.05~0.20	H01, G10	Uncoated

Special Korloy cutter for cast iron roughing

# Cube Mill

- 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



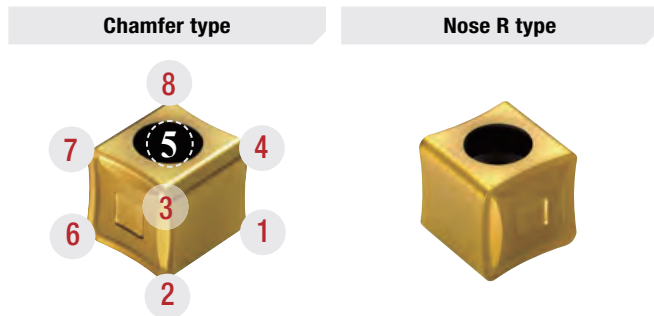
Roughing for cast iron

## Code system

<b>CBM</b>	<b>E</b>	<b>3</b>	<b>250</b>	<b>R</b>	<b>(2)</b>	<b>-</b>	<b>28Z</b>
<b>Cutter</b> CBM : CUBE MILL	<b>KAPR</b> Q : 88° C : 65° F : 85° A : 45° E : 75°	<b>Inscribe circle of Insert</b> 3 : 9.525 4 : 12.7	<b>Cutter diameter</b> Ø250	<b>Hand</b> R : Right-handed L : Left-handed	<b>Cutter shape</b> Unmarked : Normal type 2 : Quick change type (2 pieces type)		<b>No. of tooth (Z)</b>

※ Cube Mill and Cube Mill Couple are available by order made.

## Insert (R/L type)

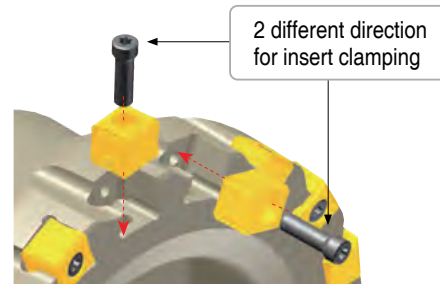
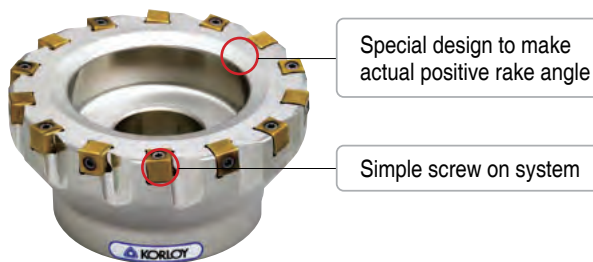


## Cutter body




Cutter diameter (Ø)	Normal	Quick change
	Ø80~315mm	Ø200~450mm
	3 1/4~12 1/2 Inch	8~18 Inch

KAPR : 88°, 85°, 75°, 65°, 45°

## Cutter



## Parts

 <b>Cube Mill 3000 type</b>	 Screw	 Wrench
	FTGA0417CBM ETGA0520CBM	TW15-100 TW20-100

# B Technical Information for Couple Mill

Ideal combination of aluminum body with cast iron high feed cutter

## Couple Mill

- 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

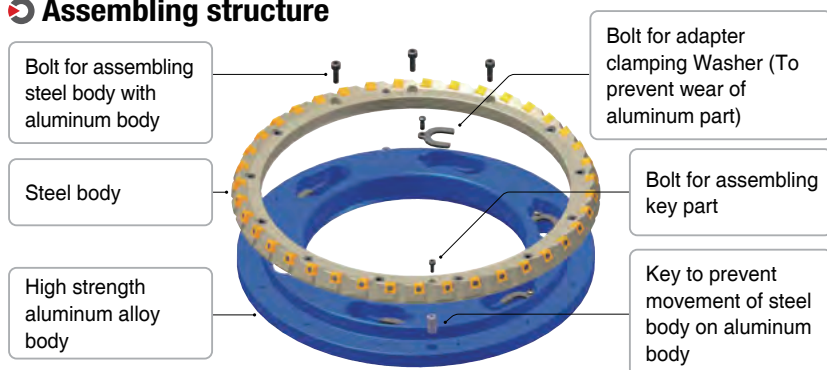
#### • Cube-couple

<b>CBM</b>	<b>E</b>	<b>3</b>	<b>355</b>	<b>R</b>	<b>28Z</b>	<b>-</b>	<b>CP</b>
<b>Cutter</b> CBM : CUBE MILL	<b>KAPR</b> Q : 88° C : 65° F : 85° A : 45° E : 75°	<b>Inscribed circle of Insert</b> 3 : 9.525 4 : 12.7	<b>Cutter diameter</b> Ø355	<b>Hand</b> R : Right-handed L : Left-handed	<b>No. of tooth (Z)</b> 28Z : 28		<b>Couple Mill</b>

#### • Storm-couple

<b>S</b>	<b>Q</b>	<b>N</b>	<b>3</b>	<b>355</b>	<b>R</b>	<b>28Z</b>	<b>-</b>	<b>CP</b>
<b>Cutter</b> S : Storm Mill	<b>KAPR</b> Q : 88° C : 65° F : 85° A : 45° E : 75°	<b>Relief angle of insert</b> N : Negative (0°)	<b>Inscribed circle of Insert</b> 3 : 9.525 4 : 12.7	<b>Cutter diameter</b> Ø355	<b>Hand</b> R : Right-handed L : Left-handed	<b>No. of tooth (Z)</b> 28		<b>Couple Mill</b>

### Assembling structure



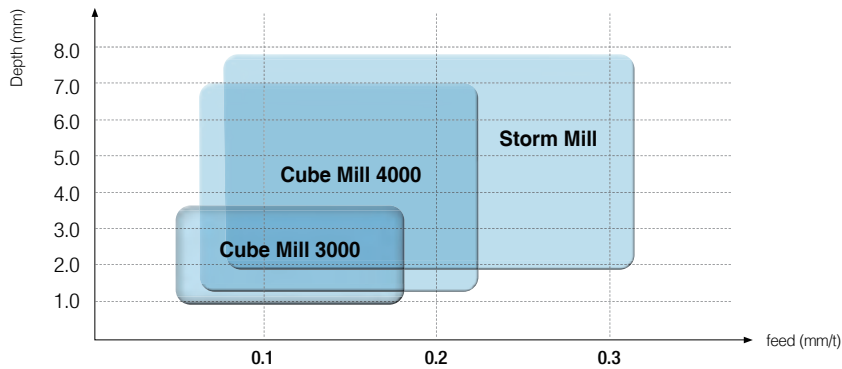
### Cutter body

Cutter diameter (Ø)	Quick change	
	Metric	Ø355~450mm
Inch	14 1/4~18 Inch	

### Parts

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 conditions

Cube Mill		Gray cast iron		Ductile cast iron	
		vc(m/min)	fz(mm/t)	vc(m/min)	fz(mm/t)
PVD	PC6100	150~300	0.08~0.18	100~200	0.08~0.18
Uncoated	G10	90~120	0.05~0.18	60~130	0.05~0.18

## Available arbors and adaptors

Cutter Designation		Available arbors and adaptors		
		NC arbors	General arbor	Adaptor
<b>CBMQ</b>	<b>3080R/L-00Z</b>	BT□□-FMA25.4-□□	NT*□□(M/U)-FMA25.4-25	
<b>(CBMF)</b>	<b>3100R/L-00Z</b>	BT□□-FMA31.75-□□	NT*□□(M/U)-FMA31.75-□□	
<b>(CBME)</b>	<b>3125R/L-00Z</b>	BT□□-FMA38.1-□□	NT*□□(M/U)-FMA38.1-□□	
<b>(CBMC)</b>	<b>3160R/L-00Z</b>	BT□□-FMA50.8-□□	NT*□□(M/U)-FMA50.8-□□	
<b>(CBMA)</b>	<b>3200R/L-00Z</b>	BT□□-FMA47.625-□□	NT*□□(M/U)-FMA47.625-25, KCP-8***	
	<b>3250R/L-00Z</b>	BT□□-FMA47.625-□□	KNT*□□(M/U)-FMA47.625-25, KCP-8***	
	<b>3315R/L-00Z</b>		KCP-8*** (Centering Plug)	
	<b>3200R/L2-00Z</b>			APR200
	<b>3250R/L2-00Z</b>			APR250
	<b>3315R/L2-00Z</b>			APR315
	<b>3355R/L2-00Z</b>			APR355
	<b>3400R/L2-00Z</b>			APR400
	<b>3450R/L2-00Z</b>			APR450
<b>SQN</b>	<b>3080R/L-00Z</b>	BT□□-FMA25.4-□□	NT*□□(M/U)-FMA25.4-25	
<b>(SFN)</b>	<b>3100R/L-00Z</b>	BT□□-FMA31.75-□□	NT*□□(M/U)-FMA31.75-□□	
<b>(SEN)</b>	<b>3125R/L-00Z</b>	BT□□-FMA38.1-□□	NT*□□(M/U)-FMA38.1-□□	
<b>(SAN)</b>	<b>3160R/L-00Z</b>	BT□□-FMA50.8-□□	NT*□□(M/U)-FMA50.8-□□	
	<b>3200R/L-00Z</b>	BT□□-FMA47.625-□□	NT*□□(M/U)-FMA47.625-25, KCP-8***	
	<b>3250R/L-00Z</b>	BT□□-FMA47.625-□□	NT*□□(M/U)-FMA47.625-25, KCP-8***	
	<b>3315R/L-00Z</b>		KCP-8*** (Centering Plug)	
	<b>3200R/L2-00Z</b>			APR200
	<b>3250R/L2-00Z</b>			APR250
	<b>3315R/L2-00Z</b>			APR315
	<b>3355R/L2-00Z</b>			APR355
	<b>3400R/L2-00Z</b>			APR400
	<b>3450R/L2-00Z</b>			APR450

\*□□-NT number / \*\*□□-BT number / \*\*\*Milling over 5

<Arbors \*\*add>

ex) BT\*\*□□

# B Technical Information for Shave Mill

Optimal cutter for steel and cast iron machining with easily adjustable run-out

## Shave Mill

- Adjustable Range (Adjustable range: 0.1 mm, Adjustable allowance: within 2  $\mu$ m)
- 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

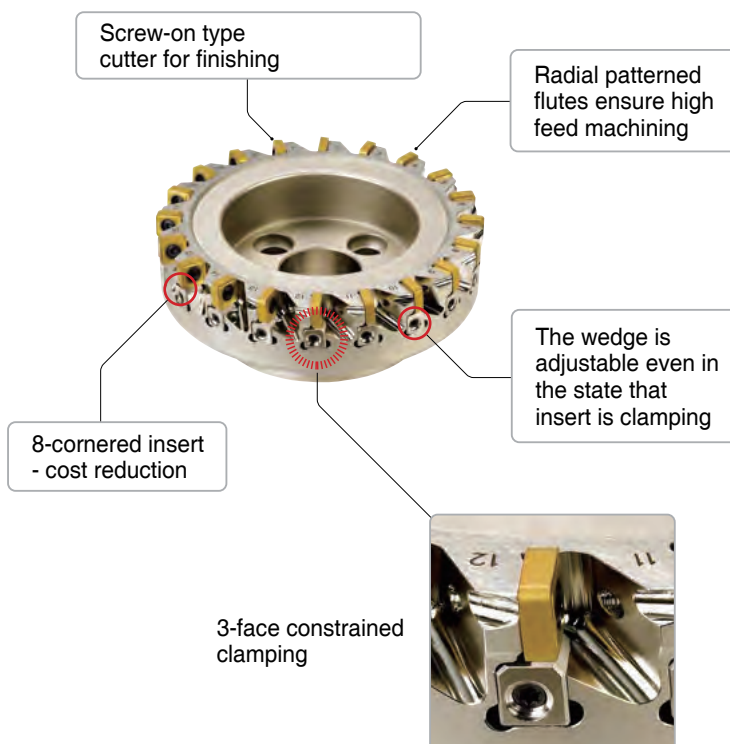
	Uncoated
• Nose R type	<b>SNEU120420-MF</b>
• Chamfer type	<b>SNEU1204ANN-MF</b>
• Low cutting type	<b>SNEU1204-WMF</b>

cBN
<b>SNEU1204-TBW</b>

#### • Cutter

<b>SVM</b>	<b>M</b>	<b>4</b>	<b>250</b>	<b>R</b>	<b>Z6</b>
Shave Mill	Metric type M : Metric A : Inch	Inscribed Circle 4 : 12.7 mm	Cutter diameter ( $\emptyset$ ) $\emptyset$ 250	Hand of tool R : Right-handed L : Left-handed	No. of tooth (Z)

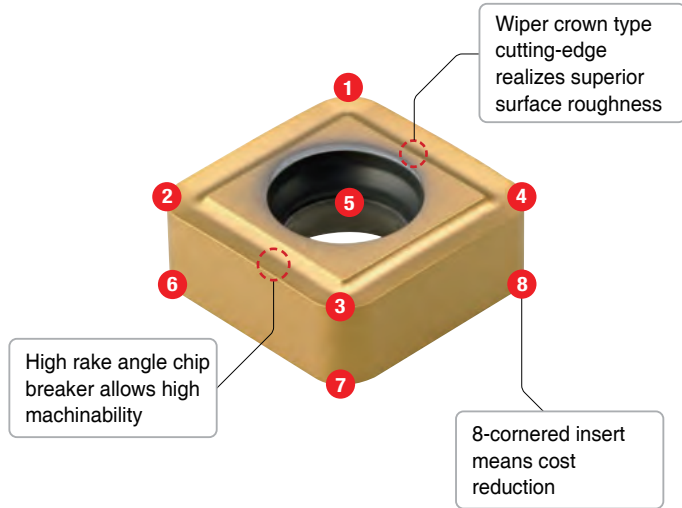
### Features



### Adjustment

- Adjustable range: 0.1 mm
- Adjustability: below 2  $\mu$
- Operation: easy and simple

## Features of insert



SNEU120420-MF



Nose R type

SNEU1204ANN-MF



Chamfer type

SNEU1204-WMF



For low cutting load

SNEU1204-TBW



Wiper for high speed machining

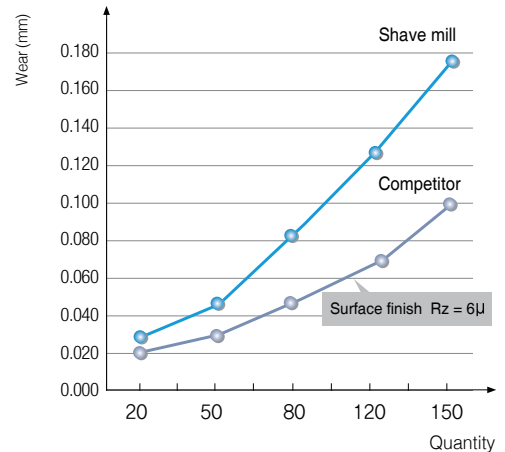
## Recommended cutting conditions

Workpiece	Cutting conditions			Grade
	vc(m/min)	fz(mm/t)	ap(mm)	
<b>P</b>	160~270	0.05~0.2	~0.5	<b>PC3700</b>
<b>K</b>	140~230 600~1000	0.05~0.3 0.05~0.2	~0.5 ~0.5	<b>PC6100</b> <b>DBN920</b>

## Application example

<b>Workpiece</b>	Cylinder head (facing)
<b>Cutting condition</b>	vc=200, fz=0.15, ap=0.5, dry
<b>Tools</b>	Cutter : SVMM4250R, Insert : PC6100 SNEU120420-MF

<b>Workpiece</b>	FC25 (HB250) Cylinder head (facing)
<b>Cutting condition</b>	vc=700, fz=0.1, ap=0.5, dry
<b>Tools</b>	Cutter : SVMM4160R Insert : DBN920 SNEU1204-CBN



### Results

Type	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.



# B Technical Information for Shave Mill Ultra

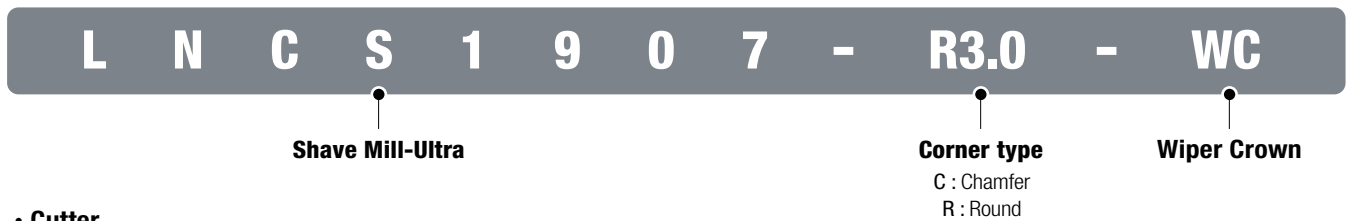
Better tool life with special grade which has both toughness and wear resistance

## Shave Mill Ultra

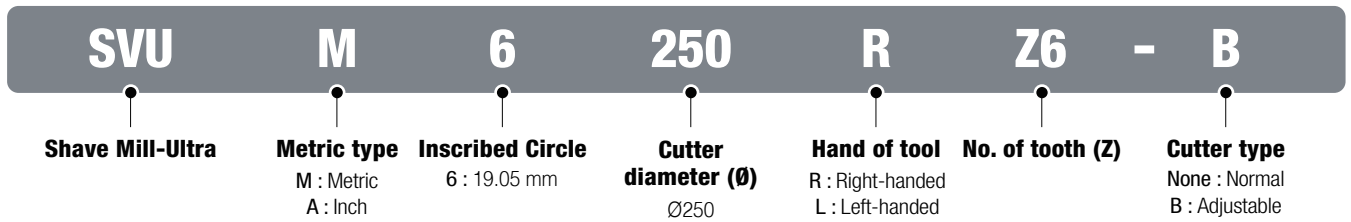
- Superior surface roughness for this Finishing cutter when applied to heavy work pieces
- Easy to handle and good rigidity with simple screw on system
- Superior surface finishes due to the wiper crown cutting-edge
- Better tool life with special grade which has both toughness and wear resistance

### Code system

#### • Insert



#### • Cutter



### Features

Good rigidity and economical due to simple screw on type

Better surface roughness when you use only 1 insert but adjust the 'ap' under 0.03 mm

Easy to handle the run-out due to Korloy exclusive high toughness cutting-edge special Part

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 cutting-edge (Type B)]

### Adjustable Range

- Range: 1.0 mm
- Allowance: Within 2  $\mu$

### Recommended cutting conditions

Workpiece	Cutting conditions			Tooth	Grade
	vc(m/min)	fz(mm/t)	ap(mm)		
P	160~270	0.05~0.20	~0.50	Full use	PC3700
	160~270	2~5	~0.03	1 use	
K	140~230	0.05~0.20	~0.50	Full use	PC6100
	140~230	2~5	~0.03	1 use	

## Gear Cutter Applicable Example

### Applicable example-external tooth gear

#### Finishing: M20



- **Cutter Dia:** Ø400
- **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:** Ø280
- **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:** Ø560
- **Tooth No:** 140 tooth
- High feed rate with low cutting resistance due to V shape insert setting design



LNE333-02-1



LNE434-02-1



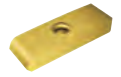
KEL1906-C0.6-MF

### Applicable example-internal tooth gear

#### Finishing: M16



- **Cutter Dia:** Ø400
- **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:** Ø280
- **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:** Ø560
- **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 : 52kW)

#### Cutting condition

vc = 119.98m/min(n=86.8rpm)  
fz = 0.518mm/t(vf = 450mm/min)  
ae = 36mm  
Dry

#### Tools

M16-PT-RACK-KOR03(Ø440xW90)

Semi-finishing cutter  
(low cut, low resistance)



#### Machine

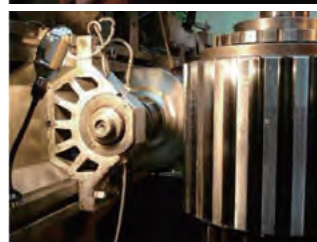
KARATS(30kw)

#### Cutting condition


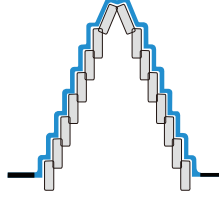

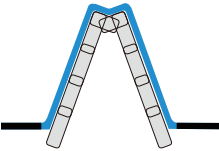

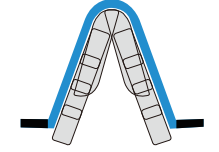

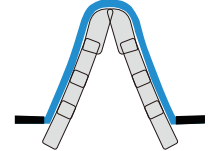

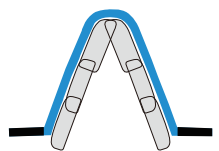

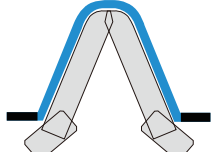

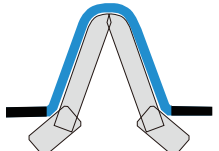

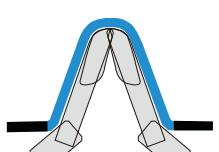
vc = 150m/min, n=119rpm  
fz = 0.09mm/t, vf = 81.6mm/min  
ae = 45mm  
Dry

#### Tools

M24 Semi-finishing External type  
Applicable Insert  
M40-ROU (Main),  
KEL150708-MX (Flank)

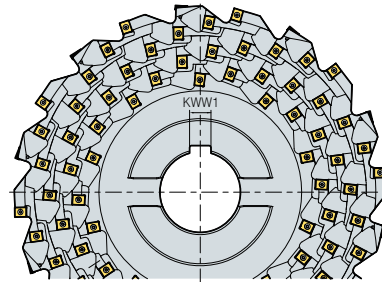
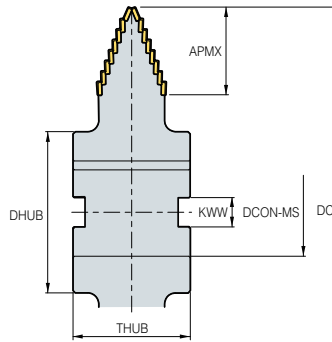
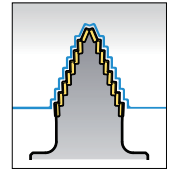


# B Gear Cutter Table

Type	Cutter shape	Cutting-edge shape	Type	Feature
Roughing			Step type	<ul style="list-style-type: none"> <li>• Working for big sized gear tooth</li> <li>• Low cutting resistance with step type insert setting</li> </ul>
			V shape type	<ul style="list-style-type: none"> <li>• Low cutting resistance with V shape cutting insert setting</li> <li>• Optimal cutting-edge line setting according to Rach type &amp; cutting-edge shape</li> </ul>
Semi-finishing			Low cutting resistance type	<ul style="list-style-type: none"> <li>• 4-Corner insert on Root portion</li> <li>• 3D chip breaker shape on flank</li> <li>• Optimal cutting-edge line setting for low cutting resistance</li> </ul>
			External gear high rigidity type	<ul style="list-style-type: none"> <li>• Optimal R type insert setting on Root portion</li> <li>• Superior Semi-finishing cutting with high rigidity shape of cutter &amp; insert</li> </ul>
			Internal gear high rigidity type	<ul style="list-style-type: none"> <li>• Exclusive semi-finishing Internal Gear insert</li> <li>• Optimal cutting-edge line setting with Internal tooth shape</li> </ul>
Finishing			External gear	<ul style="list-style-type: none"> <li>• Concave shape of cutting-edge line according to external gear type</li> <li>• Optimal cutting insert setting design according to a customer conditions</li> </ul>
			Internal gear	<ul style="list-style-type: none"> <li>• 2-corner insert setting on right &amp; left side and chamfering insert setting</li> <li>• Adjustable chamfering cartridge use for chamfering control</li> </ul>
			2 STEP type	<ul style="list-style-type: none"> <li>• Exclusive insert for machining the root part</li> <li>• 4-cornered insert</li> </ul>

• Optimal cutting insert setting design according to customer condition

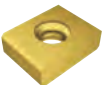
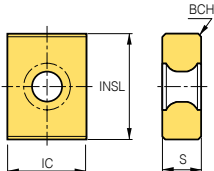

# Gear Cutter for Roughing (Step type)



Gear Module	CICT	DC	APMX	DCON-MS	DHUB	KWW	KWW1	THUB
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

(mm)

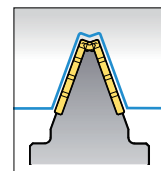
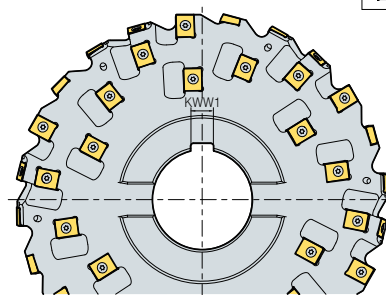
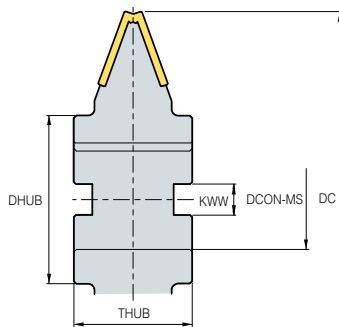
## Available inserts

Picture	Designation	Coated				Uncoated		Dimension				Configuration
		NC5330	PC9530	PC3700	PC5300	H01	G10	INSL	IC	S	BCH	
 Reinforced cutting-edge	LNE 434-02-1			○	⊙			19.05	14.29	6.35	0.6	
	KEL 1906-C0.6-MF 190610-MR			○	⊙			19.05	14.29	6.35	0.6	
 Low cutting resistance	KEL 1906-C0.6-MF 190610-MR			○	⊙			19.05	14.29	6.35	-	

\*The above specification is subject to change according to customer related condition & Korloy technical condition

⊙: 1<sup>st</sup> Rec ○: 2<sup>nd</sup> Rec


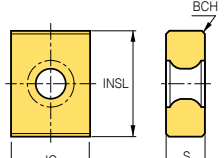


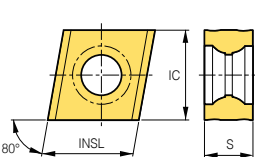

## Gear Cutter for Roughing (V shape type)



(mm)

Gear Module	TYPE	CICT	DC	DCON-MS	DHUB	KWW	KWW1	THUB
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

### Available inserts

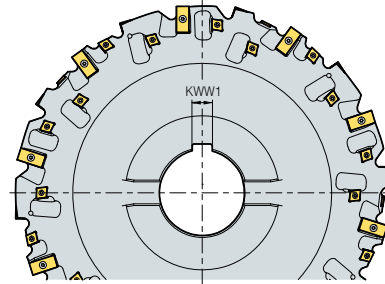
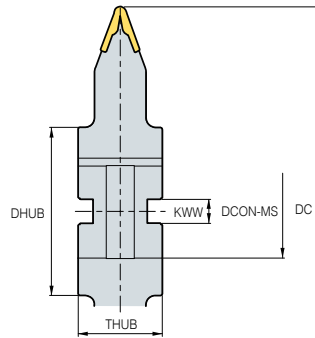
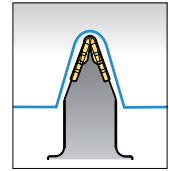
Picture	Designation	Coated				Uncoated		Dimension				Configuration
		NC5330	PC9530	PC3700	PC5300	H01	G10	INSL	IC	S	BCH	
 Reinforced cutting-edge	LNE 434-02-1			○	◎			19.05	14.29	6.35	0.6	
 Low cutting resistance	KEL 1906-C0.6-MF 190610-MR			○	◎			19.05	14.29	6.35	0.6 -	
 Reinforced cutting-edge	LNE 333-02-1			○	◎			14.3	12.7	6.35	0.8	
	CNHQ 1005-C0.5							10	10	5.4	-	

※The above specification is subject to change according to customer related condition & Korloy technical condition

©: 1<sup>st</sup> Rec ○: 2<sup>nd</sup> Rec

# Gear Cutter for Semi-finishing

(High rigid edge type, External gear)



(mm)

Gear Module	No.of teeth	CICT	DC	DCON-MS	DHUB	KWW	KWW1	THUB
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

## Available inserts

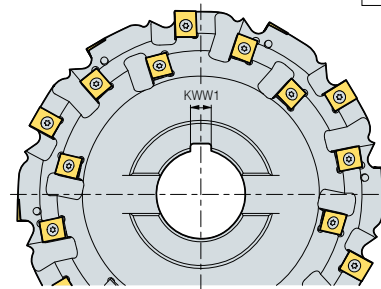
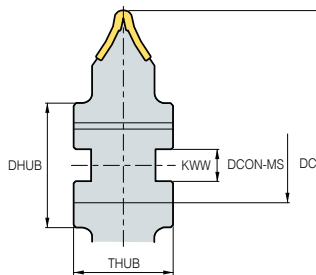
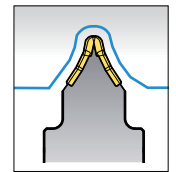
Picture	Designation	Coated				Uncoated		Dimension				Configuration
		NC5330	PC9530	PC3700	PC5300	H01	G10	INSL	IC	S	BCH	
	M6-2ST			○	◎			19.05	11.6	3.8	2.25	
	M8-2ST			○	◎			19.05	11.6	4	3	
	M10-2ST			○	◎			19.05	11.6	4.76	3.75	
	M12-2ST			○	◎			19.05	14.3	6.35	4.5	
	M14-2ST			○	◎			25.4	14.3	6.35	5.25	
	M16-2ST			○	◎			31.8	14.3	7.14	6	
	M18-2ST			○	◎			31.8	14.3	7.14	6.75	
	M20-2ST			○	◎			31.8	14.3	9.52	7.5	
	M22-2ST			○	◎			31.8	14.3	9.52	8.25	
M24-2ST			○	◎			31.8	14.3	9.52	9		
	KEC 120606-MX			○	◎			12	12.7	6.35	-	
	150708-MX			○	◎			15.15	15	7.6	-	

\*The above specification is subject to change according to customer related condition & Korloy technical condition

○: 1<sup>st</sup> Rec ○: 2<sup>nd</sup> Rec

## Gear Cutter for Semi-finishing

(High rigid edge type, External gear)



(mm)

Gear Module	No. of teeth	CICT	DC	DCON-MS	DHUB	KWW	KWW1	THUB
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

### Available inserts

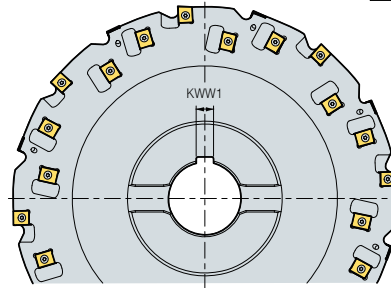
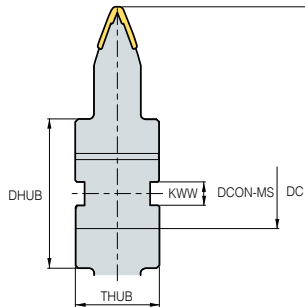
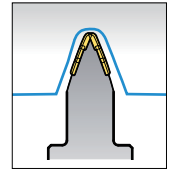
Picture	Designation	Coated				Uncoated		Dimension					Configuration
		NC5330	PC9530	PC3700	PC5300	H01	G10	INSL	IC	S	RE	BCH	
	M8-ROU			○	◎			15.875	11	4.76	4.6	-	
	M12-M14-ROU			○	◎			19.05	14.29	6.35	5.4	-	
	M16-M18-ROU			○	◎			19.05	14.29	7	5.4	-	
	M20-M22-ROU			○	◎			19.05	14.29	7.94	5.4	-	
	M40-ROU			○	◎			25.4	14.29	9.52	5.4	-	
	LNE 434-02-1			○	◎			19.05	14.29	6.35	-	0.6	
	KEL 1906-C0.6-MF			○	◎			19.05	14.29	6.35	-	0.6	
	KEL 190610-MR			○	◎			19.05	14.29	6.35	-	-	

※The above specification is subject to change according to customer related condition & Korloy technical condition

©: 1<sup>st</sup> Rec ○: 2<sup>nd</sup> Rec

# Gear Cutter for Semi-finishing

(High rigid edge type, Internal gear)



(mm)

Gear Module	No.of teeth	CICT	DC	DCON-MS	DHUB	KWW	KWW <sub>1</sub>	THUB
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

## Available inserts

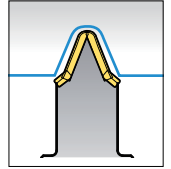
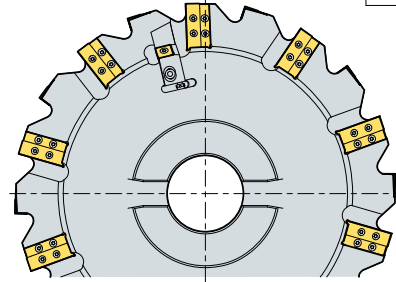
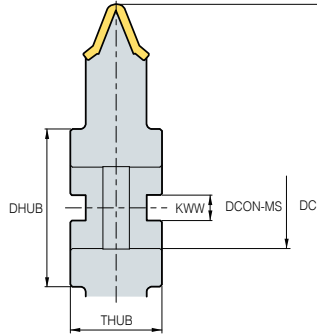
Picture	Designation	Coated				Uncoated		Dimension				Configuration
		NC5330	PC9530	PC3700	PC5300	H01	G10	INSL	IC	S	RE	
	M8-ROU			○	◎			15.875	11	4.76	2	
	M12-M14-ROU			○	◎			19.05	14.29	6.35	3	
	M16-M18-ROU			○	◎			19.05	14.29	7	5	
	M20-M22-ROU			○	◎			19.05	14.29	7.94	7	
	M40-ROU			○	◎			25.4	14.29	9.52	10	
	LNE 433-R80			○	◎			19.05	14.29	5.56	2.5	

\*The above specification is subject to change according to customer related condition & Korloy technical condition

◎: 1<sup>st</sup> Rec ○: 2<sup>nd</sup> Rec



## Gear Cutter for Finishing (1 Step type, External gear)



(mm)

Gear Module	CICT	DC	DCON-MS	DHUB	KWW	THUB
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

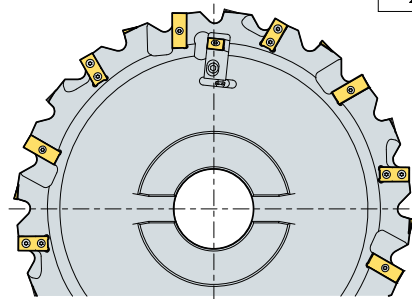
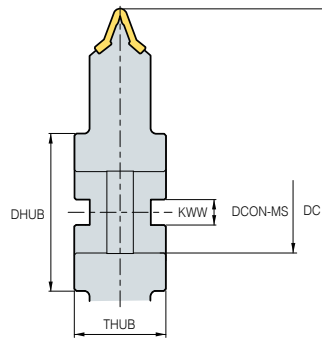
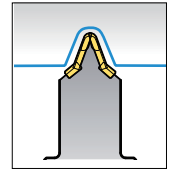
### Available inserts

Picture	Designation	Coated				Uncoated		Dimension				Configuration
		NC5330	PC9530	PC3700	PC5300	H01	G10	INSL	IC	S	RE	
	M6			○	◎			19	14.3	5	2.25	
	M8			○	◎			27	14.3	5.4	3	
	M10			○	◎			29	14.3	6.35	3.75	
	M12			○	◎			33	14.3	6.35	4.5	
	M14			○	◎			39	14.3	6.35	5.25	
	M16			○	◎			43	14.3	7.94	6	
	M18			○	◎			50	14.3	7.94	6.75	
	M20			○	◎			54	14.3	9.53	7.5	
	M22			○	◎			57	14.3	9.53	8.25	
	M24			○	◎			64	14.3	9.53	9	
	SNEQ 1507-C0.8			○	◎			15.875	15.875	7.94	-	

※The above specification is subject to change according to customer related condition & Korloy technical condition

# Gear Cutter for Finishing

(1 Step type, Internal / External gear)



(mm)

Gear Module	CICT	DC	DCON-MS	DHUB	KWW	THUB
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

## Available inserts

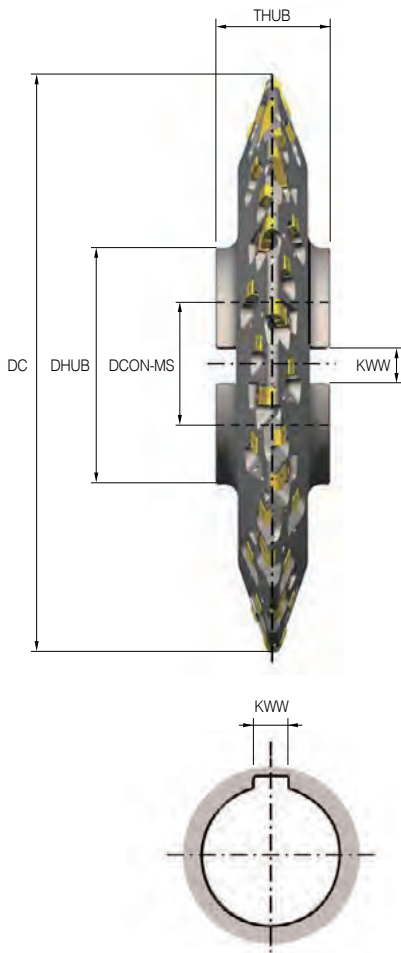
Picture	Designation	Coated				Uncoated		Dimension				Configuration
		NC5330	PC9530	PC3700	PC5300	H01	G10	INSL	IC	S	RE	
	M6		○		◎			19	14.3	5	2.25	
	M8		○		◎			27	14.3	5.4	3	
	M10		○		◎			29	14.3	6.35	3.75	
	M12		○		◎			33	14.3	6.35	4.5	
	M14		○		◎			39	14.3	6.35	5.25	
	M16		○		◎			43	14.3	7.94	6	
	M18		○		◎			50	14.3	7.94	6.75	
	M20		○		◎			54	14.3	9.53	7.5	
	M22		○		◎			57	14.3	9.53	8.25	
	M24		○		◎			64	14.3	9.53	9	
	SNEQ 1507-C0.8		○		◎			15.875	15.875	7.94	-	
	M6-2ST							19.05	11.6	3.8	2.25	
	M8-2ST							19.05	11.6	4	3	
	M10-2ST							19.05	11.6	4.76	3.75	
	M12-2ST							19.05	14.3	6.35	4.5	
	M14-2ST							25.4	14.3	6.35	5.25	
	M16-2ST							31.8	14.3	7.14	6	
	M18-2ST							31.8	14.3	7.14	6.75	
	M20-2ST							31.8	14.3	9.52	7.5	
	M22-2ST							31.8	14.3	9.52	8.25	
M24-2ST							31.8	14.3	9.52	9		

\*The above specification is subject to change according to customer related condition & Korloy technical condition

◎: 1<sup>st</sup> Rec ○: 2<sup>nd</sup> Rec

# B Gear Cutter Order Form

## ➤ Gear cutter order form



### Cutter Type

Roughing

Step

V shape

Semi-finishing

Low cutting resistance

High rigid edge

Finishing

1 Step

2 Step

■ Stock for finishing(one side) (mm) :

■ Outside diameter DC(mm) :

■ Bore diameter DCON-MS(mm) :

■ Hub diameter DHUB(mm) :

■ Cutter width THUB(mm) :

■ Radial keyway width KWW(mm) :

■ Radial keyway depth(mm) :

■ Axial keyway width KWW (mm) :

■ Axial keyway depth(mm) :

## ➤ Involute gear data

External Gear

Internal Gear

Rack Gear

■ Module  $m_n$  :

■ No. of teeth  $Z$ (mm) :

■ Pressure angle  $\alpha$ (°) :

■ Helix angle  $\beta$ (°) :

■ Addendum modification coefficient  $x$  :

■ Tip diameter  $d_a$ (mm) :

■ Root diameter  $d_f$ (mm) :

■ Root radius  $\rho_f$ (mm)

■ Base tangent length  $W_k$ (mm)

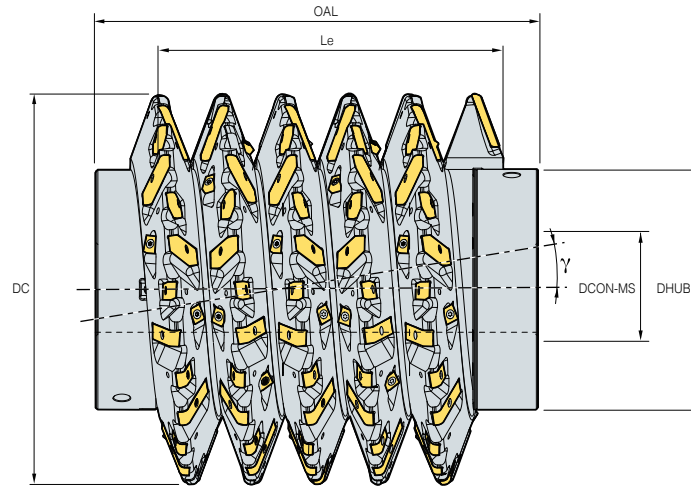
■ No. of measuring teeth  $K$  :

■ Dimension over balls  $M_d$ (mm) :

■ Ball diameter  $DM$ (mm) :

■ Gear quality (DIN, JIS) :

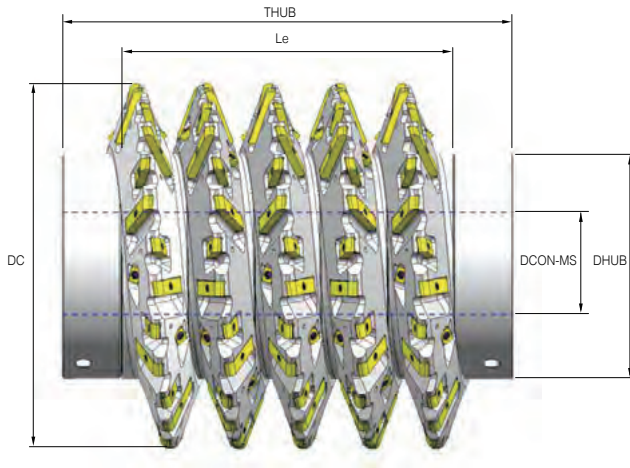
## Indexable HOB



Gear Module	DC	DHUB	DCON-MS	No.Segm. (Pitch)	Le	Segment insert	Total insert	$\gamma$ (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

# B Indexable HOB Cutter Order Form

## Indexable HOB Cutter Order Form



### Tool SPEC.

■ Outside diameter  $DC(\text{mm})$  :

■ Bore diameter  $DCON-MS(\text{mm})$  :

■ Hub diameter  $DHUB(\text{mm})$  :

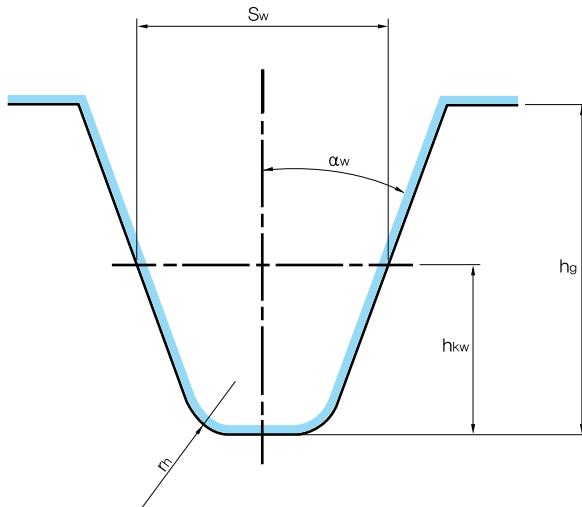
■ Hob length  $THUB(\text{mm})$  :

■ Cutting length  $Le(\text{mm})$  :

■ Spiral direction RH/LH :

■ Quality class acc. to DIN 3968 :

### Profile of Hob [ Module m6 ~ ]



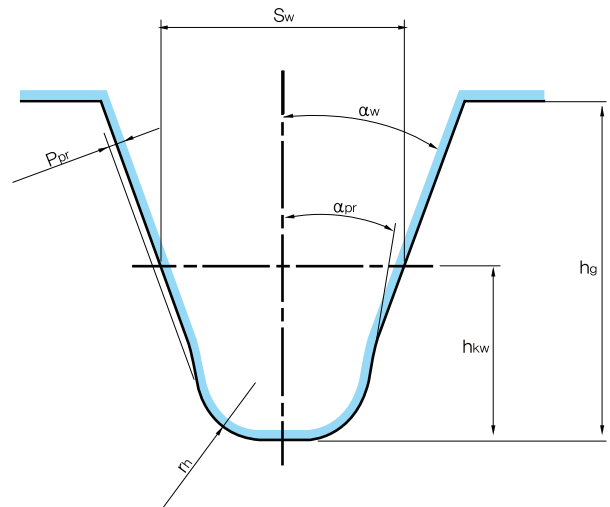
■ Module  $m_n$  :

■ Addendum  $h_{kw}(\text{mm})$  :

■ Tooth thickness  $Sw(\text{mm})$  :

■ Tooth depth  $hg(\text{mm})$  :

### Profile of Roughing hob [ Module m8 ~ ]



■ Pressure angle  $\alpha_w(\text{mm})$  :

■ Protuberance amount  $P_{pr}(\text{mm})$  :

■ Protuberance angle  $\alpha_{pr}(\text{mm})$  :

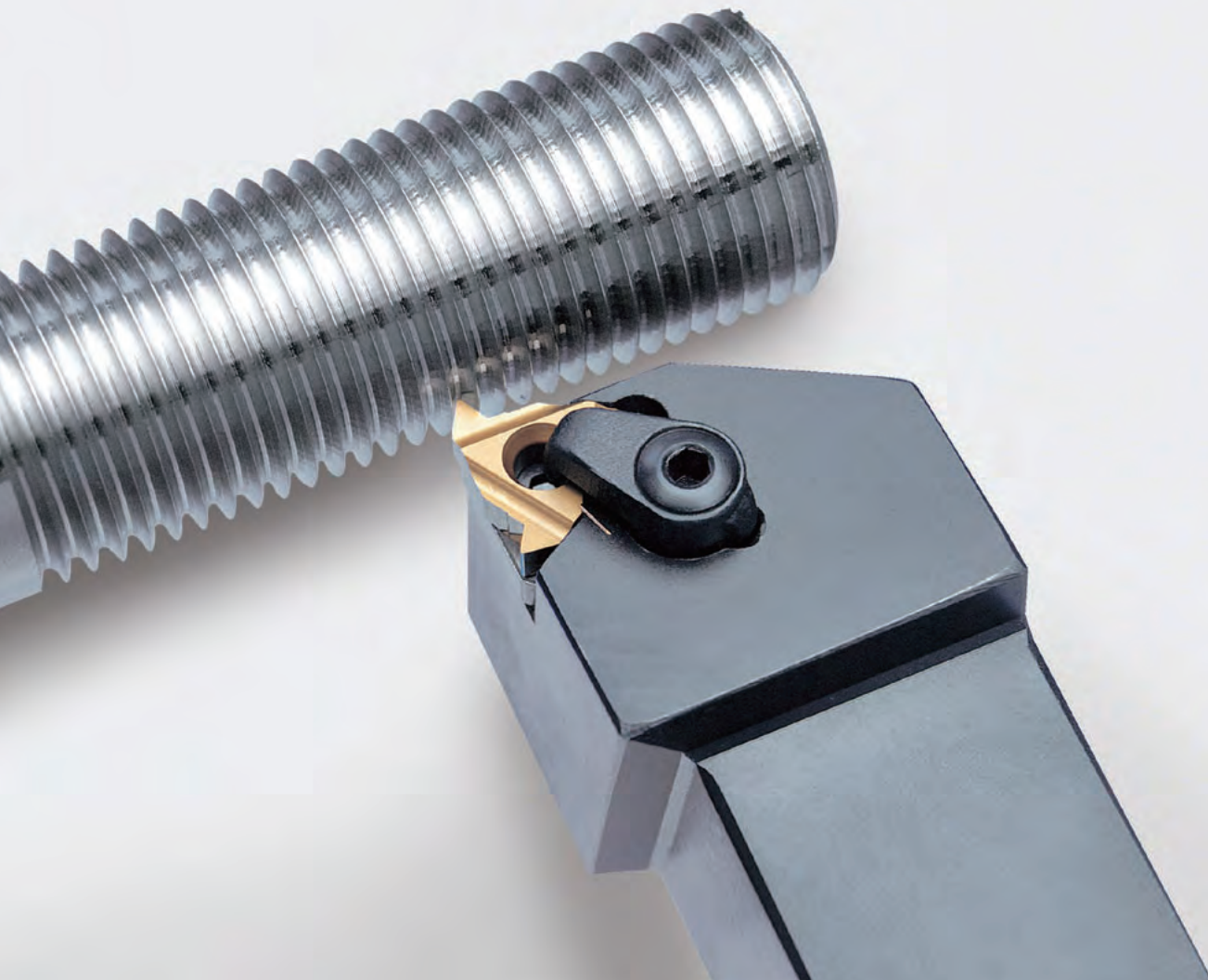
■ Tip radius  $r_h(\text{mm})$  :





# THREADING

Korloy threading tools are available for machining various shapes of thread at various pitches while ensuring high quality performances



## Technical information for THREADING

### Technical Information for Threading

- C2** Thread Milling Holders Code System
- C2** Thread Milling Inserts Code System
- C3** Technical Information for Thread Milling

### Thread Milling Inserts

- C12** ISO Metric
- C13** American UNC
- C14** UNJ(Unified Constant Thread)
- C15** Whitworth(BSW, BSF, BSP, BSB)
- C16** NPT
- C16** NPTF
- C16** BSPT

### Thread Milling Holders

- C17** Standard Type
- C17** Long Type
- C17** Tapered Type



# C Technical Information for Thread Milling

## Thread Milling Holders Code System

**TM S R L 25 - 11**

① Product name      ② Holder style      ③ Hand      ④ Shank type      ⑤ Shank diameter      ⑥ Cutting edge length

<p><b>① Product name</b>  <b>TM S R L 25 - 11</b></p> <p>Thread Milling Holder</p>	<p><b>③ Hand</b>  <b>TM S R L 25 - 11</b></p> <p>R : Right-handed L : Left-handed</p>	<p><b>⑤ Shank diameter</b>  <b>TM S R L 25 - 11</b></p> <p>25 : 25.0</p>						
<p><b>② Holder style</b>  <b>TM S R L 25 - 11</b></p> <p>S : Shank Type</p>	<p><b>④ Shank type</b>  <b>TM S R L 25 - 11</b></p> <p>None : Standard          L : Long Type          T : Taper Type</p>	<p><b>⑥ Cutting edge length(mm)</b>  <b>TM S R L 25 - 11</b></p> <table border="0"> <tr> <td>10 : 10.4</td> <td>22 : 22</td> </tr> <tr> <td>11 : 11</td> <td>27 : 27</td> </tr> <tr> <td>16 : 16</td> <td>38 : 38.5</td> </tr> </table>	10 : 10.4	22 : 22	11 : 11	27 : 27	16 : 16	38 : 38.5
10 : 10.4	22 : 22							
11 : 11	27 : 27							
16 : 16	38 : 38.5							

## Thread Milling Inserts Code System

**TM 2 I 16 - 1.5 ISO**

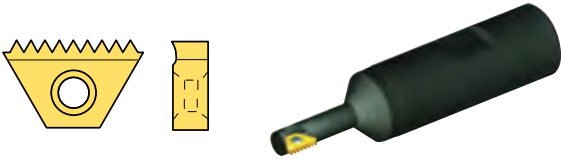
① Insert style      ② Cutting edge      ③ Type of insert      ④ Cutting edge length      ⑤ Pitch      ⑥ Type

<p><b>① Insert style</b>  <b>TM 2 I 16 - 1.5 ISO</b></p> <p>Thread Milling Insert</p>	<p><b>④ Cutting edge length(mm)</b>  <b>TM 2 I 16 - 1.5 ISO</b></p> <p>10 : 10.4          11 : 11          16 : 16          22 : 22          27 : 27          38 : 38.5</p>	<p><b>⑥ Type</b>  <b>TM 2 I 16 - 1.5 ISO</b></p> <p>ISO Metric          American UN (UNC, UNF, UNEF)          UNJ          Whitworth (BSW, BSF, BSP, BSB)          National Pipe Thread (NPT)          National Pipe Thread (NPTF)          British Standard Pipe Thread (BSPT)</p>
<p><b>② Cutting edge</b>  <b>TM 2 I 16 - 1.5 ISO</b></p> <p>None : 1 cutting edge          2 : 2 cutting edge</p>	<p><b>⑤ Pitch</b>  <b>TM 2 I 16 - 1.5 ISO</b></p> <p>mm : 0.5 ~ 6      tpi : 48 ~ 6</p>	
<p><b>③ Type of insert</b>  <b>TM 2 I 16 - 1.5 ISO</b></p> <p>I : Internal          E : External          EI : External &amp; Internal</p>		

## Thread Milling

### The right tool for the job

#### Small diameter type



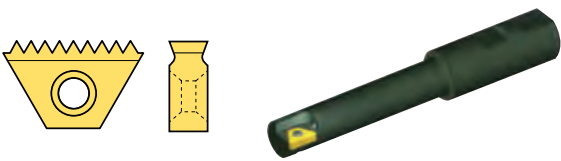
- Tool holder: TMSR • Insert: TM
- For small bore diameters down to 9.5 mm / L = 10.4 mm

#### Standard type



- Tool holder: TMSR • Insert: TM2
- For standard length threads

#### Long type



- Tool holder: TMSR • Insert: TM2
- For long or remote threads

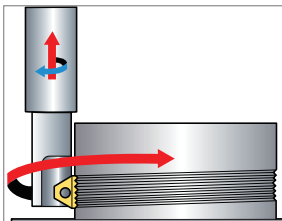
#### Tapered type



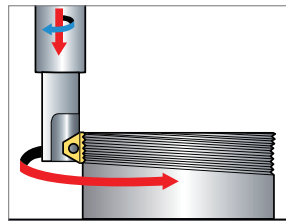
- Tool holder: TMSR • Insert: TM2 (BSPT, NPT, NPTF)
- For taper thread

### Thread milling methods

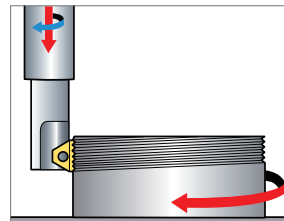
#### External threading



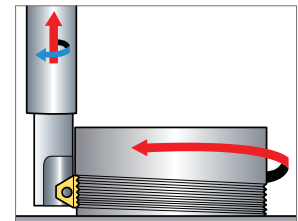
Right handed thread  
conventional milling



Left handed thread  
down milling

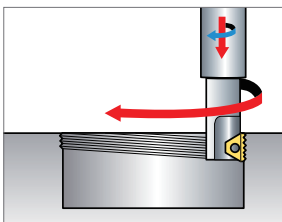


Right handed thread  
down milling

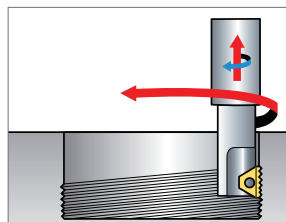


Left handed thread  
conventional milling

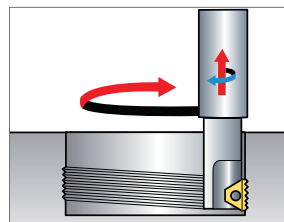
#### Internal threading



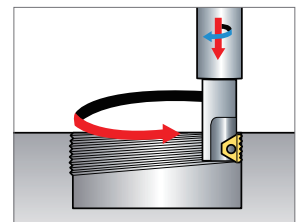
Right handed thread  
down milling



Left handed thread  
conventional milling

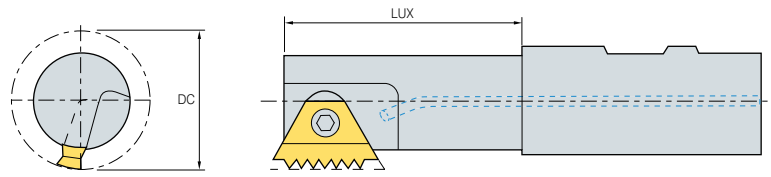


Right handed thread  
conventional milling



Left handed thread  
down milling

## 🔗 Tooling recommendation for given internal thread specification

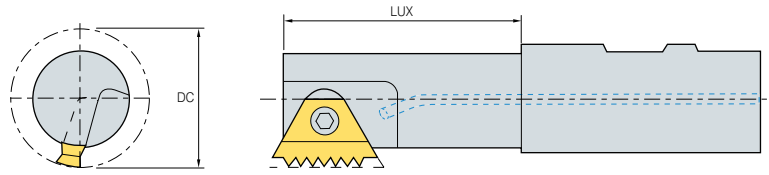


### • ISO

TP	TDZ (mm)	Holder	Insert	LUX	DC	TDN
0.75	11	TMSR 12-10	TM2I 10-0.75ISO	12	9	0.43
1	12-14	TMSR 12-10	TM2I 10-1.0ISO	12	9	0.58
	15-18	TMSR 12-11	TM2I 11-1.0ISO	12	11.5	
	20	TMSR 16-16	TM2I 16-1.0ISO	22	17	
	22	TMSR 20-22	TM2I 22-1.0ISO	29	19	
	24	TMSR 20-16	TM2I 16-1.0ISO	43	20	
	25-28	TMSRL 25-16	TM2I 16-1.0ISO	25	22	
1.25	14	TMSR 12-10	TM2I 10-1.25ISO	12	9	0.72
1.5	14-15	TMSR 12-10	TM2I 10-1.5ISO	12	9	0.87
	16-20	TMSR 12-11	TM2I 11-1.5ISO	12	11.5	
	22	TMSR 16-16	TM2I 16-1.5ISO	22	17	
	24	TMSR 20-22	TM2I 22-1.5ISO	29	19	
	25-26	TMSR 20-16	TM2I 16-1.5ISO	43	20	
	27-30	TMSRL 25-16	TM2I 16-1.5ISO	25	22	
	35-42	TMSR 25-27	TM2I 27-1.5ISO	52	30	
	45	TMSR 32-27	TM2I 27-1.5ISO	58	37	
2	22	TMSRT 16-16	TM2I 16-2.0ISO	22	15.5	1.15
	24	TMSR 16-16	TM2I 16-2.0ISO	22	17	
	25	TMSR 20-22	TM2I 22-2.0ISO	29	19	
	27	TMSR 20-16	TM2I 16-2.0ISO	43	20	
	28-32	TMSRL 25-16	TM2I 16-2.0ISO	25	22	
	39-42	TMSR 25-27	TM2I 27-2.0ISO	52	30	
	45-48	TMSR 32-27	TM2I 27-2.0ISO	58	37	
3	42-48	TMSR 25-27	TM2I 27-3.0ISO	52	30	1.73
	50-52	TMSR 32-27	TM2I 27-3.0ISO	58	37	
	45-52	TMSR 25-27	TM2I 27-4.0ISO	52	30	
4	55	TMSR 32-38	TM2I 38-4.0ISO	55	35	2.31
	56-58	TMSR 32-27	TM2I 27-4.0ISO	58	37	
	60-65	TMSR 40-38	TM2I 38-4.0ISO	65	46	
	48-52	TMSR 32-38	TM2I 38-5.0ISO	55	35	
5	48-52	TMSR 32-38	TM2I 38-5.0ISO	55	35	2.89
5.5	56	TMSR 32-38	TM2I 38-5.5ISO	55	35	3.17
	60	TMSR 40-38	TM2I 38-5.5ISO	65	46	
6	64-68	TMSR 40-38	TM2I 38-6.0ISO	65	46	3.46

- The recommended holder is the largest for the given thread specification
- Holder with smaller or equal cutting diameters (DC) can also be used

## Tooling recommendation for given internal thread specification



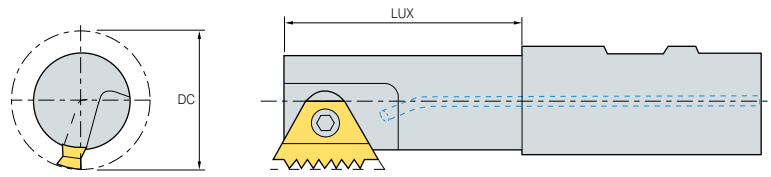
### • UN

TPI	TDZ (inch)	Holder	Insert	LUX	DC	TDN
32	7/16-1/2	TMSR 12-10	TMI 10-32UN	12	9	0.46
	9/16-11/16	TMSR 12-11	TM2I 11-32UN	12	11.5	
	3/4-13/16	TMSR 16-16	TM2I 16-32UN	22	17	
	7/8-15/16	TMSR 20-16	TM2I 16-32UN	43	20	
28	1	TMSR 25-16	TM2I 16-32UN	25	22	0.52
	7/16-1/2	TMSR 12-10	TMI 10-28UN	12	9	
	9/16-3/4	TMSR 12-11	TM2I 11-28UN	12	11.5	
	13/16-7/8	TMSR 16-16	TM2I 16-28UN	22	17	
	15/16	TMSR 20-16	TM2I 16-28UN	43	20	
24	1-1 1/8	TMSRL 25-16	TM2I 16-28UN	25	22	0.61
	9/16-11/16	TMSR 12-11	TM2I 11-24UN	12	11.5	
20	1/2-9/16	TMSR 12-10	TMI 10-20UN	12	9	0.73
	5/8-13/16	TMSR 12-11	TM2I 11-20UN	12	11.5	
	7/8	TMSR 16-16	TM2I 16-20UN	22	17	
	15/16-1	TMSR 20-16	TM2I 16-20UN	43	20	
	1 1/16-1 1/8	TMSRL 25-16	TM2I 16-20UN	25	22	
	1 3/8-1 5/8	TMSR 25-27	TM2I 27-20UN	52	30	
18	1 11/16-1 13/16	TMSR 32-27	TM2I 27-20UN	28	37	0.81
	5/8	TMSR 12-11	TM2I 11-18UN	12	11.5	
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-18UN	25	22	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-18UN	52	30	
16	1 11/16	TMSR 32-27	TM2I 27-18UN	58	37	0.92
	11/16-13/16	TMSR 12-11	TM2I 11-16UN	12	11.5	
	7/8-15/16	TMSR 16-16	TM2I 16-16UN	22	17	
	1	TMSR 20-16	TM2I 16-16UN	43	20	
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-16UN	25	22	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-16UN	52	30	
14	1 11/16-1 7/8	TMSR 32-27	TM2I 27-16UN	58	37	1.05
	7/8	TMSR 12-11	TM2I 11-14UN	12	11.5	
12	7/8	TMSRT 16-16	TM2I 16-12UN	22	15.5	1.22
	15/16	TMSR 16-16	TM2I 16-12UN	22	17	
	1	TMSR 20-22	TM2I 22-12UN	29	19	
	1 1/16	TMSR 20-16	TM2I 16-12UN	43	20	
	1 1/8-1 1/4	TMSRL 25-16	TM2I 16-12UN	25	22	
	1 1/2-1 11/16	TMSR 25-27	TM2I 27-12UN	52	30	
	1 3/4-1 15/16	TMSR 32-27	TM2I 27-12UN	58	37	
8	1 11/16-1 15/16	TMSR 25-27	TM2I 27-8UN	52	30	1.83
	2-1 1/8	TMSR 32-27	TM2I 27-8UN	58	37	
6	2-2 1/8	TMSR 25-27	TM2I 27-6UN	52	30	2.44
	2 1/4	TMSR 32-27	TM2I 27-6UN	58	37	
	2 3/8-2 1/2	TMSR 40-38	TM2I 38-6UN	65	46	
4.5	2-2 1/4	TMSR 32-38	TM2I 38-4.5UN	55	35	3.26
4	2 1/2	TMSR 40-38	TM2I 38-4UN	65	46	3.67

• The recommended holder is the largest for the given thread specification  
 • Holder with smaller or equal cutting diameters (DC) can also be used

# C Technical Information for Thread Milling

## Tooling recommendation for given internal thread specification



### • UNJ

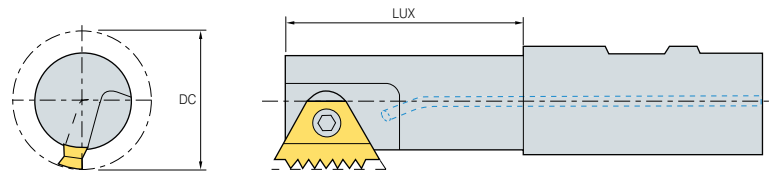
TPI	TDZ (inch)	Holder	Insert	LUX	DC	TDN
24	9/16-11/16	TMSR 12-11	TM2I 11-24UNJ	12	11.5	0.55
20	1/2	TMSR 12-10	TMI 10-20UNJ	12	9	0.66
	3/4-13/16	TMSR 12-11	TM2I 11-20UNJ	12	11.5	
	7/8	TMSR 16-16	TM2I 16-20UNJ	22	17	
	15/16-1	TMSR 20-16	TM2I 16-20UNJ	43	20	
18	5/8	TMSR 12-11	TM2I 11-18UNJ	12	11.5	0.74
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-18UNJ	25	22	
16	11/16-13/16	TMSR 12-11	TM2I 11-16UNJ	12	11.5	0.83
	7/8-15/16	TMSR 16-16	TM2I 16-16UNJ	22	17	
	1	TMSR 20-16	TM2I 16-16UNJ	43	20	
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-16UNJ	25	22	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-16UNJ	52	30	
	1 11/16-1 7/8	TMSR 32-27	TM2I 27-16UNJ	58	37	
14	7/8	TMSR 12-11	TM2I 11-14UNJ	12	11.5	0.95
12	7/8	TMSRT 16-16	TM2I 16-12UNJ	22	15.5	1.11
	15/16-1	TMSR 16-16	TM2I 16-12UNJ	22	17	
	1 1/16	TMSR 20-16	TM2I 16-12UNJ	43	20	
	1 1/8-1 1/4	TMSRL 25-16	TM2I 16-12UNJ	25	22	
	1 1/2-1 11/16	TMSR 25-27	TM2I 27-12UNJ	52	30	
	1 3/4-1 15/16	TMSR 32-27	TM2I 27-12UNJ	58	37	

### • W

TPI	TDZ (inch)	Holder	Insert	LUX	DC	TDN
26	1/2-9/16	TMSR 12-10	TMEI 10-26W	12	9	0.63
	5/8-3/4	TMSR 12-11	TM2EI 11-26W	12	11.5	
	13/16-7/8	TMSR 16-16	TM2EI 16-26W	22	17	
	15/16-1	TMSR 20-16	TM2EI 16-26W	43	20	
	1 1/16-1 1/8	TMSRL 25-16	TM2EI 16-26W	25	22	
20	9/16	TMSR 12-10	TM2EI 10-20W	12	9	0.81
	5/8-13/16	TMSR 12-11	TM2EI 11-20W	12	11.5	
	7/8-15/16	TMSR 16-16	TM2EI 16-20W	22	17	
	1	TMSR 20-16	TM2EI 16-20W	43	20	
	1 1/16-1 3/16	TMSRL 25-16	TM2EI 16-20W	25	22	
16	13/16	TMSR 16-16	TM2EI 16-16W	22	15.5	1.02
	7/8-15/16	TMSR 16-16	TM2EI 16-16W	22	17	
	1-1 1/16	TMSR 20-16	TM2EI 16-16W	43	20	
	1 1/8-1 1/4	TMSRL 25-16	TM2EI 16-16W	25	22	
	1.4-1 5/8	TMSR 25-27	TM2EI 27-16W	52	30	
	1 3/4-1.9	TMSR 32-27	TM2EI 27-16W	28	37	
12	1 1/2-1 3/4	TMSR 25-27	TM2EI 27-12W	52	30	1.36
	1 7/8	TMSR 32-27	TM2EI 27-12W	58	37	
8	1 7/8-1.9	TMSR 25-27	TM2EI 27-8W	52	30	2.03
	2.1-2 1/8	TMSR 32-27	TM2EI 27-8W	58	37	
7	2	TMSR 25-27	TM2EI 27-7W	52	30	2.32
6	2.1-2 1/8	TMSR 25-27	TM2EI 27-6W	52	30	2.71
	2 1/4	TMSR 32-38	TM2EI 38-6W	55	35	
	2 3/8-2.6	TMSR 32-27	TM2EI 27-6W	58	37	
	2 5/8-2 3/4	TMSR 40-38	TM2EI 38-6W	65	46	
5	3	TMSR 40-38	TM2EI 38-5W	65	46	3.25
4.5	3 1/2	TMSR 40-38	TM2EI 38-4.5W	65	46	3.61

• The recommended holder is the largest for the given thread specification  
 • Holder with smaller or equal cutting diameters (DC) can also be used

## Tooling recommendation for given internal thread specification



### • BSPT

TPI	TDZ (inch)	Holder	Insert	LUX	DC	TDN
19	3/8	TMSR 21-11	TM2EI 11-19BSPT	20	11.5	0.86
14	1/2-3/4	TMSRT 16-11	TM2EI 16-14BSPT	22	15.5	1.16
11	1-1 1/4	TMSRT 20-16	TM2EI 16-11BSPT	23	19	1.48
	1 1/2	TMSR 25-27	TM2EI 27-11BSPT	52	30	
	2-6	TMSRT 32-27	TM2EI 27-11BSPT	58	37	

### • NPT

TPI	TDZ (inch)	Holder	Insert	LUX	DC	TDN
14	1/2	TMSRT 16-16	TM2EI 16-14NPT	22	15.5	1.33
	3/4	TMSRT 20-16	TM2EI 16-14NPT	23	19	
11.5	1	TMSRT 20-16	TM2EI 16-11.5NPT	23	19	1.64
	1 1/4	TMSR 25-27	TM2EI 27-11.5NPT	52	30	
	1 1/2-2	TMSRT 32-27	TM2EI 27-11.5NPT	58	37	
8	2 1/2	TMSRT 32-27	TM2EI 27-8NPT	58	37	2.42
	3-24	TMSR 40-38	TM2EI 38-8NPT	65	46	

### • NPTF

TPI	TDZ (inch)	Holder	Insert	LUX	DC	TDN
14	1/2	TMSRT 16-16	TM2EI 16-14NPTF	22	15.5	1.35
	3/4	TMSRT 20-16	TM2EI 16-14NPTF	23	19	
11.5	1	TMSRT 20-16	TM2EI 16-11.5NPTF	23	19	1.63
	1 1/2	TMSR 25-27	TM2EI 27-11.5NPTF	52	30	
	2	TMSRT 32-27	TM2EI 27-11.5NPTF	58	37	
8	2 1/2	TMSRT 32-27	TM2EI 27-8NPTF	58	37	2.38
	3	TMSR 40-38	TM2EI 38-8NPTF	65	46	

• The recommended holder is the largest for the given thread specification

• Holder with smaller or equal cutting diameters (DC) 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	1.25	1.5	1.75	2	-	2.5	3	3.5	4	4.5	5	5.5	-	6	-	
	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	9	9.5	9.7	9.9	10	10.4	10.7	11.4	12														
TMSR 20-10	9	9.5	9.7	9.9	10	10.4	10.7	11.4	12														
TMSR 12-11	11.5	12	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1													
TMSR 20-11	11.5	12	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1													
TMSRL 25-11	11.5	12	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1													
TMSRT 16-16	15.5	16	16.2	16.4	16.5	16.9	17.2	17.9	18.5	19	19.5	20											
TMSR 16-16	17	17.6	17.8	18	18.2	18.7	19	19.6	20	20.5	21	21.5											
TMSR 16-22	17	17.6	17.8	18	18.2	18.7	19	19.6	20	20.5	21	21.5											
TMSR 20-22	19	19.7	20	20.2	20.4	20.8	21	21.6	22	22.5	23	23.5											
TMSRT 20-16	19	19.7	20	20.2	20.4	20.8	21	21.6	22	22.5	23	23.5											
TMSR 20-16	20	20.7	21	21.2	21.4	21.8	22	22.6	23	23.5	24	24.5											
TMSRW 25-22	22	22.7	23	23.2	23.4	23.8	24	24.6	25	25.5	26	26.5											
TMSRL 25-22	22	22.7	23	23.2	23.4	23.8	24	24.6	25	25.5	26	26.5											
TMSRL 25-16	22	22.7	23	23.2	23.4	23.8	24	24.6	25	25.5	26	26.5											
TMSR 25-27	30	30.7	31	31.2	31.4	31.8	32	32.8	33.5	34.1	34.6	35.6	36.6	39	42	45	48						
TMSRL 25-27	30	30.7	31	31.2	31.4	31.8	32	32.8	33.5	34.1	34.6	35.6	36.6	39	42	45	48						
TMSR 32-38	35								38.5	39.1	39.6	40.6	42	44	47	50	53.4	42.5	50	44.6	57.5	56.6	
TMSR 32-27	37	38	38.2	38.4	38.6	39.1	39.5	40.4	41	41.5	42	43	44	46.5	49	52	55.5						
TMSRL 32-27	37	38	38.2	38.4	38.6	39.1	39.5	40.4	41	41.5	42	43	44	46.5	49	52	55.5						
TMSRT 32-27	37	38	38.2	38.4	38.6	39.1	39.5	40	41	41.5	42	43	44	46.5	49	52	55.5						
TMSR 40-38	46								49.5	50.1	50.6	51.6	53	55	55.2	55.6	55	52.5	54	54.5	57.5	56.6	
TMSRL 40-38	46								49.5	50.1	50.6	51.6	53	55	55.2	55.6	55	52.5	54	54.5	57.5	56.6	

- In order to perform a thread milling operation, a milling machine with three-axis control capability for helical interpolation is required
- Helical interpolation is a CNC function producing tool movement along a helical path. This helical motion combines a 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:

**G02:** Helical interpolation in a clockwise direction

**G03:** Helical interpolation in a counter-clockwise direction

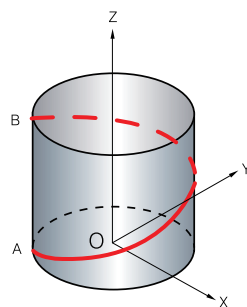


Fig. A

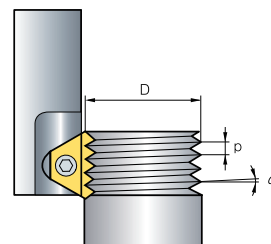


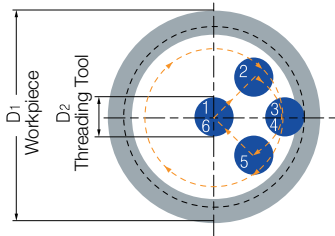
Fig. B

- The thread milling operation (Fig. B) consists of circular rotation of the tool around its own axis together with an orbiting motion along the bore or workpiece circumference. During one such orbit, the tool will shift vertically by 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.

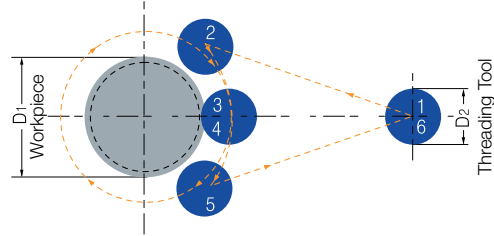
## ➤ Tangential arc approach

- 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

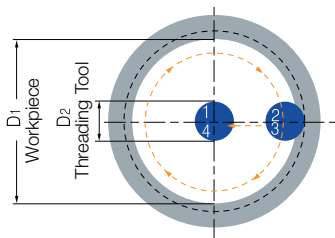


- 1-2: rapid approach
- 2-3: tool entry along tangential arc, with simultaneous feed along z-axis
- 3-4: helical movement during one full orbit (360°)
- 4-5: tool exit along tangential arc, with continuing feed along z-axis
- 5-6: rapid return

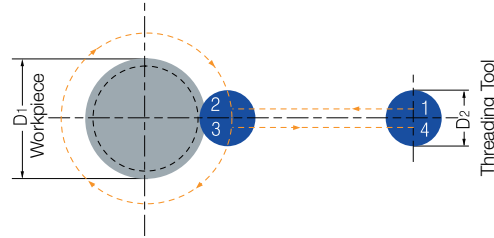
## ➤ Radial approach

- This is the simplest method. This is the simplest method and below are the two characteristics of radial approach:
  - ① a small vertical mark may be left at the entry (and exit) point. This is of no significance to the thread itself
  - ② 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

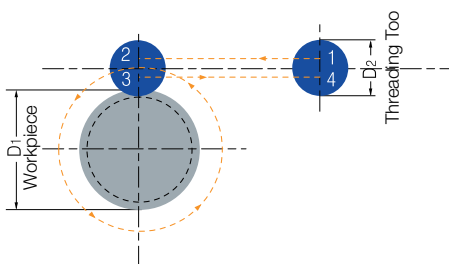


- 1-2: radial entry
- 2-3: helical movement during one full orbit (360°)
- 3-4: radial exit

## ➤ 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

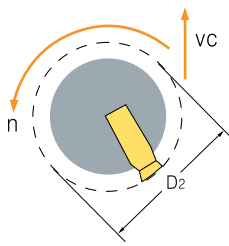


- 1-2: radial entry with simultaneous feed along z axis
- 2-3: helical movement during one full orbit (360°)
- 3-4: radial exit



## Preparing for the Thread Milling Operation

### Calculation of rotational velocity and feed at the cutting edge



$$n = \frac{vc \times 1000}{\pi \times D2}$$

$$vc = \frac{n \times \pi \times D2}{1000}$$

$$F1 = n \times z \times fn$$

**n:** Rotational Velocity (min<sup>-1</sup>)

**vc:** Cutting Speed (m/min)

**D2:** Tool holder Cutting Dia. (mm)

**F1:** Real Feed rate at the Cutting edges (mm/min)

**z:** No. of Cutting Edges

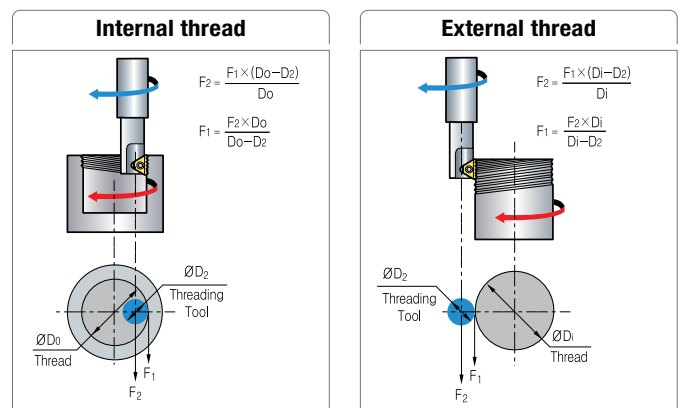
**fn:** Feed per Rooth per Rotation (mm/rev)

### 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





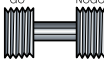
The equations define the relationship between feed rates at the cutting edge and at the tool center line



### Grades and applications

- Grade:** PC9570T
- Application:** The general-purpose grade for machining steel and cast iron is a high toughness fine-grain material with excellent toughness. It is coated with TiCN, offering outstanding toughness and wear resistance, which enhances chip resistance and extends tool life.

### Trouble shooting

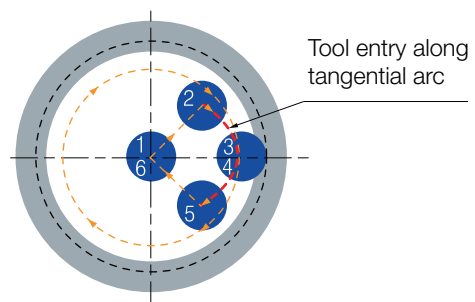
Problem	Possible	Solution
 <b>Increased insert flank wear</b>	Cutting speed too high Chip is too thin Insufficient coolant	Reduce cutting speed/use coated insert Increase feed rate Increase coolant flow rate
 <b>Chipping of cutting edge</b>	Chip is too thick Vibration	Reduce feed rate/Use the tangential arc method Increase RPM Check stability
 <b>Material built-up on the cutting edge</b>	Incorrect cutting speed Unsuitable carbide grade	Change cutting speed Use a coated carbide grade
 <b>Chatter/vibration</b>	Feed rate is too high Profile is too deep Thread length is too long	Reduce the feed. Execute two passes, each with increased cutting depth/ Execute two passes, each cutting only half the thread length Execute two passes, each cutting only half the thread length
 <b>Insufficient thread accuracy</b>	Tool deflection	Reduce feed rate/Execute a "zero" cut

## Recommended cutting conditions

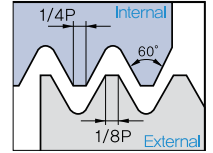
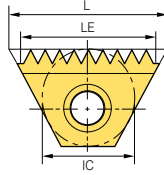
	Workpiece	Hardness brinell (HB)	vc (m/min)		Feed fz (mm/t)		
			Grade		Indexable insert	Solid endmill	
			PC9570T	PC9070M			
P	Carbon steel	Low carbon (C+0.1-0.25%)	125	100 ~ 210	80 ~ 250	0.05 ~ 0.3	0.03 ~ 0.15
		Medium carbon (C = 0.25-0.55%)	150	100 ~ 180	80 ~ 230	0.05 ~ 0.25	0.03 ~ 0.1
		High carbon (C = 0.55-0.85%)	170	100 ~ 170	80 ~ 200	0.05 ~ 0.2	0.03 ~ 0.08
	Low alloy steel	Non-hardened	180	90 ~ 160	60 ~ 180	0.05 ~ 0.25	0.03 ~ 0.1
		Hardened	275	80 ~ 150	60 ~ 170	0.05 ~ 0.2	0.03 ~ 0.07
		Hardened	350	70 ~ 140	60 ~ 160	0.05 ~ 0.15	0.01 ~ 0.03
	High alloy steel	Annealed	200	60 ~ 130	40 ~ 100	0.05 ~ 0.2	0.03 ~ 0.05
		Hardened	325	70 ~ 110	30 ~ 80	0.05 ~ 0.1	0.01 ~ 0.03
	Cast steel	Low alloy	200	100 ~ 170	80 ~ 250	0.05 ~ 0.15	0.03 ~ 0.1
		High alloy	225	70 ~ 120	60 ~ 170	0.05 ~ 0.1	0.01 ~ 0.03
M	Ferritic stainless steel	Non-hardened	200	100 ~ 170	60 ~ 150	0.05 ~ 0.15	0.04 ~ 0.1
		Hardened	330	100 ~ 170	60 ~ 120	0.05 ~ 0.1	0.01 ~ 0.05
	Austenitic stainless steel	Austenitic	180	70 ~ 140	60 ~ 140	0.05 ~ 0.15	0.04 ~ 0.1
		Super austenitic	200	70 ~ 140	60 ~ 130	0.05 ~ 0.1	0.04 ~ 0.1
	Ferritic Stainless Steel Castings	Non-hardened	200	70 ~ 140	60 ~ 160	0.05 ~ 0.15	0.04 ~ 0.1
		Hardened	330	70 ~ 140	60 ~ 110	0.05 ~ 0.1	0.03 ~ 0.05
	Austenitic Stainless Steel Castings	Austenitic	200	70 ~ 120	60 ~ 150	0.05 ~ 0.15	0.04 ~ 0.1
		Hardened	330	70 ~ 120	60 ~ 100	0.05 ~ 0.1	0.03 ~ 0.05
	High temperature alloys	Annealed (Iron based)	200	20 ~ 45	30 ~ 60	0.05 ~ 0.1	0.04 ~ 0.1
		Aged (Iron based)	280	20 ~ 30	20 ~ 50	0.02 ~ 0.05	0.01 ~ 0.03
		Annealed (Nickel or Cobalt based)	250	15 ~ 20	15 ~ 35	0.02 ~ 0.05	0.01 ~ 0.03
		Aged (Nickel or Cobalt based)	350	10 ~ 15	15 ~ 30	0.02 ~ 0.05	0.01 ~ 0.03
	Titanium alloys	Pure 99.5 Ti	400Rm	70 ~ 140	40 ~ 80	0.02 ~ 0.05	0.03 ~ 0.05
		α+β alloys	1050Rm	20 ~ 50	20 ~ 50	0.02 ~ 0.05	0.03 ~ 0.05
K	Extra hard steel	Hardened & tempered	55HrC	20 ~ 45	15 ~ 45	0.01 ~ 0.03	0.005 ~ 0.01
	Malleable cast iron	Ferritic (short chips)	130	60 ~ 130	70 ~ 160	0.02 ~ 0.08	0.01 ~ 0.03
		Pearlitic (long chips)	230	60 ~ 120	60 ~ 150	0.02 ~ 0.05	0.03 ~ 0.05
	Grey cast iron	Low tensile strength	180	60 ~ 130	70 ~ 160	0.05 ~ 0.15	0.05 ~ 0.1
		High tensile strength	260	60 ~ 100	40 ~ 120	0.05 ~ 0.1	0.03 ~ 0.05
	Nodular SG iron	Ferritic	160	60 ~ 125	40 ~ 110	0.05 ~ 0.15	0.05 ~ 0.1
		Pearlitic	260	50 ~ 90	40 ~ 100	0.05 ~ 0.1	0.03 ~ 0.05
	N	Aluminum alloys Wrought	Non-aging	60	100 ~ 250	200 ~ 300	0.1 ~ 0.4
Aged			100	100 ~ 180	150 ~ 250	0.1 ~ 0.3	0.1 ~ 0.2
Aluminum alloys		Cast	75	150 ~ 400	100 ~ 200	0.1 ~ 0.3	0.1 ~ 0.2
		Cast & aged	90	150 ~ 280	120 ~ 220	0.05 ~ 0.25	0.1 ~ 0.15
		Cast Si 13-22%	130	80 ~ 150	200 ~ 300	0.1 ~ 0.3	0.1 ~ 0.2
Copper and copper alloys		Brass	90	120 ~ 210	200 ~ 300	0.1 ~ 0.3	0.1 ~ 0.25
		Bronze and non-leaded copper	100	120 ~ 210	150 ~ 250	0.05 ~ 0.25	0.1 ~ 0.2

## Example

- At tool entry, set the Feed fz (mm/tooth) to 70% lower than the threading Feed
- Threading Feed: 0.3 (mm/t)
- Tool entry Feed: 0.09 (mm/t)



## ISO Metric



Defined by : R262 (DIN 13)  
Tolerance class : 6g/6H

### • External/Internal

(mm)

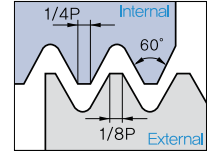
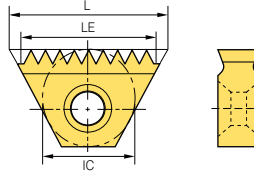
Insert size		TP	Designation				LE	NT (Number of Teeth)	Tool holder
IC	L		External	PC9570T	Internal	PC9570T			
6	10.4	0.5	-		TMI	10-0.5ISO	●	10	TMSR - 10
		0.75	-			10-0.75ISO		9.75	
		1	-			10-1.0ISO	●	9	
		1.25	-			10-1.25ISO		8.75	
		1.5	-			10-1.5ISO		9	
6.35	11	0.5	-		TM2I	11-0.5ISO		10	TMSR - 11
		0.75	TM2E	11-0.75ISO		11-0.75ISO	●	10.5	
		1		11-1.0ISO		11-1.0ISO	●	10	
		1.25		11-1.25ISO		-		10	
		1.25		-		11-1.25ISO		8.75	
		1.5		11-1.5ISO		-		9	
		1.5		-		11-1.5ISO	●	10.5	
9.525	16	0.5	-		TM2I	16-0.5ISO		15	TMSR - 16
		0.75	TM2E	16-0.75ISO		16-0.75ISO		15	
		0.8		-		16-0.8ISO		14.4	
		1		16-1.0ISO		-		14	
		1		-		16-1.0ISO	●	15	
		1.25		16-1.25ISO		16-1.25ISO		15	
		1.5		16-1.5ISO	●	16-1.5ISO	●	15	
		1.75		16-1.75ISO		16-1.75ISO		14	
2		16-2.0ISO		16-2.0ISO	●	14			
9.525B	22	1	TM2E	22-1.0ISO		TM2I	22-1.0ISO	22	TMSR - 22
		1.25		22-1.25ISO			21.25		
		1.5		22-1.5ISO		22-1.5ISO	●	21	
		1.75		22-1.75ISO		22-1.75ISO		21	
		2		22-2.0ISO	●	22-2.0ISO	●	22	
15.875	27	1	TM2E	27-1.0ISO		TM2I	27-1.0ISO	26	TMSR - 27
		1.25		27-1.25ISO			25		
		1.5		27-1.5ISO		27-1.5ISO	●	25.5	
		1.75		27-1.75ISO		27-1.75ISO		24.5	
		2		27-2.0ISO		27-2.0ISO	●	24	
		2.5		27-2.5ISO		27-2.5ISO		25	
		3		27-3.0ISO		27-3.0ISO	●	24	
		3.5		27-3.5ISO		27-3.5ISO		24.5	
		4		27-4.0ISO		27-4.0ISO	●	24	
4.5		27-4.5ISO		27-4.5ISO		22.5			
19.05B	38.5	1.5	TM2E	38-1.5ISO		TM2I	38-1.5ISO	36	TMSR - 38
		2		38-2.0ISO		38-2.0ISO		36	
		3		38-3.0ISO		38-3.0ISO		36	
		4		38-4.0ISO		38-4.0ISO		32	
		4.5		38-4.5ISO		38-4.5ISO		31.5	
		5		38-5.0ISO		38-5.0ISO		30	
		5.5		38-5.5ISO		38-5.5ISO		33	
6		38-6.0ISO		38-6.0ISO		30			

➔ Applicable Insters C17

\* All inserts except TMI10 code have 2 cutting edges

● : Stock item

# American UNC



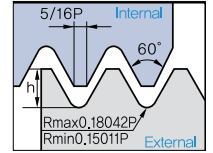
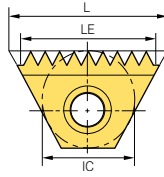
Defined by : ANSI B1.1.74  
Tolerance class : Class 2A/2B

• External/Internal

(mm)

Insert size		TPI	Designation				LE	NT (Number of Teeth)	Tool holder	
IC	L		External	PC9570T	Internal	PC9570T				
6	10.4	32	-		TMI	10-32UN		9.53	12	TMSR - 10
		28	-			10-28UN		9.07	10	
		24	-			10-24UN		9.53	9	
		20	-			10-20UN	●	8.89	7	
		18	-			10-18UN		8.47	6	
		16	-			10-16UN		7.94	5	
6.35	11	48	-		TM2I	11-48UN		10.05	19	TMSR - 11
		40	-			11-40UN		10.16	16	
		32	-			11-32UN		10.32	13	
		28	TM2E	11-28UN		11-28UN		9.98	11	
		27		11-27UN		11-27UN		10.35	11	
		24		11-24UN		11-24UN		9.53	9	
		20		11-20UN		11-20UN		10.16	8	
		18		11-18UN		11-18UN	●	9.88	7	
		16		11-16UN		11-16UN		9.53	6	
		14		11-14UN		11-14UN		9.07	5	
9.525	16	40	-		TM2I	16-40UN		14.61	40	TMSR - 16
		32	-			16-32UN		15.08	32	
		28	TM2E	16-28UN		16-28UN		14.51	28	
		27		16-27UN		16-27UN		14.11	27	
		24		16-24UN		16-24UN		14.82	24	
		20		16-20UN		16-20UN		13.97	20	
		18		16-18UN		16-18UN		14.11	18	
		16		16-16UN		16-16UN	●	14.29	16	
		14		16-14UN		16-14UN		14.51	14	
		13		16-13UN		16-13UN		13.68	13	
		12		16-12UN		16-12UN	●	14.82	12	
		11.5		16-11.5UN		16-11.5UN		13.25	11.5	
9.525B	22	24	TM2E	22-24UN		TM2I	22-24UN	21.16	20	TMSR - 22
		20		22-20UN		22-20UN	21.59	17		
		18		22-18UN		22-18UN	21.17	15		
		16		22-16UN		22-16UN	20.64	13		
		14		22-14UN		22-14UN	21.77	12		
		13		22-13UN		22-13UN	21.49	11		
		12		22-12UN		22-12UN	21.17	10		
15.875	27	24	TM2E	27-24UN		TM2I	27-24UN	25.4	24	TMSR - 27
		20		27-20UN		27-20UN	25.4	20		
		18		27-18UN		27-18UN	25.4	18		
		16		27-16UN		27-16UN	25.4	16		
		14		27-14UN		27-14UN	25.4	14		
		13		27-13UN		27-13UN	25.4	13		
		12		27-12UN		27-12UN	25.4	12		
		11.5		27-11.5UN		27-11.5UN	24.3	11		
		11		27-11UN		27-11UN	25.4	11		
		10		27-10UN		-	22.86	9		
		10		-		27-10UN	25.4	10		
		9		27-9UN		27-9UN	22.58	8		
		8		27-8UN		27-8UN	22.23	7		
		7		27-7UN		-	21.77	6		
		7		-		27-7UN	25.4	7		
6		27-6UN		-	21.17	5				
6		-		27-6UN	25.4	6				
19.05	38.5	6	TM2E	38-6UN		TM2I	38-6UN	38.87	8	TMSR - 38
		5		38-5UN		38-5UN	30.48	6		
		4.5		38-4.5UN		38-4.5UN	33.87	6		
		4		38-4UN		38-4UN	31.75	5		

## UNJ(Unified Constant Thread)



Defined by : MIL-S-8879C  
Tolerance class : 3A/3B

### • External/Internal

(mm)

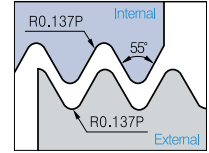
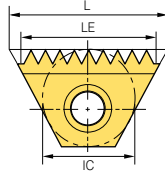
Insert size		TPI	Designation				LE	NT (Number of Teeth)	Tool holder	
IC	L		External	PC9570T	Internal	PC9570T				
6	10.4	24	-		TMI	10-24UNJ	9.53	9	TMSR - 10	
		20	-			10-20UNJ	8.89	7		
		18	-			10-18UNJ	8.47	6		
		16	-			10-16UNJ	9.53	8		
6.35	11	24	TM2E	11-24UNJ		TM2I	11-24UNJ	9.53	9	TMSR - 11
		20		11-20UNJ			11-20UNJ	10.16	8	
		18		-			11-18UNJ	9.88	7	
		16		11-16UNJ			11-16UNJ	9.53	6	
		14		11-14UNJ			11-14UNJ	9.07	5	
9.525	16	24	TM2E	16-24UNJ		TM2I	16-24UNJ	14.82	14	TMSR - 16
		20		16-20UNJ			16-20UNJ	13.97	11	
		18		16-18UNJ			16-18UNJ	14.11	10	
		16		16-16UNJ			16-16UNJ	14.29	9	
		14		16-14UNJ			16-14UNJ	14.51	8	
		13		16-13UNJ			-	13.68	7	
		12		16-12UNJ			16-12UNJ	14.82	7	
15.875	27	16	TM2E	27-16UNJ		TM2I	27-16UNJ	25.4	16	TMSR - 27
		12		27-12UNJ			27-12UNJ	25.4	12	
		11		27-11UNJ			27-11UNJ	25.4	11	

Applicable Insters **C17**

\* All inserts except TMI10 code have 2 cutting edges

• : Stock item

# Whitworth(BSW, BSF, BSP, BSB)



BSW Defined by : B.S.84:1956, DIN 259, ISO228/1:1982  
 BSF Defined by : B.S.2779:1956  
 Tolerance class : BSW-Medium class A, BSP-Medium class

• External/Internal

(mm)

Insert size		TPI	Designation		PC9570T	LE	NT (Number of Teeth)	Tool holder
IC	L		External + Internal					
6	10.4	28	TMEI	10-28W		9.07	10	TMSR - 10
		26		10-26W		8.79	9	
		24		10-24W		9.53	9	
		20		10-20W		8.89	7	
		19		10-19W		9.36	7	
6.35	11	28	TM2EI	11-28W		9.98	11	TMSR - 11
		26		11-26W		9.77	10	
		24		11-24W		9.53	9	
		20		11-20W		10.16	8	
		19		11-19W		9.36	7	
9.525	16	14	TM2EI	11-14W		9.07	5	TMSR - 16
		26		16-26W		14.65	15	
		24		16-24W		14.82	14	
		20		16-20W		13.97	11	
		19		16-19W		14.71	11	
		18		16-18W		14.11	10	
		16		16-16W		14.29	9	
		14		16-14W		14.51	8	
9.525B	22	12	TM2EI	16-12W		14.82	7	TMSR - 22
		11		16-11W	●	13.85	6	
		24		22-24W		21.17	20	
		20		22-20W		21.59	17	
		19		22-19W		21.39	16	
		18		22-18W		21.17	15	
		16		22-16W		20.64	13	
		14		22-14W		21.77	12	
15.875	27	11	TM2EI	22-11W		20.78	9	TMSR - 27
		16		27-16W		25.4	16	
		14		27-14W		25.4	14	
		12		27-12W		23.28	11	
		11		27-11W		23.09	10	
		10		27-10W		25.4	10	
		9		27-9W		22.58	8	
		8		27-8W		22.23	7	
19.05B	38.5	7	TM2EI	27-7W		21.77	6	TMSR - 38
		6		27-6W		21.17	5	
		11		38-11W		34.64	15	
		6		38-6W		33.87	8	
		5		38-5W		30.48	6	
		4.5		38-4.5W		33.87	6	

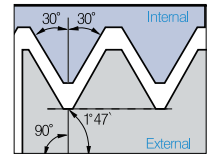
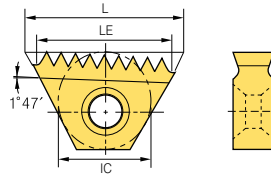
Applicable Insters **C17**

\* All inserts except TMI10 code have 2 cutting edges

● : Stock item

# C Thread Milling Inserts

## NPT



Defined by : USAS B2.1:1968  
Tolerance class : Standard NPT

### • External/Internal

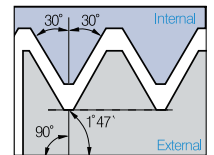
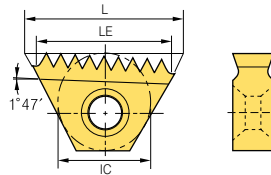
Insert size		TPI	Designation		PC9570T	LE	NT (Number of Teeth)	Tool holder	
IC	L		External+Internal					RH	LH
9.525	16	18	TM2E	16-18NPT *		14.11	10	TMSRT - 16	TMSLT - 16
		14	TM2EI	16-14NPT		14.51	8		
		11.5		16-11.5NPT		13.25	6		
9.525B	22	14	TM2EI	22-14NPT		21.77	12	TMSRT - 22	TMSLT - 22
15.875	27	11.5	TM2EI	27-11.5NPT	●	24.3	11	TMSR - 27	TMSL - 27
		8		27-8NPT	●	22.23	7		
19.05B	38.5	11.5	TM2EI	38-11.5NPT		35.34	16	TMSR - 38	TMSL - 38
		8		38-8NPT		31.75	10		

➔ Applicable Insters C17

\* TM2E16-18NPT is for external threading

● : Stock item

## NPTF



Defined by : ANSI 1.20.3-1976  
Tolerance class : Standard NPTF

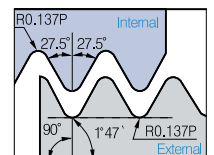
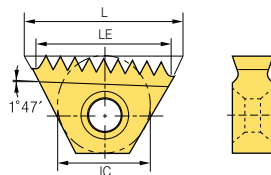
### • External/Internal

Insert size		TPI	Designation		PC9570T	LE	NT (Number of Teeth)	Tool holder	
IC	L		External+Internal					RH	LH
9.525	16	14	TM2EI	16-14NPTF	●	14.51	8	TMSRT - 16	TMSLT - 16
		11.5		16-11.5NPTF		13.25	6		
9.525B	22	14	TM2EI	22-14NPTF		21.77	12	TMSRT - 22	TMSLT - 22
		11.5		22-11.5NPTF		19.88	9		
15.875	27	11.5	TM2EI	27-11.5NPTF		24.3	11	TMSR - 27	TMSL - 27
		8		27-8NPTF		22.23	7		
19.05B	38.5	11.5	TM2EI	38-11.5NPTF		35.34	16	TMSR - 38	TMSL - 38
		8		38-8NPTF		31.75	10		

➔ Applicable holders C17

● : Stock item

## BSPT



Defined by : B.S 21:1985  
Tolerance class : Standard BSPT

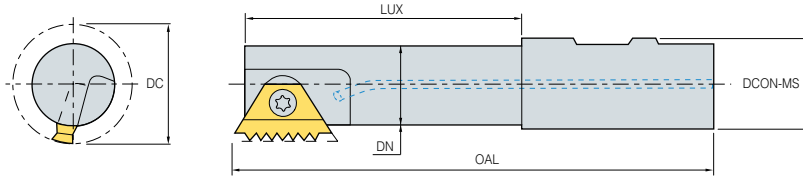
### • External/Internal

Insert size		TPI	Designation		PC9570T	LE	NT (Number of Teeth)	Tool holder	
IC	L		External+Internal					RH	LH
6.35	11	19	TM2EI	11-19BSPT		9.36	7	TMSR - 10	TMSL - 10
9.525	16	14	TM2EI	16-14BSPT		14.51	8	TMSRT - 16	TMSLT - 16
		11		16-11BSPT		13.85	6		
15.875	27	11	TM2EI	27-11BSPT		23.09	10	TMSR - 27	TMSL - 27

➔ Applicable Insters C17

● : Stock item

# Standard Type

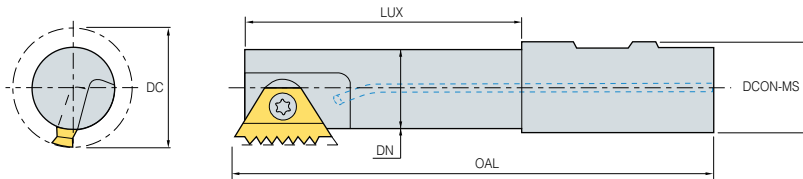


Insert size	Designation	Stock	DC	DCON-MS	DN	LUX	OAL	Screw	Wrench
IC									
6	TMSR 12-10		9	12	6.8	12	69	STM10	TW07P
	TMSR 20-10		9	20	6.8	17	84		
6.35	TMSR 12-11	●	11.5	12	8.9	12	70	STM11	TW08P
	TMSR 20-11	●	11.5	20	8.9	20	85		
9.525	TMSR 16-16	●	17	16	13.6	22	90	STM1622	TW10P
	TMSR 20-16	●	20	20	16.6	43	95		
9.525B	TMSR 16-22		17	16	13.5	29	79.5	STM1622	TW10P
	TMSR 20-22	●	19	20	15.5	29	81.5		
	TMSR 25-22		19	25	15.5	30	92.3		
	TMSRW 25-22		22	25	18.5	30	90.8		
15.875	TMSR 25-27	●	30	25	24.0	52	110	STM27	TW25L
	TMSL 25-27		30	25	24.0	52	110		
	TMSR 32-27		37	32	31.0	58	120		
19.05	TMSR 32-38		35	32	27.0	53	115	STM38	TW30L
	TMSR 40-38		46	40	38.0	63	135		

Applicable holders C12-C16

● : Stock item

# Long Type

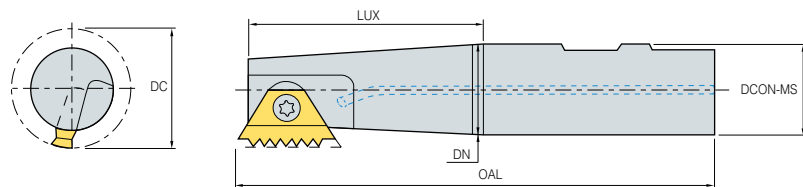


Insert size	Designation	Stock	DC	DCON-MS	DN	LUX	OAL	Screw	Wrench
IC									
6.35	TMSRL 25-11		11.5	25	8.9	17	125	STM11	TW08P
9.525B	TMSRL 25-16	●	22	25	18.6	25	125	STM1622	TW10P
9.525B	TMSRL 20-22	●	19	20	15.5	44	96.5	STM1622	TW10P
	TMSRL 25-22		22	25	18.6	63.5	125		
15.875	TMSRL 25-27		30	25	24	92	150	STM27	TW25L
	TMSRL 32-27		37	32	31	98	160		
19.05B	TMSRL 40-38		46	40	38	93	168	STM38	TW30L

Applicable holders C12-C16

● : Stock item

# Taper Type



Insert size	Designation	Stock	DC	DCON-MS	DN	LUX	OAL	Screw	Wrench
IC									
9.525	TMSRT 16-16	●	15.5	16	12.5	22	90	STM1622	TW10P
	TMSRT 20-16		19	20	15	23	85	STMT16	
9.525B	TMSRT 16-22		17	16	13.5	29	79.5	STM1622	TW10P
	TMSRT 20-22		19	20	15.5	29	81.5		
15.875	TMSRT 32-27		37	32	31	58	120	STM27	TW25L

Applicable holders C12-C16

● : Stock item





# 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 DRILL

**D2** KORLOY Drills

### **Indexable Drills**

**D3** Technical Information for KING Drill

**D9** KING Drill

**D20** Technical Information for KING Drill  
(For through coolant system with a lathe)

**D21** KING Drill  
(For through coolant system with a lathe)

**D24** Technical Information for KING Drill  
(For large diameter drilling)

**D25** KING Drill (For large diameter drilling)

**D26** Technical Information for KED Plus Drill

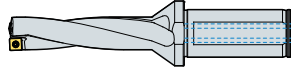
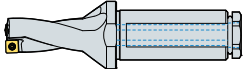

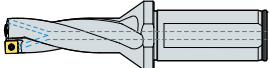
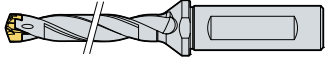
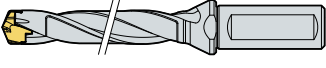
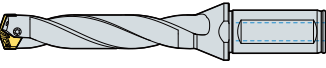
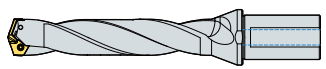
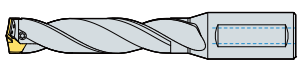
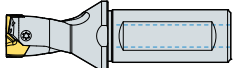
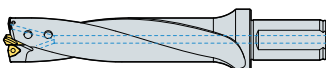
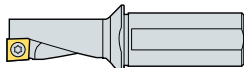
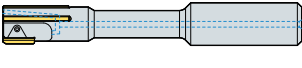
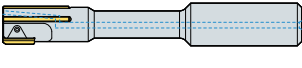
**D29** KED Plus Drill

- D37** Technical Information for TPDC Plus Drill
- D45** TPDC Plus Drill
- D52** Technical Information for TPDB Plus Drill
- D58** TPDB Plus Drill
- D65** Technical Information for TPDB-DS
- D67** TPDB-DS
- D69** Technical Information for TPDB-H
- D72** TPDB-H
- D75** Technical Information for TPDB-F
- D77** TPDB-F
- D79** Technical Information for WPDC
- D82** Center Drill
- D83** WPDC
- D85** Technical Information for Multi Turn
- D87** Multi Turn

**Indexable Reamers**

- D88** Technical Information for Indexable Reamer
- D91** Indexable Reamers

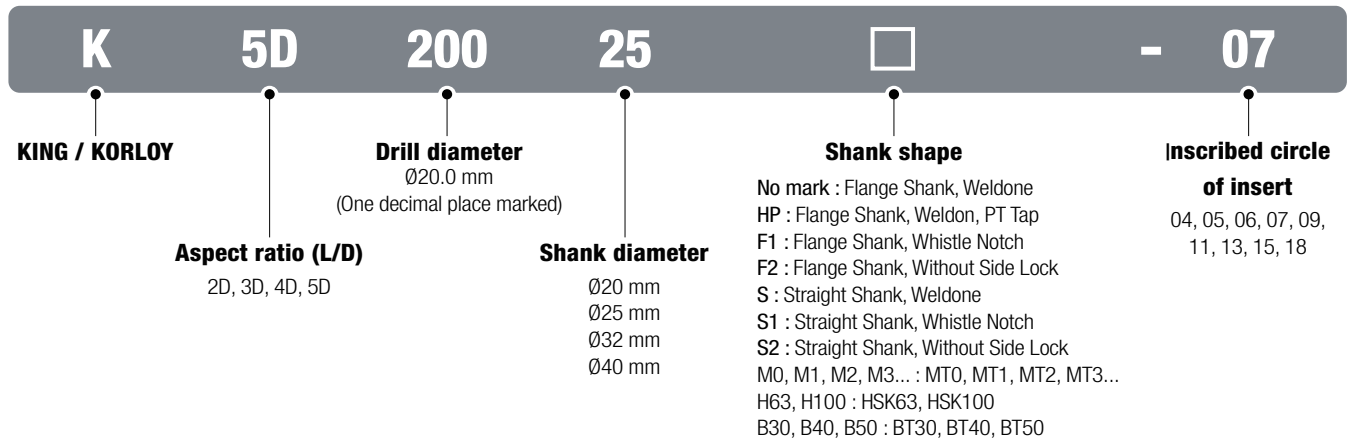


Type	Designation		Shape	Drills dia.(Ø)	Aspect ratio	Page
Indexable Drills	<b>KING Drill</b>	K□D	 Available insert: SP□T, XO□T	Ø12.0~Ø60.5	2D~5D	D11 ~ D19
	<b>KING Drill HP</b>	K□D..HP	 Available insert: SP□T, XO□T	Ø12.0~Ø60.5	2D~4D	D21 ~ D23
	<b>KING Drill (for large diameter drilling)</b>	K□D	 Available insert: SP□T, XO□T	Ø61.0~Ø100.0	2D~4D	D25
	<b>KED Plus Drill</b>	E□D	 Available insert: SP□T, XO□T	Ø12.0~Ø60.5	2D~5D	D29 ~ D36
	<b>TPDC Plus Drill</b>	<b>TPDX</b>	 Available insert: TPD□□□□XP	Ø8.0~Ø11.9	3D~8D	D46
		<b>TPDC</b>	 Available insert: TPD□□□□□□	Ø12.0~Ø30.9	1.5D~12D	D49 ~ D51
	<b>TPDB Plus Drill</b>	<b>TPDB-P</b>	 Available insert: TPD□□□□B	Ø10.0~Ø32.9	3D~12D	D60 ~ D64
		<b>TPDB-DS</b>	 Available insert: TPD□□□□B-DS	Ø33.0~Ø39.9	3D~8D	D68
		<b>TPDB-H</b>	 Available insert: TPD□□□□BP-H	Ø14.0~Ø32.9	3D~8D	D73 ~ D74
		<b>TPDB-F</b>	 Available insert: TPD□□□□B-F	Ø14.0~Ø30.9	1.5D	D78
	Indexable Drills & Drill with center	<b>WPDC</b>	 Available insert: WC□T	Ø25.0~Ø80.0	5D~8D	D83 ~ D84
<b>Multi Turn</b>	<b>MT</b>	 Available insert: QC□T	Ø10.0~Ø32.0	2.25D	D87	
Reamer	Indexable Reamer	<b>IRT</b>	 Available insert: RI	Ø10.0~Ø31.0	3D~5D	D92
		<b>IRB</b>	 Available insert: RI	Ø10.0~Ø31.0	3D~5D	D93

Optimized insert design for maximum drilling efficiency

# KING Drill

## Code system

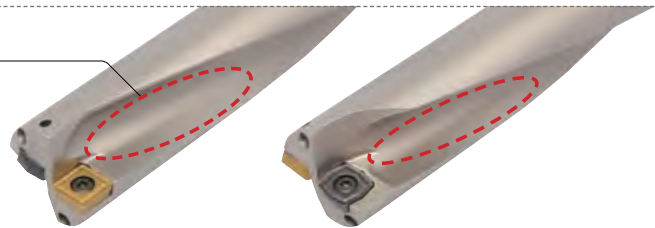


## Features

- 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
<b>Features</b>	- 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
<b>Insert</b>	Peripheral insert	Central insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Central insert
<b>Shape</b>							
<b>Grades for workpiece</b>	NC5330 : P, M, K PC3700 : P PC5300 : P, M, K, S PC6100 : K PC9540 : P, M, S		PC5335 : P, M		H01 : N		PC5300 : P, M, K, S

## Recommended cutting conditions

Workpiece			Insert			vc(m/min)	Aspect ratio (L/D) = 2D, 3D, 4D Feed rate (mm/rev) per drill dia. (mm)						
ISO	Workpiece	Hardness (HB)	Chip breaker	Grade			Ø12~Ø16	Ø17~Ø23	Ø24~Ø29	Ø30~Ø42	Ø43~Ø60	Ø61~Ø100	
				Central	Peripheral								
P	Carbon steel	Low carbon steel	LD	PC5335	PC5335	120(60~170)	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	
			PD/RD	PC5300	PC3700	150(120~180)							
		NC5330	180(140~220)										
	High carbon steel	180~280	PD	PC5300	PC3700	120(90~150)	0.04~0.10	0.04~0.12	0.05~0.16	0.06~0.16	0.06~0.18	0.06~0.18	
					NC5330	150(110~190)	0.04~0.06	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	
	Alloy steel	Low alloy steel	140~260	LD	PC5335	PC5335	120(60~160)	0.06~0.10	0.06~0.10	0.06~0.12	0.06~0.14	0.06~0.14	0.06~0.14
PD				PC5300	PC3700	150(120~170)	0.06~0.12	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16	0.06~0.16	
NC5330		180(140~210)	0.06~0.08	0.06~0.08	0.06~0.10	0.06~0.12	0.06~0.12	0.06~0.12	0.06~0.12				
Low alloy heat-treated steel		200~400	PD	PC5300	PC5300	100(50~150)	0.04~0.10	0.06~0.10	0.06~0.12	0.06~0.14	0.06~0.14	0.06~0.14	
High alloy steel		260~320	PD	PC5300	PC3700	100(50~160)	0.05~0.11	0.05~0.11	0.05~0.13	0.05~0.15	0.05~0.15	0.05~0.15	
High alloy heat-treated steel	300~450	PD	PC5300	PC5300	70(30~120)	0.04~0.08	0.06~0.08	0.06~0.10	0.06~0.12	0.06~0.12	0.06~0.12		
M	Stainless steel	Stainless steel	135-275	LD	PC5335	PC5335	120(80~140)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08
				PD	PC5300	PC5300	130(100~160)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08
					PC9540	PC9540	90(60~120)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08
K	Cast iron	Gray cast iron	150~230	PD	PC5300	PC6100	190(150~250)	0.04~0.12	0.05~0.14	0.06~0.18	0.10~0.22	0.10~0.26	0.10~0.26
		Ductile cast iron	150~230	PD	PC5300	PC6100	130(100~160)	0.04~0.07	0.04~0.08	0.04~0.10	0.05~0.12	0.05~0.12	0.05~0.12
S	Heat resisting alloy	Ni-heat resisting alloy	130~400	PD	PC5300	PC5300	50(30~100)	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10
					PC9540	PC9540	40(20~80)	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10
	Ti-heat resisting alloy	130~400	LD	PC5335	PC5335	60(40~80)	0.04~0.08	0.04~0.10	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16	
			PD	PC5300	PC5300	60(40~80)	0.04~0.08	0.04~0.10	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16	
High hardened steel	400 Over	PD	PC5300	PC5300	40(20~80)	0.04~0.05	0.04~0.06	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08		
N	Aluminium	Aluminium	30~150	ND	H01	H01	300(250~400)	0.05~0.14	0.06~0.16	0.10~0.20	0.10~0.22	0.12~0.25	0.12~0.25
		Alloyed copper	150-160	ND	H01	H01	250(200~300)	0.05~0.14	0.06~0.16	0.10~0.20	0.10~0.22	0.12~0.25	0.12~0.25

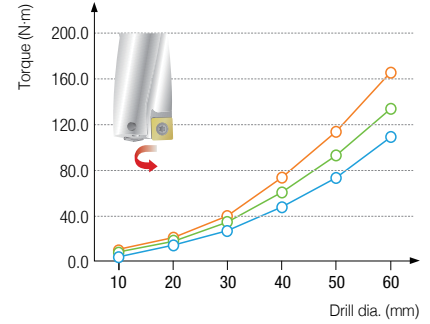
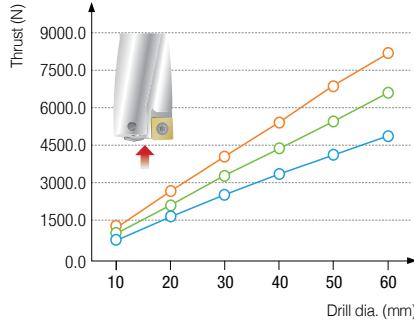
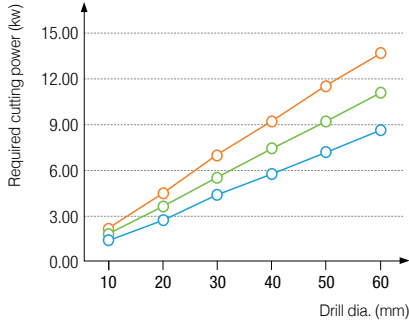
- The Max. feed of 5D holders is 70%~80% of the max. conditions of 2D/3D/4D holders
- In interrupted machining part, reduce 30~50% of feed from the above machining around interrupted part

## 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** SCM440(240HB)  
**Cutting conditions** vc(m/min) = 100, Through coolant system

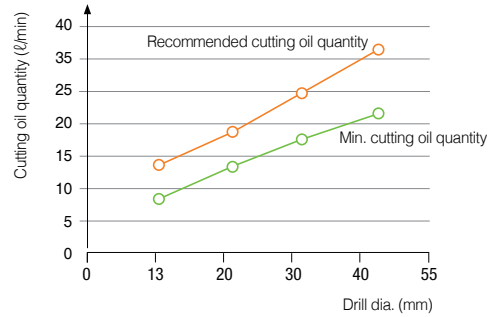
fn(mm/rev)=0.13    fn(mm/rev)=0.10    fn(mm/rev)=0.07



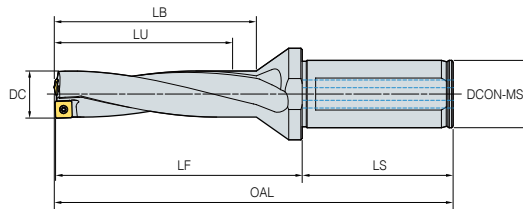
## Cutting oil quantity

**Workpiece** SCM440(240HB)  
**Cutting conditions** vc(m/min) = 100, Through coolant system

※ The data of the graph above could be changed depending on workpiece and cutting condition



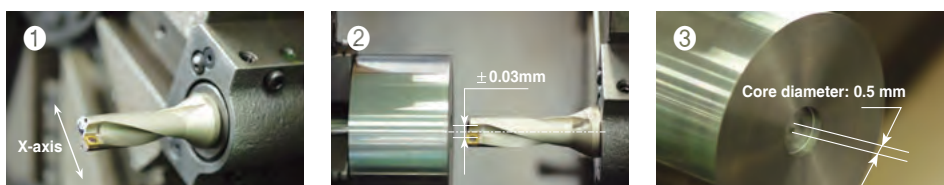
## Drill tolerance and hole tolerance



Drill dia.(DC)		Ø12 ~ Ø29	Ø30 ~ Ø45	Ø46 ~ Ø60.5
<b>2D~3D</b>	Drill tolerance	0 ~ -0.15	0 ~ -0.15	0 ~ -0.15
	Hole tolerance	+0.2 ~ -0.1	+0.25 ~ -0.1	+0.28 ~ -0.1
<b>4D~5D</b>	Drill tolerance	0 ~ -0.15	0 ~ -0.15	0 ~ -0.15
	Hole tolerance	+0.25 ~ -0.05	+0.3 ~ -0.05	+0.33 ~ -0.05

## Notice for setting the drill in the lathe

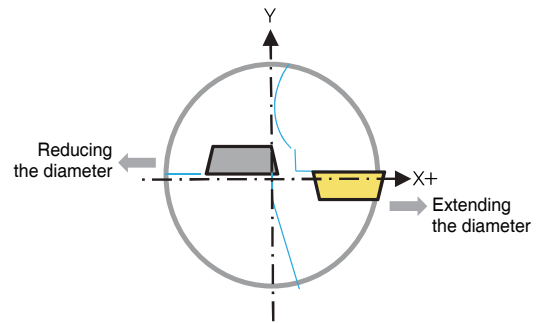
- Set the peripheral insert parallel to the X axis. (based on the side lock)
- If the machined core is 0.5 mm after machining 5 mm, that is the proper setting
  - ※ Please make sure that the location of the side lock could be different depending on manufacturers of machine



# D Technical Information for KING Drill

## ➤ Range of adjusting machining diameter in the lathe

- In machining in the lathe, the KING Drill can extend and reduce the machining diameter by adjusting the x-axis. Please refer to the table showing the range of adjusting drilling diameter below
- The more the drilling diameter is extended or reduced, the more the drill loses drilling balance. In this case, reduce the feed or cutting speed in machining
- Reducing the machining diameter excessively could damage the holder



(mm)

Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)	Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)	Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)	Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)
12.0	11.7~12.4	24.5	23.9~25.1	37.0	36.3~37.7	49.5	48.7~50.2
12.5	12.2~12.9	25.0	24.4~25.6	37.5	36.8~38.2	50.0	49.2~50.7
13.0	12.7~13.4	25.5	24.9~26.1	38.0	37.3~38.7	50.5	49.7~51.2
13.5	13.2~13.9	26.0	25.4~26.6	38.5	37.8~39.2	51.0	50.2~51.7
14.0	13.6~14.5	26.5	25.9~27.1	39.0	38.3~39.7	51.5	50.7~52.2
14.5	14.1~15.0	27.0	26.4~27.6	39.5	38.8~40.2	52.0	51.2~52.7
15.0	14.6~15.5	27.5	26.9~28.1	40.0	39.3~40.7	52.5	51.7~53.2
15.5	15.1~16.0	27.8	27.4~28.6	40.5	39.8~41.2	53.0	52.2~53.7
16.0	15.6~16.5	28.5	27.9~29.1	41.0	40.3~41.7	53.5	52.7~54.2
16.5	16.0~17.0	29.0	28.4~29.6	41.5	40.8~42.2	54.0	53.2~54.7
17.0	16.5~17.5	29.5	28.9~30.1	42.0	41.3~42.7	54.5	53.7~55.2
17.5	17.0~18.0	30.0	29.3~30.7	42.5	41.8~43.2	55.0	54.2~55.7
18.0	17.5~18.5	30.5	29.8~31.2	43.0	42.2~43.7	55.5	54.7~56.2
18.5	18.0~19.0	31.0	30.3~31.7	43.5	42.7~44.2	56.0	55.2~56.7
19.0	18.5~19.5	31.5	30.8~32.2	44.0	43.2~44.7	56.5	55.7~57.2
19.5	19.0~20.0	32.0	31.3~32.7	44.5	43.7~45.2	57.0	56.2~57.7
20.0	19.4~20.6	32.5	31.8~33.2	45.0	44.2~45.7	57.5	56.7~58.2
20.5	19.9~21.1	33.0	32.3~33.7	45.5	44.7~46.2	58.0	57.2~58.7
21.0	20.4~21.6	33.5	32.8~34.2	46.0	45.2~46.7	58.5	57.7~59.2
21.5	20.9~22.1	34.0	33.3~34.7	46.5	45.7~47.2	59.0	58.2~59.7
22.0	21.4~22.6	34.5	33.8~35.2	47.0	46.2~47.7	59.5	58.7~60.2
22.5	21.9~23.1	35.0	34.3~35.7	47.5	46.7~48.2	60.0	59.2~60.7
23.0	22.4~23.6	35.5	34.8~36.2	48.0	47.2~48.7	60.5	59.7~61.2
23.5	22.9~24.1	36.0	35.3~36.7	48.5	47.7~49.2		
24.0	23.4~24.6	36.5	35.8~37.2	49.0	48.2~49.7		

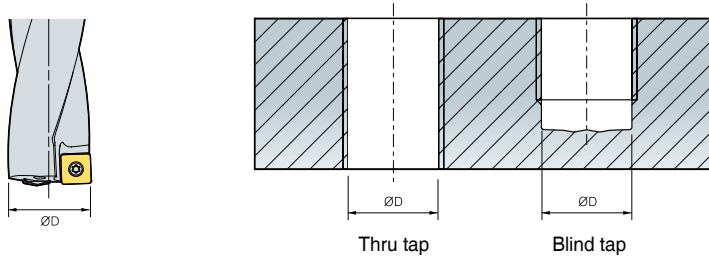
## ➤ Insert and parts

Drill dia. (mm)	Peripheral insert	Central insert	Screw	Wrench	Torque (N·m)
Ø12.0~Ø13.5	SP□T040204-□□	XO□T040204-□□	FTNA0204	TW06P	0.4
Ø13.6~Ø16.0	SP□T050204-□□	XO□T050204-□□	FTNA0204	TW06P	0.4
Ø16.1~Ø19.5	SP□T060205-□□	XO□T060204-□□	FTKA02206S	TW07P	0.8
Ø19.6~Ø23.5	SP□T07T208-□□	XO□T07T205-□□	FTKA02565	TW07S	0.8
Ø23.6~Ø29.5	SP□T090308-□□	XO□T090305-□□	FTKA0307	TW09S	1.2
Ø29.6~Ø35.5	SP□T11T308-□□	XO□T11T306-□□	FTKA03508	TW15S	3
Ø35.6~Ø42.5	SP□T130410-□□	XO□T130406-□□	FTKA0410	TW15S	3
Ø42.6~Ø50.5	SP□T15M510-□□	XO□T15M508-□□	FTNC04511	TW20S	5
Ø50.6~Ø60.5	SP□T180510-□□	XO□T180508-□□	FTNA0511	TW20-100	5

- 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

## KING Drill - for machining a tap foundation hole

- There are two types of specifications of tap, metric and inch. The KING Drill is available for machining both thru tap and blind tap



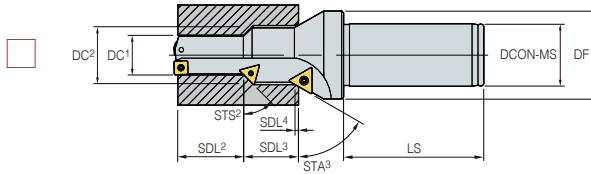
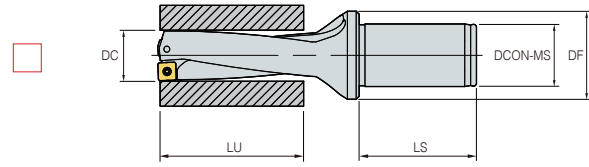
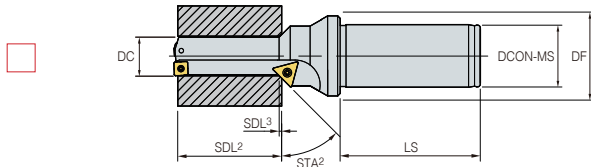
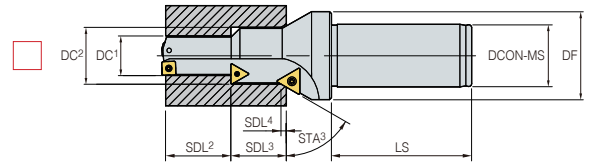
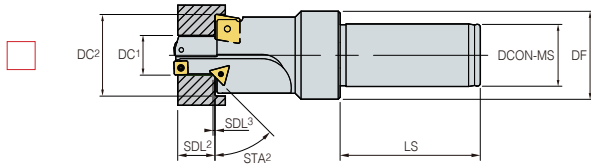
(mm)

Tap type	Thread	ØD	Designation	Reference
Metric	M14 x 2.0	12.0	K3D12020-04	F13
	M16 x 2.0	14.0	K3D14020-05	F13
	M18 x 2.5	15.5	K3D15520-05	F13
	M20 x 2.5	17.5	K3D17525-06	F13
	M22 x 2.5	19.5	K3D19525-06	F13
	M24 x 3.0	21.0	K3D21025-07	F13
	M27 x 3.0	24.0	K3D24032-09	F13
	M30 x 3.5	26.5	K3D26532-09	F13
	M33 x 4.0	29.0	K3D29032-09	F13
	M36 x 4.0	32.0	K3D30032-11	F14
	M39 x 4.0	35.0	K3D35032-11	F14
M42 x 4.5	37.5	K3D37540-13	F14	
Inch	9/16-12 UNC	12.2	K3D12220-04	F13
	5/8-11 UNC	13.5	K3D13520-04	F13
	3/4-10 UNC	16.5	K3D16525-06	F13
	7/8-9 UNC	19.5	K3D19525-06	F13
	9/16-18 UNF	12.9	K3D12920-04	F13
	5/8-18 UNF	14.5	K3D14520-05	F13
	3/4-16 UNF	17.5	K3D17525-06	F13

- The same applies to DC value KED Plus Drill



## Special Drill Order Form



**■ Coolant type**

Through coolant Plug type (Standard)     Through coolant Non plug type     No coolant

**■ Types of shank**

Flat Type

Weldon Type

Whistle Notch Type

**■ Hole type**

Blind hole     Thru hole

**■ Location of side lock**

Parallel to peripheral insert (standard)

90° angle to peripheral insert (standard)

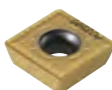
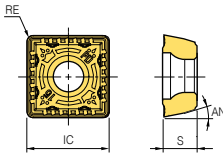

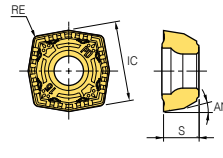

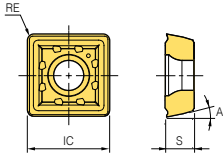

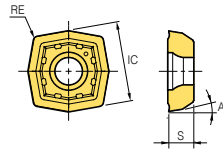

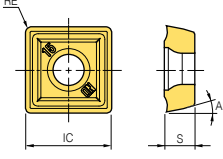
180° angle to peripheral insert (standard)

270° angle to peripheral insert (standard)

**■ Note**

- Currently using tool:
- Current cutting condition
  - RPM or vc (m/min):
  - vf (mm/min) or fn (mm/rev):
  - Depth of cut (mm):
- Standard of measuring tool life:
- Currently using machine
  - Machining center:
  - General lathe:
  - CNC lathe:

## Available insert


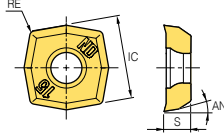
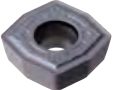
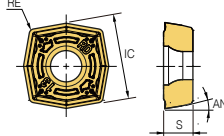
Picture	Designation	Coated							Uncoated	Dimension (mm)					Configuration
		NC5330	NCM535	PC3700	PC6100	PC9540	PC5335	PC5300	H01	IC	S	RE	AN	CEDC	
 Universal	040204-PD	●	●	●	●	●	●	●		4.7	2.4	0.4	11	4	
	050204-PD	●	●	●	●	●	●	●		5.1	2.4	0.4	11	4	
	[Peripheral] 060205-PD	●	●	●	●	●	●	●		6.2	2.5	0.5	11	4	
	07T208-PD	●	●	●	●	●	●	●		7.5	2.87	0.8	11	4	
	090308-PD	●	●	●	●	●	●	●		9.2	3.3	0.8	11	4	
	11T308-PD	●	●	●	●	●	●	●		11	4	0.8	11	4	
	130410-PD	●	●	●	●	●	●	●		13	4.5	1	11	4	
	15M510-PD	●	●	●	●	●	●	●		15.2	5	1	11	4	
	180510-PD	●	●	●	●	●	●	●		18.2	5.5	1	11	4	
 Universal	040204-PD					●	●	●		4.9	2.4	0.4	9	4	
	[Central] 050204-PD					●	●	●		5.4	2.4	0.4	9	4	
	060204-PD					●	●	●		6.6	2.5	0.4	9	4	
	07T205-PD					●	●	●		7.8	2.8	0.5	9	4	
	090305-PD					●	●	●		9.6	3.3	0.5	9	4	
	11T306-PD					●	●	●		11.4	4	0.6	9	4	
	130406-PD					●	●	●		13.6	4.5	0.6	9	4	
	15M508-PD					●	●	●		15.9	5	0.8	9	4	
	180508-PD					●	●	●		18.9	5.5	0.8	9	4	
 Mild steel	060205-LD							●		6.2	2.5	0.5	11	4	
	[Peripheral] 07T208-LD							●		7.5	2.8	0.8	11	4	
	090308-LD							●		9.2	3.3	0.8	11	4	
	11T308-LD							●		11	4	0.8	11	4	
	130410-LD							●		13	4.5	1	11	4	
	15M510-LD							●		15.2	5	1	11	4	
	180510-LD							●		18.2	5.5	1	11	4	
 Mild steel	060204-LD							●		6.6	2.5	0.4	9	4	
	[Central] 07T205-LD							●		7.8	2.8	0.5	9	4	
	090305-LD							●		9.6	3.3	0.5	9	4	
	11T306-LD							●		11.4	4	0.6	9	4	
	130406-LD							●		13.6	4.5	0.6	9	4	
	15M508-LD							●		15.9	5	0.8	9	4	
	180508-LD							●		18.9	5.5	0.8	9	4	
 Al	040204-ND							●		4.7	2.4	0.4	11	4	
	[Peripheral] 050204-ND							●		5.1	2.4	0.4	11	4	
	060205-ND							●		6.2	2.5	0.5	11	4	
	07T208-ND							●		7.5	2.8	0.8	11	4	
	090308-ND							●		9.2	3.3	0.8	11	4	
	11T308-ND							●		11	4	0.8	11	4	
	130410-ND							●		13	4.5	1	11	4	
	15M510-ND							●		15.2	5	1	11	4	
	180510-ND							●		18.2	5.5	1	11	4	

Applicable holders D11 ~ D19

● : Stock Item

# D Drill Available Insert

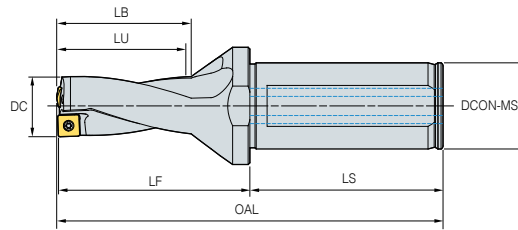
## Available insert

Picture	Designation	Coated							Uncoated	Dimension (mm)					Configuration
		NC5330	NCM535	PC3700	PC6100	PC9540	PC5335	PC5300	H01	IC	S	RE	AN	CEDC	
 <p>AI</p>	[Central]								●	4.9	2.4	0.4	9	4	
									●	5.4	2.4	0.4	9	4	
									●	6.6	2.5	0.4	9	4	
									●	7.8	2.8	0.5	9	4	
									●	9.6	3.3	0.5	9	4	
									●	11.4	4	0.6	9	4	
									●	13.6	4.5	0.6	9	4	
									●	15.9	5	0.8	9	4	
									●	18.9	5.5	0.8	9	4	
 <p>Rein forced cutting-edge</p>	[Central]							●	7.8	2.8	0.7	9	4		
								●	9.6	3.3	0.8	9	4		
									●	11.4	4	0.9	9		4
									●	13.6	4.5	1	9		4
									●	15.9	5	1.1	9		4
									●	18.9	5.5	1.2	9		4

Applicable holders D11 ~ D19

●: Stock Item

# KING Drill(2D)

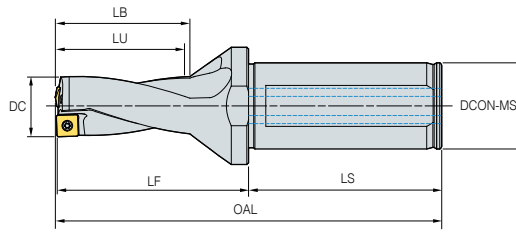


										(mm)		
K2D	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench
	12020-04*	●	12	20	24	40.71	27	50	91	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04	●	12.5	20	24	40.71	27	50	91			
	13020-04	●	13	20	26	42.71	29	50	93			
	13520-04*	●	13.5	20	26	42.71	29	50	93	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	14020-05*	●	14	20	28	45.6	31	50	96			
	14520-05*	●	14.5	20	28	45.6	31	50	96			
	15020-05	●	15	20	30	48.6	33	50	99	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	15520-05*	●	15.5	20	30	48.5	33	50	99			
	16020-05	●	16	20	32	50.5	35	50	101			
	16525-06*	●	16.5	25	32	50.6	35	56	107	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	17025-06	●	17	25	34	52.6	37	56	109			
	17525-06*	●	17.5	25	34	52.5	37	56	109			
	18025-06	●	18	25	36	55.5	39	56	112	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	18525-06	●	18.5	25	36	55.5	39	56	112			
	19025-06	●	19	25	38	57.4	41	56	114			
	19525-06*	●	19.5	25	38	57.4	41	56	114	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	20025-07	●	20	25	40	61.5	43	56	118			
	20525-07	●	20.5	25	40	61.4	43	56	118			
	21025-07*	●	21	25	42	63.4	45	56	120	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	21525-07	●	21.5	25	42	63.4	45	56	120			
	22025-07	●	22	25	44	65.4	47	56	122			
	22525-07	●	22.5	25	44	65.3	47	56	122	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	23025-07	●	23	25	46	69.3	49	56	126			
	23525-07	●	23.5	25	46	69.3	49	56	126			
	24032-09*	●	24	32	48	72.4	51	60	133	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	24532-09	●	24.5	32	48	72.4	51	60	133			
	25032-09	●	25	32	50	74.3	53	60	135			
	25532-09	●	25.5	32	50	74.3	53	60	135	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	26032-09	●	26	32	52	76.3	55	60	137			
	26532-09*	●	26.5	32	52	76.3	55	60	137			
	27032-09	●	27	32	54	79.2	57	60	140	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	27532-09	●	27.5	32	54	79.2	57	60	140			
	28032-09	●	28	32	56	82.2	59	60	143			
	28532-09	●	28.5	32	56	82.2	59	60	143	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	29032-09	●	29	32	58	84.1	61	60	145			
	29532-09*	●	29.5	32	58	84.1	61	60	145			
	30032-11	●	30	32	60	89	63	60	150	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	30532-11	●	30.5	32	60	89	63	60	150			
	31032-11	●	31	32	62	91	65	60	152			
	31532-11	●	31.5	32	62	91	65	60	152	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	32032-11*	●	32	32	64	93	67	60	154			
	32532-11	●	32.5	32	64	93	67	60	154			
	33032-11	●	33	32	66	96	69	60	157	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	33532-11	●	33.5	32	66	96	69	60	157			
	34032-11	●	34	32	68	98	71	60	159			
	34532-11	●	34.5	32	68	97.9	71	60	159	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	35032-11*	●	35	32	70	99.9	73	60	161			
	35532-11	●	35.5	32	70	99.9	73	60	161			

➡ Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

## KING Drill(2D)

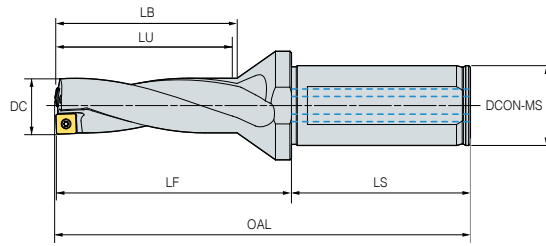


										(mm)	
Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench
K2D	36040-13	●	36	40	72	105.1	76	70	176	SP□T130410-□□ XO□T130406-□□	FTKA0410 TW15S
	36540-13	●	36.5	40	72	105	76	70	176		
	37040-13	●	37	40	74	107	78	70	178		
	37540-13*	●	37.5	40	74	107	78	70	178		
	38040-13	●	38	40	76	109.9	80	70	181		
	38540-13	●	38.5	40	76	109.9	80	70	181		
	39040-13	●	39	40	78	111.9	82	70	183		
	39540-13	●	39.5	40	78	111.9	82	70	183		
	40040-13	●	40	40	80	114.8	84	70	186		
	40540-13	●	40.5	40	80	114.8	84	70	186		
	41040-13	●	41	40	82	116.8	86	70	188		
	41540-13	●	41.5	40	82	116.8	86	70	188		
	42040-13	●	42	40	84	119.7	88	70	191		
	42540-13	●	42.5	40	84	119.7	88	70	191		
	43040-15	●	43	40	86	124.8	91	70	196		
	43540-15	●	43.5	40	86	124.8	91	70	196		
	44040-15	●	44	40	88	126.8	93	70	198		
	44540-15	●	44.5	40	88	126.7	93	70	198		
	45040-15	●	45	40	90	129.7	95	70	201		
	45540-15	●	45.5	40	90	129.7	95	70	201		
	46040-15	●	46	40	92	131.7	97	70	203		
	46540-15	●	46.5	40	92	131.6	97	70	203		
	47040-15	●	47	40	94	134.6	99	70	206		
	47540-15	●	47.5	40	94	134.6	99	70	206		
	48040-15	●	48	40	96	136.6	101	70	208		
	48540-15	●	48.5	40	96	136.5	101	70	208		
	49040-15	●	49	40	98	138.5	103	70	210		
	49540-15	●	49.5	40	98	138.5	103	70	210		
	50040-15	●	50	40	100	140.5	105	70	212		
	50540-15	●	50.5	40	100	140.5	105	70	212		
	51040-18	●	51	40	102	146.6	108	70	218	SP□T180510-□□ XO□T180508-□□	FTNA0511 TW20-100
	51540-18		51.5	40	102	146.6	108	70	218		
	52040-18	●	52	40	104	148.6	110	70	220		
52540-18		52.5	40	104	148.5	110	70	220			
53040-18	●	53	40	106	150.5	112	70	222			
53540-18		53.5	40	106	150.5	112	70	222			
54040-18	●	54	40	108	152.4	114	70	224			
54540-18		54.5	40	108	152.4	114	70	224			
55040-18	●	55	40	110	154.4	116	70	226			
55540-18		55.5	40	110	154.4	116	70	226			
56040-18	●	56	40	112	158.3	118	70	230			
56540-18		56.5	40	112	158.3	118	70	230			
57040-18	●	57	40	114	161.3	121	70	233			
57540-18		57.5	40	114	161.3	121	70	233			
58040-18	●	58	40	116	164.2	124	70	236			
58540-18		58.5	40	116	164.2	124	70	236			
59040-18	●	59	40	118	167.2	127	70	239			
59540-18		59.5	40	118	167.2	127	70	239			
60040-18	●	60	40	120	170.2	130	70	242			
60540-18		60.5	40	120	170.2	130	70	242			

➔ Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# KING Drill(3D)

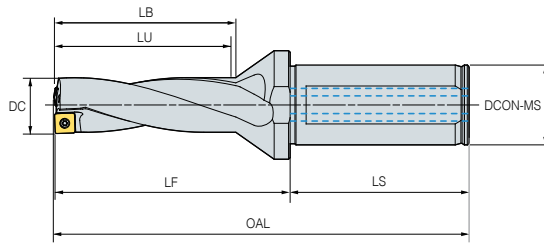




										(mm)	
Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench
<b>K3D</b>											
12020-04*	●	12	20	36	52.71	39	50	103	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
12220-04*	●	12.2	20	36	52.71	39	50	103			
12520-04	●	12.5	20	36	52.71	39	50	103			
12920-04*	●	12.9	20	36	55.71	42	50	106			
13020-04	●	13	20	39	55.71	42	50	106			
13520-04*	●	13.5	20	39	55.71	42	50	106			
14020-05*	●	14	20	42	59.6	45	50	110	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
14520-05*	●	14.5	20	42	59.6	45	50	110			
15020-05	●	15	20	45	63.6	48	50	114			
15520-05*	●	15.5	20	45	63.5	48	50	114			
16020-05	●	16	20	48	66.5	51	50	117			
16525-06*	●	16.5	25	48	66.6	51	56	123			
17025-06	●	17	25	51	69.6	54	56	126	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
17525-06*	●	17.5	25	51	69.5	54	56	126			
18025-06	●	18	25	54	73.5	57	56	130			
18525-06	●	18.5	25	54	73.5	57	56	130			
19025-06	●	19	25	57	76.4	60	56	133			
19525-06*	●	19.5	25	57	76.4	60	56	133			
20025-07	●	20	25	60	81.5	63	56	138	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
20525-07	●	20.5	25	60	81.4	63	56	138			
21025-07*	●	21	25	63	84.4	66	56	141			
21525-07	●	21.5	25	63	84.4	66	56	141			
22025-07	●	22	25	66	87.4	69	56	144			
22525-07	●	22.5	25	66	87.3	69	56	144			
23025-07	●	23	25	69	92.3	72	56	149	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
23525-07	●	23.5	25	69	92.3	72	56	149			
24032-09*	●	24	32	72	96.4	75	60	157			
24532-09	●	24.5	32	72	96.4	75	60	157			
25032-09	●	25	32	75	99.3	78	60	160			
25532-09	●	25.5	32	75	99.3	78	60	160			
26032-09	●	26	32	78	102.3	81	60	163			
26532-09*	●	26.5	32	78	102.3	81	60	163			
27032-09	●	27	32	81	106.2	84	60	167			
27532-09	●	27.5	32	81	106.2	84	60	167			
28032-09	●	28	32	84	110.2	87	60	171			
28532-09	●	28.5	32	84	110.2	87	60	171			
29032-09	●	29	32	87	113.1	90	60	174			
29532-09*	●	29.5	32	87	113.1	90	60	174			

➔ Applicable inserts **D9 ~ 10**

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

## KING Drill(3D)

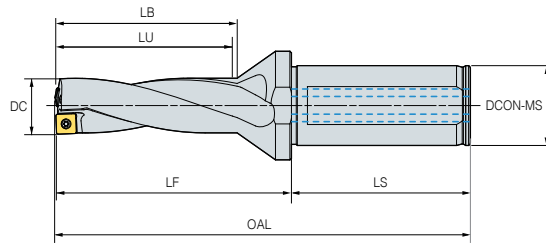


										(mm)		
Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw 	Wrench 	
<b>K3D</b>	<b>30032-11</b>	●	30	32	90	119	93	60	180	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>30532-11</b>	●	30.5	32	90	119	93	60	180			
	<b>31032-11</b>	●	31	32	93	122	96	60	183			
	<b>31532-11</b>	●	31.5	32	93	122	96	60	183			
	<b>32032-11*</b>	●	32	32	96	125	99	60	186			
	<b>32532-11</b>	●	32.5	32	96	125	99	60	186			
	<b>33032-11</b>	●	33	32	99	129	102	60	190			
	<b>33532-11</b>	●	33.5	32	99	129	102	60	190			
	<b>34032-11</b>	●	34	32	102	132	105	60	193			
	<b>34532-11</b>	●	34.5	32	102	131.9	105	60	193			
	<b>35032-11*</b>	●	35	32	105	134.9	108	60	196			
	<b>35532-11</b>	●	35.5	32	105	134.9	108	60	196			
	<b>36040-13</b>	●	36	40	108	141.1	112	70	212	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	<b>36540-13</b>	●	36.5	40	108	141	112	70	212			
	<b>37040-13</b>	●	37	40	111	144	115	70	215			
	<b>37540-13*</b>	●	37.5	40	111	144	115	70	215			
	<b>38040-13</b>	●	38	40	114	147.9	118	70	219			
	<b>38540-13</b>	●	38.5	40	114	147.9	118	70	219			
	<b>39040-13</b>	●	39	40	117	150.9	121	70	222			
	<b>39540-13</b>	●	39.5	40	117	150.9	121	70	222			
	<b>40040-13</b>	●	40	40	120	154.8	124	70	226			
	<b>40540-13</b>	●	40.5	40	120	154.8	124	70	226			
	<b>41040-13</b>	●	41	40	123	157.8	127	70	229			
	<b>41540-13</b>	●	41.5	40	123	157.8	127	70	229			
	<b>42040-13</b>	●	42	40	126	161.7	130	70	233	SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
	<b>42540-13</b>	●	42.5	40	126	161.7	130	70	233			
	<b>43040-15</b>	●	43	40	129	167.8	134	70	239			
	<b>43540-15</b>	●	43.5	40	129	167.8	134	70	239			
	<b>44040-15</b>	●	44	40	132	170.8	137	70	242			
	<b>44540-15</b>	●	44.5	40	132	170.7	137	70	242			
	<b>45040-15</b>	●	45	40	135	174.7	140	70	246			
	<b>45540-15</b>	●	45.5	40	135	174.7	140	70	246			
	<b>46040-15</b>	●	46	40	138	177.7	143	70	249			
	<b>46540-15</b>	●	46.5	40	138	177.6	143	70	249			
	<b>47040-15</b>	●	47	40	141	181.6	146	70	253			
	<b>47540-15</b>	●	47.5	40	141	181.6	146	70	253			
	<b>48040-15</b>	●	48	40	144	184.6	149	70	256			
	<b>48540-15</b>	●	48.5	40	144	184.5	149	70	256			
	<b>49040-15</b>	●	49	40	147	187.5	152	70	259			
	<b>49540-15</b>	●	49.5	40	147	187.5	152	70	259			
	<b>50040-15</b>	●	50	40	150	190.5	155	70	262			
	<b>50540-15</b>	●	50.5	40	150	190.5	155	70	262			

Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# KING Drill(3D)



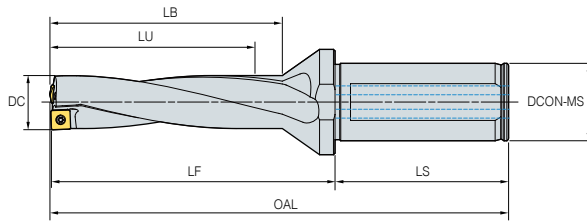
Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench
<b>K3D</b>	<b>51040-18</b>	●	51	40	153	197.6	159	70	269	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	<b>51540-18</b>		51.5	40	153	197.6	159	70	269			
	<b>52040-18</b>	●	52	40	156	200.6	162	70	272			
	<b>52540-18</b>		52.5	40	156	200.5	162	70	272			
	<b>53040-18</b>	●	53	40	159	203.5	165	70	275			
	<b>53540-18</b>		53.5	40	159	203.5	165	70	275			
	<b>54040-18</b>	●	54	40	162	206.4	168	70	278			
	<b>54540-18</b>		54.5	40	162	206.4	168	70	278			
	<b>55040-18</b>	●	55	40	165	209.4	171	70	281			
	<b>55540-18</b>		55.5	40	165	209.4	171	70	281			
	<b>56040-18</b>	●	56	40	168	214.3	174	70	286			
	<b>56540-18</b>		56.5	40	168	214.3	174	70	286			
	<b>57040-18</b>	●	57	40	171	218.3	178	70	290			
	<b>57540-18</b>		57.5	40	171	218.3	178	70	290			
	<b>58040-18</b>	●	58	40	174	222.2	182	70	294			
	<b>58540-18</b>		58.5	40	174	222.2	182	70	294			
	<b>59040-18</b>	●	59	40	177	226.2	186	70	298			
	<b>59540-18</b>		59.5	40	177	226.2	186	70	298			
	<b>60040-18</b>	●	60	40	180	230.2	190	70	302			
<b>60540-18</b>		60.5	40	180	230.2	190	70	302				

Applicable inserts **D9 ~ 10**

\*The items marked \* can machine a tap foundation hole(Reference D7 page)



# KING Drill(4D)

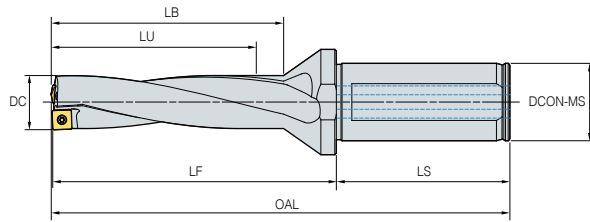


										(mm)		
Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench	
<b>K4D</b>	<b>12020-04*</b>	●	12	20	48	64.71	51	50	115	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	<b>12520-04</b>	●	12.5	20	48	64.71	51	50	115			
	<b>13020-04</b>	●	13	20	52	68.71	55	50	119			
	<b>13520-04*</b>	●	13.5	20	52	68.71	55	50	119			
	<b>14020-05*</b>	●	14	20	56	73.6	59	50	124	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	<b>14520-05*</b>	●	14.5	20	56	73.6	59	50	124			
	<b>15020-05</b>	●	15	20	60	78.6	63	50	129			
	<b>15520-05*</b>	●	15.5	20	60	78.5	63	50	129			
	<b>16020-05</b>	●	16	20	64	82.5	67	50	133	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	<b>16525-06*</b>	●	16.5	25	64	82.6	67	56	139			
	<b>17025-06</b>	●	17	25	68	86.6	71	56	143			
	<b>17525-06*</b>	●	17.5	25	68	86.5	71	56	143			
	<b>18025-06</b>	●	18	25	72	91.5	75	56	148			
	<b>18525-06</b>	●	18.5	25	72	91.5	75	56	148			
	<b>19025-06</b>	●	19	25	76	95.4	79	56	152	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	<b>19525-06*</b>	●	19.5	25	76	95.4	79	56	152			
	<b>20025-07</b>	●	20	25	80	101.5	83	56	158			
	<b>20525-07</b>	●	20.5	25	80	101.4	83	56	158			
	<b>21025-07*</b>	●	21	25	84	105.4	87	56	162			
	<b>21525-07</b>	●	21.5	25	84	105.4	87	56	162			
	<b>22025-07</b>	●	22	25	88	109.4	91	56	166			
	<b>22525-07</b>	●	22.5	25	88	109.3	91	56	166			
	<b>23025-07</b>	●	23	25	92	115.3	95	56	172	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	<b>23525-07</b>	●	23.5	25	92	115.3	95	56	172			
	<b>24032-09*</b>	●	24	32	96	120.4	99	60	181			
	<b>24532-09</b>	●	24.5	32	96	120.4	99	60	181			
	<b>25032-09</b>	●	25	32	100	124.3	103	60	185			
	<b>25532-09</b>	●	25.5	32	100	124.3	103	60	185			
	<b>26032-09</b>	●	26	32	104	128.3	107	60	189			
	<b>26532-09*</b>	●	26.5	32	104	128.3	107	60	189			
	<b>27032-09</b>	●	27	32	108	133.2	111	60	194			
	<b>27532-09</b>	●	27.5	32	108	133.2	111	60	194			
	<b>28032-09</b>	●	28	32	112	138.2	115	60	199			
	<b>28532-09</b>	●	28.5	32	112	138.2	115	60	199			
	<b>29032-09</b>	●	29	32	116	142.1	119	60	203	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>29532-09*</b>	●	29.5	32	116	142.1	119	60	203			
	<b>30032-11</b>	●	30	32	120	149	123	60	210			
	<b>30532-11</b>	●	30.5	32	120	149	123	60	210			
	<b>31032-11</b>	●	31	32	124	153	127	60	214			
	<b>31532-11</b>	●	31.5	32	124	153	127	60	214			
<b>32032-11*</b>	●	32	32	128	157	131	60	218				
<b>32532-11</b>	●	32.5	32	128	157	131	60	218				
<b>33032-11</b>	●	33	32	132	162	135	60	223				
<b>33532-11</b>	●	33.5	32	132	162	135	60	223				
<b>34032-11</b>	●	34	32	136	166	139	60	227				
<b>34532-11</b>	●	34.5	32	136	165.9	139	60	227				
<b>35032-11*</b>	●	35	32	140	169.9	143	60	231				
<b>35532-11</b>	●	35.5	32	140	169.9	143	60	231				

Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# KING Drill(4D)

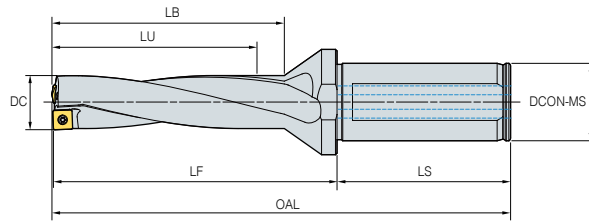


Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench
K4D	36040-13	●	36	40	144	177.1	148	70	248	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13	●	36.5	40	144	177	148	70	248			
	37040-13	●	37	40	148	181	152	70	252			
	37540-13*	●	37.5	40	148	181	152	70	252			
	38040-13	●	38	40	152	185.9	156	70	257			
	38540-13	●	38.5	40	152	185.9	156	70	257			
	39040-13	●	39	40	156	189.9	160	70	261			
	39540-13	●	39.5	40	156	189.9	160	70	261			
	40040-13	●	40	40	160	194.8	164	70	266			
	40540-13	●	40.5	40	160	194.8	164	70	266			
	41040-13	●	41	40	164	198.8	168	70	270			
	41540-13	●	41.5	40	164	198.8	168	70	270			
	42040-13	●	42	40	168	212.7	172	70	284			
	42540-13	●	42.5	40	168	212.7	172	70	284			
	43040-15	●	43	40	172	210.8	177	70	282			
	43540-15	●	43.5	40	172	210.8	177	70	282			
	44040-15	●	44	40	176	214.8	181	70	286			
	44540-15	●	44.5	40	176	214.7	181	70	286			
	45040-15	●	45	40	180	219.7	185	70	291			
	45540-15	●	45.5	40	180	219.7	185	70	291			
	46040-15	●	46	40	184	223.7	189	70	295			
	46540-15	●	46.5	40	184	223.6	189	70	295			
	47040-15	●	47	40	188	228.6	193	70	300			
	47540-15	●	47.5	40	188	228.6	193	70	300			
	48040-15	●	48	40	192	232.6	197	70	304			
	48540-15	●	48.5	40	192	232.5	197	70	304			
	49040-15	●	49	40	196	236.5	201	70	308			
	49540-15	●	49.5	40	196	236.5	201	70	308			
	50040-15	●	50	40	200	240.5	205	70	312			
	50540-15	●	50.5	40	200	240.5	205	70	312			
	51040-18	●	51	40	204	248.6	210	70	320			
	51540-18		51.5	40	204	248.6	210	70	320			
	52040-18	●	52	40	208	252.6	214	70	324			
	52540-18		52.5	40	208	252.5	214	70	324			
	53040-18	●	53	40	212	256.5	218	70	328			
	53540-18		53.5	40	212	256.5	218	70	328			
54040-18	●	54	40	216	260.4	222	70	332				
54540-18		54.5	40	216	260.4	222	70	332				
55040-18	●	55	40	220	264.4	226	70	336				
55540-18		55.5	40	220	264.4	226	70	336				
56040-18	●	56	40	224	270.3	230	70	342				
56540-18		56.5	40	224	270.3	230	70	342				
57040-18	●	57	40	228	275.3	235	70	347				
57540-18		57.5	40	228	275.3	235	70	347				
58040-18	●	58	40	232	280.2	240	70	352				
58540-18		58.5	40	232	280.2	240	70	352				
59040-18	●	59	40	236	285.2	245	70	357				
59540-18		59.5	40	236	285.2	245	70	357				
60040-18	●	60	40	240	290.2	250	70	362				
60540-18		60.5	40	240	290.2	250	70	362				
										SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
										SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100

➔ Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# KING Drill(5D)

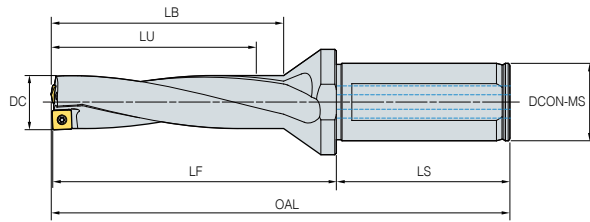


										(mm)		
Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench	
<b>K5D</b>	<b>12020-04*</b>	●	12	20	60	76.71	63	50	127	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	<b>12520-04</b>	●	12.5	20	60	76.71	63	50	127			
	<b>13020-04</b>	●	13	20	65	81.71	68	50	132			
	<b>13520-04*</b>	●	13.5	20	65	81.71	68	50	132	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	<b>14020-05*</b>	●	14	20	70	87.6	73	50	138			
	<b>14520-05*</b>	●	14.5	20	70	87.6	73	50	138			
	<b>15020-05</b>	●	15	20	75	93.6	78	50	144	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	<b>15520-05*</b>	●	15.5	20	75	93.5	78	50	144			
	<b>16020-05</b>	●	16	20	80	98.5	83	50	149			
	<b>16525-06*</b>	●	16.5	25	80	98.6	83	56	155	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	<b>17025-06</b>	●	17	25	85	103.6	88	56	160			
	<b>17525-06*</b>	●	17.5	25	85	103.5	88	56	160			
	<b>18025-06</b>	●	18	25	90	109.5	93	56	166	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	<b>18525-06</b>	●	18.5	25	90	109.5	93	56	166			
	<b>19025-06</b>	●	19	25	95	114.4	98	56	171			
	<b>19525-06*</b>	●	19.5	25	95	114.4	98	56	171	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>20025-07</b>	●	20	25	100	121.5	103	56	178			
	<b>20525-07</b>	●	20.5	25	100	121.4	103	56	178			
	<b>21025-07*</b>	●	21	25	105	126.4	108	56	183	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>21525-07</b>	●	21.5	25	105	126.4	108	56	183			
	<b>22025-07</b>	●	22	25	110	131.4	113	56	188			
	<b>22525-07</b>	●	22.5	25	110	131.3	113	56	188	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>23025-07</b>	●	23	25	115	138.3	118	56	195			
	<b>23525-07</b>	●	23.5	25	115	138.3	118	56	195			
	<b>24032-09*</b>	●	24	32	120	144.4	123	60	205	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>24532-09</b>	●	24.5	32	120	144.4	123	60	205			
	<b>25032-09</b>	●	25	32	125	149.3	128	60	210			
	<b>25532-09</b>	●	25.5	32	125	149.3	128	60	210	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>26032-09</b>	●	26	32	130	154.3	133	60	215			
	<b>26532-09*</b>	●	26.5	32	130	154.3	133	60	215			
	<b>27032-09</b>	●	27	32	135	160.2	138	60	221	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>27532-09</b>	●	27.5	32	135	160.2	138	60	221			
	<b>28032-09</b>	●	28	32	140	166.2	143	60	227			
	<b>28532-09</b>	●	28.5	32	140	166.2	143	60	227	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S
	<b>29032-09</b>	●	29	32	145	171.1	148	60	232			
<b>29532-09*</b>	●	29.5	32	145	171.1	148	60	232				
<b>30032-11</b>	●	30	32	150	179	153	60	240	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S	
<b>30532-11</b>	●	30.5	32	150	179	153	60	240				
<b>31032-11</b>	●	31	32	155	184	158	60	245				
<b>31532-11</b>	●	31.5	32	155	184	158	60	245	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S	
<b>32032-11*</b>	●	32	32	160	189	163	60	250				
<b>32532-11</b>	●	32.5	32	160	189	163	60	250				
<b>33032-11</b>	●	33	32	165	195	168	60	256	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S	
<b>33532-11</b>	●	33.5	32	165	195	168	60	256				
<b>34032-11</b>	●	34	32	170	200	173	60	261				
<b>34532-11</b>	●	34.5	32	170	199.9	173	60	261	SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S	
<b>35032-11*</b>	●	35	32	175	204.9	178	60	266				
<b>35532-11</b>	●	35.5	32	175	204.9	178	60	266				

Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# KING Drill(5D)



Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench
K5D	36040-13	●	36	40	180	213.1	184	70	284	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13	●	36.5	40	180	213	184	70	284			
	37040-13	●	37	40	185	218	189	70	289			
	37540-13*	●	37.5	40	185	218	189	70	289			
	38040-13	●	38	40	190	223.9	194	70	295			
	38540-13	●	38.5	40	190	223.9	194	70	295			
	39040-13	●	39	40	195	228.9	199	70	300			
	39540-13	●	39.5	40	195	228.9	199	70	300			
	40040-13	●	40	40	200	234.8	204	70	306			
	40540-13	●	40.5	40	200	234.8	204	70	306			
	41040-13	●	41	40	205	239.8	209	70	311			
	41540-13	●	41.5	40	205	239.8	209	70	311			
	42040-13	●	42	40	210	245.7	214	70	317			
	42540-13	●	42.5	40	210	245.7	214	70	317			
	43040-15	●	43	40	215	253.8	220	70	325			
	43540-15	●	43.5	40	215	254.8	221	70	326			
	44040-15	●	44	40	220	258.8	225	70	330			
	44540-15	●	44.5	40	220	258.7	225	70	330			
	45040-15	●	45	40	225	264.7	230	70	336			
	45540-15	●	45.5	40	225	264.7	230	70	336			
	46040-15	●	46	40	230	269.7	235	70	341			
	46540-15	●	46.5	40	230	269.6	235	70	341			
	47040-15	●	47	40	235	275.6	240	70	347			
	47540-15	●	47.5	40	235	275.6	240	70	347			
	48040-15	●	48	40	240	280.6	245	70	352			
	48540-15	●	48.5	40	240	280.5	245	70	352			
	49040-15	●	49	40	245	285.5	250	70	357			
	49540-15	●	49.5	40	245	285.5	250	70	357			
	50040-15	●	50	40	250	290.5	255	70	362			
	50540-15	●	50.5	40	250	290.5	255	70	362			
	51040-18	●	51	40	255	299.6	261	70	371	SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100
	51540-18	●	51.5	40	255	299.6	261	70	371			
	52040-18	●	52	40	260	304.6	266	70	376			
52540-18	●	52.5	40	260	304.5	266	70	376				
53040-18	●	53	40	265	309.5	271	70	381				
53540-18	●	53.5	40	265	309.5	271	70	381				
54040-18	●	54	40	270	314.4	276	70	386				
54540-18	●	54.5	40	270	314.4	276	70	386				
55040-18	●	55	40	275	319.4	281	70	391				
55540-18	●	55.5	40	275	319.4	281	70	391				
56040-18	●	56	40	280	326.3	286	70	398				
56540-18	●	56.5	40	280	326.3	286	70	398				
57040-18	●	57	40	285	332.3	292	70	404				
57540-18	●	57.5	40	285	332.3	292	70	404				
58040-18	●	58	40	290	338.2	298	70	410				
58540-18	●	58.5	40	290	338.2	298	70	410				
59040-18	●	59	40	295	344.2	304	70	416				
59540-18	●	59.5	40	295	344.2	304	70	416				
60040-18	●	60	40	300	350.2	310	70	422				
60540-18	●	60.5	40	300	350.2	310	70	422				

➔ Applicable inserts D9 ~ 10

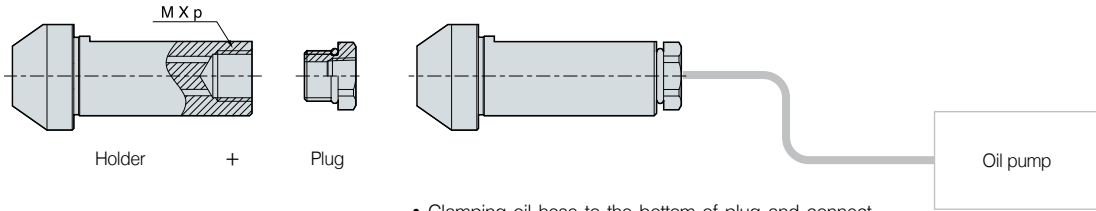
\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# D Technical Information for KING Drill (For through coolant system with a lathe)

Drill with through coolant system for general lathe and CNC lathe without through coolant system

## KING Drill (For through coolant system with a lathe)

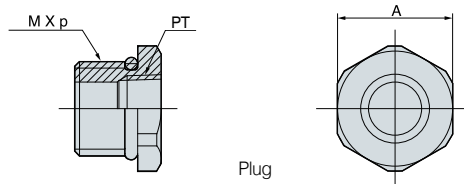
- Through coolant system with drill holder, plug, oil-hole hose and oil-hole pump
- PT TAP in the plug is combined to PT TAP connected to oil hose
- Available to use the drill without a plug in milling machine



- Clamping oil hose to the bottom of plug and connect the oil pump to the holder

(mm)

Tap type	Diameter	Shank dia.	M x p	Plug
K□D120~16020HP-□□	Ø12.0 ~ Ø16.0	Ø20	M12 x 1.5	PLG12PT18
K□D161~23525HP-□□	Ø16.1 ~ Ø23.5	Ø25	M16 x 1.5	PLG16PT18
K□D236~35532HP-□□	Ø23.6 ~ Ø35.5	Ø32	M20 x 2.0	PLG20PT14
K□D356~60940HP-□□	Ø35.6 ~ Ø60.5	Ø40	M27 x 2.0	PLG27PT38

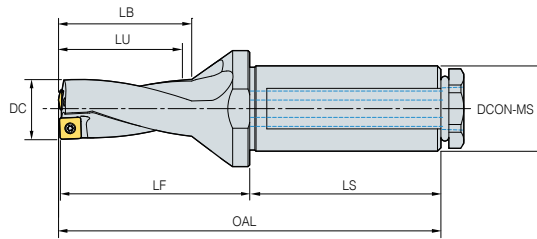


- Plug is assembled

Plug Type	M x p	PT Tap	A
PLG12PT18	M12 x 1.5	1/8	16
PLG16PT18	M16 x 1.5	1/8	19
PLG20PT14	M20 x 2.0	1/4	26
PLG27PT38	M27 x 2.0	3/8	35

## KING Drill(2D)

For through coolant system with a lathe



										(mm)		
K2D	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench
	13020HP-04	●	13	20	26	42.71	29	50	93	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	13520HP-04*		13.5	20	26	42.71	29	50	93			
	14020HP-05*	●	14	20	28	45.6	31	50	96	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	15020HP-05		15	20	30	48.6	33	50	99			
	16020HP-05	●	16	20	32	50.5	35	50	101		FTKA02206S	TW07P
	17025HP-06		17	25	34	52.6	37	56	109			
	18025HP-06	●	18	25	36	55.5	39	56	112	SP□T060205-□□ XO□T060204-□□	FTKA02565	TW07S
	19025HP-06		19	25	38	57.4	41	56	114			
	20025HP-07	●	20	25	40	61.5	43	56	118		FTKA0307	TW09S
	21025HP-07*		21	25	42	63.4	45	56	120			
	22025HP-07	●	22	25	44	65.4	47	56	122	SP□T07T208-□□ XO□T07T205-□□	FTKA0307	TW09S
	23025HP-07		23	25	46	69.3	49	56	126			
	24032HP-09*	●	24	32	48	72.4	51	60	133		FTKA0307	TW09S
	25032HP-09		25	32	50	74.3	53	60	135			
	26032HP-09	●	26	32	52	76.3	55	60	137	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	27032HP-09		27	32	54	79.2	57	60	140			
	28032HP-09	●	28	32	56	82.2	59	60	143		FTKA0307	TW09S
	29032HP-09		29	32	58	84.1	61	60	145			

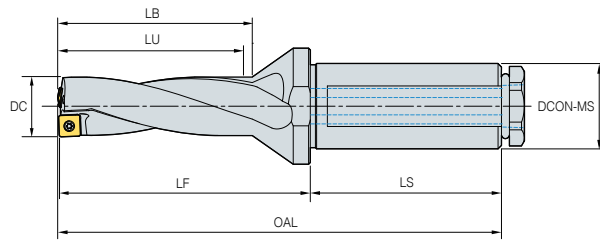
Applicable inserts **D9 ~ 10**



\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# D KING Drill (For through coolant system with a lathe)

## KING Drill(3D)

For through coolant system with a lathe



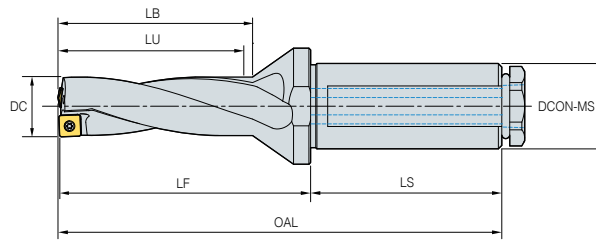
										(mm)		
Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw 	Wrench 	
<b>K3D</b>	<b>13020HP-04</b>	●	13	20	39	55.71	42	50	106	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	<b>13520HP-04*</b>	●	13.5	20	39	55.71	42	50	106			
	<b>14020HP-05*</b>	●	14	20	42	59.6	45	50	110			
	<b>14520HP-05*</b>	●	14.5	20	42	59.6	45	50	110	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	<b>15020HP-05</b>	●	15	20	45	63.6	48	50	114			
	<b>15520HP-05*</b>	●	15.5	20	45	63.5	48	50	114			
	<b>16020HP-05</b>	●	16	20	48	66.5	51	50	117	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	<b>16525HP-06*</b>	●	16.5	25	48	66.6	51	56	123			
	<b>17025HP-06</b>	●	17	25	51	69.6	54	56	126			
	<b>17525HP-06*</b>	●	17.5	25	51	69.5	54	56	126			
	<b>18025HP-06</b>	●	18	25	54	73.5	57	56	130			
	<b>18525HP-06</b>	●	18.5	25	54	73.5	57	56	130			
	<b>19025HP-06</b>	●	19	25	57	76.4	60	56	133	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	<b>19525HP-06*</b>	●	19.5	25	57	76.4	60	56	133			
	<b>20025HP-07</b>	●	20	25	60	81.5	63	56	138			
	<b>20525HP-07</b>	●	20.5	25	60	81.4	63	56	138			
	<b>21025HP-07*</b>	●	21	25	63	84.4	66	56	141			
	<b>21525HP-07</b>	●	21.5	25	63	84.4	66	56	141			
	<b>22025HP-07</b>	●	22	25	66	87.4	69	56	144	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	<b>22525HP-07</b>	●	22.5	25	66	87.3	69	56	144			
	<b>23025HP-07</b>	●	23	25	69	92.3	72	56	149			
	<b>23525HP-07</b>	●	23.5	25	69	92.3	72	56	149			
	<b>24032HP-09*</b>	●	24	32	72	96.4	75	60	157			
	<b>24532HP-09</b>	●	24.5	32	72	96.4	75	60	157			
	<b>25032HP-09</b>	●	25	32	75	99.3	78	60	160			
	<b>25532HP-09</b>	●	25.5	32	75	99.3	78	60	160			
	<b>26032HP-09</b>	●	26	32	78	102.3	81	60	163			
	<b>26532HP-09*</b>	●	26.5	32	78	102.3	81	60	163			
	<b>27032HP-09</b>	●	27	32	81	106.2	84	60	167			
	<b>27532HP-09</b>	●	27.5	32	81	106.2	84	60	167			
<b>28032HP-09</b>	●	28	32	84	110.2	87	60	171				
<b>28532HP-09</b>	●	28.5	32	84	110.2	87	60	171				
<b>29032HP-09</b>	●	29	32	87	113.1	90	60	174				
<b>29532HP-09*</b>	●	29.5	32	87	113.1	90	60	174				

 Applicable inserts **D9 ~ 10**

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

## KING Drill(4D)

For through coolant system with a lathe



										(mm)		
K4D	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Screw	Wrench
	13020HP-04	●	13	20	52	42.71	29	50	93	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	13520HP-04*		13.5	20	52	42.71	29	50	93			
	14020HP-05*	●	14	20	56	73.6	59	50	124	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	15020HP-05		15	20	60	78.6	63	50	129			
	16020HP-05	●	16	20	64	82.5	67	50	133			
	17025HP-06		16	20	64	82.5	67	50	133			
	18025HP-06	●	18	25	72	91.5	75	56	148	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	19025HP-06		19	25	76	95.4	79	56	152			
	20025HP-07	●	20	25	80	101.5	83	56	158			
	21025HP-07*		21	25	84	105.4	87	56	162	SP□T07T208-□□ XO□T07T205-□□	FTKA02565	TW07S
	22025HP-07	●	22	25	88	109.4	91	56	166			
	23025HP-07		23	25	92	115.3	95	56	172			
	24032HP-09*	●	24	32	96	120.4	99	60	181			
	25032HP-09		25	32	100	124.3	103	60	185			
	26032HP-09	●	26	32	104	128.3	107	60	189	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
	27032HP-09		27	32	108	133.2	111	60	194			
	28032HP-09	●	28	32	112	138.2	115	60	199			
	29032HP-09		29	32	116	142.1	119	60	203			

Applicable inserts **D9 ~ 10**

\*The items marked \* can machine a tap foundation hole(Reference D7 page)



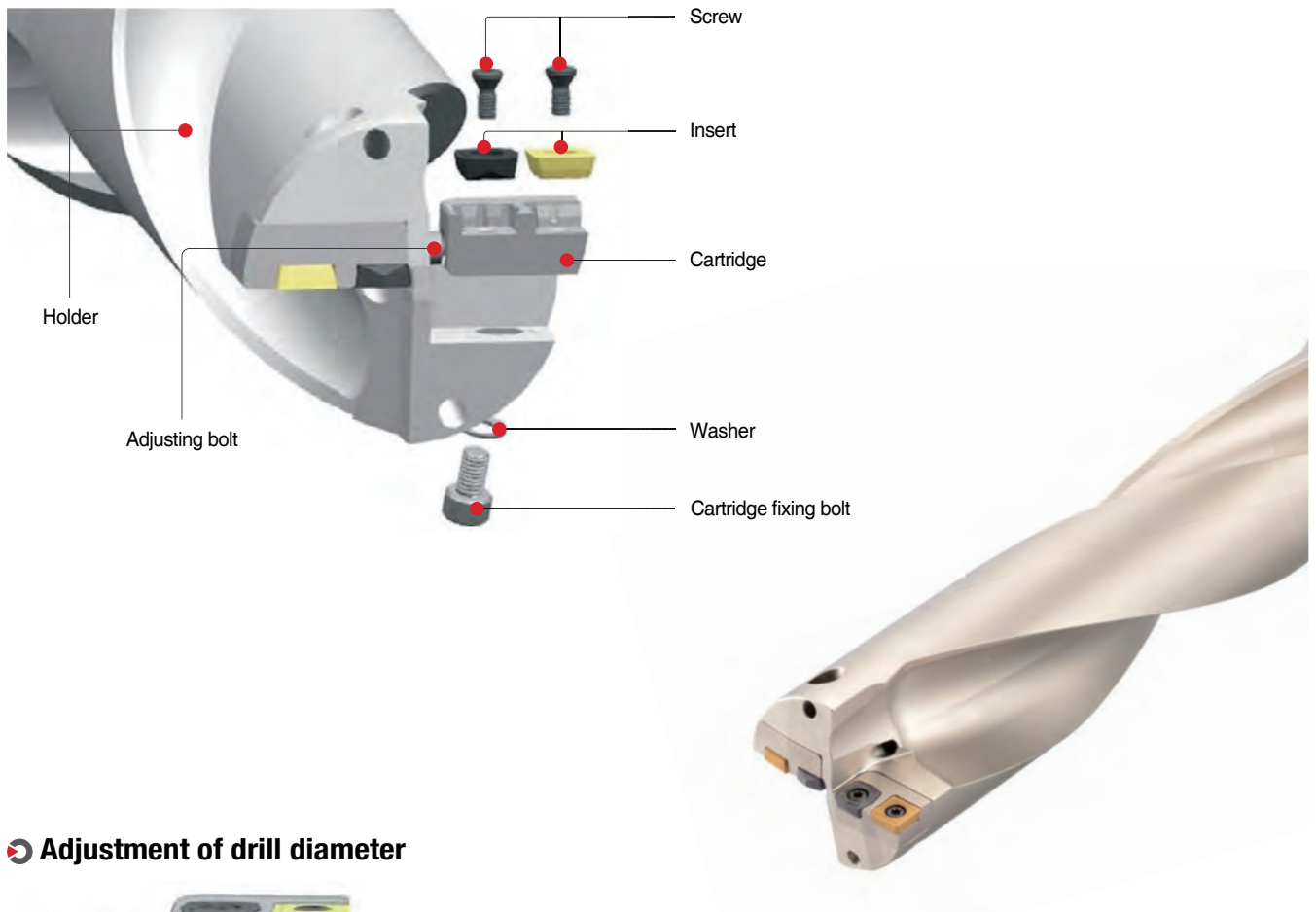
# D Technical Information for KING Drill (For large diameter drilling)

High rigidity drill produces cost efficiency due to cartridge replacement

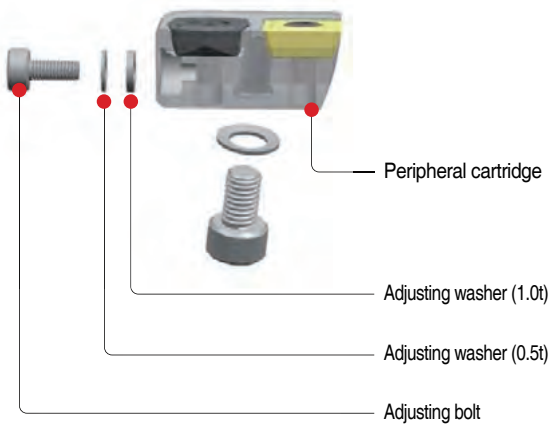
## KING Drill(For large diameter drilling)

- Cartridge type for  $\varnothing 61 \sim \varnothing 100$  drilling
- Peripheral cartridge can adjust the drilling diameter within 5 mm
- Easy to adjust drilling diameter with adjusting bolt

### Structure of KING Drill (for large diameter) parts



### Adjustment of drill diameter

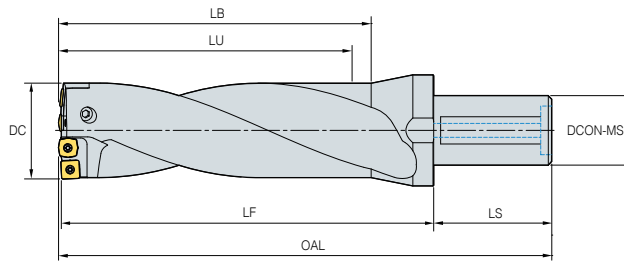


Adjustment $\varnothing$ (mm)	Adjusting washer	
	Designation	Width(mm)
1	WA0305	0.5
2	WA0310	1.0
3	WA0305 + WA0310	1.5
4	WA0310 x 2	2.0
5	WA0305 + WA0310 x 2	2.5

※ Adjusting washer adjusts the drilling diameter within 5 mm

# KING Drill

For through coolant system with a lathe



Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert		Screw	Wrench	
									Internal	External			
<b>K2D</b>	616550-11	●	61	50	122	174.06	130	80	255	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	●	65	50	130	183.88	140	80	265	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	●	70	50	140	193.88	150	80	275	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	●	75	50	150	203.88	160	80	285	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	●	80	50	160	213.8	170	80	295	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	●	85	50	170	223.8	180	80	305	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	●	90	50	180	233.8	190	80	315	KDC9095C	KDC9095P	FTNC04511	TW20S
	9510050-18	●	95	50	190	243.5	200	80	325	KDC95100C	KDC95100P	FTNA0511	TW20-100
<b>K3D</b>	616550-11	●	61	50	183	239.06	195	80	320	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	●	65	50	195	253.88	210	80	335	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	●	70	50	210	268.88	225	80	350	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	●	75	50	225	283.88	240	80	365	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	●	80	50	240	298.8	255	80	380	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	●	85	50	255	313.8	270	80	395	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	●	90	50	270	328.8	85	80	410	KDC9095C	KDC9095P	FTNC04511	TW20S
	9510050-18	●	95	50	285	343.5	300	80	425	KDC95100C	KDC95100P	FTNA0511	TW20-100
<b>K4D</b>	616550-11	●	61	50	244	304.06	260	80	385	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	●	65	50	260	323.88	280	80	405	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	●	70	50	280	343.88	300	80	425	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	●	75	50	300	363.88	320	80	445	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	●	80	50	320	383.8	340	80	465	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	●	85	50	340	403.8	360	80	485	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	●	90	50	360	423.8	380	80	505	KDC9095C	KDC9095P	FTNC04511	TW20S

Applicable inserts **D9 ~ 10**

## Parts

Cartridge		Range(Ø)	Insert				Screw	Wrench
Internal	External		Designation	Quantity	Designation	Quantity		
KDC6165C	KDC6165P	61~65	XO□T11T306-□□	2	SP□T11T308-□□	2	FTKA03508	TW15S
KDC6570C	KDC6570P	65~70	XO□T130406-□□	2	SP□T130410-□□	2	FTKA0410	TW15S
KDC7075C	KDC7075P	70~75	XO□T130406-□□	2	SP□T130410-□□	2	FTKA0410	TW15S
KDC7580C	KDC7580P	75~80	XO□T130406-□□	2	SP□T130410-□□	2	FTKA0410	TW15S
KDC8085C	KDC8085P	80~85	XO□T15M508-□□	2	SP□T15M510-□□	2	FTNC04511	TW20S
KDC8590C	KDC8590P	85~90	XO□T15M508-□□	2	SP□T15M510-□□	2	FTNC04511	TW20S
KDC9095C	KDC9095P	90~95	XO□T15M508-□□	2	SP□T15M510-□□	2	FTNC04511	TW20S
KDC95100C	KDC95100P	95~100	XO□T180508-□□	2	SP□T180510-□□	2	FTNA0511	TW20-100

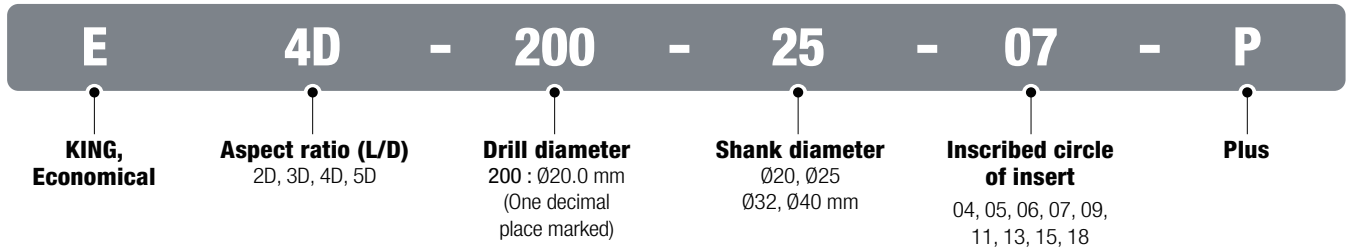
# D Technical Information for KED Plus Drill

KORLOY Indexable New Generation Economical Drill

## KED Plus Drill

- Economical drill with good chip control due to optimal chip flute enlarging the space for chip flow
- Stable machining due to optimal shape and cutting edge arrangement of central and peripheral inserts

### Code system



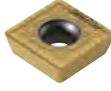
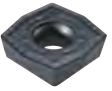
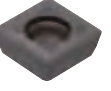
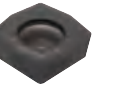

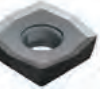
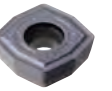
### Holder Features

- Excellent chip control for suitable cutting range with small diameters (Ø12-Ø23.5) due to the cutting fluid system and chip flute
- Excellent surface finish for suitable cutting range with medium to large diameters (Ø24-Ø60.5) due to widened chip pockets even in deep drilling
- Increased the rigidity of drill body and improved chip evacuation due to optimized shape of flute



### Features of chip breaker

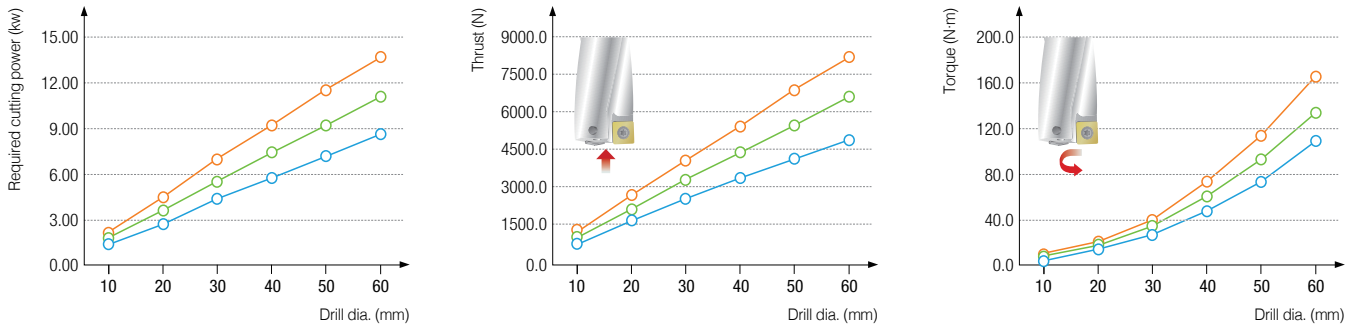
- Optimized design of inserts for maximum drilling efficiency
  - Excellent cutting performance and chip control due to the optimized geometry and chip breaker of both inserts: central and peripheral
  - A set of differently shaped central and peripheral inserts optimizing the insert locations in order to maximize cutting tool life

Chip breaker	PD		LD		ND		RD
<b>Features</b>	- 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
<b>Insert</b>	External	Internal	External	Internal	External	Internal	Internal
<b>Shape</b>							
<b>Grades for workpiece</b>	NC5330 : P, M, K PC3700 : P PC5300 : P, M, K, S PC6100 : K PC9540 : P, M, S		PC5300 : P, M, K, S PC9540 : P, M, S		PC5335 : P, M		H01 : N  PC5300 : P, M, K, S

## Required cutting power

**Workpiece** SCM440(240HB)  
**Cutting conditions**  $vc(m/min) = 100$ , Through coolant system

$fn(mm/rev)=0.13$     $fn(mm/rev)=0.10$     $fn(mm/rev)=0.07$

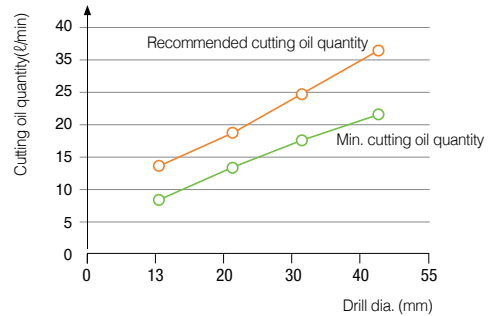


※ Cutting force shown as the above is base on drilling in facilities with enough rigidity and power

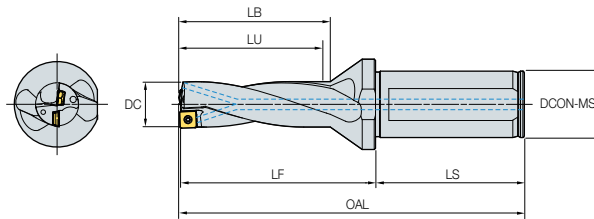
## Cutting oil quantity

**Workpiece** SCM440(240HB)  
**Cutting conditions**  $vc(m/min) = 100$ , Through coolant system

※ The data of the graph above could be changed depending on workpiece and cutting condition



## Drill tolerance and hole tolerance



Drill dia.(DC)		Ø12 ~ Ø29	Ø30 ~ Ø45	Ø46 ~ Ø60.5
<b>2D~3D</b>	Drill tolerance(DC)	-0.15 ~ 0	-0.15 ~ 0	-0.15 ~ 0
	Hole tolerance	-0.1 ~ +0.2	-0.1 ~ +0.25	-0.1 ~ +0.28
<b>4D~5D</b>	Drill tolerance(DC)	-0.15 ~ 0	-0.15 ~ 0	-0.15 ~ 0
	Hole tolerance	-0.05 ~ +0.25	-0.05 ~ +0.3	-0.05 ~ +0.33

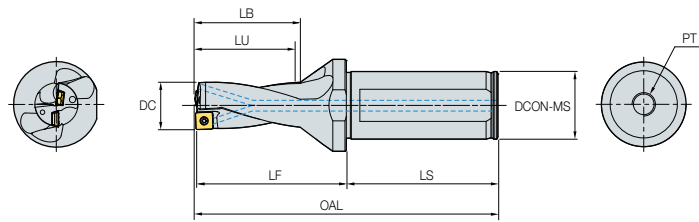
(mm)

## Recommended cutting conditions

Workpiece			Insert			vc(m/min)	Aspect ratio (L/D) = 2D, 3D, 4D Feed rate (mm/rev) per drill dia. (mm)					
ISO	Workpiece	Hardness (HB)	Chip breaker	Grade			Ø12~Ø16	Ø17~Ø23	Ø24~Ø29	Ø30~Ø42	Ø43~Ø60	
				Central	Peripheral							
P	Carbon steel	Low carbon steel	LD	PC5335	PC5335	120(60~170)	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	
			PD/RD	PC5300	PC3700	150(120~180)						
		NC5330	180(140~220)									
	High carbon steel	180~280	PD	PC5300	PC3700	120(90~150)	0.04~0.10	0.04~0.12	0.05~0.16	0.06~0.16	0.06~0.18	
					NC5330	150(110~190)	0.04~0.06	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08	
	Alloy steel	Low alloy steel	140~260	LD	PC5335	PC5335	120(60~160)	0.06~0.10	0.06~0.10	0.06~0.12	0.06~0.14	0.06~0.14
PD				PC5300	PC3700	150(120~170)	0.06~0.12	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16	
NC5330		180(140~210)	0.06~0.08	0.06~0.08	0.06~0.10	0.06~0.12	0.06~0.12					
Low alloy heat-treated steel		200~400	PD	PC5300	PC3700	100(50~150)	0.04~0.10	0.06~0.10	0.06~0.12	0.06~0.14	0.06~0.14	
High alloy steel		260~320	PD	PC5300	PC3700	100(50~160)	0.05~0.11	0.05~0.11	0.05~0.13	0.05~0.15	0.05~0.15	
High alloy heat-treated steel	300~450	PD	PC5300	PC3700	70(30~120)	0.04~0.08	0.06~0.08	0.06~0.10	0.06~0.12	0.06~0.12		
M	Stainless steel	135~275	LD	PD5335	PC5335	120(80~140)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	
			PD	PC5300	PC3700	130(100~160)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	
				PC9540	PC9540	90(60~120)	0.04~0.07	0.04~0.07	0.04~0.07	0.04~0.08	0.04~0.08	
K	Cast iron	Gray cast iron	150~230	PD	PC5300	PC6100	190(150~250)	0.04~0.12	0.05~0.14	0.06~0.18	0.10~0.22	0.10~0.26
		Ductile cast iron	150~230	PD	PC5300	PC6100	130(100~160)	0.04~0.07	0.04~0.08	0.04~0.10	0.05~0.12	0.05~0.12
S	Heat resisting alloy	130~400	PD	PC5300	PC3700	50(30~100)	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	
				PC9540	PC9540	40(20~80)	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	0.04~0.10	
	Ti-heat resisting alloy	130~400	LD	PC5335	PC5335	60(40~80)	0.04~0.08	0.04~0.10	0.06~0.12	0.06~0.14	0.06~0.16	
			PD	PC5300	PC3700	60(40~80)	0.04~0.08	0.04~0.10	0.06~0.12	0.06~0.14	0.06~0.16	
High hardened steel	400이상	PD	PC5300	PC3700	40(20~80)	0.04~0.05	0.04~0.06	0.04~0.08	0.04~0.08	0.04~0.08		
N	Aluminium	Aluminium	30~150	ND	H01	H01	300(250~400)	0.05~0.14	0.06~0.16	0.10~0.20	0.10~0.22	0.12~0.25
		Alloyed copper	150-160	ND	H01	H01	250(200~300)	0.05~0.14	0.06~0.16	0.10~0.20	0.10~0.22	0.12~0.25

- 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

# KED Plus Drill(2D)

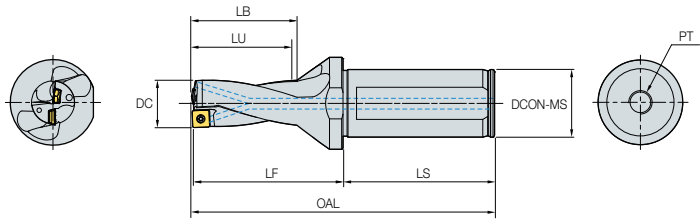


Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PT	Applicable insert	Screw	Wrench
E2D-	12020-04-P*	●	12	20	24	40.71	27	50	91	1/8	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04-P		12.5	20	24	40.71	27	50	91				
	13020-04-P	●	13	20	26	42.71	29	50	93				
	13520-04-P*	●	13.5	20	26	42.71	29	50	93				
	14020-05-P*	●	14	20	28	45.6	31	50	96				
	14520-05-P*	●	14.5	20	28	45.6	31	50	96				
	15020-05-P	●	15	20	30	48.6	33	50	99				
	15520-05-P*	●	15.5	20	30	48.5	33	50	99				
	16020-05-P	●	16	20	32	50.5	35	50	101				
	16525-06-P*	●	16.5	25	32	50.6	35	56	107				
	17025-06-P	●	17	25	34	52.6	37	56	109				
	17525-06-P*	●	17.5	25	34	52.5	37	56	109				
	18025-06-P	●	18	25	36	55.5	39	56	112				
	18525-06-P	●	18.5	25	36	55.5	39	56	112				
	19025-06-P	●	19	25	38	57.4	41	56	114				
	19525-06-P*	●	19.5	25	38	57.4	41	56	114				
	20025-07-P	●	20	25	40	61.5	43	56	118				
	20525-07-P	●	20.5	25	40	61.4	43	56	118				
	21025-07-P*	●	21	25	42	63.4	45	56	120				
	21525-07-P	●	21.5	25	42	63.4	45	56	120				
	22025-07-P	●	22	25	44	65.4	47	56	122				
	22525-07-P	●	22.5	25	44	65.3	47	56	122				
	23025-07-P	●	23	25	46	69.3	49	56	126				
	23525-07-P	●	23.5	25	46	69.3	49	56	126				
	24032-09-P*	●	24	32	48	72.4	51	60	133				
	24532-09-P	●	24.5	32	48	72.4	51	60	133				
	25032-09-P	●	25	32	50	74.3	53	60	135				
	25532-09-P	●	25.5	32	50	74.3	53	60	135				
	26032-09-P	●	26	32	52	76.3	55	60	137				
	26532-09-P*	●	26.5	32	52	76.3	55	60	137				
	27032-09-P	●	27	32	54	79.2	57	60	140				
	27532-09-P	●	27.5	32	54	79.2	57	60	140				
	28032-09-P	●	28	32	56	82.2	59	60	143				
	28532-09-P	●	28.5	32	56	82.2	59	60	143				
	29032-09-P	●	29	32	58	84.1	61	60	145				
29532-09-P*	●	29.5	32	58	84.1	61	60	145					
30032-11-P	●	30	32	60	89	63	60	150					
30532-11-P		30.5	32	60	89	63	60	150					
31032-11-P	●	31	32	62	91	65	60	152					
31532-11-P		31.5	32	62	91	65	60	152					
32032-11-P*	●	32	32	64	93	67	60	154					
32532-11-P		32.5	32	64	93	67	60	154					
33032-11-P	●	33	32	66	96	69	60	157					
33532-11-P		33.5	32	66	96	69	60	157					
34032-11-P	●	34	32	68	98	71	60	159					
34532-11-P		34.5	32	68	97.9	71	60	159					
35032-11-P*	●	35	32	70	99.9	73	60	161					
35532-11-P		35.5	32	70	99.9	73	60	161					
									1/4	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S	
										SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S	

➔ Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

## KED Plus Drill(2D)

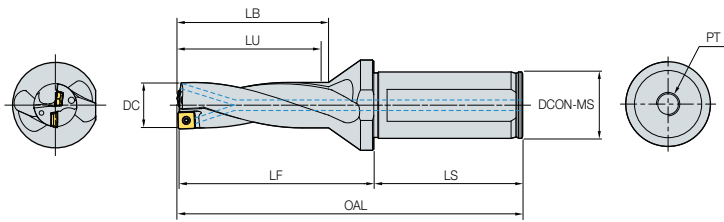


Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PT	Applicable insert	Screw	Wrench
E2D-	36040-13-P	●	36	40	72	105.1	76	70	176	1/4	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13-P		36.5	40	72	105	76	70	176				
	37040-13-P	●	37	40	74	107	78	70	178				
	37540-13-P*		37.5	40	74	107	78	70	178				
	38040-13-P	●	38	40	76	109.9	80	70	181				
	38540-13-P		38.5	40	76	109.9	80	70	181				
	39040-13-P	●	39	40	78	111.9	82	70	183				
	39540-13-P		39.5	40	78	111.9	82	70	183				
	40040-13-P	●	40	40	80	114.8	84	70	186				
	40540-13-P		40.5	40	80	114.8	84	70	186				
	41040-13-P	●	41	40	82	116.8	86	70	188				
	41540-13-P		41.5	40	82	116.8	86	70	188				
	42040-13-P	●	42	40	84	119.7	88	70	191				
	42540-13-P		42.5	40	84	119.7	88	70	191				
	43040-15-P	●	43	40	86	124.8	91	70	196				
	43540-15-P		43.5	40	86	124.8	91	70	196				
	44040-15-P	●	44	40	88	126.8	93	70	198				
	44540-15-P		44.5	40	88	126.7	93	70	198				
	45040-15-P	●	45	40	90	129.7	95	70	201				
	45540-15-P		45.5	40	90	129.7	95	70	201				
	46040-15-P	●	46	40	92	131.7	97	70	203				
	46540-15-P		46.5	40	92	131.6	97	70	203				
	47040-15-P	●	47	40	94	134.6	99	70	206				
	47540-15-P		47.5	40	94	134.6	99	70	206				
	48040-15-P	●	48	40	96	136.6	101	70	208				
	48540-15-P		48.5	40	96	136.5	101	70	208				
	49040-15-P	●	49	40	98	138.5	103	70	210				
	49540-15-P		49.5	40	98	138.5	103	70	210				
	50040-15-P	●	50	40	100	140.5	105	70	212				
	50540-15-P		50.5	40	100	140.5	105	70	212				
	51040-18-P	●	51	40	102	146.6	108	70	218				
	51540-18-P		51.5	40	102	146.6	108	70	218				
	52040-18-P	●	52	40	104	148.6	110	70	220				
	52540-18-P		52.5	40	104	148.5	110	70	220				
	53040-18-P	●	53	40	106	150.5	112	70	222				
	53540-18-P		53.5	40	106	150.5	112	70	222				
	54040-18-P	●	54	40	108	152.4	114	70	224				
	54540-18-P		54.5	40	108	152.4	114	70	224				
	55040-18-P	●	55	40	110	154.4	116	70	226				
	55540-18-P		55.5	40	110	154.4	116	70	226				
	56040-18-P	●	56	40	112	158.3	118	70	230				
	56540-18-P		56.5	40	112	158.3	118	70	230				
57040-18-P	●	57	40	114	161.3	121	70	233					
57540-18-P		57.5	40	114	161.3	121	70	233					
58040-18-P	●	58	40	116	164.2	124	70	236					
58540-18-P		58.5	40	116	164.2	124	70	236					
59040-18-P	●	59	40	118	167.2	127	70	239					
59540-18-P		59.5	40	118	167.2	127	70	239					
60040-18-P	●	60	40	120	170.2	130	70	242					
60540-18-P		60.5	40	120	170.2	130	70	242					
											SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
											SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100

Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# KED Plus Drill(3D)



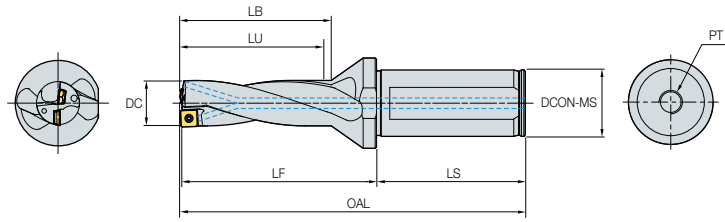
Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PT	Applicable insert	Screw	Wrench
E3D-	12020-04-P*	●	12	20	36	52.71	39	50	103	1/8	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04-P		12.5	20	36	52.71	39	50	103				
	13020-04-P	●	13	20	39	55.71	42	50	106				
	13520-04-P*	●	13.5	20	39	55.71	42	50	106				
	14020-05-P*	●	14	20	42	59.6	45	50	110				
	14520-05-P*	●	14.5	20	42	59.6	45	50	110				
	15020-05-P	●	15	20	45	63.6	48	50	114				
	15520-05-P*	●	15.5	20	45	63.5	48	50	114				
	16020-05-P	●	16	20	48	66.5	51	50	117				
	16525-06-P*	●	16.5	25	48	66.6	51	56	123				
	17025-06-P	●	17	25	51	69.6	54	56	126				
	17525-06-P*	●	17.5	25	51	69.5	54	56	126				
	18025-06-P	●	18	25	54	73.5	57	56	130				
	18525-06-P	●	18.5	25	54	73.5	57	56	130				
	19025-06-P	●	19	25	57	76.4	60	56	133				
	19525-06-P*	●	19.5	25	57	76.4	60	56	133				
	20025-07-P	●	20	25	60	81.5	63	56	138				
	20525-07-P	●	20.5	25	60	81.4	63	56	138				
	21025-07-P*	●	21	25	63	84.4	66	56	141				
	21525-07-P	●	21.5	25	63	84.4	66	56	141				
	22025-07-P	●	22	25	66	87.4	69	56	144				
	22525-07-P	●	22.5	25	66	87.3	69	56	144				
	23025-07-P	●	23	25	69	92.3	72	56	149				
	23525-07-P	●	23.5	25	69	92.3	72	56	149				
	24032-09-P*	●	24	32	72	96.4	75	60	157				
	24532-09-P	●	24.5	32	72	96.4	75	60	157				
	25032-09-P	●	25	32	75	99.3	78	60	160				
	25532-09-P	●	25.5	32	75	99.3	78	60	160				
	26032-09-P	●	26	32	78	102.3	81	60	163				
	26532-09-P*	●	26.5	32	78	102.3	81	60	163				
	27032-09-P	●	27	32	81	106.2	84	60	167				
	27532-09-P	●	27.5	32	81	106.2	84	60	167				
	28032-09-P	●	28	32	84	110.2	87	60	171				
	28532-09-P	●	28.5	32	84	110.2	87	60	171				
	29032-09-P	●	29	32	87	113.1	90	60	174				
29532-09-P*	●	29.5	32	87	113.1	90	60	174					
30032-11-P	●	30	32	90	119	93	60	180					
30532-11-P		30.5	32	90	119	93	60	180					
31032-11-P	●	31	32	93	122	96	60	183					
31532-11-P		31.5	32	93	122	96	60	183					
32032-11-P*	●	32	32	96	125	99	60	186					
32532-11-P		32.5	32	96	125	99	60	186					
33032-11-P	●	33	32	99	129	102	60	190					
33532-11-P		33.5	32	99	129	102	60	190					
34032-11-P	●	34	32	102	132	105	60	193					
34532-11-P		34.5	32	102	131.9	105	60	193					
35032-11-P*	●	35	32	105	134.9	108	60	196					
35532-11-P		35.5	32	105	134.9	108	60	196					
									1/4	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S	
										SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S	

➔ Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)



## KED Plus Drill(3D)

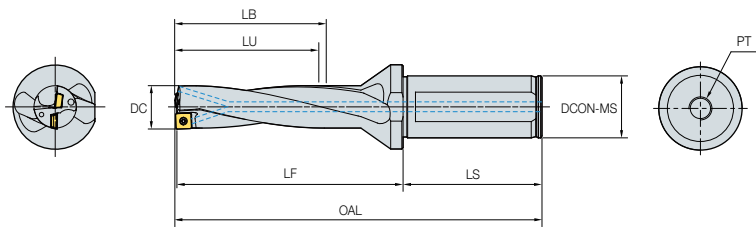


Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PT	Applicable insert	Screw	Wrench
E3D-	36040-13-P	●	36	40	108	141.1	112	70	212	1/4	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13-P		36.5	40	108	141	112	70	212				
	37040-13-P	●	37	40	111	144	115	70	215				
	37540-13-P*		37.5	40	111	144	115	70	215				
	38040-13-P	●	38	40	114	147.9	118	70	219				
	38540-13-P		38.5	40	114	147.9	118	70	219				
	39040-13-P	●	39	40	117	150.9	121	70	222				
	39540-13-P		39.5	40	117	150.9	121	70	222				
	40040-13-P	●	40	40	120	154.8	124	70	226				
	40540-13-P		40.5	40	120	154.8	124	70	226				
	41040-13-P	●	41	40	123	157.8	127	70	229				
	41540-13-P		41.5	40	123	157.8	127	70	229				
	42040-13-P	●	42	40	126	161.7	130	70	233				
	42540-13-P		42.5	40	126	161.7	130	70	233				
	43040-15-P	●	43	40	129	167.8	134	70	239				
	43540-15-P		43.5	40	129	167.8	134	70	239				
	44040-15-P	●	44	40	132	170.8	137	70	242				
	44540-15-P		44.5	40	132	170.7	137	70	242				
	45040-15-P	●	45	40	135	174.7	140	70	246				
	45540-15-P		45.5	40	135	174.7	140	70	246				
	46040-15-P	●	46	40	138	177.7	143	70	249				
	46540-15-P		46.5	40	138	177.6	143	70	249				
	47040-15-P	●	47	40	141	181.6	146	70	253				
	47540-15-P		47.5	40	141	181.6	146	70	253				
	48040-15-P	●	48	40	144	184.6	149	70	256				
	48540-15-P		48.5	40	144	184.5	149	70	256				
	49040-15-P	●	49	40	147	187.5	152	70	259				
	49540-15-P		49.5	40	147	187.5	152	70	259				
	50040-15-P	●	50	40	150	190.5	155	70	262				
	50540-15-P		50.5	40	150	190.5	155	70	262				
	51040-18-P	●	51	40	153	197.6	159	70	269				
	51540-18-P		51.5	40	153	197.6	159	70	269				
	52040-18-P	●	52	40	156	200.6	162	70	272				
	52540-18-P		52.5	40	156	200.5	162	70	272				
	53040-18-P	●	53	40	159	203.5	165	70	275				
	53540-18-P		53.5	40	159	203.5	165	70	275				
	54040-18-P	●	54	40	162	206.4	168	70	278				
	54540-18-P		54.5	40	162	206.4	168	70	278				
	55040-18-P	●	55	40	165	209.4	171	70	281				
	55540-18-P		55.5	40	165	209.4	171	70	281				
56040-18-P	●	56	40	168	214.3	174	70	286					
56540-18-P		56.5	40	168	214.3	174	70	286					
57040-18-P	●	57	40	171	218.3	178	70	290					
57540-18-P		57.5	40	171	218.3	178	70	290					
58040-18-P	●	58	40	174	222.2	182	70	294					
58540-18-P		58.5	40	174	222.2	182	70	294					
59040-18-P	●	59	40	177	226.2	186	70	298					
59540-18-P		59.5	40	177	226.2	186	70	298					
60040-18-P	●	60	40	180	230.2	190	70	302					
60540-18-P		60.5	40	180	230.2	190	70	302					
											SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
											SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100

Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# KED Plus Drill(4D)

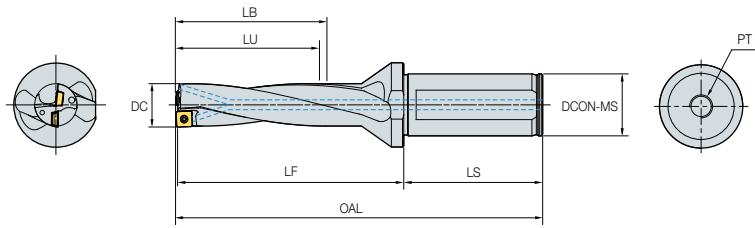


Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PT	Applicable insert	Screw	Wrench
E4D-	12020-04-P*	●	12	20	48	64.71	51	50	115	1/8	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04-P	●	12.5	20	48	64.71	51	50	115				
	13020-04-P	●	13	20	52	68.71	55	50	119				
	13520-04-P*	●	13.5	20	52	68.71	55	50	119				
	14020-05-P*	●	14	20	56	73.6	59	50	124				
	14520-05-P*	●	14.5	20	56	73.6	59	50	124				
	15020-05-P	●	15	20	60	78.6	63	50	129				
	15520-05-P*	●	15.5	20	60	78.5	63	50	129				
	16020-05-P	●	16	20	64	82.5	67	50	133				
	16525-06-P*	●	16.5	25	64	82.6	67	56	139				
	17025-06-P	●	17	25	68	86.6	71	56	143				
	17525-06-P*	●	17.5	25	68	86.5	71	56	143				
	18025-06-P	●	18	25	72	91.5	75	56	148				
	18525-06-P	●	18.5	25	72	91.5	75	56	148				
	19025-06-P	●	19	25	76	95.4	79	56	152				
	19525-06-P*	●	19.5	25	76	95.4	79	56	152				
	20025-07-P	●	20	25	80	101.5	83	56	158				
	20525-07-P	●	20.5	25	80	101.4	83	56	158				
	21025-07-P*	●	21	25	84	105.4	87	56	162				
	21525-07-P	●	21.5	25	84	105.4	87	56	162				
	22025-07-P	●	22	25	88	109.4	91	56	166				
	22525-07-P	●	22.5	25	88	109.3	91	56	166				
	23025-07-P	●	23	25	92	115.3	95	56	172				
	23525-07-P	●	23.5	25	92	115.3	95	56	172				
	24032-09-P*	●	24	32	96	120.4	99	60	181				
	24532-09-P	●	24.5	32	96	120.4	99	60	181				
	25032-09-P	●	25	32	100	124.3	103	60	185				
	25532-09-P	●	25.5	32	100	124.3	103	60	185				
	26032-09-P	●	26	32	104	128.3	107	60	189				
	26532-09-P*	●	26.5	32	104	128.3	107	60	189				
	27032-09-P	●	27	32	108	133.2	111	60	194				
	27532-09-P	●	27.5	32	108	133.2	111	60	194				
	28032-09-P	●	28	32	112	138.2	115	60	199				
	28532-09-P	●	28.5	32	112	138.2	115	60	199				
	29032-09-P	●	29	32	116	142.1	119	60	203				
29532-09-P*	●	29.5	32	116	142.1	119	60	203					
30032-11-P	●	30	32	120	149	123	60	210					
30532-11-P		30.5	32	120	149	123	60	210					
31032-11-P	●	31	32	124	153	127	60	214					
31532-11-P		31.5	32	124	153	127	60	214					
32032-11-P*	●	32	32	128	157	131	60	218					
32532-11-P		32.5	32	128	157	131	60	218					
33032-11-P	●	33	32	132	162	135	60	223					
33532-11-P		33.5	32	132	162	135	60	223					
34032-11-P	●	34	32	136	166	139	60	227					
34532-11-P		34.5	32	136	165.9	139	60	227					
35032-11-P*	●	35	32	140	169.9	143	60	231					
35532-11-P		35.5	32	140	169.9	143	60	231					
									1/4	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S	
										SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S	

➔ Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

## KED Plus Drill(4D)

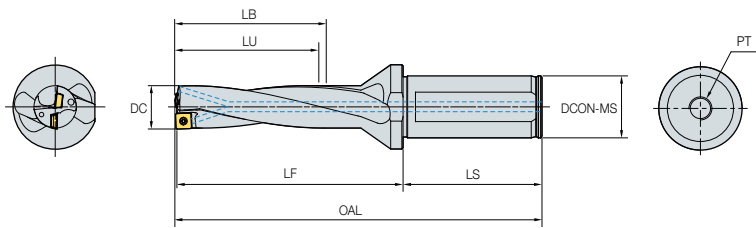


Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PT	Applicable insert	Screw	Wrench
E4D-	36040-13-P	●	36	40	144	177.1	148	70	248	1/4	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13-P		36.5	40	144	177	148	70	248				
	37040-13-P	●	37	40	148	181	152	70	252				
	37540-13-P*		37.5	40	148	181	152	70	252				
	38040-13-P	●	38	40	152	185.9	156	70	257				
	38540-13-P		38.5	40	152	185.9	156	70	257				
	39040-13-P	●	39	40	156	189.9	160	70	261				
	39540-13-P		39.5	40	156	189.9	160	70	261				
	40040-13-P	●	40	40	160	194.8	164	70	266				
	40540-13-P		40.5	40	160	194.8	164	70	266				
	41040-13-P	●	41	40	164	198.8	168	70	270				
	41540-13-P		41.5	40	164	198.8	168	70	270				
	42040-13-P	●	42	40	168	212.7	172	70	284				
	42540-13-P		42.5	40	168	212.7	172	70	284				
	43040-15-P	●	43	40	172	210.8	177	70	282				
	43540-15-P		43.5	40	172	210.8	177	70	282				
	44040-15-P	●	44	40	176	214.8	181	70	286				
	44540-15-P		44.5	40	176	214.7	181	70	286				
	45040-15-P	●	45	40	180	219.7	185	70	291				
	45540-15-P		45.5	40	180	219.7	185	70	291				
	46040-15-P	●	46	40	184	223.7	189	70	295				
	46540-15-P		46.5	40	184	223.6	189	70	295				
	47040-15-P	●	47	40	188	228.6	193	70	300				
	47540-15-P		47.5	40	188	228.6	193	70	300				
	48040-15-P	●	48	40	192	232.6	197	70	304				
	48540-15-P		48.5	40	192	232.5	197	70	304				
	49040-15-P	●	49	40	196	236.5	201	70	308				
	49540-15-P		49.5	40	196	236.5	201	70	308				
	50040-15-P	●	50	40	200	240.5	205	70	312				
	50540-15-P		50.5	40	200	240.5	205	70	312				
	51040-18-P	●	51	40	204	248.6	210	70	320				
	51540-18-P		51.5	40	204	248.6	210	70	320				
	52040-18-P	●	52	40	208	252.6	214	70	324				
	52540-18-P		52.5	40	208	252.5	214	70	324				
	53040-18-P	●	53	40	212	256.5	218	70	328				
	53540-18-P		53.5	40	212	256.5	218	70	328				
54040-18-P	●	54	40	216	260.4	222	70	332					
54540-18-P		54.5	40	216	260.4	222	70	332					
55040-18-P	●	55	40	220	264.4	226	70	336					
55540-18-P		55.5	40	220	264.4	226	70	336					
56040-18-P	●	56	40	224	270.3	230	70	342					
56540-18-P		56.5	40	224	270.3	230	70	342					
57040-18-P	●	57	40	228	275.3	235	70	347					
57540-18-P		57.5	40	228	275.3	235	70	347					
58040-18-P	●	58	40	232	280.2	240	70	352					
58540-18-P		58.5	40	232	280.2	240	70	352					
59040-18-P	●	59	40	236	285.2	245	70	357					
59540-18-P		59.5	40	236	285.2	245	70	357					
60040-18-P	●	60	40	240	290.2	250	70	362					
60540-18-P		60.5	40	240	290.2	250	70	362					
											SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100

➔ Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

# KED Plus Drill(5D)

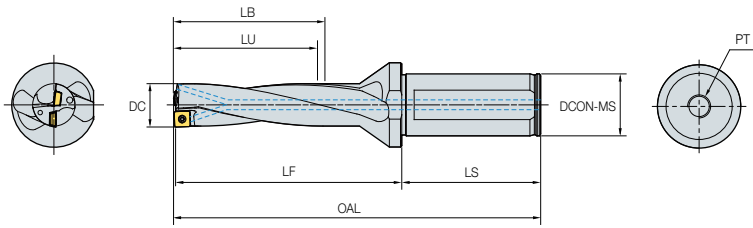


Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PT	Applicable insert	Screw	Wrench
E5D-	12020-04-P*		12	20	60	76.71	63	50	127	1/8	SP□T040204-□□ XO□T040204-□□	FTNA0204	TW06P
	12520-04-P		12.5	20	60	76.71	63	50	127				
	13020-04-P	●	13	20	65	81.71	68	50	132				
	13520-04-P*	●	13.5	20	65	81.71	68	50	132				
	14020-05-P*	●	14	20	70	87.6	73	50	138				
	14520-05-P*	●	14.5	20	70	87.6	73	50	138				
	15020-05-P	●	15	20	75	93.6	78	50	144				
	15520-05-P*	●	15.5	20	75	93.5	78	50	144				
	16020-05-P	●	16	20	80	98.5	83	50	149				
	16525-06-P*	●	16.5	25	80	98.6	83	56	155				
	17025-06-P	●	17	25	85	103.6	88	56	160				
	17525-06-P*	●	17.5	25	85	103.5	88	56	160				
	18025-06-P	●	18	25	90	109.5	93	56	166				
	18525-06-P	●	18.5	25	90	109.5	93	56	166				
	19025-06-P	●	19	25	95	114.4	98	56	171				
	19525-06-P*	●	19.5	25	95	114.4	98	56	171				
	20025-07-P	●	20	25	100	121.5	103	56	178				
	20525-07-P	●	20.5	25	100	121.4	103	56	178				
	21025-07-P*	●	21	25	105	126.4	108	56	183				
	21525-07-P	●	21.5	25	105	126.4	108	56	183				
	22025-07-P	●	22	25	110	131.4	113	56	188				
	22525-07-P	●	22.5	25	110	131.3	113	56	188				
	23025-07-P	●	23	25	115	138.3	118	56	195				
	23525-07-P	●	23.5	25	115	138.3	118	56	195				
	24032-09-P*	●	24	32	120	144.4	123	60	205				
	24532-09-P	●	24.5	32	120	144.4	123	60	205				
	25032-09-P	●	25	32	125	149.3	128	60	210				
	25532-09-P	●	25.5	32	125	149.3	128	60	210				
	26032-09-P	●	26	32	130	154.3	133	60	215				
	26532-09-P*	●	26.5	32	130	154.3	133	60	215				
	27032-09-P	●	27	32	135	160.2	138	60	221				
	27532-09-P	●	27.5	32	135	160.2	138	60	221				
	28032-09-P	●	28	32	140	166.2	143	60	227				
	28532-09-P	●	28.5	32	140	166.2	143	60	227				
	29032-09-P	●	29	32	145	171.1	148	60	232				
	29532-09-P*	●	29.5	32	145	171.1	148	60	232				
	30032-11-P	●	30	32	150	179	153	60	240				
	30532-11-P		30.5	32	150	179	153	60	240				
	31032-11-P	●	31	32	155	184	158	60	245				
	31532-11-P		31.5	32	155	184	158	60	245				
	32032-11-P*	●	32	32	160	189	163	60	250				
	32532-11-P		32.5	32	160	189	163	60	250				
33032-11-P	●	33	32	165	195	168	60	256					
33532-11-P		33.5	32	165	195	168	60	256					
34032-11-P	●	34	32	170	200	173	60	261					
34532-11-P		34.5	32	170	199.9	173	60	261					
35032-11-P*	●	35	32	175	204.9	178	60	266					
35532-11-P		35.5	32	175	204.9	178	60	266					
										1/4	SP□T090308-□□ XO□T090305-□□	FTKA0307	TW09S
											SP□T11T308-□□ XO□T11T306-□□	FTKA03508	TW15S

➔ Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

## KED Plus Drill(5D)



Designation		Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PT	Applicable insert	Screw	Wrench
E5D-	36040-13-P	●	36	40	180	213.1	184	70	284	1/4	SP□T130410-□□ XO□T130406-□□	FTKA0410	TW15S
	36540-13-P		36.5	40	180	213	184	70	284				
	37040-13-P	●	37	40	185	218	189	70	289				
	37540-13-P*		37.5	40	185	218	189	70	289				
	38040-13-P	●	38	40	190	223.9	194	70	295				
	38540-13-P		38.5	40	190	223.9	194	70	295				
	39040-13-P	●	39	40	195	228.9	199	70	300				
	39540-13-P		39.5	40	195	228.9	199	70	300				
	40040-13-P	●	40	40	200	234.8	204	70	306				
	40540-13-P		40.5	40	200	234.8	204	70	306				
	41040-13-P	●	41	40	205	239.8	209	70	311				
	41540-13-P		41.5	40	205	239.8	209	70	311				
	42040-13-P	●	42	40	210	245.7	214	70	317				
	42540-13-P		42.5	40	210	245.7	214	70	317				
	43040-15-P	●	43	40	215	253.8	220	70	325				
	43540-15-P		43.5	40	215	254.8	221	70	326				
	44040-15-P	●	44	40	220	258.8	225	70	330				
	44540-15-P		44.5	40	220	258.7	225	70	330				
	45040-15-P	●	45	40	225	264.7	230	70	336				
	45540-15-P		45.5	40	225	264.7	230	70	336				
	46040-15-P	●	46	40	230	269.7	235	70	341				
	46540-15-P		46.5	40	230	269.6	235	70	341				
	47040-15-P	●	47	40	235	275.6	240	70	347				
	47540-15-P		47.5	40	235	275.6	240	70	347				
	48040-15-P	●	48	40	240	280.6	245	70	352				
	48540-15-P		48.5	40	240	280.5	245	70	352				
	49040-15-P	●	49	40	245	285.5	250	70	357				
	49540-15-P		49.5	40	245	285.5	250	70	357				
	50040-15-P	●	50	40	250	290.5	255	70	362				
	50540-15-P		50.5	40	250	290.5	255	70	362				
	51040-18-P	●	51	40	255	299.6	261	70	371				
	51540-18-P		51.5	40	255	299.6	261	70	371				
	52040-18-P	●	52	40	260	304.6	266	70	376				
	52540-18-P		52.5	40	260	304.5	266	70	376				
	53040-18-P	●	53	40	265	309.5	271	70	381				
	53540-18-P		53.5	40	265	309.5	271	70	381				
	54040-18-P	●	54	40	270	314.4	276	70	386				
	54540-18-P		54.5	40	270	314.4	276	70	386				
	55040-18-P	●	55	40	275	319.4	281	70	391				
	55540-18-P		55.5	40	275	319.4	281	70	391				
	56040-18-P	●	56	40	280	326.3	286	70	398				
	56540-18-P		56.5	40	280	326.3	286	70	398				
57040-18-P	●	57	40	285	332.3	292	70	404					
57540-18-P		57.5	40	285	332.3	292	70	404					
58040-18-P	●	58	40	290	338.2	298	70	410					
58540-18-P		58.5	40	290	338.2	298	70	410					
59040-18-P	●	59	40	295	344.2	304	70	416					
59540-18-P		59.5	40	295	344.2	304	70	416					
60040-18-P	●	60	40	300	350.2	310	70	422					
60540-18-P		60.5	40	300	350.2	310	70	422					
											SP□T15M510-□□ XO□T15M508-□□	FTNC04511	TW20S
											SP□T180510-□□ XO□T180508-□□	FTNA0511	TW20-100

Applicable inserts D9 ~ 10

\*The items marked \* can machine a tap foundation hole(Reference D7 page)

High quality and high feed top solid indexable drill

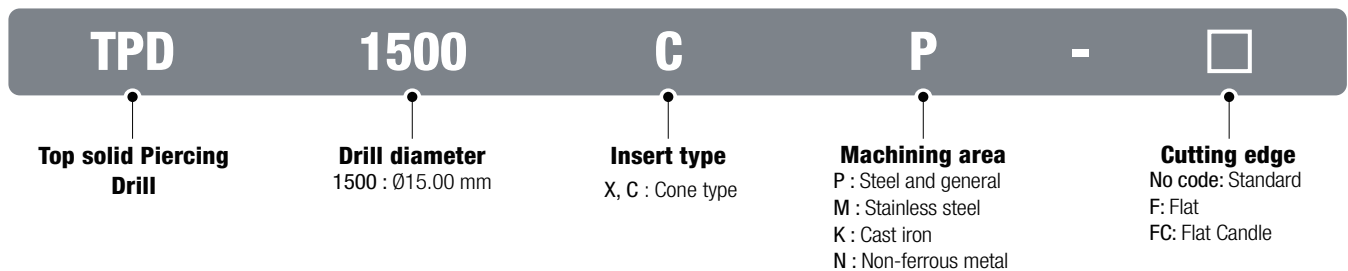
# TPDC Plus Drill

(XP, CP, CM, CN, CP-FC)

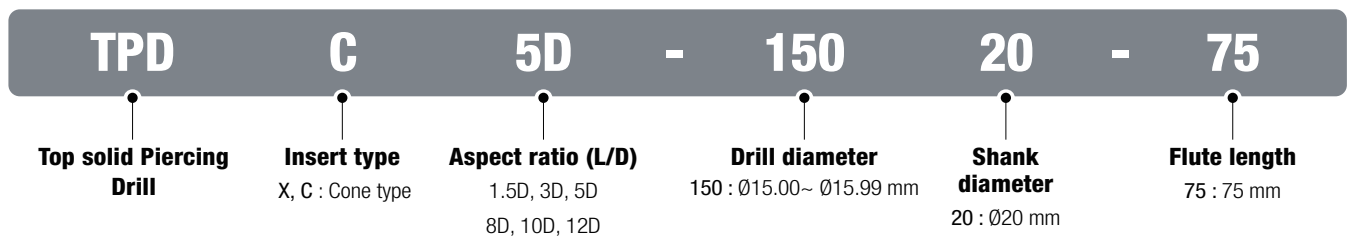
- The optimal tool shape for drilling realizing high precision and high feed machining as of carbide solid drill performance level
- Usable for various machining through enlarged line-up by workpieces, depth of cuts and workpiece shapes

## Code system

### • Insert

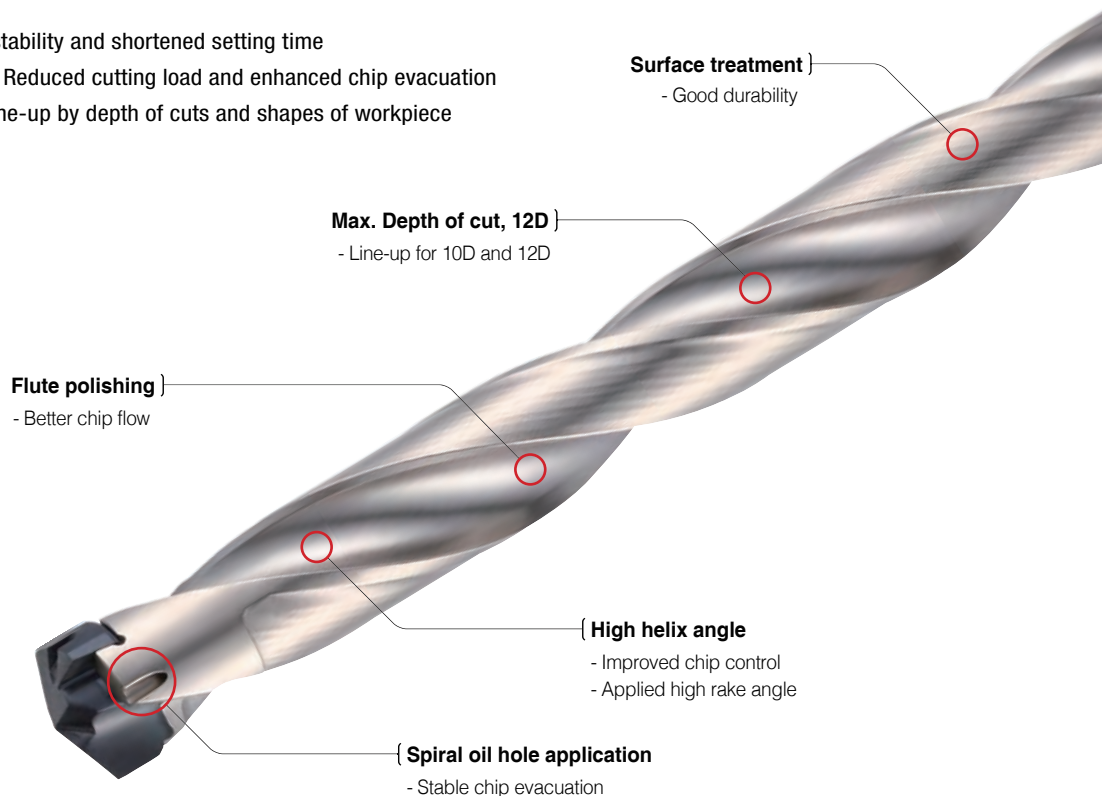


### • Holder








## 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

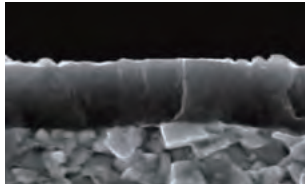


# D Technical Information for TPDC Plus Drill

## Insert features

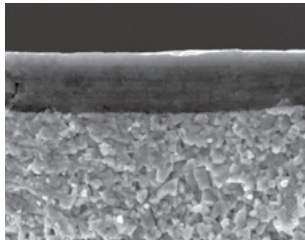
Shape	Application	Drill dia. (mm)	Features
 <b>XP</b>	<b>P</b>	Ø8.00~Ø11.99	<ul style="list-style-type: none"> <li>• High durability due to the strong clamping system</li> <li>• Excellent quality of machining and stable machining from high clamping force</li> <li>• Enhanced performance by high lubricated grade</li> </ul>
 <b>CP</b>	<b>P K</b>	Ø12.00~Ø30.99	<ul style="list-style-type: none"> <li>• High quality machining due to excellent centering: Good roundness and surface finish</li> <li>• Excellent chip control from exclusive edge design: Stable machining by good chip forming and chip evacuation</li> </ul>
 <b>CM</b>	<b>M</b>	Ø12.00~Ø30.99	<ul style="list-style-type: none"> <li>• Ensuring strength of point and cutting edge: Stable machinability</li> <li>• Increased stability of machining due to low cutting load</li> <li>• Applied grade with high built up edge resistance and chipping resistance</li> </ul>
 <b>CN</b>	<b>N</b>	Ø12.00~Ø30.99	<ul style="list-style-type: none"> <li>• Cutting edge with low cutting load: Excellent chip evacuation from increased surface finish of insert by special after treatment</li> <li>• Long tool life due to ultra-fine substrate application</li> </ul>
 <b>FC</b>	<b>P</b>	Ø12.00~Ø30.99	<ul style="list-style-type: none"> <li>• Cutting edge shape with excellent centering: Stable machinability from low cutting load</li> <li>• Available in various machining applications: Flat surface, angled surface, curved surface drilling, plunging and boring</li> <li>• Reduced cycle time by simplified tools: Endmill+drill machining→TPDC-CP-FC insert</li> </ul>

## Grade features



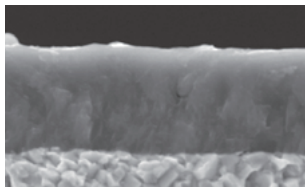
### PC5335

- PVD coating technology with high toughness and excellent lubrication
- Coating with high adherence
- General grade for various kinds of workpiece machining



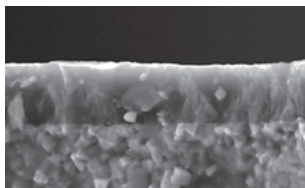
### PC330P

- Improved wear resistance, built up edge resistance and heat resistance due to multi-coating layer with high hardness and lubrication
- Improved resistance against chipping and breakage due to alternating laminated structure which minimizes vertical crack
- Grade for carbon steel machining



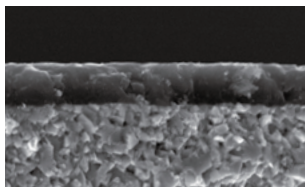
### PC5300

- PVD coating layer with high hardness and stability at high temperature
- Stable hole-making from high strength of cutting edge and chipping resistance
- Grade for alloy steel and cast iron machining



### PC330N

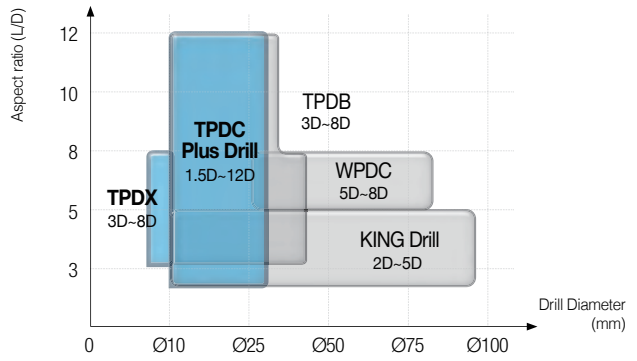
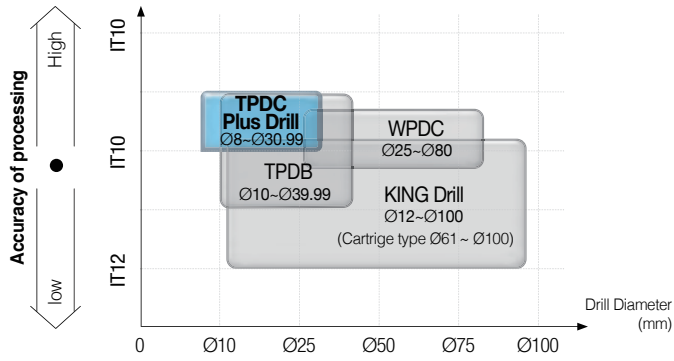
- PVD coating technology with hard and smooth surface
- Coating layer with stability of thermal shock and adherence
- Grade for stainless steel machining



### PC325U

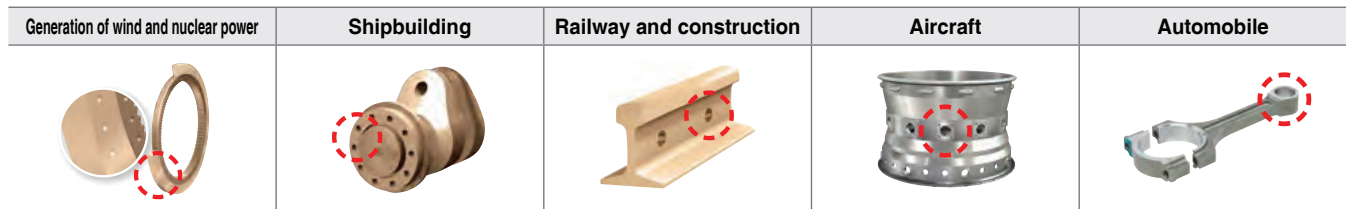
- Enhanced lubrication of surface and reduced cutting load
- Long tool life from higher welding resistance
- Optimal grade for general workpiece cutting such as carbon steel

## 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
TPDC Plus Drill	8.00 ~ 30.99mm	1.5, 3, 5, 8, 10, 12	h7	IT10	≤ 3.0µm	P, M, K, N

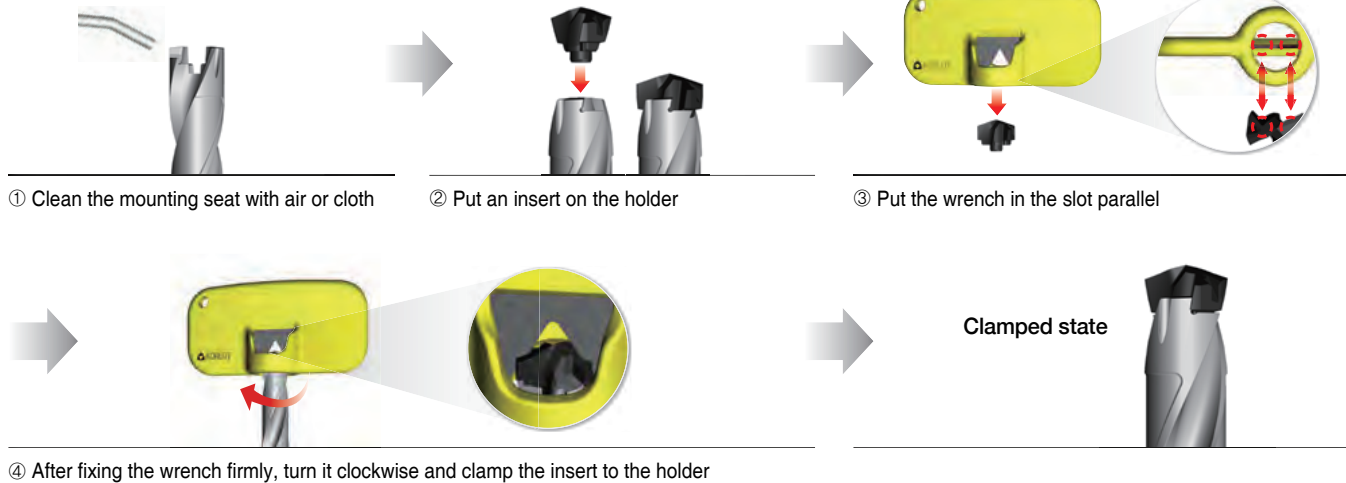
## Applicable industries



## How to clamp insert

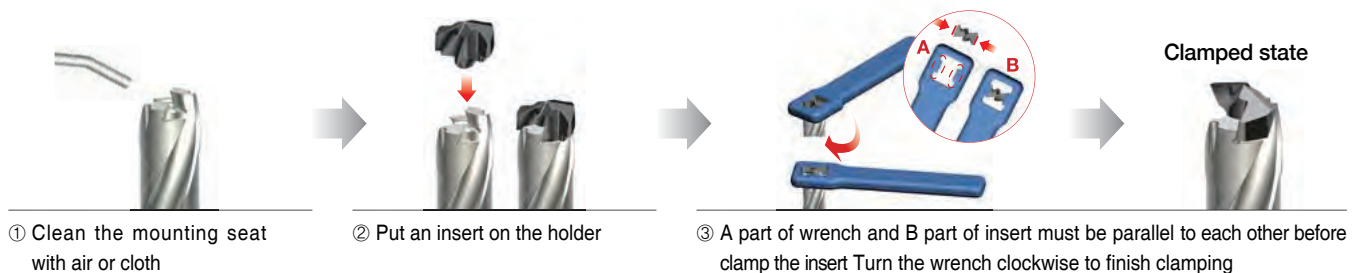
### Using the improved wrench

- Using the insert with slot on the top (Use the improved inserts only)



### Using the existing wrench

- Using any inserts (Use both existing inserts and improved inserts) ▶ Use only the improved wrench later





# D Technical Information for TPDC Plus Drill

## Recommended cutting conditions (XP)

### [3D Drilling]

Workpiece			Grade	vc (m/min)	Aspect ratio (L/D) = 3D Feed rate (mm/rev) per drill dia. (mm)	
ISO	Workpiece	HB			Ø8.00~Ø9.99	Ø10.00~Ø11.99
<b>P</b> Carbon steel	Low carbon steel	80~120	PC325U	110(80~140)	0.12~0.22	0.15~0.28
	High carbon steel	180~280	PC325U	90(70~110)		
<b>P</b> Alloy steel	Low alloy steel	140~260	PC325U	90(70~110)	0.12~0.25	0.14~0.28
	Low alloy heat-treated steel	200~400	PC325U	70(50~90)		
	High alloy steel	260~320	PC325U	70(50~90)	0.12~0.20	0.12~0.22
	High alloy heat-treated steel	300~450	PC325U	60(40~80)		
<b>K</b> Cast iron	Gray cast iron	150~230	PC325U	125(90~160)	0.15~0.30	0.20~0.35
	Ductile cast iron	160~260	PC325U	110(80~140)		

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

### [5D Drilling]

Workpiece			Grade	vc (m/min)	Aspect ratio (L/D) = 5D Feed rate (mm/rev) per drill dia. (mm)	
ISO	Workpiece	HB			Ø8.00~Ø9.99	Ø10.00~Ø11.99
<b>P</b> Carbon steel	Low carbon steel	80~120	PC325U	110(80~140)	0.12~0.22	0.15~0.28
	High carbon steel	180~280	PC325U	90(70~110)		
<b>P</b> Alloy steel	Low alloy steel	140~260	PC325U	90(70~110)	0.12~0.25	0.14~0.28
	Low alloy heat-treated steel	200~400	PC325U	70(50~90)		
	High alloy steel	260~320	PC325U	70(50~90)	0.12~0.20	0.12~0.22
	High alloy heat-treated steel	300~450	PC325U	60(40~80)		
<b>K</b> Cast iron	Gray cast iron	150~230	PC325U	125(90~160)	0.15~0.30	0.20~0.35
	Ductile cast iron	160~260	PC325U	110(80~140)		

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

### [8D Drilling]

Workpiece			Grade	vc (m/min)	Aspect ratio (L/D) = 8D Feed rate (mm/rev) per drill dia. (mm)	
ISO	Workpiece	HB			Ø8.00~Ø9.99	Ø10.00~Ø11.99
<b>P</b> Carbon steel	Low carbon steel	80~120	PC325U	100(70~130)	0.10~0.20	0.12~0.25
	High carbon steel	180~280	PC325U	80(60~100)		
<b>P</b> Alloy steel	Low alloy steel	140~260	PC325U	80(60~100)	0.10~0.22	0.12~0.25
	Low alloy heat-treated steel	200~400	PC325U	60(40~80)		
	High alloy steel	260~320	PC325U	60(40~80)	0.10~0.17	0.10~0.20
	High alloy heat-treated steel	300~450	PC325U	50(30~70)		
<b>K</b> Cast iron	Gray cast iron	150~230	PC325U	115(80~150)	0.12~0.27	0.17~0.32
	Ductile cast iron	160~260	PC325U	100(70~130)		

※ In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

※ In case of 8D drilling, please use a Pilot Drill

**Recommended cutting conditions (CP/CM/CN)**
**[1.5D/3D Drilling]**

Workpiece			Insert	Grade	vc (m/min)	Aspect ratio (L/D) = 1.5D, 3D Feed rate (mm/rev) per drill dia. (mm)		
ISO	Workpiece	HB				Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99
<b>P</b> Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	120(90~140)	0.25~0.35	0.30~0.40	0.35~0.45
	High carbon steel	180~280	CP	PC5335 PC330P	110(80~130)	0.25~0.35	0.30~0.40	0.30~0.45
<b>P</b> Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	120(90~140)	0.28~0.40	0.33~0.43	0.38~0.48
	Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	80(60~100)	0.28~0.40	0.33~0.43	0.30~0.48
	High alloy steel	260~320	CP	PC5335 PC5300	75(60~90)	0.20~0.35	0.22~0.40	0.25~0.45
	High alloy heat-treated steel	300~450	CP	PC5335 PC5300	65(50~80)	0.20~0.35	0.22~0.40	0.22~0.45
<b>M</b> Stainless steel	Austenitic	135~275	CM	PC330N	65(50~80)	0.05~0.15	0.10~0.20	0.15~0.25
	Ferritic, martensitic	135~275	CM	PC330N	75(60~90)	0.10~0.20	0.15~0.30	0.20~0.35
<b>K</b> Cast	Gray cast iron	150~230	CP	PC5335 PC5300	130(90~140)	0.35~0.45	0.40~0.50	0.45~0.55
	Ductile cast iron	160~260	CP	PC5335 PC5300	120(80~130)	0.30~0.40	0.30~0.45	0.40~0.50
<b>N</b> Non-ferrous metal	Aluminum	30~150	CN	H01	200(120~220)	0.35~0.45	0.40~0.50	0.45~0.55
	Copper alloy	150~160	CN	H01	200(120~220)	0.35~0.45	0.40~0.50	0.45~0.55

※ In interrupted machining, reduce the feed to 0.1-0.15 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 (m/min)	Aspect ratio (L/D) = 5D Feed rate (mm/rev) per drill dia. (mm)		
ISO	Workpiece	HB				Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99
<b>P</b> Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	110(80~140)	0.15~0.30	0.20~0.35	0.25~0.40
	High carbon steel	180~280	CP	PC5335 PC330P	100(70~130)	0.15~0.30	0.20~0.35	0.25~0.40
<b>P</b> Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	110(80~140)	0.18~0.35	0.23~0.38	0.28~0.43
	Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	75(50~100)	0.18~0.35	0.23~0.38	0.28~0.43
	High alloy steel	260~320	CP	PC5335 PC5300	70(50~90)	0.18~0.30	0.20~0.35	0.25~0.40
	High alloy heat-treated steel	300~450	CP	PC5335 PC5300	60(40~80)	0.18~0.30	0.20~0.35	0.22~0.40
<b>M</b> Stainless steel	Austenitic	135~275	CM	PC330N	60(40~80)	0.05~0.15	0.10~0.20	0.15~0.25
	Ferritic, martensitic	135~275	CM	PC330N	70(50~90)	0.10~0.20	0.15~0.30	0.20~0.35
<b>K</b> Cast	Gray cast iron	150~230	CP	PC5335 PC5300	120(80~140)	0.25~0.40	0.30~0.45	0.35~0.50
	Ductile cast iron	160~260	CP	PC5335 PC5300	110(70~130)	0.20~0.35	0.25~0.40	0.30~0.45
<b>N</b> Non-ferrous metal	Aluminum	30~150	CN	H01	200(90~220)	0.35~0.45	0.40~0.50	0.45~0.55
	Copper alloy	150~160	CN	H01	200(90~220)	0.35~0.45	0.40~0.50	0.45~0.55

※ In interrupted machining, reduce the feed to 0.1-0.15 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

## Recommended cutting conditions (CP/CM/CN)

### [8D Drilling]

Workpiece			Insert	Grade	vc (m/min)	Aspect ratio (L/D) = 8D Feed rate (mm/rev) per drill dia. (mm)		
ISO	Workpiece	HB				Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99
<b>P</b> Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	100(70~130)	0.12~0.25	0.17~0.30	0.22~0.35
	High carbon steel	180~280	CP	PC5335 PC330P	90(60~120)	0.12~0.25	0.17~0.30	0.22~0.35
<b>P</b> Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	100(70~130)	0.15~0.30	0.20~0.33	0.25~0.38
	Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	65(40~90)	0.15~0.30	0.20~0.33	0.25~0.38
	High alloy steel	260~320	CP	PC5335 PC5300	60(40~80)	0.15~0.25	0.17~0.30	0.22~0.35
	High alloy heat-treated steel	300~450	CP	PC5335 PC5300	50(30~70)	0.15~0.25	0.17~0.30	0.22~0.35
<b>M</b> Stainless steel	Austenitic	135~275	CM	PC330N	50(30~70)	0.05~0.10	0.05~0.15	0.10~0.20
	Ferritic, martensitic	135~275	CM	PC330N	60(40~80)	0.05~0.15	0.10~0.25	0.15~0.30
<b>K</b> Cast	Gray cast iron	150~230	CP	PC5335 PC5300	110(70~130)	0.22~0.35	0.27~0.40	0.32~0.45
	Ductile cast iron	160~260	CP	PC5335 PC5300	100(60~120)	0.17~0.30	0.22~0.35	0.27~0.40
<b>N</b> Non-ferrous metal	Aluminum	30~150	CN	H01	190(80~200)	0.30~0.40	0.35~0.45	0.40~0.50
	Copper alloy	150~160	CN	H01	190(80~200)	0.30~0.40	0.35~0.45	0.40~0.50

※ In interrupted machining, reduce the feed to 0.1-0.15 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 (m/min)	Aspect ratio (L/D) =10D, 12D Feed rate (mm/rev) per drill dia. (mm)		
ISO	Workpiece	HB				Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99
<b>P</b> Carbon steel	Low carbon steel	80~120	CP	PC5335 PC330P	90(60~120)	0.10~0.20	0.15~0.25	0.20~0.30
	High carbon steel	180~280	CP	PC5335 PC330P	80(50~110)	0.10~0.20	0.15~0.25	0.20~0.30
<b>P</b> Alloy steel	Low alloy steel	140~260	CP	PC5335 PC5300	90(60~120)	0.13~0.25	0.18~0.28	0.23~0.33
	Low alloy heat-treated steel	200~400	CP	PC5335 PC5300	55(40~80)	0.13~0.30	0.18~0.28	0.23~0.33
	High alloy steel	260~320	CP	PC5335 PC5300	50(40~70)	0.13~0.25	0.15~0.25	0.20~0.30
	High alloy heat-treated steel	300~450	CP	PC5335 PC5300	40(30~60)	0.13~0.25	0.15~0.25	0.20~0.30
<b>M</b> Stainless steel	Austenitic	135~275	CM	PC330N	50(30~60)	0.05~0.10	0.05~0.15	0.10~0.20
	Ferritic, martensitic	135~275	CM	PC330N	60(40~70)	0.05~0.15	0.10~0.25	0.15~0.30
<b>K</b> Cast	Gray cast iron	150~230	CP	PC5335 PC5300	100(60~120)	0.20~0.30	0.25~0.35	0.30~0.40
	Ductile cast iron	160~260	CP	PC5335 PC5300	90(50~110)	0.15~0.25	0.20~0.30	0.25~0.35
<b>N</b> Non-ferrous metal	Aluminum	30~150	CN	H01	180(70~190)	0.28~0.35	0.33~0.40	0.38~0.45
	Copper alloy	150~160	CN	H01	180(70~190)	0.28~0.35	0.33~0.40	0.38~0.45

※ In interrupted machining, reduce the feed to 0.1-0.15 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

## How to drill a deep hole (10D/12D)

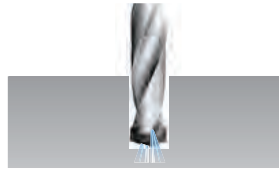
### Using a pilot drill (recommended)

#### 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

## Recommended cutting conditions (CP-FC)

Workpiece			Grade	vc (m/min)	Aspect ratio (L/D) = 1.5D, 3D, 5D			
					Feed rate (mm/rev) per drill dia. (mm)			
ISO	Workpiece	HB			Ø12.00-Ø17.99	Ø18.00-Ø25.99	Ø26.00-Ø30.99	
<b>P</b>	Carbon steel	Low carbon steel (SM10C, SM20C etc)	80-120	PC5335	90(70-110)	0.18-0.28	0.2-0.3	0.23-0.33
		High carbon steel (SM45C, SM50C etc)	180-280		80(60-100)	0.18-0.28	0.2-0.3	0.23-0.33
	Alloy steel	Low alloy steel (SCM420, SCM440 etc)	140-260		90(70-110)	0.18-0.28	0.2-0.3	0.23-0.33
		High alloy steel (SCM435, SCM445 etc)	260-320		70(50-90)	0.18-0.28	0.2-0.3	0.23-0.33

Machining	Flat surface drilling	Angled surface drilling	Curved surface drilling	Plunging	Boring
Pic.					
1.5D/3D	○	○	○	○	○
5D	○	×	×	×	×

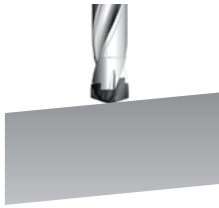
※ Please refer to the precaution in drilling in case of angled surface drilling, curved surface drilling, plunging and boring

# D Technical Information for TPDC Plus Drill

## Precaution in drilling

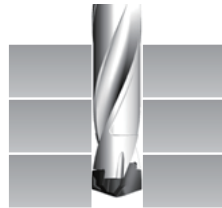
### TPDC-CP/CM/CN

#### Angled surface drilling



- The approach angle between drill and the workpiece at the beginning and the end should be less than  $6^\circ$
- Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface

#### Stacked plates drilling



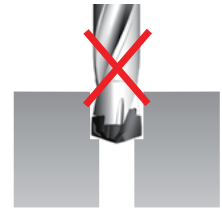
- Gap between the plates could make wrong chip evacuation causing fracture of the drill
- Place stacked plates without any gap between each

#### Plunging



- Irregular cutting resistance in plunging could cause fracture and deformation of the drill

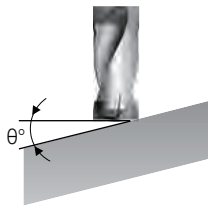
#### Boring



- Boring is not recommended due to wear and chipping in the corner of the insert

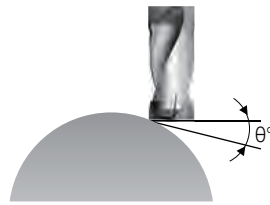
### TPDC-CP-FC

#### Angled surface drilling



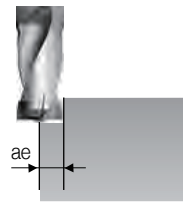
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface (Recommended only in case of  $\theta$  is less than  $10^\circ$ )

#### Curved surface drilling



- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface (In case,  $\theta$  is over  $30^\circ$ , 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

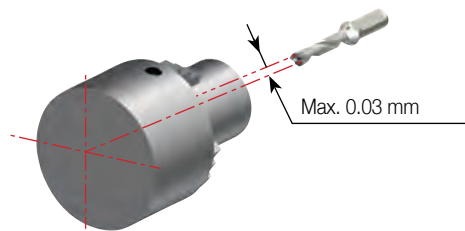
#### Boring



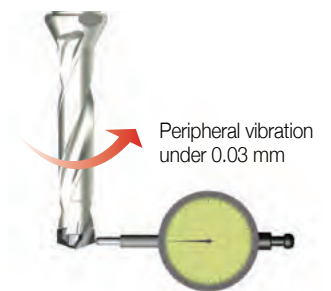
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of boring
- Start with 2 mm stepping before boring to prevent long chip

## 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. 0.03 mm)
- Condition of supplying coolant (pressure, flow, concentration)
- Chip evacuation



Setting of the horizontal equipment



Setting of the vertical equipment

## Supply of coolant

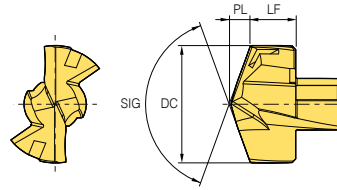
- Supply enough coolant to the beginning of the hole
- Minimum pressure of oil coolant: 5 bar
- Minimum flow of coolant: 5 l/min




Available insert (TPDX)



XP




Designation	Coated	DC	LF	PL	SIG	Holder	Wrench 
	PC325U						
TPD	0800XP	●	8	3.3	1.22	TPDX□D-08012-□	TPDC -W0811
	0810XP	●	8.1	3.3	1.24		
	0820XP	●	8.2	3.3	1.25		
	0830XP	●	8.3	3.2	1.27		
	0840XP	●	8.4	3.2	1.28		
	0850XP	●	8.5	3.2	1.3	TPDX□D-08512-□	
	0860XP	●	8.6	3.2	1.31		
	0870XP	●	8.7	3.2	1.33		
	0880XP	●	8.8	3.2	1.35		
	0890XP	●	8.9	3.1	1.36		
	0900XP	●	9	3.6	1.38	TPDX□D-09012-□	
	0910XP	●	9.1	3.6	1.39		
	0920XP	●	9.2	3.6	1.41		
	0930XP	●	9.3	3.6	1.42		
	0940XP	●	9.4	3.6	1.44		
	0950XP	●	9.5	3.6	1.45	TPDX□D-09512-□	
	0960XP	●	9.6	3.5	1.47		
	0970XP	●	9.7	3.5	1.48		
	0980XP	●	9.8	3.5	1.5		
	0990XP	●	9.9	3.5	1.51		
	1000XP	●	10	4.0	1.53	TPDX□D-10016-□	
	1010XP	●	10.1	4.0	1.54		
	1020XP	●	10.2	3.9	1.56		
	1030XP	●	10.3	3.9	1.57		
	1040XP	●	10.4	3.9	1.59		
	1050XP	●	10.5	3.9	1.61	TPDX□D-10516-□	
	1060XP	●	10.6	3.9	1.62		
	1070XP	●	10.7	3.9	1.64		
	1080XP	●	10.8	3.9	1.65		
	1090XP	●	10.9	3.8	1.67		
	1100XP	●	11	4.3	1.68	TPDX□D-11016-□	
	1110XP	●	11.1	4.3	1.7		
	1120XP	●	11.2	4.3	1.71		
1130XP	●	11.3	4.3	1.73			
1140XP	●	11.4	4.3	1.74			
1150XP	●	11.5	4.2	1.76	TPDX□D-11516-□		
1160XP	●	11.6	4.2	1.77			
1170XP	●	11.7	4.2	1.79			
1180XP	●	11.8	4.2	1.8			
1190XP	●	11.9	4.2	1.82			

Applicable holders D46

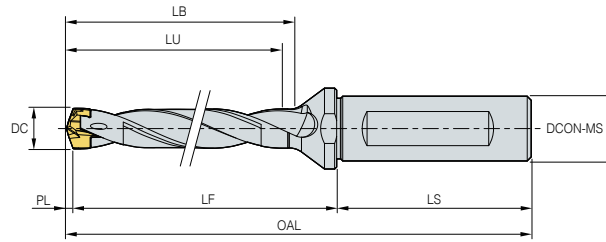
\* We can provide if you order exact machining specification

● : Stock Item

• Parts (applicable wrench)

Picture	Designation	Drill diameter ØD (mm)	Torque (N•m)
	TPDC-W0811	8.00-11.99	0.7-1.5

## TPDX(3D/5D/8D)



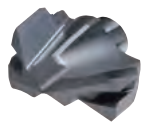
(mm)

	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert
TPDX	3D-08012-24	●	8	12	25.22	35.98	29.22	45	82.2	TPD0800XP-0849XP
	3D-08512-26	●	8.5	12	26.80	37.80	31.05	45	84.1	TPD0850XP-0899XP
	3D-09012-27	●	9	12	28.38	39.52	32.88	45	85.9	TPD0900XP-0949XP
	3D-09512-29	●	9.5	12	29.95	41.25	34.70	45	87.7	TPD0950XP-0999XP
	3D-10016-30	●	10	16	31.53	45.07	36.53	48	94.6	TPD1000XP-1049XP
	3D-10516-32	●	10.5	16	33.11	46.89	38.36	48	96.5	TPD1050XP-1099XP
	3D-11016-33	●	11	16	34.68	48.52	40.18	48	98.2	TPD1100XP-1149XP
	3D-11516-35	●	11.5	16	36.26	50.34	42.01	48	100.1	TPD1150XP-1199XP
	5D-08012-40	●	8	12	41.22	51.98	45.22	45	98.2	TPD0800XP-0849XP
	5D-08512-43	●	8.5	12	43.80	54.80	48.05	45	101.1	TPD0850XP-0899XP
	5D-09012-45	●	9	12	46.38	57.52	50.88	45	103.9	TPD0900XP-0949XP
	5D-09512-48	●	9.5	12	48.95	60.25	53.70	45	106.7	TPD0950XP-0999XP
	5D-10016-50	●	10	16	51.53	65.07	56.53	48	114.6	TPD1000XP-1049XP
	5D-10516-53	●	10.5	16	54.11	67.89	59.36	48	117.5	TPD1050XP-1099XP
	5D-11016-55	●	11	16	56.68	70.52	62.18	48	120.2	TPD1100XP-1149XP
	5D-11516-58	●	11.5	16	59.26	73.34	65.01	48	123.1	TPD1150XP-1199XP
	8D-08012-64	●	8	12	65.22	75.98	69.22	45	122.2	TPD0800XP-0849XP
	8D-08512-68	●	8.5	12	69.30	80.30	73.55	45	126.6	TPD0850XP-0899XP
	8D-09012-72	●	9	12	73.38	84.52	77.88	45	130.9	TPD0900XP-0949XP
	8D-09512-76	●	9.5	12	77.45	88.75	82.20	45	135.2	TPD0950XP-0999XP
8D-10016-80	●	10	16	81.53	95.07	86.53	48	144.6	TPD1000XP-1049XP	
8D-10516-84	●	10.5	16	85.61	99.39	90.86	48	149.0	TPD1050XP-1099XP	
8D-11016-88	●	11	16	89.68	103.52	95.18	48	153.2	TPD1100XP-1149XP	
8D-11516-92	●	11.5	16	93.76	107.84	99.51	48	157.6	TPD1150XP-1199XP	

Applicable holders **D45**

※ We can provide if you order exact machining specification. Ex) Ø10 and 60 mm depth of cut → TPDX6D-10016-60

Available insert (TPDC)



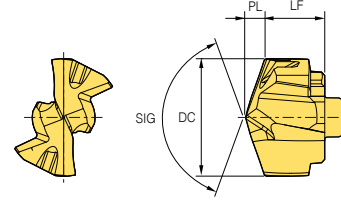
CP



CM



CN



P type (CP)		M type (CM)		N type (CN)		DC	LF	PL	SIG	Holder	Wrench	
Designation	Coated PC5335	Designation	Coated PC330N	Designation	Uncoated H01							
TPD 1200CP	●	TPD 1200CM	●	TPD 1200CN		12	6.2	1.89	140	TPDC□D-12016-□	TPDC-W1216	
1220CP	●	1220CM	●	1220CN		12.2	6.2	1.92	140			
1250CP	●	1250CM	●	1250CN		12.5	6.1	1.97	140			TPDC□D-12516-□
1260CP	●	1260CM	●	1260CN		12.6	6.1	1.99	140			
1300CP	●	1300CM	●	1300CN		13	6.8	2.05	140			TPDC□D-13016-□
1350CP	●	1350CM	●	1350CN		13.5	6.7	2.13	140			
1400CP	●	1400CM	●	1400CN		14	7.3	2.21	140			TPDC□D-14016-□
1420CP	●	1420CM	●	1420CN		14.2	7.3	2.24	140			
1430CP	●	1430CM	●	1430CN		14.3	7.3	2.25	140			TPDC□D-14516-□
1450CP	●	1450CM	●	1450CN		14.5	7.2	2.29	140			
1500CP	●	1500CM	●	1500CN		15	7.7	2.36	140	TPDC□D-15020-□		
1520CP	●	1520CM	●	1520CN		15.2	7.7	2.4	140			
1550CP	●	1550CM	●	1550CN		15.5	7.7	2.44	140	TPDC□D-16020-□		
1600CP	●	1600CM	●	1600CN		16	8.3	2.52	140			
1630CP	●	1630CM	●	1630CN		16.3	8.2	2.57	140			
1650CP	●	1650CM	●	1650CN		16.5	8.2	2.6	140			
1670CP	●	1670CM	●	1670CN		16.7	8.2	2.63	140			
1690CP	●	1690CM	●	1690CN		16.9	8.1	2.66	140			
1700CP	●	1700CM	●	1700CN		17	8.8	2.68	140			
1750CP	●	1750CM	●	1750CN		17.5	8.7	2.76	140		TPDC□D-17020-□	
1770CP	●	1770CM	●	1770CN		17.7	8.7	2.79	140			
1800CP	●	1800CM	●	1800CN		18	9.4	2.84	140		TPDC□D-18025-□	
1810CP	●	1810CM	●	1810CN		18.1	9.4	2.85	140			
1850CP	●	1850CM	●	1850CN		18.5	9.3	2.92	140			
1860CP	●	1860CM	●	1860CN		18.6	9.3	2.93	140			
1870CP	●	1870CM	●	1870CN		18.7	9.3	2.95	140			
1900CP	●	1900CM	●	1900CN		19	9.8	3	140	TPDC□D-19025-□		
1920CP	●	1920CM	●	1920CN		19.2	9.8	3.03	140			
1930CP	●	1930CM	●	1930CN		19.3	12.8	3.04	140			
1950CP	●	1950CM	●	1950CN		19.5	9.7	3.07	140			
1970CP	●	1970CM	●	1970CN		19.7	9.7	3.11	140			
2000CP	●	2000CM	●	2000CN		20	10.4	3.15	140	TPDC□D-20025-□		
2050CP	●	2050CM	●	2050CN		20.5	10.3	3.23	140			
2100CP	●	2100CM	●	2100CN		21	10.9	3.31	140	TPDC□D-21025-□		
2150CP	●	2150CM	●	2150CN		21.5	10.8	3.39	140			
2200CP	●	2200CM	●	2200CN		22	11.4	3.52	140	TPDC□D-22025-□		
2250CP	●	2250CM	●	2250CN		22.5	11.3	3.6	140			
2260CP	●	2260CM	●	2260CN		22.6	11.3	3.62	140			
2270CP	●	2270CM	●	2270CN		22.7	11.3	3.63	140			
2300CP	●	2300CM	●	2300CN		23	11.8	3.68	140			
2350CP	●	2350CM	●	2350CN		23.5	11.7	3.76	140			
2400CP	●	2400CM	●	2400CN		24	12.4	3.84	140		TPDC□D-24032-□	
2450CP	●	2450CM	●	2450CN		24.5	12.3	3.92	140			
2500CP	●	2500CM	●	2500CN		25	12.9	4	140		TPDC□D-25032-□	
2530CP	●	2530CM	●	2530CN		25.3	12.9	4.05	140			
2550CP	●	2550CM	●	2550CN		25.5	12.8	4.08	140			
2580CP	●	2580CM	●	2580CN		25.8	12.8	4.13	140			
2590CP	●	2590CM	●	2590CN		25.9	12.8	4.15	140	TPDC□D-26032-□		
2600CP	●	2600CM	●	2600CN		26	13.4	4.16	140			
2650CP	●	2650CM	●	2650CN		26.5	13.4	4.24	140	TPDC□D-27032-□		
2700CP	●	2700CM	●	2700CN		27	13.9	4.32	140			
2750CP	●	2750CM	●	2750CN		27.5	13.8	4.4	140			
2800CP	●	2800CM	●	2800CN		28	14.4	4.48	140			
2850CP	●	2850CM	●	2850CN		28.5	14.3	4.56	140			
2900CP	●	2900CM	●	2900CN		29	15	4.64	140			
2950CP	●	2950CM	●	2950CN		29.5	14.9	4.72	140		TPDC□D-28032-□	
3000CP	●	3000CM	●	3000CN		30	15.5	4.8	140			
3050CP	●	3050CM	●	3050CN		30.5	15.4	4.88	140		TPDC□D-29032-□	

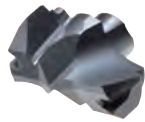
Applicable holders D49 ~ D51 ※ We can provide if you order exact machining specification Ex) Ø15.9 and carbon steel machining → TPDC1590CP/PC330P ● : Stock Item

Parts (applicable wrench)

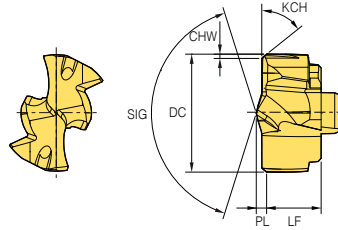
Picture	Designation	Drill diameter ØD (mm)	Torque (N•m)
	TPDC-W1216	12.00-16.99	2.0-3.0
	TPDC-W1721	17.00-21.99	2.0-4.0
	TPDC-W2225	22.00-25.99	3.0-4.0
	TPDC-W2630	26.00-30.99	4.0-5.0




## Available insert (TPDC)



FC




(mm)

Designation	Coated	DC	LF	PL	SIG	KCH	CHW	Holder	Chamfer (mm)		Wrench 	
	PC5335								a	a		
TPD	1200CP-FC	•	12	5.7	1.05	145	50	0.38	TPDC□D-12016-□	0.38	0.45	TPDC-W1216
	1220CP-FC		12.2	5.7	1.05	145	50	0.38				
	1250CP-FC		12.5	5.7	1.05	145	50	0.38				
	1260CP-FC		12.6	5.7	1.05	145	50	0.38				
	1300CP-FC	•	13	6.4	1.05	145	50	0.38				
	1350CP-FC		13.5	6.4	1.05	145	50	0.38				
	1400CP-FC	•	14	6.9	1.15	145	50	0.38				
	1420CP-FC		14.2	6.9	1.15	145	50	0.38				
	1430CP-FC		14.3	6.9	1.15	145	50	0.38				
	1450CP-FC		14.5	6.9	1.15	145	50	0.38				
	1500CP-FC	•	15	7.3	1.15	145	50	0.38				
	1550CP-FC		15.5	7.3	1.15	145	50	0.38				
	1600CP-FC	•	16	8	1.25	145	50	0.38				
	1630CP-FC		16.3	8	1.25	145	50	0.38				
	1650CP-FC		16.5	8	1.25	145	50	0.38				
	1670CP-FC		16.7	8	1.25	145	50	0.38				
TPD	1700CP-FC	•	17	8.2	1.35	145	50	0.46	TPDC□D-17020-□	0.46	0.55	TPDC-W1721
	1750CP-FC		17.5	8.2	1.35	145	50	0.46				
	1770CP-FC		17.7	8.2	1.35	145	50	0.46				
	1800CP-FC	•	18	8.8	1.45	145	50	0.46				
	1810CP-FC		18.1	8.8	1.45	145	50	0.46				
	1850CP-FC		18.5	8.8	1.45	145	50	0.46				
	1860CP-FC		18.6	8.8	1.45	145	50	0.46				
	1870CP-FC		18.7	8.8	1.45	145	50	0.46				
	1900CP-FC	•	19	9.2	1.45	145	50	0.46				
	1920CP-FC		19.2	9.2	1.45	145	50	0.46				
	1950CP-FC		19.5	9.2	1.45	145	50	0.46				
	1970CP-FC		19.7	9.2	1.45	145	50	0.46				
	2000CP-FC	•	20	9.8	1.45	145	50	0.46				
	2050CP-FC		20.5	9.8	1.45	145	50	0.46				
	2100CP-FC	•	21	10	1.55	145	50	0.46				
	2150CP-FC		21.5	10	1.55	145	50	0.46				
TPD	2200CP-FC	•	22	11	1.55	145	50	0.46	TPDC□D-22025-□	0.46	0.55	TPDC-W2225
	2250CP-FC		22.5	11	1.55	145	50	0.46				
	2260CP-FC		22.6	11	1.55	145	50	0.46				
	2270CP-FC		22.7	11	1.55	145	50	0.46				
	2300CP-FC	•	23	11.4	1.65	145	50	0.46				
	2350CP-FC		23.5	11.4	1.65	145	50	0.46				
	2400CP-FC	•	24	12.2	1.65	145	50	0.46				
	2450CP-FC		24.5	12.2	1.65	145	50	0.46				
	2500CP-FC	•	25	12.5	1.75	145	50	0.46				
	2530CP-FC		25.3	12.5	1.75	145	50	0.46				
	2550CP-FC		25.5	12.5	1.75	145	50	0.46				
	2580CP-FC		25.8	12.5	1.75	145	50	0.46				
	2590CP-FC		25.9	12.5	1.75	145	50	0.46				
	2600CP-FC	•	26	13.1	1.85	145	50	0.55				
	2650CP-FC		26.5	13.1	1.85	145	50	0.55				
	2700CP-FC	•	27	13.4	1.95	145	50	0.55				
2750CP-FC		27.5	13.4	1.95	145	50	0.55					
TPD	2800CP-FC	•	28	13.8	1.95	145	50	0.55	TPDC□D-28032-□	0.54	0.65	TPDC-W2630
	2850CP-FC		28.5	13.8	1.95	145	50	0.55				
	2900CP-FC	•	29	14.4	2.05	145	50	0.55				
	2950CP-FC		29.5	14.4	2.05	145	50	0.55				
	3000CP-FC	•	30	15.1	2.05	145	50	0.55				
	3050CP-FC		30.5	15.1	2.05	145	50	0.55				

Applicable holders **D49 ~ D51** ※We can provide if you order exact machining specification Ex) Ø15.9 and carbon steel machining → TPDC1590CP-FC/PC5335 ●: Stock Item  
 ※ TPDC-CP-FC insert: impossible to be reground

### Parts (applicable wrench)

Picture	Designation	Drill diameter ØD (mm)	Torque (N•m)
	TPDC-W1216	12.00-16.99	2.0-3.0
	TPDC-W1721	17.00-21.99	2.0-4.0
	TPDC-W2225	22.00-25.99	3.0-4.0
	TPDC-W2630	26.00-30.99	4.0-5.0

# TPDC(1.5D/3D)

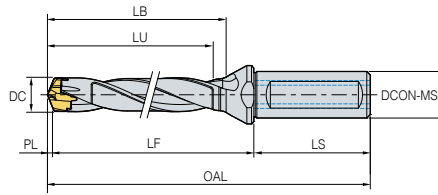


Fig. 1

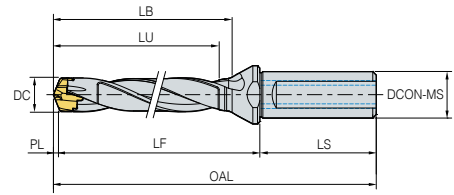


Fig. 2

(mm)											
	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Fig.
TPDC	1.5D-12016-18	●	12	16	19.89	35.01	25.90	48	84.9	TPD1200C□-1249C□	1
	1.5D-12516-19	●	12.5	16	20.72	35.93	26.90	48	85.9	TPD1250C□-1299C□	1
	1.5D-13016-20	●	13	16	21.55	37.05	28.10	48	87.1	TPD1300C□-1349C□	1
	1.5D-13516-20	●	13.5	16	22.38	37.97	29.10	48	88.1	TPD1350C□-1399C□	1
	1.5D-14016-21	●	14	16	23.21	40.99	32.20	48	93.2	TPD1400C□-1449C□	1
	1.5D-14516-22	●	14.5	16	24.04	41.91	33.20	48	94.2	TPD1450C□-1499C□	1
	1.5D-15020-23	●	15	20	24.86	43.04	32.30	50	95.4	TPD1500C□-1599C□	2
	1.5D-16020-24	●	16	20	26.52	45.08	34.50	50	97.6	TPD1600C□-1699C□	2
	1.5D-17020-26	●	17	20	28.18	47.02	36.60	50	99.7	TPD1700C□-1799C□	2
	1.5D-18025-27	●	18	25	29.84	51.06	38.80	56	109.9	TPD1800C□-1899C□	2
	1.5D-19025-28	●	19	25	31.50	53.00	40.90	56	112	TPD1900C□-1999C□	2
	1.5D-20025-30	●	20	25	33.15	55.05	43.10	56	114.2	TPD2000C□-2099C□	2
	1.5D-21025-31	●	21	25	34.81	57.09	45.30	56	116.4	TPD2100C□-2199C□	2
	1.5D-22025-33	●	22	25	35.84	59.66	47.40	56	118.5	TPD2200C□-2299C□	2
	1.5D-23025-34	●	23	25	37.47	61.73	49.60	56	120.7	TPD2300C□-2399C□	2
	1.5D-24032-36	●	24	32	39.10	66.70	51.70	60	129.8	TPD2400C□-2499C□	2
	1.5D-25032-37	●	25	32	41.50	68.00	53.90	60	132	TPD2500C□-2599C□	2
	1.5D-26032-39	●	26	32	43.16	70.04	56.10	60	134.2	TPD2600C□-2699C□	2
	1.5D-27032-40	●	27	32	44.82	71.98	58.20	60	136.3	TPD2700C□-2799C□	2
	1.5D-28032-42	●	28	32	46.48	73.92	60.30	60	138.4	TPD2800C□-2899C□	2
	1.5D-29032-43	●	29	32	48.14	76.06	62.60	60	140.7	TPD2900C□-2999C□	2
	1.5D-30032-45	●	30	32	49.80	78.00	64.70	60	142.8	TPD3000C□-3099C□	2
	3D-12016-36	●	12	16	37.89	49.00	39.90	48	98.9	TPD1200C□-1249C□	1
	3D-12516-38	●	12.5	16	39.47	50.90	41.90	48	100.9	TPD1250C□-1299C□	1
	3D-13016-39	●	13	16	41.05	53.10	44.10	48	103.1	TPD1300C□-1349C□	1
	3D-13516-41	●	13.5	16	42.63	54.00	45.10	48	104.1	TPD1350C□-1399C□	1
	3D-14016-42	●	14	16	44.21	56.00	47.20	48	106.2	TPD1400C□-1449C□	1
	3D-14516-44	●	14.5	16	45.79	56.90	48.20	48	107.2	TPD1450C□-1499C□	1
	3D-15020-45	●	15	20	47.36	61.00	50.40	50	113.4	TPD1500C□-1599C□	2
	3D-16020-48	●	16	20	50.52	64.00	53.50	50	116.5	TPD1600C□-1699C□	2
	3D-17020-51	●	17	20	53.68	67.00	56.70	50	119.7	TPD1700C□-1799C□	2
	3D-18025-54	●	18	25	56.84	73.10	60.90	56	131.9	TPD1800C□-1899C□	2
	3D-19025-57	●	19	25	60.00	76.00	64.00	56	135	TPD1900C□-1999C□	2
3D-20025-60	●	20	25	63.15	79.10	67.20	56	138.2	TPD2000C□-2099C□	2	
3D-21025-63	●	21	25	66.31	82.10	70.40	56	141.4	TPD2100C□-2199C□	2	
3D-22025-66	●	22	25	68.84	85.70	73.50	56	144.5	TPD2200C□-2299C□	2	
3D-23025-69	●	23	25	71.97	89.70	77.70	56	148.7	TPD2300C□-2399C□	2	
3D-24032-72	●	24	32	75.10	95.70	80.80	60	158.8	TPD2400C□-2499C□	2	
3D-25032-75	●	25	32	79.00	98.00	84.00	60	162	TPD2500C□-2599C□	2	
3D-26032-78	●	26	32	82.16	109.00	95.20	60	173.2	TPD2600C□-2699C□	2	
3D-27032-81	●	27	32	85.32	112.00	98.30	60	176.3	TPD2700C□-2799C□	2	
3D-28032-84	●	28	32	88.48	115.90	102.40	60	180.4	TPD2800C□-2899C□	2	
3D-29032-87	●	29	32	91.64	120.10	106.70	60	184.7	TPD2900C□-2999C□	2	
3D-30032-90	●	30	32	94.80	123.00	109.80	60	187.8	TPD3000C□-3099C□	2	

Applicable inserts **D47 ~ D48**

\* We can provide if you order exact machining specification. Ex) Ø15 and 60 mm depth of cut → TPDC4D-15020-60

## TPDC(5D/8D)

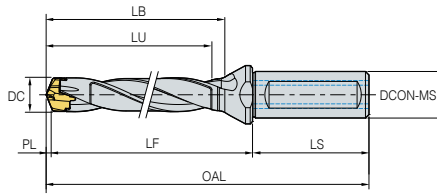


Fig. 1

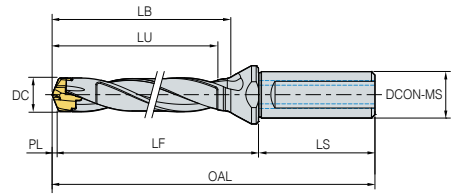


Fig. 2

(mm)

	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Fig.
TPDC	5D-12016-60	●	12	16	61.89	73.00	63.90	48	122.9	TPD1200C□-1249C□	1
	5D-12516-63	●	12.5	16	64.47	75.90	66.90	48	125.9	TPD1250C□-1299C□	1
	5D-13016-65	●	13	16	67.05	79.10	70.10	48	129.1	TPD1300C□-1349C□	1
	5D-13516-68	●	13.5	16	69.63	81.00	72.10	48	131.1	TPD1350C□-1399C□	1
	5D-14016-70	●	14	16	72.21	84.00	75.20	48	134.2	TPD1400C□-1449C□	1
	5D-14516-73	●	14.5	16	74.79	85.90	77.20	48	136.2	TPD1450C□-1499C□	1
	5D-15020-75	●	15	20	77.36	91.00	80.40	50	143.4	TPD1500C□-1599C□	2
	5D-16020-80	●	16	20	82.52	96.00	85.50	50	148.5	TPD1600C□-1699C□	2
	5D-17020-85	●	17	20	87.68	101.00	90.70	50	153.7	TPD1700C□-1799C□	2
	5D-18025-90	●	18	25	92.84	109.10	96.90	56	167.9	TPD1800C□-1899C□	2
	5D-19025-95	●	19	25	98.00	114.00	102.00	56	173	TPD1900C□-1999C□	2
	5D-20025-100	●	20	25	103.15	119.10	107.20	56	178.2	TPD2000C□-2099C□	2
	5D-21025-105	●	21	25	108.31	124.10	112.40	56	183.4	TPD2100C□-2199C□	2
	5D-22025-110	●	22	25	112.84	129.70	117.50	56	188.5	TPD2200C□-2299C□	2
	5D-23025-115	●	23	25	117.97	135.70	123.70	56	194.7	TPD2300C□-2399C□	2
	5D-24032-120	●	24	32	123.10	143.70	128.80	60	206.8	TPD2400C□-2499C□	2
	5D-25032-125	●	25	32	129.00	148.00	134.00	60	212	TPD2500C□-2599C□	2
	5D-26032-130	●	26	32	134.16	161.00	147.20	60	225.2	TPD2600C□-2699C□	2
	5D-27032-135	●	27	32	139.32	166.00	152.30	60	230.3	TPD2700C□-2799C□	2
	5D-28032-140	●	28	32	144.48	171.90	158.40	60	236.4	TPD2800C□-2899C□	2
	5D-29032-145	●	29	32	149.64	178.10	164.70	60	242.7	TPD2900C□-2999C□	2
	5D-30032-150	●	30	32	154.80	183.00	169.80	60	247.8	TPD3000C□-3099C□	2
	8D-12016-96	●	12	16	97.89	109.00	99.90	48	158.9	TPD1200C□-1249C□	1
	8D-12516-100	●	12.5	16	101.97	113.40	104.40	48	163.4	TPD1250C□-1299C□	1
	8D-13016-104	●	13	16	106.05	118.10	109.10	48	168.1	TPD1300C□-1349C□	1
	8D-13516-108	●	13.5	16	110.13	121.50	112.60	48	171.6	TPD1350C□-1399C□	1
	8D-14016-112	●	14	16	114.21	126.00	117.20	48	176.2	TPD1400C□-1449C□	1
	8D-14516-116	●	14.5	16	118.29	129.40	120.70	48	179.7	TPD1450C□-1499C□	1
	8D-15020-120	●	15	20	122.36	136.00	125.40	50	188.4	TPD1500C□-1599C□	2
	8D-16020-128	●	16	20	130.52	144.00	133.50	50	196.5	TPD1600C□-1699C□	2
	8D-17020-136	●	17	20	138.68	152.00	141.70	50	204.7	TPD1700C□-1799C□	2
	8D-18025-144	●	18	25	146.84	163.10	150.90	56	221.9	TPD1800C□-1899C□	2
	8D-19025-152	●	19	25	155.00	171.00	159.00	56	230	TPD1900C□-1999C□	2
8D-20025-160	●	20	25	163.15	179.10	167.20	56	238.2	TPD2000C□-2099C□	2	
8D-21025-168	●	21	25	171.31	187.10	175.40	56	246.4	TPD2100C□-2199C□	2	
8D-22025-176	●	22	25	178.84	195.70	183.50	56	254.5	TPD2200C□-2299C□	2	
8D-23025-184	●	23	25	186.97	204.70	192.70	56	263.7	TPD2300C□-2399C□	2	
8D-24032-192	●	24	32	195.10	215.70	200.80	60	278.8	TPD2400C□-2499C□	2	
8D-25032-200	●	25	32	204.00	223.00	209.00	60	287	TPD2500C□-2599C□	2	
8D-26032-208	●	26	32	212.16	239.00	224.20	60	303.2	TPD2600C□-2699C□	2	
8D-27032-216	●	27	32	220.32	247.00	231.30	60	311.3	TPD2700C□-2799C□	2	
8D-28032-224	●	28	32	228.48	255.90	239.40	60	320.4	TPD2800C□-2899C□	2	
8D-29032-232	●	29	32	236.64	265.10	247.70	60	329.7	TPD2900C□-2999C□	2	
8D-30032-240	●	30	32	244.80	273.00	254.80	60	337.8	TPD3000C□-3099C□	2	

※ Applicable inserts D47 ~ D48

※ We can provide if you order exact machining specification. Ex) Ø15 and 60 mm depth of cut → TPDC4D-15020-60

# TPDC(10D/12D)

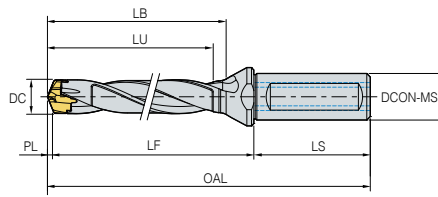


Fig. 1

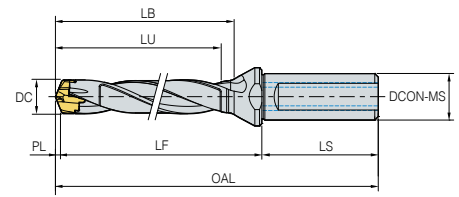


Fig. 2

(mm)											
	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert	Fig.
TPDC	10D-12016-120		12	16	121.89	137.01	127.90	48	186.9	TPD1200C□-1249C□	1
	10D-12516-125		12.5	16	126.97	141.90	132.90	48	191.9	TPD1250C□-1299C□	1
	10D-13016-130		13	16	132.05	147.10	138.10	48	197.1	TPD1300C□-1349C□	1
	10D-13516-135		13.5	16	137.13	153.00	144.10	48	203.1	TPD1350C□-1399C□	1
	10D-14016-140		14	16	142.21	160.00	151.20	48	210.2	TPD1400C□-1449C□	1
	10D-14516-145		14.5	16	147.29	164.90	156.20	48	215.2	TPD1450C□-1499C□	1
	10D-15020-150		15	20	152.36	171.00	151.90	50	223.4	TPD1500C□-1599C□	1
	10D-16020-160		16	20	162.52	181.10	156.90	50	233.6	TPD1600C□-1699C□	1
	10D-17020-170		17	20	172.68	191.00	162.10	50	243.7	TPD1700C□-1799C□	1
	10D-18025-180		18	25	182.84	204.10	168.10	56	262.9	TPD1800C□-1899C□	1
	10D-19025-190		19	25	193.00	215.00	175.20	56	274	TPD1900C□-1999C□	1
	10D-20025-200		20	25	203.15	225.10	180.20	56	284.2	TPD2000C□-2099C□	1
	10D-21025-210		21	25	213.31	235.10	160.40	56	294.4	TPD2100C□-2199C□	1
	10D-22025-220		22	25	222.84	246.70	170.60	56	305.5	TPD2200C□-2299C□	1
	10D-23025-230		23	25	232.97	257.70	180.70	56	316.7	TPD2300C□-2399C□	1
	10D-24032-240		24	32	243.10	270.70	191.90	60	333.8	TPD2400C□-2499C□	2
	10D-25032-250		25	32	254.00	280.00	203.00	60	344	TPD2500C□-2599C□	2
	10D-26032-260		26	32	264.16	291.00	213.20	60	355.2	TPD2600C□-2699C□	2
	10D-27032-270		27	32	274.32	302.00	223.40	60	366.3	TPD2700C□-2799C□	2
	10D-28032-280		28	32	284.48	311.90	234.50	60	376.4	TPD2800C□-2899C□	2
	10D-29032-290		29	32	294.64	322.10	245.70	60	386.7	TPD2900C□-2999C□	2
	10D-30032-300		30	32	304.80	333.00	255.80	60	397.8	TPD3000C□-3099C□	2
	12D-12016-144		12	16	145.89	161.00	266.00	48	210.9	TPD1200C□-1249C□	1
	12D-12516-150		12.5	16	151.97	165.90	277.20	48	215.9	TPD1250C□-1299C□	1
	12D-13016-156		13	16	158.05	171.10	288.30	48	221.1	TPD1300C□-1349C□	1
	12D-13516-162		13.5	16	164.13	177.00	298.40	48	227.1	TPD1350C□-1399C□	1
	12D-14016-168		14	16	170.21	184.00	308.70	48	234.2	TPD1400C□-1449C□	1
	12D-14516-174		14.5	16	176.29	188.90	319.80	48	239.2	TPD1450C□-1499C□	1
	12D-15020-180		15	20	182.36	196.00	185.40	50	248.4	TPD1500C□-1599C□	1
	12D-16020-192		16	20	194.52	213.10	202.60	50	265.6	TPD1600C□-1699C□	1
	12D-17020-204		17	20	206.68	225.00	214.70	50	277.7	TPD1700C□-1799C□	1
	12D-18025-216		18	25	218.84	240.10	227.90	56	298.9	TPD1800C□-1899C□	1
	12D-19025-228		19	25	231.00	253.00	241.00	56	312	TPD1900C□-1999C□	1
12D-20025-240		20	25	243.15	265.10	253.20	56	324.2	TPD2000C□-2099C□	1	
12D-21025-252		21	25	255.31	277.10	265.40	56	336.4	TPD2100C□-2199C□	1	
12D-22025-264		22	25	266.84	290.70	278.50	56	349.5	TPD2200C□-2299C□	1	
12D-23025-276		23	25	278.97	303.70	291.70	56	362.7	TPD2300C□-2399C□	1	
12D-24032-288		24	32	291.10	318.70	303.80	60	381.8	TPD2400C□-2499C□	2	
12D-25032-300		25	32	304.00	330.00	316.00	60	394	TPD2500C□-2599C□	2	
12D-26032-312		26	32	316.16	343.00	329.20	60	407.2	TPD2600C□-2699C□	2	
12D-27032-324		27	32	328.32	356.00	342.30	60	420.3	TPD2700C□-2799C□	2	
12D-28032-336		28	32	340.48	367.90	354.40	60	432.4	TPD2800C□-2899C□	2	
12D-29032-348		29	32	352.64	380.10	366.70	60	444.7	TPD2900C□-2999C□	2	
12D-30032-360		30	32	364.80	393.00	379.80	60	457.8	TPD3000C□-3099C□	2	

Applicable inserts **D47 ~ D48**

\* We can provide if you order exact machining specification. Ex) Ø15 and 60 mm depth of cut → TPDC4D-15020-60

# D Technical Information for TPDB Plus Drill

Highly precise and efficient top solid indexable drill

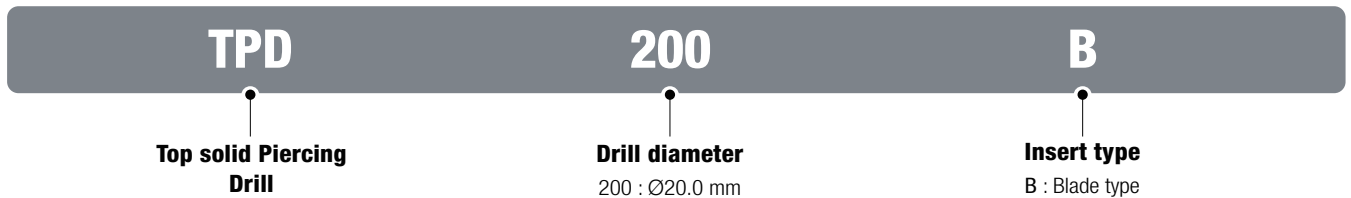
## TPDB Plus Drill Series

(TPDB [Standard], TPDB-DS [Medium/Large dia.], TPDB-H [H-Beam], TPDB-F [Flat])

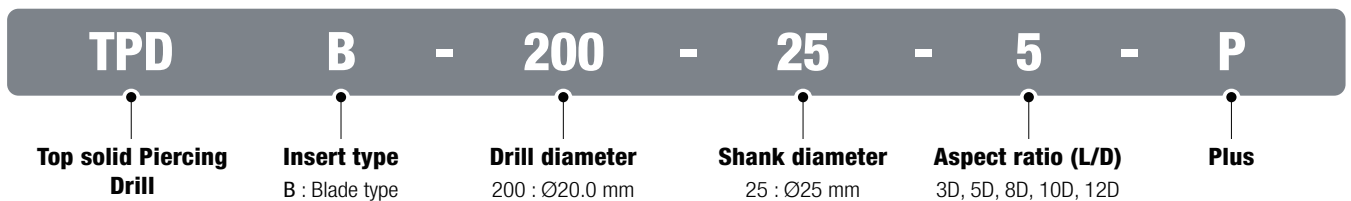
- **Highly precise clamping system** - Superior clamping precision with auto-centering system and highly precise grinding clamping parts
- **Screw on clamping system** - Easy to replace inserts
- **Sharp cutting edge** - Low cutting load and good chip control
- **Holder with excellent durability** - 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

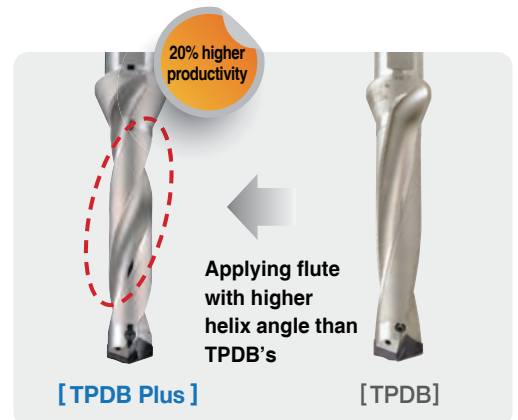
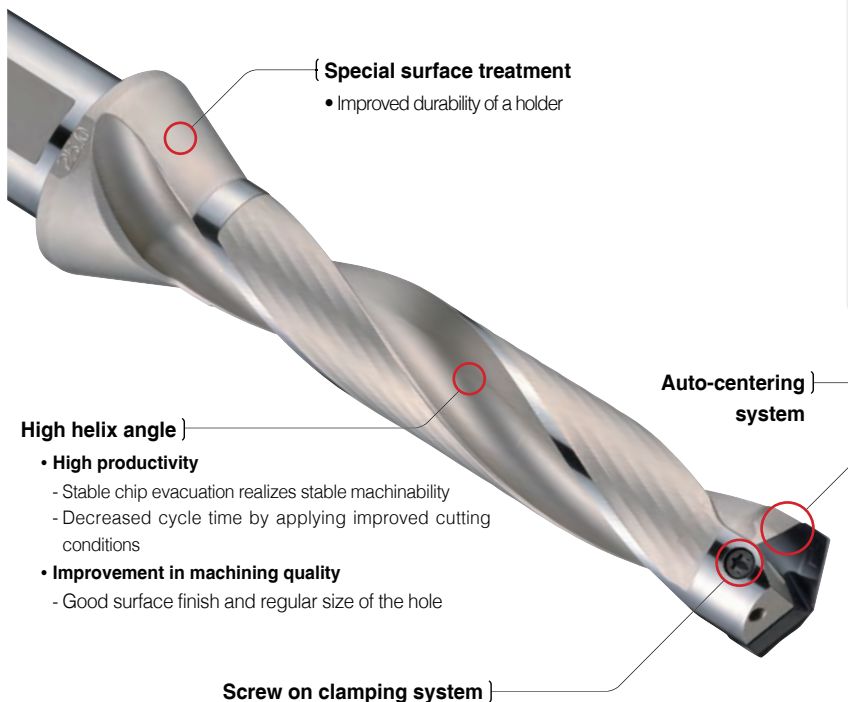
• Insert



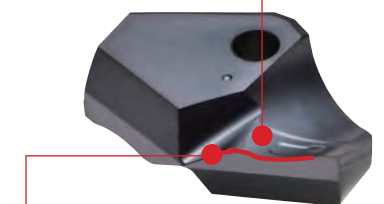
• Holder



### Features

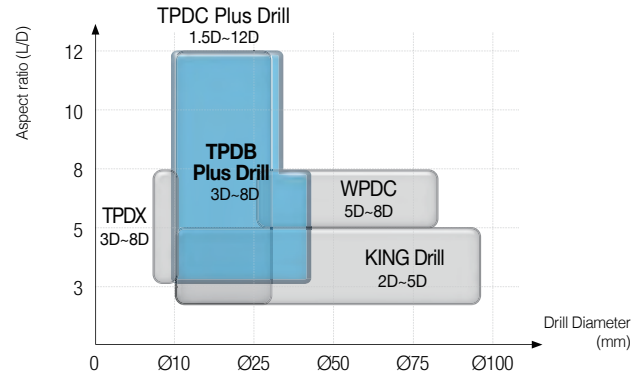
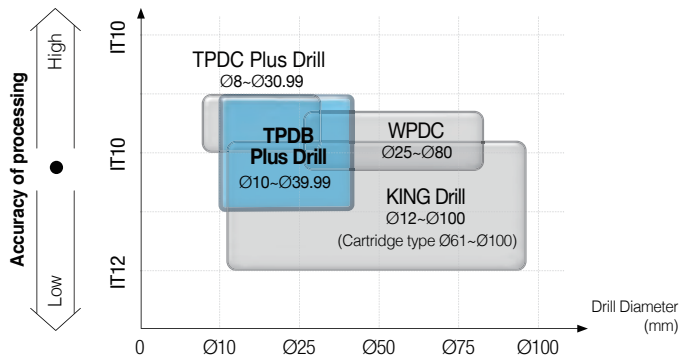


**Advanced chip control due to a chip breaker**



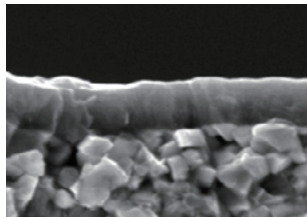
**Cutting edge with low cutting resistance**  
- Low cutting load and excellent chip control

## Application range



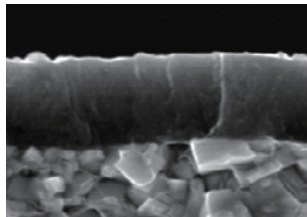
Tools		Application range			
		Drill Diameter (Ø)	Aspect ratio (L/D)	Tolerance of drill dia.	Workpiece
TPDB Plus Drill	TPDB	10.0 ~ 32.99 mm	3, 5, 8, 10, 12	h7	P, K
	TPDB-DS	33.0 ~ 39.99 mm	3, 5, 8		P, K
	TPDB-H	14.0 ~ 32.99 mm	3, 4, 5, 8		P
	TPDB-F	14.0 ~ 30.99 mm	1.5		P

## Grade features



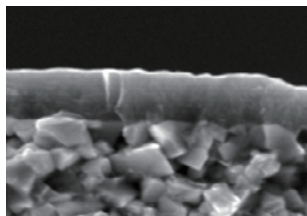
### PC5300

- Applying PVD coating with high hardness and stability in machining at high temperature
- Stable Drilling due to high cutting edge strength and excellent chipping resistance
- Optimal grade for Drilling alloy Steel and Cast iron



### PC5335

- Applying PVD coating with high toughness and excellent lubrication
- Coating layer highly adhering to substrate
- Optimal grade for general structural Carbon steel (FE360B, etc.) and machine structural Carbon steel (C45, etc.) machining

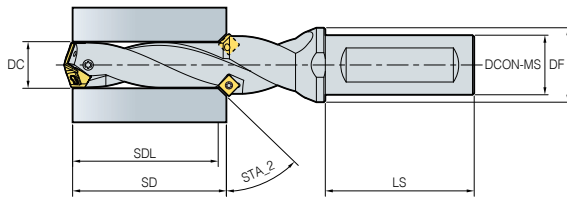
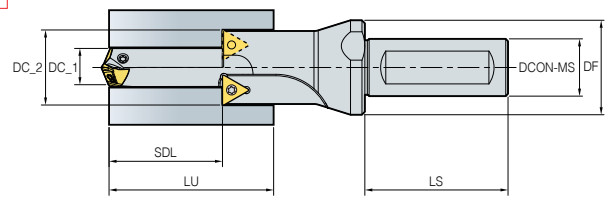
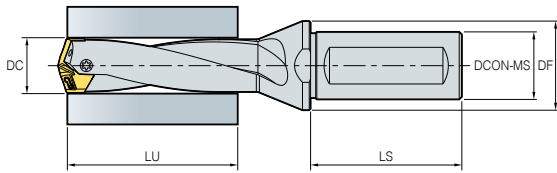
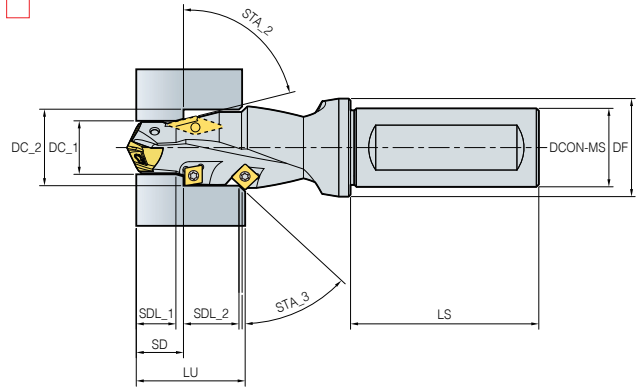
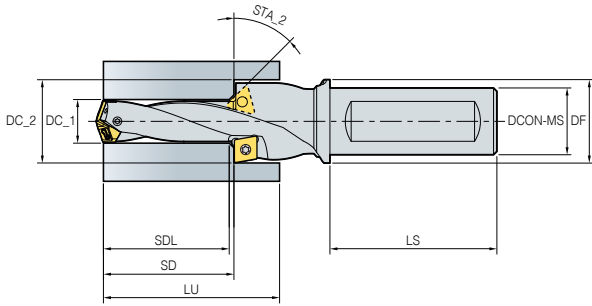


### PC330P

- Applying PVD coating with high surface finish and excellent lubrication
- Coating layer with excellent hardness at high temperature and oxidation resistance
- Optimal grade for welding structural Carbon steel (E355DD, etc.)

# D Technical Information for TPDB Plus Drill

## Special Drill Order Form



### Hole type

- Blind hole       Thru hole

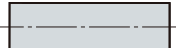
### Coolant type

- Interna       External

### Special note

- Currently using tool :
- Current cutting condition
  - n (rpm) or vc (m/min) :
  - vf (mm/min) or fn (mm/rev) :
  - Depth of cut, ap (mm) :
- Standard of measuring tool life :
- Currently using machine
  - Machining center :
  - General lathe :
  - CNC lathe :

### Types of shank

-  Plain type

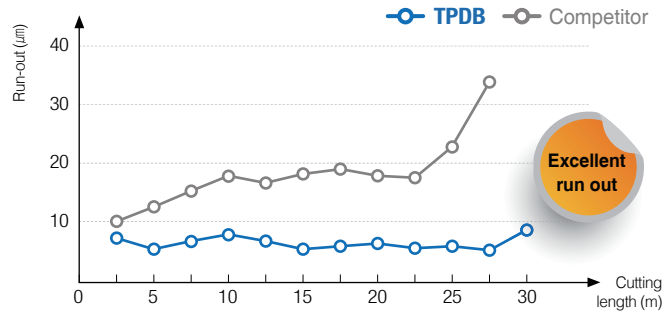
-  Flat type

-  Weldon type

-  Whistle notch type

## Run-out

- Workpiece** Alloy steel (SCM440, HRC22)
- Cutting conditions**  $vc(m/min)=90$ ,  $fn(mm/rev)=0.25$ ,  
 $ap(mm)=120$ , wet (20 bar)
- Tools** **Insert** : TPD250B (PC5300)  
**Holder** : TPDB250-32-5-P (Drill dia.= $\varnothing 25mm$ )



## How to clamp an insert

### Clamping an insert to a holder



- ① Put an insert on the tip seat of the holder.
- ② As the [ Pic. 1 ], push the insert to the v-shaped groove of the holder.
- ③ Screw and clamp the insert.

### Changing the used insert to a new one



- ① Unscrew and separate the used insert from the holder.
- ② As the [ Pic. 2 ], clean the insert seat.
- ③ Put a new insert on the tip seat.
- ④ As the [ Pic. 3 ], clamp the insert pushing it with a hand not to separate from the holder.

## Recommended cutting conditions

ISO	Workpiece				Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Grade	vc (m/min)	Aspect ratio (L/D) = 3D, 5D		
	Workpiece material		KS	ISO					fn (mm/rev)		
									Ø10~Ø16.9	Ø17~Ø26.9	Ø27~Ø32.9
<b>P</b>	<b>Carbon steel</b>	C = 0.10 ~ 0.25%	SM15C SM25C	C15 C25	1500	90 ~ 200	PC5335 PC330P	80 ~ 140	0.30 ~ 0.15	0.35 ~ 0.20	0.40 ~ 0.25
		C = 0.25 ~ 0.55%	SM35C SM45C	C35 C45	1600	125 ~ 225	PC5335 PC330P	80 ~ 140	0.30 ~ 0.15	0.35 ~ 0.20	0.40 ~ 0.25
		C = 0.55 ~ 0.80%	SM58C	C60	1700	150 ~ 250	PC5335 PC330P	70 ~ 130	0.30 ~ 0.15	0.35 ~ 0.20	0.40 ~ 0.25
	<b>Alloy steel ≤ 5%</b>	Non-hardened	SCM440	42CrMo4	1700	180	PC5300	80 ~ 140	0.35 ~ 0.18	0.38 ~ 0.23	0.43 ~ 0.28
		Hardened and Tempered	SCM445	-	2050	350	PC5300	50 ~ 100	0.35 ~ 0.18	0.38 ~ 0.23	0.43 ~ 0.28
	<b>Alloy steel ≤ 5%</b>	Annealed	STD11	-	1950	200	PC5300	50 ~ 90	0.30 ~ 0.18	0.35 ~ 0.20	0.40 ~ 0.25
Hardened tool steel		STD61	X40CrMoV5-1	3000	352	PC5300	40 ~ 80	0.30 ~ 0.18	0.35 ~ 0.20	0.40 ~ 0.25	
<b>K</b>	<b>Gray cast iron</b>		GC250 GC350	250 350	900	150 ~ 230	PC5300	80 ~ 140	0.35 ~ 0.18	0.40 ~ 0.20	0.45 ~ 0.25
	<b>Ductile cast iron</b>		GCD400 GCD500 GCD600	400-15 150-10 600-3	870	160 ~ 260	PC5300	70 ~ 130	0.35 ~ 0.18	0.40 ~ 0.20	0.45 ~ 0.25

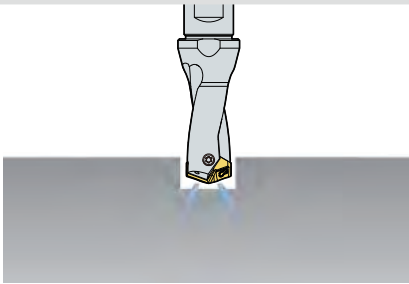
※ In case of 8D, machine in 20 ~ 30% lower cutting conditions than the mentioned above, or machine the beginning of hole (1.5D) before Drilling.  
 ※ In interrupted machining, reduce the feed to 0.1 ~ 0.15 machining around the interrupted part.  
 ※ Refer to the 'Recommended Drilling method' on the page D56 for Drilling of 10D - 12D.



# D Technical Information for TPDB Plus Drill

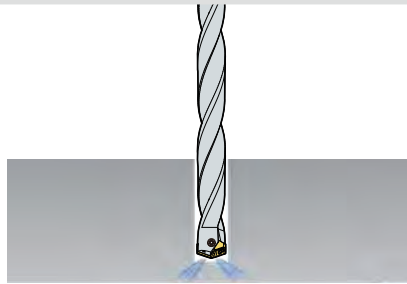
## Recommended Drilling method (10D, 12D)

### Machine a pilot hole (with a pilot Drill)



- Machine a pilot hole with the depth of cut as 0.5D and at 30% lower speed using a 1.5D or 3D Drill.

### Start Drilling



- After machining the pilot hole, replace the pilot Drill to a Drill for further operation and machine in recommended cutting conditions.



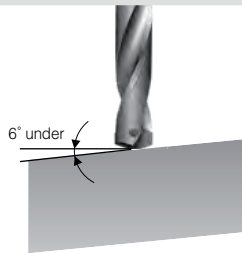
[Result of recommended Drilling]



[Result of general Drilling]

## Precaution in Drilling

### Angled surface Drilling



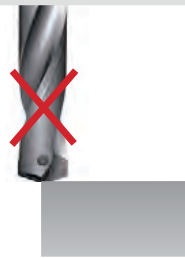
- The approach angle between Drill and the workpiece at the beginning and the end should be less than 6°.
- Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface.

### Stacked plates Drilling



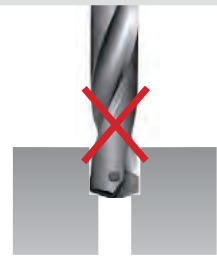
- Gap between the plates could make wrong chip evacuation causing fracture of the Drill.
- Strongly clamp the workpiece together to eliminate any gaps and then proceed with usage.

### Plunging



- Irregular cutting resistance in plunging could cause fracture and deformation of the Drill.

### Boring



- Boring is not recommended as it can cause excessive wear and chipping at the insert's corner.
- In case of necessity, process it with a 2mm stepping. (30% reduction in transfer during processing)

## Basic checklist for the Drilling operations

- Workpiece clamping condition
- Rotational state of the main axial in the machining equipment
- Holder condition
- Clamped drill's Run-out : Max. 0.03 mm
- Coolant supply condition (pressure, flow rate, concentration)
- Chip evacuation condition

## Coolant application system

- Adequate supply of cutting fluid at the entrance of the hole
- Minimum cutting fluid pressure : 5 bar or above
- Minimum flow rate : 5ℓ/min or above



[Dry]

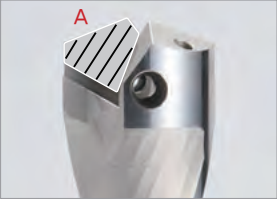
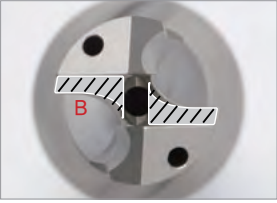


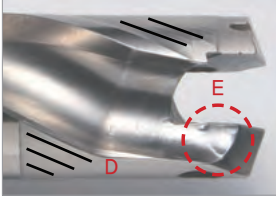


[Internal coolant]

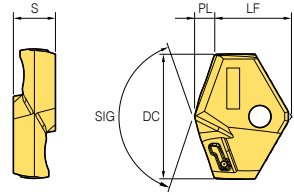
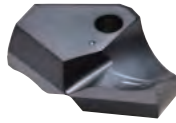


[ External coolant ]

## Replacement of holders and screws

Worn part	How to check	Description
<p>[Pic. 1]</p> 	<p>[Pic. 2]</p> <p>Check the gap</p> 	<ul style="list-style-type: none"> <li>• In case of Drilling for a long time as shown in the [ <b>Pic. 1</b> ] the 'A' part is torn and twisted due to torque.</li> <li>• As shown in the [ <b>Pic.2</b> ] 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.</li> </ul>
<p>[Pic. 3]</p> 	<p>[Pic. 4]</p> <p>Check the moving</p> 	<ul style="list-style-type: none"> <li>• 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 [ <b>Pic.3</b> ].</li> <li>• 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 [ <b>Pic.4</b> ] replace the used holder to a new one.</li> </ul>
<p>[Pic. 5]</p> 	<p>Check the moving</p> 	<ul style="list-style-type: none"> <li>• After an extended period of use, the screw can be worn as shown in the 'C' part of [ <b>Pic.5</b> ] 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.</li> <li>• Spreading the grease on the screw makes it last longer</li> </ul>
<p>[Pic. 6]</p> <ol style="list-style-type: none"> <li>① Check the 'D' and 'E' parts as shown in the [ <b>Pic.6</b> ]</li> <li>② Check whether the chips are getting longer or not.</li> </ol>		<ul style="list-style-type: none"> <li>• Winding or jamming of long and tiny chips in Drilling causes wear or scratch on the 'D' part as shown in the [ <b>Pic.6</b> ] due to chattering from machining in improper cutting conditions. In that case, reset the cutting conditions and check the Run-out before machining.</li> <li>• The excessive wear of the part 'E' as shown in the [ <b>Pic.6</b> ] relating to chip curling might cause long chips.</li> </ul>

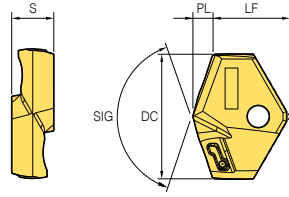
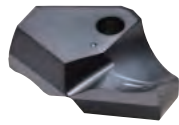
## Available insert(TPDB)



Designation	Coated			DC	S	LF	PL	SIG
	PC5300	PC5335	PC330P					
TPD 100B	●			10.0	3.5	6.21	1.58	140°
101B	●			10.1	3.5	6.20	1.59	140°
102B	●			10.2	3.5	6.18	1.61	140°
103B	●			10.3	3.5	6.17	1.62	140°
105B	●			10.5	3.5	6.13	1.66	140°
108B	●			10.8	3.5	6.09	1.70	140°
110B	●	●		11.0	3.5	7.06	1.73	140°
111B	●			11.1	3.5	7.04	1.75	140°
115B	●			11.5	3.5	6.98	1.81	140°
118B	●			11.8	3.5	6.93	1.86	140°
120B	●	●		12.0	3.5	7.22	2.07	140°
121B	●			12.1	3.5	7.21	2.08	140°
122B	●			12.2	3.5	7.19	2.10	140°
123B	●			12.3	3.5	7.17	2.12	140°
124B	●			12.4	3.5	7.16	2.13	140°
125B	●	●		12.5	3.5	7.14	2.15	140°
126B	●			12.6	3.5	7.12	2.17	140°
130B	●			13.0	4.0	8.05	2.24	140°
132B	●			13.2	4.0	8.02	2.27	140°
135B	●			13.5	4.0	7.97	2.32	140°
137B	●			13.7	4.0	7.93	2.36	140°
140B	●	●		14.0	4.0	8.38	2.41	140°
141B	●			14.1	4.0	8.36	2.43	140°
142B	●			14.2	4.0	8.35	2.44	140°
143B	●			14.3	4.0	8.33	2.46	140°
144B	●			14.4	4.0	8.31	2.48	140°
145B	●	●		14.5	4.0	8.29	2.50	140°
146B	●			14.6	4.0	8.28	2.51	140°
147B	●			14.7	4.0	8.26	2.53	140°
150B	●	●		15.0	4.0	8.71	2.58	140°
151B	●			15.1	4.0	8.69	2.60	140°
152B	●			15.2	4.0	8.67	2.62	140°
154B	●			15.4	4.0	8.64	2.65	140°
155B	●	●		15.5	4.0	8.62	2.67	140°
157B	●			15.7	4.0	8.59	2.70	140°
158B	●			15.8	4.0	8.57	2.72	140°
159B	●		●	15.9	4.0	8.55	2.74	140°
160B	●	●		16.0	5.5	9.54	2.75	140°
161B	●			16.1	5.5	9.52	2.77	140°
162B	●			16.2	5.5	9.50	2.79	140°
163B	●			16.3	5.5	9.48	2.81	140°
164B	●			16.4	5.5	9.47	2.82	140°
165B	●			16.5	5.5	9.45	2.84	140°
166B	●			16.6	5.5	9.43	2.86	140°
167B	●			16.7	5.5	9.41	2.88	140°
170B	●	●	●	17.0	5.5	9.86	2.93	140°
171B	●			17.1	5.5	9.85	2.94	140°
172B	●			17.2	5.5	9.83	2.96	140°
173B	●			17.3	5.5	9.81	2.98	140°
174B	●			17.4	5.5	9.79	3.00	140°
175B	●	●	●	17.5	5.5	9.78	3.01	140°
176B	●			17.6	5.5	9.76	3.03	140°
177B	●			17.7	5.5	9.74	3.05	140°
178B	●			17.8	5.5	9.73	3.06	140°
180B	●	●	●	18.0	6.0	10.69	3.10	140°
181B	●			18.1	6.0	10.67	3.12	140°
182B	●			18.2	6.0	10.66	3.13	140°
185B	●	●	●	18.5	6.0	10.60	3.19	140°
186B	●	●		18.6	6.0	10.59	3.20	140°
187B	●			18.7	6.0	10.57	3.22	140°
190B	●	●		19.0	6.0	11.02	3.27	140°
191B	●			19.1	6.0	11.00	3.29	140°
192B	●			19.2	6.0	10.98	3.31	140°
193B	●			19.3	6.0	10.97	3.32	140°
195B	●			19.5	6.0	10.93	3.36	140°

Applicable holders D60 ~ D64

Available insert(TPDB)



Designation	Coated			DC	S	LF	PL	SIG
	PC5300	PC5335	PC330P					
TPD 196B	●			19.6	6.0	10.92	3.37	140°
197B	●			19.7	6.0	10.90	3.39	140°
198B	●			19.8	6.0	10.88	3.41	140°
200B	●			20.0	6.5	11.99	3.44	140°
201B	●	●	●	20.1	6.5	11.97	3.46	140°
202B	●			20.2	6.5	11.95	3.48	140°
204B	●			20.4	6.5	11.92	3.51	140°
205B	●			20.5	6.5	11.90	3.53	140°
206B	●			20.6	6.5	11.88	3.55	140°
210B	●			21.0	6.5	12.31	3.62	140°
211B	●	●	●	21.1	6.5	12.30	3.63	140°
212B	●			21.2	6.5	12.28	3.65	140°
213B	●			21.3	6.5	12.26	3.67	140°
215B	●			21.5	6.5	12.23	3.70	140°
217B	●			21.7	6.5	12.19	3.74	140°
219B	●			21.9	6.5	12.16	3.77	140°
220B	●			22.0	7.0	12.64	3.79	140°
222B	●	●		22.2	7.0	12.61	3.82	140°
223B	●			22.3	7.0	12.59	3.84	140°
225B	●			22.5	7.0	12.56	3.87	140°
227B	●			22.7	7.0	12.52	3.91	140°
230B	●			23.0	7.0	12.97	3.96	140°
235B	●	●		23.5	7.0	12.88	4.05	140°
237B	●			23.7	7.0	12.85	4.08	140°
240B	●			24.0	7.5	13.45	4.13	140°
242B	●	●		24.2	7.5	13.41	4.17	140°
244B	●			24.4	7.5	13.38	4.20	140°
245B	●			24.5	7.5	13.36	4.22	140°
247B	●			24.7	7.5	13.33	4.25	140°
250B	●			25.0	7.5	13.65	4.43	140°
251B	●	●		25.1	7.5	13.64	4.44	140°
252B	●			25.2	7.5	13.62	4.46	140°
253B	●			25.3	7.5	13.60	4.48	140°
255B	●			25.5	7.5	13.56	4.52	140°
256B	●			25.6	7.5	13.55	4.53	140°
258B	●			25.8	7.5	13.51	4.57	140°
259B	●			25.9	7.5	13.49	4.59	140°
260B	●			26.0	8.5	13.98	4.60	140°
262B	●	●		26.2	8.5	13.94	4.64	140°
265B	●			26.5	8.5	13.89	4.69	140°
270B	●			27.0	8.5	14.80	4.78	140°
275B	●		●	27.5	8.5	14.71	4.87	140°
280B	●			28.0	9.5	15.76	4.96	140°
285B	●			28.5	9.5	15.67	5.05	140°
290B	●			29.0	9.5	16.09	5.13	140°
295B	●			29.5	9.5	16.00	5.22	140°
300B	●			30.0	10.0	16.26	5.46	140°
310B	●			31.0	10.0	16.58	5.64	140°
320B	●		●	32.0	10.0	16.90	5.82	140°
329B	●			32.9	10.0	16.73	5.99	140°

Applicable holders D60 ~ D64

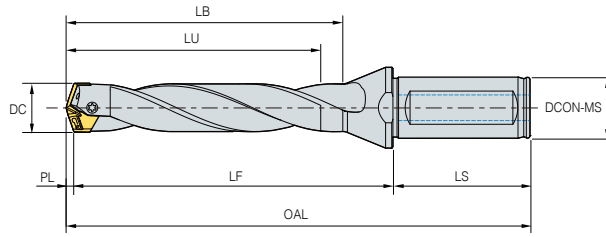
\* We can provide nonstock items with Ø10.00-Ø32.99

● : Stock Item

Parts

Designation	Drill dia. (ØD)	Screw	Wrench	Torque (N•m)
TPD 100B ~ 129B	10.0 ~ 12.9	FTNB0209-P	TW06P	0.4
130B ~ 149B	13.0 ~ 14.9	FTNB02512-P	TW07S	0.8
150B ~ 179B	15.0 ~ 17.9	FTNB02514-P	TW07S	0.8
180B ~ 199B	18.0 ~ 19.9	FTNB0316-P	TW09S	1.2
200B ~ 239B	20.0 ~ 23.9	FTNB0319	TW09S	1.2
240B ~ 259B	24.0 ~ 25.9	FTNB03522	TW15S	3.0
260B ~ 279B	26.0 ~ 27.9	FTNB03524	TW15S	3.0
280B ~ 299B	28.0 ~ 29.9	FTNB0426	TW15S	3.0
300B ~ 329B	30.0 ~ 32.9	FTNB0528	TW20-100	4.0

## TPDB(3D)



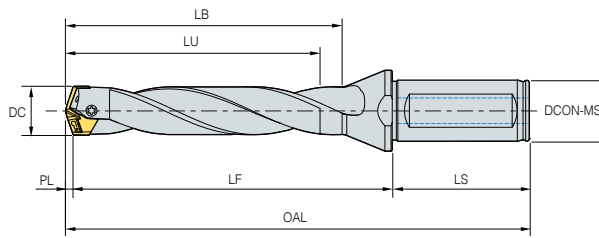
(mm)

	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PL	Applicable insert
TPDB	100-16-3-P	●	10.0~10.4	16	31.58	47.02	37.08	48	96.6	1.58	TPD100B~104B
	105-16-3-P	●	10.5~10.9	16	33.16	47.94	38.91	48	97.6	1.66	TPD105B~109B
	110-16-3-P	●	11.0~11.4	16	34.73	49.97	40.73	48	99.7	1.73	TPD110B~114B
	115-16-3-P	●	11.5~11.9	16	36.31	50.89	42.56	48	100.7	1.81	TPD115B~119B
	120-16-3-P	●	12.0~12.4	16	38.07	53.83	44.57	48	103.9	2.07	TPD120B~124B
	125-16-3-P	●	12.5~12.9	16	39.65	55.75	46.4	48	105.9	2.15	TPD125B~129B
	130-16-3-P	●	13.0~13.4	16	41.24	59.06	48.24	48	109.3	2.24	TPD130B~134B
	135-16-3-P	●	13.5~13.9	16	42.82	60.98	50.07	48	111.3	2.32	TPD135B~139B
	140-16-3-P	●	14.0~14.4	16	44.41	63.09	51.91	48	113.5	2.41	TPD140B~144B
	145-16-3-P	●	14.5~14.9	16	46	66	53.75	48	116.5	2.5	TPD145B~149B
	150-20-3-P	●	15.0~15.4	20	47.58	68.12	55.58	50	120.7	2.58	TPD150B~154B
	155-20-3-P	●	15.5~15.9	20	49.17	70.03	57.42	50	122.7	2.67	TPD155B~159B
	160-20-3-P	●	16.0~16.4	20	50.75	72.15	59.25	50	124.9	2.75	TPD160B~164B
	165-20-3-P	●	16.5~16.9	20	52.34	74.06	61.09	50	126.9	2.84	TPD165B~169B
	170-20-3-P	●	17.0~17.4	20	53.93	77.17	62.93	50	130.1	2.93	TPD170B~174B
	175-20-3-P	●	17.5~17.9	20	55.51	79.09	64.76	50	132.1	3.01	TPD175B~179B
	180-25-3-P	●	18.0~18.4	25	57.1	81.1	66.6	56	140.2	3.1	TPD180B~184B
	185-25-3-P	●	18.5~18.9	25	58.69	83.01	68.44	56	142.2	3.19	TPD185B~189B
	190-25-3-P	●	19.0~19.4	25	60.27	86.03	70.27	56	145.3	3.27	TPD190B~194B
	195-25-3-P	●	19.5~19.9	25	61.86	87.94	72.11	56	147.3	3.36	TPD195B~199B
	200-25-3-P	●	20.0~20.4	25	63.44	90.06	73.94	56	149.5	3.44	TPD200B~204B
	205-25-3-P	●	20.5~20.9	25	65.03	91.97	75.78	56	151.5	3.53	TPD205B~209B
	210-25-3-P	●	21.0~21.4	25	66.62	91.08	77.62	60	154.7	3.62	TPD210B~214B
	215-25-3-P	●	21.5~21.9	25	68.2	93	79.45	60	156.7	3.7	TPD215B~219B
	220-25-3-P	●	22.0~22.4	25	69.79	95.11	81.29	60	158.9	3.79	TPD220B~224B
	225-25-3-P	●	22.5~22.9	25	71.37	97.03	83.12	60	160.9	3.87	TPD225B~229B
	230-25-3-P	●	23.0~23.4	25	72.96	100.14	84.96	60	164.1	3.96	TPD230B~234B
	235-25-3-P	●	23.5~23.9	25	74.55	102.05	86.8	60	166.1	4.05	TPD235B~239B
	240-32-3-P	●	24.0~24.4	32	76.13	108.17	88.63	60	172.3	4.13	TPD240B~244B
	245-32-3-P	●	24.5~24.9	32	77.72	110.08	90.47	60	174.3	4.22	TPD245B~249B
	250-32-3-P	●	25.0~25.4	32	79.43	113.07	92.43	60	177.5	4.43	TPD250B~254B
	255-32-3-P	●	25.5~25.9	32	81.02	114.98	94.27	60	179.5	4.52	TPD255B~259B
260-32-3-P	●	26.0~26.9	32	82.6	117.1	96.1	60	181.7	4.6	TPD260B~269B	
270-32-3-P	●	27.0~27.9	32	85.78	122.12	99.78	60	186.9	4.78	TPD270B~279B	
280-32-3-P	●	28.0~28.9	32	88.96	126.04	103.46	60	191.0	4.96	TPD280B~289B	
290-32-3-P	●	29.0~29.9	32	92.13	131.07	107.13	60	196.2	5.13	TPD290B~299B	
300-32-3-P	●	30.0~30.9	32	95.46	133.94	110.96	60	199.4	5.46	TPD300B~309B	
310-32-3-P	●	31.0~31.9	32	98.64	138.96	114.64	60	204.6	5.64	TPD310B~319B	
320-32-3-P	●	32.0~32.9	32	101.82	140.98	118.32	60	206.8	5.82	TPD320B~329B	

● Applicable inserts D58 ~ D59

● : Stock Item

# TPDB(5D)



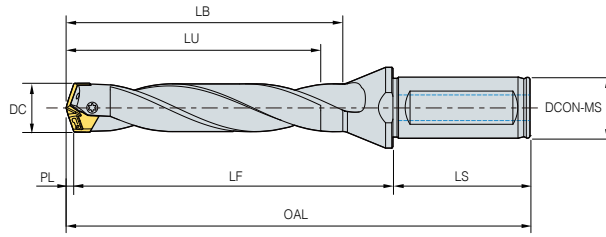
(mm)

	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PL	Applicable insert
TPDB	100-16-5-P	●	10.0-10.4	16	51.58	67.02	57.08	48	116.6	1.58	TPD100B~104B
	105-16-5-P	●	10.5-10.9	16	54.16	68.94	59.91	48	118.6	1.66	TPD105B~109B
	110-16-5-P	●	11.0-11.4	16	56.73	71.97	62.73	48	121.7	1.73	TPD110B~114B
	115-16-5-P	●	11.5-11.9	16	59.31	74.89	65.56	48	124.7	1.81	TPD115B~119B
	120-16-5-P	●	12.0-12.4	16	62.07	78.03	68.57	48	128.1	2.07	TPD120B~124B
	125-16-5-P	●	12.5-12.9	16	64.65	81.05	71.4	48	131.2	2.15	TPD125B~129B
	130-16-5-P	●	13.0-13.4	16	67.24	85.06	74.24	48	135.3	2.24	TPD130B~134B
	135-16-5-P	●	13.5-13.9	16	69.82	88.08	77.07	48	138.4	2.32	TPD135B~139B
	140-16-5-P	●	14.0-14.4	16	72.41	91.09	79.91	48	141.5	2.41	TPD140B~144B
	145-16-5-P	●	14.5-14.9	16	75	95.1	82.75	48	145.6	2.5	TPD145B~149B
	150-20-5-P	●	15.0-15.4	20	77.58	98.12	85.58	50	150.7	2.58	TPD150B~154B
	155-20-5-P	●	15.5-15.9	20	80.17	101.03	88.42	50	153.7	2.67	TPD155B~159B
	160-20-5-P	●	16.0-16.4	20	82.75	104.15	91.25	50	156.9	2.75	TPD160B~164B
	165-20-5-P	●	16.5-16.9	20	85.34	107.06	94.09	50	159.9	2.84	TPD165B~169B
	170-20-5-P	●	17.0-17.4	20	87.93	111.17	96.93	50	164.1	2.93	TPD170B~174B
	175-20-5-P	●	17.5-17.9	20	90.51	114.09	99.76	50	167.1	3.01	TPD175B~179B
	180-25-5-P	●	18.0-18.4	25	93.1	117.1	102.6	56	176.2	3.1	TPD180B~184B
	185-25-5-P	●	18.5-18.9	25	95.69	120.01	105.44	56	179.2	3.19	TPD185B~189B
	190-25-5-P	●	19.0-19.4	25	98.27	124.03	108.27	56	183.3	3.27	TPD190B~194B
	195-25-5-P	●	19.5-19.9	25	100.86	126.94	111.11	56	186.3	3.36	TPD195B~199B
	200-25-5-P	●	20.0-20.4	25	103.44	130.06	113.94	56	189.5	3.44	TPD200B~204B
	205-25-5-P	●	20.5-20.9	25	106.03	132.97	116.78	56	192.5	3.53	TPD205B~209B
	210-25-5-P	●	21.0-21.4	25	108.62	133.08	119.62	60	196.7	3.62	TPD210B~214B
	215-25-5-P	●	21.5-21.9	25	111.2	136	122.45	60	199.7	3.7	TPD215B~219B
	220-25-5-P	●	22.0-22.4	25	113.79	139.11	125.29	60	202.9	3.79	TPD220B~224B
	225-25-5-P	●	22.5-22.9	25	116.37	142.03	128.12	60	205.9	3.87	TPD225B~229B
	230-25-5-P	●	23.0-23.4	25	118.96	146.14	130.96	60	210.1	3.96	TPD230B~234B
	235-25-5-P	●	23.5-23.9	25	121.55	149.05	133.8	60	213.1	4.05	TPD235B~239B
	240-32-5-P	●	24.0-24.4	32	124.13	156.17	136.63	60	220.3	4.13	TPD240B~244B
	245-32-5-P	●	24.5-24.9	32	126.72	159.08	139.47	60	223.3	4.22	TPD245B~249B
	250-32-5-P	●	25.0-25.4	32	129.43	163.07	142.43	60	227.5	4.43	TPD250B~254B
	255-32-5-P	●	25.5-25.9	32	132.02	165.98	145.27	60	230.5	4.52	TPD255B~259B
260-32-5-P	●	26.0-26.9	32	134.6	169.1	148.1	60	233.7	4.6	TPD260B~269B	
270-32-5-P	●	27.0-27.9	32	139.78	176.12	153.78	60	240.9	4.78	TPD270B~279B	
280-32-5-P	●	28.0-28.9	32	144.96	182.04	159.46	60	247.0	4.96	TPD280B~289B	
290-32-5-P	●	29.0-29.9	32	150.13	189.07	165.13	60	254.2	5.13	TPD290B~299B	
300-32-5-P	●	30.0-30.9	32	155.46	193.94	170.96	60	259.4	5.46	TPD300B~309B	
310-32-5-P	●	31.0-31.9	32	160.64	200.96	176.64	60	266.6	5.64	TPD310B~319B	
320-32-5-P	●	32.0-32.9	32	165.82	204.98	182.32	60	270.8	5.82	TPD320B~329B	

Applicable inserts **D58 ~ D59**

● : Stock Item

## TPDB(8D)

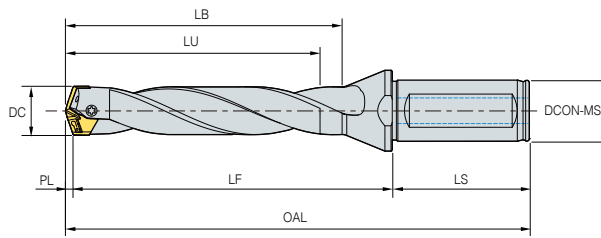


(mm)											
	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PL	Applicable insert
TPDB	100-16-8-P	●	10.0~10.4	16	81.58	97.02	87.08	48	146.6	1.58	TPD100B~104B
	105-16-8-P	●	10.5~10.9	16	85.66	100.94	91.41	48	150.6	1.66	TPD105B~109B
	110-16-8-P	●	11.0~11.4	16	89.73	104.97	95.73	48	154.7	1.73	TPD110B~114B
	115-16-8-P	●	11.5~11.9	16	93.81	108.89	100.06	48	158.7	1.81	TPD115B~119B
	120-16-8-P	●	12.0~12.4	16	98.07	114.03	104.57	48	164.1	2.07	TPD120B~124B
	125-16-8-P	●	12.5~12.9	16	102.15	118.55	108.9	48	168.7	2.15	TPD125B~129B
	130-16-8-P	●	13.0~13.4	16	106.24	124.06	113.24	48	174.3	2.24	TPD130B~134B
	135-16-8-P	●	13.5~13.9	16	110.32	128.58	117.57	48	178.9	2.32	TPD135B~139B
	140-16-8-P	●	14.0~14.4	16	114.41	133.09	121.91	48	183.5	2.41	TPD140B~144B
	145-16-8-P	●	14.5~14.9	16	118.5	138.6	126.25	48	189.1	2.5	TPD145B~149B
	150-20-8-P	●	15.0~15.4	20	122.58	143.12	130.58	50	195.7	2.58	TPD150B~154B
	155-20-8-P	●	15.5~15.9	20	126.67	147.53	134.92	50	200.2	2.67	TPD155B~159B
	160-20-8-P	●	16.0~16.4	20	130.75	152.15	139.25	50	204.9	2.75	TPD160B~164B
	165-20-8-P	●	16.5~16.9	20	134.84	156.56	143.59	50	209.4	2.84	TPD165B~169B
	170-20-8-P	●	17.0~17.4	20	138.93	162.17	147.93	50	215.1	2.93	TPD170B~174B
	175-20-8-P	●	17.5~17.9	20	143.01	166.59	152.26	50	219.6	3.01	TPD175B~179B
	180-25-8-P	●	18.0~18.4	25	147.1	171.1	156.6	56	230.2	3.1	TPD180B~184B
	185-25-8-P	●	18.5~18.9	25	151.19	175.51	160.94	56	234.7	3.19	TPD185B~189B
	190-25-8-P	●	19.0~19.4	25	155.27	181.03	165.27	56	240.3	3.27	TPD190B~194B
	195-25-8-P	●	19.5~19.9	25	159.36	185.44	169.61	56	244.8	3.36	TPD195B~199B
	200-25-8-P	●	20.0~20.4	25	163.44	190.06	173.94	56	249.5	3.44	TPD200B~204B
	205-25-8-P	●	20.5~20.9	25	167.53	194.47	178.28	56	254	3.53	TPD205B~209B
	210-25-8-P	●	21.0~21.4	25	171.62	196.08	182.62	60	259.7	3.62	TPD210B~214B
	215-25-8-P	●	21.5~21.9	25	175.7	200.5	186.95	60	264.2	3.7	TPD215B~219B
	220-25-8-P	●	22.0~22.4	25	179.79	205.11	191.29	60	268.9	3.79	TPD220B~224B
	225-25-8-P	●	22.5~22.9	25	183.87	209.73	195.62	60	273.6	3.87	TPD225B~229B
	230-25-8-P	●	23.0~23.4	25	187.96	215.14	199.96	60	279.1	3.96	TPD230B~234B
	235-25-8-P	●	23.5~23.9	25	192.05	219.55	204.3	60	283.6	4.05	TPD235B~239B
	240-32-8-P	●	24.0~24.4	32	196.13	228.17	208.63	60	292.3	4.13	TPD240B~244B
	245-32-8-P	●	24.5~24.9	32	200.22	232.58	212.97	60	296.8	4.22	TPD245B~249B
	250-32-8-P	●	25.0~25.4	32	204.43	238.07	217.43	60	302.5	4.43	TPD250B~254B
	255-32-8-P	●	25.5~25.9	32	208.52	242.48	221.77	60	307	4.52	TPD255B~259B
260-32-8-P	●	26.0~26.9	32	212.6	247.1	226.1	60	311.7	4.6	TPD260B~269B	
270-32-8-P	●	27.0~27.9	32	220.78	257.12	234.78	60	321.9	4.78	TPD270B~279B	
280-32-8-P	●	28.0~28.9	32	228.96	266.04	243.46	60	331	4.96	TPD280B~289B	
290-32-8-P	●	29.0~29.9	32	237.13	276.07	252.13	60	341.2	5.13	TPD290B~299B	
300-32-8-P	●	30.0~30.9	32	245.46	283.94	260.96	60	349.4	5.46	TPD300B~309B	
310-32-8-P	●	31.0~31.9	32	253.64	293.96	269.64	60	359.6	5.64	TPD310B~319B	
320-32-8-P	●	32.0~32.9	32	261.82	300.98	278.32	60	366.8	5.82	TPD320B~329B	

● Applicable inserts D58 ~ D59

●: Stock Item

# TPDB(10D)



(mm)

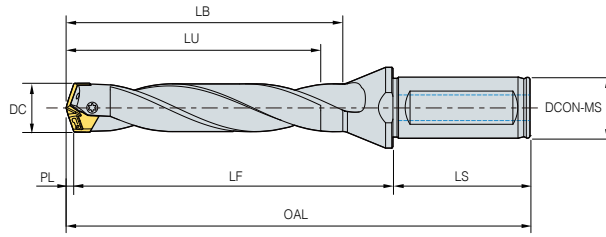
	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PL	Applicable insert
TPDB	100-16-10-P	●	10.0~10.4	16	101.58	117.02	107.08	48	166.6	1.58	TPD100B~104B
	105-16-10-P	●	10.5~10.9	16	106.66	121.94	112.41	48	171.6	1.66	TPD105B~109B
	110-16-10-P	●	11.0~11.4	16	111.73	126.97	117.73	48	176.7	1.73	TPD110B~114B
	115-16-10-P	●	11.5~11.9	16	116.81	131.89	123.06	48	181.7	1.81	TPD115B~119B
	120-16-10-P	●	12.0~12.4	16	122.07	138.03	128.57	48	188.1	2.07	TPD120B~124B
	125-16-10-P	●	12.5~12.9	16	127.15	143.55	133.9	48	193.7	2.15	TPD125B~129B
	130-16-10-P	●	13.0~13.4	16	132.24	150.06	139.24	48	200.3	2.24	TPD130B~134B
	135-16-10-P	●	13.5~13.9	16	137.32	155.58	144.57	48	205.9	2.32	TPD135B~139B
	140-16-10-P	●	14.0~14.4	16	142.41	161.09	149.91	48	211.5	2.41	TPD140B~144B
	145-16-10-P	●	14.5~14.9	16	147.5	167.6	155.25	48	218.1	2.5	TPD145B~149B
	150-20-10-P	●	15.0~15.4	20	152.58	173.12	160.58	50	225.7	2.58	TPD150B~154B
	155-20-10-P	●	15.5~15.9	20	157.67	178.53	165.92	50	231.2	2.67	TPD155B~159B
	160-20-10-P	●	16.0~16.4	20	162.75	184.15	171.25	50	236.9	2.75	TPD160B~164B
	165-20-10-P	●	16.5~16.9	20	167.84	189.56	176.59	50	242.4	2.84	TPD165B~169B
	170-20-10-P	●	17.0~17.4	20	172.93	196.17	181.93	50	249.1	2.93	TPD170B~174B
	175-20-10-P	●	17.5~17.9	20	178.01	201.59	187.26	50	254.6	3.01	TPD175B~179B
	180-25-10-P	●	18.0~18.4	25	183.1	207.1	192.6	56	266.2	3.1	TPD180B~184B
	185-25-10-P	●	18.5~18.9	25	188.19	212.51	197.94	56	271.7	3.19	TPD185B~189B
	190-25-10-P	●	19.0~19.4	25	193.27	219.03	203.27	56	278.3	3.27	TPD190B~194B
	195-25-10-P	●	19.5~19.9	25	198.36	224.44	208.61	56	283.8	3.36	TPD195B~199B
	200-25-10-P	●	20.0~20.4	25	203.44	230.06	213.94	56	289.5	3.44	TPD200B~204B
	205-25-10-P	●	20.5~20.9	25	208.53	235.47	219.28	56	295	3.53	TPD205B~209B
	210-25-10-P	●	21.0~21.4	25	213.62	238.08	224.62	60	301.7	3.62	TPD210B~214B
	215-25-10-P	●	21.5~21.9	25	218.7	243.5	229.95	60	307.2	3.7	TPD215B~219B
	220-25-10-P	●	22.0~22.4	25	223.79	249.11	235.29	60	312.9	3.79	TPD220B~224B
	225-25-10-P	●	22.5~22.9	25	228.87	254.73	240.62	60	318.6	3.87	TPD225B~229B
	230-25-10-P	●	23.0~23.4	25	233.96	261.14	245.96	60	325.1	3.96	TPD230B~234B
	235-25-10-P	●	23.5~23.9	25	239.05	266.55	251.3	60	330.6	4.05	TPD235B~239B
	240-32-10-P	●	24.0~24.4	32	244.13	276.17	256.63	60	340.3	4.13	TPD240B~244B
	245-32-10-P	●	24.5~24.9	32	249.22	281.58	261.97	60	345.8	4.22	TPD245B~249B
	250-32-10-P	●	25.0~25.4	32	254.43	288.07	267.43	60	352.5	4.43	TPD250B~254B
	255-32-10-P	●	25.5~25.9	32	259.52	293.48	272.77	60	358	4.52	TPD255B~259B
260-32-10-P	●	26.0~26.9	32	264.6	299.1	278.1	60	363.7	4.6	TPD260B~269B	
270-32-10-P	●	27.0~27.9	32	274.78	311.12	288.78	60	375.9	4.78	TPD270B~279B	
280-32-10-P	●	28.0~28.9	32	284.96	322.04	299.46	60	387	4.96	TPD280B~289B	
290-32-10-P	●	29.0~29.9	32	295.13	334.07	310.13	60	399.2	5.13	TPD290B~299B	
300-32-10-P	●	30.0~30.9	32	305.46	343.94	320.96	60	409.4	5.46	TPD300B~309B	
310-32-10-P	●	31.0~31.9	32	315.64	355.96	331.64	60	421.6	5.64	TPD310B~319B	
320-32-10-P	●	32.0~32.9	32	325.82	364.98	342.32	60	430.8	5.82	TPD320B~329B	

Applicable inserts **D58 ~ D59**

● : Stock Item



## TPDB(12D)



											(mm)
	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PL	Applicable insert
TPDB	100-16-12-P	●	10.0~10.4	16	121.58	137.02	127.08	48	186.6	1.58	TPD100B~104B
	105-16-12-P	●	10.5~10.9	16	127.66	142.94	133.41	48	192.6	1.66	TPD105B~109B
	110-16-12-P	●	11.0~11.4	16	133.73	148.97	139.73	48	198.7	1.73	TPD110B~114B
	115-16-12-P	●	11.5~11.9	16	139.81	154.89	146.06	48	204.7	1.81	TPD115B~119B
	120-16-12-P	●	12.0~12.4	16	146.07	162.03	152.57	48	212.1	2.07	TPD120B~124B
	125-16-12-P	●	12.5~12.9	16	152.15	168.55	158.9	48	218.7	2.15	TPD125B~129B
	130-16-12-P	●	13.0~13.4	16	158.24	176.06	165.24	48	226.3	2.24	TPD130B~134B
	135-16-12-P	●	13.5~13.9	16	164.32	182.58	171.57	48	232.9	2.32	TPD135B~139B
	140-16-12-P	●	14.0~14.4	16	170.41	189.09	177.91	48	239.5	2.41	TPD140B~144B
	145-16-12-P	●	14.5~14.9	16	176.5	196.6	184.25	48	247.1	2.5	TPD145B~149B
	150-20-12-P	●	15.0~15.4	20	182.58	203.12	190.58	50	255.7	2.58	TPD150B~154B
	155-20-12-P	●	15.5~15.9	20	188.67	209.53	196.92	50	262.2	2.67	TPD155B~159B
	160-20-12-P	●	16.0~16.4	20	194.75	216.15	203.25	50	268.9	2.75	TPD160B~164B
	165-20-12-P	●	16.5~16.9	20	200.84	222.56	209.59	50	275.4	2.84	TPD165B~169B
	170-20-12-P	●	17.0~17.4	20	206.93	230.17	215.93	50	283.1	2.93	TPD170B~174B
	175-20-12-P	●	17.5~17.9	20	213.01	236.59	222.26	50	289.6	3.01	TPD175B~179B
	180-25-12-P	●	18.0~18.4	25	219.1	243.1	228.6	56	302.2	3.1	TPD180B~184B
	185-25-12-P	●	18.5~18.9	25	225.19	249.51	234.94	56	308.7	3.19	TPD185B~189B
	190-25-12-P	●	19.0~19.4	25	231.27	257.03	241.27	56	316.3	3.27	TPD190B~194B
	195-25-12-P	●	19.5~19.9	25	237.36	263.44	247.61	56	322.8	3.36	TPD195B~199B
	200-25-12-P	●	20.0~20.4	25	243.44	270.06	253.94	56	329.5	3.44	TPD200B~204B
	205-25-12-P	●	20.5~20.9	25	249.53	276.47	260.28	56	336	3.53	TPD205B~209B
	210-25-12-P	●	21.0~21.4	25	255.62	280.08	266.62	60	343.7	3.62	TPD210B~214B
	215-25-12-P	●	21.5~21.9	25	261.7	286.5	272.95	60	350.2	3.7	TPD215B~219B
	220-25-12-P	●	22.0~22.4	25	267.79	293.11	279.29	60	356.9	3.79	TPD220B~224B
	225-25-12-P	●	22.5~22.9	25	273.87	299.73	285.62	60	363.6	3.87	TPD225B~229B
	230-25-12-P	●	23.0~23.4	25	279.96	307.14	291.96	60	371.1	3.96	TPD230B~234B
	235-25-12-P	●	23.5~23.9	25	286.05	313.55	298.3	60	377.6	4.05	TPD235B~239B
	240-32-12-P	●	24.0~24.4	32	292.13	324.17	304.63	60	388.3	4.13	TPD240B~244B
	245-32-12-P	●	24.5~24.9	32	298.22	330.58	310.97	60	394.8	4.22	TPD245B~249B
	250-32-12-P	●	25.0~25.4	32	304.43	338.07	317.43	60	402.5	4.43	TPD250B~254B
	255-32-12-P	●	25.5~25.9	32	310.52	344.48	323.77	60	409	4.52	TPD255B~259B
260-32-12-P	●	26.0~26.9	32	316.6	351.1	330.1	60	415.7	4.6	TPD260B~269B	
270-32-12-P	●	27.0~27.9	32	328.78	365.12	342.78	60	429.9	4.78	TPD270B~279B	
280-32-12-P	●	28.0~28.9	32	340.96	378.04	355.46	60	443	4.96	TPD280B~289B	
290-32-12-P	●	29.0~29.9	32	353.13	392.07	368.13	60	457.2	5.13	TPD290B~299B	
300-32-12-P	●	30.0~30.9	32	365.46	403.94	380.96	60	469.4	5.46	TPD300B~309B	
310-32-12-P	●	31.0~31.9	32	377.64	417.96	393.64	60	483.6	5.64	TPD310B~319B	
320-32-12-P	●	32.0~32.9	32	389.82	428.98	406.32	60	494.8	5.82	TPD320B~329B	

● Applicable inserts D58 ~ D59

● : Stock Item

# TPDB-DS

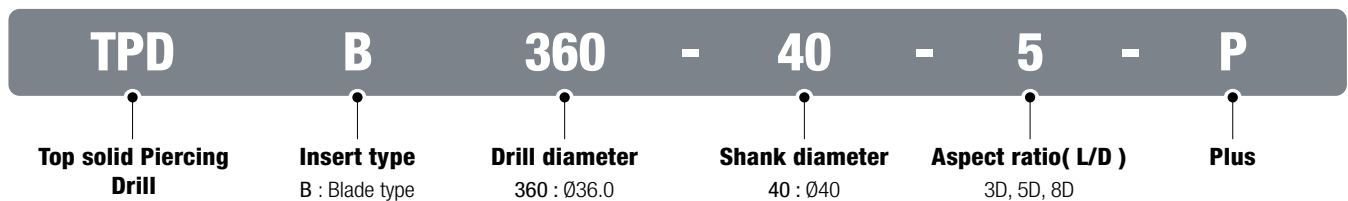
- A curved linear insert with high helix angle applied holder, which has low cutting load and excellent chip handling performance.
- Excellent clamping stability with a specially designed clamping section and 2 screws-on clamping methods.
- Improved wear resistance and durability through special surface treatment.

## Code system

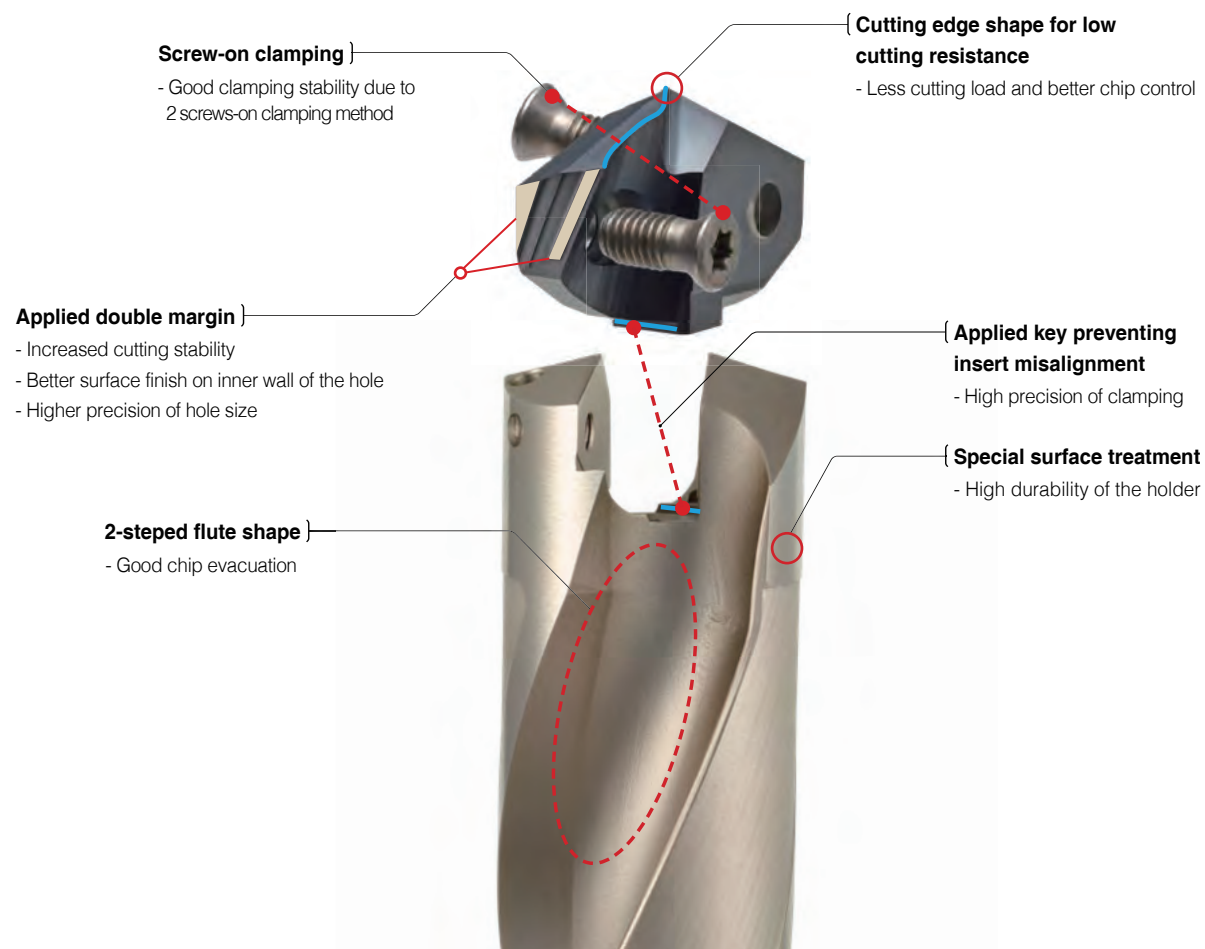
### • Insert



### • Holder

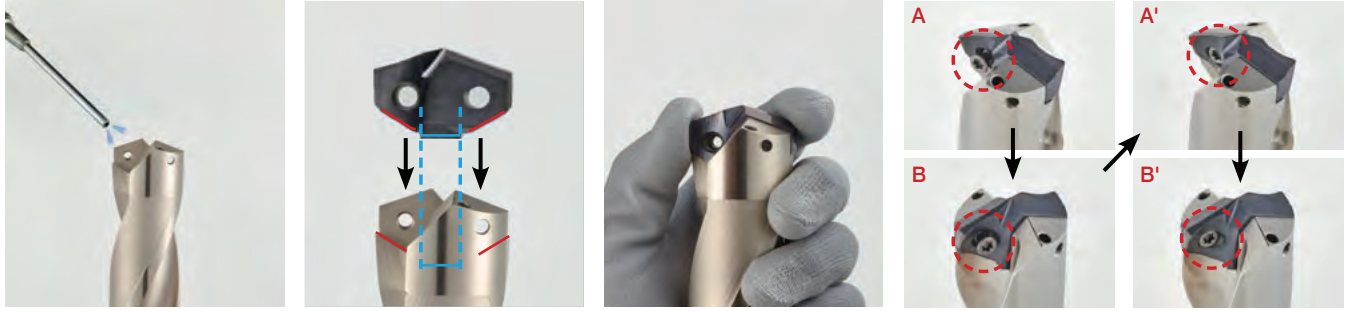


## Features



# D Technical Information for TPDB-DS

## How to clamp an insert

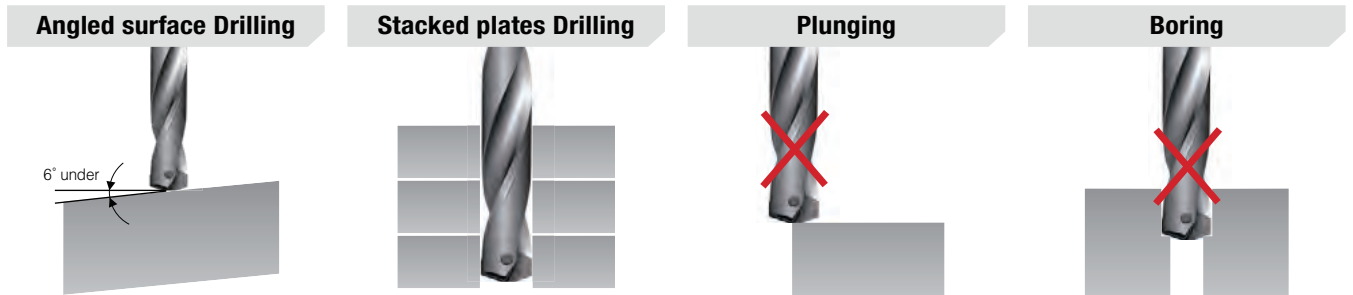


- ① Clean the tip seat.
- ② Put an insert in
- ③ Lightly press the insert while screwing to prevent it from rotating.
- ④ Clamp a screw partially just like in the case of A and B to prevent laterality
- ⑤ Clamp the screws completely in the order of A', B'.

## Recommended cutting conditions

Workpiece				Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Grade	vc (m/min)	Aspect ratio (L/D) = 3D, 5D	
ISO	Workpiece material	KS	ISO					fn (mm/rev)	
P	Carbon steel	C = 0.10~0.25%	SM15C SM25C	C15 C25	1500	90~200	PC5300	80~140	0.4~0.25
		C = 0.25~0.55%	SM35C SM45C	C35 C45	1600	125~225	PC5300	80~140	0.4~0.25
		C = 0.55~0.80%	SM58C	C60	1700	150~250	PC5300	70~130	0.4~0.25
	Alloy steel ≤ 5%	Non-hardened	SCM440	42CrMo4	1700	180	PC5300	80~130	0.45~0.25
		Hardened and Tempered	SCM445	-	2050	350	PC5300	60~110	0.45~0.25
	Alloy steel ≤ 5%	Annealed	STD11	-	1950	200	PC5300	60~100	0.4~0.25
Hardened tool steel		STD61	X40CrMoV5-1	3000	352	PC5300	50~90	0.35~0.2	
K	Gray cast iron		GC250 GC350	250 350	900	150~230	PC5300	80~140	0.45~0.25
	Ductile cast iron		GCD400 GCD500 GCD600	400-15 150-10 600-3	870	160~260	PC5300	70~130	0.45~0.25

## Precaution in 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.
- Gap between the plates could make wrong chip evacuation causing fracture of the Drill.
- Strongly clamp the workpiece together to eliminate any gaps and then proceed with usage.
- Irregular cutting resistance in plunging could cause fracture and deformation of the Drill.
- Boring is not recommended as it can cause excessive wear and chipping at the insert's corner.
- In case of necessity, process it with a 2mm stepping. (30% reduction in transfer during processing)

## Basic checklist for the Drilling operations

- Workpiece clamping condition
- Rotational state of the main axial in the machining equipment
- Holder condition
- Clamped drill's Run-out : Max. 0.03 mm
- Coolant supply condition (pressure, flow rate, concentration)
- Chip evacuation condition

## Coolant application system

- Adequate supply of cutting fluid at the entrance of the hole
- Minimum cutting fluid pressure : 5 bar or above
- Minimum flow rate : 5ℓ/min or above

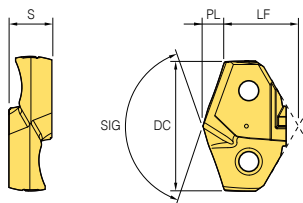
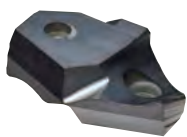


[Dry]

[Internal coolant]

[ External coolant ]

Available insert(TPDB-DS)



		(mm)					
Designation	Coated	DC	S	LF	PL	SIG	
	PC5300						
TPD	330B-DS	●	33.0	10.5	18.16	5.38	140°
	335B-DS		33.5	10.5	18.08	5.46	140°
	340B-DS	●	34.0	11.0	18.55	5.54	140°
	345B-DS		34.5	11.0	18.47	5.62	140°
	350B-DS	●	35.0	11.5	19.48	5.70	140°
	355B-DS	●	35.5	11.5	19.40	5.78	140°
	360B-DS	●	36.0	11.5	20.41	5.87	140°
	365B-DS		36.5	11.5	20.33	5.95	140°
	370B-DS	●	37.0	12.0	20.80	6.03	140°
	375B-DS		37.5	12.0	20.72	6.11	140°
	380B-DS	●	38.0	12.0	21.63	6.19	140°
	385B-DS	●	38.5	12.0	21.55	6.27	140°
	390B-DS	●	39.0	12.5	22.02	6.35	140°
	395B-DS		39.5	12.5	21.93	6.44	140°

Applicable holders **D68**

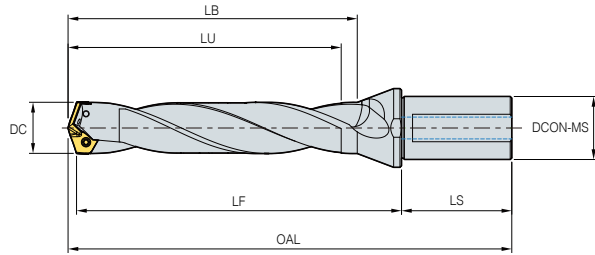
※ TPD Inserts not list above within the range of Ø33.00 ~ Ø39.99 can be made to order

● : Stock Item

Parts

Designation	Drill dia. DC (mm)	Screw	Wrench
TPD 330B-DS ~ 339B-DS	33.0 ~ 33.9	FTKA0410	TW15S
340B-DS ~ 349B-DS	34.0 ~ 34.9	FTKA0410	TW15S
350B-DS ~ 359B-DS	35.0 ~ 35.9	FTKA0410	TW15S
360B-DS ~ 369B-DS	36.0 ~ 36.9	FTNC04511	TW20S
370B-DS ~ 379B-DS	37.0 ~ 37.9	FTNC04511	TW20S
380B-DS ~ 389B-DS	38.0 ~ 38.9	FTNA0511	TW20S
390B-DS ~ 399B-DS	39.0 ~ 39.9	FTNA0511	TW20S

## TPDB-DS(3D/5D/8D)



(mm)

	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PL	Applicable insert
TPDB	330-40-3-P	●	33.0~33.9	40	104.38	140.30	117.58	70	215.7	5.38	TPD330B~339B-DS
	340-40-3-P	●	34.0~34.9	40	107.54	144.41	121.15	70	219.9	5.54	TPD340B~349B-DS
	350-40-3-P	●	35.0~35.9	40	110.70	148.51	124.71	70	224.2	5.70	TPD350B~359B-DS
	360-40-3-P	●	36.0~36.9	40	113.87	152.60	128.27	70	228.5	5.87	TPD360B~369B-DS
	370-40-3-P	●	37.0~37.9	40	117.03	156.70	131.83	70	232.7	6.03	TPD370B~379B-DS
	380-40-3-P	●	38.0~38.9	40	120.19	160.81	135.40	70	237.0	6.19	TPD380B~389B-DS
	390-40-3-P	●	39.0~39.9	40	123.35	164.91	138.96	70	241.3	6.35	TPD390B~399B-DS
	330-40-5-P		33.0~33.9	40	170.38	206.30	183.58	70	281.7	5.38	TPD330B~339B-DS
	340-40-5-P		34.0~34.9	40	175.54	212.41	189.15	70	287.9	5.54	TPD340B~349B-DS
	350-40-5-P		35.0~35.9	40	180.70	218.51	194.71	70	294.2	5.70	TPD350B~359B-DS
	360-40-5-P		36.0~36.9	40	185.87	224.60	200.27	70	300.5	5.87	TPD360B~369B-DS
	370-40-5-P		37.0~37.9	40	191.03	230.70	205.83	70	306.7	6.03	TPD370B~379B-DS
	380-40-5-P		38.0~38.9	40	196.19	236.81	211.40	70	313.0	6.19	TPD380B~389B-DS
	390-40-5-P		39.0~39.9	40	201.35	242.91	216.96	70	319.3	6.35	TPD390B~399B-DS
	330-40-8-P		33.0~33.9	40	269.38	305.30	282.58	70	380.7	5.38	TPD330B~339B-DS
	340-40-8-P		34.0~34.9	40	277.54	314.41	291.15	70	389.9	5.54	TPD340B~349B-DS
	350-40-8-P		35.0~35.9	40	285.70	323.51	299.71	70	399.2	5.70	TPD350B~359B-DS
	360-40-8-P		36.0~36.9	40	293.87	332.60	308.27	70	408.5	5.87	TPD360B~369B-DS
	370-40-8-P		37.0~37.9	40	302.03	341.70	316.83	70	417.7	6.03	TPD370B~379B-DS
380-40-8-P		38.0~38.9	40	310.19	350.81	325.40	70	427.0	6.19	TPD380B~389B-DS	
390-40-8-P		39.0~39.9	40	318.35	359.91	333.96	70	436.3	6.35	TPD390B~399B-DS	

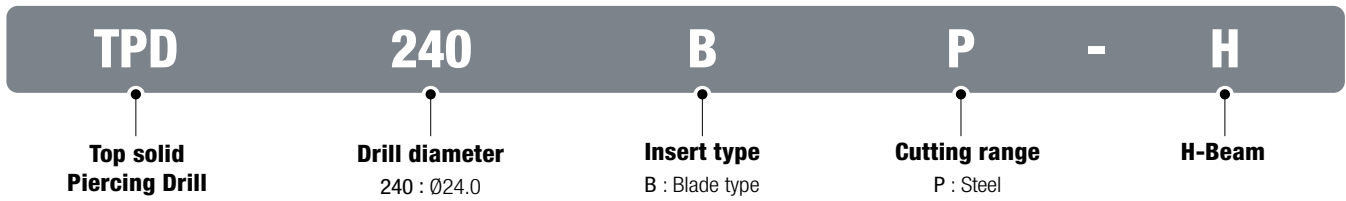
Applicable inserts **D67**

\* We can provide if you order exact machining specification ●: Stock Item

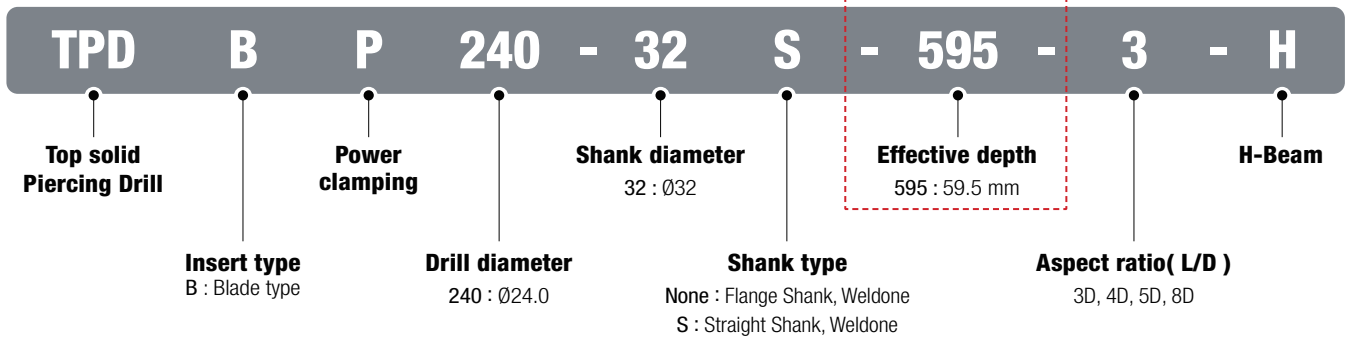
# TPDB-H

- **High precision clamping system** - High precision clamping due highly precise grinding and auto-centering
- **Screw on clamping system** - Enhanced clamping force and clamping stability from applying a main screw and a sub screw
- **Edge design with excellent centering** - Low cutting load and good chip control
- **Applying shape for better chip breaking** - Increasing chip breaking due to applying web taper
- **High durability holder** - Improved wear resistance and durability with special surface treatment implementation
- **Optimally designed oil hole** - Long tool life

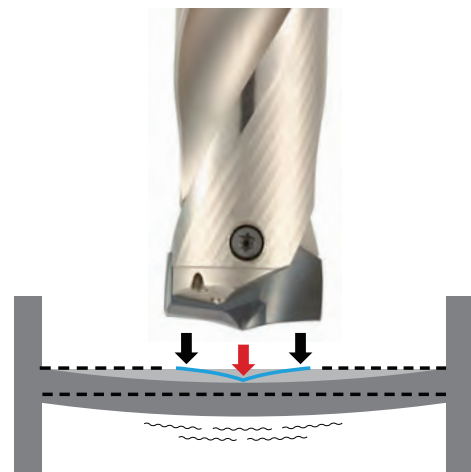
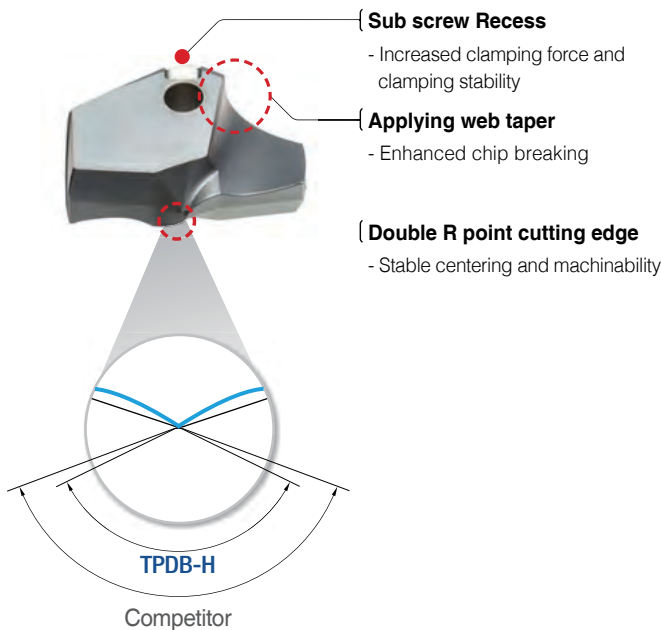
## Code system



## Holder



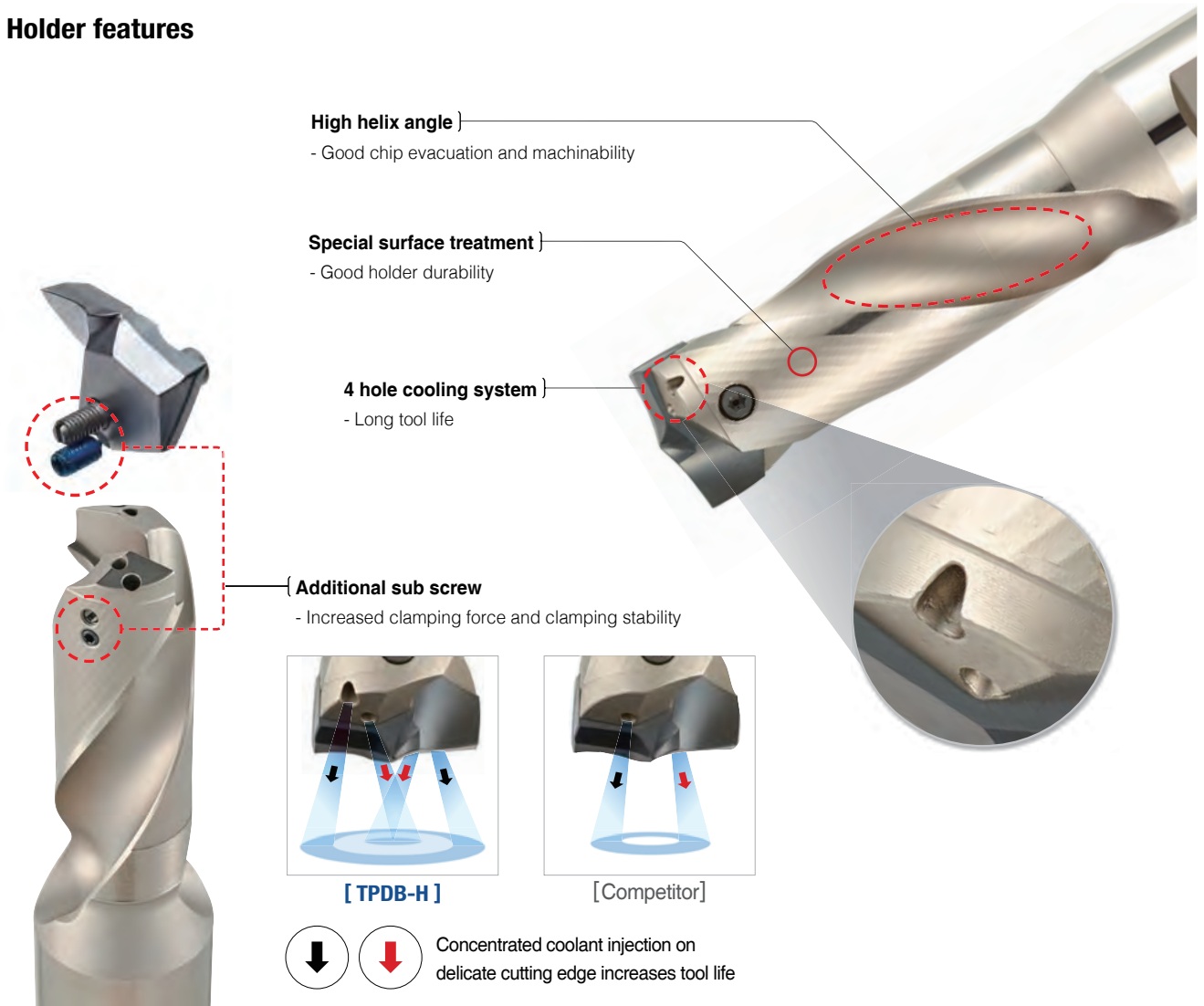
## Insert Features



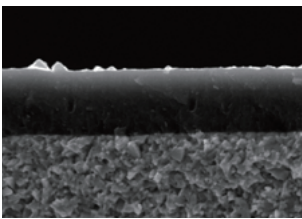
- ↓ Applied Double R point edge design optimized for excellent centering and stable machinability.
- ↓ Machinability and productivity are improved by minimizing both workpiece's bending and chipping at edge corner section.

# D Technical Information for TPDB-H

## Holder features



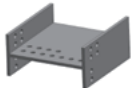


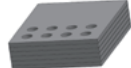
## Grade features



### PC340UL

- Applying high toughness substrate with good fracture resistance
- Applying PVD coating technology enhancing lubrication and welding resistance
- Increasing chipping resistance and cutting stability due to good surface finish

## Workpiece and recommended cutting conditions

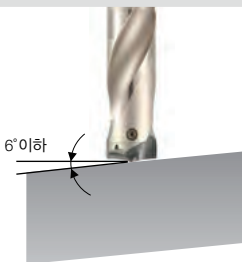
ISO	Workpiece			Yield Strength (Mpa, min)	Brinell hardness (HB)	Grade	vc (m/min)	Aspect ratio (L/D) = 3D, 4D, 5D, 8D	
	Workpiece material	KS	AISI					fn(mm/rev)	
								Ø14 ~ Ø21.9	Ø22 ~ Ø32.9
<b>P</b>	H-Beam					PC340UL	60~75	0.25~0.2	0.3~0.2
	Angle		SS275 (SS400*)	A36	275	PC340UL	60~75	0.25~0.2	0.3~0.2
	Plate		SM355 (SM490*)	A572	355	PC340UL	60~75	0.25~0.2	0.3~0.2
	Plate (Stacked)		SHN355 (SHN490*)		(t≤16)	PC340UL	55~65	0.25~0.15	0.25~0.15

※ In case of 5D over, machine in 30% lower cutting conditions or use under the above conditions

\* : Old symbol

## 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.
- Strongly clamp the workpiece together to eliminate any gaps and then proceed with usage.

### Plunging



- Irregular cutting resistance in plunging could cause fracture and deformation of the Drill.

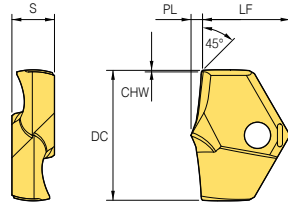
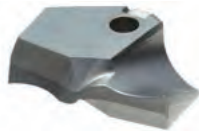
### Boring



- Boring is not recommended as it can cause excessive wear and chipping at the insert's corner.
- In case of necessity, process it with a 2mm stepping. (30% reduction in transfer during processing)



## Available insert(TPDB-H)







Designation		Coated PC340UL	DC	S	LF	PL	CHW
TPD	140BP-H	●	14.0	4.0	9.45	1.17	0.05
	150BP-H		15.0	4.0	9.83	1.29	0.05
	160BP-H	●	16.0	5.5	10.73	1.39	0.07
	170BP-H		17.0	5.5	11.14	1.48	0.07
	180BP-H	●	18.0	6.0	12.15	1.51	0.07
	190BP-H		19.0	6.0	12.54	1.60	0.07
	200BP-H	●	20.0	6.5	13.45	1.67	0.07
	210BP-H		21.0	6.5	13.86	1.76	0.07
	220BP-H	●	22.0	7.0	14.54	1.89	0.09
	230BP-H		23.0	7.0	14.70	1.94	0.09
	240BP-H	●	24.0	7.5	15.56	2.02	0.09
	250BP-H		25.0	7.5	15.98	2.10	0.09
	260BP-H	●	26.0	8.5	16.35	2.23	0.09
	270BP-H	●	27.0	8.5	17.43	2.28	0.13
	280BP-H		28.0	9.5	18.26	2.32	0.13
	290BP-H		29.0	9.5	18.64	2.55	0.13
300BP-H	●	30.0	10.0	19.03	2.61	0.13	
310BP-H		31.0	10.0	19.44	2.70	0.13	
320BP-H	●	32.0	10.0	19.85	2.79	0.13	

(mm)

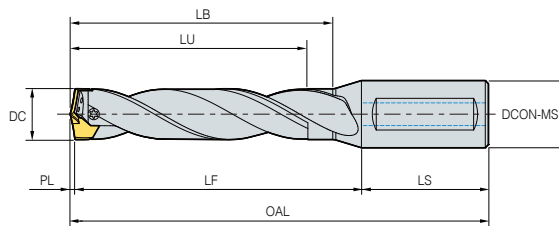
Applicable holders D73 ~ D74

●: Stock Item

## Parts

Designation	Drill dia. DC (mm)	Screw 	Wrench 	Sub screw 	Wrench for sub screw 
TPD 140BP-H~159BP-H	Ø14.0 ~ Ø15.9	FTNB02512-P	TW07S	-	-
160BP-H~179BP-H	Ø16.0 ~ Ø17.9	FTNB02514-P	TW07S	KHMA02505	HW13LB
180BP-H~199BP-H	Ø18.0 ~ Ø19.9	FTNB0316-P	TW09S	KHMA02505	HW13LB
200BP-H~239BP-H	Ø20.0 ~ Ø23.9	FTNB0319	TW09S	KHMA0306	HW15L
240BP-H~259BP-H	Ø24.0 ~ Ø25.9	FTNB03522	TW15S	KHMA0308	HW15L
260BP-H~279BP-H	Ø26.0 ~ Ø27.9	FTNB03524	TW15S	KHMA0308	HW15L
280BP-H~299BP-H	Ø28.0 ~ Ø29.9	FTNB0426	TW15S	KHMA0410	HW20L
300BP-H~329BP-H	Ø30.0 ~ Ø32.9	FTNB0528	TW20-100	KHMA0410	HW20L

# TPDB-H(3D/4D)



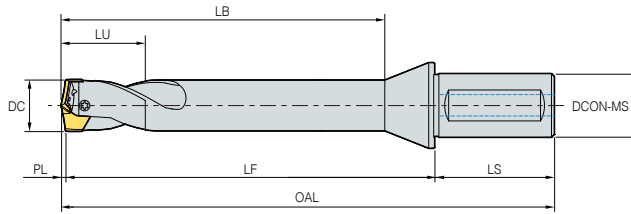
(mm)

Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PL	Applicable insert	
TPDBP	140-16S-3-H	●	14.0~14.9	16	35.67	48.83	43.17	48	98.0	1.17	TPD140BP-H ~149BP-H
	150-20S-3-H		15.0~15.9	20	38.29	52.21	46.29	50	103.5	1.29	TPD150BP-H ~159BP-H
	160-20S-3-H	●	16.0~16.9	20	40.89	55.11	49.39	50	106.5	1.39	TPD160BP-H ~169BP-H
	170-20S-3-H		17.0~17.9	20	43.48	58.02	52.48	50	109.5	1.48	TPD170BP-H ~179BP-H
	180-20S-3-H	●	18.0~18.9	20	46.01	62.49	55.51	50	114.0	1.51	TPD180BP-H ~189BP-H
	190-20S-3-H		19.0~19.9	20	48.60	67.40	58.60	50	119.0	1.60	TPD190BP-H ~199BP-H
	200-25S-3-H	●	20.0~20.9	25	51.17	76.33	61.67	56	128.0	1.67	TPD200BP-H ~209BP-H
	210-25S-3-H		21.0~21.9	25	53.76	73.24	64.76	56	131.0	1.76	TPD210BP-H ~219BP-H
	220-25S-3-H	●	22.0~22.9	25	56.39	76.11	67.89	56	134.0	1.89	TPD220BP-H ~229BP-H
	230-25S-3-H		23.0~23.9	25	58.94	79.06	70.94	56	137.0	1.94	TPD230BP-H ~239BP-H
	240-32S-3-H	●	24.0~24.9	32	61.52	84.78	74.02	60	146.8	2.02	TPD240BP-H ~249BP-H
	250-32S-3-H		25.0~25.9	32	64.10	84.90	77.10	60	147.0	2.10	TPD250BP-H ~259BP-H
	260-32S-3-H	●	26.0~26.9	32	66.73	87.77	80.23	60	150.0	2.23	TPD260BP-H ~269BP-H
	270-32S-3-H	●	27.0~27.9	32	69.28	90.72	83.28	60	153.0	2.28	TPD270BP-H ~279BP-H
	280-32S-3-H		28.0~28.9	32	71.82	93.68	86.32	60	156.0	2.32	TPD280BP-H ~289BP-H
	290-32S-3-H		29.0~29.9	32	74.55	96.45	89.55	60	159.0	2.55	TPD290BP-H ~299BP-H
	300-32S-3-H	●	30.0~30.9	32	77.11	99.39	92.61	60	162.0	2.61	TPD300BP-H ~309BP-H
	310-32S-3-H		31.0~31.9	32	79.70	102.30	95.70	60	165.0	2.70	TPD310BP-H ~319BP-H
	320-32S-3-H	●	32.0~32.9	32	82.29	105.21	98.79	60	168.0	2.79	TPD320BP-H ~329BP-H
	140-16S-4-H		14.0~14.9	16	49.67	62.83	57.17	48	112.0	1.17	TPD140BP-H ~149BP-H
	150-20S-4-H		15.0~15.9	20	53.29	67.21	61.29	50	118.5	1.29	TPD150BP-H ~159BP-H
	160-20S-4-H		16.0~16.9	20	56.89	71.11	65.39	50	122.5	1.39	TPD160BP-H ~169BP-H
	170-20S-4-H		17.0~17.9	20	60.48	75.02	69.48	50	126.5	1.48	TPD170BP-H ~179BP-H
	180-20S-4-H		18.0~18.9	20	64.01	80.49	73.51	50	132.0	1.51	TPD180BP-H ~189BP-H
	190-20S-4-H		19.0~19.9	20	67.60	86.40	77.60	50	138.0	1.60	TPD190BP-H ~199BP-H
	200-25S-4-H		20.0~20.9	25	71.17	96.33	81.67	56	148.0	1.67	TPD200BP-H ~209BP-H
	210-25S-4-H		21.0~21.9	25	74.76	94.24	85.76	56	152.0	1.76	TPD210BP-H ~219BP-H
	220-25S-4-H	●	22.0~22.9	25	78.39	98.11	89.89	56	156.0	1.89	TPD220BP-H ~229BP-H
	230-25S-4-H		23.0~23.9	25	81.94	102.06	93.94	56	160.0	1.94	TPD230BP-H ~239BP-H
	240-32S-4-H	●	24.0~24.9	32	85.52	108.78	98.02	60	170.8	2.02	TPD240BP-H ~249BP-H
	250-32S-4-H		25.0~25.9	32	89.10	109.90	102.10	60	172.0	2.10	TPD250BP-H ~259BP-H
	260-32S-4-H	●	26.0~26.9	32	92.73	113.77	106.23	60	176.0	2.23	TPD260BP-H ~269BP-H
270-32S-4-H	●	27.0~27.9	32	96.28	117.72	110.28	60	180.0	2.28	TPD270BP-H ~279BP-H	
280-32S-4-H		28.0~28.9	32	99.82	121.68	114.32	60	184.0	2.32	TPD280BP-H ~289BP-H	
290-32S-4-H		29.0~29.9	32	103.55	125.45	118.55	60	188.0	2.55	TPD290BP-H ~299BP-H	
300-32S-4-H		30.0~30.9	32	107.11	129.39	122.61	60	192.0	2.61	TPD300BP-H ~309BP-H	
310-32S-4-H		31.0~31.9	32	110.70	133.30	126.70	60	196.0	2.70	TPD310BP-H ~319BP-H	
320-32S-4-H		32.0~32.9	32	114.29	137.21	130.79	60	200.0	2.79	TPD320BP-H ~329BP-H	

➡ Applicable inserts **D72**

● : Stock Item

# TPDB-H(5D/8D)



											(mm)
	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	PL	Applicable insert
TPDBP	140-16-345-5-H	●	14.0~14.9	16	35.67	83.83	71.17	48	133.0	1.17	TPD140BP-H ~ 149BP-H
	150-20-370-5-H		15.0~15.9	20	38.29	90.21	76.29	50	141.5	1.29	TPD150BP-H ~ 159BP-H
	160-20-395-5-H	●	16.0~16.9	20	40.89	95.11	81.39	50	146.5	1.39	TPD160BP-H ~ 169BP-H
	170-20-420-5-H		17.0~17.9	20	43.48	100.02	86.48	50	151.5	1.48	TPD170BP-H ~ 179BP-H
	180-20-445-5-H	●	18.0~18.9	20	46.01	106.49	91.51	50	158.0	1.51	TPD180BP-H ~ 189BP-H
	190-20-470-5-H		19.0~19.9	20	48.60	113.40	96.60	50	165.0	1.60	TPD190BP-H ~ 199BP-H
	200-25-495-5-H	●	20.0~20.9	25	51.17	123.33	101.67	56	175.0	1.67	TPD200BP-H ~ 209BP-H
	210-25-520-5-H		21.0~21.9	25	53.76	122.24	106.76	56	180.0	1.76	TPD210BP-H ~ 219BP-H
	220-25-545-5-H	●	22.0~22.9	25	56.39	127.11	111.89	56	185.0	1.89	TPD220BP-H ~ 229BP-H
	230-25-570-5-H		23.0~23.9	25	58.94	132.06	116.94	56	190.0	1.94	TPD230BP-H ~ 239BP-H
	240-32-595-5-H	●	24.0~24.9	32	61.52	144.78	122.02	60	206.8	2.02	TPD240BP-H ~ 249BP-H
	250-32-620-5-H		25.0~25.9	32	64.10	146.90	127.10	60	209.0	2.10	TPD250BP-H ~ 259BP-H
	260-32-645-5-H	●	26.0~26.9	32	66.73	151.77	132.23	60	214.0	2.23	TPD260BP-H ~ 269BP-H
	270-32-670-5-H		27.0~27.9	32	69.28	156.72	137.28	60	219.0	2.28	TPD270BP-H ~ 279BP-H
	280-32-695-5-H		28.0~28.9	32	71.82	161.68	142.32	60	224.0	2.32	TPD280BP-H ~ 289BP-H
	290-32-720-5-H		29.0~29.9	32	74.55	166.45	147.55	60	229.0	2.55	TPD290BP-H ~ 299BP-H
	300-32-745-5-H	●	30.0~30.9	32	77.11	171.39	152.61	60	234.0	2.61	TPD300BP-H ~ 309BP-H
	310-32-770-5-H		31.0~31.9	32	79.70	176.30	157.70	60	239.0	2.70	TPD310BP-H ~ 319BP-H
	320-32-795-5-H	●	32.0~32.9	32	82.29	181.21	162.79	60	244.0	2.79	TPD320BP-H ~ 329BP-H
	140-16-345-8-H	●	14.0~14.9	16	35.67	125.83	113.17	48	175.0	1.17	TPD140BP-H ~ 149BP-H
	150-20-370-8-H		15.0~15.9	20	38.29	135.21	121.29	50	186.5	1.29	TPD150BP-H ~ 159BP-H
	160-20-395-8-H	●	16.0~16.9	20	40.89	143.11	129.39	50	194.5	1.39	TPD160BP-H ~ 169BP-H
	170-20-420-8-H		17.0~17.9	20	43.48	151.02	137.48	50	202.5	1.48	TPD170BP-H ~ 179BP-H
	180-20-445-8-H	●	18.0~18.9	20	46.01	160.49	145.51	50	212.0	1.51	TPD180BP-H ~ 189BP-H
	190-20-470-8-H		19.0~19.9	20	48.60	170.40	153.60	50	222.0	1.60	TPD190BP-H ~ 199BP-H
	200-25-495-8-H	●	20.0~20.9	25	51.17	183.33	161.67	56	235.0	1.67	TPD200BP-H ~ 209BP-H
	210-25-520-8-H		21.0~21.9	25	53.76	185.24	169.76	56	243.0	1.76	TPD210BP-H ~ 219BP-H
	220-25-545-8-H	●	22.0~22.9	25	56.39	193.11	177.89	56	251.0	1.89	TPD220BP-H ~ 229BP-H
	230-25-570-8-H		23.0~23.9	25	58.94	201.06	185.94	56	259.0	1.94	TPD230BP-H ~ 239BP-H
	240-32-595-8-H		24.0~24.9	32	61.52	216.78	194.02	60	278.8	2.02	TPD240BP-H ~ 249BP-H
	250-32-620-8-H		25.0~25.9	32	64.10	221.90	202.10	60	284.0	2.10	TPD250BP-H ~ 259BP-H
	260-32-645-8-H		26.0~26.9	32	66.73	229.77	210.23	60	292.0	2.23	TPD260BP-H ~ 269BP-H
270-32-670-8-H		27.0~27.9	32	69.28	237.72	218.28	60	300.0	2.28	TPD270BP-H ~ 279BP-H	
280-32-695-8-H		28.0~28.9	32	71.82	245.68	226.32	60	308.0	2.32	TPD280BP-H ~ 289BP-H	
290-32-720-8-H		29.0~29.9	32	74.55	253.45	234.55	60	316.0	2.55	TPD290BP-H ~ 299BP-H	
300-32-745-8-H		30.0~30.9	32	77.11	261.39	242.61	60	324.0	2.61	TPD300BP-H ~ 309BP-H	
310-32-770-8-H		31.0~31.9	32	79.70	269.30	250.70	60	332.0	2.70	TPD310BP-H ~ 319BP-H	
320-32-795-8-H		32.0~32.9	32	82.29	277.21	258.79	60	340.0	2.79	TPD320BP-H ~ 329BP-H	

Applicable inserts D72

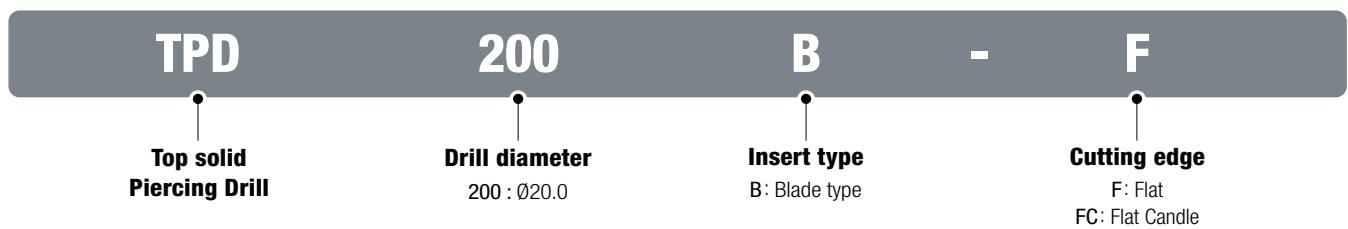
● : Stock Item

# TPDB-F

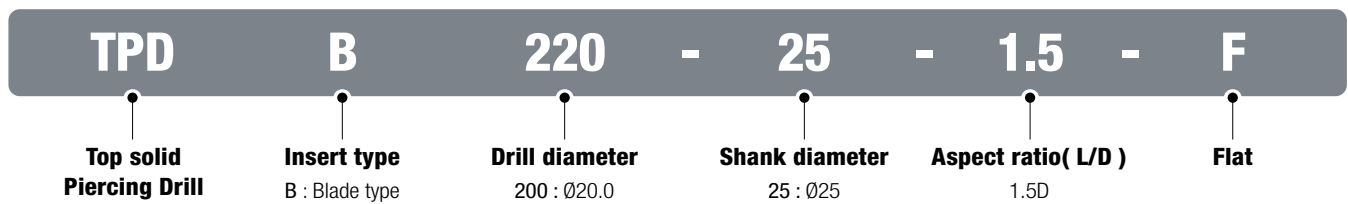
- **High precision clamping system** - High precision clamping due to high precise grinding and auto-centering
- **Screw on clamping system** - Easy to replace insert
- **Cutting edge with 180° point angle** - Flat bottom machining
- **Low cutting load cutting edge** - Low cutting load and excellent 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

## Code system

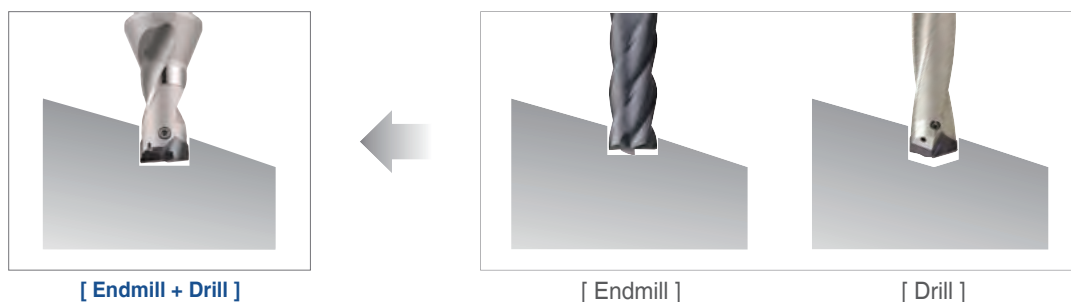
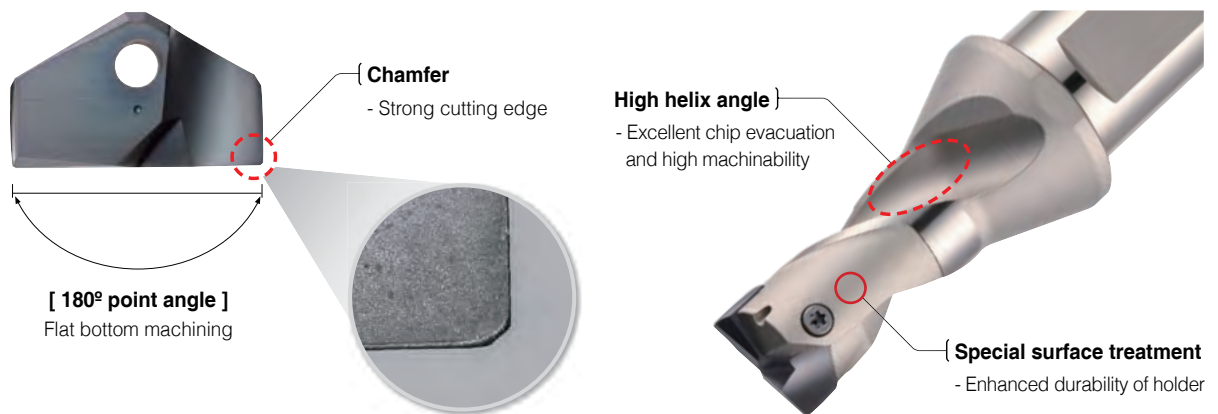
### • Insert



### • Holder

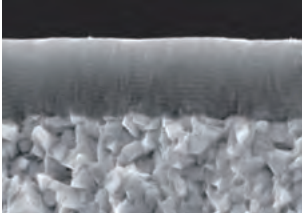


## Features



# D Technical Information for TPDB-F

## Grade features



### 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

## 추천절삭조건

ISO	Workpiece				Specific cutting force (N/mm <sup>2</sup> )	Brinell hardness (HB)	Grade	vc (m/min)	Aspect ratio (L/D) = 1.5D	
	Workpiece material	KS	ISO	fn (mm/rev)						
				Ø14 ~ Ø21.9					Ø22 ~ Ø30.9	
P	Carbon steel	C = 0.10~0.25%	SM15C SM25C	C15 C25	1500	90~200	PC5400	60~100	0.3~0.2	0.32~0.22
		C = 0.25~0.55%	SM35C SM45C	C35 C45	1600	125~225	PC5400	60~100	0.3~0.2	0.32~0.22
		C = 0.55~0.80%	SM58C	C60	1700	150~250	PC5400	50~90	0.3~0.2	0.32~0.22
	Alloy steel ≤ 5%	Non-hardened	SCM440	42CrMo4	1700	180	PC5400	50~90	0.3~0.2	0.32~0.22
		Hardened and Tempered	SCM445	-	2050	350	PC5400	40~80	0.2~0.2	0.32~0.22
	Alloy steel ≤ 5%	Annealed	STD11	-	1950	200	PC5400	40~80	0.28~0.18	0.3~0.2
		Hardened tool steel	STD61	X40CrMoV5-1	3000	352	PC5400	30~70	0.28~0.18	0.3~0.2

Type	Flat surface Drilling	Angled surface Drilling	Curved surface Drilling	Plunging	Boring
Fig.					
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	Curved surface Drilling	Plunging	Boring

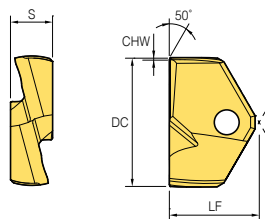
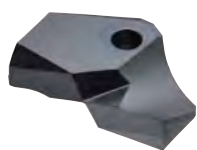
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface. (In case,  $\theta$  is over 30°, reduce it to 50%.)

- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface. (In case,  $\theta$  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 longer 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.

Available insert(TPDB-F)



(mm)



	Designation	Coated PC5400	DC	S	LF	CHW
TPD	140B-F		14.0	4.0	9.04	0.06
	145B-F		14.5	4.0	9.04	0.06
	150B-F		15.0	4.0	9.54	0.06
	155B-F		15.5	4.0	9.54	0.06
	160B-F		16.0	5.5	10.54	0.06
	165B-F		16.5	5.5	10.54	0.06
	170B-F		17.0	5.5	11.04	0.06
	175B-F		17.5	5.5	11.04	0.06
	180B-F		18.0	6.0	12.18	0.06
	185B-F		18.5	6.0	12.18	0.06
	190B-F		19.0	6.0	12.77	0.06
	195B-F		19.5	6.0	12.77	0.06
	200B-F		20.0	6.5	13.18	0.08
	205B-F		20.5	6.5	13.18	0.08
	210B-F		21.0	6.5	13.68	0.08
	215B-F		21.5	6.5	13.68	0.08
	220B-F	●	22.0	7.0	14.18	0.08
	225B-F		22.5	7.0	14.18	0.08
	230B-F		23.0	7.0	14.68	0.08
	235B-F		23.5	7.0	14.68	0.08
	240B-F		24.0	7.5	15.33	0.08
	245B-F		24.5	7.5	15.33	0.08
	250B-F		25.0	7.5	15.83	0.08
	255B-F		25.5	7.5	15.83	0.08
	260B-F		26.0	8.5	16.33	0.08
	265B-F	●	26.5	8.5	16.33	0.08
	270B-F		27.0	8.5	17.33	0.08
	275B-F		27.5	8.5	17.33	0.08
	280B-F		28.0	9.5	18.33	0.08
	285B-F		28.5	9.5	18.33	0.08
290B-F		29.0	9.5	18.97	0.08	
295B-F		29.5	9.5	18.97	0.08	
300B-F		30.0	10.0	19.47	0.08	
305B-F		30.5	10.0	19.47	0.08	

Applicable holders **D78**

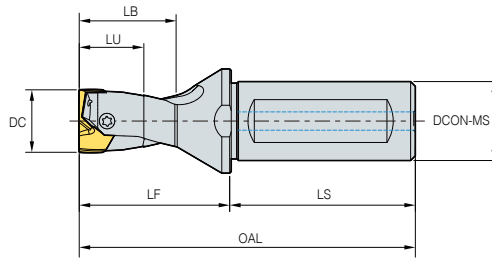
※ TPD Inserts not list above within the range of  $\varnothing 14.00 \sim \varnothing 30.99$  can be made to order

● : Stock Item

Parts

	Designation	Drill dia. DC (mm)	Screw 	Wrench 	Torque (N · m)
TPD	140B-F ~ 149B-F	14.0 ~ 14.9	FTNB02512-P	TW07S	0.8
	150B-F ~ 179B-F	15.0 ~ 17.9	FTNB02514-P	TW07S	0.8
	180B-F ~ 199B-F	18.0 ~ 19.9	FTNB0316-P	TW09S	1.2
	200B-F ~ 239B-F	20.0 ~ 23.9	FTNB0319	TW09S	1.2
	240B-F ~ 259B-F	24.0 ~ 25.9	FTNB03522	TW15S	3.0
	260B-F ~ 279B-F	26.0 ~ 27.9	FTNB03524	TW15S	3.0
	280B-F ~ 299B-F	28.0 ~ 29.9	FTNB0426	TW15S	3.0
	300B-F ~ 309B-F	30.0 ~ 30.9	FTNB0528	TW20-100	4.0

# TPDB-F(1.5D)



(mm)

	Designation	Stock	DC	DCON-MS	LU	LF	LB	LS	OAL	Applicable insert
<b>TPDB</b>	<b>140-16-1.5-F</b>		14.0~14.4	16	21.00	38.0	28.0	48	86.0	TPD140B-F ~ 144B-F
	<b>145-16-1.5-F</b>		14.5~14.9	16	21.75	39.0	29.0	48	87.0	TPD145B-F ~ 149B-F
	<b>150-20-1.5-F</b>		15.0~15.4	20	22.50	43.0	30.0	50	93.0	TPD150B-F ~ 154B-F
	<b>155-20-1.5-F</b>		15.5~15.9	20	23.25	44.0	31.0	50	94.0	TPD155B-F ~ 159B-F
	<b>160-20-1.5-F</b>		16.0~16.4	20	24.00	45.0	32.0	50	95.0	TPD160B-F ~ 164B-F
	<b>165-20-1.5-F</b>		16.5~16.9	20	24.75	46.0	33.0	50	96.0	TPD165B-F ~ 169B-F
	<b>170-20-1.5-F</b>		17.0~17.4	20	25.50	47.0	34.0	50	97.0	TPD170B-F ~ 174B-F
	<b>185-20-1.5-F</b>		18.5~18.9	20	27.75	50.0	37.0	50	100.0	TPD185B-F ~ 189B-F
	<b>190-25-1.5-F</b>		19.0~19.4	25	28.50	45.0	38.0	56	101.0	TPD190B-F ~ 194B-F
	<b>195-25-1.5-F</b>		19.5~19.9	25	29.25	46.0	39.0	56	102.0	TPD195B-F ~ 199B-F
	<b>200-25-1.5-F</b>		20.0~20.4	25	30.00	60.0	40.0	56	116.0	TPD200B-F ~ 204B-F
	<b>205-25-1.5-F</b>		20.5~20.9	25	30.75	61.0	41.0	56	117.0	TPD205B-F ~ 209B-F
	<b>210-25-1.5-F</b>		21.0~21.4	25	31.50	62.0	42.0	56	118.0	TPD210B-F ~ 214B-F
	<b>215-25-1.5-F</b>		21.5~21.9	25	32.25	63.0	43.0	56	119.0	TPD215B-F ~ 219B-F
	<b>220-25-1.5-F</b>		22.0~22.4	25	33.00	64.0	44.0	56	120.0	TPD220B-F ~ 224B-F
	<b>225-25-1.5-F</b>		22.5~22.9	25	33.75	65.0	45.0	56	121.0	TPD225B-F ~ 229B-F
	<b>230-25-1.5-F</b>		23.0~23.4	25	34.50	66.0	46.0	56	122.0	TPD230B-F ~ 234B-F
	<b>235-25-1.5-F</b>		23.5~23.9	25	35.25	67.0	47.0	56	123.0	TPD235B-F ~ 239B-F
	<b>240-32-1.5-F</b>		24.0~24.4	32	36.00	68.5	48.0	60	128.5	TPD240B-F ~ 244B-F
	<b>245-32-1.5-F</b>		24.5~24.9	32	36.75	69.5	49.0	60	129.5	TPD245B-F ~ 249B-F
	<b>250-32-1.5-F</b>		25.0~25.4	32	37.50	70.5	50.0	60	130.5	TPD250B-F ~ 254B-F
	<b>255-32-1.5-F</b>		25.5~25.9	32	38.25	71.5	51.0	60	131.5	TPD255B-F ~ 259B-F
	<b>260-32-1.5-F</b>		26.0~26.4	32	39.00	72.5	52.0	60	132.5	TPD260B-F ~ 264B-F
	<b>265-32-1.5-F</b>		26.5~26.9	32	39.75	73.5	53.0	60	133.5	TPD265B-F ~ 269B-F
	<b>270-32-1.5-F</b>		27.0~27.4	32	40.50	74.5	54.0	60	134.5	TPD270B-F ~ 274B-F
	<b>275-32-1.5-F</b>		27.5~27.9	32	41.25	75.5	55.0	60	135.5	TPD275B-F ~ 279B-F
	<b>280-32-1.5-F</b>		28.0~28.4	32	42.00	76.5	56.0	60	136.5	TPD280B-F ~ 284B-F
	<b>285-32-1.5-F</b>		28.5~28.9	32	42.75	77.5	57.0	60	137.5	TPD285B-F ~ 289B-F
	<b>290-32-1.5-F</b>		29.0~29.4	32	43.50	78.5	58.0	60	138.5	TPD290B-F ~ 294B-F
	<b>295-32-1.5-F</b>		29.5~29.9	32	44.25	79.5	59.0	60	139.5	TPD295B-F ~ 299B-F
<b>300-32-1.5-F</b>		30.0~30.4	32	45.00	80.5	60.0	60	140.5	TPD300B-F ~ 304B-F	
<b>305-32-1.5-F</b>		30.5~30.9	32	45.75	81.5	61.0	60	141.5	TPD305B-F ~ 309B-F	

Applicable inserts **D77**

● : Stock Item

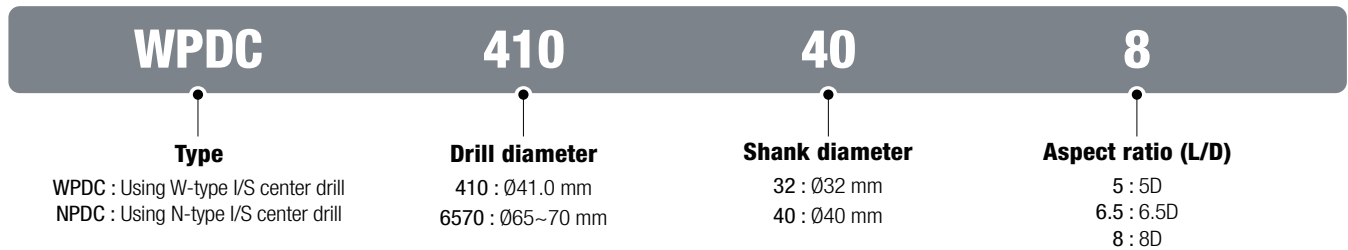
Convenient and quickly adjustable drill height

# WPDC

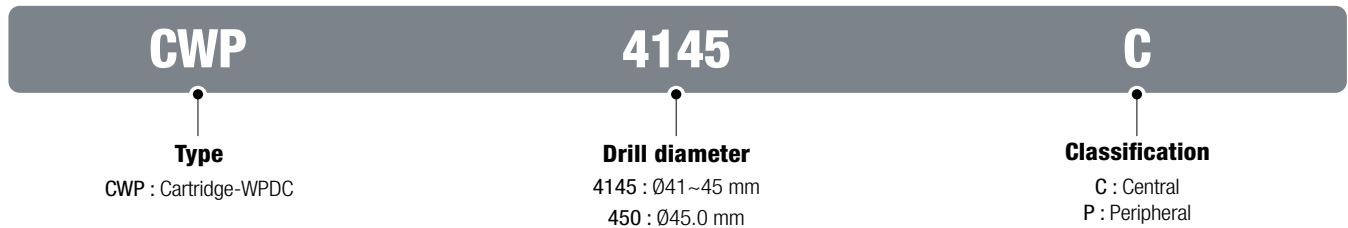
Indexable drill clamped with center drill

## Code system

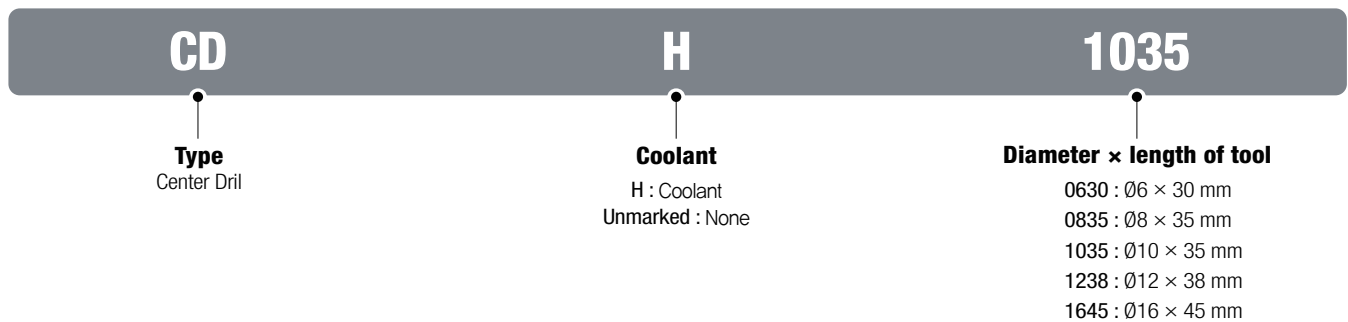
### • Holder



### • Cartridge



### • Center drill



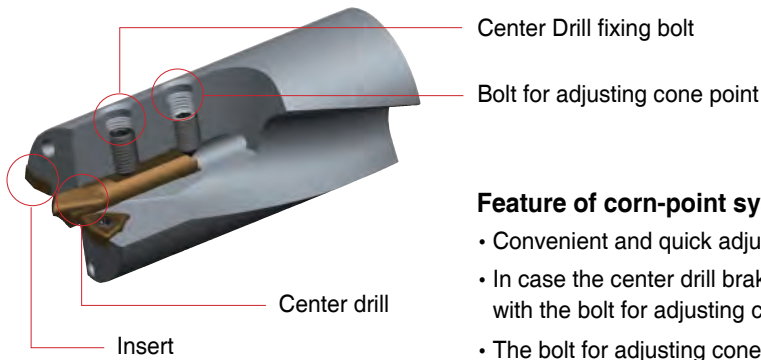
### • Grade





# D Technical Information for WPDC

## 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

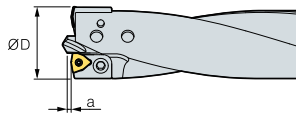
## Clamping

1	2	3	4	5
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

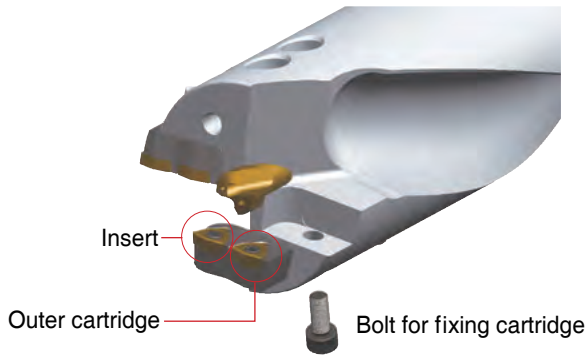
- The length of 'a' being too short can cause bad surface finish or high cutting load
- On the other hand, the length of 'a' being too long can make tool failure and chattering while drilling



Diameter (ØD)	Length of the 'a' part of center drill		
	Steel	Alloy steel	Non-ferrous metal
25~30	1.2	1.0	1.5
31~40	1.5	1.3	1.8
41~50	1.8	1.5	2.2
51~59	2.2	1.8	2.5
60~75	2.5	2.0	2.8
76~80	3.0	2.5	3.5

### 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



#### 1) Range of adjustable drill diameter

- ① Single cartridge type (Drill diameter  $\varnothing 41 \sim \varnothing 59$ )  $\rightarrow -1.0$  mm
- ② Dual cartridge type (Drill diameter  $\varnothing 60 \sim \varnothing 80$ )  $\rightarrow -5.0$  mm

#### 2) Diameter of the standard drills is provided with maximum size of standards

Ex) WPDC6570-40-6.5  $\rightarrow$  Drill diameter 70.0 mm






Ex) How to adjust drill diameter to  $\varnothing 66.0$  machining with WPDC6570-40-8

$\rightarrow$  To make the drill diameter of outer cartridge to  $\varnothing 66.0$ , machine 2.0 mm ( $\varnothing 70.0 - \varnothing 66.0 = 4 \rightarrow 4 \div 2 = 2$  (radius))

### Recommended cutting conditions

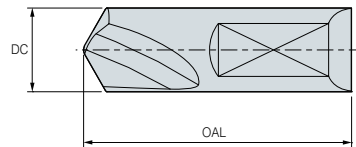
Workpiece			Chip breaker	Grade	vc (m/min)	Aspect ratio (L/D) = 5D, 6.5D, 8D						
ISO	Workpiece	HB				Feed rate (mm/rev) per drill dia. (mm)						
						$\sim \varnothing 30$	$\varnothing 31 \sim \varnothing 40$	$\varnothing 41 \sim \varnothing 50$	$\varnothing 51 \sim \varnothing 59$	$\varnothing 60 \sim \varnothing 75$	$\varnothing 76 \sim \varnothing 80$	
P	Carbon steel	Low carbon steel ( $\sim 0.25\%$ )	80~180	C21N	PC5335	190(160~220)	0.07~0.11	0.08~0.12	0.10~0.14	0.12~0.16	0.12~0.16	0.12~0.16
		High carbon steel (0.25%~)	180~280	C21N	PC5335	140(110~170)	0.07~0.11	0.08~0.12	0.10~0.14	0.12~0.16	0.12~0.16	0.12~0.16
	Alloy steel	Low alloy steel	140~260	C21N	PC5335	130(100~160)	0.08~0.12	0.08~0.12	0.10~0.14	0.12~0.18	0.12~0.18	0.12~0.18
		High alloy steel	50~260	C21N	PC5335	100(70~130)	0.06~0.10	0.08~0.12	0.08~0.12	0.10~0.16	0.10~0.16	0.10~0.16
M	Stainless steel	Stainless steel	135~275	C21N	PC5335	100(70~130)	0.06~0.10	0.08~0.12	0.10~0.12	0.12~0.14	0.12~0.14	0.12~0.14
K	Cast iron	Gray cast iron	150~220	C21N	PC5335	160(130~190)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
		Ductile cast iron	200~300	C21N	PC5335	140(170~110)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
		Malleable cast iron	130~230	C21N	PC5335	150(180~120)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
N	Non-ferrous metal	Aluminum	30~150	C21N	PC5335	300(250~350)	0.08~0.12	0.10~0.14	0.12~0.16	0.14~0.18	0.14~0.18	0.14~0.18
		Alloyed copper	150~160	C21N	PC5335	250(200~300)	0.08~0.12	0.10~0.14	0.12~0.16	0.14~0.18	0.14~0.18	0.14~0.18
S	Heat resistant alloy	Heat resistant alloy	130~400	C21N	PC5335	50(70~30)	0.05~0.08	0.05~0.08	0.06~0.10	0.06~0.10	0.06~0.10	0.06~0.10

## Parts of WPDC type indexable drills

Designation	ØD	Insert			Center drill			Cartridge					
		Insert	Screw 	Wrench 	Center drill 	fixed bolt 	cone point bolt 	Central	Peripheral	Fixed bolt			
WPDC 250-32-□	25	WC□T030204-C21N	FTKA02206	TW06S	CD0630	KHA0508	KHC0510						
260-280-32-□	26~28	WC□T040204-C21N	FTNA02555	TW07S		KHA0510							
290-300-32-□	29~30					WC□T050308-C21N	FTKA0307				TW09S	KHA0610	KHC0610
310-350-32-□	31~35	KHA0612											
360-400-32-□	36~40	WC□T06T308-C21N	FTKA03508	TW15S	CDH1035							KHA0812	
410-40-□	41					CWP420P							
420-40-□	42					CWP430P							
430-40-□	43					CWP440P							
440-40-□	44					CWP450P							
450-40-□	45				CDH1238	KHA0815	KHC0812				CWP460P	CWP4650C	BHA0512
460-40-□	46										CWP470P		
470-40-□	47										CWP480P		
480-40-□	48							CWP490P					
490-40-□	49							CWP500P					
510-40-□	51	WC□T080408-C21N	FTKA0411K	TW15S	CDH1238	KHA1015	KHC1016	CWP510P	CWP5155C	BHA0612			
520-40-□	52							CWP520P					
530-40-□	53							CWP530P					
540-40-□	54							CWP540P					
550-40-□	55							CWP550P					
560-40-□	56				CDH1645	KHA1020	KHC1016	CWP560P	CWP5659C	BHA0614			
570-40-□	57							CWP570P					
580-40-□	58							CWP580P					
590-40-□	59							CWP590P					
6065-40-□	60~65							WC□T050308-C21N			FTKA0307	TW09S	KHA1020
6570-40-□	65~70	CWP6570C	CWP6570P										
7075-40-□	70~75	CWP7075C	CWP7075P										
7580-40-□	75~80	WC□T06T308-C21N	FTKA03508	TW15S	CDH1645			CWP7580C	CWP7580T	BHA0612			

Applicable inserts **D83**

## Center Drill


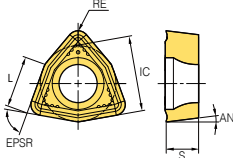

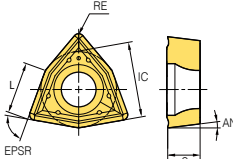


(mm)

Designation	DC	OAL	Oil-hole
CD 0630	6	30	X
CD 0835	8	35	X
CDH 1035	10	35	○
CDH 1238	12	38	○
CDH 1645	16	45	○

• This is HSS with Tin coating

**Applicable insert**

Picture	Designation	Coated							Uncoated	Dimension (mm)						Configuration		
		NC5330	NCM535	PC3700	PC6100	PC9530	PC9540	PC5335	PC5300	H01	IC	S	RE	CBMD	AN		CEDC	
	030208-C20N							●			5.56	2.38	0.8	C20N	7	3		
	040208-C20N							●			6.35	2.38	0.8	C20N	7	3		
	050308-C20N		●						●			7.94	3.18	0.8	C20N	7		3
	06T308-C20N		●						●			9.525	3.97	0.8	C20N	7		3
	080408-C20N								●			12.7	4.76	0.8	C20N	7		3
	080412-C20N		●						●			12.7	4.76	1.2	C20N	7		3
	030204-C21N							●			5.56	2.38	0.4	C21N	7	3		
	040204-C21N							●			6.35	2.38	0.4	C21N	7	3		
	040208-C21N								●			6.35	2.38	0.8	C21N	7		3
	050308-C21N								●			7.94	3.18	0.8	C21N	7		3
	06T308-C21N								●			9.525	3.97	0.8	C21N	7		3
	080408-C21N								●			12.7	4.76	0.8	C21N	7		3

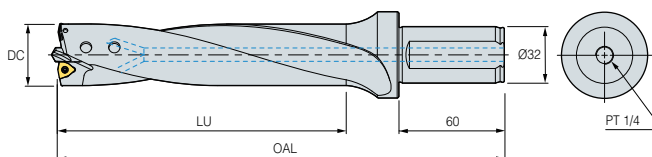
Applicable inserts **D83 ~ D84**

● : Stock Item

**WPDC(5D/6.5D/8D)**



Standard type



Designation	DC	5D		6.5D		8D		Applicable insert	Center drill	
		LU	OAL	LU	OAL	LU	OAL			
WPDC	250-32-□	25	150	240	185	275	220	310	WC□T030204-C21N	CD0630
	260-32-□	26	150	240	185	275	220	310		
	270-32-□	27	150	240	185	275	220	310		
	280-32-□	28	150	240	185	275	220	310		
	290-32-□	29	150	240	185	275	220	310		
	300-32-□	30	150	240	185	275	220	310		
	310-32-□	31	175	265	218	308	260	350	WC□T050308-C21N	CD0835
	320-32-□	32	175	265	218	308	260	350		
	330-32-□	33	175	265	218	308	260	350		
	340-32-□	34	175	265	218	308	260	350		
	350-32-□	35	175	265	218	308	260	350		
	360-32-□	36	200	290	250	340	300	390		
	370-32-□	37	200	290	250	340	300	390		
	380-32-□	38	200	290	250	340	300	390		
390-32-□	39	200	290	250	340	300	390			
400-32-□	40	200	290	250	340	300	390			

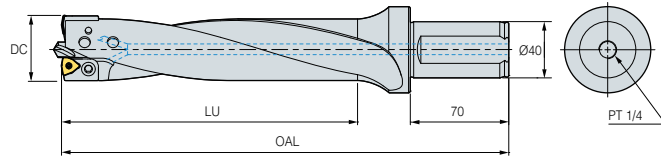
Applicable inserts **D83**

\* We can provide if you order exact diameter  
Ex) machining hole 32.5 mm \* 6.5D WPDC325-32-6.5

# WPDC(5D/6.5D/8D)



Single insert cartridge type



(mm)

Designation	DC	5D		6.5D		8D		Applicable insert	Center drill	Cartridge		
		LU	OAL	LU	OAL	LU	OAL			Inner	Outer	
WPDC	410-40-□	41	225	330	283	388	340	445	WC□T06T308-C21N	CDH1035	CWP4145C	CWP410P
	420-40-□	42	225	330	283	388	340	445				CWP420P
	430-40-□	43	225	330	283	388	340	445				CWP430P
	440-40-□	44	225	330	283	388	340	445				CWP440P
	450-40-□	45	225	330	283	388	340	445				CWP450P
	460-40-□	46	250	355	315	420	380	485			CWP4650C	CWP460P
	470-40-□	47	250	355	315	420	380	485				CWP470P
	480-40-□	48	250	355	315	420	380	485				CWP480P
	490-40-□	49	250	355	315	420	380	485				CWP490P
	500-40-□	50	250	355	315	420	380	485				CWP500P
	510-40-□	51	275	380	348	453	420	525			CWP5155C	CWP510P
	520-40-□	52	275	380	348	453	420	525				CWP520P
	530-40-□	53	275	380	348	453	420	525				CWP530P
	540-40-□	54	275	380	348	453	420	525				CWP540P
	550-40-□	55	275	380	348	453	420	525				CWP550P
	560-40-□	56	300	405	380	485	460	565			CWP5659C	CWP560P
	570-40-□	57	300	405	380	485	460	565				CWP570P
	580-40-□	58	300	405	380	485	460	565				CWP580P
	590-40-□	59	300	405	380	485	460	565				CWP590P

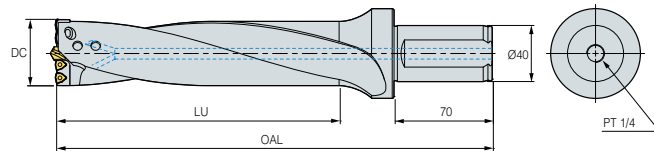
Applicable inserts **D83**

\* We can provide if you order exact diameter  
Ex) machining hole 47.5 mm \* 5D -> WPDC475-40-5

# WPDC(5D/6.5D/8D)



Dual insert cartridge type



(mm)

Designation	DC	DCX	5D		6.5D		8D		Applicable insert	Center drill	Cartridge		
			LU	OAL	LU	OAL	LU	OAL			Inner	Outer	
WPDC	6065-40-□	60~65	60~65	325	430	423	528	520	625	WC□T050308-C21N	CDH1238	CWP6065C	CWP6065P
	6570-40-□	65~70	65~70	350	455	455	560	560	665			CWP6570C	CWP6570P
	7075-40-□	70~75	70~75	375	480	488	593	600	705			CWP7075C	CWP7075P
	7580-40-□	75~80	75~80	400	505	520	625	640	745			WC□T06T308-C21N	CDH1645

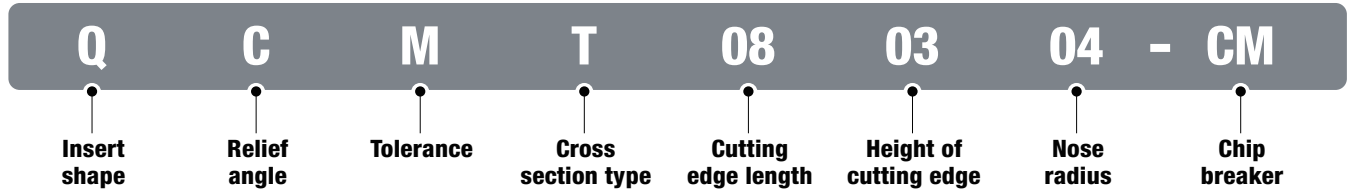
Applicable inserts **D83**

\* We can provide if you order exact diameter  
Ex) machining hole 70.5 mm \* 6.5D -> WPDC705-40-6.5

## Multi Turn

### Code system

#### • Insert

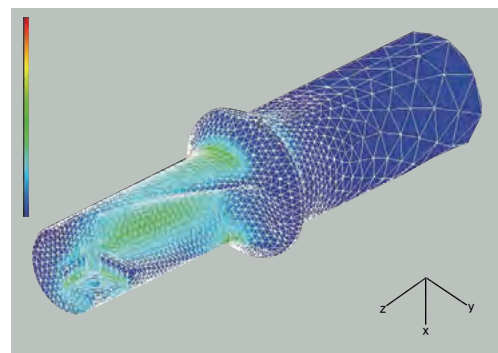
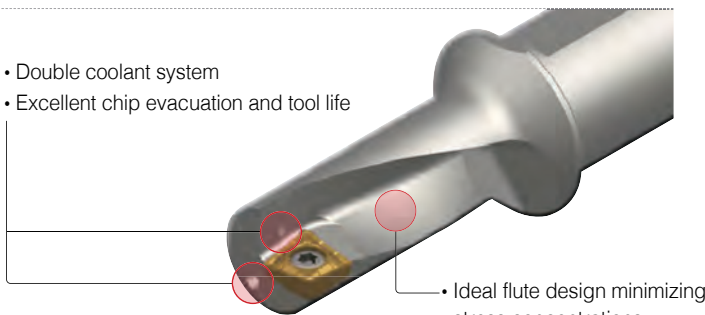


#### • Holder



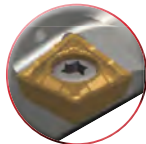
### Tool design by FEM analysis

- Double coolant system
- Excellent chip evacuation and tool life



- Minimized stress during cutting, prevented damage from vibration and longer tool life **Optimized design**

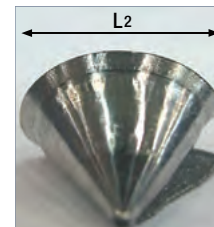
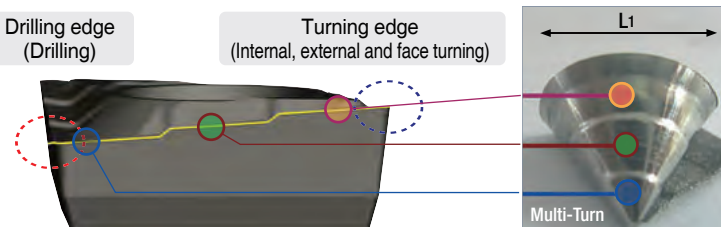
※ **Notice:** Clamp an insert shown as in the picture



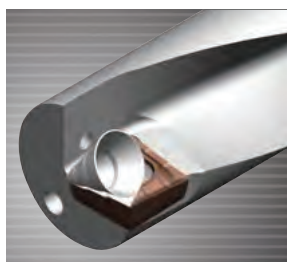
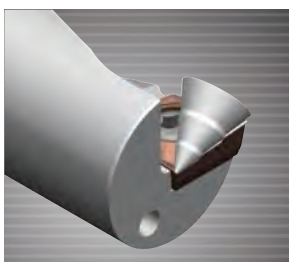
### Creative stepping cutting edge

Drilling edge (Drilling)

Turning edge (Internal, external and face turning)



- Special chip formed by edge geometry better chip
- Evacuation due to small radius width of chip curl



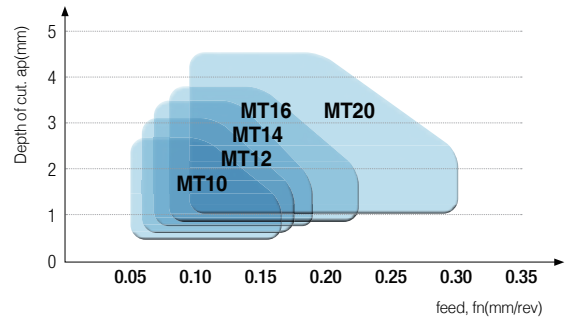
Comparison	Multi turn	Competitor A	Competitor B
Feed $f_n$ (mm/rev) = 0.08			
Feed $f_n$ (mm/rev) = 0.10			
Chip width (rate)	80%	100%	120%

## ➤ User's guide

### » External / Internal turning



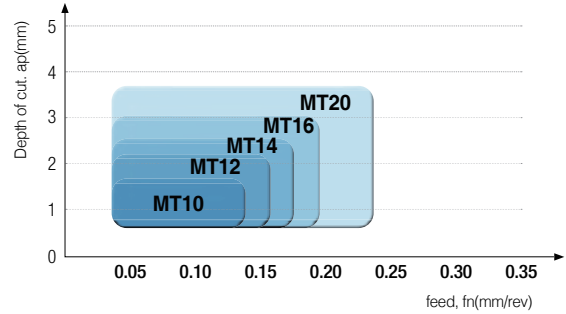
#### ● Application range



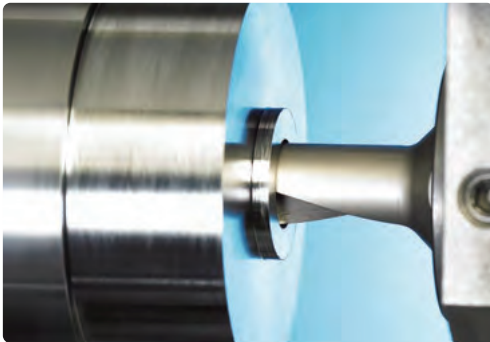
### » Facing



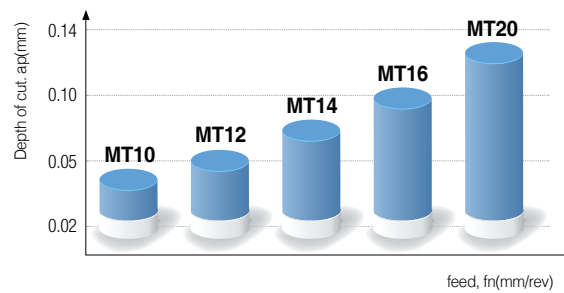
#### ● Application ranges of facing



### » Drilling

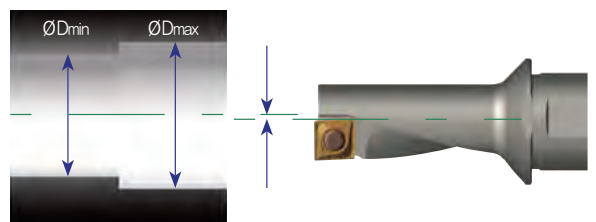


#### ● Drilling feed range by designation



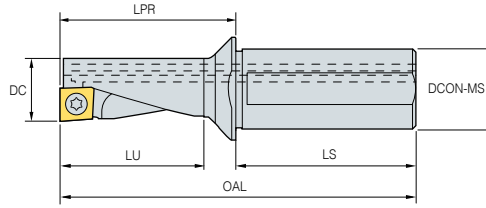
### » Offset (Diameter compensation)

Disignation	Machined diameter (mm)	ØDmin(mm)	ØDmax(mm)
MT10R/L-2.25D	10	9.85	10.35
MT12R/L-2.25D	12	11.85	12.35
MT14R/L-2.25D	14	13.85	14.35
MT16R/L-2.25D	16	15.85	16.35
MT20R/L-2.25D	20	19.85	20.35
MT25R/L-2.25D	25	24.85	25.35
MT32R/L-2.25D	32	31.85	32.35



Drill diameter is adjustable by the offset compensation

# MT(Multi-Turn)



Designation	Stock		DC	DCON-MS	LU	OAL	LPR	LS	Applicable insert	Screw	Wrench
	R	L									
<b>MT</b> 10R/L-2.25D	●	●	10	12	22.5	69.5	27.5	42	QC□T050204	FTNA0204S	TW06P
12R/L-2.25D	●	●	12	16	27	78	33	45	QC□T060204	FTNA02205S	TW06P
14R/L-2.25D	●		14	16	31.5	83.5	38.5	45	QC□T070304	FTKA02555	TW07P
16R/L-2.25D	●	●	16	20	36	94	44	50	QC□T080304	FTNA0306	TW09P
20R/L-2.25D	●	●	20	25	45	111	55	56	QC□T10T304	FTNA03508	TW15P
25R/L-2.25D	●		25	32	56.25	130	69	61	QC□T130408	FTNC04509	TW20S
32R/L-2.25D	●		32	40	72	160	86	74	QC□T170508	FTNC04511	TW20S

↻ Applicable inserts **D87**

● : Stock Item

## ↻ Applicable insert

Picture	Designation	Coated				Uncoated		Dimension (mm)					Configuration
		NC3120	NC3225	NC6315	PC5300	H01	H05	IC	L	S	RE	EPSR	
	<b>QCMT</b> 050204-CM		●	●	●			5.4	5	2.10	0.4	87	
	060204-CM		●	●	●			6.4	6	2.38	0.4	87	
	070304-CM		●	●	●			7.4	7	3.18	0.4	87	
	080304-CM		●	●	●			8.4	8	3.18	0.4	87	
	10T304-CM		●		●			10.4	10	3.97	0.4	87	
	130408-CM		●		●			13.5	13	4.76	0.8	87	
	170508-CM		●	●	●			17.5	17	5.56	0.8	87	
	<b>QCGT</b> 050204-CA					●		5.4	5	2.10	0.4	87	
	060204-CA					●		6.4	6	2.38	0.4	87	
	070304-CA					●		7.4	7	3.18	0.4	87	
	080304-CA					●		8.4	8	3.18	0.4	87	
	10T304-CA					●		10.4	10	3.97	0.4	87	
	130408-CA					●		13.5	13	4.76	0.8	87	
	170508-CA					●		17.5	17	5.56	0.8	87	

↻ Applicable holders **D87**

● : Stock Item



# D Technical Information for Indexable Reamer

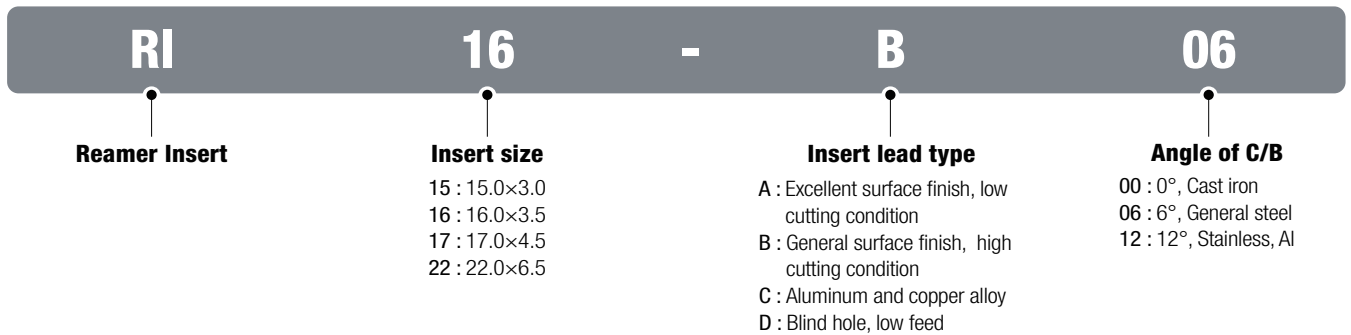
Mass production and High performance

## Indexable Reamers

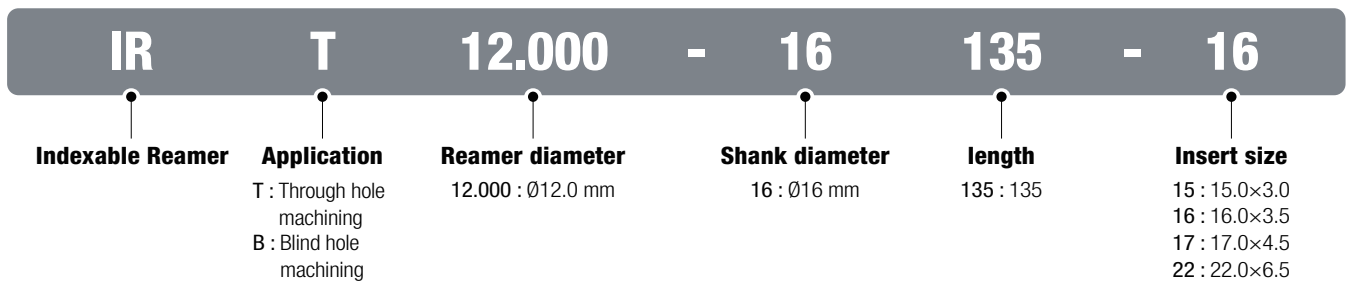
- Suitable for mass production and high performance
- Using PCD or coated insert for high speed machining
- Excellent high accuracy and adjustable machining hole
- Using accuracy chucking system (Hydraulic, rotating type arbor)
- Using inner coolant type machine to evacuate chips
- Using suitable holder and insert
- As insert setting, using setting fixture (KIRSD-210)

### Code system

#### • Insert

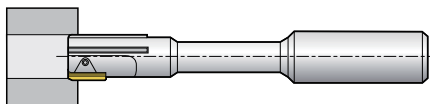


#### • Holder

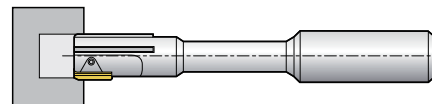


### Application

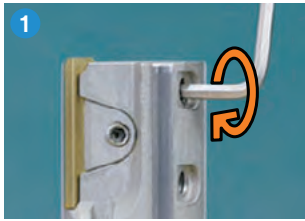
Through hole machining (IRT type)



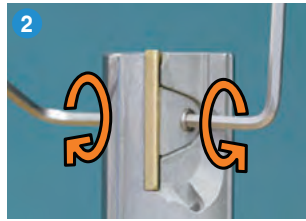
Blind hole machining (IRB type)



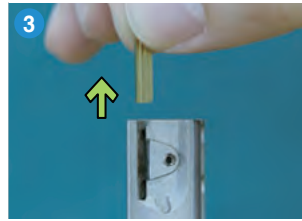
## How to set an insert



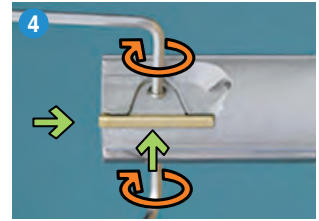
1. Screw the wedge screw counter clockwise with the exclusive wrench



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:  $\varnothing 60 \times 210$  mm
- 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:  $+0.015 \sim +0.020$  mm  
 ② Bottom side of insert:  $+0.005 \sim +0.010$  mm  
 ③ Back taper:  $0.010 \sim 0.015$  mm

## 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  $0.010 \sim 0.015$  mm 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

# D Technical Information for Indexable Reamer

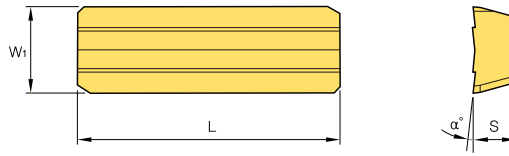
## Recommended cutting conditions

Workpiece	Insert type		Feed rate (mm/rev) per drill dia. (mm)	Cutting speed $v_c$ (m/min)	
	Rake angle	Lead type		Coated	Uncoated
Carbon steel General steel	6	A	0.1~0.4	60~80	40~60
		B	0.1~0.3	80~120	60~80
		D	0.05~0.2		
Mild steel Alloy steel	6	A	0.1~0.4	40~60	20~40
		B	0.1~0.3	80~120	60~80
		D	0.05~0.2		
High alloy steel Tool steel	6	A	0.1~0.4	20~60	20~40
		B	0.1~0.3	40~80	40~60
		D	0.05~0.2		
Stainless steel	12	A	0.1~0.3	40~60	20~40
		B	0.1~0.2	60~80	40~60
		D	0.05~0.2		
Cast iron	0.6	A	0.1~0.3	60~100	40~60
		B	0.1~0.25	80~120	60~80
		D	0.05~0.2		
Alloyed aluminum	12	B	0.1~0.3		160~200
		C	0.15~0.3		150~250
		D	0.05~0.2		110~200
Alloyed copper	0	B	0.1~0.2		80~100
		D	0.05~0.2		
Non-ferrous alloy	0	B	0.1~0.3		10~70

## Parts

Reamer size	Clamp	Wedge	Clamp Screw	Wedge Screw	Clamp Wrench	Wedge Wrench
10.0~11.9	CV 15	AW2430	DHA0308	HSO306	HW15L	HW15L
12.0~17.9	CV 16	AW2435				
18.0~27.9	CV 17	AW3240	DHA0409	HSO406	HW20L	HW20L
28.0~31.9	CV 22	AW3260				

## Available insert



Designation	Grade			Dimensions			Lead type	Rake angle (α°)
	K10 (Uncoated)	BPK110 (TiAlN)	BPK210 (TiN)	L	W1	S		
RI	15-A06		○	15	3.0	1.5	A	6°
	15-A12	○		15	3.0	1.5	A	12°
	15-B06		○	15	3.0	1.5	B	6°
	15-B12		○	15	3.0	1.5	B	12°
	16-A06			16	3.5	1.5	A	6°
	16-A12	○		16	3.5	1.5	A	12°
	16-B06		○	16	3.5	1.5	B	6°
	16-B12		○	16	3.5	1.5	B	12°
	17-A06			17	4.5	2.0	A	6°
	17-A12	○		17	4.5	2.0	A	12°
	17-B06		○	17	4.5	2.0	B	6°
	17-B12		○	17	4.5	2.0	B	12°
	22-A06			22	6.5	3.0	A	6°
	22-A12	○		22	6.5	3.0	A	12°
	22-B06		○	22	6.5	3.0	B	6°
	22-B12		○	22	6.5	3.0	B	12°

(mm)

Applicable holders **D92 ~ D93**

※ ○ This is recommended grade as for insert type

## Angle of chip breaker

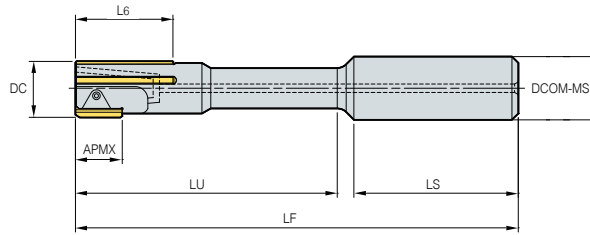
Division	00	06	12
Shape			
Application	For cast iron machining	For general machining	For stainless and aluminum machining

## 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



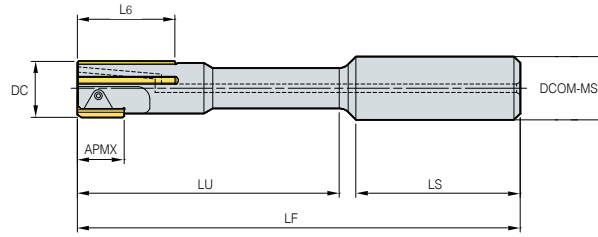
(mm)

Designation	DC	APMX	L6	LU	LS	LF	DCOM-MS	Applicable insert	
<b>IRT</b>	<b>10.000-16125-15</b>	10	15	30	75	45	125	16	RI 15
	<b>11.000-16125-15</b>	11	15	30	75	45	125	16	RI 15
	<b>12.000-16135-16</b>	12	16	30	85	45	135	16	RI 16
	<b>13.000-16135-16</b>	13	16	30	85	45	135	16	RI 16
	<b>14.000-16135-16</b>	14	16	30	85	45	135	16	RI 16
	<b>15.000-16135-16</b>	15	16	30	85	45	135	16	RI 16
	<b>16.000-20155-16</b>	16	16	30	100	50	155	20	RI 16
	<b>17.000-20155-16</b>	17	16	30	100	50	155	20	RI 16
	<b>18.000-20155-17</b>	18	17	30	100	50	155	20	RI 17
	<b>19.000-20155-17</b>	19	17	30	100	50	155	20	RI 17
	<b>20.000-25165-17</b>	20	17	30	110	56	165	25	RI 17
	<b>21.000-25165-17</b>	21	17	30	110	56	165	25	RI 17
	<b>22.000-25165-17</b>	22	17	30	110	56	165	25	RI 17
	<b>23.000-25165-17</b>	23	17	30	110	56	165	25	RI 17
	<b>24.000-25165-17</b>	24	17	30	110	56	165	25	RI 17
	<b>25.000-25165-17</b>	25	17	30	110	56	165	25	RI 17
	<b>26.000-25165-17</b>	26	17	30	110	56	165	25	RI 17
	<b>27.000-25165-17</b>	27	17	30	110	56	165	25	RI 17
	<b>28.000-32165-22</b>	28	22	30	110	56	165	32	RI 22
	<b>29.000-32165-22</b>	29	22	30	110	56	165	32	RI 22
	<b>30.000-32165-22</b>	30	22	30	110	56	165	32	RI 22
	<b>31.000-32165-22</b>	31	22	30	110	56	165	32	RI 22

Applicable inserts **D91**

## IRB

Stuffed hole



(mm)

Designation	DC	APMX	L6	LU	LS	LF	DCOM-MS	Applicable insert	
<b>IRB</b>	<b>10.000-16125-15</b>	10	15	30	75	45	125	16	RI 15
	<b>11.000-16125-15</b>	11	15	30	75	45	125	16	RI 15
	<b>12.000-16135-16</b>	12	16	30	85	45	135	16	RI 16
	<b>13.000-16135-16</b>	13	16	30	85	45	135	16	RI 16
	<b>14.000-16135-16</b>	14	16	30	85	45	135	16	RI 16
	<b>15.000-16135-16</b>	15	16	30	85	45	135	16	RI 16
	<b>16.000-20155-16</b>	16	16	30	100	50	155	20	RI 16
	<b>17.000-20155-16</b>	17	16	30	100	50	155	20	RI 16
	<b>18.000-20155-17</b>	18	17	30	100	50	155	20	RI 17
	<b>19.000-20155-17</b>	19	17	30	100	50	155	20	RI 17
	<b>20.000-25165-17</b>	20	17	30	110	56	165	25	RI 17
	<b>21.000-25165-17</b>	21	17	30	110	56	165	25	RI 17
	<b>22.000-25165-17</b>	22	17	30	110	56	165	25	RI 17
	<b>23.000-25165-17</b>	23	17	30	110	56	165	25	RI 17
	<b>24.000-25165-17</b>	24	17	30	110	56	165	25	RI 17
	<b>25.000-25165-17</b>	25	17	30	110	56	165	25	RI 17
	<b>26.000-25165-17</b>	26	17	30	110	56	165	25	RI 17
	<b>27.000-25165-17</b>	27	17	30	110	56	165	25	RI 17
	<b>28.000-32165-22</b>	28	22	30	110	56	165	32	RI 22
	<b>29.000-32165-22</b>	29	22	30	110	56	165	32	RI 22
<b>30.000-32165-22</b>	30	22	30	110	56	165	32	RI 22	
<b>31.000-32165-22</b>	31	22	30	110	56	165	32	RI 22	

Applicable inserts **D91**



# TOOLING SYSTEM

We will strive to contribute to the development of the automotive, aerospace, electronics, machinery, and plant industries by supplying high-quality products to our customers, and we will make every effort to promote the excellence of Korean tools worldwide through exports to various countries.



## Technical Information for TOOLING SYSTEM

<b>E2</b>	Tooling System Index	<b>E94</b>	FMA
<b>E4</b>	DINOX MAP	<b>E96</b>	FMC
<b>E8</b>	DHE	<b>E99</b>	MD
<b>E15</b>	DHE/S	<b>E105</b>	EXT/RDC
<b>E18</b>	DHE/G	<b>E106</b>	FBH/B
<b>E20</b>	DHC/DHJ Collet	<b>E112</b>	FBH
<b>E22</b>	DZC	<b>E113</b>	FBH/D
<b>E24</b>	DSC	<b>E117</b>	DBCA
<b>E33</b>	NPM	<b>E121</b>	DBC
<b>E39</b>	DCL	<b>E123</b>	SMB
<b>E40</b>	DCJ	<b>E125</b>	KMB
<b>E44</b>	SDC/P	<b>E127</b>	SMH
<b>E53</b>	SDC/PL	<b>E129</b>	BKA
<b>E56</b>	GERC	<b>E131</b>	FZ UNIT
<b>E60</b>	ER Collet	<b>E132</b>	Angular head
<b>E64</b>	ER/L	<b>E134</b>	KAH
<b>E65</b>	RTJW	<b>E136</b>	KHU
<b>E67</b>	DSK	<b>E138</b>	KAG
<b>E70</b>	GSK	<b>E140</b>	HRAG
<b>E74</b>	HC Collet	<b>E142</b>	MAH
<b>E78</b>	DTN	<b>E144</b>	KAC
<b>E81</b>	TCA Tap Adapter	<b>E146</b>	SAH
<b>E82</b>	DST	<b>E148</b>	POSITIONING BLOCK
<b>E85</b>	TER Tap Collet	<b>E150</b>	ATM
<b>E86</b>	THE	<b>E153</b>	ATM(U) SPARE PART
<b>E88</b>	STER PAT.	<b>E154</b>	ATU
<b>E89</b>	OFH	<b>E156</b>	Damping Pro
<b>E90</b>	SLA	<b>E163</b>	Pull Stud Bolt
<b>E93</b>	MTA/TMTA	<b>E164</b>	HT



# E Tooling System Index

<b>DHE</b>  E8	<b>DHE/S</b>  E15	<b>DHE/G</b>  E18	<b>DHC/DHJ</b>  E20
<b>DZC</b>  E22	<b>DSC</b>  E24	<b>NPM</b>  E33	<b>DCL</b>  E39
<b>DJC</b>  E40	<b>SDC/P</b>  E44	<b>SDC/PL</b>  E53	<b>GETC</b>  E56
<b>ER COLLET</b>  E60	<b>ER/L</b>  E64	<b>RTJW</b>  E65	<b>DSK</b>  E67
<b>GSK</b>  E70	<b>HC COLLET</b>  E74	<b>DTN</b>  E78	<b>TCA</b>  E81
<b>DST</b>  E82	<b>TER</b>  E85	<b>TEH</b>  E86	<b>STER PAT.</b>  E88

**OFH**



**E89**

**SLA**



**E90**

**MTA/TMTA**



**E93**

**FMA**



**E94**

**FMC**



**E96**

**MD**



**E101**

**EXT**



**E105**

**RDC**



**E105**

**FBH/B**



**E106**

**FBH**



**E112**

**FBH/D**



**E113**

**DBCA**



**E117**

**DBC**



**E121**

**SMB**



**E123**

**KMB**



**E125**

**SMH**



**E127**

**BAK**



**E129**

**FZ UNIT**



**E131**

**KAH**



**E134**

**FMA**



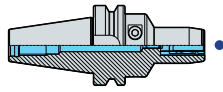
**E158**

**FMC**

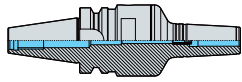


**E159**

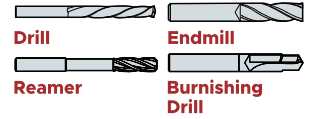
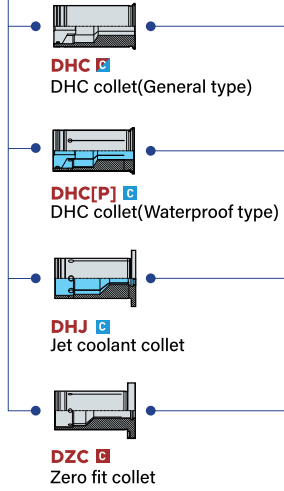
## 1. Hydraulic Expansion Chuck



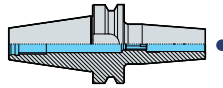
**DHE** Hydraulic expansion chuck



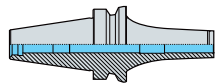
**DHE/S** Slim hydraulic expansion chuck



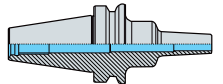
## 2. Shrinking Chuck



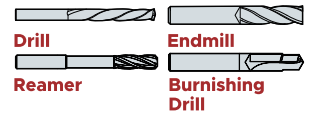
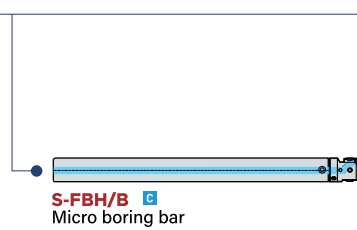
**DSC** Shrinking Chuck



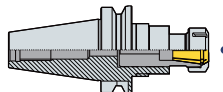
**DSC/M** Shrinking Chuck (Mono curve type)



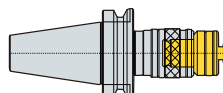
**DSC/S** Shrinking Chuck (Mono slim type)



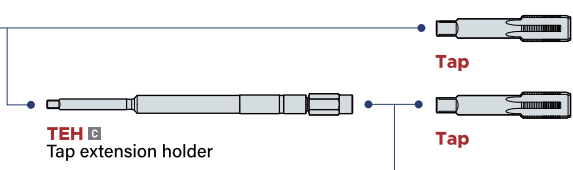
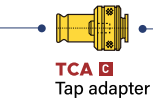
## 3. Tapping Holder



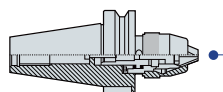
**DST** High speed synchro tapping chuck



**DTN** Tapping holder



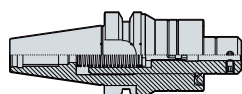
## 4. Drill Chuck



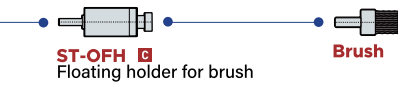
**NPU** Drill chuck



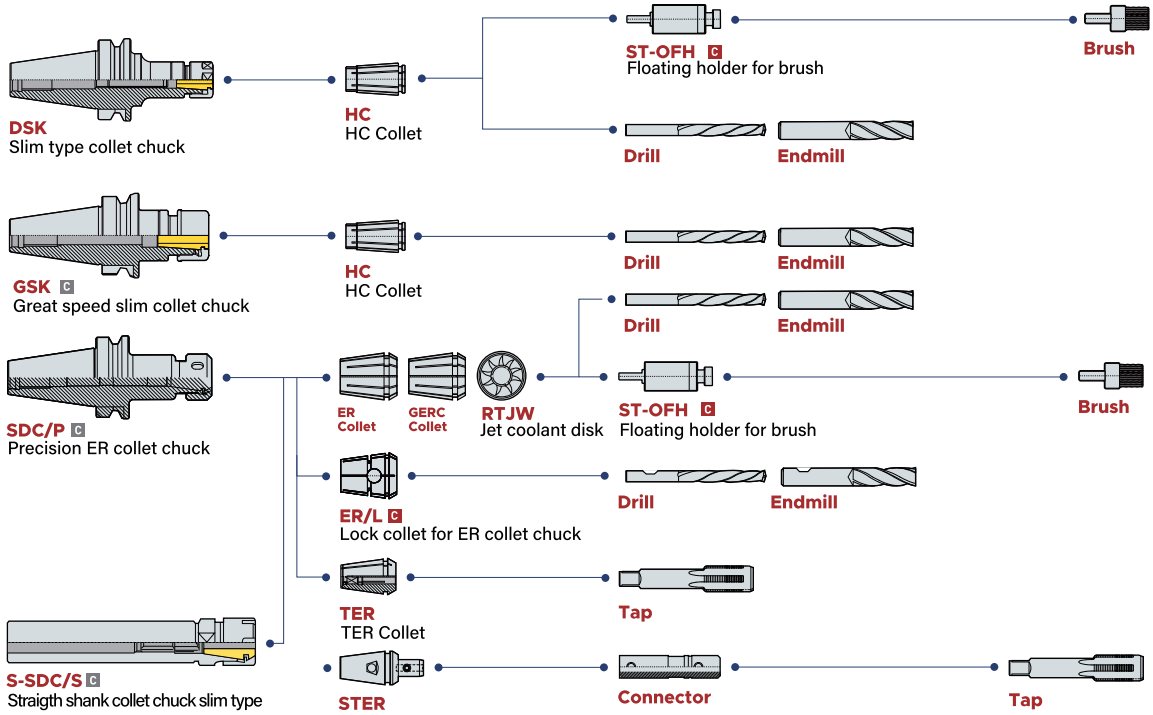
## 5. Floating Holder for Brush



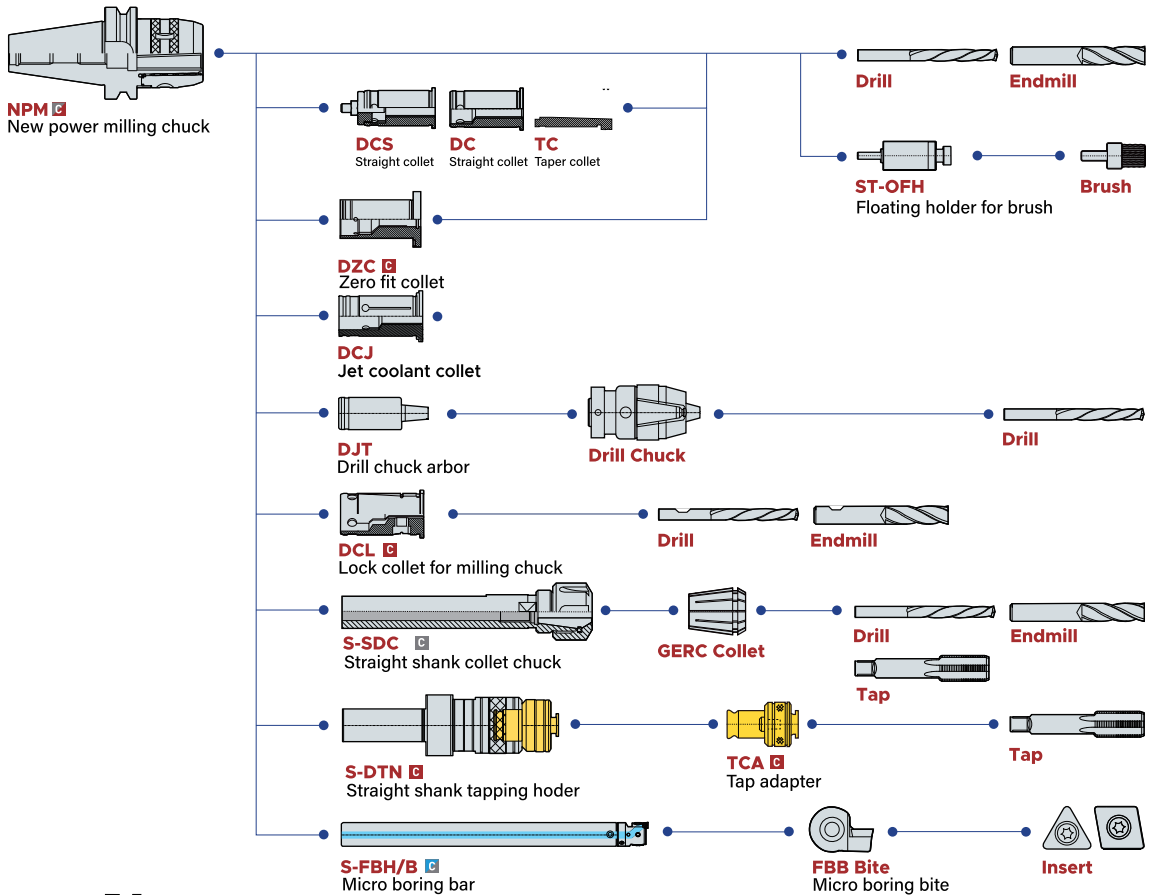
**OFH** Floating holder for brush



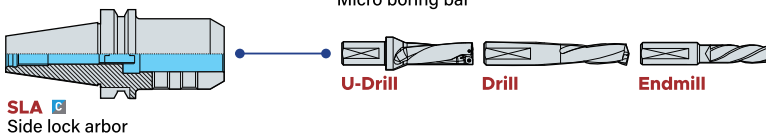
### 6. Collet Chuck



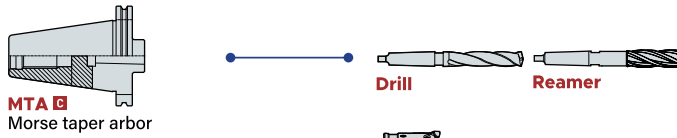
### 7. Milling Chuck



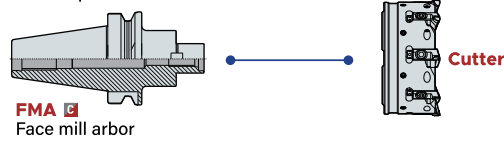
### 8. Side Lock Arbor



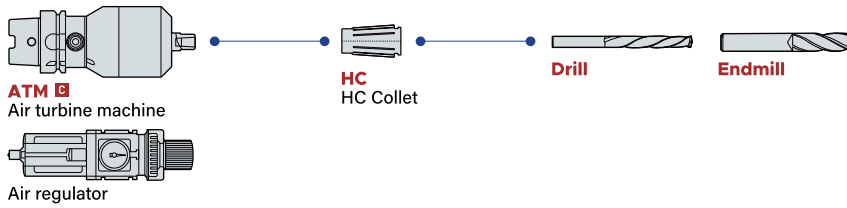
## 9. Morse Taper Arbor



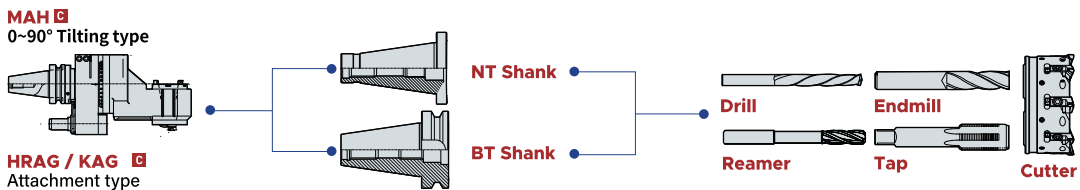
## 10. Face mill Arbor



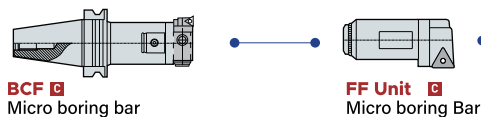
## 11. Air Spindle



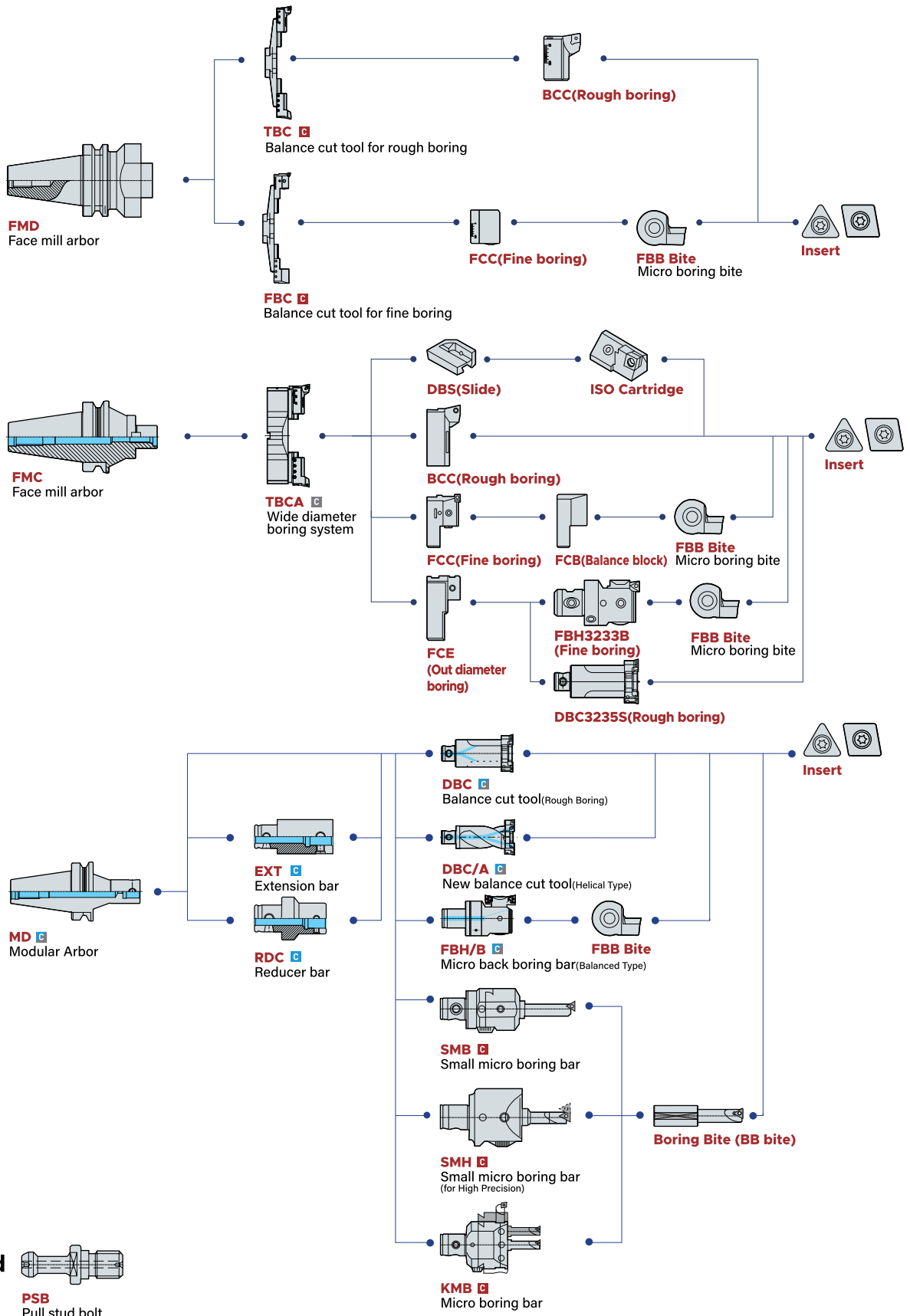
## 12. Angular Head



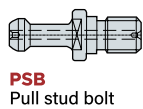
## 13. Boring Series



**13. Boring Series**



**14. Pull Stud Bolt**



# E Technical information for DHE

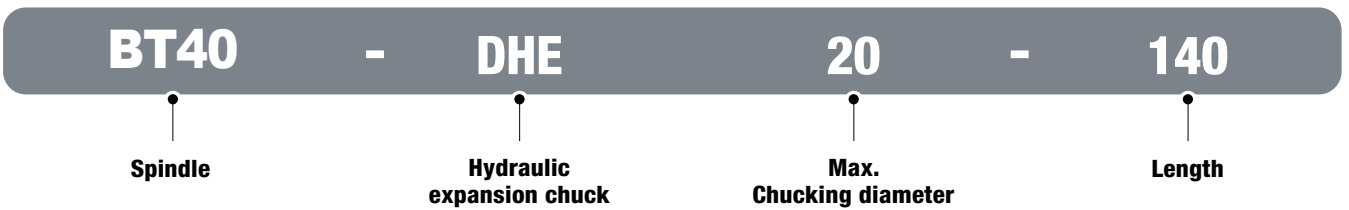
## Hydraulic expansion chuck

# 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:  $\varnothing 4\sim 32$



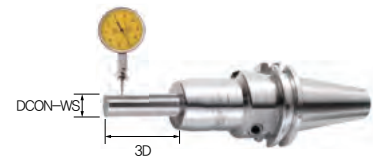
### Code system



### Features

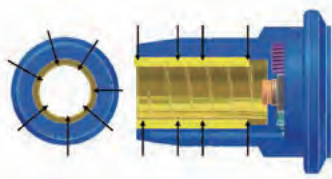
High accuracy provides long tool life due to reduced wear and hydraulic room enhances a surface roughness by lessening vibrations

- Run-out: under  $5\ \mu\text{m}$
- $L = 3 \times \varnothing D$
- Shank: Tolerance of  $\varnothing D$ : 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



### With simple T-wrench, very easy to change a tool

- Clamping structure for easy operation (Convenience)
- Decrease of worker's fatigue
- Improving machine capacity



Shank	Grade	RPMX
BT50, HSK100A	G6.3	15,000
BT40, HSK63A		20,000
BT30, HSK50A		25,000

### Stable clamping

The clearance between holder and tool is fixed by hydraulic pressure



# DBT-DHE

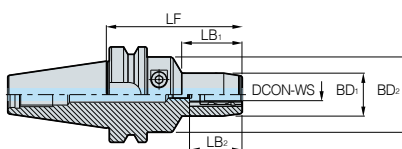


Fig. 1

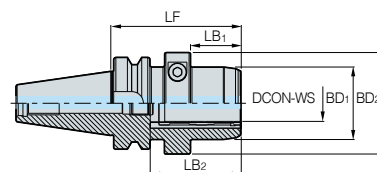



Fig. 2

(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	ADJ	RPMX	Fig.		
<b>DBT30-</b>	<b>DHE6-65</b>	6	65	29	46	33	30~40	M5	25,000	1	0.7
	<b>DHE8-65</b>	8	65	31	46	33	30~40	M5	25,000	1	0.7
	<b>DHE10-65</b>	10	65	32	46	34	35~45	M5	25,000	1	0.7
	<b>DHE12-70</b>	12	70	35	46	34	41~51	M5	25,000	1	0.8
	<b>DHE14-90</b>	14	90	36	46	40	43~53	M5	25,000	1	1
	<b>DHE16-90</b>	16	90	40	46	45	46~56	M5	25,000	1	1
	<b>DHE18-90</b>	18	90	42	46	40	49~59	M5	25,000	1	1.1
	<b>DHE20-90</b>	20	90	44	46	45	49~59	M5	25,000	1	1.1
<b>DBT40-</b>	<b>DHE6-90</b>	6	90	29	50	40	30~40	M5	20,000	1	1.4
	<b>DHE6-140</b>	6	140	29	50	40	30~40	M5	20,000	1	2.2
	<b>DHE8-90</b>	8	90	31	50	40	30~40	M5	20,000	1	1.4
	<b>DHE8-140</b>	8	140	31	50	40	30~40	M5	20,000	1	2.2
	<b>DHE10-90</b>	10	90	33	50	40	35~45	M5	20,000	1	1.5
	<b>DHE10-140</b>	10	140	33	50	40	35~45	M5	20,000	1	2.2
	<b>DHE12-90</b>	12	90	35	50	40	41~51	M10	20,000	1	1.5
	<b>DHE12-140</b>	12	140	35	50	40	41~51	M10	20,000	1	2.3
	<b>DHE14-90</b>	14	90	36	50	40	43~53	M10	20,000	1	1.5
	<b>DHE14-140</b>	14	140	36	50	40	43~53	M10	20,000	1	2.2
	<b>DHE16-90</b>	16	90	40	50	45	46~56	M10	20,000	1	1.5
	<b>DHE16-140</b>	16	140	40	50	45	46~56	M10	20,000	1	2.2
	<b>DHE18-90</b>	18	90	42	50	45	49~59	M10	20,000	1	1.5
	<b>DHE18-140</b>	18	140	42	50	45	49~59	M10	20,000	1	2.2
	<b>DHE20-90</b>	20	90	44	50	47	49~59	M10	20,000	1	1.5
	<b>DHE20-140</b>	20	140	44	50	50	49~59	M10	20,000	1	2.3
<b>DHE25-90</b>	25	90	50	50	35	58~68	M16	20,000	2	2	
<b>DHE32-90</b>	32	90	63	50	35	58~68	M16	20,000	2	2.3	
<b>DBT50-</b>	<b>DHE6-90</b>	6	90	29	50	34	30~40	M5	15,000	1	3.9
	<b>DHE6-140</b>	6	140	29	50	40	30~40	M5	15,000	1	4.5
	<b>DHE8-90</b>	8	90	31	50	34	30~40	M5	15,000	1	4.2
	<b>DHE8-140</b>	8	140	31	50	40	30~40	M5	15,000	1	4.6
	<b>DHE10-90</b>	10	90	33	50	34	35~45	M5	15,000	1	3.9
	<b>DHE10-140</b>	10	140	33	50	34	35~45	M5	15,000	1	4.5
	<b>DHE12-90</b>	12	90	35	50	34	41~51	M10	15,000	1	4
	<b>DHE12-140</b>	12	140	35	50	34	41~51	M10	15,000	1	4.6
	<b>DHE14-90</b>	14	90	36	50	34	43~53	M10	15,000	1	3.9
	<b>DHE14-140</b>	14	140	36	50	34	43~53	M10	15,000	1	4.5
	<b>DHE16-90</b>	16	90	40	50	34	46~56	M10	15,000	1	4.1
	<b>DHE16-140</b>	16	140	40	50	34	46~56	M10	15,000	1	4.7
	<b>DHE18-90</b>	18	90	42	50	40	49~59	M10	15,000	1	4
	<b>DHE18-140</b>	18	140	42	50	45	49~59	M10	15,000	1	4.5
	<b>DHE20-90</b>	20	90	44	50	34	49~59	M10	15,000	1	4.2
	<b>DHE20-140</b>	20	140	44	50	47	49~59	M10	15,000	1	4.5
<b>DHE25-90</b>	25	90	66	-	52	58~68	M16	15,000	2	4.7	
<b>DHE32-90</b>	32	90	72	-	52	58~68	M16	15,000	2	4.8	



## BT-DHE

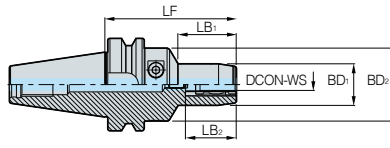


Fig. 1

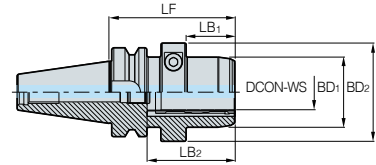


Fig. 2

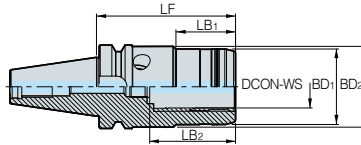


Fig. 3

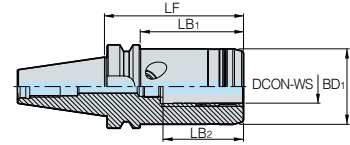


Fig. 4

(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	ADJ	RPMX	Fig.	kg	
<b>BT30-</b>	<b>DHE4-65</b>	4	65	29	46	33	40	-	25,000	1	0.7
	<b>DHE5-65</b>	5	65	29	46	33	40	-	25,000	1	0.7
	<b>DHE6-65</b>	6	65	29	46	33	30~40	M5	25,000	1	0.7
	<b>DHE8-65</b>	8	65	31	46	33	30~40	M5	25,000	1	0.7
	<b>DHE10-65</b>	10	65	32	46	34	35~45	M5	25,000	1	0.7
	<b>DHE12-70</b>	12	70	35	46	34	36~46	M5	25,000	1	0.8
	<b>DHE14-90</b>	14	90	36	46	40	43~53	M5	25,000	1	1
	<b>DHE16-90</b>	16	90	40	46	45	46~56	M5	25,000	1	1
	<b>DHE18-90</b>	18	90	42	46	40	49~59	M5	25,000	1	1.1
<b>DHE20-90</b>	20	90	44	46	45	49~59	M5	25,000	1	1.1	
<b>BT40-</b>	<b>DHE4-90</b>	4	90	29	50	40	40	-	20,000	1	1.4
	<b>DHE5-90</b>	5	90	29	50	40	40	-	20,000	1	1.4
	<b>DHE6-90</b>	6	90	29	50	40	30~40	M5	20,000	1	1.4
	<b>DHE6-140</b>	6	140	29	50	40	30~40	M5	20,000	1	2.2
	<b>DHE8-90</b>	8	90	31	50	40	30~40	M5	20,000	1	1.4
	<b>DHE8-140</b>	8	140	31	50	40	30~40	M5	20,000	1	2.2
	<b>DHE10-90</b>	10	90	33	50	40	35~45	M5	20,000	1	1.5
	<b>DHE10-140</b>	10	140	33	50	40	35~45	M5	20,000	1	2.2
	<b>DHE12-90</b>	12	90	35	50	40	41~51	M10	20,000	1	1.5
	<b>DHE12-140</b>	12	140	35	50	40	41~51	M10	20,000	1	2.3
	<b>DHE14-90</b>	14	90	36	50	40	43~53	M10	20,000	1	1.5
	<b>DHE14-140</b>	14	140	36	50	40	43~53	M10	20,000	1	2.2
	<b>DHE16-90</b>	16	90	40	50	45	46~56	M10	20,000	1	1.5
	<b>DHE16-140</b>	16	140	40	50	45	46~56	M10	20,000	1	2.2
	<b>DHE18-90</b>	18	90	42	50	45	49~59	M10	20,000	1	1.5
	<b>DHE18-140</b>	18	140	42	50	45	49~59	M10	20,000	1	2.2
	<b>DHE20-90</b>	20	90	44	50	47	49~59	M10	20,000	1	1.5
	<b>DHE20-140</b>	20	140	44	50	50	49~59	M10	20,000	1	2.3
	<b>DHE25-90</b>	25	90	50	70	35	58~68	M16	20,000	2	2
	<b>DHE25-105</b>	25	105	57	-	78	51~61	M16	20,000	4	2
	<b>DHE25-140</b>	25	140	57	-	113	51~61	M16	20,000	4	2.6
<b>DHE32-90</b>	32	90	63	75	35	58~68	M16	20,000	2	2.3	
<b>DHE32-105</b>	32	105	57	61	45	55~65	M16	20,000	3	2.4	
<b>DHE32-140</b>	32	140	57	61	45	55~65	M16	20,000	3	3	

Spare Part **E13**

• LB<sub>2</sub>: Insertion depth of tool (Min.~Max.) Through coolant system is installed

# BT-DHE

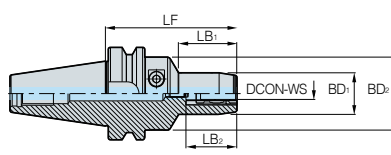


Fig. 1

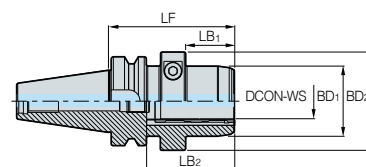


Fig. 2

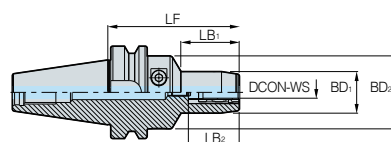


Fig. 3

											(mm)
Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	ADJ	RPMX	Fig.	kg	
<b>BT50-</b>	<b>DHE4-90</b>	4	90	29	50	34	40	-	15,000	1	3.9
	<b>DHE5-90</b>	5	90	29	50	34	40	-	15,000	1	3.9
	<b>DHE6-90</b>	6	90	29	50	34	30~40	M5	15,000	1	3.9
	<b>DHE6-140</b>	6	140	29	50	40	30~40	M5	15,000	1	4.4
	<b>DHE8-90</b>	8	90	31	50	34	30~40	M5	15,000	1	4.2
	<b>DHE8-140</b>	8	140	31	50	40	30~40	M5	15,000	1	4.6
	<b>DHE10-90</b>	10	90	33	50	34	35~45	M5	15,000	1	3.9
	<b>DHE10-140</b>	10	140	33	50	34	35~45	M5	15,000	1	4.5
	<b>DHE12-90</b>	12	90	35	50	34	41~51	M10	15,000	1	4
	<b>DHE12-140</b>	12	140	35	50	34	41~51	M10	15,000	1	4.6
	<b>DHE14-90</b>	14	90	36	50	34	43~53	M10	15,000	1	3.9
	<b>DHE14-140</b>	14	140	36	50	34	43~53	M10	15,000	1	4.5
	<b>DHE16-90</b>	16	90	40	50	34	46~56	M10	15,000	1	4.1
	<b>DHE16-140</b>	16	140	40	50	34	46~56	M10	15,000	1	4.7
	<b>DHE18-90</b>	18	90	42	50	40	49~59	M10	15,000	1	4
	<b>DHE18-140</b>	18	140	42	50	45	49~59	M10	15,000	1	4.5
	<b>DHE20-90</b>	20	90	44	50	34	49~59	M10	15,000	1	4
	<b>DHE20-140</b>	20	140	44	50	47	49~59	M10	15,000	1	4.5
	<b>DHE25-90</b>	25	90	66	-	52	58~68	M16	15,000	2	4.7
<b>DHE25-150</b>	25	150	57	-	112	51~61	M16	15,000	3	4.5	
<b>DHE32-90</b>	32	90	72	-	52	58~68	M16	15,000	2	5.8	

Spare Part **E13**

• LB<sub>2</sub>: Insertion depth of tool (Min.~Max.) Through coolant system is installed

## HSK-DHE

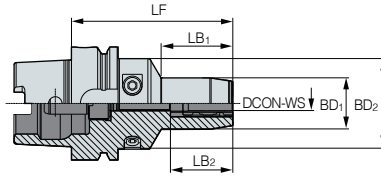


Fig. 1

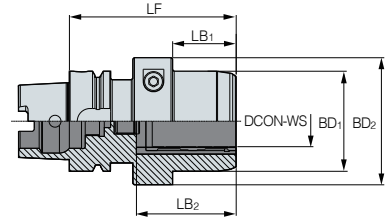


Fig. 2

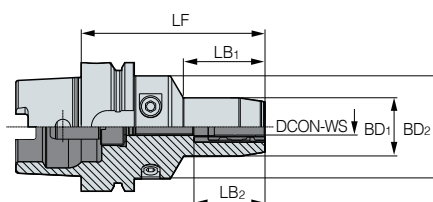
(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	ADJ	RPMX	Fig.	$\frac{\circ}{kg}$	
HSK50A-	DHE6-70	6	70	29	40	28	30~40	M5	20,000	1	0.7
	DHE8-70	8	70	31	40	28	30~40	M5	20,000	1	0.7
	DHE10-80	10	80	33	40	35	35~45	M5	20,000	1	0.8
	DHE12-90	12	90	35	40	40	41~51	M5	20,000	1	0.8
	DHE14-95	14	95	36	53	28	43~53	M10	20,000	2	0.8
	DHE16-95	16	95	40	53	28	46~56	M10	20,000	2	0.9
	DHE18-100	18	100	42	60	28	49~59	M10	20,000	2	0.9
DHE20-100	20	100	44	60	28	49~59	M10	20,000	2	0.9	
HSK63A-	DHE4-75	4	75	29	50	34	40	-	20,000	1	1
	DHE5-75	5	75	29	50	34	40	-	20,000	1	1
	DHE6-75	6	75	29	50	34	30~40	M5	20,000	1	1
	DHE6-150	6	150	29	50	34	30~40	M5	20,000	1	2.2
	DHE8-75	8	75	31	50	34	30~40	M5	20,000	1	1
	DHE8-150	8	150	31	50	34	30~40	M5	20,000	1	2.2
	DHE10-85	10	85	33	50	34	35~45	M5	20,000	1	1.2
	DHE10-150	10	150	33	51	34	35~45	M5	20,000	1	2.2
	DHE12-90	12	90	35	51	40	41~51	M10	20,000	1	1.2
	DHE12-150	12	150	35	51	40	41~51	M10	20,000	1	2.2
	DHE14-95	14	95	36	52	40	42~53	M10	20,000	1	1.3
	DHE14-150	14	150	36	52	40	43~53	M10	20,000	1	2.2
	DHE16-95	16	95	40	52	45	46~56	M10	20,000	1	1.3
	DHE16-150	16	150	40	53	45	46~56	M10	20,000	1	2.2
	DHE18-100	18	100	42	53	45	49~59	M10	20,000	1	1.4
	DHE18-150	18	150	42	53	45	49~59	M10	20,000	1	2.2
DHE20-100	20	100	44	50	50	49~59	M10	20,000	1	1.4	
DHE20-150	20	150	44	50	50	49~59	M10	20,000	1	2.2	
DHE25-110	25	110	50	70	48	56~68	M16	20,000	2	1.9	
DHE32-110	32	110	63	80	48	56~68	M16	20,000	2	2.3	


Spare Part E13

• LB<sub>2</sub>: Insertion depth of tool (Min.~Max.) Through coolant system is installed

# HSK-DHE





(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	ADJ	RPMX	 kg	
HSK100A-	DHE6-80	6	80	29	50	34	30~40	M5	15,000	2.4
	DHE6-150	6	150	29	50	34	30~40	M5	15,000	2.8
	DHE8-80	8	80	31	50	34	30~40	M5	15,000	2.4
	DHE8-150	8	150	31	50	34	30~40	M5	15,000	2.8
	DHE10-90	10	90	33	50	34	35~45	M5	15,000	2.5
	DHE10-150	10	150	33	50	34	35~45	M5	15,000	3
	DHE12-95	12	95	35	50	34	41~51	M10	15,000	2.5
	DHE12-150	12	150	35	50	34	41~52	M10	15,000	3
	DHE14-100	14	100	36	50	40	43~53	M10	15,000	2.6
	DHE14-150	14	150	36	50	40	43~54	M10	15,000	3.1
	DHE16-100	16	100	40	50	45	46~56	M10	15,000	2.6
	DHE16-150	16	150	40	50	45	46~56	M10	15,000	3.1
	DHE18-100	18	100	42	50	45	49~59	M10	15,000	2.7
	DHE18-150	18	150	42	50	45	49~59	M10	15,000	3.2
	DHE20-105	20	105	44	50	50	49~59	M10	15,000	2.8
	DHE20-150	20	150	44	50	50	49~59	M10	15,000	3.4
DHE25-115	25	115	50	63	62	58~68	M16	15,000	3.3	
DHE32-115	32	115	63	75	62	58~68	M16	15,000	3.8	

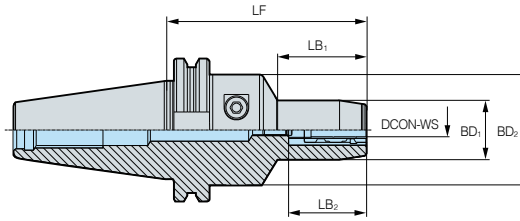
 Spare Part **E13**

• LB<sub>2</sub>: Insertion depth of tool (Min.~Max.) Through coolant system is installed

## Parts

Basic					
Division		Clamp bolt	Wrench	Division	Adjust screw
Parts				Parts	
Designation				Designation	
BT30/SK30/HSK50A	DHE4.5, 6, 8, 10, 12, 14, 16, 18, 20	BTF1010	DHETW-5	DHE 6, 8, 10	DHE-M5 (ADJ)
	DHE 25, 32	BTF1212-1.5	DHETW-6	DHE 25, 32	DHE-M16 (ADJ)
BT40/BT50/SK40/SK50/HSK63A/HSK100A	DHE4.5, 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)

## SK-DHE



(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	ADJ	RPMX	kg	
<b>SK40-</b>	<b>DHE6-90</b>	6	90	29	50	40	30-40	M5	20,000	1.4
	<b>DHE8-90</b>	8	90	31	50	40	30-40	M5	20,000	1.4
	<b>DHE10-90</b>	10	90	33	50	40	35-45	M5	20,000	1.5
	<b>DHE12-90</b>	12	90	35	50	40	41~51	M10	20,000	1.5
	<b>DHE12-140</b>	12	140	35	50	40	41~51	M10	20,000	2.1
	<b>DHE14-90</b>	14	90	36	50	40	43~53	M10	20,000	1.4
	<b>DHE16-90</b>	16	90	40	50	45	46~56	M5	20,000	1.5
	<b>DHE18-90</b>	18	90	42	50	45	49~59	M5	20,000	1.5
	<b>DHE20-90</b>	20	90	44	50	50	49~59	M10	20,000	1.5
<b>SK50-</b>	<b>DHE12-90</b>	12	90	35	50	40	41~51	M10	15,000	3.2
	<b>DHE14-90</b>	14	90	36	50	40	43~53	M10	15,000	3.2
	<b>DHE16-90</b>	16	90	40	50	45	46~56	M10	15,000	3.3
	<b>DHE18-90</b>	18	90	42	50	40	49~59	M10	15,000	3.2
	<b>DHE20-90</b>	20	90	44	50	47	49~59	M10	15,000	3.2

Spare Part **E14**

• LB<sub>2</sub>: Insertion depth of tool (Min.~Max.) Through coolant system is installed

### Parts

Basic					
Division		Clamp bolt	Wrench	Division	Adjust screw
Parts				Parts	
Designation				Designation	
<b>BT30/SK30/HSK50A</b>	DHE4.5, 6, 8, 10, 12, 14, 16, 18, 20	BTF1010	DHETW-5	DHE 6, 8, 10	DHE-M5 (ADJ)
	DHE 25, 32	BTF1212-1.5	DHETW-6	DHE 12, 14, 16, 18, 20	DHE-M10 (ADJ)
<b>BT40/BT50/SK40/SK50/HSK63A/HSK100A</b>	DHE4.5, 6, 8, 10, 12, 14, 16, 18, 20	BTF1010	DHETW-5	DHE 25, 32	DHE-M16 (ADJ)
	DHE 25, 32	BTF1212-1.5	DHETW-6		

※ DBT30, BT30, HSK50A is Exception

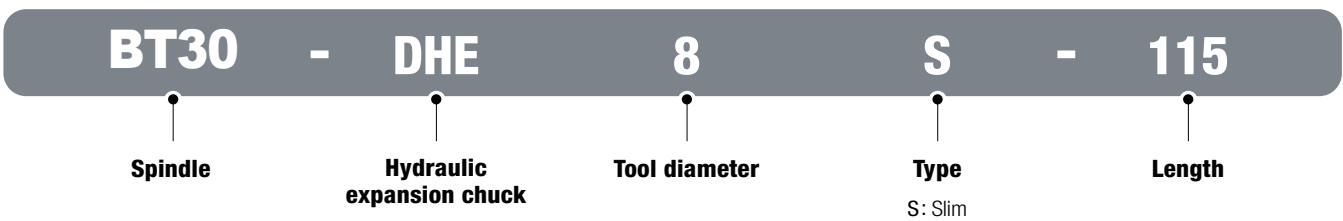
**Slim hydraulic expansion chuck**

# 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**

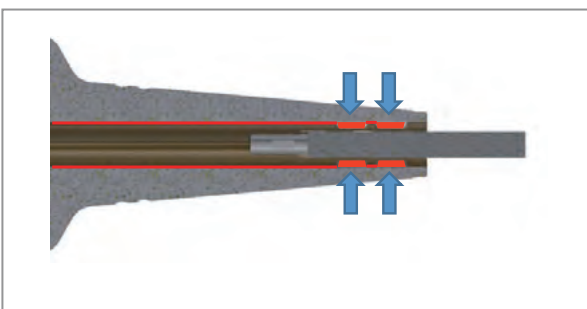


**Recommended Machining Works**



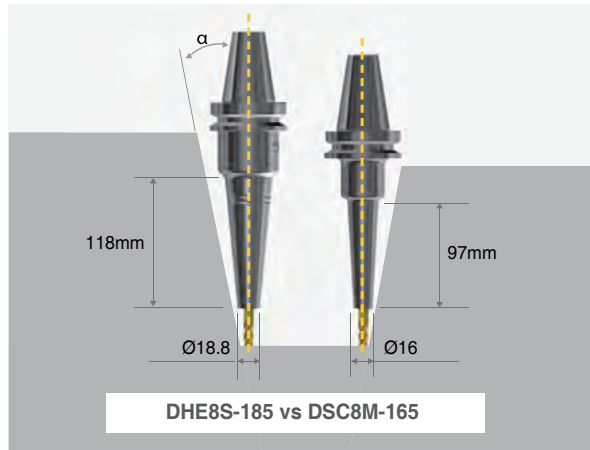
- Optimized for machining that requires high precision
- Enables challenging narrow and deep machining
- Products that require fine boring operations

**Stable Clamping Force**



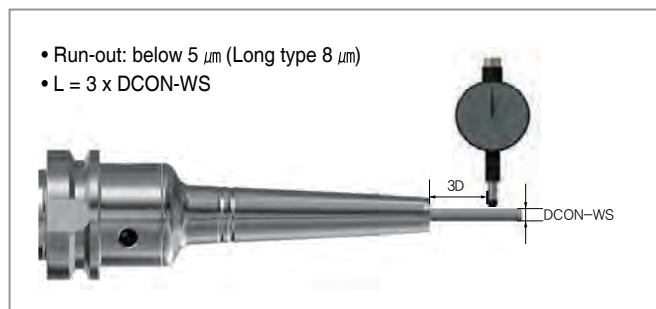
- Maintains high clamping force and good accuracy by holding the tool at two points

**Product Comparison**

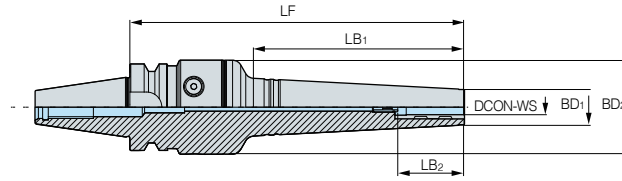


- Length and thickness are the same as those of DSC/M Type (if the tool projection length is 40 mm, difference of  $\alpha$  = around 2°)
- Longer gauge line and higher rigidity (versus the DSC/M Type)
- Ideal for mold machining due to its 3-degree taper shape

**High-Precision**



## BT-DHE/S



(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	RPMX	Run-out	kg	
<b>BT30-</b>	DHE4S-115	4	115	16.8	50	50	19	25,000	5 $\mu$ m	1.1
	DHE5S-115	5	115	16.8	50	50	19	25,000	5 $\mu$ m	1.1
	DHE6S-115	6	115	17	50	50	23	25,000	5 $\mu$ m	1.1
	DHE6S-180	6	180	17	50	115	23	25,000	8 $\mu$ m	1.4
	DHE8S-115	8	115	19	50	50	31	25,000	5 $\mu$ m	1.1
	DHE8S-180	8	180	19	50	115	31	25,000	8 $\mu$ m	1.4
	DHE10S-120	10	120	21	50	55	36	25,000	5 $\mu$ m	1.4
	DHE10S-180	10	180	21	50	115	36	25,000	8 $\mu$ m	1.9
	DHE12S-130	12	130	23	50	65	38	25,000	5 $\mu$ m	1.2
DHE12S-180	12	180	23	50	115	38	25,000	8 $\mu$ m	1.6	
<b>BT40-</b>	DHE4S-120	4	120	16.8	50	50	19	20,000	5 $\mu$ m	1.7
	DHE5S-120	5	120	16.8	50	50	19	20,000	5 $\mu$ m	1.7
	DHE6S-120	6	120	17	50	50	23	20,000	5 $\mu$ m	1.7
	DHE6S-185	6	185	17	50	115	23	20,000	8 $\mu$ m	2.0
	DHE8S-120	8	120	19	50	50	31	20,000	5 $\mu$ m	2.0
	DHE8S-185	8	185	19	50	115	31	20,000	8 $\mu$ m	2.0
	DHE10S-125	10	125	21	50	55	36	20,000	5 $\mu$ m	1.6
	DHE10S-185	10	185	21	50	115	36	20,000	8 $\mu$ m	2.0
	DHE12S-135	12	135	23	50	65	38	20,000	5 $\mu$ m	1.8
	DHE12S-185	12	185	23	50	115	38	20,000	8 $\mu$ m	2.2
<b>BT50-</b>	DHE16S-190	16	190	26.8	50	115	41	20,000	8 $\mu$ m	2.3
	DHE20S-190	20	190	30.8	50	115	44	20,000	8 $\mu$ m	2.4
	DHE6S-200	6	200	16.8	50	115	22	15,000	8 $\mu$ m	4.6
	DHE8S-200	8	200	18.8	50	115	30	15,000	8 $\mu$ m	4.6
	DHE10S-200	10	200	20.8	50	115	35	15,000	8 $\mu$ m	4.8
	DHE12S-200	12	200	22.8	50	115	37	15,000	8 $\mu$ m	4.9
DHE16S-200	16	200	26.8	50	115	41	15,000	8 $\mu$ m	5.0	
DHE20S-200	20	200	30.8	50	115	44	15,000	8 $\mu$ m	5.0	

⚙ Spare Part E16

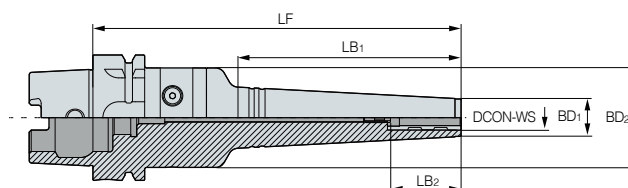
• LB<sub>2</sub>: Insertion depth of tool (Min.) Through coolant system is installed

### Parts

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK63A	HSK63A-CNS
HSK100A	HSK100A-CNS

# HSK-DHE/S





Designation		DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	RPMX	Run-out	$\frac{O}{kg}$
HSK63A-	DHE4S-120	4	120	16.8	50	50	19	20,000	5 $\mu$ m	1.4
	DHE5S-120	5	120	16.8	50	50	19	20,000	5 $\mu$ m	1.4
	DHE6S-120	6	120	17	50	50	23	20,000	5 $\mu$ m	1.4
	DHE6S-185	6	185	17	50	115	23	20,000	8 $\mu$ m	1.7
	DHE8S-120	8	120	19	50	50	31	20,000	5 $\mu$ m	1.4
	DHE8S-185	8	185	19	50	115	31	20,000	8 $\mu$ m	1.8
	DHE10S-125	10	125	21	50	55	36	20,000	5 $\mu$ m	1.5
	DHE10S-185	10	185	21	50	115	36	20,000	8 $\mu$ m	1.8
	DHE12S-135	12	135	23	50	65	38	20,000	5 $\mu$ m	1.8
	DHE12S-185	12	185	23	50	115	38	20,000	8 $\mu$ m	1.8
HSK100A-	DHE16S-190	16	190	26.8	50	115	41	20,000	8 $\mu$ m	2.2
	DHE20S-190	20	190	30.8	50	115	44	20,000	8 $\mu$ m	2.3
HSK100A-	DHE16S-190	16	190	26.8	50	115	41	15,000	8 $\mu$ m	3.1
	DHE20S-190	20	190	30.8	50	115	44	15,000	8 $\mu$ m	3.3

(mm)

➔ Spare Part E17

• LB<sub>2</sub>: Insertion depth of tool (Min.) Through coolant system is installed

## Parts

Basic					
Division		Clamp bolt	Wrench	Division	Adjust screw
Parts				Parts	
Designation				Designation	
BT30	DHE/S 4, 5, 6, 8, 10, 12	BTF1010	DHETW-5	DHE/S 6, 8, 10, 12	DHE-M5 (ADJ)
BT40	DHE/S 4, 5, 6, 8, 10, 12, 16, 20	BTF1010	DHETW-5	DHE/S 16, 20	DHE-M10 (ADJ)
BT50	DHE/S 6, 8, 10, 12, 16, 20	BTF1010	DHETW-5		
HSK63A	DHE/S 4, 5, 6, 8, 10, 12, 16, 20	BTF1010	DHETW-5		
HSK100A	DHE/S 16, 20	BTF1010	DHETW-5		



# E Technical information for DHE/G

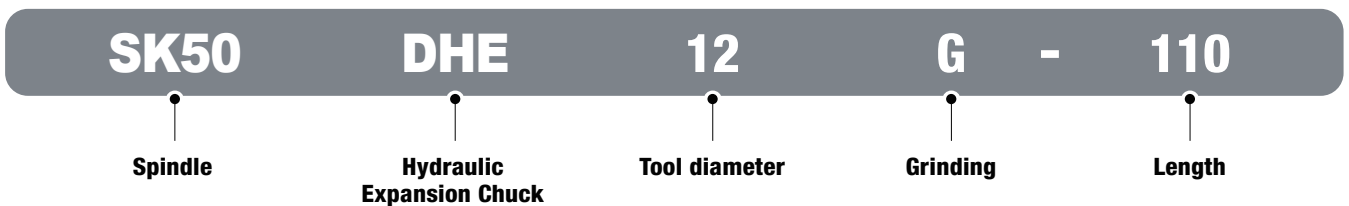
## Hydraulic expansion chuck for tool grinding

# DHE/G

- Minimized wheel interference thanks to the application of 25 degrees to the entrance unit
- Stable run-out within  $3\mu\text{m}$  in  $3\times\text{ØD}$
- Stable clamping force with 2-point clamping

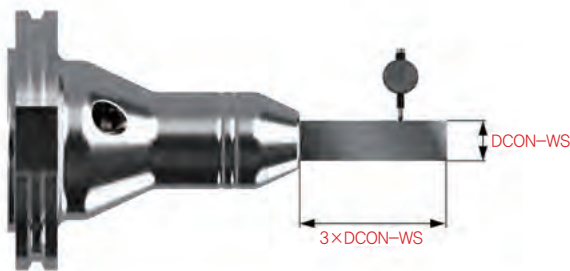


### Code system



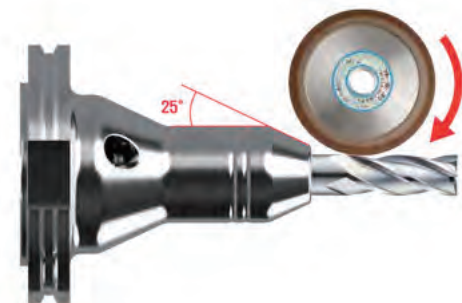
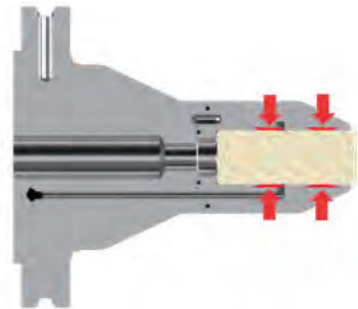
### High Precision

- Run-out within  $3\mu\text{m}$  in  $3\times\text{DCON-WS}$  achieved by the application of high-precision.



### Stable Clamping

- Achieve high-precision due to the stable clamping of 2 points on the upper side and the lower side. application of high-precision.

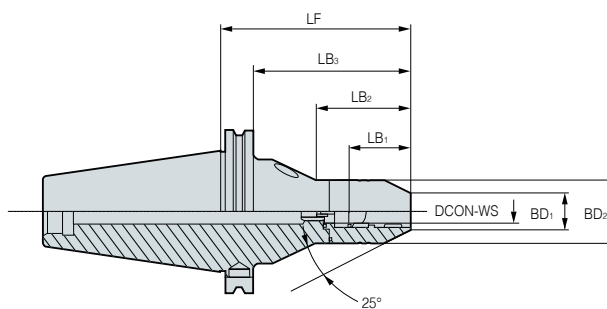


### Minimized Wheel Interference


- The front-end unit employs  $25^\circ$  of angle and minimizes wheel interference during machining.

### Hydraulic Chuck for Grinding Tools



- Used as a jig for fixing an end tool when grinding the tools.

**DHE/G**

(mm)

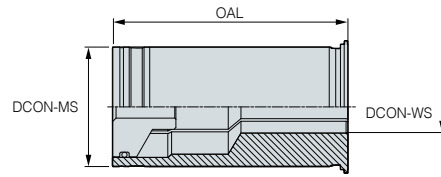
Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	LB <sub>3</sub>	ADJ		
<b>SK50-</b>	<b>DHE6G-110</b>	6	110	15	32	25	55	90.9	M5	3.2
	<b>DHE8G-110</b>	8	110	17	33.5	25	55	90.9	M5	3.4
	<b>DHE10G-110</b>	10	110	19	35	30	55	90.9	M5	3.4
	<b>DHE12G-110</b>	12	110	21.5	36.5	36	55	90.9	M10	3.6
	<b>DHE14G-110</b>	14	110	23.5	38	38	60	90.9	M10	3.6
	<b>DHE16G-110</b>	16	110	25.5	39.5	41	60	90.9	M10	3.7
	<b>DHE18G-110</b>	18	110	27.5	41	44	60	90.9	M10	3.8
	<b>DHE20G-110</b>	20	110	28	42	44	47	90.9	M10	3.8
	<b>DHE25G-110</b>	25	110	33	47	53	49	90.9	M16	4
<b>DHE32G-110</b>	32	110	40	54	53	63	90.9	M16	4.2	

 Spare Part **E19**
 **Parts**

Basic					
Division		Clamp bolt	Wrench	Division	Adjust screw
Parts				Parts	
Designation				Designation	
<b>SK50</b>	DHE6,8,10,12,14,16,18,20	BTF1010	DHETW-5	DHE 6,8,10	DHE-M5 (ADJ)
	DHE25,32	BTF1212-1.5	DHETW-6	DHE 12,14,16,18,20	DHE-M10 (ADJ)
				DHE 25,32	DHE-M16 (ADJ)

# DHC Collet

General type



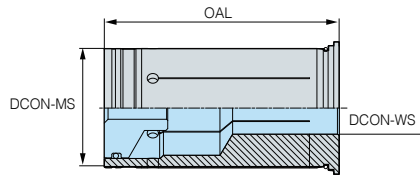
(mm)

Designation	DCON-WS	OAL	DCON-MS	$\frac{g}{kg}$
<b>DHC12-</b>	3	47	12	0.06-0.08
	4	47	12	0.06-0.08
	5	47	12	0.06-0.08
	6	47	12	0.06-0.08
	8	47	12	0.06-0.08
<b>DHC20-</b>	3	52	20	0.04-0.06
	4	52	20	0.04-0.06
	5	52	20	0.04-0.06
	6	52	20	0.04-0.06
	7	52	20	0.04-0.06
	8	52	20	0.04-0.06
	9	52	20	0.04-0.06
	10	52	20	0.04-0.06
	11	52	20	0.04-0.06
	12	52	20	0.04-0.06
<b>DHC32-</b>	14	52	20	0.04-0.06
	16	52	20	0.04-0.06
	6	63	32	0.2-0.5
	8	63	32	0.2-0.5
	10	63	32	0.2-0.5
	12	63	32	0.2-0.5
	14	63	32	0.2-0.5
	16	63	32	0.2-0.5
	18	63	32	0.2-0.5
	19	63	32	0.2-0.5
20	63	32	0.2-0.5	
25	63	32	0.2-0.5	


• Through coolant system is not available

# DHC-(P) Collet

Sealed type



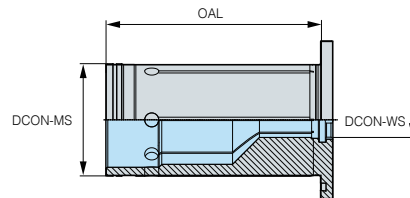
(mm)

Designation	DCON-WS	OAL	DCON-MS	
<b>DHC12-</b>	3(P)	47	12	0.04
	4(P)	47	12	0.04
	5(P)	47	12	0.04
	6(P)	47	12	0.04
	8(P)	47	12	0.04
<b>DHC20-</b>	3(P)	52	20	0.06~0.1
	4(P)	52	20	0.06~0.1
	5(P)	52	20	0.06~0.1
	6(P)	52	20	0.06~0.1
	7(P)	52	20	0.06~0.1
	8(P)	52	20	0.06~0.1
	9(P)	52	20	0.06~0.1
	10(P)	52	20	0.06~0.1
	11(P)	52	20	0.06~0.1
	12(P)	52	20	0.06~0.1
	14(P)	52	20	0.06~0.1
<b>DHC32-</b>	6(P)	63	32	0.2~0.3
	8(P)	63	32	0.2~0.3
	10(P)	63	32	0.2~0.3
	12(P)	63	32	0.2~0.3
	14(P)	63	32	0.2~0.3
	16(P)	63	32	0.2~0.3
	18(P)	63	32	0.2~0.3
	19(P)	63	32	0.2~0.3
	20(P)	63	32	0.2~0.3
25(P)	63	32	0.2~0.3	


• Through coolant system is installed

# DHJ Collet

Jet coolant



(mm)

Designation	DCON-WS	OAL	DCON-MS	
<b>DHJ20-</b>	6	50	20	0.1
	8	50	20	0.1
	10	50	20	0.1
	12	50	20	0.1
	14	50	20	0.08
	16	50	20	0.08

• Through coolant system is installed

# E Technical information for DZC

## Zero fit collet

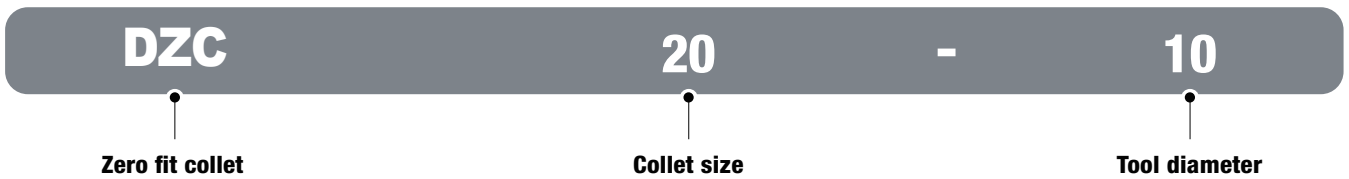
# DZC

### Correcting 10 - 20 $\mu\text{m}$ Run-out generated at tool tip to 0-2 $\mu\text{m}$

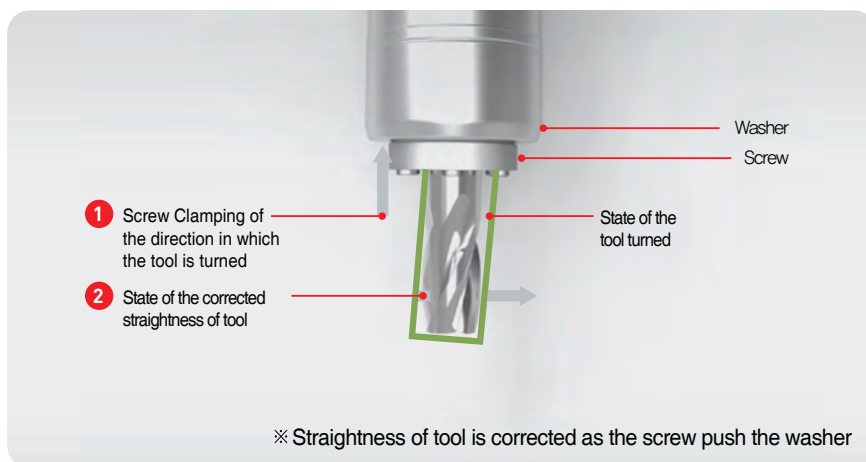
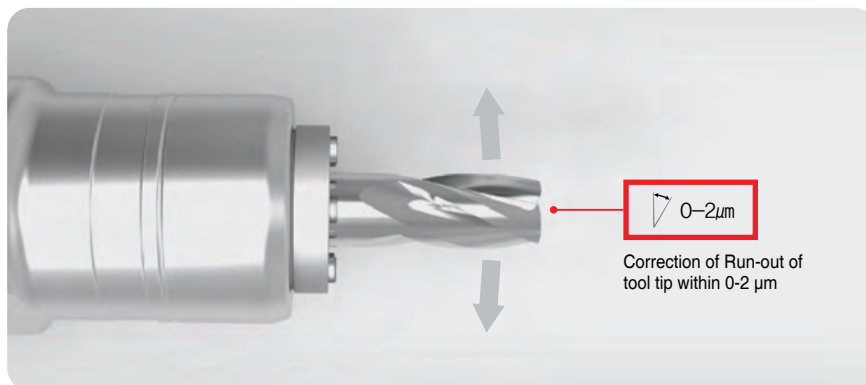
- Improves the Run-out and straightness of end tools
- Improves the surface roughness and quality of the machining area
- Improves the accuracy of boring hole dimension
- Improves the tool life of end tools



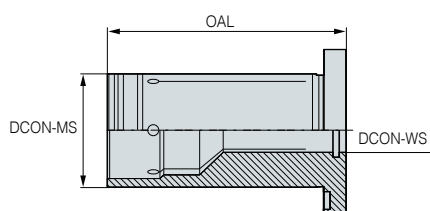
## Code system



## Features



# DZC



(mm)

Designation	DCON-WS	OAL	DCON-MS
<b>DZC20-</b>	6	57	20
	8	57	20
	10	57	20
	12	57	20
	14	57	20
	16	57	20
<b>DZC32-</b>	6	68	32
	8	68	32
	10	68	32
	12	68	32
	16	68	32
	20	68	32
	25	68	32

• Through coolant system is not available

## Precautions

- Run-out can be adjusted with small force.
- Excessive clamping of the adjustment screw may result in deformation of the product.  
(suggested clamping torque : less than 600cN•M)
- If the run-out adjustment screw is clamped using excessive force, all six screws must be completely unclamped and adjusted again.

# E Technical information for DSC

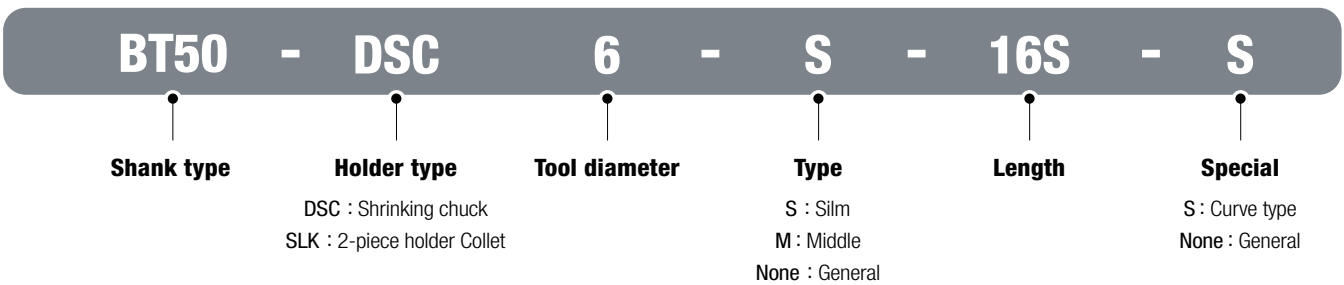
## Shrinking Chuck

# 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:  $\varnothing 3\sim 20$

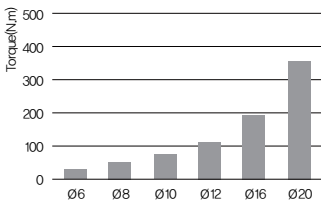


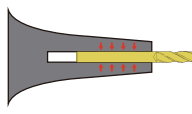
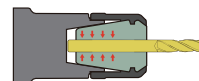
### Code system



### High Clamping Force

- Increase of 30% clamping force versus hydraulic expansion chuck
- Definite power transmission
- Run-out( $\leq 0.003\text{mm}$ )



Shrinking chuck	Collet chuck
Fix the clearance between holder and tool by heat shrinking	Fix the tool by elasticity of collet
	
Thermal expansion $\blacktriangleright$ Thermal shrinking	Elastic deformation
Highly strong clamping	Strong clamping

### Slim type series

#### Straight type

Used by combining with various holders such as hydraulic expansion chuck, milling chuck, and collet chuck etc.



#### Mono type

Used with high precision as integral types



**Tool tightening tolerance**

(mm)

Tool Shank	Tool Shank Tolerance(h6)	Tool Shank	Tool Shank Tolerance(h6)	Tool Shank	Tool Shank Tolerance(h6)	Tool Shank	Tool Shank Tolerance(h6)
Ø3	0~-0.008	Ø6	0~-0.008	Ø12	0~-0.011	Ø25	0~-0.013
Ø4	0~-0.009	Ø8	0~-0.009	Ø16	0~-0.011	Ø32	0~-0.016
Ø5	0~-0.011	Ø10	0~-0.011	Ø20	0~-0.013		

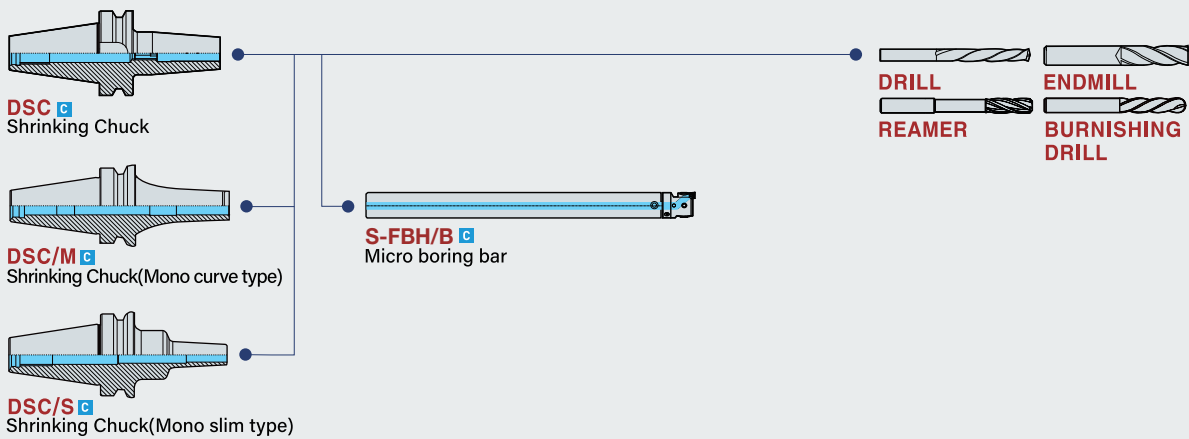
**Min. tool insertion depth**

(mm)

Inner Diameter	Type	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Min. tool insertion depth	Slim	18	24	30	30	-	-	-	-
	Medium	18	24	30	30	32	40	-	-
	General	26	26	32	37	37	40	42	52


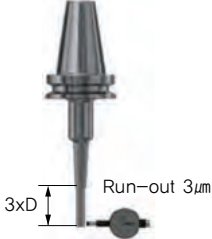
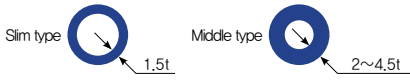
**DSC MAP**

**Shrinking Chuck**

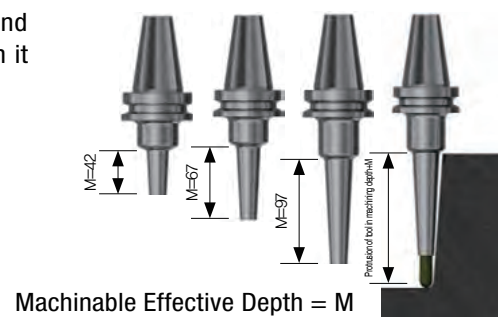





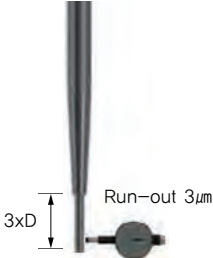
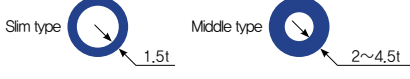
## ➤ Mono type

Figure	Accuracy	Type
		



- Ensures good rigidity by using special steel instead of general steel and maintains high-precision due to its excellent thermal resistance even when it is used moer than 5,000 times
- Enables stable cutting and good surface roughness due to its high rigidity
- Provides a long tool life due to its high-precision



## ➤ Straight Type

Figure	Accuracy	Type
 <p>Collet Chuck    Hydraulic Expansion Chuck    Milling Chuck</p>		 <p>Used by combining with various holders such as hydraulic expansion chuck, milling chuck, and collet chuck, etc.</p>

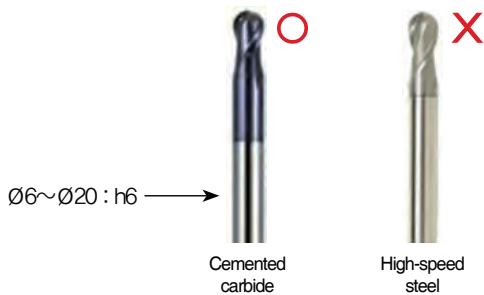
- Straight types used by combining with various holders such as hydraulic expansion chuck and collet chuck, etc. maintain high-precision and help enable various machining operations at an affordable price
- There are more than 20 types of shanks that can be used according to work situations

Examples	
 <p>Ø6~Ø12 tools can be tightened Various lengths and shank sizes</p>	 <p>Lengths can be adjusted and used according to machining situations</p>

## Precautions in Use

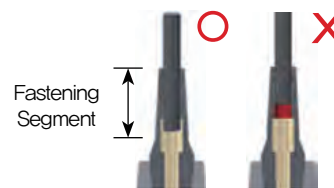
### Tools to Use

- Use cemented carbide tools
- High-speed steel may not be disassembled
- Using an excessive tolerance tool affects clamping force, causing an accident



### Precautions for Fastening Tools

- Maintain clean state by removing rust, dust, cutting oil, etc. generated by corrosion of the inner diameter of the chuck before tool tightening
- When tightening a tool, tighten it under the tightening section
- Tool tightening in the middle of the tightening section affects accuracy and durability
- When tightening a tool, touching the bottom surface affects accuracy



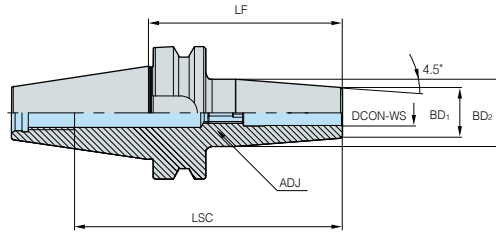
### High-frequency Heating-related Precautions

- When tightening/disassembling a tool, it is recommended that slim-type programmed shrink fit devices be used
- Using devices with no slim-type program may cause overheating. (Overheating may affect the product durability, service life, and accuracy.)

### Storage Method

- When the shrink fit chuck is not used, the tool should be separated from the chuck. (Long-time connection may affect the service life of the product.)
- After using the shrink fit chuck, be sure to remove moisture and use inhibited oil and rust-preventing spray to prevent rust from occurring. (Less rust occurs compared to general steel as special steel is used; however, long-time non-use may cause rust occurrence.)

# BT-DSC



(mm)

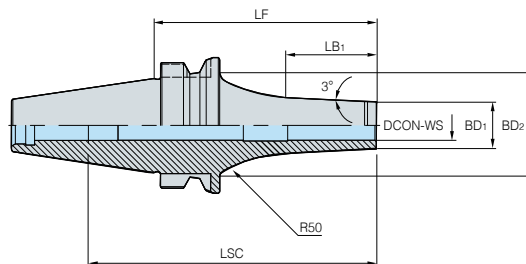
Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LSC	ADJ	RPMX	kg	
BT30-	DSC3-60	3	60	11	18.5	82	-	25,000	0.4
	DSC4-60	4	60	13	20.5	82	-	25,000	0.4
BT40-	DSC6-90	6	90	21	27	36	M5	20,000	1.1
	DSC6-120	6	120	21	27	36	M5	20,000	1.2
	DSC6-160	6	160	21	27	36	M5	20,000	1.4
	DSC8-90	8	90	21	27	36	M5	20,000	1.1
	DSC8-120	8	120	21	27	36	M5	20,000	1.2
	DSC8-160	8	160	21	27	36	M5	20,000	1.4
	DSC10-90	10	90	24	32	42	M8	20,000	1.1
	DSC10-120	10	120	24	32	42	M8	20,000	1.3
	DSC10-160	10	160	24	32	42	M8	20,000	1.6
	DSC12-90	12	90	24	32	47	M8	20,000	1.1
	DSC12-120	12	120	24	32	47	M8	20,000	1.3
	DSC12-160	12	160	24	32	47	M8	20,000	1.6
	DSC16-90	16	90	27	34	50	M12	20,000	1.2
	DSC16-120	16	120	27	34	50	M12	20,000	1.3
	DSC16-160	16	160	27	34	50	M12	20,000	1.7
	DSC20-90	20	90	33	42	52	M12	20,000	1.3
	DSC20-120	20	120	33	42	52	M12	20,000	1.5
	DSC20-160	20	160	33	42	52	M12	20,000	2.0

Spare Part E32

• LSC : Insertion depth of tool • Through coolant system is installed

# BT-DSC/M

Mono Curve type



(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LSC	RPMX	kg	
BT30-	DSC3M-75S	3	75	8	25	30	97	25,000	0.4
	DSC4M-75S	4	75	10	25	32	97	25,000	0.4
	DSC6M-75S	6	75	12	30	29	97	25,000	0.5
	DSC8M-75S	8	75	14	32	29	97	25,000	0.5
	DSC10M-75S	10	75	16	32	31	45	25,000	0.5
	DSC12M-75S	12	75	19	32	34	45	25,000	0.5

• LSC : Insertion depth of tool • Through coolant system is installed

# BT-DSC/M

Mono type

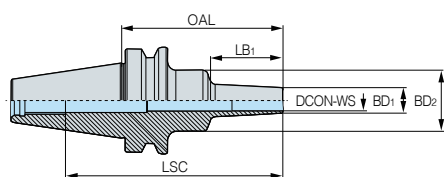


Fig. 1

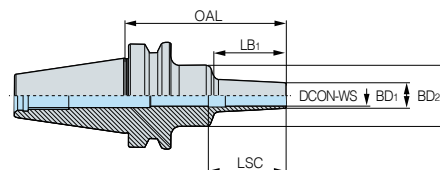



Fig. 2

(mm)

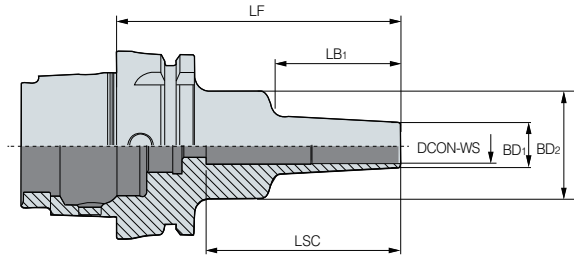
Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LSC	RPMX	Fig.		
<b>BT40-</b>	DSC3M-95	3	95	8	26	42	128	20,000	1	1.1
	DSC4M-95	4	95	8	26	42	128	20,000	1	1.1
	DSC6M-95	6	95	10	26	42	128	20,000	1	1.0
	DSC6M-120	6	120	10	26	67	153	20,000	1	1.0
	DSC6M-160	6	160	10	36	97	193	20,000	1	1.2
	DSC8M-95	8	95	13	36	42	128	20,000	1	1.3
	DSC8M-120	8	120	13	36	67	153	20,000	1	1.3
	DSC8M-160	8	160	13	36	97	193	20,000	1	1.3
	DSC10M-95	10	95	16	36	42	128	20,000	1	1.1
	DSC10M-120	10	120	16	36	67	153	20,000	1	1.1
	DSC10M-160	10	160	16	36	97	193	20,000	1	1.3
	DSC12M-95	12	95	19	36	42	128	20,000	1	1.1
	DSC12M-120	12	120	19	36	67	153	20,000	1	1.2
	DSC12M-160	12	160	19	36	97	193	20,000	1	1.4
	DSC16M-95	16	95	24	50	42	47	20,000	2	1.3
	DSC16M-120	16	120	24	50	67	47	20,000	2	1.4
DSC16M-160	16	160	24	50	97	47	20,000	2	1.7	
DSC20M-95	20	95	29	50	42	55	20,000	2	1.3	
DSC20M-120	20	120	29	50	67	55	20,000	2	1.5	
DSC20M-160	20	160	29	50	97	55	20,000	2	1.9	
<b>BT50-</b>	DSC6M-110	6	110	10	26	42	163	15,000	1	3.5
	DSC6M-160	6	160	10	36	97	213	15,000	1	3.6
	DSC8M-110	8	110	13	36	42	163	15,000	1	3.7
	DSC8M-160	8	160	13	36	97	213	15,000	1	3.7
	DSC10M-110	10	110	16	36	42	163	15,000	1	3.7
	DSC10M-160	10	160	16	36	97	213	15,000	1	3.7
	DSC12M-110	12	110	19	36	42	163	15,000	1	3.7
	DSC12M-160	12	160	19	50	97	213	15,000	1	4.0
	DSC16M-110	16	110	24	50	42	163	15,000	1	3.9
	DSC16M-160	16	160	24	50	97	213	15,000	1	4.1
	DSC20M-110	20	110	29	50	42	55	15,000	2	3.9
	DSC20M-160	20	160	29	50	97	55	15,000	2	4.2

 Spare Part **E32**

• LSC : Insertion depth of tool • Through coolant system is installed

# HSK-DSC/M

Mono type



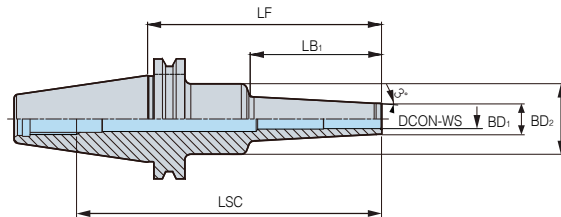
(mm)

Designation		DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LSC	RPMX	kg
HSK63A-	DSC6M-95	6	95	10	26	42	73	20,000	0.7
	DSC8M-95	8	95	13	36	42	39	20,000	0.8
	DSC10M-120	10	120	16	36	67	45	20,000	0.8
	DSC12M-120	12	120	19	36	67	45	20,000	0.9
	DSC16M-120	16	120	24	50	67	47	20,000	1.1

• LSC : Insertion depth of tool • Adjustment screw not available • Through coolant system is installed

# SK-DSC/M

Mono type



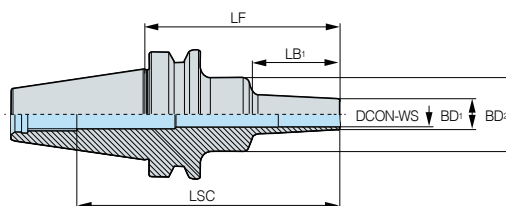
(mm)

Designation		DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LSC	RPMX	kg
SK40-	DSC6M-95	6	95	10	26	42	131	20,000	0.8
	DSC6M-120	6	120	10	26	67	156	20,000	1.0
	DSC8M-95	8	95	13	36	42	131	20,000	1.4
	DSC8M-120	8	120	13	36	67	156	20,000	1.0
	DSC10M-95	10	95	16	36	42	131	20,000	1.0
	DSC10M-120	10	120	16	36	67	156	20,000	1.0
	DSC12M-95	12	95	19	36	42	131	20,000	1.0
	DSC12M-120	12	120	19	36	67	156	20,000	1.1
	DSC16M-95	16	95	24	50	42	47	20,000	1.3
	DSC16M-120	16	120	24	50	67	47	20,000	1.4
	DSC20M-95	20	95	29	50	42	55	20,000	1.3
	DSC20M-120	20	120	29	50	67	55	20,000	1.4


• LSC : Insertion depth of tool • Adjustment screw not available • Through coolant system is installed

# BT-DSC/S

Mono Slim type



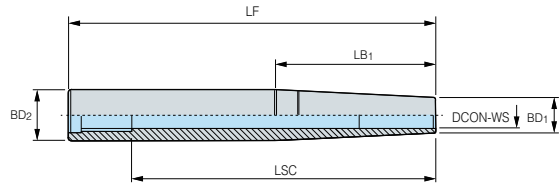
(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LSC	RPMX		
<b>BT30-</b>	<b>DSC6S-60</b>	6	60	9	20	22	82	25,000	0.4
	<b>DSC6S-80</b>	6	80	9	20	42	102	25,000	0.5
	<b>DSC6S-120</b>	6	120	9	25	67	142	25,000	0.5
<b>BT40-</b>	<b>DSC6S-95</b>	6	95	9	26	42	128	20,000	1.0
	<b>DSC6S-120</b>	6	120	9	26	67	153	20,000	1.0
	<b>DSC6S-160</b>	6	160	9	36	97	193	20,000	1.2
	<b>DSC8S-95</b>	8	95	11	36	42	128	20,000	1.1
	<b>DSC8S-120</b>	8	120	11	36	67	153	20,000	1.1
	<b>DSC8S-160</b>	8	160	11	36	97	193	20,000	1.2
	<b>DSC10S-95</b>	10	95	13	36	42	128	20,000	1.0
	<b>DSC10S-120</b>	10	120	13	36	67	153	20,000	1.1
	<b>DSC10S-160</b>	10	160	13	36	97	193	20,000	1.2
	<b>DSC12S-95</b>	12	95	15	36	42	128	20,000	1.1
	<b>DSC12S-120</b>	12	120	15	36	67	153	20,000	1.1
	<b>DSC12S-160</b>	12	160	15	36	97	193	20,000	1.2
<b>BT50-</b>	<b>DSC6S-110</b>	6	110	9	26	42	166	15,000	3.5
	<b>DSC6S-160</b>	6	160	9	36	97	216	15,000	3.6
	<b>DSC8S-110</b>	8	110	11	36	42	166	15,000	3.6
	<b>DSC8S-160</b>	8	160	11	36	97	216	15,000	3.6
	<b>DSC10S-110</b>	10	110	13	36	42	166	15,000	3.6
	<b>DSC10S-160</b>	10	160	13	36	97	216	15,000	3.6
	<b>DSC12S-110</b>	12	110	15	36	42	166	15,000	3.6
	<b>DSC12S-160</b>	12	160	15	36	97	216	15,000	3.7

• LSC : Insertion depth of tool • Adjustment screw not available • Through coolant system is installed

## ST-DSC/M

### Straight Shank Shrinking Chuck



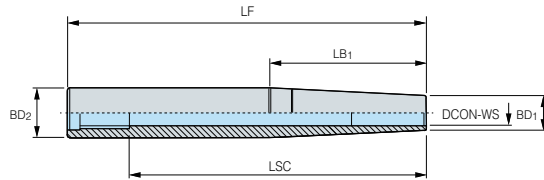
(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LSC		
ST16-	DSC6M-115	6	115	10	16	50	95	0.1
	DSC6M-140	6	140	10	16	60	120	0.1
ST20-	DSC6M-175	6	175	10	20	95	155	0.2
	DSC8M-145	8	145	13	20	70	125	0.2
	DSC10M-120	10	120	16	20	50	45	0.2
ST25-	DSC8M-175	8	175	13	25	105	155	0.4
	DSC10M-145	10	145	16	25	75	45	0.4
	DSC10M-175	10	175	16	25	105	45	0.4
	DSC12M-120	12	120	19	25	50	45	0.3
	DSC12M-150	12	150	19	25	80	45	0.4
	DSC16M-175	16	175	24	25	50	47	0.5
ST32-	DSC20M-175	20	175	29	32	50	55	0.8

• LSC : Insertion depth of tool • Adjustment screw not available • Through coolant system is installed

## ST-DSC/S

### Straight Shank Shrinking Chuck



(mm)

De	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LSC		
ST16-	DSC6S-115	6	115	9	16	55	95	0.1
	DSC6S-140	6	140	9	16	70	120	0.1
	DSC8S-115	8	115	11	16	50	95	0.1
ST20-	DSC6S-175	6	175	9	20	105	155	0.2
	DSC8S-175	8	175	11	20	85	155	0.2
	DSC10S-145	10	145	13	20	75	77	0.2
	DSC12S-120	12	120	15	20	50	52	0.2
ST32-	DSC12S-315	12	315	15	32	185	295	1.2

• LSC : Insertion depth of tool • Adjustment screw not available • Through coolant system is installed

### Parts

Basic										
Type	DSC6	DSC8	DSC10	DSC12	DSC14	DSC16	DSC18	DSC20	DSC25	DSC32
Adjust screw	M520C		M820C		M1230C					

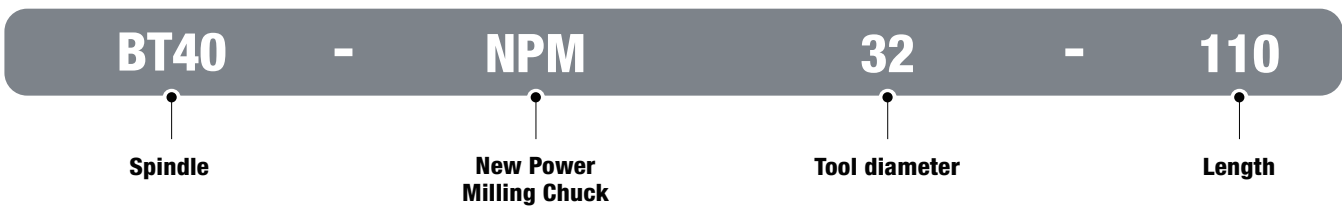
**New power milling chuck**

# NPM

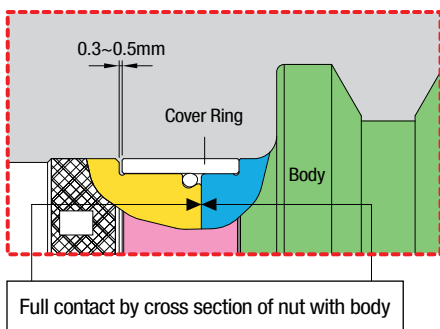
- Strong clamping over 500kgf-m (on NPM42 basis)
- DUST BLOCK functions for blocking foreign substance
- Jet coolant available
- High precision within 15 at L/D = 3
- Boring range:  $\varnothing 20\sim 42$



**Code system**

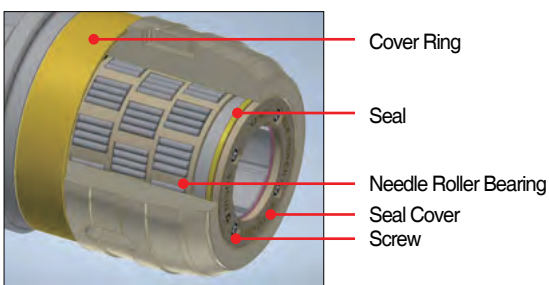


**Improvement of durability by preventing minute dust, chips and coolant**

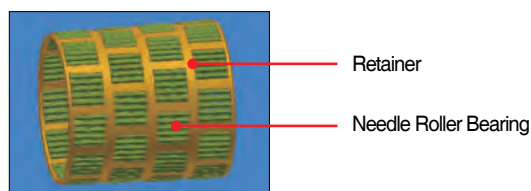


Adopted Stop Ring on Head parts  
- Preventing minute dust by Shim & O-Ring

**NPM Structural Features**



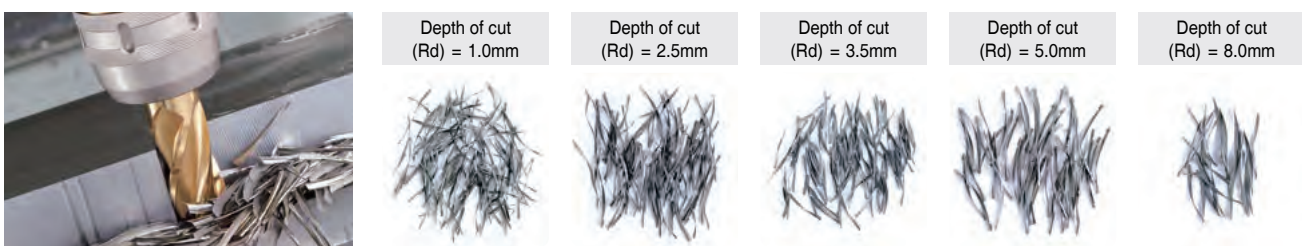
• Needle Roller Bearing (NPM20)



- Specially designed Steel Bearing for prevention of damage  
- Strong clamping by spreading the force

**Stable machining from heavy to fine**

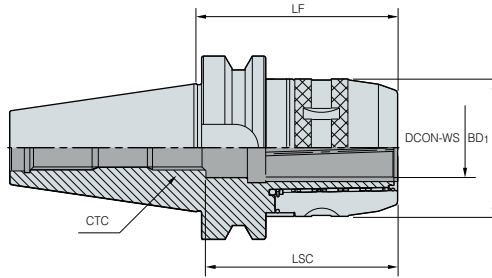
- Perfect face contact and Powerful clamping force strengthen both Cutting force and Absorption of vibration.




Possible machining from heavy milling to fine finishing



## DBT-NPM



(mm)

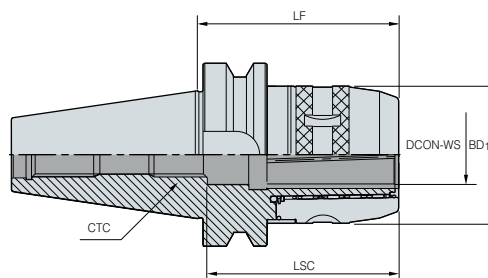
Designation	DCON-WS	LF	BD <sub>1</sub>	LSC	CTC	COLLET	
<b>DBT30-</b> NPM20-85	20	85	54	85	M16	DC20, DSC20, DCJ20	1.1
<b>DBT40-</b> NPM20-85	20	85	54	85	M16	DC20, DSC20, DCJ20	2.3
NPM20-100	20	100	54	85	M16	DC20, DSC20, DCJ20	2.4
NPM20-135	20	135	54	85	M16	DC20, DSC20, DCJ20	2.5
NPM25-85	25	85	61	83	M16	DC25, DCS25	1.8
NPM32-90	32	90	75	85	M16	DC32, DCS32, DCJ32	2.4
NPM32-110	32	110	75	95	M16	DC32, DCS32, DCJ32	2.9
NPM32-120	32	120	75	95	M16	DC32, DCS32, DCJ32	3.1
NPM32-135	32	135	75	95	M16	DC32, DCS32, DCJ32	3.4
<b>DBT50-</b> NPM20-95	20	95	54	85	M16	DC20, DCS20, DCJ20	4.3
NPM20-105	20	105	54	85	M16	DC20, DCS20, DCJ20	4.5
NPM20-125	20	125	54	85	M16	DC20, DCS20, DCJ20	4.8
NPM20-165	20	165	54	85	M16	DC20, DCS20, DCJ20	5.3
NPM25-95	25	95	61	83	M16	DC25, DCS25	4.6
NPM32-90	32	90	75	93	M24	DC32, DCS32, DCJ32	4.9
NPM32-110	32	110	75	93	M24	DC32, DCS32, DCJ32	5
NPM32-135	32	135	75	105	M24	DC32, DCS32, DCJ32	5.8
NPM32-165	32	165	75	105	M24	DC32, DCS32, DCJ32	6.9
NPM42-110	42	110	90	125	M24	DC42, DCS42	5.6
NPM42-135	42	135	90	125	M24	DC42, DCS42	6.6
NPM42-165	42	165	90	125	M24	DC42, DCS42	8

 Spare Part **E35**  Application Collet **E40**

• LSC: Insertion depth of tool • Through coolant system is optional

• In case of  $L \leq 90$ , chucks with over 90mm are recommended for roughing by short cap

# BT-NPM



(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	LSC	CTC	COLLET	kg	
<b>BT30-</b> NPM20-85	20	85	54	85	M16	DC20, DSC20, DCJ20	1.2	
<b>BT40-</b>	NPM20-85	20	85	85	M16	DC20, DSC20, DCJ20	2.3	
	NPM20-100	20	100	85	M16	DC20, DSC20, DCJ20	2.3	
	NPM20-135	20	135	83	M16	DC20, DSC20, DCJ20	2.4	
	NPM25-85	25	85	61	85	DC25, DCS25	1.7	
	NPM32-90	32	90	75	87	M16	DC32, DCS32, DCJ32	2.3
	NPM32-110	32	110	75	95	M16	DC32, DCS32, DCJ32	2.8
	NPM32-120	32	120	75	95	M16	DC32, DCS32, DCJ32	3
	NPM32-135	32	135	75	95	M16	DC32, DCS32, DCJ32	3.5
<b>BT50-</b>	NPM20-95	20	95	85	M16	DC20, DCS20, DCJ20	4.3	
	NPM20-125	20	125	85	M16	DC20, DCS20, DCJ20	4.7	
	NPM20-165	20	165	85	M16	DC20, DCS20, DCJ20	5.2	
	NPM25-95	25	95	61	83	DC25, DCS25	4.6	
	NPM32-90	32	90	75	93	M24	DC32, DCS32, DCJ32	4.9
	NPM32-110	32	110	75	105	M24	DC32, DCS32, DCJ32	5.0
	NPM32-135	32	135	75	105	M24	DC32, DCS32, DCJ32	5.7
	NPM32-165	32	165	75	105	M24	DC32, DCS32, DCJ32	6.9
	NPM42-110	42	110	90	125	M24	DC42, DCS42	5.4
	NPM42-135	42	135	90	125	M24	DC42, DCS42	6.5
NPM42-165	42	165	90	125	M24	DC42, DCS42	7.9	

Spare Part **E35** Application Collet **E40**

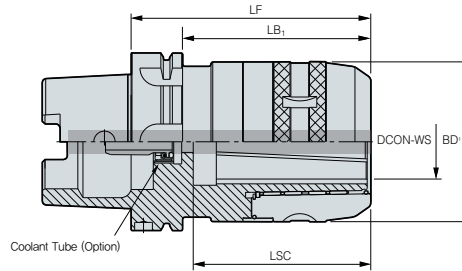
• LSC: Insertion depth of tool • Through coolant system is optional

• In case of  $L \leq 90$ , chucks with over 90mm are recommended for roughing by short cap

## Parts

For separate purchase			
Division	Collet	Spanner	Through coolant system
<b>Parts</b>			
<b>Designation</b>			
NPM20	DC20, DCS20, DCJ20	57-60	CTC20-□□
NPM32	DC32, DCS32, DCJ32	75-79	CTC32-□□
NPM42	DC42, DCS42	92-96	CTC42-□□

## HSK-NPM



(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	LB <sub>1</sub>	LSC	COLLET	/ kg	
<b>HSK63A-</b>	<b>NPM20-100</b>	20	100	54	74	75	DC20, DCS20, DCJ20	1.0
	<b>NPM20-100</b>	20	100	54	74	75	DC20, DCS20, DCJ20	1.6
	<b>NPM25-100</b>	25	100	61	74	75	DC25, DCS25	1.9
	<b>NPM32-110</b>	32	110	75	84	82	DC32, DCS32, DCJ32	2.5
	<b>NPM32-120</b>	32	120	75	84	90	DC32, DCS32, DCJ32	2.9
<b>HSK100A-</b>	<b>NPM20-110</b>	20	110	54	81	75	DC20, DCS20, DCJ20	3.0
	<b>NPM25-110</b>	25	110	61	81	75	DC25, DCS25, DCJ25	3.2
	<b>NPM32-115</b>	32	115	75	86	82	DC32, DCS32, DCJ32	4.1
	<b>NPM32-130</b>	32	130	75	101	90	DC32, DCS32, DCJ32	4.0
	<b>NPM42-135</b>	42	135	90	106	100	DC42, DCS42	5.7

Spare Part **E36** Application Collet **E40**

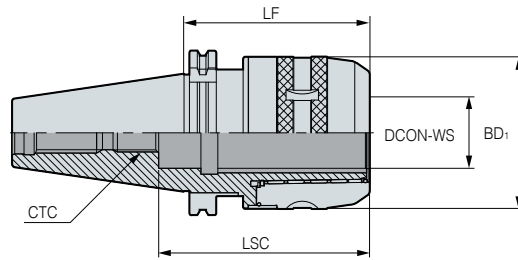
• LSC: Insertion depth of tool • Through coolant system is optional

### Parts

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

# SK-NPM



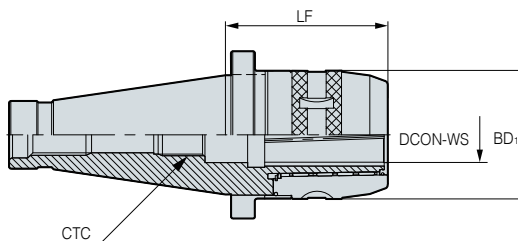
(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	LSC	CTC	COLLET	kg	
<b>SK40-</b>	<b>NPM20-95</b>	20	95	54	85	M16	DC20, DCS20, DCJ20	2.4
	<b>NPM32-95</b>	32	95	75	85	M16	DC32, DCS32, DCJ32	2.4
	<b>NPM32-110</b>	32	110	75	95	M16	DC32, DCS32, DCJ32	2.8
	<b>NPM32-135</b>	32	135	75	95	M16	DC32, DCS32, DCJ32	3.2
<b>SK50-</b>	<b>NPM20-100</b>	20	100	54	85	M16	DC20, DCS20, DCJ20	3.6
	<b>NPM32-100</b>	32	100	75	105	M24	DC32, DCS32, DCJ32	4.3
	<b>NPM32-130</b>	32	130	75	105	M24	DC32, DCS32, DCJ32	5.2
	<b>NPM42-110</b>	42	110	90	125	M24	DC42, DCS42	5.2
	<b>NPM42-135</b>	42	135	90	125	M24	DC42, DCS42	6.1

Spare Part **E35**   Application Collet **E40**

• LSC: Insertion depth of tool   • Through coolant system is optional

# NT-NPM



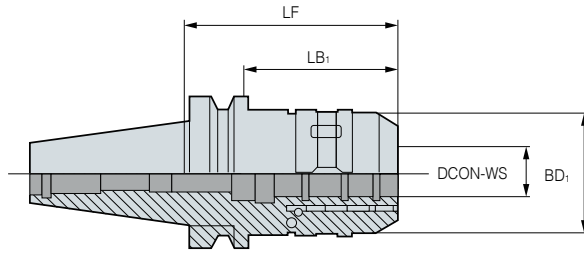
(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	CTC	COLLET	kg	
<b>NT40-</b>	<b>NPM32-95</b>	32	95	75	M16	DC32, DCS32, DCJ32	2.7
<b>NT50-</b>	<b>NPM32-95</b>	32	95	75	M24	DC32, DCS32, DCJ32	4.3
	<b>NPM42-95</b>	42	95	90	M24	DC42, DCS42	4.8
<b>NT50M-</b>	<b>NPM32-95</b>	32	95	75	M24	DC32, DCS32, DCJ32	4.4
	<b>NPM42-95</b>	42	95	90	M24	DC42, DCS42	4.9


Spare Part **E35**   Application Collet **E40**

• Through coolant system is not available

## BT-DMC




(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	LB <sub>1</sub>	COLLET	
<b>BT30-</b> DMC20-80	20	80	54	80	DC20, DCS20	1
<b>BT40-</b> DMC20-90	20	90	54	80	DC20, DCS20	2.3
DMC32-105	32	105	75	95	DC32, DCS32	2.9
<b>BT50-</b> DMC32-105	32	105	75	95	DC32, DCS32	4.9
DMC32-165	32	165	75	95	DC32, DCS32	6.7
DMC42-105	42	105	90	125	DC42, DCS42	5.2
DMC42-165	42	165	90	125	DC42, DCS42	8

 Spare Part **E38**  Application Collet **E40**

• Through coolant system is optional

### Parts

Division	For separate purchase
Spanner	

Classification by shank	
DMC 20	57-60
DMC 32	75-79
DMC 42	92-96

## Lock collet for milling chuck

# DCL

- The mechanical fastening method enables the prevention of tool deviation
- Stable tool fastening force even under extreme machining conditions

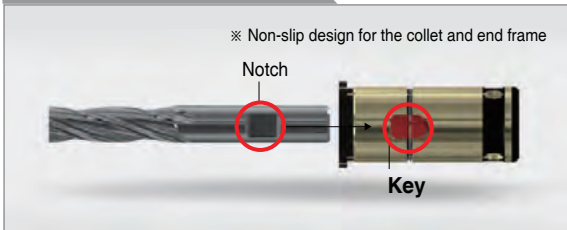


### Code system

<b>DCL</b>	<b>32</b>	<b>-</b>	<b>20</b>
DINE lock-collet	Collet size		Tool diameter

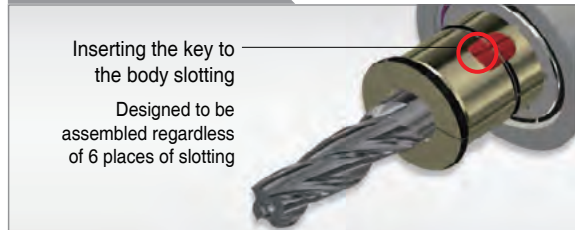
### Features

#### Designed to prevent fallout



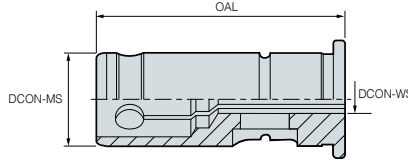
- Designed especially for extreme machining with a lot of mechanical actions, prevents the tool from deviating or falling out
- Weldon flat (DIN 6535HB) end mill used

#### Designed as non-slip



- Closely adhered to the grooves of the milling chuck - No slip occurring even under high torque

### Detailed Specifications



Designation	DCON-WS	OAL	DCON-MS	Designation	DCON-WS	OAL	DCON-MS
DCL20-6	6	53	20	DCL32-10	10	65	32
DCL20-8	8	53	20	DCL32-12	12	65	32
DCL20-10	10	53	20	DCL32-14	14	65	32
DCL20-12	12	53	20	DCL32-16	16	65	32
DCL20-14	14	53	20	DCL32-18	18	65	32
DCL20-16	16	53	20	DCL32-20	20	65	32
DCL32-6	6	65	32	DCL32-25	25	65	32
DCL32-8	8	65	32				

### Parts

Basic			Basic		
Division	Key	C-Grip	Division	Key	C-Grip
Parts			Parts		
Designation			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			

# E Technical information for DCJ

## Jetcoolant collet (for milling chuck)

# DCJ

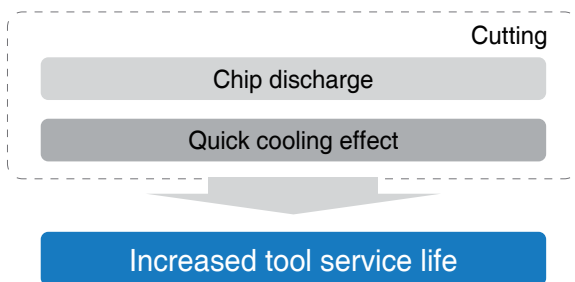
- Ensures a longer tool life of cutting tools by preventing chips from adhering to tools
- Improves chip breakability/breaking strong jet injection
- Maintains the performance of the conventional milling chuck
- Enables a fast change of the inside jet coolant by collet replacement
- Available an ultrahigh-pressure inside coolant



Designation		Ø6	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
NPM	20	•	•	•	•	•			
	32	•	•	•	•	•	•	•	
	42	•	•	•	•	•	•	•	•

• 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

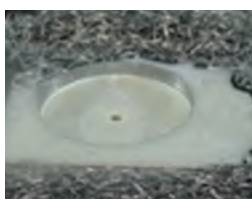
- Jet coolant



- Inside coolant



### ➤ Chip evacuation

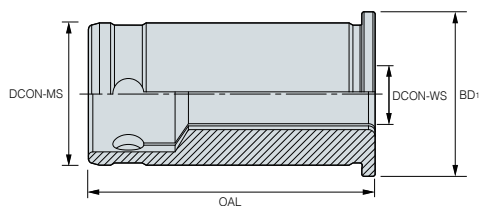


### ➤ Coolant type


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

# DC Collet

Straight Collet



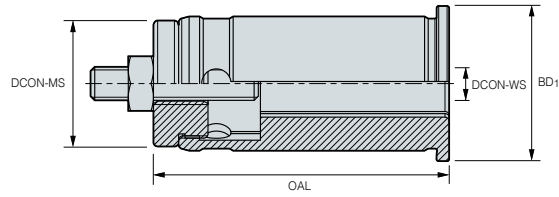
(mm)

Designation	DCON-WS	OAL	DCON-MS	BD1	
<b>DC</b> 20-6	6	53	20	25	0.1
20-8	8	53	20	25	0.1
20-10	10	53	20	25	0.1
20-12	12	53	20	25	0.1
20-14	14	53	20	25	0.1
20-16	16	53	20	25	0.1
25-6	6	62	25	29	0.2
25-8	8	62	25	29	0.2
25-10	10	62	25	29	0.2
25-12	12	62	25	29	0.2
25-16	16	62	25	29	0.2
32-6	6	65	32	37	0.2
32-8	8	65	32	37	0.2
32-10	10	65	32	37	0.2
32-12	12	65	32	37	0.2
32-14	14	65	32	37	0.2
32-16	16	65	32	37	0.2
32-19	19	65	32	37	0.2
32-20	20	65	32	37	0.2
32-25	25	65	32	37	0.2
42-6	6	73	42	47	0.5
42-8	8	73	42	47	0.5
42-10	10	73	42	47	0.5
42-12	12	73	42	47	0.5
42-16	16	73	42	47	0.5
42-20	20	73	42	47	0.5
42-25	25	73	42	47	0.5
42-32	32	73	42	47	0.5




# DCS Collet

Straight Collet

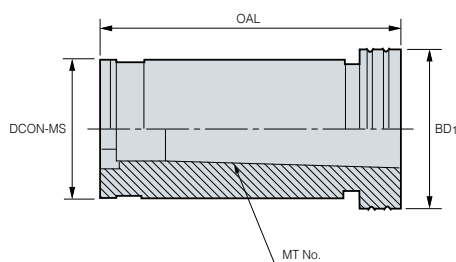


(mm)


Designation	DCON-WS	OAL	DCON-MS	BD1		
<b>DCS</b>	<b>20-6</b>	6	57	20	25	0.1
	<b>20-8</b>	8	57	20	25	0.1
	<b>20-10</b>	10	57	20	25	0.1
	<b>20-12</b>	12	57	20	25	0.1
	<b>20-16</b>	16	57	20	25	0.1
	<b>32-6</b>	6	70.5	32	37	0.2
	<b>32-8</b>	8	70.5	32	37	0.2
	<b>32-10</b>	10	70.5	32	37	0.2
	<b>32-12</b>	12	70.5	32	37	0.2
	<b>32-14</b>	14	70.5	32	37	0.2
	<b>32-16</b>	16	70.5	32	37	0.2
	<b>32-19</b>	19	70.5	32	37	0.2
	<b>32-20</b>	20	70.5	32	37	0.2
	<b>32-25</b>	25	70.5	32	37	0.2
	<b>42-6</b>	6	80	42	47	0.5
	<b>42-8</b>	8	80	42	47	0.5
	<b>42-10</b>	10	80	42	47	0.5
	<b>42-12</b>	12	80	42	47	0.5
	<b>42-16</b>	16	80	42	47	0.5
	<b>42-20</b>	20	80	42	47	0.5
<b>42-25</b>	25	80	42	47	0.5	
<b>42-32</b>	32	80	42	47	0.5	

# TC Collet

Taper Collet

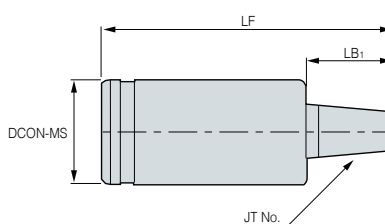


(mm)


Designation	MT No.	OAL	BD <sub>1</sub>	DCON-MS		
TC	20-1	MT1	60	26	20	0.1
	20-2	MT2	72	26	20	0.1
	25-1	MT1	60	32	25	0.2
	25-2	MT2	72	32	25	0.2
	32-1	MT1	60	38	32	0.4
	32-2	MT2	72	38	32	0.4
	32-3	MT3	90	38	32	0.4
	42-1	MT1	60	48	42	0.6
	42-2	MT2	72	48	42	0.7
	42-3	MT3	90	48	42	0.8
	42-4	MT4	113	48	42	0.9

# DJT

Drill Chuck Arbor



(mm)

Designation	JT No.	LF	DCON-MS	LB <sub>1</sub>		
DJT	20-6	JT6	83	20	28	0.2
	32-6	JT6	93	32	28	0.5
	42-6	JT6	103	42	28	0.9

# E Technical information for SDC/P

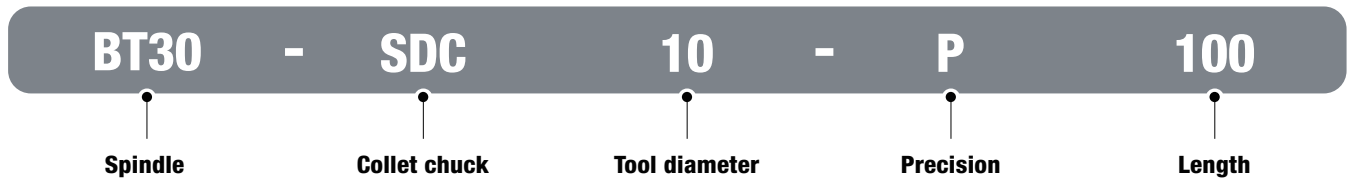
## Precision collet chuck for multi purpose machining

# SDC/P

- Superior efficiency for general machining due to affordable pricing and stable performance
- The sleeve nuts allows stable run-out when compared to other companies
- Wide fastening range applicable
- Various machining available just by replacing the collet
- Chucking range :  $\varnothing 1 \sim \varnothing 26$



### Code system



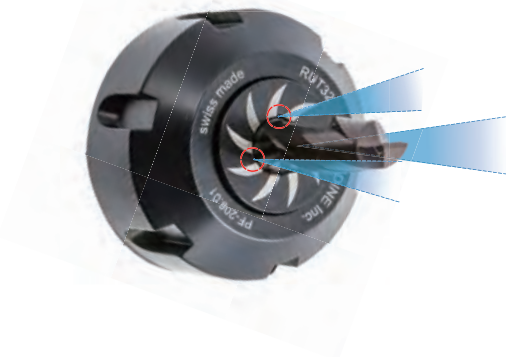
### Bearing nuts designed for improved precision (SWISS Made )

- Soft sleeve bearing RN Nut

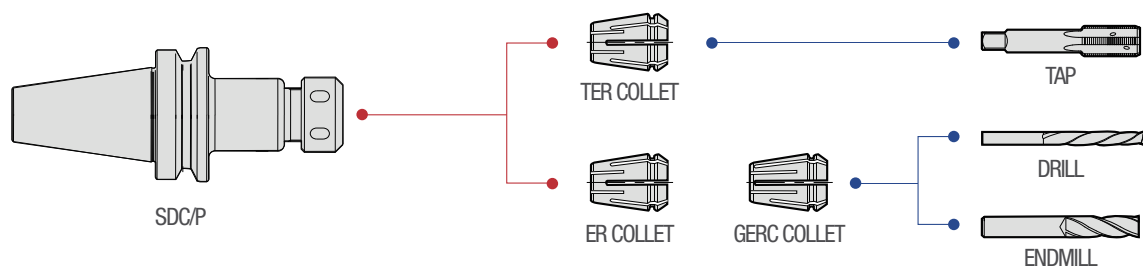


### Jet coolant disk Applicable

- After replacing with RT/RUT nut, connect RTJW to use jet coolant - internal coolant



### SDC/P Application



## DBT-SDC/P

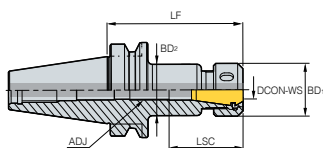


Fig. 1

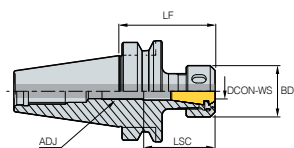


Fig. 2

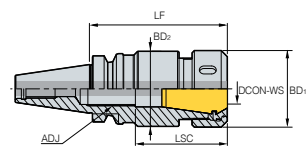


Fig. 3

		(mm)								
Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LSC	Collet/ STEP	ADJ	Fig.	$\frac{Q}{kg}$	
DBT30-	SDC7P-70	1.0~7.0	70	18	17	33	GERC11/0.5	M7	1	0.5
	SDC7P-100	1.0~7.0	100	18	17	33	GERC11/0.5	M7	1	0.5
	SDC10P-50	1.0~10.0	50	32	-	44.5	GERC16/1.0	M10	2	0.5
	SDC10P-70	1.0~10.0	70	32	31	44.5	GERC16/1.0	M10	1	0.6
	SDC10P-100	1.0~10.0	100	32	31	44.5	GERC16/1.0	M10	1	0.7
	SDC13P-50	1.0~13.0	50	35	-	49	GERC20/1.0	M13	2	0.5
	SDC13P-70	1.0~13.0	70	35	34	49	GERC20/1.0	M13	1	0.6
	SDC13P-100	1.0~13.0	100	35	34	49	GERC20/1.0	M13	1	0.8
	SDC16P-50	2.0~16.0	50	42	-	50	GERC25/1.0	M18	2	0.5
	SDC16P-70	2.0~16.0	70	42	41	50	GERC25/1.0	M18	1	0.7
	SDC16P-100	2.0~16.0	100	42	41	50	GERC25/1.0	M18	1	1.0
	SDC20P-60	2.0~20.0	60	50	-	60	GERC32/1.0	M22	2	0.6
	SDC20P-90	2.0~20.0	90	50	49	60	GERC32/1.0	M22	3	1.0
SDC20P-120	2.0~20.0	120	50	49	60	GERC32/1.0	M22	3	1.4	
DBT40-	SDC7P-70	1.0~7.0	70	18	17	33	GERC11/0.5	M7	1	0.9
	SDC7P-90	1.0~7.0	90	18	17	33	GERC11/0.5	M7	1	0.9
	SDC7P-130	1.0~7.0	130	18	17	33	GERC11/0.5	M7	1	1.0
	SDC10P-70	1.0~10.0	70	32	31	44.5	GERC16/1.0	M10	1	1.0
	SDC10P-90	1.0~10.0	90	32	31	44.5	GERC16/1.0	M10	1	1.2
	SDC10P-130	1.0~10.0	130	32	31	44.5	GERC16/1.0	M10	2	1.4
	SDC13P-70	1.0~13.0	70	35	34	49	GERC20/1.0	M13	1	1.1
	SDC13P-90	1.0~13.0	90	35	34	49	GERC20/1.0	M13	1	1.2
	SDC13P-130	1.0~13.0	130	35	34	49	GERC20/1.0	M13	1	1.4
	SDC13P-150	1.0~13.0	150	35	34	49	GERC20/1.0	M13	1	1.6
	SDC16P-70	2.0~16.0	70	42	41	50	GERC25/1.0	M18	1	1.1
	SDC16P-90	2.0~16.0	90	42	41	50	GERC25/1.0	M18	1	1.3
	SDC16P-130	2.0~16.0	130	42	41	50	GERC25/1.0	M18	1	1.7
	SDC20P-70	2.0~20.0	70	50	-	60	GERC32/1.0	M22	2	1.1
	SDC20P-90	2.0~20.0	90	50	49	60	GERC32/1.0	M22	1	1.4
	SDC20P-130	2.0~20.0	130	50	49	60	GERC32/1.0	M22	1	1.9
	SDC20P-150	2.0~20.0	150	50	49	60	GERC32/1.0	M22	1	2.2
SDC26P-90	4.0~26.0	90	63	62	71	GERC40/1.0	M28	1	1.7	

➔ Spare Part E46 ➔ Application Collet E56

• LSC: Insertion depth of tool • Through coolant system is optional  
• Collets in the right size are recommended for oil hole type

## DBT-SDC/P

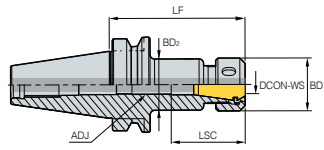


Fig. 1

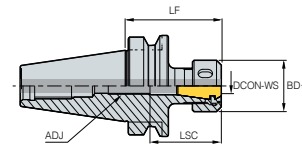


Fig. 2

(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LSC	Collet/ STEP	ADJ	Fig.	kg	
<b>DBT50-</b>	<b>SDC10P-100</b>	1.0~10.0	100	32	31	44.5	GERC16/1.0	M10	1	3.7
	<b>SDC10P-120</b>	1.0~10.0	120	32	31	44.5	GERC16/1.0	M10	1	3.7
	<b>SDC10P-160</b>	1.0~10.0	160	32	31	44.5	GERC16/1.0	M10	1	3.8
	<b>SDC13P-100</b>	1.0~13.0	100	35	34	49	GERC20/1.0	M13	1	3.8
	<b>SDC13P-130</b>	1.0~13.0	130	35	34	49	GERC20/1.0	M13	1	3.8
	<b>SDC13P-160</b>	1.0~13.0	160	35	34	49	GERC20/1.0	M13	1	4.1
	<b>SDC13P-180</b>	1.0~13.0	180	35	34	49	GERC20/1.0	M13	1	4.2
	<b>SDC16P-100</b>	2.0~16.0	100	42	41	50	GERC25/1.0	M18	1	3.9
	<b>SDC16P-160</b>	2.0~16.0	160	42	41	50	GERC25/1.0	M18	1	4.3
	<b>SDC20P-70</b>	2.0~20.0	70	50	-	60	GERC32/1.0	M22	2	1.7
	<b>SDC20P-100</b>	2.0~20.0	100	50	49	60	GERC32/1.0	M22	1	4.0
	<b>SDC20P-130</b>	2.0~20.0	130	50	49	60	GERC32/1.0	M22	1	4.3
	<b>SDC20P-160</b>	2.0~20.0	160	50	49	60	GERC32/1.0	M22	1	4.7
	<b>SDC20P-180</b>	2.0~20.0	180	50	49	60	GERC32/1.0	M22	1	5.0
	<b>SDC26P-160</b>	4.0~26.0	160	63	62	71	GERC40/1.0	M28	1	5.5

Spare Part **E46** Application Collet **E56**

• LSC: Insertion depth of tool • Through coolant system is optional  
• Collets in the right size are recommended for oil hole type

### Parts

Division	Basic		For separate purchase	
	Sleeve bearing nut	Adjust screw	Spanner	Collet
<b>Parts</b>				
<b>Designation</b>				
<b>SDC7P</b>	RN11	BN0716F	20-22	GERC/ER 11-ØD
<b>SDC10P</b>	RN16	BN1025F	32-35	GERC/ER 16-ØD
<b>SDC13P</b>	RN20	BN1325F	35-38	GERC/ER 20-ØD
<b>SDC16P</b>	RN25	BN1830F	42-46	GERC/ER 25-ØD
<b>SDC20P</b>	RN32	BN2230F	48-52	GERC/ER 32-ØD
<b>SDC26P</b>	RN40	BN2838F	62-65	GERC/ER 40-ØD

BT30-SDC13P-50/HSK63A-SDC13P-100 is applide with BN0716F screw.

## BT-SDC/P

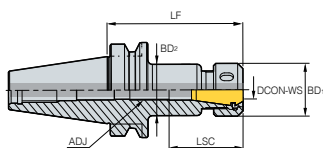


Fig. 1

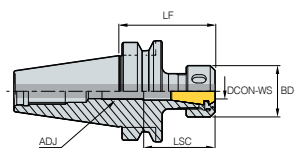


Fig. 2

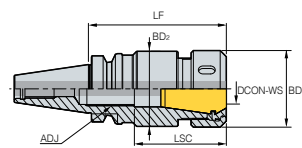


Fig. 3

		(mm)								
Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LSC	Collet/ STEP	ADJ	Fig.	$\frac{Q}{kg}$	
<b>BT30-</b>	<b>SDC7P-70</b>	1.0~7.0	70	18	17	33	GERC11/0.5	M7	1	0.5
	<b>SDC7P-100</b>	1.0~7.0	100	18	17	33	GERC11/0.5	M7	1	0.5
	<b>SDC10P-50</b>	1.0~10.0	50	32	-	44.5	GERC16/1.0	M10	2	0.5
	<b>SDC10P-70</b>	1.0~10.0	70	32	31	44.5	GERC16/1.0	M10	1	0.6
	<b>SDC10P-100</b>	1.0~10.0	100	32	31	44.5	GERC16/1.0	M10	1	0.7
	<b>SDC13P-50</b>	1.0~13.0	50	35	-	49	GERC20/1.0	M13	2	0.5
	<b>SDC13P-70</b>	1.0~13.0	70	35	34	49	GERC20/1.0	M13	1	0.6
	<b>SDC13P-100</b>	1.0~13.0	100	35	34	49	GERC20/1.0	M13	1	0.8
	<b>SDC16P-50</b>	2.0~16.0	50	42	-	50	GERC25/1.0	M18	2	0.5
	<b>SDC16P-70</b>	2.0~16.0	70	42	41	50	GERC25/1.0	M18	1	0.7
	<b>SDC16P-100</b>	2.0~16.0	100	42	41	50	GERC25/1.0	M18	1	1.0
	<b>SDC20P-60</b>	2.0~20.0	60	50	-	60	GERC32/1.0	M22	2	0.6
	<b>SDC20P-90</b>	2.0~20.0	90	50	49	60	GERC32/1.0	M22	3	1.0
	<b>SDC20P-120</b>	2.0~20.0	120	50	49	60	GERC32/1.0	M22	3	1.4
<b>BT40-</b>	<b>SDC7P-70</b>	1.0~7.0	70	18	17	33	GERC11/0.5	M7	1	0.9
	<b>SDC7P-90</b>	1.0~7.0	90	18	17	33	GERC11/0.5	M7	1	0.9
	<b>SDC7P-130</b>	1.0~7.0	130	18	17	33	GERC11/0.5	M7	1	1.0
	<b>SDC10P-70</b>	1.0~10.0	70	32	31	44.5	GERC16/1.0	M10	1	1.0
	<b>SDC10P-90</b>	1.0~10.0	90	32	31	44.5	GERC16/1.0	M10	1	1.2
	<b>SDC10P-130</b>	1.0~10.0	130	32	31	44.5	GERC16/1.0	M10	2	1.4
	<b>SDC13P-70</b>	1.0~13.0	70	35	34	49	GERC20/1.0	M13	1	1.1
	<b>SDC13P-90</b>	1.0~13.0	90	35	34	49	GERC20/1.0	M13	1	1.2
	<b>SDC13P-130</b>	1.0~13.0	130	35	34	49	GERC20/1.0	M13	1	1.4
	<b>SDC13P-150</b>	1.0~13.0	150	35	34	49	GERC20/1.0	M13	1	1.6
	<b>SDC16P-70</b>	2.0~16.0	70	42	41	50	GERC25/1.0	M18	1	1.1
	<b>SDC16P-90</b>	2.0~16.0	90	42	41	50	GERC25/1.0	M18	1	1.3
	<b>SDC16P-130</b>	2.0~16.0	130	42	41	50	GERC25/1.0	M18	1	1.7
	<b>SDC20P-70</b>	2.0~20.0	70	50	-	60	GERC32/1.0	M22	2	1.1
	<b>SDC20P-90</b>	2.0~20.0	90	50	49	60	GERC32/1.0	M22	1	1.4
	<b>SDC20P-130</b>	2.0~20.0	130	50	49	60	GERC32/1.0	M22	1	1.9
	<b>SDC20P-150</b>	2.0~20.0	150	50	49	60	GERC32/1.0	M22	1	2.2
<b>SDC26P-90</b>	4.0~26.0	90	63	62	71	GERC40/1.0	M28	1	1.7	

➔ Spare Part **E48** ➔ Application Collet **E56**

• LSC: Insertion depth of tool • Through coolant system is optional  
• Collets in the right size are recommended for oil hole type

## BT-SDC/P

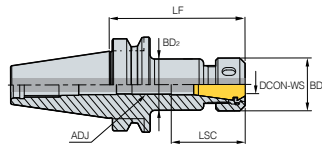


Fig. 1

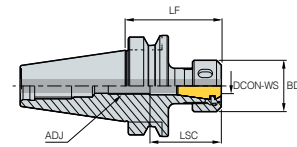


Fig. 2

(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LSC	Collet/ STEP	ADJ	Fig.	kg	
<b>BT50-</b>	<b>SDC10P-100</b>	1.0~10.0	100	32	31	44.5	GERC16/1.0	M10	1	3.7
	<b>SDC10P-120</b>	1.0~10.0	120	32	31	44.5	GERC16/1.0	M10	1	3.7
	<b>SDC10P-160</b>	1.0~10.0	160	32	31	44.5	GERC16/1.0	M10	1	3.8
	<b>SDC13P-100</b>	1.0~13.0	100	35	34	49	GERC20/1.0	M13	1	3.8
	<b>SDC13P-130</b>	1.0~13.0	130	35	34	49	GERC20/1.0	M13	1	3.8
	<b>SDC13P-160</b>	1.0~13.0	160	35	34	49	GERC20/1.0	M13	1	4.1
	<b>SDC13P-180</b>	1.0~13.0	180	35	34	49	GERC20/1.0	M13	1	4.2
	<b>SDC16P-100</b>	2.0~16.0	100	42	41	50	GERC25/1.0	M18	1	3.9
	<b>SDC16P-160</b>	2.0~16.0	160	42	41	50	GERC25/1.0	M18	1	4.3
	<b>SDC20P-70</b>	2.0~20.0	70	50	-	60	GERC32/1.0	M22	2	1.7
	<b>SDC20P-100</b>	2.0~20.0	100	50	49	60	GERC32/1.0	M22	1	4.0
	<b>SDC20P-130</b>	2.0~20.0	130	50	49	60	GERC32/1.0	M22	1	4.3
	<b>SDC20P-160</b>	2.0~20.0	160	50	49	60	GERC32/1.0	M22	1	4.7
	<b>SDC20P-180</b>	2.0~20.0	180	50	49	60	GERC32/1.0	M22	1	5.0
	<b>SDC26P-160</b>	4.0~26.0	160	63	62	71	GERC40/1.0	M28	1	5.5

Spare Part **E48** Application Collet **E56**

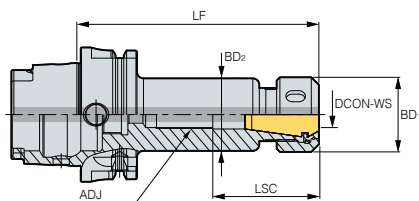
• LSC: Insertion depth of tool • Through coolant system is optional  
• Collets in the right size are recommended for oil hole type

### Parts

Division	Basic		For separate purchase	
	Sleeve bearing nut	Adjust screw	Spanner	Collet
<b>Parts</b>				
<b>Designation</b>				
<b>SDC7P</b>	RN11	BN0716F	20-22	GERC/ER 11-ØD
<b>SDC10P</b>	RN16	BN1025F	32-35	GERC/ER 16-ØD
<b>SDC13P</b>	RN20	BN1325F	35-38	GERC/ER 20-ØD
<b>SDC16P</b>	RN25	BN1830F	42-46	GERC/ER 25-ØD
<b>SDC20P</b>	RN32	BN2230F	48-52	GERC/ER 32-ØD
<b>SDC26P</b>	RN40	BN2838F	62-65	GERC/ER 40-ØD

BT30-SDC13P-50/HSK63A-SDC13P-100 is applide with BN0716F screw.

# HSK-SDC/P



(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LSC	ADJ	Collet/STEP	kg	
<b>HSK63A-</b>	<b>SDC7P-100</b>	1.0~7.0	100	18	17	33	M7	GERC11/0.5	0.9
	<b>SDC7P-120</b>	1.0~7.0	120	18	17	34	M8	GERC11/0.5	0.9
	<b>SDC10P-100</b>	1.0~10.0	100	32	31	44.5	M10	GERC16/1.0	1
	<b>SDC10P-120</b>	1.0~10.0	120	32	31	44.5	M10	GERC16/1.0	1
	<b>SDC13P-100</b>	1.0~13.0	100	35	34	P	M7	GERC20/1.0	1.1
	<b>SDC13P-120</b>	1.0~13.0	120	35	34	49	M7	GERC20/1.0	1.2
	<b>SDC13P-150</b>	1.0~13.0	150	35	34	49	M7	GERC20/1.0	1.2
	<b>SDC16P-100</b>	1.0~16.0	100	42	41	50	M7	GERC25/1.0	1.2
	<b>SDC20P-110</b>	1.0~20.0	110	50	49	60	M7	GERC32/1.0	1.5
	<b>SDC26P-130</b>	4.0~26.0	130	63	62	71	M10	GERC40/1.0	1.6
<b>HSK100A-</b>	<b>SDC7P-100</b>	1.0~7.0	100	18	17	33	M7	GERC11/0.5	2
	<b>SDC10P-100</b>	1.0~10.0	100	32	31	44.5	M10	GERC16/1.0	2.2
	<b>SDC13P-100</b>	1.0~13.0	100	35	34	49	M7	GERC20/1.0	2.4
	<b>SDC16P-110</b>	2.0~16.0	100	42	41	50	M13	GERC25/1.0	2.6
	<b>SDC20P-120</b>	2.0~20.0	120	50	49	60	M10	GERC32/1.0	2.9
	<b>SDC26P-130</b>	4.0~26.0	130	63	62	71	M28	GERC40/1.0	3.8

Spare Part **E49** Application Collet **E56**

• LSC: Insertion depth of tool • Through coolant system is optional  
• Collets in the right size are recommended for oil hole type

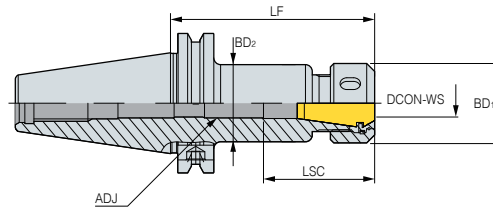
## Parts

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK63A	HSK63A-CNS
HSK100A	HSK100A-CNS



## SK-SDC/P



(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LSC	ADJ	Collet/STEP	/ kg
<b>SK40-</b>	<b>SDC10P-90</b>	1.0~10.0	90	32	31	44.5	GERC16/1.0 M10	1.1
	<b>SDC13P-90</b>	1.0~13.0	90	35	34	49	GERC20/1.0 M13	1.2
	<b>SDC13P-120</b>	1.0~13.0	120	35	34	49	GERC20/1.0 M13	1.3
	<b>SDC16P-90</b>	2.0~16.0	90	42	41	50	GERC25/1.0 M18	1.4
	<b>SDC20P-90</b>	2.0~20.0	90	50	49	60	GERC32/1.0 M13	1.5

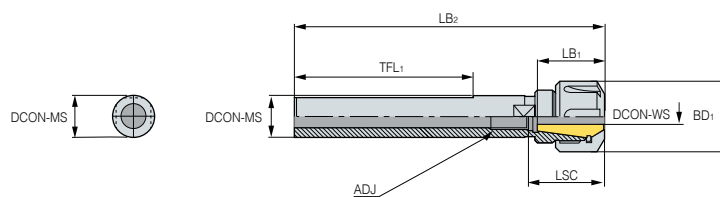
Spare Part **E50** Application Collet **E56**

• LSC: Insertion depth of tool • Through coolant system is optional  
• Collets in the right size are recommended for oil hole type


### Parts

Basic			For separate purchase	
Division	Sleeve bearing nut	Adjust screw	Spanner	Collet
<b>Parts</b>				
<b>Designation</b>				
<b>SDC7P</b>	RN11	BN0716F	20-22	GERC/ER 11-ØD
<b>SDC10P</b>	RN16	BN1025F	32-35	GERC/ER 16-ØD
<b>SDC13P</b>	RN20	BN1325F	35-38	GERC/ER 20-ØD
<b>SDC16P</b>	RN25	BN1830F	42-46	GERC/ER 25-ØD
<b>SDC20P</b>	RN32	BN2230F	48-52	GERC/ER 32-ØD
<b>SDC26P</b>	RN40	BN2838F	62-65	GERC/ER 40-ØD

BT30-SDC13P-50/HSK63A-SDC13P-100 is applide with BN0716F screw.

**S-SDC**

(mm)

	Designation	DCON-WS	LB2	BD1	DCON-MS	LB1	TFL1	LSC	Collet/STEP	ADJ	
<b>S16-</b>	<b>SDC7-120M</b>	1.0~7.0	120	19	16	-	-	33	GERC11/0.5	M7	0.1
	<b>SDC7-120T</b>	1.0~7.0	120	19	16	-	73	33	GERC11/0.5	M7	0.1
	<b>SDC10-150T</b>	1.0~10.0	150	28	16	46.5	83	34.5	GERC16/1.0	M10	0.2
<b>S20-</b>	<b>SDC10-150M</b>	1.0~10.0	150	28	20	26.5	-	34.5	GERC16/1.0	M10	0.3
	<b>SDC10-150T</b>	1.0~10.0	150	28	20	26.5	83	34.5	GERC16/1.0	M10	0.3
	<b>SDC13-150M</b>	1.0~13.0	150	35	20	50	-	49	GERC20/1.0	M13	0.3
	<b>SDC13-150T</b>	1.0~13.0	150	35	20	50	83	49	GERC20/1.0	M13	0.3
<b>S25-</b>	<b>SDC10-150M</b>	1.0~10.0	150	28	25	-	-	34.5	GERC16/1.0	M10	0.4
	<b>SDC10-150T</b>	1.0~10.0	150	28	25	-	83	34.5	GERC16/1.0	M10	0.4
	<b>SDC13-150M</b>	1.0~13.0	150	35	25	-	-	49	GERC20/1.0	M13	0.4
	<b>SDC13-150T</b>	1.0~13.0	150	35	25	-	83	49	GERC20/1.0	M13	0.4
<b>S32-</b>	<b>SDC13-150M</b>	1.0~13.0	150	35	32	-	-	49	GERC20/1.0	M13	0.7
	<b>SDC13-150T</b>	1.0~13.0	150	35	32	-	83	49	GERC20/1.0	M13	0.7
	<b>SDC20-165M</b>	2.0~20.0	165	50	32	-	-	60	GERC32/1.0	M22	0.9
	<b>SDC20-165T</b>	2.0~20.0	165	50	32	-	83	60	GERC32/1.0	M22	0.9

 Spare Part **E52**  Application Collet **E56**

• LSC: Insertion depth of tool • Through coolant system is optional

## S-SDC/S

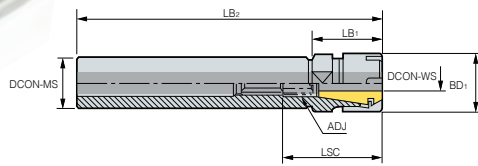


Fig. 1

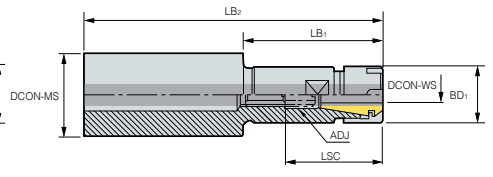


Fig. 2

(mm)

Designation	DCON-WS	LB2	BD1	DCON-MS	LB1	LSC	Collet/STEP	ADJ	Fig.	kg	
<b>S16-</b>	<b>SDC7S-100M</b>	1.0~7.0	100	16	16	21	33	GERC11/0.5	M7	1	0.1
	<b>SDC7S-150M</b>	1.0~7.0	150	16	16	21	33	GERC11/0.5	M7	1	0.1
	<b>SDC10S-100M</b>	1.0~10.0	100	22	16	50	44.5	GERC16/1.0	M10	1	0.1
	<b>SDC10S-150M</b>	1.0~10.0	150	22	16	50	44.5	GERC16/1.0	M10	1	0.1
<b>S20-</b>	<b>SDC7S-100M</b>	1.0~7.0	100	16	20	30	35	GERC11/0.5	M7	2	0.1
	<b>SDC7S-150M</b>	1.0~7.0	150	16	20	80	35	GERC11/0.5	M7	2	0.2
	<b>SDC10S-100M</b>	1.0~10.0	100	22	20	50	44.5	GERC16/1.0	M10	1	0.1
	<b>SDC10S-150M</b>	1.0~10.0	150	22	20	50	44.5	GERC16/1.0	M10	1	0.2
	<b>SDC10S-200M</b>	1.0~10.0	200	22	20	50	44.5	GERC16/1.0	M10	1	0.3
	<b>SDC13S-100M</b>	1.0~13.0	100	28	20	50	49	GERC20/1.0	M13	1	0.1
	<b>SDC13S-150M</b>	1.0~13.0	150	28	20	50	49	GERC20/1.0	M13	1	0.2
<b>S25-</b>	<b>SDC7S-100M</b>	1.0~7.0	100	16	25	30	33	GERC11/0.5	M7	2	0.2
	<b>SDC7S-150M</b>	1.0~7.0	150	16	25	80	33	GERC11/0.5	M7	2	0.2
	<b>SDC10S-100M</b>	1.0~10.0	100	22	25	30	44.5	GERC16/1.0	M10	2	0.2
	<b>SDC10S-150M</b>	1.0~10.0	150	22	25	80	44.5	GERC16/1.0	M10	2	0.3
	<b>SDC13S-100M</b>	1.0~13.0	100	28	25	50	49	GERC20/1.0	M13	1	0.2
	<b>SDC13S-150M</b>	1.0~13.0	150	28	25	50	49	GERC20/1.0	M13	1	0.4
	<b>SDC16S-100M</b>	2.0~16.0	100	35	25	50	50	GERC25/1.0	M18	1	0.3
	<b>SDC16S-150M</b>	2.0~16.0	150	35	25	50	50	GERC25/1.0	M18	1	0.4
<b>S32-</b>	<b>SDC16S-120M</b>	2.0~16.0	120	35	32	50	50	GERC25/1.0	M18	1	0.5
	<b>SDC16S-150M</b>	2.0~16.0	150	35	32	50	50	GERC25/1.0	M18	1	0.6

Spare Part **E52** Application Collet **E56**

• LSC: Insertion depth of tool • Through coolant system is optional

### Parts

Basic		For separate purchase	
Division	Nut	Spanner	Collet
<b>Parts</b>			
<b>Designation</b>			
<b>SDC7S</b>	R11M	M11M	GERC/ER 11-ØD
<b>SDC10S</b>	R16M	M16M	GERC/ER 16-ØD
<b>SDC13S</b>	R20M	M20M	GERC/ER 20-ØD
<b>SDC16S</b>	R25M	M25M	GERC/ER 25-ØD

BT30-SDC13P-50/HSK63A-SDC13P-100 is applide with BN0716F screw.

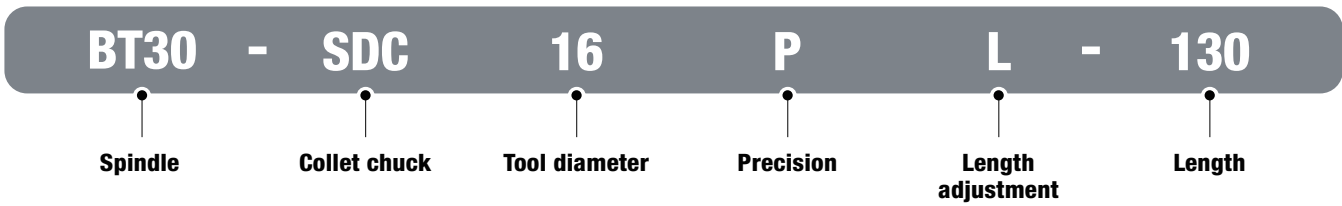
**Precision collet chuck (Length adjustment type)**

# SDC/PL

- Precise tool length adjustment
- Improved production efficiency by reducing tool setup time



**Code system**

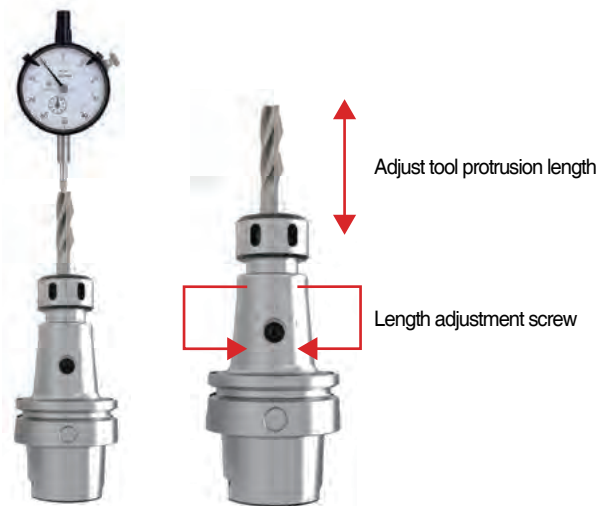


**What is SDC/PL?**

Reduced tool setting time by designing the length to be adjustable from the outside.

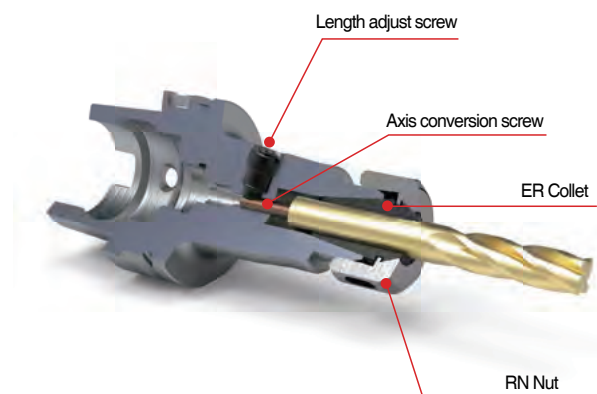
**How to adjust length**

- Rotate the adjustment screw to adjust the tool length



**Part name**

- Internal coolant system is Basic



## BT-SDC/PL

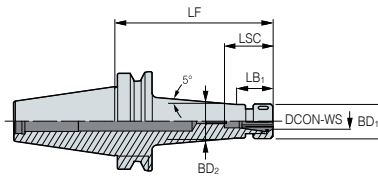


Fig. 1

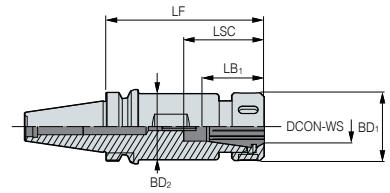


Fig. 2

(mm)

Designation	DCON-WS	LF	BD1	BD2	LSC	LB1	Collet/STEP	Fig.		
<b>BT30-</b>	<b>SDC13PL-100</b>	1.0~13.0	100	35	34	49	39~49	37	GERC20/1.0	1
	<b>SDC16PL-100</b>	2.0~16.0	100	42	41	50	40~50	45	GERC25/1.0	2
	<b>SDC20PL-100</b>	2.0~20.0	120	50	49	60	50~60	55	GERC32/1.0	2
<b>BT40-</b>	<b>SDC13PL-90</b>	1.0~13.0	90	35	34	49	39~49	37	GERC20/1.0	1
	<b>SDC13PL-130</b>	1.0~13.0	130	35	34	49	39~49	37	GERC20/1.0	1
	<b>SDC13PL-150</b>	1.0~13.0	150	35	34	49	39~49	37	GERC20/1.0	1
	<b>SDC16PL-90</b>	2.0~16.0	90	42	41	50	40~50	37	GERC25/1.0	1
	<b>SDC16PL-130</b>	2.0~16.0	130	42	41	50	40~50	57	GERC25/1.0	1
	<b>SDC20PL-130</b>	2.0~20.0	130	50	49	60	50~60	58	GERC32/1.0	1
	<b>SDC20PL-150</b>	2.0~20.0	150	50	49	60	50~60	68	GERC32/1.0	1
<b>BT50-</b>	<b>SDC13PL-100</b>	1.0~13.0	100	35	34	49	39~49	37	GERC20/1.0	1
	<b>SDC13PL-130</b>	1.0~13.0	130	35	34	49	39~49	37	GERC20/1.0	1
	<b>SDC13PL-160</b>	1.0~13.0	160	35	34	49	39~49	37	GERC20/1.0	1
	<b>SDC13PL-180</b>	1.0~13.0	180	35	34	49	39~49	37	GERC20/1.0	1
	<b>SDC16PL-100</b>	2.0~16.0	100	42	41	50	40~50	37	GERC25/1.0	1
	<b>SDC16PL-160</b>	2.0~16.0	160	42	41	50	40~50	67	GERC25/1.0	1
	<b>SDC20PL-130</b>	2.0~20.0	130	50	49	60	50~60	52	GERC32/1.0	1
	<b>SDC20PL-160</b>	2.0~20.0	160	50	49	60	50~60	67	GERC32/1.0	1
	<b>SDC20PL-180</b>	2.0~20.0	180	50	49	60	50~60	77	GERC32/1.0	1
	<b>SDC20PL-160</b>	4.0~26.0	160	63	62	71	61~71	68	GERC40/1.0	1

➡ Spare Part **E55**   ➡ Application Collet **E56**

- LSC: Insertion depth of tool
- Through coolant system is optional
- Collets in the right size are recommended for oil hole type

# HSK-SDC/PL

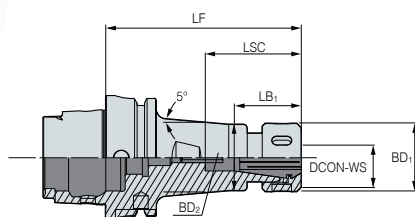


Fig. 1

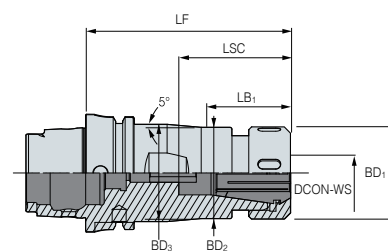


Fig. 2

Designation		DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	BD <sub>3</sub>	LSC	LB <sub>1</sub>	Collet/STEP	Fig.
HSK63A-	SDC13PL-100	1.0~13.0	100	35	34		49	39~49	GERC20/1.0	1
	SDC16PL-100	2.0~16.0	100	42	41		50	40~50	GERC25/1.0	1
	SDC20PL-110	2.0~20.0	110	50	49	52	60	50~60	GERC32/1.0	2
HSK100A-	SDC16PL-110	2.0~16.0	110	42	41		50	40~50	GERC25/1.0	1
	SDC20PL-120	2.0~20.0	120	50	49		60	50~60	GERC32/1.0	1

(mm)

Spare Part **E55** Application Collet **E56**

• LSC: Insertion depth of tool • Through coolant system is optional  
• Collets in the right size are recommended for oil hole type

## Parts

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK63A	HSK63A-CNS
HSK100A	HSK100A-CNS

# E Technical information for GERC

## GER Collet

# GERC

- Corrosion resistant collet to micro unit
- High tech coating for long lasting precision
- Longer tool life and higher productivity

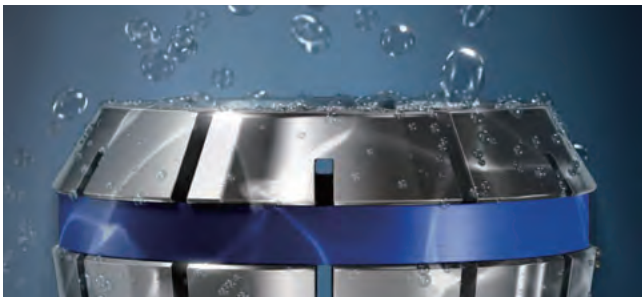


### Code system



### 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

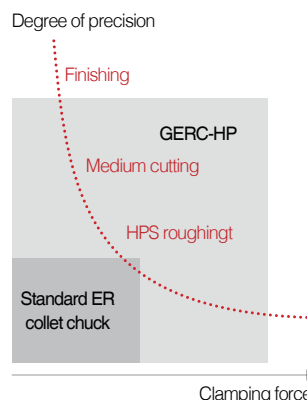
Two samples of collets after 4 months of use:  
Left: GERC collet, Right: Non-coated

### 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

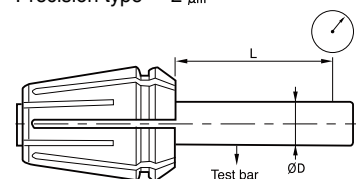


Precision type collet 2  $\mu$ m



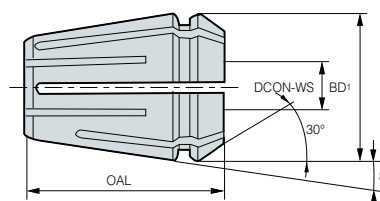
### Precision (L/D = 3)

Standard type = 5  $\mu$ m  
Precision type = 2  $\mu$ m



# GERC Collet

General type



Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>GERC11-</b>	1.0	11	1.0	18.0	11.5	5 $\mu$ m
	1.5	11	1.5	18.0	11.5	5 $\mu$ m
	2.0	11	2.0	18.0	11.5	5 $\mu$ m
	2.5	11	2.5	18.0	11.5	5 $\mu$ m
	3.0	11	3.0	18.0	11.5	5 $\mu$ m
	3.5	11	3.5	18.0	11.5	5 $\mu$ m
	4.0	11	4.0	18.0	11.5	5 $\mu$ m
	4.5	11	4.5	18.0	11.5	5 $\mu$ m
	5.0	11	5.0	18.0	11.5	5 $\mu$ m
	5.5	11	5.5	18.0	11.5	5 $\mu$ m
	6.0	11	6.0	18.0	11.5	5 $\mu$ m
	6.5	11	6.5	18.0	11.5	5 $\mu$ m
7.0	11	7.0	18.0	11.5	5 $\mu$ m	
<b>GERC16-</b>	1.0	16	1.0	27.5	17.0	5 $\mu$ m
	2.0	16	2.0	27.5	17.0	5 $\mu$ m
	3.0	16	3.0	27.5	17.0	5 $\mu$ m
	4.0	16	4.0	27.5	17.0	5 $\mu$ m
	4.5	16	4.5	27.5	17.0	5 $\mu$ m
	5.0	16	5.0	27.5	17.0	5 $\mu$ m
	6.0	16	6.0	27.5	17.0	5 $\mu$ m
	7.0	16	7.0	27.5	17.0	5 $\mu$ m
	8.0	16	8.0	27.5	17.0	5 $\mu$ m
	9.0	16	9.0	27.5	17.0	5 $\mu$ m
10.0	16	10.0	27.5	17.0	5 $\mu$ m	
<b>GERC20-</b>	1.0	20	1.0	31.5	21.0	5 $\mu$ m
	2.0	20	2.0	31.5	21.0	5 $\mu$ m
	3.0	20	3.0	31.5	21.0	5 $\mu$ m
	4.0	20	4.0	31.5	21.0	5 $\mu$ m
	5.0	20	5.0	31.5	21.0	5 $\mu$ m
	6.0	20	6.0	31.5	21.0	5 $\mu$ m
	7.0	20	7.0	31.5	21.0	5 $\mu$ m
	8.0	20	8.0	31.5	21.0	5 $\mu$ m
	9.0	20	9.0	31.5	21.0	5 $\mu$ m
	10.0	20	10.0	31.5	21.0	5 $\mu$ m
	11.0	20	11.0	31.5	21.0	5 $\mu$ m
	12.0	20	12.0	31.5	21.0	5 $\mu$ m
	13.0	20	13.0	31.5	21.0	5 $\mu$ m

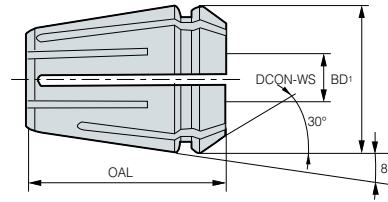
(mm)

Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>GERC25-</b>	2.0	25	2.0	34.0	26.0	5 $\mu$ m
	3.0	25	3.0	34.0	26.0	5 $\mu$ m
	4.0	25	4.0	34.0	26.0	5 $\mu$ m
	5.0	25	5.0	34.0	26.0	5 $\mu$ m
	6.0	25	6.0	34.0	26.0	5 $\mu$ m
	7.0	25	7.0	34.0	26.0	5 $\mu$ m
	8.0	25	8.0	34.0	26.0	5 $\mu$ m
	9.0	25	9.0	34.0	26.0	5 $\mu$ m
	10.0	25	10.0	34.0	26.0	5 $\mu$ m
	11.0	25	11.0	34.0	26.0	5 $\mu$ m
	12.0	25	12.0	34.0	26.0	5 $\mu$ m
	13.0	25	13.0	34.0	26.0	5 $\mu$ m
	14.0	25	14.0	34.0	26.0	5 $\mu$ m
	15.0	25	15.0	34.0	26.0	5 $\mu$ m
	16.0	25	16.0	34.0	26.0	5 $\mu$ m
<b>GERC32-</b>	2.0	32	2.0	40.0	33.0	5 $\mu$ m
	3.0	32	3.0	40.0	33.0	5 $\mu$ m
	4.0	32	4.0	40.0	33.0	5 $\mu$ m
	5.0	32	5.0	40.0	33.0	5 $\mu$ m
	6.0	32	6.0	40.0	33.0	5 $\mu$ m
	7.0	32	7.0	40.0	33.0	5 $\mu$ m
	8.0	32	8.0	40.0	33.0	5 $\mu$ m
	9.0	32	9.0	40.0	33.0	5 $\mu$ m
	10.0	32	10.0	40.0	33.0	5 $\mu$ m
	11.0	32	11.0	40.0	33.0	5 $\mu$ m
	12.0	32	12.0	40.0	33.0	5 $\mu$ m
	13.0	32	13.0	40.0	33.0	5 $\mu$ m
	14.0	32	14.0	40.0	33.0	5 $\mu$ m
	15.0	32	15.0	40.0	33.0	5 $\mu$ m
	16.0	32	16.0	40.0	33.0	5 $\mu$ m
17.0	32	17.0	40.0	33.0	5 $\mu$ m	
18.0	32	18.0	40.0	33.0	5 $\mu$ m	
19.0	32	19.0	40.0	33.0	5 $\mu$ m	
20.0	32	20.0	40.0	33.0	5 $\mu$ m	
<b>GERC40-</b>	16.0	40	16.0	46.0	41.0	5 $\mu$ m
	20.0	40	20.0	46.0	41.0	5 $\mu$ m
	25.0	40	25.0	46.0	41.0	5 $\mu$ m



# GERC Collet

Precision type

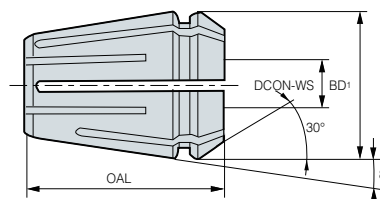


(mm)

Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>GERC11-</b>	3.0HP	11.0	3.0	18.0	11.5	2 $\mu$ m
	4.0HP	11.0	4.0	18.0	11.5	2 $\mu$ m
	5.0HP	11.0	5.0	18.0	11.5	2 $\mu$ m
	6.0HP	11.0	6.0	18.0	11.5	2 $\mu$ m
<b>GERC16-</b>	3.0HP	16.0	3.0	27.5	17.0	2 $\mu$ m
	4.0HP	16.0	4.0	27.5	17.0	2 $\mu$ m
	5.0HP	16.0	5.0	27.5	17.0	2 $\mu$ m
	6.0HP	16.0	6.0	27.5	17.0	2 $\mu$ m
	7.0HP	16.0	7.0	27.5	17.0	2 $\mu$ m
	8.0HP	16.0	8.0	27.5	17.0	2 $\mu$ m
	9.0HP	16.0	9.0	27.5	17.0	2 $\mu$ m
	10.0HP	16.0	10.0	27.5	17.0	2 $\mu$ m
<b>GERC20-</b>	3.0HP	20.0	3.0	31.5	21.0	2 $\mu$ m
	4.0HP	20.0	4.0	31.5	21.0	2 $\mu$ m
	5.0HP	20.0	5.0	31.5	21.0	2 $\mu$ m
	6.0HP	20.0	6.0	31.5	21.0	2 $\mu$ m
	8.0HP	20.0	8.0	31.5	21.0	2 $\mu$ m
	9.0HP	20.0	9.0	31.5	21.0	2 $\mu$ m
	10.0HP	20.0	10.0	31.5	21.0	2 $\mu$ m
	11.0HP	20.0	11.0	31.5	21.0	2 $\mu$ m
	12.0HP	20.0	12.0	31.5	21.0	2 $\mu$ m
	13.0HP	20.0	13.0	31.5	21.0	2 $\mu$ m
<b>GERC25-</b>	6.0HP	25.0	6.0	34.0	26.0	2 $\mu$ m
	10.0HP	25.0	10.0	34.0	26.0	2 $\mu$ m
	12.0HP	25.0	12.0	34.0	26.0	2 $\mu$ m
	14.0HP	25.0	14.0	34.0	26.0	2 $\mu$ m
	16.0HP	25.0	16.0	34.0	26.0	2 $\mu$ m
<b>GERC32-</b>	6.0HP	32.0	6.0	40.0	33.0	2 $\mu$ m
	10.0HP	32.0	10.0	40.0	33.0	2 $\mu$ m
	12.0HP	32.0	12.0	40.0	33.0	2 $\mu$ m
	16.0HP	32.0	16.0	40.0	33.0	2 $\mu$ m
	18.0HP	32.0	18.0	40.0	33.0	2 $\mu$ m
	20.0HP	32.0	20.0	40.0	33.0	2 $\mu$ m

# GERC Collet

General Sealed type



(mm)

Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>GERC16-</b>	<b>5.0C</b>	16	5.0	27.5	17.0	5 $\mu$ m
	<b>6.0C</b>	16	6.0	27.5	17.0	5 $\mu$ m
	<b>8.0C</b>	16	8.0	27.5	17.0	5 $\mu$ m
	<b>10.0C</b>	16	10.0	27.5	17.0	5 $\mu$ m
<b>GERC20-</b>	<b>6.0C</b>	20	6.0	31.5	21.0	5 $\mu$ m
	<b>8.0C</b>	20	8.0	31.5	21.0	5 $\mu$ m
	<b>10.0C</b>	20	10.0	31.5	21.0	5 $\mu$ m
	<b>12.0C</b>	20	12.0	31.5	21.0	5 $\mu$ m
<b>GERC25-</b>	<b>6.0C</b>	25	6.0	34.0	26.0	5 $\mu$ m
	<b>8.0C</b>	25	8.0	34.0	26.0	5 $\mu$ m
	<b>10.0C</b>	25	10.0	34.0	26.0	5 $\mu$ m
	<b>12.0C</b>	25	12.0	34.0	26.0	5 $\mu$ m
	<b>14.0C</b>	25	14.0	34.0	26.0	5 $\mu$ m
<b>16.0C</b>	25	16.0	34.0	26.0	5 $\mu$ m	


Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>GERC32-</b>	<b>8.0C</b>	32	8.0	40.0	33.0	5 $\mu$ m
	<b>9.0C</b>	32	9.0	40.0	33.0	5 $\mu$ m
	<b>10.0C</b>	32	10.0	40.0	33.0	5 $\mu$ m
	<b>11.0C</b>	32	11.0	40.0	33.0	5 $\mu$ m
	<b>12.0C</b>	32	12.0	40.0	33.0	5 $\mu$ m
	<b>13.0C</b>	32	13.0	40.0	33.0	5 $\mu$ m
	<b>14.0C</b>	32	14.0	40.0	33.0	5 $\mu$ m
	<b>15.0C</b>	32	15.0	40.0	33.0	5 $\mu$ m
	<b>16.0C</b>	32	16.0	40.0	33.0	5 $\mu$ m
	<b>18.0C</b>	32	18.0	40.0	33.0	5 $\mu$ m
<b>20.0C</b>	32	20.0	40.0	33.0	5 $\mu$ m	

# GERC Collet set

General type

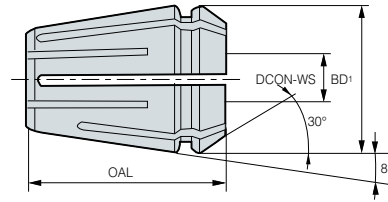


(mm)

Designation	DCON-WS	Distance	Collet amount	Accuracy		
<b>GERC</b>	<b>11 (SET)</b>	1.0-7.0	0.5	13pcs	5 $\mu$ m	0.1
	<b>16 (SET)</b>	1.0-10.0	1.0	10pcs	5 $\mu$ m	0.2
	<b>20 (SET)</b>	2.0-13.0	1.0	12pcs	5 $\mu$ m	0.5
	<b>25 (SET)</b>	2.0-16.0	1.0	15pcs	5 $\mu$ m	1.1
	<b>32 (SET)</b>	3.0-20.0	1.0	18pcs	5 $\mu$ m	2.6
	<b>40 (SET)</b>	4.0-26.0	1.0	23pcs	5 $\mu$ m	5.8

# ER Collet

General type



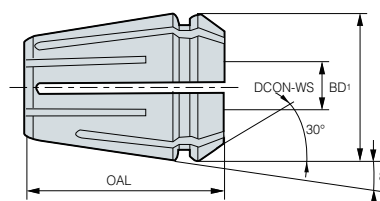
(mm)

Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>ER11-</b>	1.0	11	1.0	18.0	11.5	10 $\mu$ m
	1.5	11	1.5	18.0	11.5	10 $\mu$ m
	2.0	11	2.0	18.0	11.5	10 $\mu$ m
	2.5	11	2.5	18.0	11.5	10 $\mu$ m
	3.0	11	3.0	18.0	11.5	10 $\mu$ m
	3.5	11	3.5	18.0	11.5	10 $\mu$ m
	4.0	11	4.0	18.0	11.5	10 $\mu$ m
	4.5	11	4.5	18.0	11.5	10 $\mu$ m
	5.0	11	5.0	18.0	11.5	10 $\mu$ m
	5.5	11	5.5	18.0	11.5	10 $\mu$ m
	6.0	11	6.0	18.0	11.5	10 $\mu$ m
6.5	11	6.5	18.0	11.5	10 $\mu$ m	
7.0	11	7.0	18.0	11.5	10 $\mu$ m	
<b>ER16-</b>	1.0	16	1.0	27.5	17.0	10 $\mu$ m
	2.0	16	2.0	27.5	17.0	10 $\mu$ m
	3.0	16	3.0	27.5	17.0	10 $\mu$ m
	4.0	16	4.0	27.5	17.0	10 $\mu$ m
	5.0	16	5.0	27.5	17.0	10 $\mu$ m
	6.0	16	6.0	27.5	17.0	10 $\mu$ m
	7.0	16	7.0	27.5	17.0	10 $\mu$ m
	8.0	16	8.0	27.5	17.0	10 $\mu$ m
	9.0	16	9.0	27.5	17.0	10 $\mu$ m
	10.0	16	10.0	27.5	17.0	10 $\mu$ m
<b>ER20-</b>	1.0	20	1.0	31.5	21.0	10 $\mu$ m
	2.0	20	2.0	31.5	21.0	10 $\mu$ m
	3.0	20	3.0	31.5	21.0	10 $\mu$ m
	4.0	20	4.0	31.5	21.0	10 $\mu$ m
	5.0	20	5.0	31.5	21.0	10 $\mu$ m
	6.0	20	6.0	31.5	21.0	10 $\mu$ m
	7.0	20	7.0	31.5	21.0	10 $\mu$ m
	8.0	20	8.0	31.5	21.0	10 $\mu$ m
	9.0	20	9.0	31.5	21.0	10 $\mu$ m
	10.0	20	10.0	31.5	21.0	10 $\mu$ m
	11.0	20	11.0	31.5	21.0	10 $\mu$ m
	12.0	20	12.0	31.5	21.0	10 $\mu$ m
	13.0	20	13.0	31.5	21.0	10 $\mu$ m

Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>ER25-</b>	2.0	25	2.0	34.0	26.0	10 $\mu$ m
	3.0	25	3.0	34.0	26.0	10 $\mu$ m
	4.0	25	4.0	34.0	26.0	10 $\mu$ m
	5.0	25	5.0	34.0	26.0	10 $\mu$ m
	6.0	25	6.0	34.0	26.0	10 $\mu$ m
	7.0	25	7.0	34.0	26.0	10 $\mu$ m
	8.0	25	8.0	34.0	26.0	10 $\mu$ m
	9.0	25	9.0	34.0	26.0	10 $\mu$ m
	10.0	25	10.0	34.0	26.0	10 $\mu$ m
	11.0	25	11.0	34.0	26.0	10 $\mu$ m
	12.0	25	12.0	34.0	26.0	10 $\mu$ m
	13.0	25	13.0	34.0	26.0	10 $\mu$ m
	14.0	25	14.0	34.0	26.0	10 $\mu$ m
	15.0	25	15.0	34.0	26.0	10 $\mu$ m
	16.0	25	16.0	34.0	26.0	10 $\mu$ m
<b>ER32-</b>	2.0	32	2.0	40.0	33.0	10 $\mu$ m
	3.0	32	3.0	40.0	33.0	10 $\mu$ m
	4.0	32	4.0	40.0	33.0	10 $\mu$ m
	5.0	32	5.0	40.0	33.0	10 $\mu$ m
	6.0	32	6.0	40.0	33.0	10 $\mu$ m
	7.0	32	7.0	40.0	33.0	10 $\mu$ m
	8.0	32	8.0	40.0	33.0	10 $\mu$ m
	9.0	32	9.0	40.0	33.0	10 $\mu$ m
	10.0	32	10.0	40.0	33.0	10 $\mu$ m
	11.0	32	11.0	40.0	33.0	10 $\mu$ m
	12.0	32	12.0	40.0	33.0	10 $\mu$ m
	13.0	32	13.0	40.0	33.0	10 $\mu$ m
	14.0	32	14.0	40.0	33.0	10 $\mu$ m
	15.0	32	15.0	40.0	33.0	10 $\mu$ m
16.0	32	16.0	40.0	33.0	10 $\mu$ m	
17.0	32	17.0	40.0	33.0	10 $\mu$ m	
18.0	32	18.0	40.0	33.0	10 $\mu$ m	
19.0	32	19.0	40.0	33.0	10 $\mu$ m	
20.0	32	20.0	40.0	33.0	10 $\mu$ m	

# ER Collet

Precision type



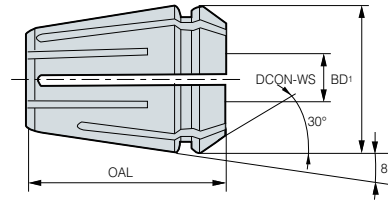
Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>ER11-</b>	<b>2.0P</b>	11	2.0	18.0	11.3	5 $\mu$ m
	<b>3.0P</b>	11	3.0	18.0	11.3	5 $\mu$ m
	<b>4.0P</b>	11	4.0	18.0	11.3	5 $\mu$ m
	<b>5.0P</b>	11	5.0	18.0	11.3	5 $\mu$ m
	<b>6.0P</b>	11	6.0	18.0	11.3	5 $\mu$ m
	<b>7.0P</b>	11	7.0	18.0	11.3	5 $\mu$ m
	<b>ER16-</b>	<b>2.0P</b>	16	2.0	27.5	16.7
<b>3.0P</b>		16	3.0	27.5	16.7	5 $\mu$ m
<b>4.0P</b>		16	4.0	27.5	16.7	5 $\mu$ m
<b>5.0P</b>		16	5.0	27.5	16.7	5 $\mu$ m
<b>6.0P</b>		16	6.0	27.5	16.7	5 $\mu$ m
<b>7.0P</b>		16	7.0	27.5	16.7	5 $\mu$ m
<b>8.0P</b>		16	8.0	27.5	16.7	5 $\mu$ m
<b>9.0P</b>		16	9.0	27.5	16.7	5 $\mu$ m
<b>10.0P</b>		16	10.0	27.5	16.7	5 $\mu$ m
<b>ER20-</b>		<b>2.0P</b>	20	2.0	31.5	20.7
	<b>3.0P</b>	20	3.0	31.5	20.7	5 $\mu$ m
	<b>4.0P</b>	20	4.0	31.5	20.7	5 $\mu$ m
	<b>5.0P</b>	20	5.0	31.5	20.7	5 $\mu$ m
	<b>6.0P</b>	20	6.0	31.5	20.7	5 $\mu$ m
	<b>7.0P</b>	20	7.0	31.5	20.7	5 $\mu$ m
	<b>8.0P</b>	20	8.0	31.5	20.7	5 $\mu$ m
	<b>9.0P</b>	20	9.0	31.5	20.7	5 $\mu$ m
	<b>10.0P</b>	20	10.0	31.5	20.7	5 $\mu$ m
	<b>11.0P</b>	20	11.0	31.5	20.7	5 $\mu$ m
	<b>12.0P</b>	20	12.0	31.5	20.7	5 $\mu$ m
	<b>13.0P</b>	20	13.0	31.5	20.7	5 $\mu$ m

(mm)

Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>ER25-</b>	<b>2.0P</b>	25	2.0	34.0	25.8	5 $\mu$ m
	<b>3.0P</b>	25	3.0	34.0	25.8	5 $\mu$ m
	<b>4.0P</b>	25	4.0	34.0	25.8	5 $\mu$ m
	<b>5.0P</b>	25	5.0	34.0	25.8	5 $\mu$ m
	<b>6.0P</b>	25	6.0	34.0	25.8	5 $\mu$ m
	<b>7.0P</b>	25	7.0	34.0	25.8	5 $\mu$ m
	<b>8.0P</b>	25	8.0	34.0	25.8	5 $\mu$ m
	<b>9.0P</b>	25	9.0	34.0	25.8	5 $\mu$ m
	<b>10.0P</b>	25	10.0	34.0	25.8	5 $\mu$ m
	<b>11.0P</b>	25	11.0	34.0	25.8	5 $\mu$ m
	<b>12.0P</b>	25	12.0	34.0	25.8	5 $\mu$ m
	<b>13.0P</b>	25	13.0	34.0	25.8	5 $\mu$ m
	<b>14.0P</b>	25	14.0	34.0	25.8	5 $\mu$ m
	<b>15.0P</b>	25	15.0	34.0	25.8	5 $\mu$ m
	<b>16.0P</b>	25	16.0	34.0	25.8	5 $\mu$ m
	<b>ER32-</b>	<b>2.0P</b>	32	2.0	40.0	32.8
<b>3.0P</b>		32	3.0	40.0	32.8	5 $\mu$ m
<b>4.0P</b>		32	4.0	40.0	32.8	5 $\mu$ m
<b>5.0P</b>		32	5.0	40.0	32.8	5 $\mu$ m
<b>6.0P</b>		32	6.0	40.0	32.8	5 $\mu$ m
<b>7.0P</b>		32	7.0	40.0	32.8	5 $\mu$ m
<b>8.0P</b>		32	8.0	40.0	32.8	5 $\mu$ m
<b>9.0P</b>		32	9.0	40.0	32.8	5 $\mu$ m
<b>10.0P</b>		32	10.0	40.0	32.8	5 $\mu$ m
<b>11.0P</b>		32	11.0	40.0	32.8	5 $\mu$ m
<b>12.0P</b>		32	12.0	40.0	32.8	5 $\mu$ m
<b>13.0P</b>		32	13.0	40.0	32.8	5 $\mu$ m
<b>14.0P</b>		32	14.0	40.0	32.8	5 $\mu$ m
<b>15.0P</b>		32	15.0	40.0	32.8	5 $\mu$ m
<b>16.0P</b>	32	16.0	40.0	32.8	5 $\mu$ m	
<b>17.0P</b>	32	17.0	40.0	32.8	5 $\mu$ m	
<b>18.0P</b>	32	18.0	40.0	32.8	5 $\mu$ m	
<b>19.0P</b>	32	19.0	40.0	32.8	5 $\mu$ m	
<b>20.0P</b>	32	20.0	40.0	32.8	5 $\mu$ m	

# ER Collet

General Sealed type



(mm)


Designation	ER size	DCON-WS	OAL	BD1	Accuracy	
<b>ER16-</b>	<b>5.0C</b>	16	5.0	27.5	17.0	10 $\mu$ m
	<b>6.0C</b>	16	6.0	27.5	17.0	10 $\mu$ m
	<b>8.0C</b>	16	8.0	27.5	17.0	10 $\mu$ m
	<b>10.0C</b>	16	10.0	27.5	17.0	10 $\mu$ m
<b>ER20-</b>	<b>6.0C</b>	20	6.0	31.5	21.0	10 $\mu$ m
	<b>8.0C</b>	20	8.0	31.5	21.0	10 $\mu$ m
	<b>10.0C</b>	20	10.0	31.5	21.0	10 $\mu$ m
	<b>12.0C</b>	20	12.0	31.5	21.0	10 $\mu$ m
<b>ER25-</b>	<b>6.0C</b>	25	6.0	34.0	26.0	10 $\mu$ m
	<b>8.0C</b>	25	8.0	34.0	26.0	10 $\mu$ m
	<b>10.0C</b>	25	10.0	34.0	26.0	10 $\mu$ m
	<b>12.0C</b>	25	12.0	34.0	26.0	10 $\mu$ m
	<b>14.0C</b>	25	14.0	34.0	26.0	10 $\mu$ m
	<b>16.0C</b>	25	16.0	34.0	26.0	10 $\mu$ m
<b>ER32-</b>	<b>8.0C</b>	32	8.0	40.0	33.0	10 $\mu$ m
	<b>9.0C</b>	32	9.0	40.0	33.0	10 $\mu$ m
	<b>10.0C</b>	32	10.0	40.0	33.0	10 $\mu$ m
	<b>11.0C</b>	32	11.0	40.0	33.0	10 $\mu$ m
	<b>12.0C</b>	32	12.0	40.0	33.0	10 $\mu$ m
	<b>13.0C</b>	32	13.0	40.0	33.0	10 $\mu$ m
	<b>14.0C</b>	32	14.0	40.0	33.0	10 $\mu$ m
	<b>15.0C</b>	32	15.0	40.0	33.0	10 $\mu$ m
	<b>16.0C</b>	32	16.0	40.0	33.0	10 $\mu$ m
	<b>18.0C</b>	32	18.0	40.0	33.0	10 $\mu$ m
	<b>20.0C</b>	32	20.0	40.0	33.0	10 $\mu$ m

# ER Collet set

General type



(mm)

	Designation	DCON-WS	Distance	Collet amount	Accuracy	 kg
ER	<b>11 (SET)</b>	1.0-7.0	0.5	13pcs	10 $\mu$ m	0.1
	<b>16 (SET)</b>	1.0-10.0	1.0	10pcs	10 $\mu$ m	0.1
	<b>20 (SET)</b>	2.0-13.0	1.0	12pcs	10 $\mu$ m	0.4
	<b>25 (SET)</b>	2.0-16.0	1.0	15pcs	10 $\mu$ m	1.1
	<b>32 (SET)</b>	3.0-20.0	1.0	18pcs	10 $\mu$ m	2.6

# E Technical information for ER/L

## 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



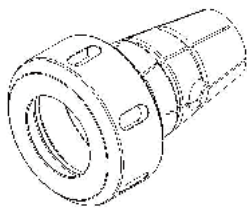
### Code system



### How to use

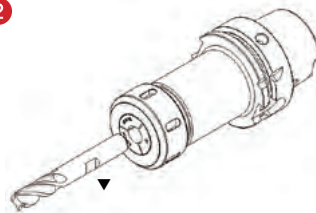
- Assemble the collet with nut (same for general ER collet in use)
- Assemble the end tool (in the direction of assembling notch with key)
- Tighten the nut with the body

1



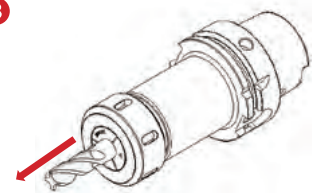
Combine the non-slip ER collet with nut

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

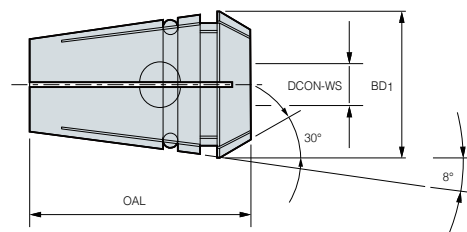


After checking that the steel ball in the collet is caught in the notched part, completely clamp the nut by pulling the end mill in the axial direction (arrow direction)

**Note** If an auto clamp device is used, skip step 3 (Endmill rotation may cause injury)

## ER/L Collet

## Lock collet for ER collet chuck



(mm)

Designation	ER size	DCON-WS	OAL	BD1	BD2	
ER	20-6L	20	6	31.5	20.7	20
	20-8L	20	8	31.5	20.7	20
	20-10L	20	10	31.5	20.7	20
	20-12L	20	12	31.5	20.7	20
	32-12L	32	12	40.0	32.7	32
	32-16L	32	16	40.0	32.7	32
	32-20L	32	20	40.0	32.7	32

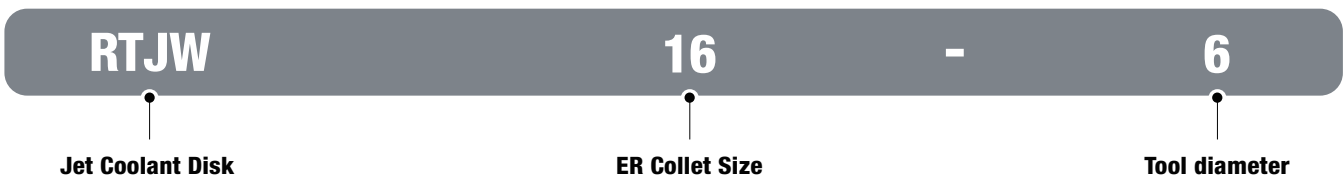
Jet coolant disk

# RTJW

- Provides a longer cutting tool service life by preventing chips from adhering to the tool
- Improves chip breakability/breaking strong jet injection
- Reduces equipment non-operation time as nozzle position change is not necessary

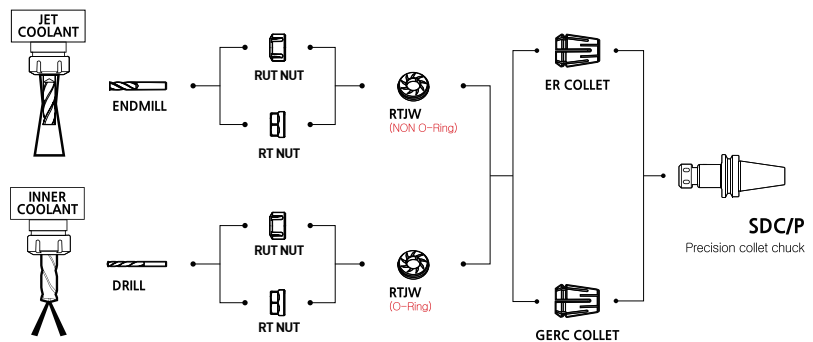


**Code system**



**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



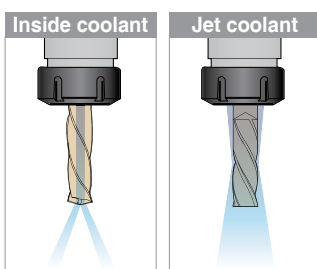
RT NUT			
Type	M	D	L
RT16	M22x1.50	28.0	22.5



RUT NUT			
Type	M	D	L
RUT20	M25x1.50	35.0	24.0
RUT25	M32x1.50	42.0	25.0
RUT32	M40x1.50	50.0	27.5
RUT40	M50x1.50	63.0	30.5

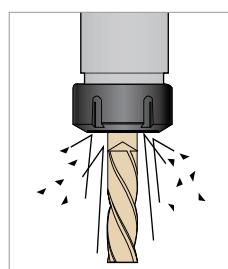


	Pocket machining	After	Remarks
Jet coolant			▶ The chips in the pocket are completely removed by a strong jet injection
Outside coolant			▶ The chips in the pocket are not removed ▶ Chips are accumulated in the collet and nut



**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 Dia.
RTJW16-	6	16	6
	7	16	7
	8	16	8
RTJW20-	6	20	6
	7	20	7
	8	20	8
	9	20	9
	10	20	10
RTJW25-	6	25	6
	7	25	7
	8	25	8
	9	25	9
	10	25	10
	11	25	11
	12	25	12
	13	25	13
	14	25	14
15	25	15	
16	25	16	

	Designation	ER size	Inner Dia.
RTJW32-	6	32	6
	7	32	7
	8	32	8
	9	32	9
	10	32	10
	11	32	11
	12	32	12
	13	32	13
	14	32	14
	15	32	15
	16	32	16
RTJW40-	17	32	17
	18	32	18
	20	32	20
	18	40	18
	19	40	19
	20	40	20
	21	40	21
	22	40	22
24	40	24	

Clamping items: E45-E50

• Less than Ø5 cannot be used for production

**Slim type collet chuck**

# DSK

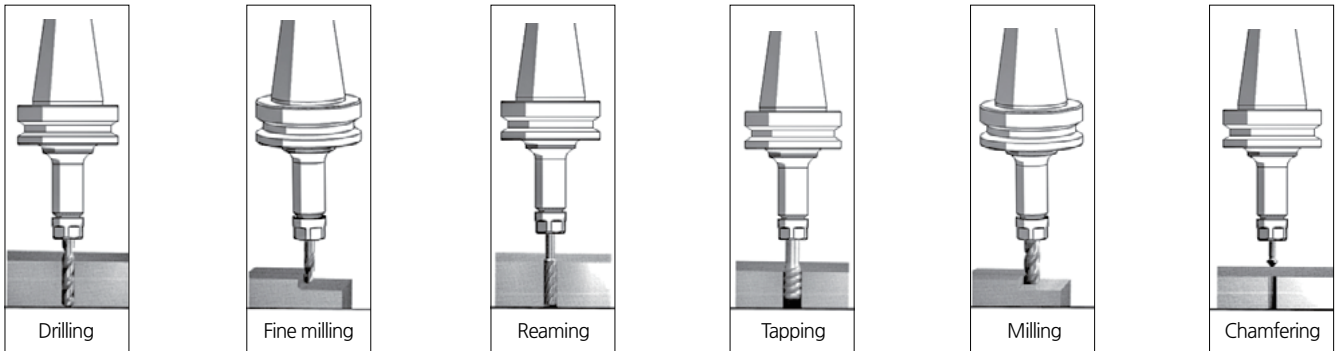
- Available for machining at max.15,000 RPM and balancing of G6.3
- Minimized tool vibration during operation by using collet 8°
- Swiss made high precision nut enhances stability
- Tool clamping range: Ø2~25




**Code system**

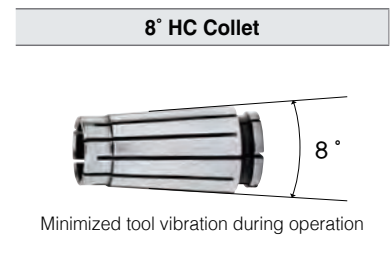


**Multipurpose operation**

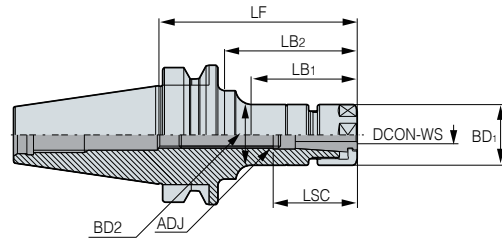


**Collet**

Standard type & Precision type	Designation	Max Chacking	Run-out
	HC6 - ØD	6.0	Standard type 5 µm
	HC10 - ØD	10.0	
	HC13 - ØD	13.0	Precision type 3 µm
	HC16 - ØD	16.0	
	HC20 - ØD	20.0	
	HC25 - ØD	25.0	



## BT-DSK

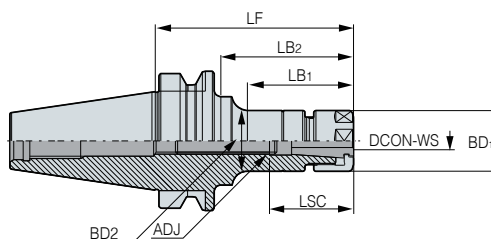


(mm)

Designation		DCON-WS	LF	BD1	BD2	LB1	LB2	LSC	COLLET	ADJ	RPMX	$\frac{0}{kg}$
<b>BT30-</b>	<b>DSK6-60</b>	3.0~6.0	60	20	20	33	33	31	HC6	M8	15,000	0.4
	<b>DSK6-90</b>	3.0~6.0	90	20	32	56	65	31	HC6	M8	15,000	0.5
	<b>DSK10-60</b>	2.0~10.0	60	28	28	35	35	38	HC10	M12	15,000	0.5
	<b>DSK10-90</b>	2.0~10.0	90	28	28	65	65	38	HC10	M12	15,000	0.6
	<b>DSK10-120</b>	2.0~10.0	120	28	28	95	95	38	HC10	M12	15,000	1.1
	<b>DSK13-60</b>	3.0~13.0	60	33	33	36	36	43	HC13	M12	15,000	0.5
	<b>DSK16-60</b>	3.0~16.0	60	40	40	37	37	52	HC16	M12	15,000	0.6
	<b>DSK16-90</b>	3.0~16.0	90	40	40	67	67	52	HC16	M18	15,000	0.8
	<b>DSK16-120</b>	3.0~16.0	120	40	40	97	97	60	HC16	M18	15,000	1.1
	<b>DSK20-75</b>	4.0~20.0	75	48	48	52	52	70	HC20	M12	15,000	1.1
	<b>DSK20-90</b>	4.0~20.0	90	48	48	52	52	70	HC20	M18	15,000	1.2
	<b>DSK25-90</b>	16.0~25.0	90	55	55	67.5	67.5	63.5	HC25	M12	15,000	0.9
<b>BT40-</b>	<b>DSK6-60</b>	3.0~6.0	60	20	20	30	30	35	HC6	M8	10,000	1.0
	<b>DSK6-90</b>	3.0~6.0	90	19.5	32	51	61	31	HC6	M8	10,000	1.1
	<b>DSK6-120</b>	3.0~6.0	120	19.5	32	60	90	31	HC6	M8	10,000	1.1
	<b>DSK6-150</b>	3.0~6.0	150	19.5	25	60	120	31	HC6	M8	10,000	1.1
	<b>DSK10-60</b>	2.0~10.0	60	28	28	32	32	50	HC10	M12	10,000	1.1
	<b>DSK10-90</b>	2.0~10.0	90	27.5	40	48	60	38	HC10	M12	10,000	1.2
	<b>DSK10-120</b>	2.0~10.0	120	27.5	40	73	90	38	HC10	M12	10,000	1.2
	<b>DSK10-150</b>	2.0~10.0	150	27.5	34.5	73	118	38	HC10	M12	10,000	1.4
	<b>DSK10-180</b>	2.0~10.0	180	28	39	73	148	50	HC10	M12	10,000	1.4
	<b>DSK13-90</b>	3.0~13.0	90	33	33	59	59	43	HC13	M15	10,000	1.3
	<b>DSK16-60</b>	3.0~16.0	90	40	40	58	58	52	HC16	M18	10,000	1.3
	<b>DSK16-90</b>	3.0~16.0	90	40	40	58	58	52	HC16	M18	10,000	1.3
	<b>DSK16-120</b>	3.0~16.0	120	40	40	88	88	52	HC16	M18	10,000	1.5
	<b>DSK16-150</b>	3.0~16.0	150	40	40	118	118	52	HC16	M18	10,000	1.9
	<b>DSK16-180</b>	3.0~16.0	180	40	40	148	148	60	HC16	M18	10,000	1.9
	<b>DSK20-60</b>	4.0~20.0	60	48	48	32	32	70	HC20	M22	10,000	1.5
	<b>DSK20-90</b>	4.0~20.0	90	48.5	48.5	60	60	60	HC20	M22	10,000	1.5
	<b>DSK20-120</b>	4.0~20.0	120	48.5	48.5	90	90	60	HC20	M22	10,000	1.8
	<b>DSK25-90</b>	16.0~25.0	90	55	55	61	61	63.5	HC25	M28	10,000	1.6
	<b>DSK25-120</b>	16.0~25.0	120	55	55	91	91	85	HC25	M28	10,000	2.0

🔄 Spare Part **E69**    🔄 Application Collet **E74**

# BT-DSK



Designation		DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	LSC	COLLET	ADJ	RPMX	kg
<b>BT50-</b>	<b>DSK6-105</b>	3.0-6.0	105	19.5	32	55	64	31	HC6	M8	8,000	3.6
	<b>DSK6-135</b>	3.0-6.0	135	19.5	32	60	92	31	HC6	M8	8,000	3.7
	<b>DSK6-165</b>	3.0-6.0	165	19.5	32	60	114	31	HC6	M8	8,000	4.1
	<b>DSK10-105</b>	2.0-10.0	105	27.5	27.5	57	57	38	HC10	M12	8,000	3.8
	<b>DSK10-135</b>	2.0-10.0	135	27.5	32	70	92	38	HC10	M12	8,000	3.9
	<b>DSK10-165</b>	2.0-10.0	165	27.5	36	75	114	38	HC10	M12	8,000	4.1
	<b>DSK10-195</b>	2.0-10.0	195	28	36	75	146	38	HC10	M12	8,000	4.5
	<b>DSK13-135</b>	3.0-13.0	135	33	33	92	92	43	HC13	M15	8,000	3.8
	<b>DSK16-105</b>	3.0-16.0	105	40	40	62	62	52	HC16	M18	8,000	4.0
	<b>DSK16-135</b>	3.0-16.0	135	40	40	92	92	52	HC16	M18	8,000	4.2
	<b>DSK16-165</b>	3.0-16.0	165	40	50	40	122	52	HC16	M18	8,000	4.6
	<b>DSK16-195</b>	3.0-16.0	195	40	52	40	152	60	HC16	M18	8,000	4.6
	<b>DSK20-105</b>	4.0-20.0	105	48	40	62	62	60	HC20	M22	8,000	4.2
	<b>DSK20-135</b>	4.0-20.0	135	48	40	92	92	60	HC20	M22	8,000	4.5
	<b>DSK20-165</b>	4.0-20.0	165	48	40	122	122	60	HC20	M22	8,000	4.9
<b>DSK25-105</b>	16.0-25.0	105	55	55	62	62	63.5	HC25	M28	8,000	4.4	
<b>DSK25-135</b>	16.0-25.0	135	55	55	92	92	63.5	HC25	M28	8,000	4.5	
<b>DSK25-165</b>	16.0-25.0	165	55	55	122	122	63.5	HC25	M28	8,000	5.2	

Spare Part **E69** Application Collet **E74**

## Parts

Division	Basic			For separate purchase
	Nut	Adjust screw	Collet Extractor	Spanner
<b>Parts</b>				
<b>Designation</b>				
<b>DSK6</b>	DN6	BN0825F	DSK-6CE	DSS-6
<b>DSK10</b>	DN10	BN1225F	DSK-10CE	DSS-10
<b>DSK13</b>	DN13	BN1230(BT30)/BN1524F(etc.)	DSK-13CE	DSS-13
<b>DSK16</b>	DN16	BN1830F	DSK-16CE	DSS-16
<b>DSK20</b>	DN20	BN2230F	DSK-20CE	DSS-20
<b>DSK25</b>	DN25	BN2838F	DSK-25CE	DSS-25

# E Technical information for GSK

## Great speed slim collet chuck

# GSK

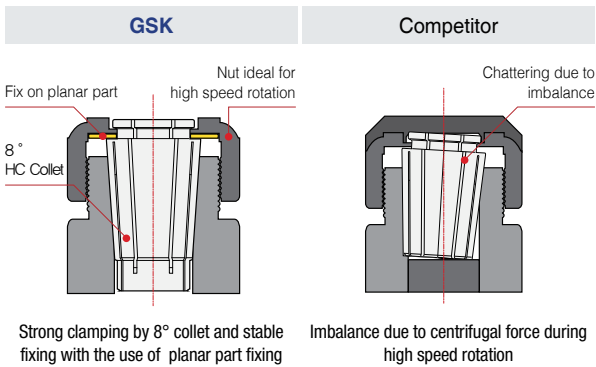
- Available for machining at max.25,000 RPM and balancing of G6.3
- Increased productivity due to high speed machining
- Minimized tool vibration during operation by using collet 8°
- Swiss made high precision nut enhances stability by pressing collet uniformly
- Tool clamping range: Ø2~25



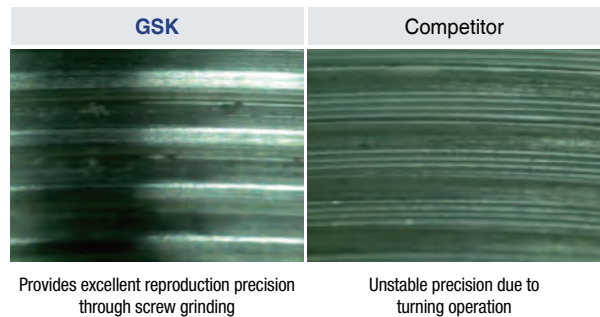
### Code system



### Original design

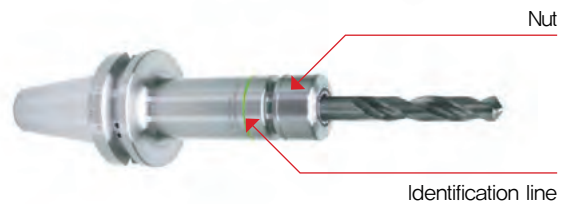


### Comparison of screw polishing points of nut tightened



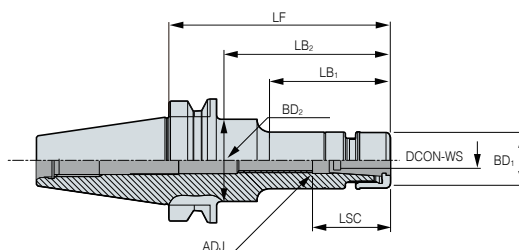
### Special design

Optimized for great-speed collet chucks and uniquely designed to enable easy run-out measurement by designating the test area to the product




Internal coolant system is optional

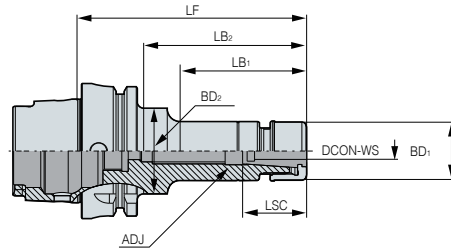
# BT-GSK



(mm)

Designation		DCON-WS	LF	BD <sub>1</sub>	BD <sub>2</sub>	LB <sub>1</sub>	LB <sub>2</sub>	LSC	COLLET	ADJ	RPMX	
<b>BT30-</b>	<b>GSK6-60</b>	3.0-6.0	60	19.5	19.5	33	33	31	HC6	M8	25,000	0.4
	<b>GSK6-90</b>	3.0-6.0	90	19.5	32	56	65	31	HC6	M8	25,000	0.5
	<b>GSK10-60</b>	2.0-10.0	60	27	27	35	35	38	HC10	M12	25,000	0.5
	<b>GSK10-90</b>	2.0-10.0	90	27	27	65	65	38	HC10	M12	25,000	0.6
	<b>GSK13-60</b>	3.0-13.0	60	35	35	36	36	43	HC13	M12	25,000	0.6
	<b>GSK16-60</b>	3.0-16.0	60	40	40	37	37	52	HC16	M12	25,000	0.6
	<b>GSK16-90</b>	3.0-16.0	90	40	40	67	67	52	HC16	M18	25,000	0.8
	<b>GSK25-90</b>	16.0-25.0	90	55	55	67.5	67.5	64	HC25	M12	25,000	1.0
<b>BT40-</b>	<b>GSK6-90</b>	3.0-6.0	90	20	32	51	61	31	HC6	M8	20,000	1.0
	<b>GSK6-120</b>	3.0-6.0	120	20	32	60	90	31	HC6	M8	20,000	1.2
	<b>GSK6-150</b>	3.0-6.0	150	20	25	60	120	31	HC6	M8	20,000	1.2
	<b>GSK10-90</b>	2.0-10.0	90	27	40	48	60	38	HC10	M12	20,000	1.1
	<b>GSK10-120</b>	2.0-10.0	120	27	40	73	90	38	HC10	M12	20,000	1.3
	<b>GSK10-150</b>	2.0-10.0	150	27	35	73	118	38	HC10	M12	20,000	1.4
	<b>GSK13-90</b>	3.0-13.0	90	35	35	59	59	43	HC13	M15	20,000	1.2
	<b>GSK16-90</b>	3.0-16.0	90	40	40	58	58	52	HC16	M18	20,000	1.3
	<b>GSK16-120</b>	3.0-16.0	120	40	40	88	88	52	HC16	M18	20,000	1.5
	<b>GSK16-150</b>	3.0-16.0	150	40	40	118	118	52	HC16	M18	20,000	1.8
	<b>GSK20-90</b>	4.0-20.0	90	48	48	60	60	60	HC20	M22	20,000	1.4
	<b>GSK20-120</b>	4.0-20.0	120	48	48	90	90	60	HC20	M22	20,000	1.8
	<b>GSK25-90</b>	16.0-25.0	90	55	55	61	61	64	HC25	M28	20,000	1.6
	<b>GSK25-120</b>	16.0-25.0	120	55	55	91	91	64	HC25	M28	20,000	2.0
<b>BT50-</b>	<b>GSK6-105</b>	3.0-6.0	105	20	32	55	64	31	HC6	M8	15,000	3.6
	<b>GSK6-135</b>	3.0-6.0	135	20	32	60	92	31	HC6	M8	15,000	3.6
	<b>GSK6-165</b>	3.0-6.0	165	20	32	60	114	31	HC6	M8	15,000	3.9
	<b>GSK10-105</b>	2.0-10.0	105	27	27	57	57	38	HC10	M12	15,000	3.7
	<b>GSK10-135</b>	2.0-10.0	135	27	32	70	92	38	HC10	M12	15,000	3.7
	<b>GSK10-165</b>	2.0-10.0	165	27	36	75	114	38	HC10	M12	15,000	4.0
	<b>GSK13-135</b>	3.0-13.0	135	35	35	92	92	43	HC13	M15	15,000	3.9
	<b>GSK16-105</b>	3.0-16.0	105	40	40	62	62	52	HC16	M18	15,000	3.9
	<b>GSK16-135</b>	3.0-16.0	135	40	40	92	92	52	HC16	M18	15,000	4.1
	<b>GSK16-165</b>	3.0-16.0	165	40	50	40	122	52	HC16	M18	15,000	4.3
	<b>GSK20-105</b>	4.0-20.0	105	48	-	-	62	60	HC20	M22	15,000	4.1
	<b>GSK20-135</b>	4.0-20.0	135	48	-	-	92	60	HC20	M22	15,000	4.4
	<b>GSK20-165</b>	4.0-20.0	165	48	-	-	122	60	HC20	M22	15,000	4.9
	<b>GSK25-105</b>	16.0-25.0	105	55	55	62	62	64	HC25	M28	15,000	4.2
	<b>GSK25-135</b>	16.0-25.0	135	55	55	92	92	64	HC25	M28	15,000	4.6
	<b>GSK25-165</b>	16.0-25.0	165	55	55	122	122	64	HC25	M28	15,000	5.1

# HSK-GSK



(mm)

Designation	DCON-WS	LF	BD1	BD2	LB1	LB2	LSC	COLLET	ADJ	RPMX	$\frac{m}{kg}$	
<b>HSK63A-</b>	<b>GSK6-100</b>	3.0~6.0	100	20	32	51	71	31	HC6	M8	20,000	0.8
	<b>GSK10-105</b>	2.0~10.0	105	27	35	60	76	38	HC10	M12	20,000	0.9
	<b>GSK16-120</b>	3.0~16.0	120	40	40	90	-	52	HC16	M18	20,000	1.3
	<b>GSK20-120</b>	4.0~20.0	120	48	48	92	-	60	HC20	M22	20,000	1.6
<b>HSK100A-</b>	<b>GSK6-120</b>	3.0~6.0	120	19.5	32	70	88	31	HC6	M8	15,000	2.2
	<b>GSK10-120</b>	2.0~10.0	120	27	27	70	88	38	HC10	M12	15,000	2.3
	<b>GSK16-140</b>	3.0~16.0	140	40	40	105	-	52	HC16	M18	15,000	2.8
	<b>GSK25-155</b>	16.0~25.0	155	55	55	120	-	64	HC25	M28	15,000	3.6

# SK-GSK

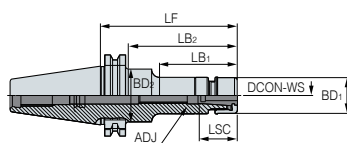


Fig. 1

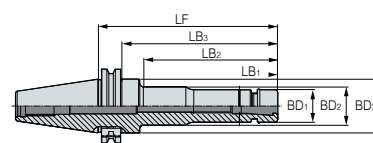


Fig. 2

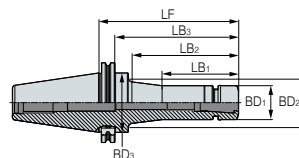



Fig. 3

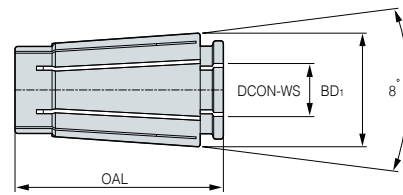
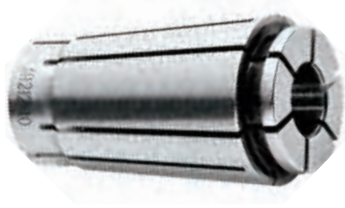
(mm)

Designation	DCON-WS	LF	BD1	BD2	BD3	LB1	LB2	LB3	LSC	COLLET	ADJ	RPMX	Fig.	 kg	
<b>SK40-</b>	<b>GSK6-60</b>	3.0~6.0	60	20	-	-	41	-	-	31	HC6	M8	20,000	1	0.8
	<b>GSK6-90</b>	3.0~6.0	90	20	45	-	48	71	-	31	HC6	M8	20,000	1	1.0
	<b>GSK10-90</b>	2.0~10.0	90	27	45	-	50	71	-	38	HC10	M12	20,000	1	1.1
	<b>GSK10-150</b>	2.0~10.0	150	27	32	45	70	112	131	38	HC10	M12	20,000	2	1.3
	<b>GSK16-90</b>	3.0~16.0	90	40	-	-	68	-	-	52	HC16	M18	20,000	1	1.2
	<b>GSK16-150</b>	3.0~16.0	150	40	45	-	114	118	-	52	HC16	M18	20,000	1	1.7
	<b>GSK20-90</b>	4.0~20.0	90	48	-	-	71	-	-	60	HC20	M22	20,000	1	1.3
	<b>GSK25-90</b>	16.0~25.0	90	55	-	-	71	-	-	64	HC25	M28	20,000	1	1.3
<b>SK50-</b>	<b>GSK6-105</b>	3.0~6.0	105	20	70	-	60	86	-	31	HC6	M8	15,000	1	3.1
	<b>GSK6-165</b>	3.0~6.0	165	20	32	70	60	120	15	31	HC6	M8	15,000	2	3.3
	<b>GSK10-105</b>	2.0~10.0	105	27	70	-	65	86	-	38	HC10	M12	15,000	1	3.2
	<b>GSK10-165</b>	2.0~10.0	165	27	32	70	75	120	15	38	HC10	M12	15,000	2	3.4
	<b>GSK16-105</b>	3.0~16.0	105	40	70	-	65	86	-	52	HC16	M18	15,000	1	3.4
	<b>GSK16-165</b>	3.0~16.0	165	40	50	70	90	126	15	52	HC16	M18	15,000	3	3.9
	<b>GSK20-105</b>	4.0~20.0	105	48	70	-	65	86	-	60	HC20	M22	15,000	1	3.6
	<b>GSK20-165</b>	4.0~20.0	165	48	70	-	125	146	-	60	HC20	M22	15,000	1	4.3
	<b>GSK25-105</b>	16.0~25.0	105	55	70	-	65	86	-	64	HC25	M28	15,000	1	3.7
<b>GSK25-165</b>	16.0~25.0	165	55	70	-	125	146	-	64	HC25	M28	15,000	1	4.6	



# HC Collet

General type



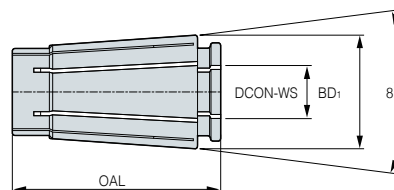
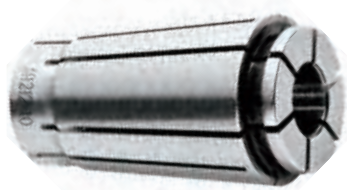
Designation	DCON-WS	OAL	BD <sub>1</sub>	Clearance	Accuracy
<b>HC6-</b>	3.0	3.0	25.0	10.5	1.0 5μm
	4.0	4.0	25.0	10.5	1.0 5μm
	5.0	5.0	25.0	10.5	1.0 5μm
	6.0	6.0	25.0	10.5	1.0 5μm
<b>HC10-</b>	2.0	2.0	30.5	15.6	1.0 5μm
	3.0	3.0	30.5	15.6	1.0 5μm
	4.0	4.0	30.5	15.6	1.0 5μm
	5.0	5.0	30.5	15.6	1.0 5μm
	6.0	6.0	30.5	15.6	1.0 5μm
	7.0	7.0	30.5	15.6	1.0 5μm
	8.0	8.0	30.5	15.6	1.0 5μm
	9.0	9.0	30.5	15.6	1.0 5μm
<b>HC13-</b>	3.0	3.0	39.0	20.1	1.0 5μm
	4.0	4.0	39.0	20.1	1.0 5μm
	5.0	5.0	39.0	20.1	1.0 5μm
	6.0	6.0	39.0	20.1	1.0 5μm
	7.0	7.0	39.0	20.1	1.0 5μm
	8.0	8.0	39.0	20.1	1.0 5μm
	9.0	9.0	39.0	20.1	1.0 5μm
	10.0	10.0	39.0	20.1	1.0 5μm
	11.0	11.0	39.0	20.1	1.0 5μm
	12.0	12.0	39.0	20.1	1.0 5μm
<b>HC16-</b>	3.0	3.0	45.0	24.6	1.0 5μm
	4.0	4.0	45.0	24.6	1.0 5μm
	5.0	5.0	45.0	24.6	1.0 5μm
	6.0	6.0	45.0	24.6	1.0 5μm
	7.0	7.0	45.0	24.6	1.0 5μm
	8.0	8.0	45.0	24.6	1.0 5μm
	9.0	9.0	45.0	24.6	1.0 5μm
	10.0	10.0	45.0	24.6	1.0 5μm
	11.0	11.0	45.0	24.6	1.0 5μm
	12.0	12.0	45.0	24.6	1.0 5μm
	13.0	13.0	45.0	24.6	1.0 5μm
	14.0	14.0	45.0	24.6	1.0 5μm
	15.0	15.0	45.0	24.6	1.0 5μm
	16.0	16.0	45.0	24.6	1.0 5μm

(mm)

Designation	DCON-WS	OAL	BD <sub>1</sub>	Clearance	Accuracy
<b>HC20-</b>	4.0	4.0	54.3	29.2	2.0 5μm
	6.0	6.0	54.3	29.2	2.0 5μm
	8.0	8.0	54.3	29.2	2.0 5μm
	10.0	10.0	54.3	29.2	2.0 5μm
	12.0	12.0	54.3	29.2	2.0 5μm
	14.0	14.0	54.3	29.2	2.0 5μm
	16.0	16.0	54.3	29.2	2.0 5μm
	18.0	18.0	54.3	29.2	2.0 5μm
<b>HC25-</b>	16.0	16.0	57.0	35.7	1.0 5μm
	17.0	17.0	57.0	35.7	1.0 5μm
	18.0	18.0	57.0	35.7	1.0 5μm
	19.0	19.0	57.0	35.7	1.0 5μm
	20.0	20.0	57.0	35.7	1.0 5μm
	21.0	21.0	57.0	35.7	1.0 5μm
	22.0	22.0	57.0	35.7	1.0 5μm
	23.0	23.0	57.0	35.7	1.0 5μm
	24.0	24.0	57.0	35.7	1.0 5μm
	25.0	25.0	57.0	35.7	1.0 5μm

# HC Collet

Precision type

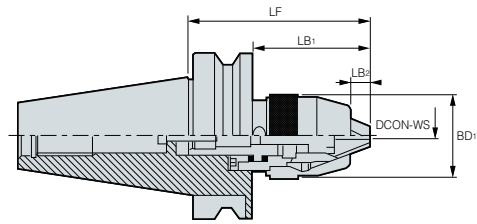


Designation	DCON-WS	OAL	BD1	Clearance	Accuracy
<b>HC6-</b>	<b>3.0P</b>	3.0	25.0	10.5	1.0 3μm
	<b>4.0P</b>	4.0	25.0	10.5	1.0 3μm
	<b>5.0P</b>	5.0	25.0	10.5	1.0 3μm
	<b>6.0P</b>	6.0	25.0	10.5	1.0 3μm
<b>HC10-</b>	<b>2.0P</b>	2.0	30.5	15.6	1.0 3μm
	<b>3.0P</b>	3.0	30.5	15.6	1.0 3μm
	<b>4.0P</b>	4.0	30.5	15.6	1.0 3μm
	<b>5.0P</b>	5.0	30.5	15.6	1.0 3μm
	<b>6.0P</b>	6.0	30.5	15.6	1.0 3μm
	<b>7.0P</b>	7.0	30.5	15.6	1.0 3μm
	<b>8.0P</b>	8.0	30.5	15.6	1.0 3μm
	<b>9.0P</b>	9.0	30.5	15.6	1.0 3μm
	<b>10.0P</b>	10.0	30.5	15.6	1.0 3μm
	<b>HC13-</b>	<b>3.0P</b>	3.0	39.0	20.1
<b>4.0P</b>		4.0	39.0	20.1	1.0 3μm
<b>5.0P</b>		5.0	39.0	20.1	1.0 3μm
<b>6.0P</b>		6.0	39.0	20.1	1.0 3μm
<b>7.0P</b>		7.0	39.0	20.1	1.0 3μm
<b>8.0P</b>		8.0	39.0	20.1	1.0 3μm
<b>9.0P</b>		9.0	39.0	20.1	1.0 3μm
<b>10.0P</b>		10.0	39.0	20.1	1.0 3μm
<b>11.0P</b>		11.0	39.0	20.1	1.0 3μm
<b>12.0P</b>		12.0	39.0	20.1	1.0 3μm
<b>13.0P</b>		13.0	39.0	20.1	1.0 3μm
<b>HC16-</b>		<b>3.0P</b>	3.0	45.0	24.6
	<b>4.0P</b>	4.0	45.0	24.6	1.0 3μm
	<b>5.0P</b>	5.0	45.0	24.6	1.0 3μm
	<b>6.0P</b>	6.0	45.0	24.6	1.0 3μm
	<b>7.0P</b>	7.0	45.0	24.6	1.0 3μm
	<b>8.0P</b>	8.0	45.0	24.6	1.0 3μm
	<b>9.0P</b>	9.0	45.0	24.6	1.0 3μm
	<b>10.0P</b>	10.0	45.0	24.6	1.0 3μm
	<b>11.0P</b>	11.0	45.0	24.6	1.0 3μm
	<b>12.0P</b>	12.0	45.0	24.6	1.0 3μm
	<b>13.0P</b>	13.0	45.0	24.6	1.0 3μm
	<b>14.0P</b>	14.0	45.0	24.6	1.0 3μm
	<b>15.0P</b>	15.0	45.0	24.6	1.0 3μm
	<b>16.0P</b>	16.0	45.0	24.6	1.0 3μm

(mm)

Designation	DCON-WS	OAL	BD1	Clearance	Accuracy
<b>HC20-</b>	<b>4.0P</b>	4.0	54.3	29.2	2.0 3μm
	<b>6.0P</b>	6.0	54.3	29.2	2.0 3μm
	<b>8.0P</b>	8.0	54.3	29.2	2.0 3μm
	<b>10.0P</b>	10.0	54.3	29.2	2.0 3μm
	<b>12.0P</b>	12.0	54.3	29.2	2.0 3μm
	<b>14.0P</b>	14.0	54.3	29.2	2.0 3μm
	<b>16.0P</b>	16.0	54.3	29.2	2.0 3μm
	<b>18.0P</b>	18.0	54.3	29.2	2.0 3μm
	<b>20.0P</b>	20.0	54.3	29.2	2.0 3μm
	<b>HC25-</b>	<b>16.0P</b>	16.0	57.0	35.7
<b>17.0P</b>		17.0	57.0	35.7	1.0 3μm
<b>18.0P</b>		18.0	57.0	35.7	1.0 3μm
<b>19.0P</b>		19.0	57.0	35.7	1.0 3μm
<b>20.0P</b>		20.0	57.0	35.7	1.0 3μm
<b>21.0P</b>		21.0	57.0	35.7	1.0 3μm
<b>22.0P</b>		22.0	57.0	35.7	1.0 3μm
<b>23.0P</b>		23.0	57.0	35.7	1.0 3μm
<b>24.0P</b>		24.0	57.0	35.7	1.0 3μm
<b>25.0P</b>		25.0	57.0	35.7	1.0 3μm

# BT-NPU

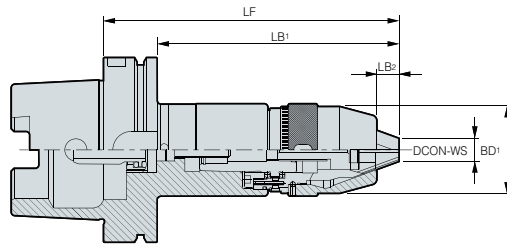


(mm)

Designation		DCON-WS	LF	BD1	LB1	LB2	kg
<b>BT30-</b>	<b>NPU8-97</b>	1~8	97	38	75	8.0	0.8
	<b>NPU13-125</b>	1~13	125	50	103	12.0	1.4
<b>BT40-</b>	<b>NPU8-87</b>	1~8	87	38	60	8.0	1.2
	<b>NPU13-105</b>	1~13	105	50	78	12.0	1.6
	<b>NPU13-130</b>	1~13	130	50	103	12.0	1.9
<b>BT50-</b>	<b>NPU13-130</b>	1~13	130	50	92	12.0	4.5
	<b>NPU13-190</b>	1~13	190	50	152	12.0	5.3

• Through coolant system is not available

# HSK-NPU

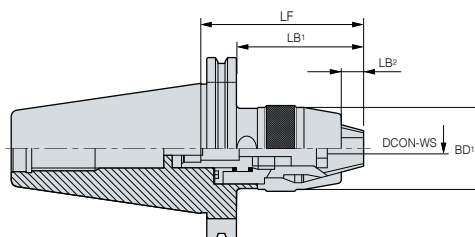


(mm)


Designation		DCON-WS	LF	BD1	LB1	LB2	kg
<b>HSK63A-</b>	<b>NPU13-175</b>	1~13	175	50	149	12.0	2.4
<b>HSK100A-</b>	<b>NPU13-180</b>	1~13	180	50	151	12.0	3.6

• Through coolant system is not available

# SK-NPU






(mm)

Designation	DCON-WS	LF	BD1	LB1	LB2	
SK40- NPU13-105	1~13	105	50	78	12.5	1.6
SK50- NPU13-111	1~13	111	50	84	12.5	3.6

• Through coolant system is not available

## Parts

Division	Basic		For separate purchase
	Chuk	Bolt	Spanner
<b>Parts</b>			
<b>Designation</b>			
NPU8	NPU08	BX0620	NPU0836
NPU13	NPU13	BX0825	NPU1348

# E Technical information for DTN

## Tapping holder

# DTN

- Compact design and slim type
- Improvement of tapping force
- Tapping range: M3~M38

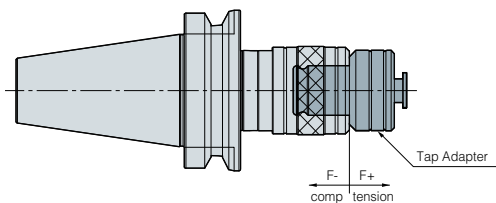


### Code system



### Easy exchange of TCA (Tap adaptor)

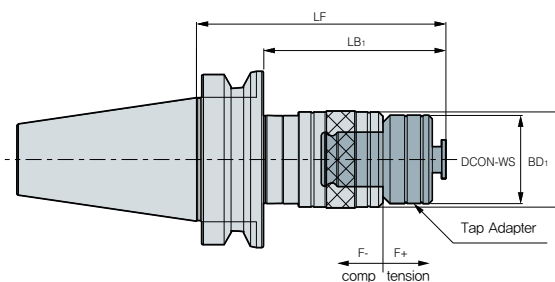
Convenient one-touch exchange type for high precision and longer tool life  
Contraction of length is possible by axial floating way



### How to clamp TCA and a tap holder

Before installation	After installation	Disassembly
<ol style="list-style-type: none"> <li>1. Insert TCA pushing the cover of tap holder</li> <li>2. Clamp the TCA in the Key groove and firmly</li> </ol>	<ol style="list-style-type: none"> <li>1. The cover of tap holder is placed correctly</li> </ol>	<ol style="list-style-type: none"> <li>1. Separate the TCA pushing the cover of tap holder</li> </ol>

# BT-DTN



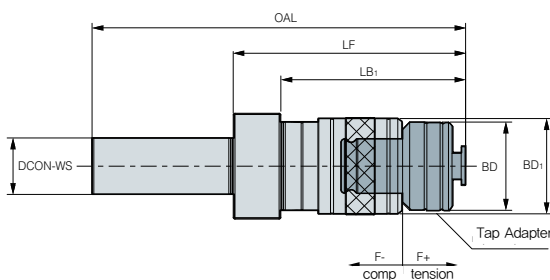
(mm)

Designation	Tapping range	LF	LB <sub>1</sub>	DCON-WS	BD <sub>1</sub>	Adaptor	F-	F+	kg	
<b>BT30-</b>	DTN12-85	M3~M12	85	63	32	39	TCA1-M	4	10	0.5
<b>BT40-</b>	DTN12-90	M3~M12	90	63	32	39	TCA1-M	4	10	1.2
	DTN12-120	M3~M12	120	93	32	39	TCA1-M	4	10	1.5
	DTN22-130	M8~M24	130	103	50	56	TCA2-M	12.5	12.5	1.7
	DTN22-160	M8~M24	160	133	50	56	TCA2-M	12.5	12.5	2.2
<b>BT50-</b>	DTN12-100	M3~M12	100	62	32	39	TCA1-M	4	10	3.9
	DTN12-130	M3~M12	130	92	32	39	TCA1-M	4	10	3.9
	DTN22-140	M8~M24	140	102	50	56	TCA2-M	12.5	12.5	4.3
	DTN22-170	M8~M24	170	132	50	56	TCA2-M	12.5	12.5	4.7
	DTN38-185	M16~M38	185	147	72	81	TCA3-M	20	20	5.7
	DTN38-215	M16~M38	215	177	72	81	TCA3-M	20	20	6.7

Tap Adapter (TCA) **E81**

• Through coolant system is not available

# S-DTN



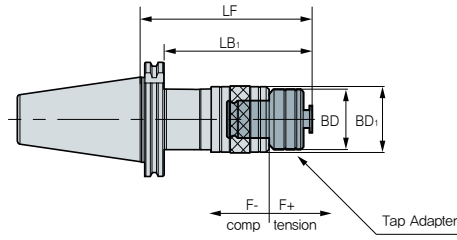
(mm)

Designation	Tapping range	BD	DCON-WS	OAL	BD <sub>1</sub>	LF	LB <sub>1</sub>	Adaptor	F-	F+	kg	
<b>S32-</b>	DTN12-90	M3-M12	32	32	170	39	90	63	TCA1	4	10	1.0
	DTN22-130	M8-M24	50	32	210	56	130	103	TCA2	12.5	12.5	1.8


Tap Adapter (TCA) **E81**

• Through coolant system is not available

# SK-DTN



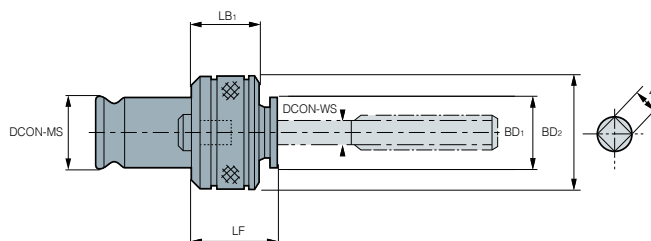
(mm)

Designation	Tapping range	BD	LF	BD <sub>1</sub>	LB <sub>1</sub>	Adaptor	F <sup>-</sup>	F <sup>+</sup>		
<b>SK40-</b>	<b>DTN12-90</b>	M3-M12	32	90	39	70.9	TCA1-M	4	10	1.0
	<b>DTN22-130</b>	M8-M22	50	130	56	110.9	TCA2-M	12.5	12.5	1.6
<b>SK50-</b>	<b>DTN12-100</b>	M3-M12	32	100	39	80.9	TCA1-M	4	10	2.9
	<b>DTN22-140</b>	M8-M22	50	140	56	120.9	TCA2-M	12.5	12.5	3.5


 Tap Adapter (TCA) **E81**

• Through coolant system is not available

# TCA Tap Adapter



(mm)

Designation		DCON-WS	LF	DCON-MS	LB <sub>1</sub>	BD <sub>1</sub>	BD <sub>2</sub>	W	 kg
<b>TCA1-</b>	<b>M3</b>	4	27	19	25	19	32	3	0.2
	<b>M4</b>	5	27	19	25	19	32	4	0.2
	<b>M5</b>	6	27	19	25	19	32	4	0.2
	<b>M6</b>	6	27	19	25	19	32	4	0.2
	<b>M8</b>	6.2	27	19	25	19	32	5	0.2
	<b>M10</b>	7	27	19	25	19	32	6	0.2
	<b>M11</b>	8	27	19	25	19	32	6	0.2
	<b>M12</b>	9	27	19	25	19	32	7	0.2
<b>TCA2-</b>	<b>M8</b>	6.2	34	31	31	29	50	5	0.5
	<b>M10</b>	7	34	31	31	29	50	6	0.5
	<b>M12</b>	8.5	34	31	31	29	50	7	0.5
	<b>M14</b>	11	34	31	31	29	50	8	0.5
	<b>P1/4</b>	11	34	31	31	29	50	9	0.5
	<b>M16</b>	13	34	31	31	29	50	10	0.5
	<b>M18</b>	14	34	31	31	29	50	11	0.5
	<b>M20</b>	15	34	31	31	29	50	12	0.5
	<b>M22</b>	17	34	31	31	29	50	13	0.5
	<b>P1/2</b>	18	34	31	31	29	50	14	0.5
	<b>M24</b>	19	34	31	31	29	50	15	0.5
<b>TCA3-</b>	<b>M16</b>	13	45	48	41	44	72	10	1.4
	<b>M18</b>	14	45	48	41	44	72	11	1.4
	<b>M20</b>	15	45	48	41	44	72	12	1.4
	<b>M22</b>	17	45	48	41	44	72	13	1.4
	<b>M24</b>	19	45	48	41	44	72	15	1.4
	<b>M27</b>	20	45	48	41	44	72	15	1.4
	<b>M30</b>	23	45	48	41	44	72	17	1.4
	<b>M33</b>	25	45	48	41	44	72	19	1.4
<b>M36</b>	28	45	48	41	44	72	21	1.4	

• Through coolant system is not available



# E Technical information for DST

## High speed synchro tapping chuck

# DST

- 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



### Excellent performance, precise machining

Expanded machining area



**DST22**  
(vc = 100 m/min)

Excellent cutting face

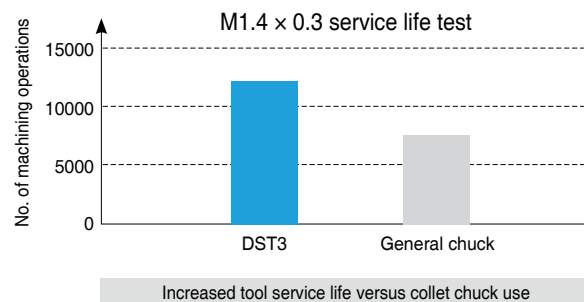


Conventional one

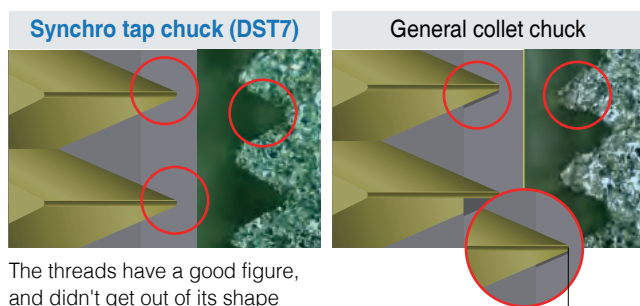
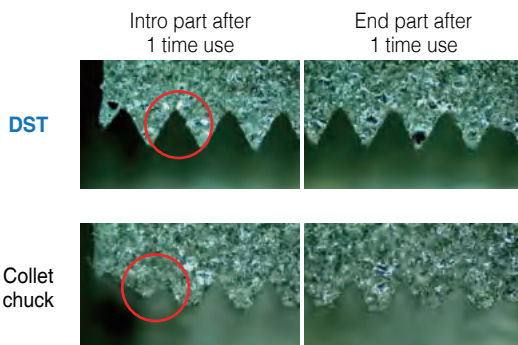


#### Exclusive collet for tapping

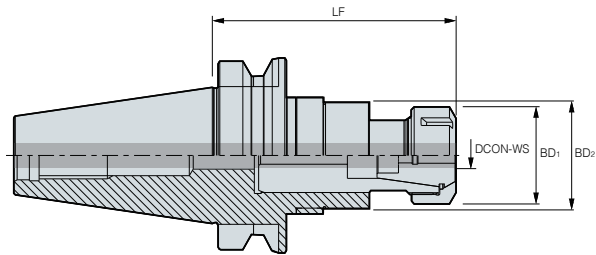
- At tapping work use of TER collet
- DST3: Use of ER11 collet



### Comparison of thread figures



# BT-DST



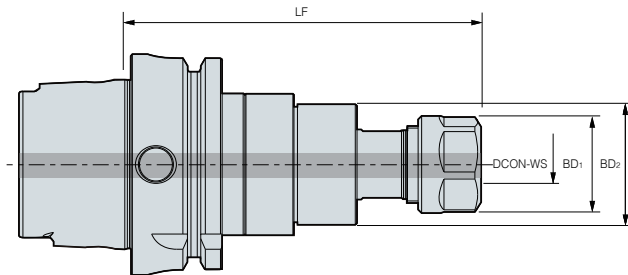
(mm)

Designation		DCON-WS	LF	BD1	BD2	Collet	F-	F+	kg
<b>BT30-</b>	<b>DST3-70</b>	M1~M3	70	20	19	ER11	0.5	0.5	0.5
	<b>DST10-100</b>	M3~M10	100	40.4	28	TER16	0.5	0.5	0.8
<b>BT40-</b>	<b>DST3-70</b>	M1~M3	70	20	19	ER11	0.5	0.5	1.0
	<b>DST10-100</b>	M3~M10	100	40.4	28	TER16	0.5	0.5	1.3
	<b>DST22-110</b>	M6~M22	110	60	50	TER32	0.7	0.7	1.7
<b>BT50-</b>	<b>DST10-110</b>	M3~M10	110	60	50	TER16	0.5	0.5	3.8
	<b>DST22-130</b>	M6~M22	130	60	50	TER32	0.7	0.7	4.5

Application Collet **E60, E85**

• Through coolant system is optional

# HSK-DST



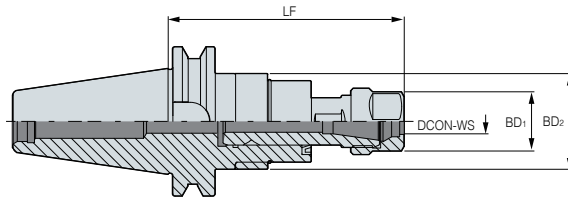
(mm)

Designation		DCON-WS	LF	BD1	BD2	Collet	F-	F+	kg
<b>HSK63A-</b>	<b>DST3-80</b>	M1~M3	80	19	20	ER11	0.5	0.5	0.7
	<b>DST10-100</b>	M3~M10	100	28	40.4	TER16	0.5	0.5	0.9
	<b>DST22-130</b>	M6~M22	130	49.5	60	TER32	0.7	0.7	1.8


Application Collet **E60, E85**


• Through coolant system is optional

## SK-DST



(mm)

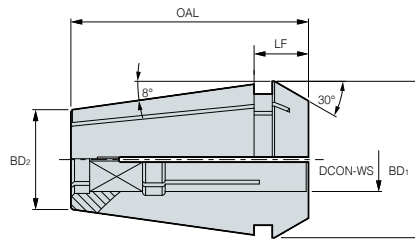
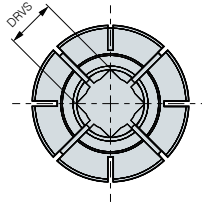
Designation	DCON-WS	LF	BD1	BD2	Collet	F-	F+	
<b>SK30-</b> DST3-70	M1-M3	70	19	20	ER11	0.2	0.2	0.4
<b>SK40-</b>	DST3-70	M1-M3	70	19	ER11	0.2	0.2	0.9
	DST10-110	M3-M10	110	28	TER16	0.5	0.5	1.2
	DST22-120	M6-M22	120	50	TER32	0.7	0.7	1.8
<b>SK50-</b>	DST10-110	M3-M10	110	28	TER16	0.5	0.5	3.0
	DST22-120	M6-M22	120	50	TER32	0.7	0.7	3.7

 Application Collet **E60, E85**


• Through coolant system is optional

# TER Collet

Tap Collet



(mm)

Designation	Tapping Range	DCON-WS	OAL	DRVS	BD1	BD2	LF		
<b>TER16-</b>	4x3.2	M3	4	27.5	3.2	16.74	10.1	6.3	0.03
	5x4	M4	5	27.5	4	16.74	10.1	6.3	0.03
	5.5x4.5	M5	5.5	27.5	4.5	16.74	10.1	6.3	0.02
	6x4.5	M6,U1/4	6	27.5	4.5	16.74	10.1	6.3	0.02
	6.2x5	M7, M8	6.2	27.5	5	16.74	10.1	6.3	0.02
	7x5.5	M9, M10, U3/8	7	27.5	5.5	16.74	10.1	6.3	0.02
<b>TER20-</b>	5x4	M4	5	31.5	4	20.74	13.2	7.2	0.05
	5.5x4.5	M5	5.5	31.5	4.5	20.74	13.2	7.2	0.05
	6x4.5	M6,U1/4	6	31.5	4.5	20.74	13.2	7.2	0.05
	6.2x5	M7, M8	6.2	31.5	5	20.74	13.2	7.2	0.04
	7x5.5	M9, M10, U3/8	7	31.5	5.5	20.74	13.2	7.2	0.05
	8x6	M11, U7/16, P1/8	8	31.5	6	20.74	13.2	7.2	0.04
<b>TER25-</b>	5x4	M4	5	34	4	25.74	17.6	7.5	0.9
	5.5x4.5	M5	5.5	34	4.5	25.74	17.6	7.5	0.8
	6x4.5	M6	6	34	4.5	25.74	17.6	7.5	0.8
	6.2x5	M7, M8	6.2	34	5	25.74	17.6	7.5	0.1
	7x5.5	M9, M10, U3/8	7	34	5.5	25.74	17.6	7.5	0.8
	8.5x6.5	M12	8.5	34	6.5	25.74	17.6	7.5	0.8
<b>TER32-</b>	6x4.5	M6,U1/4	6.2	40	4.5	32.74	23.1	8.2	0.2
	6.2x5	M7, M8	M8	40	5	32.74	23.1	8.2	0.2
	7x5.5	M9, M10, U3/8	7	40	5.5	32.74	23.1	8.2	0.2
	8X6	M11, U7/16, P1/8	8	40	6	32.74	23.1	8.2	0.2
	8.5x6.5	M12	8.5	40	6.5	32.74	23.1	8.2	0.2
	10.5x8	M14, U9/16	10.5	40	8	32.74	23.1	8.2	0.2
	12.5x10	M16	12.5	40	10	32.74	23.1	8.2	0.2
	14x11	M18, P3/8	14	40	11	32.74	23.1	8.2	0.1
	15x12	M20	15	40	12	32.74	23.1	8.2	0.1
	17x13	M22, U7/8	17	40	13	32.74	23.1	8.2	0.1
	11x9	P1/4	11	40	9	32.74	23.1	8.2	0.2
	12x9	U5/8	12	40	9	32.74	23.1	8.2	0.2
9x7	U1/2	9	40	7	32.74	23.1	8.2	0.2	

• Water proof tapping is possible with the use of RTJW and nuts (limited to the right sizes)

# E Technical information for TEH

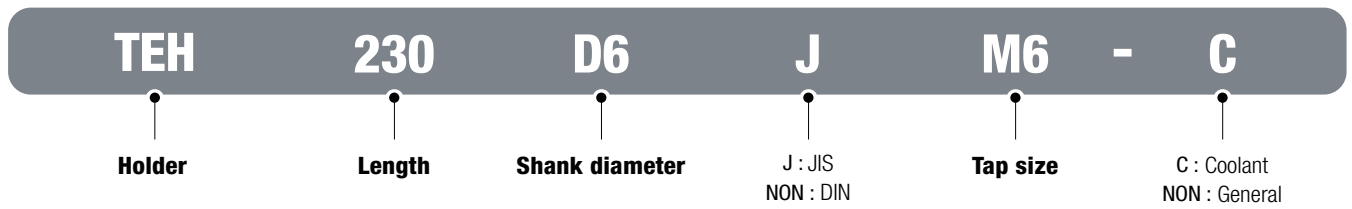
## Tap Extension Holder

# TEH

- Length-extending holder exclusive for tap when applying to the interference section
- Tool cost is reduced, and machining performance is improved compared to the use of long taps



### Code system



### Structure



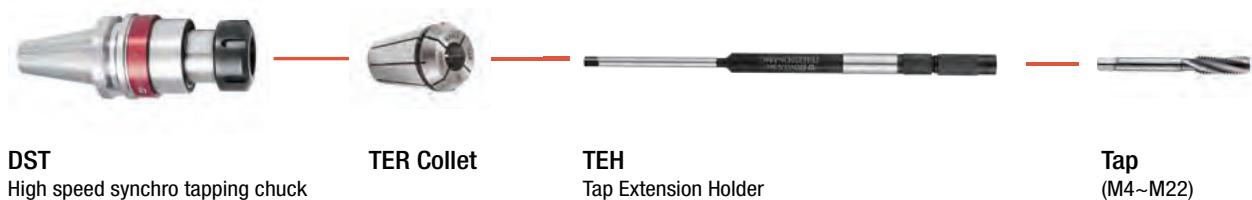
### Processing of deep holes



Full length comparison	TEH	General long tap
M10	230mm	150mm
M22	330mm	200mm

※ Since the full length is longer than that of the general long tap, it is favorable for processing narrow, deep holes.

### TEH Setting Method



# TEH (JIS)

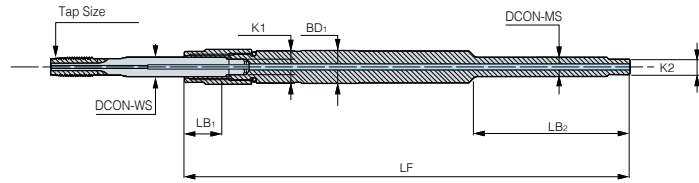


Fig. 1

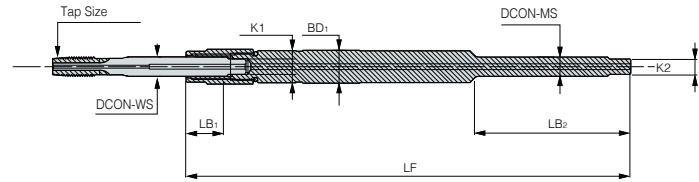


Fig. 2

(mm)

Designation	Tapping range	LB <sub>1</sub>	LB <sub>2</sub>	LF	BD <sub>1</sub>	DCON-WS	DCON-MS	K1	K2	NutØ	Fig.	
<b>TEH230</b>	<b>D5J-M4</b>	M4	18	50	230	11	5	6	4	45	12.1	2
	<b>D6J-M6C</b>	M6	18	50	230	12	6	6	4.5	4.5	13.3	1
	<b>D6.2J-M8C</b>	M8	18	65	230	12	6.2	6.2	5	5	13.3	1
	<b>D7J-M10C</b>	M10	18	65	230	13	7	7	5.5	5.5	14.4	1
	<b>D8.5J-M12C</b>	M12	22	65	230	14	8.5	8.5	6.5	6.5	15.6	1
<b>TEH330</b>	<b>D10.5J-M14C</b>	M14	25	70	330	16	10.5	10.5	8	8	17.9	1
	<b>D12.5J-M16C</b>	M16	25	70	330	18	12.5	12.5	10	10	19.9	1
	<b>D14J-M18C</b>	M18	25	70	330	20	14	14	11	11	21.9	1
	<b>D15J-M20C</b>	M20	25	75	330	21	15	15	12	12	22.9	1
	<b>D17J-M22C</b>	M22	25	75	330	23	17	17	13	13	25.9	1

• Through coolant system is installed (Fig.2 Designation is non-coolant type)

# TEH (DIN)

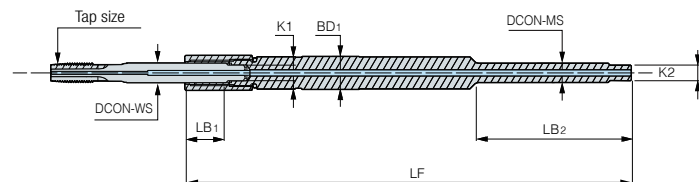


Fig. 1

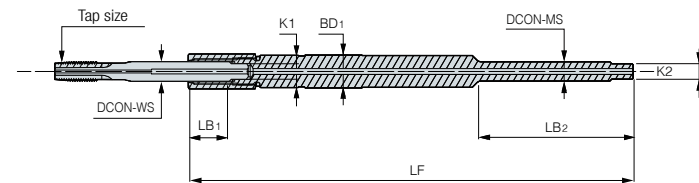


Fig. 2

(mm)

Designation	Tapping range	LB <sub>1</sub>	LB <sub>2</sub>	LF	BD <sub>1</sub>	DCON-WS	DCON-MS	K1	K2	NutØ	Fig.	
<b>TEH230</b>	<b>D4.5-M4</b>	M4	18	50	230	10	4.5	6	3.4	4.5	11.1	2
	<b>D6-M6C</b>	M6	20	50	230	12	6	7	4.9	5.5	13.3	1
	<b>D8-M8C</b>	M8	23	65	230	14	8	8	6.3	6.2	15.6	1
	<b>D10-M10C</b>	M10	24	65	230	16	10	10	8	8	17.9	1
	<b>D9-M12C</b>	M12	23	65	230	15	9	9	7	7	16.8	1
<b>TEH330</b>	<b>D11-M14C</b>	M14	26	70	330	17	11	11	9	9	19.1	1
	<b>D12-M16C</b>	M16	26	70	330	18	12	12	9	9	19.9	1
	<b>D14-M18C</b>	M18	28	70	330	20	14	14	11	11	21.9	1
	<b>D16-M20C</b>	M20	28	75	330	22	16	16	12	12	23.9	1
	<b>D18-M22C</b>	M22	28	75	330	24	18	18	14.5	14.5	25.9	1

• Through coolant system is installed (Fig.2 Designation is non-coolant type)

# E Technical information for STER PAT.

## DINE Synchro Tapping ER Collet

# STER PAT.

- Floating function applicable for tap machining just by fastening the ER collet chuck
- Tap size can be converted just by replacing the connector
- Tap : M6~M16



### Code system



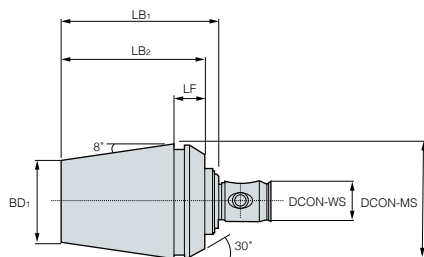
### Details

STER32

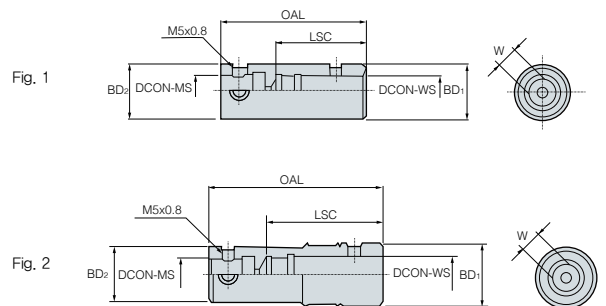


### Detailed specifications

#### COLLET



#### CONNECTOR



#### ※ COLLET

Designation	DCON-MS	BD1	DCON-WS	LB1	LB2	LF	Fig.
STER32	32	23.1	11	44	40	8.2	1

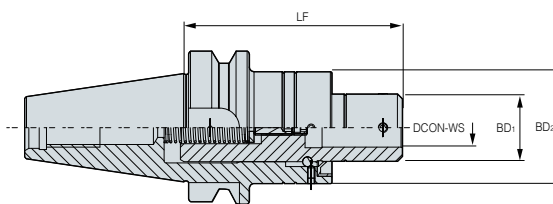
#### ※ CONNECTOR

Designation	BD1	BD2	DCON-WS	DCON-MS	OAL	LSC	W	Fig.
STER32C-M6	19	21	6	11	50	29.5	4.5	2
STER32C-M8	19	21	6.2	11	50	30	5	2
STER32C-M10	19	21	7	11	50	29	5.5	2
STER32C-M12	19	21	8.5	11	50	30.5	6.5	2
STER32C-M14	19	21	10.5	11	50	31	8	2
STER32C-M16	19	21	12.5	11	50	40.5	10	2



# BT-OFH

Floating holder



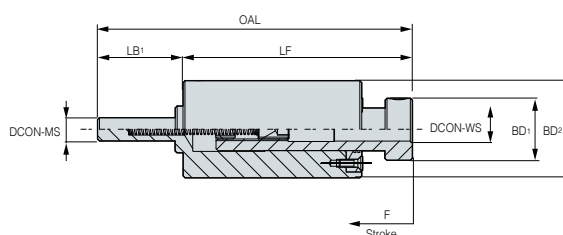
(mm)

Designation	DCON-WS	LF	BD1	BD2	Sleeve stroke(F)	RPMX
BT30-OFH6-75	6	75	19.7	38	6	15,000

• Through coolant system is not available

# ST-OFH

Floating holder



(mm)

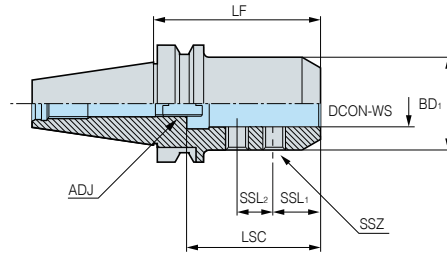
Designation	DCON-WS	OAL	BD1	BD2	DCON-MS	LB1	LF	Sleeve stroke(F)	RPMX
ST06-OFH6-60	6	81	16	25	6	59	22	6	15,000

• Through coolant system is not available




## BT-SLA

Side Lock Arbor



(mm)

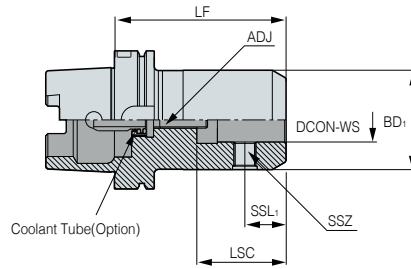
Designation	DCON-WS	LF	BD <sub>1</sub>	LSC	SSL <sub>1</sub>	SSL <sub>2</sub>	SSZ	ADJ		
<b>BT30-</b>	SLA16-90	16	90	40	72	25	20	M10	M12	0.9
	SLA20-90	20	90	50	72	25	20	M12	M12	1.2
	SLA25-90	25	90	50	72	25	20	M12	M12	1.1
<b>BT40-</b>	SLA16-90	16	90	40	72	25	20	M10	M12	1.4
	SLA20-90	20	90	50	72	25	20	M12	M12	1.8
	SLA25-90	25	90	50	72	25	20	M12	M12	1.6
	SLA32-90	32	90	60	82	25	25	M14	M12	1.8
	SLA32-105	32	105	60	82	25	25	M14	M12	2.0
	SLA40-105	40	105	80	82	25	25	M16	M12	2.9
<b>BT50-</b>	SLA16-90	16	90	40	72	25	20	M10	M12	4
	SLA20-105	20	105	50	72	25	20	M12	M12	4.4
	SLA25-105	25	105	50	72	25	20	M12	M12	4.3
	SLA25-135	25	135	50	72	25	20	M12	M12	4.6
	SLA25-165	25	165	50	82	25	20	M12	M12	5.2
	SLA32-105	32	105	60	82	25	25	M14	M12	4.5
	SLA32-135	32	135	60	82	25	25	M14	M12	5.1
	SLA32-165	32	165	60	82	25	25	M14	M12	5.7
	SLA40-105	40	105	90	82	25	20	M16	M12	6.1
	SLA40-150	40	150	90	82	25	25	M16	M12	8.1
	SLA42-105	42	105	90	82	25	25	M16	M12	5.9

 Spare Part **E91**

• Through coolant system is installed

# HSK-SLA

Side Lock Arbor



(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	LSC	SSL <sub>1</sub>	SSZ	ADJ	kg	
<b>HSK30A-</b>	<b>SLA20-100</b>	20	100	52	51	25	M8	M12	1.6
	<b>SLA25-105</b>	25	105	65	59	25	M8	M12	2.1
	<b>SLA32-105</b>	32	105	72	63	30	M5	M12	2.3
<b>HSK100A-</b>	<b>SLA20-105</b>	20	105	52	51	25	M16	M12	3.1
	<b>SLA25-110</b>	25	110	65	59	25	M18	M12	3.8
	<b>SLA32-125</b>	32	125	72	63	30	M20	M12	4.4
	<b>SLA40-135</b>	40	135	80	73	32	M20	M12	5.2

Spare Part **E91**

• Through coolant system is installed

## Parts

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK63A	HSK63A-CNS
HSK100A	HSK100A-CNS

## SK-SLA

Side Lock Arbor

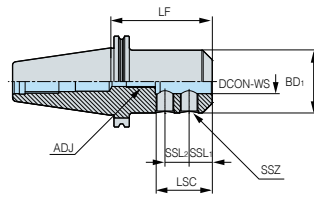


Fig. 1

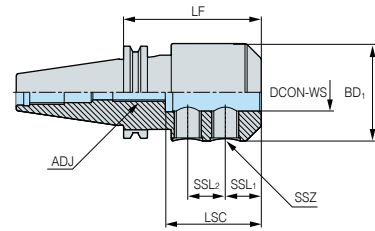


Fig. 2

(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	LSC	SSL <sub>1</sub>	SSL <sub>2</sub>	SSZ	ADJ	Fig.	kg	
<b>SK40-</b>	<b>SLA16-75</b>	16	75	48	49	24	-	M14	M12	1	1.4
	<b>SLA20-75</b>	20	75	52	51	25	-	M16	M12	1	1.5
	<b>SLA25-95</b>	25	95	65	59	24	25	M18	M12	2	2.1
	<b>SLA32-105</b>	32	105	72	63	24	28	M20	M12	2	2.8
<b>SK50-</b>	<b>SLA16-90</b>	16	90	48	49	24	-	M14	M12	1	3.5
	<b>SLA20-90</b>	20	90	52	51	25	-	M16	M12	1	3.6
	<b>SLA25-105</b>	25	105	65	59	24	25	M18	M12	1	4.5
	<b>SLA32-120</b>	32	120	72	63	24	28	M20	M12	1	5.2
	<b>SLA40-120</b>	40	120	80	73	30	32	M20	M12	1	5.6

Spare Part **E92**

• Through coolant system is not available

### Parts

Basic			For separate purchase	
Division	Set screw		Wrench	
Parts Designation				
	BT Type	HSK Type	BT Type	HSK Type
<b>SLA16</b>	BTF1010	BTF1414-1.5	LW-5	LW-6
<b>SLA20</b>	BTF1212-1.5	BTF1616-1.5	LW-6	LW-8
<b>SLA25</b>	BTF1212-1.5	BTF1818-1.5	LW-6	LW-8
<b>SLA32</b>	BTF1414-1.5	BTF2020-1.5	LW-6	LW-10
<b>SLA40</b>	BTF1624-1.5	BTF2020-1.5	LW-8	LW-10
<b>SLA42</b>	BTF1624-1.5	BTF2020-1.5	LW-8	LW-10

# SK-MTA

## Morse Taper Arbor

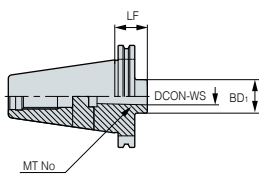


Fig. 1

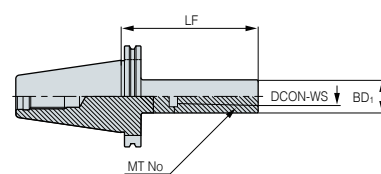



Fig. 2

(mm)

Designation	MT No.	LF	DCON-WS	BD <sub>1</sub>	Fig.	
SK50-	MTA3-45	3	23.825	40	1	2.7
	MTA3-150	3	23.825	40	2	3.6
	MTA4-75	4	31.267	50	1	2.9

• Through coolant system is not available

# BT-FMA

## Face Mill Arbor

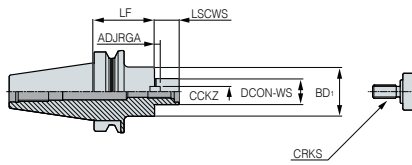


Fig. 1

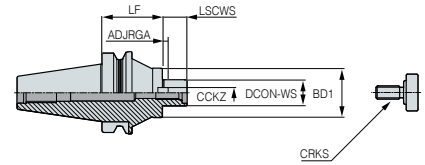


Fig. 2

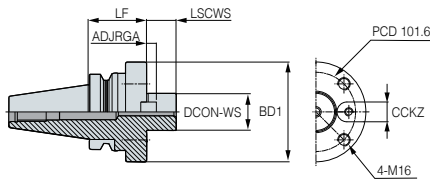


Fig. 3

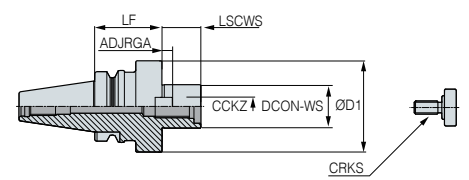


Fig. 4

Designation		DCX	DCON-WS	LF	BD1	LSCWS	CCKZ	ADJRGA	CRKS/MBCB	Fig.	(mm)
<b>BT30-</b>	<b>FMA25.4-45</b>	80	25.4	45	50	22	9.5	5	M12	4	1.0
<b>BT40-</b>	<b>FMA25.4-45</b>	80	25.4	45	50	22	9.5	5	M12	1	1.4
	<b>FMA25.4-90</b>	80	25.4	90	50	22	9.5	5	M12	1	2.2
	<b>FMA31.75-45</b>	100	31.75	45	60	30	12.7	7	M16	1	1.6
	<b>FMA31.75-75</b>	100	31.75	75	60	30	12.7	7	M16	1	2.2
	<b>FMA31.75-90</b>	100	31.75	90	60	30	12.7	7	M16	1	2.5
	<b>FMA38.1-60</b>	125	38.1	60	80	34	15.87	9	M20	4	2.6
<b>BT50-</b>	<b>FMA25.4-45</b>	80	25.4	45	50	22	9.5	5	M12	1	4.0
	<b>FMA25.4-90</b>	80	25.4	90	50	22	9.5	5	M12	1	4.7
	<b>FMA25.4-150</b>	80	25.4	150	50	22	9.5	5	M12	2	6.4
	<b>FMA31.75-45</b>	100	31.75	45	60	30	12.7	7	M16	1	4.1
	<b>FMA31.75-75</b>	100	31.75	75	60	30	12.7	7	M16	1	4.8
	<b>FMA31.75-105</b>	100	31.75	105	60	30	12.7	7	M16	2	5.6
	<b>FMA38.1-45</b>	125	38.1	45	80	34	15.87	9	M20	1	4.4
	<b>FMA38.1-75</b>	125	38.1	75	80	34	15.87	9	M20	1	5.6
	<b>FMA50.8-45</b>	160	50.8	45	100	36	19.05	10	M24	1	4.9
	<b>FMA50.8-75</b>	160	50.8	75	100	36	19.05	10	M24	1	6.8
	<b>FMA47.625-75</b>	200	47.625	75	128	38	25.4	12.5	-	3	8.3

⚙ Spare Part **E95**

• Through coolant system is not available

# NT-FMA

## Face Mill Arbor

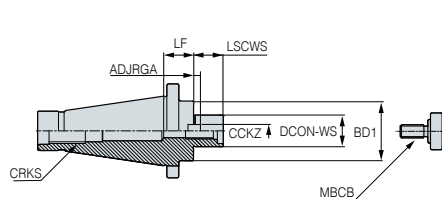


Fig. 1

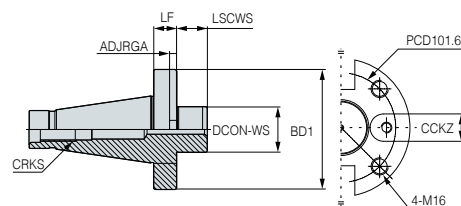


Fig. 1

Designation		DCX	DCON-WS	LF	BD <sub>1</sub>	LSCWS	MBCB	CCKZ	ADJRGA	CRKS	Fig.	kg
<b>NT40-</b>	<b>FMA25.4-25</b>	80	25.4	25	50	22	M12	9.5	5	M16	1	1.1
	<b>FMA31.75-25</b>	100	31.75	25	60	30	M16	12.7	7	M16	1	1.3
	<b>FMA38.1-25</b>	125	38.1	25	80	34	M20	15.87	9	M16	1	1.8
	<b>FMA50.8-25</b>	160	50.8	25	100	36	M24	19.05	10	M16	1	2.8
<b>NT50-</b>	<b>FMA25.4-25</b>	80	25.4	23.2	50	22	M12	9.5	5	M24	1	3.1
	<b>FMA31.75-30</b>	100	31.75	26.2	60	30	M16	12.7	7	M24	1	3.3
	<b>FMA38.1-30</b>	125	38.1	25.2	80	34	M20	15.87	9	M24	1	3.6
	<b>FMA50.8-30</b>	160	50.8	27.2	100	36	M24	19.05	10	M24	1	4.2
	<b>FMA47.625-25</b>	200	47.625	27.2	128	38	-	25.4	12.5	M24	2	5.3

(mm)

➔ Spare Part **E95**

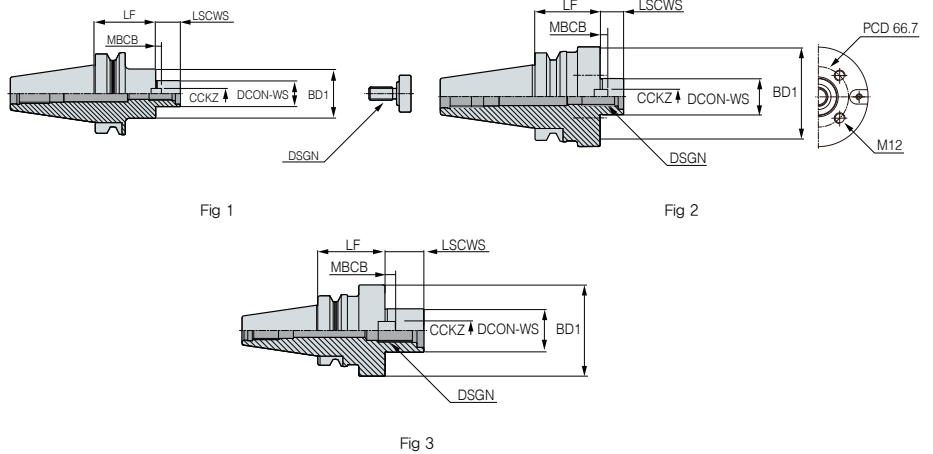
• Through coolant system is not available

### ➔ Parts

Division	Basic				For separate purchase
	Key	Key Bolt	Mount Bolt	Clamp Bolt	Wrench
<b>Parts</b>					
<b>Designation</b>					
<b>FMA25.4</b>	K9.5	BX0412	MBA-M12	BX1230	LW-10
<b>FMA31.75</b>	K12.7	BX0515	MBA-M16	-	LW-14
<b>FMA38.1</b>	K15.87	BX0616	MBA-M20	-	LW-17
<b>FMA50.8</b>	K19.05	BX0820	MBA-M24	-	
<b>FMA47.625</b>	K25.4	BX1020	-	BX1645	

# BT-FMC

## Face Mill Arbor



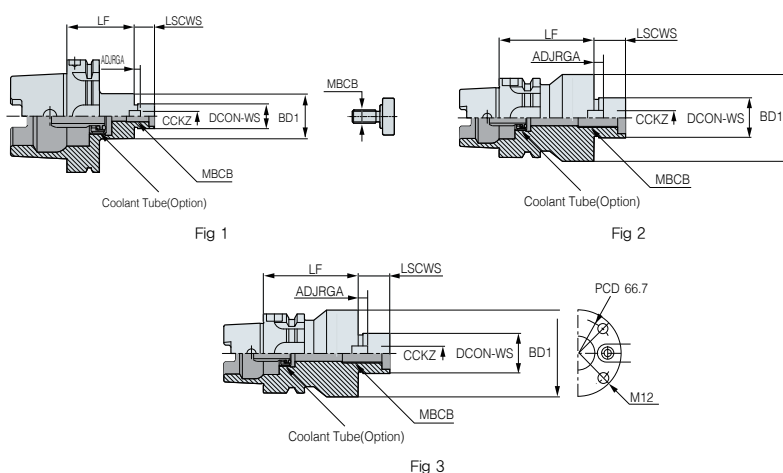
Designation		DCX	DCON-WS	LF	BD1	LSCWS	CCKZ	MBCB	DSGN	Fig.	(mm)
<b>BT30-</b>	<b>FMC16-45</b>	40	16	45	38	17	8	5.0	M8	1	0.7
	<b>FMC22-45</b>	50/63	22	45	48	19	10	5.6	M10	2	0.8
	<b>FMC27-50</b>	80	27	50	60	21	12	6.3	M12	2	1.0
<b>BT40-</b>	<b>FMC16-60</b>	40	16	60	38	17	8	5.0	M8	1	1.3
	<b>FMC22-45</b>	50/63	22	45	48	19	10	5.6	M10	1	1.3
	<b>FMC22-90</b>	50/63	22	90	48	19	10	5.6	M10	1	1.9
	<b>FMC27-60</b>	80	27	60	60	21	12	6.3	M12	1	1.8
	<b>FMC27-90</b>	80	27	90	60	21	12	6.3	M12	1	2.4
	<b>FMC32-60</b>	100	32	60	78	24	14	7.0	M16	2	2.1
	<b>FMC40-50</b>	125/160	40	50	89	27	15.87	8.0	M20	3	2.3
<b>BT50-</b>	<b>FMC16-60</b>	40	16	60	38	17	8	5.0	M8	1	3.9
	<b>FMC22-60</b>	50/63	22	60	48	19	10	5.6	M10	1	4.1
	<b>FMC27-40</b>	80	27	40	60	21	12	6.3	M12	1	3.8
	<b>FMC27-90</b>	80	27	90	60	21	12	6.3	M12	1	4.8
	<b>FMC27-150</b>	80	27	150	60	21	12	6.3	M12	1	6.1
	<b>FMC32-45</b>	100	32	45	78	24	14	7.0	M16	1	4.1
	<b>FMC32-75</b>	100	32	75	78	24	14	7.0	M16	1	5.2
	<b>FMC32-105</b>	100	32	105	78	24	14	7.0	M16	1	6.3
	<b>FMC40-50</b>	125/160	40	50	89	27	15.87	8.0	M20	2	4.6

Spare Part **E98**

• Through coolant system is not available

# HSK-FMC

## Face Mill Arbor



(mm)

Designation	DCX	DCON-WS	LF	BD <sub>1</sub>	LSCWS	CCKZ	ADJRGA	MCBB	Fig.	kg	
HSK50A-	FMC16-40	40	16	40	38	17	8	5.0	M8	1	0.4
	FMC22-50	50/63	22	50	48	19	10	5.6	M10	1	0.8
HSK63A-	FMC16-50	40	16	50	38	17	8	5.0	M8	1	0.9
	FMC22-50	50/63	22	50	48	19	10	5.6	M10	1	1.1
	FMC27-60	80	27	60	60	21	12	6.3	M12	1	1.4
	FMC32-60	100	32	60	78	24	14	7.0	M16	2	1.7
	FMC40-60	125/160	40	60	89	27	15.87	8.0	M20	3	2.5

Spare Part E98

• Internal coolant system is optional



# SK-FMC

Face Mill Arbor

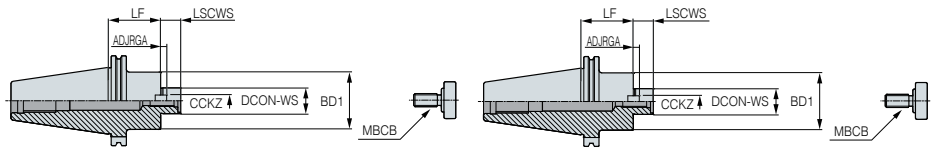


Fig 1

Fig 2

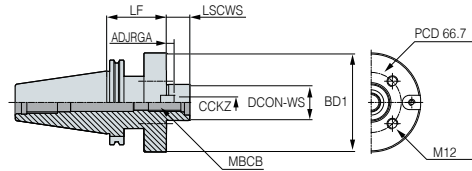


Fig 3

Designation		DCX	DCON-WS	LF	BD1	LSCWS	CCKZ	ADJRGA	MBCB	Fig.	kg
SK30-	FMC16-60	40	16	60	38	17	8	5	M8	1	0.8
	FMC22-50	50/63	22	50	48	19	10	5.6	M10	2	0.8
	FMC27-55	80	27	55	60	21	12	6.3	M12	2	1.1
SK40-	FMC16-55	40	16	55	38	17	8	5	M8	1	1.2
	FMC22-55	50/63	22	55	48	19	10	5.6	M10	1	1.4
	FMC27-60	80	27	60	60	21	12	6.3	M12	2	1.6
	FMC32-60	100	32	60	78	24	14	7	M16	2	2.2
	FMC40-50	125/160	40	50	89	27	15.87	8	M20	3	2.3
SK50-	FMC16-60	40	16	60	38	17	8	5	M8	1	2.9
	FMC22-60	50/63	22	60	48	19	10	5.6	M10	1	3.2
	FMC27-40	80	27	40	60	21	12	6.3	M12	1	3.2
	FMC32-45	100	32	45	78	24	14	7	M16	1	3.7
	FMC40-50	125/160	40	50	89	27	15.87	8	M20	3	4.2

Spare Part E98

• Through coolant system is not available

## Parts

Basic				
Division	Key	Key Bolt	Mount Bolt	Clamp Bolt
<b>Parts</b>				
<b>Designation</b>				
FMC16	K8.0	BX0310	-	BX0830
FMC22	K10.0	BX0412	-	BX1030
FMC27	K12.0	BX0516	MBA-M12	BX1230
FMC32	K14.0	BX0616	MBA-M16	-
FMC40	K15.87	BX0616	MBA-M20	BX1230

For separate purchase				
Division	Wrench	Division	Coolant Tube for HSK	Wrench
<b>Parts</b>		<b>Parts</b>		
<b>Designation</b>		<b>Designation</b>		
FMC16	LW-6	HSK50A	HSK50A-CNS	HSK50-WRENCH(C)
FMC22	LW-8	HSK63A	HSK63A-CNS	HSK63-WRENCH(C)
FMC27	LW-10			
FMC32	LW-14			
FMC40	LW-17			

# DBT-MD

## Modular Arbor

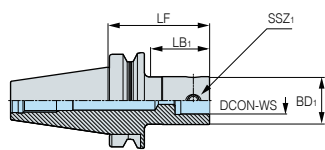


Fig. 1

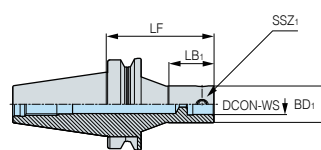


Fig. 2

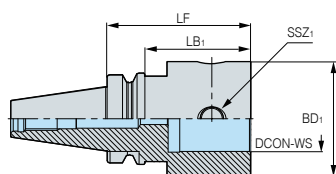


Fig. 3

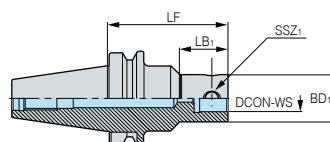



Fig. 4

(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	LB <sub>1</sub>	SSZ <sub>1</sub>	Fig.		
<b>DBT30-</b>	MD19F-70R	11	70	19	27	M5	4	0.5
	MD25F-90R	14	90	25	43	M6	4	0.6
	MD32F-80R	18	80	32	39	M8	4	0.7
	MD40F-45	22	45	40	23	M10	1	0.5
	MD40F-80R	22	80	40	49	M10	4	0.8
	MD50F-70	28	70	50	40	M12	3	0.9
<b>DBT40-</b>	MD19F-70	11	70	19	43	M5	1	1.0
	MD25F-95	14	95	25	68	M6	1	1.1
	MD25F-105R	14	105	25	40	M6	2	1.2
	MD32F-100	18	100	32	73	M8	1	1.2
	MD32F-115R	18	115	32	45	M8	2	1.5
	MD40F-50	22	50	40	23	M10	1	1.2
	MD40F-110R	22	110	40	60	M10	2	1.6
	MD40F-115	22	115	40	88	M10	1	1.6
	MD50F-100R	28	100	50	60	M12	2	1.8
	MD50F-105	28	105	50	78	M12	1	1.9
	MD63F-64	36	64	63	37	M16	3	1.5
	MD63F-90	36	90	63	63	M16	3	2.1
	MD63F-110	36	110	63	83	M16	3	2.5
	MD80F-100	45	100	80	73	M16	3	2.9

• Through coolant system is installed

# DBT-MD

Modular Arbor

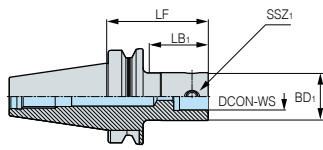


Fig. 1

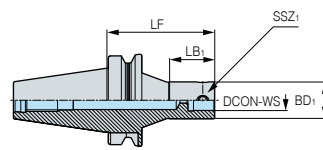


Fig. 2

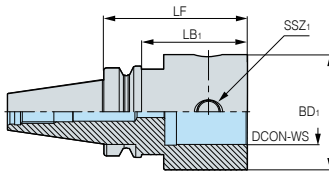


Fig. 3

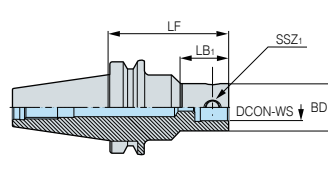



Fig. 4

(mm)

Designation	DCON-WS	LF	BD1	LB1	SSZ1	Fig.	
<b>DBT50-</b> MD19F-85	11	85	19	45	M5	1	3.7
MD19F-100	11	100	19	60	M5	1	3.8
MD25F-105	14	105	25	64	M6	1	3.9
MD25F-120R	14	120	25	40	M6	2	4.0
MD32F-110	18	110	32	67	M8	1	4.1
MD32F-115R	18	115	32	45	M8	2	4.2
MD32F-235R	18	235	32	115	M8	2	5.5
MD40F-60	22	60	40	22	M10	1	3.7
MD40F-125R	22	125	40	59	M10	2	4.3
MD40F-145	22	145	40	102	M10	1	4.5
MD40F-195R	22	195	40	83	M10	4	4.8
MD40F-230R	22	230	40	180	M10	2	5.0
MD50F-125	28	125	50	82	M12	1	4.6
MD50F-160R	28	160	50	61	M12	2	5.8
MD50F-225R	28	225	50	125	M12	4	6.0
MD50F-250R	28	250	50	81	M12	2	7.0
MD63F-75	36	75	63	35	M16	1	4.2
MD63F-130	36	130	63	87	M16	1	5.3
MD63F-140	36	140	63	97	M16	1	5.5
MD63F-140R	36	140	63	70	M16	2	5.7
MD63F-195R	36	195	63	120	M16	4	6.8
MD63F-230R	36	230	63	149	M16	4	7.5
MD63F-240R	36	240	63	190	M16	2	7.8
MD80F-75	45	75	80	36	M16	1	4.4
MD80F-110	45	110	80	69	M16	1	5.8
MD80F-160	45	160	80	119	M16	1	8.0
MD90F-75	45	75	90	37	M16	1	4.8
MD90F-145	45	145	90	107	M16	1	7.4

• Through coolant system is installed

# BT-MD

## Modular Arbor

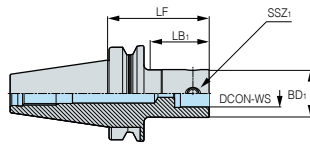


Fig. 1

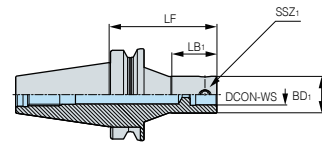


Fig. 2

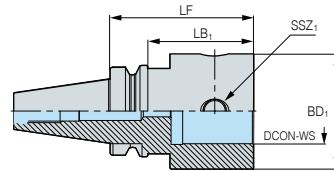


Fig. 3

(mm)

Designation	DCON-WS	LF	BD <sub>1</sub>	LB <sub>1</sub>	SSZ <sub>1</sub>	Fig.	kg	
<b>BT30-</b>	MD19F-70	11	70	19	45	M5	1	0.5
	MD25F-90	14	90	25	63	M6	1	0.6
	MD32F-80	18	80	32	55	M8	1	0.7
	MD40F-45	22	45	40	22	M10	1	0.5
	MD40F-60	22	60	40	36	M10	1	0.7
	MD40F-80	22	80	40	56	M10	1	0.9
	MD50F-70	28	70	50	48	M12	3	0.9
<b>BT40-</b>	MD19F-70	11	70	19	40	M5	1	1.0
	MD25F-95	14	95	25	63	M6	1	1.1
	MD25F-105R	14	105	25	40	M6	2	1.2
	MD32F-100	18	100	32	70	M8	1	1.2
	MD32F-115R	18	115	32	45	M8	2	1.5
	MD40F-60	22	60	40	31	M10	1	1.1
	MD40F-110R	22	110	40	60	M10	2	1.6
	MD40F-115	22	115	40	83	M10	1	1.6
	MD50F-60	28	60	50	33	M12	1	1.3
	MD50F-100R	28	100	50	50	M12	2	1.8
	MD50F-105	28	105	50	73	M12	1	1.8
	MD63F-64	36	64	63	37	M16	3	1.5
	MD63F-90	36	90	63	63	M16	3	2.0
	MD63F-110	36	110	63	83	M16	3	2.4
	MD63F-135	36	135	63	108	M16	3	3.0
MD80F-100	45	100	80	73	M16	3	2.9	

• Through coolant system is installed

# BT-MD

## Modular Arbor

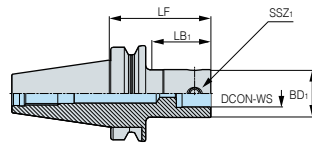


Fig. 1

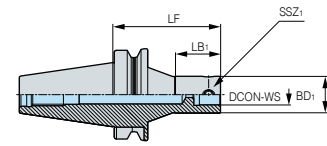


Fig. 2

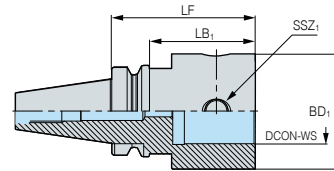



Fig. 3

(mm)

Designation	DCON-WS	LF	BD1	LB1	SSZ1	Fig.		
<b>BT50-</b>	MD19F-85	11	85	19	44	M5	1	3.7
	MD19F-100	11	100	19	62	M5	1	3.7
	MD25F-105	14	105	25	62	M6	1	3.8
	MD25F-120R	14	120	25	40	M6	2	3.8
	MD32F-110	18	110	32	67	M8	1	4.0
	MD32F-115R	18	115	32	45	M8	2	4.1
	MD32F-235R	18	235	32	115	M8	2	5.5
	MD40F-60	22	60	40	22	M10	1	3.7
	MD40F-125R	22	125	40	59	M10	2	3.8
	MD40F-145	22	145	40	107	M10	1	4.3
	MD40F-195	22	195	40	152	M10	1	4.8
	MD40F-230R	22	230	40	180	M10	2	5.0
	MD50F-125	28	125	50	82	M12	1	4.6
	MD50F-160R	28	160	50	61	M12	2	5.7
	MD50F-225	28	225	50	182	M12	1	6.0
	MD50F-250R	28	250	50	81	M12	2	7.0
	MD63F-75	36	75	63	35	M16	1	4.2
	MD63F-130	36	130	63	87	M16	1	5.3
	MD63F-140	36	140	63	92	M16	1	5.5
	MD63F-140R	36	140	63	80	M16	2	5.7
	MD63F-195	36	195	63	152	M16	1	6.8
	MD63F-230	36	230	63	187	M16	1	7.5
	MD63F-240R	36	240	63	190	M16	2	7.8
	MD80F-75	45	75	80	36	M16	1	4.3
	MD80F-110	45	110	80	69	M16	1	5.7
	MD80F-175	45	175	80	134	M16	1	8.0
	MD90F-75	45	75	90	36	M16	1	4.8
	MD90F-145	45	145	90	104	M16	1	7.4
	MD90F-195	45	195	90	154	M16	1	9.4

• Through coolant system is installed

# HSK-MD

Modular Arbor

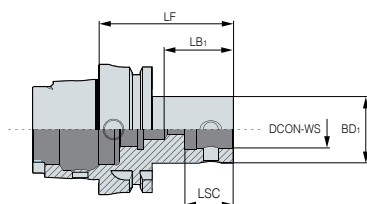


Fig. 1

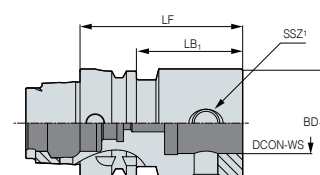


Fig. 2

Designation		DCON-WS	LF	BD <sub>1</sub>	LB <sub>1</sub>	LSC	SSZ <sub>1</sub>	Fig.	kg
HSK63A-	MD19F-60	11	60	19	31	15.5	M5	1	0.7
	MD25F-60	14	60	25	31	18.5	M6	1	0.7
	MD32F-65	18	65	32	36	23.5	M8	1	0.8
	MD40F-70	22	70	40	41	29	M10	1	0.9
	MD50F-85	28	85	50	58	36	M12	1	1.3
	MD63F-95	36	95	63	69	46	M16	2	1.7
HSK100A-	MD19F-60	11	60	19	19	15.5	M5	1	2.1
	MD25F-60	14	60	25	20	18.5	M6	1	2.1
	MD32F-65	18	65	32	26	23.5	M8	1	2.1
	MD40F-70	22	70	40	38	29	M10	1	2.3
	MD50F-80	28	80	50	48	36	M12	1	2.6
	MD63F-90	36	90	63	58	46	M16	1	3
	MD80F-105	45	105	80	73	57	M16	1	4.2
	MD90F-105	45	105	90	76	57	M16	1	4.7

(mm)

• Through coolant system installed

## Parts

For separate purchase		
Division	Clamp bolt	Wrench
Designation		
HSK63A	HSK63A-CNS	HSK63-WRENCHI(C)
HSK100A	HSK100A-CNS	HSK100-WRENCHI(C)

# SK-MD

## Modular Arbor

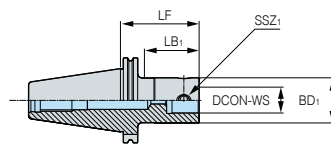


Fig. 1

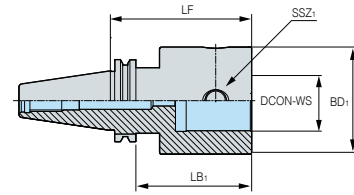


Fig. 2

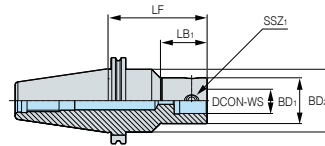


Fig. 3

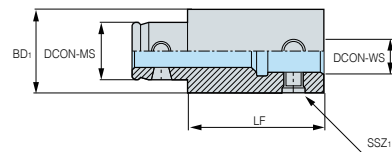
(mm)

Designation	DCON-WS	LF	BD1	BD2	LB1	SSZ1	Fig.	kg	
<b>SK40-</b>	MD19F-80R	11	80	19	30	12	M5	3	1.0
	MD25F-80R	14	80	25	35	22	M6	3	1.1
	MD32F-115R	18	115	32	42	36	M8	3	1.5
	MD40F-60	22	60	40	-	40	M10	1	1.1
	MD40F-100	22	100	40	-	79	M10	1	1.4
	MD50F-75	28	75	50	-	55	M10	1	1.5
	MD50F-100	28	100	50	-	80	M12	1	1.8
	MD63F-70	36	70	63	-	50	M16	2	1.4
<b>SK50-</b>	MD19F-85R	11	85	19	40	12	M5	3	3.0
	MD25F-80R	14	80	25	44	22	M6	3	3.1
	MD25F-105R	14	105	25	44	22	M6	3	3.3
	MD32F-110	18	110	32	-	87	M8	1	3
	MD32F-110R	18	110	32	50	36	M8	3	3.5
	MD40F-100	22	100	40	-	75	M10	1	3.2
	MD40F-145	22	145	40	-	120	M10	1	3.5
	MD40F-220R	22	220	40	60	83	M10	3	5.6
	MD50F-125R	28	125	50	65	60	M12	3	4.3
	MD50F-240R	28	240	50	65	125	M12	3	6.6
	MD63F-75	36	75	63	-	52	M16	1	3.6
	MD63F-130	36	130	63	-	107	M16	1	4.7
	MD63F-230R	36	230	63	80	149	M16	3	7.9
	MD80F-95	45	95	80	-	75	M16	1	4.8
	MD80F-150	45	150	80	-	130	M16	1	6.8
	MD90F-115	45	115	90	-	95	M16	2	6.3
MD90F-165	45	165	90	-	145	M16	2	8.1	


• Through coolant system installed

## EXT

## Extension Bar



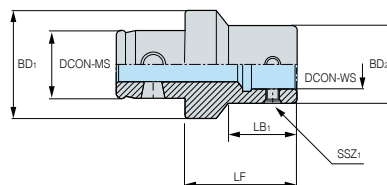
(mm)

Designation	DCON-MS	LF	BD <sub>1</sub>	DCON-WS	SSZ <sub>1</sub>	
<b>EXT</b> 1930F	11	30	19	11	M5	0.1
1950F	11	50	19	11	M5	0.1
2530F	14	30	25	14	M6	0.1
2550F	14	50	25	14	M6	0.2
3235F	18	35	32	18	M8	0.2
3260F	18	60	32	18	M8	0.4
4040F	22	40	40	22	M10	0.4
4090F	22	90	40	22	M10	0.9
5050F	28	50	50	28	M12	0.7
50100F	28	100	50	28	M12	1.4
6360F	36	60	63	36	M16	1.4
63120F	36	120	63	36	M16	2.9
8070F	45	70	80	45	M16	2.5
80120F	45	120	80	45	M16	4.5
9080F	45	80	90	45	M16	3.8
90130F	45	130	90	45	M16	6.4

• Through coolant system is installed

## RDC

## Reducer Bar



(mm)

Designation	DCON-MS	LF	BD <sub>1</sub>	DCON-WS	BD <sub>2</sub>	LB <sub>1</sub>	SSZ <sub>1</sub>	
<b>RDC</b> 3225F	18	30	32	14	25	17.25	M6	0.1
4025F	22	30	40	14	25	16.53	M6	0.3
4032F	22	30	40	18	32	18.55	M8	0.2
5025F	28	30	50	14	25	16.36	M6	0.3
5032F	28	40	50	18	32	21.75	M8	0.3
5040F	28	40	50	22	40	24.75	M10	0.5
6325F	36	30	63	14	25	15.84	M6	0.6
6332F	36	40	63	18	32	29.62	M8	0.6
6340F	36	40	63	22	40	26.85	M10	0.7
6350F	36	45	63	28	50	33.19	M12	0.9
8040F	45	40	80	22	40	24.57	M10	1.2
8050F	45	45	80	28	50	30.91	M12	1.3
8063F	45	50	80	36	63	34.66	M16	1.6

• Through coolant system is installed



# E Technical information for FBH/B

FBH back boring & balanced type

## FBH/B

- Capable of high-speed boring and backboring
- High precision balancing machining: G2.5, Head G6.3
- Minimum adjustment range: 2 $\mu$ m



### Code system



### Back Boring Range Calculation



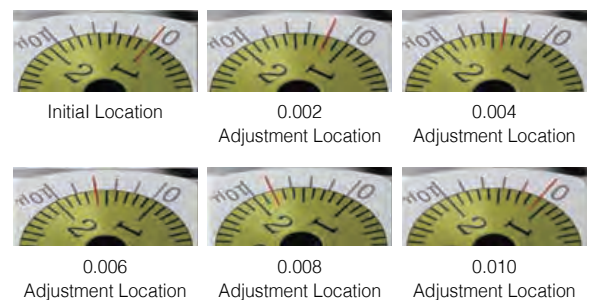
- A: Boring range ( $\varnothing$ )
- B: FBH/B body size ( $\varnothing$ )
- C: Diameter for pass ( $\varnothing$ )

Designation	Min. Diameter for Pass ( $\varnothing$ ) 'C'
FBH1920B	$\varnothing$ 24above
FBH2526B	$\varnothing$ 30.5above
FBH3233B	$\varnothing$ 35above
FBH4042B	$\varnothing$ 44above
FBH5053B	$\varnothing$ 54above
FBH6368B	$\varnothing$ 71.5above
FBH6398B	$\varnothing$ 100above
FBH8098B	$\varnothing$ 100above

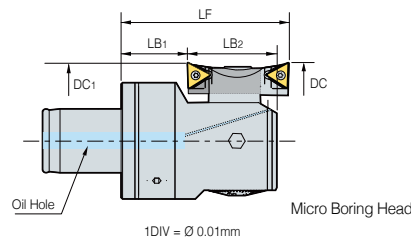
A	Max. Range of Back Boring ( $\varnothing$ )	A Max. Value = [2xC]-B
B	Max. FBH Body Size ( $\varnothing$ )	B Max. Value = [2xC]-A
C	Min. Diameter for Pass ( $\varnothing$ )	C Min. Value = [A+B]/2

### Vernier Scale Adjustment Method

- Fine Adjustment : 2 $\mu$ m Boring Range
- Can be adjusted at a rate of 2 $\mu$ m by using the main scale and vernier scale



### Boring Range



Designation	Boring Range(DC)			Backboring Range(DC1)			
	Min.	Max.	LF	Min.	Max.	LB1	LB2
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

# BT-FBH/B

## Micro Boring Bar(Balanced Type)

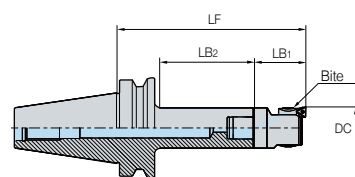


Fig. 1

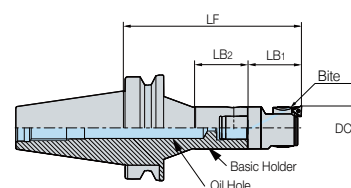


Fig. 2

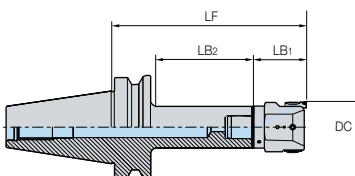
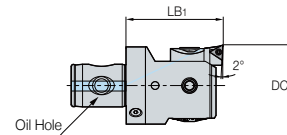


Fig. 3



Head

(mm)

Designation			Boring Range(DC)		DC	LF	LB1	LB2	kg	Fig.
Head Designation	Bite Designation	Arbor Designation	Min.	Max.						
FBH1920B	FBB20N-□-□□	BT30-MD19F-70	20(24)	26(30)	19	105	35	45	0.2	1
FBH2526B	FBB26N-□-□□	BT30-MD25F-90	26(32)	34(40)	25	131	41	63	0.2	1
FBH3233B	FBB33N-□-□□	BT30-MD32F-80	33(40)	43(50)	32	121	41	55	0.3	1
FBH4042B	FBB42N-□-□□	BT30-MD40F-45	42(50)	54(62)	40	95	50	22	0.5	1
FBH4042B	FBB42N-□-□□	BT30-MD40F-60	42(50)	54(62)	40	110	50	36	0.5	1
FBH4042B	FBB42N-□-□□	BT30-MD40F-80	42(50)	54(62)	40	130	50	56	0.5	1
FBH5053B	FBB53N-□-□□	BT30-MD50F-70	53(65)	70(82)	50	128	58	47	0.8	1
FBH1920B	FBB20N-□-□□	BT40-MD19F-70	20(24)	26(30)	19	105	35	40	0.2	1
FBH2526B	FBB26N-□-□□	BT40-MD25F-95	26(32)	34(40)	25	136	41	63	0.2	1
FBH2526B	FBB26N-□-□□	BT40-MD25F-105R	26(32)	34(40)	25	146	41	40	0.2	2
FBH3233B	FBB33N-□-□□	BT40-MD32F-100	33(40)	43(50)	32	141	41	70	0.3	1
FBH3233B	FBB33N-□-□□	BT40-MD32F-115R	33(40)	43(50)	32	156	41	45	0.3	2
FBH4042B	FBB42N-□-□□	BT40-MD40F-60	42(50)	54(62)	40	110	50	31	0.5	1
FBH4042B	FBB42N-□-□□	BT40-MD40F-110R	42(50)	54(62)	40	160	50	60	0.5	2
FBH4042B	FBB42N-□-□□	BT40-MD40F-115	42(50)	54(62)	40	165	50	83	0.5	1
FBH5053B	FBB53N-□-□□	BT40-MD50F-105	53(65)	70(82)	50	163	58	73	0.8	1
FBH6368B	FBB68N-□-□□	BT40-MD63F-64	68(90)	100(122)	63	145	81	37	2.1	3
FBH6368B	FBB68N-□-□□	BT40-MD63F-110	68(90)	100(122)	63	191	81	83	2.1	3
FBH6368B	FBB68N-□-□□	BT40-MD63F-135	68(90)	100(122)	63	216	81	108	2.1	3
FBH6398B	FBB68N-□-□□	BT40-MD63F-64	98(120)	150(172)	63	165	101	37	3.6	3
FBH6398B	FBB68N-□-□□	BT40-MD63F-110	98(120)	150(172)	63	211	101	83	3.6	3
FBH6398B	FBB68N-□-□□	BT40-MD63F-135	98(120)	150(172)	63	236	101	108	3.6	3
FBH8098B	FBB68N-□-□□	BT40-MD80F-100	98(120)	150(172)	80	201	101	73	4.8	3

⚙ Spare Part **E109**   ⚙ FBB bite **E116**

• Head : Main component, Bite/Arbor : For separate purchase   • Through coolant system is installed

\* FBB bite is largely divided into general-type FBB□□N and extended-type (back boring) FBB□□N-1 and is available as FBB□□N-D-C09, FBB□□N-□-T11 depending on the insert.

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 Bar(Balanced Type)

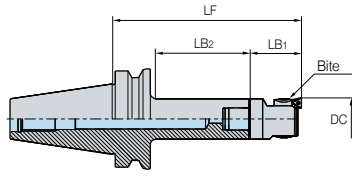


Fig. 1

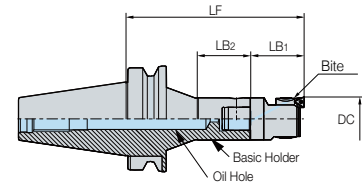


Fig. 2

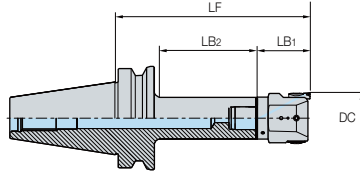
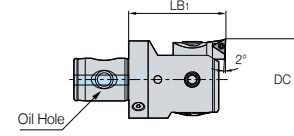


Fig. 3



Head

(mm)

Head Designation	Designation		Boring Range(DC)		DC	DC1	LF	LB1	LB2	kg	Fig.
	Bite Designation	Arbor Designation	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	3
FBH6398B	FBB68N-□-□□	BT50-MD63F-130	98(120)	150(172)	63	36	230.6	100.6	87	3.6	3
FBH6398B	FBB68N-□-□□	BT50-MD63F-95	98(120)	150(172)	63	36	295.6	100.6	152	3.6	3
FBH6398B	FBB68N-□-□□	BT50-MD63F-230	98(120)	150(172)	63	36	330.6	100.6	187	3.6	3
FBH8098B	FBB68N-□-□□	BT50-MD80F-75	98(120)	150(172)	80	45	175.6	100.6	36	4.8	3
FBH8098B	FBB68N-□-□□	BT50-MD80F-110	98(120)	150(172)	80	45	215.6	100.6	69	4.8	3
FBH8098B	FBB68N-□-□□	BT50-MD80F-175	98(120)	150(172)	80	45	275.6	100.6	134	4.8	3

⚙ Spare Part E109    ⚙ FBB bite E116

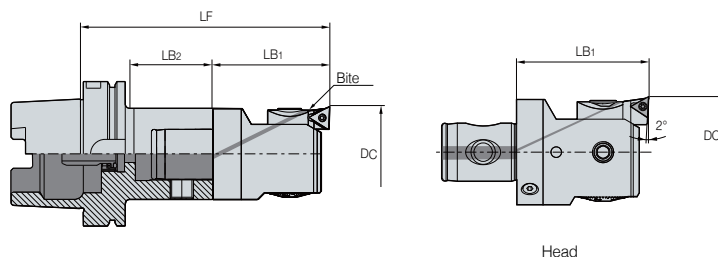
• Head : Main component, Bite/Arbor : For separate purchase    • Through coolant system is installed

\* FBB bite is largely divided into general-type FBB□□N and extended-type (back boring) FBB□□N-1 and is available as FBB□□N-D-C09, FBB□□N-□-T11 depending on the insert.

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 Bar(Balanced Type)



Designation		Boring Range(DC)								(mm)
Head Designation	Bite Designation	Arbor Designation	Min.	Max.	DC	DC1	LF	LB1	LB2	kg
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 **E109**   🔄 FBB bite **E116**

• Head : Main component, Bite/Arbor : For separate purchase   • Through coolant system is installed

\* FBB bite is largely divided into general-type FBB□□N and extended-type (back boring) FBB□□N-1 and is available as FBB□□N-D-C09, FBB□□N-□-T11 depending on the insert.

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

# SK-FBH/B

## Micro Boring Bar(Balanced Type)

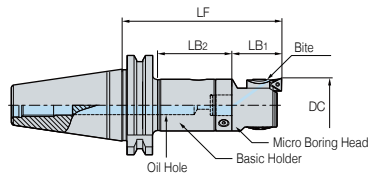


Fig. 1

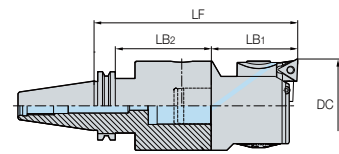


Fig. 2

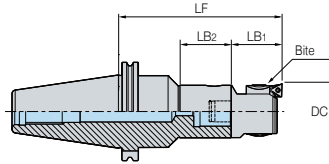
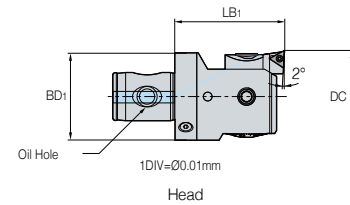


Fig. 3



(mm)

Designation			Boring Range(DC)		DC	LF	LB1	LB2	kg	Fig.
Head Designation	Bite Designation	Arbor Designation	Min.	Max.						
FBH2526B	FBB26N-□-□□	SK40-MD25F-80R	26(32)	34(40)	25	121	41	22	0.2	3
FBH3233B	FBB33N-□-□□	SK40-MD32F-115R	33(40)	43(50)	32	156	41	36	0.3	3
FBH4042B	FBB42N-□-□□	SK40-MD40F-100	42(50)	54(62)	40	150	50	80	0.5	1
FBH5053B	FBB53N-□-□□	SK40-MD50F-100	53(65)	70(82)	50	158	58	80	0.9	1
FBH6368B	FBB68N-□-□□	SK40-MD63F-70	68(90)	100(122)	63	151	81	50	2.3	2
FBH6398B	FBB68N-□-□□	SK40-MD63F-70	98(120)	150(172)	63	171	101	50	3.8	2
FBH2526B	FBB26N-□-□□	SK50-MD25F-105R	26(32)	34(40)	25	146	41	22	0.2	3
FBH3233B	FBB33N-□-□□	SK50-MD32F-110	33(40)	43(50)	32	151	41	87	0.3	1
FBH4042B	FBB42N-□-□□	SK50-MD40F-145	42(50)	54(62)	40	195	50	120	0.5	1
FBH5053B	FBB53N-□-□□	SK50-MD50F-240R	53(65)	70(82)	50	298	58	125	0.9	3
FBH6368B	FBB68N-□-□□	SK50-MD63F-130	68(90)	100(122)	63	211	81	107	2.3	1
FBH6398B	FBB68N-□-□□	SK50-MD63F-130	98(120)	150(172)	63	231	101	107	3.8	1
FBH8098B	FBB68N-□-□□	SK50-MD80F-150	98(120)	150(172)	80	251	101	130	5.1	1

⊗ Spare Part E110   ⊕ FBB bite E116

• Head : Main component, Bite/Arbor : For separate purchase   • Through coolant system is installed

\* FBB bite is largely divided into general-type FBB□□N and extended-type (back boring) FBB□□N-1 and is available as FBB□□N-D-C09, FBB□□N-□-T11 depending on the insert.

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

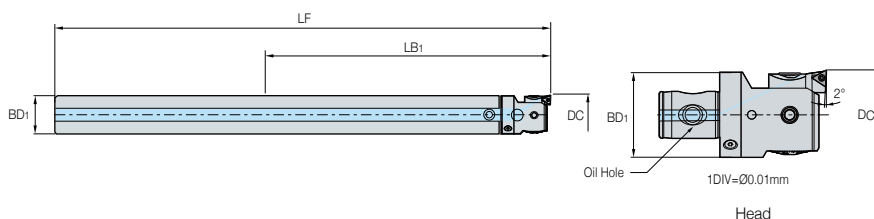
### Parts

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

# S-FBH/B

## Micro Boring Bar(Balanced Type)



(mm)

Designation	Boring Range(DC)		BD1	LF	LB1	Main Component			kg
	Min.	Max.				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 **E111**   🔄 FBB bite **E116**

• S□□W : Cemented carbide shank, S□□ : Steel shank   • Through coolant system is installed

\* FBB bite is largely divided into general-type FBB□□N and extended-type (back boring) FBB□□N-1 and is available as FBB□□N-D-C09, FBB□□N-□-T11 depending on the insert.

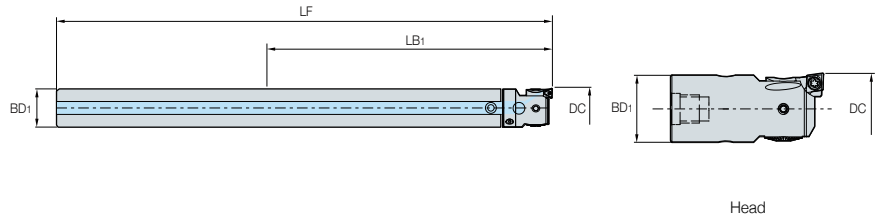
Bite	Applicable Insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

### 🔧 Parts

Main Component			
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 bar with Carbide/Steel



Designation	Boring Range(DC)		BD <sub>1</sub>	LF	LB <sub>1</sub>	Main Component			kg
	Min.	Max.				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 E112 ☞ FBB bite E116

• S□□W : Cemented carbide shank, S□□ : Steel shank • Through coolant system is installed

\* FBB bite is largely divided into general-type FBB□□N and extended-type (back boring) FBB□□N-1 and is available as FBB□□N-D-C09, FBB□□N-□-T11 depending on the insert.

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

Main Component			
Type(FBH)	Lock Screw	FBB	Clamp Screw
			
FBH15	BT02503	FBB15-C	BFTX02505N
FBH18	BT02503	FBB15-C	BFTX02505N

Micro boring bar(damping type)

# FBH/D

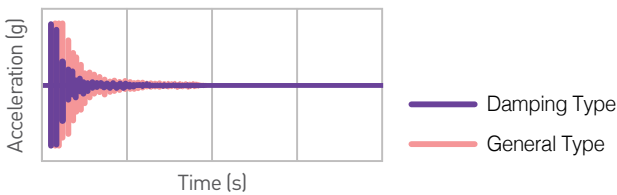
- Stable use on the deep holes is possible through the damping system (Max. 6D)
- Minimum diameter (∅26)-based 6D processing (Max. i nsertion depth L= 160mm)
- Tool life and the ability to bore difficult materials can be increased by reducing impact due to the damping effect
- Both internal and external coolants are available



Code system



Vibration Waveform Comparison



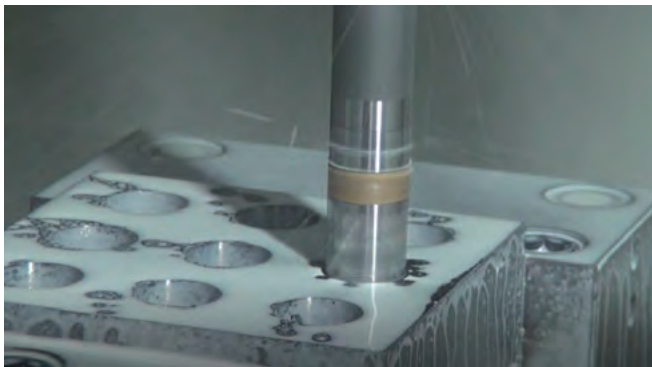
• 제품 내부에 방진 기구를 내장하여 떨림을 최소화 함

Precautions

- Performance may vary depending on conditions, so it is required to perform the work under the recommended conditions as much as possible.
  - Inner oil supply Max. 60 bar
  - Performance may decrease by arbitrary disassembly or impact.
- ※ The head and holder are integrated, so they cannot be disassembled.

Machining Conditions

Cutting Speed Vc (m/min)	150~200
Feed (mm/rev)	0.06~0.1
Depth of Cut (mm)	0.1 (One side)

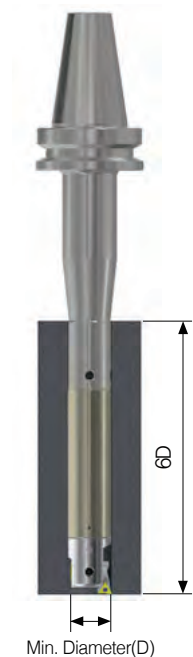


**General Boring Tool**

Insert damage or Severe shaking

**Damping Boring Tool**

Fine machining without vibration





# BT-FBH/D

Micro boring bar(Damping type)

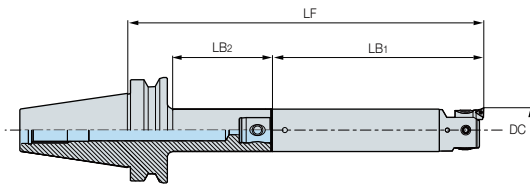


Fig. 1

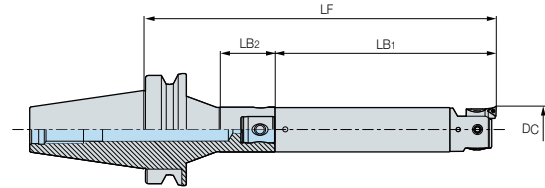
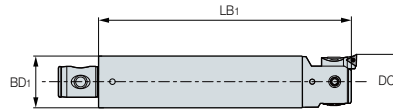


Fig. 2



Head

Head Designation	Bite Designation	Arbor Designation	Boring Range(DC)		LF	LB1	LB2	BD1	Fig.	kg	
			Min.	Max.							
BT40	FBH2526D	FBB26N-□-□□	BT40-MD25F-95	26(32)	34(40)	215	120	63	25	1	0.5
	FBH2526D	FBB26N-□-□□	BT40-MD25F-105R	26(32)	34(40)	225	120	40	25	2	0.5
BT50	FBH2526D	FBB26N-□-□□	BT50-MD25F-105	26(32)	34(40)	225	120	62	25	1	0.5
	FBH2526D	FBB26N-□-□□	BT50-MD25F-120R	26(32)	34(40)	240	120	40	25	2	0.5
	FBH2526D	FBB26N-□-□□	BT50-MD25F-165	26(32)	34(40)	285	120	122	25	1	0.5

⊕ Spare Part E111 ⊕ FBB bite E116 • Through coolant system is installed ※ Head : Main component, Bite/Arbor : For separate purchase

# HSK-FBH/D

Micro boring bar(Damping type)

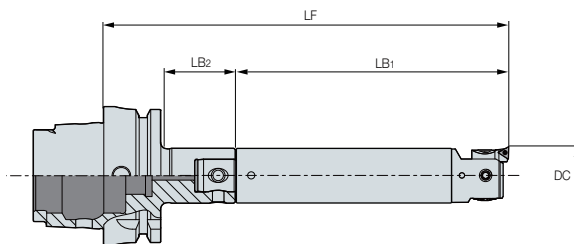


Fig. 1



Head

Head Designation	Bite Designation	Arbor Designation	Boring Range(DC)		LF	LB1	LB2	BD1	Fig.	kg	
			Min.	Max.							
HSK63A	FBH2526D	FBB26N-□-□□	HSK63A-MD25F-60	26(32)	34(40)	180	120	31	25	1	0.5

⊕ Spare Part E111 ⊕ FBB bite E116 • S□□ : Steel shank • Through coolant system is installed ※ Head : Main component, Bite/Arbor : For separate purchase

# SK-FBH/D

Micro boring bar(Damping type)

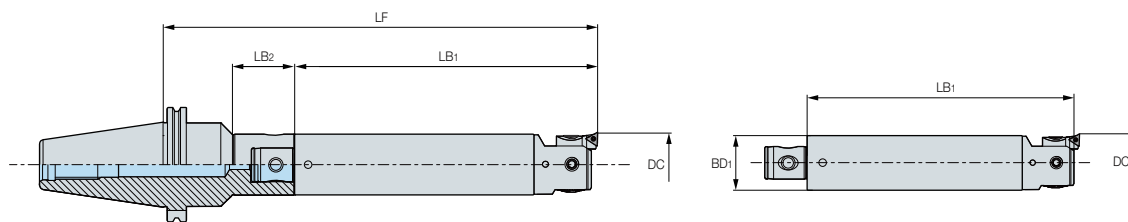


Fig. 1

Head

Head Designation	Bite Designation	Arbor Designation	Boring Range(DC)		LF	LB1	LB2	BD1	Fig.	kg	
			Min.	Max.							
SK40	FBH2526D	FBB26N-□-□□	SK40-MD25F-80R	26(32)	34(40)	200	120	22	25	1	0.5
SK50	FBH2526D	FBB26N-□-□□	SK40-MD25F-105R	26(32)	34(40)	225	120	22	25	1	0.5

(mm)

🔄 Spare Part **E111**   🔄 FBB bite **E116**

• Through coolant system is installed   \* Head : Main component, Bite/Arbor : For separate purchase

# FBB Bite

Designation	Boring Range(DC)	Insert	Insert Screw	Clamp Bolt
FBB15-C [FBH15]	Ø15~Ø18mm	CCET0301□□L	BFTX01604N	BFTX02505N
FBB15-C [FBH18]	Ø18~Ø22mm	CCET0301□□L	BFTX01604N	BFTX02505N
FBB20N	Ø20~Ø26mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0304
FBB20N-C	Ø20~Ø26mm	CCET0401□□L	FTNA0238	BXC0304
FBB20N-1	Ø24~Ø30mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0304
FBB20N-1-C	Ø24~Ø30mm	CCET0401□□L	FTNA0238	BXC0304
FBB26N	Ø26~Ø34mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0405
FBB26N-C	Ø26~Ø34mm	CCET0401□□L	FTNA0238	BXC0405
FBB26N-1	Ø32~Ø40mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0405
FBB26N-1-C	Ø32~Ø40mm	CCET0401□□L	FTNA0238	BXC0405
FBB33N	Ø33~Ø43mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0506
FBB33N-C	Ø33~Ø43mm	CCMT0602□□, CCGT0602□□	BFTX02506N	BXC0506
FBB33N-1	Ø41~Ø50mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0506
FBB33N-1-C	Ø41~Ø50mm	CCMT0602□□, CCGT0602□□L	BFTX02506N	BXC0506
FBB42N	Ø42~Ø54mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0610
FBB42N-C	Ø42~Ø54mm	CCMT0602□□, CCGT0602□□L	BFTX02506N	BXC0610
FBB42N-11	Ø42~Ø54mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB42N-1	Ø50~Ø62mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0610
FBB42N-1-C	Ø50~Ø62mm	CCMT0602□□, CCGT0602□□L	BFTX02506N	BXC0610
FBB42N-1-T11	Ø50~Ø62mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB53N	Ø53~Ø70mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0610
FBB53N-C	Ø53~Ø70mm	CCMT0602□□, CCGT0602□□	BFTX02506N	BXC0610
FBB53N-11	Ø53~Ø70mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB53N-1	Ø65~Ø82mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0610
FBB53N-1-C	Ø65~Ø82mm	CCMT0602□□, CCGT0602□□L	BFTX02506N	BXC0610
FBB53N-1-C09	Ø65~Ø82mm	CCMT09T3□□, CCGT09T3□□L	BFTX0407N	BXC0610
FBB53N-1-T11	Ø65~Ø82mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB68N	Ø68~Ø100mm/Ø98~Ø150mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0810
FBB68N-C	Ø68~Ø100mm/Ø98~Ø150mm	CCMT09T3□□, CCGT09T3□□L	BFTX0407N	BXC0810
FBB68N-11	Ø68~Ø100mm/Ø98~Ø150mm	TPGT1103□□L	BFTX0307A	BXC0810
FBB68N-1	Ø90~Ø122mm/Ø120~Ø172mm	TPGT0802□□L, TPGW0802□□	BFTX0204A	BXC0810
FBB68N-1-C09	Ø90~Ø122mm/Ø120~Ø172mm	CCMT09T3□□, CCGT09T3□□L	BFTX0407N	BXC0810
FBB68N-1-T11	Ø90~Ø122mm/Ø120~Ø172mm	TPGT1103□□L	BFTX0307A	BXC0810

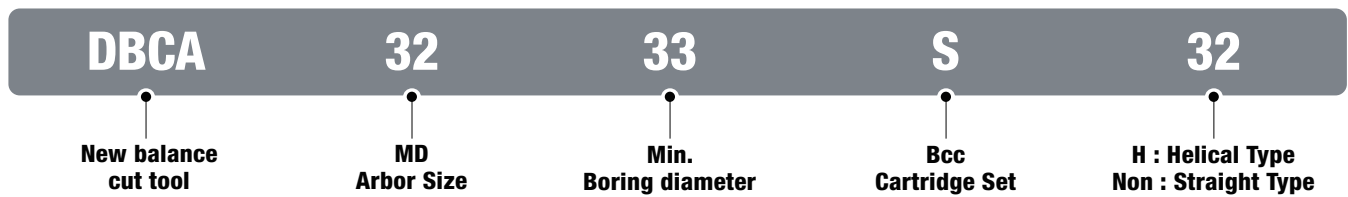
New balance cut tool

# DBCA

- Bidirectional simultaneous diameter adjustment is available due to the twin control structure
- Machining rigidity is reinforced due to the cartridge assist design
- Broader machining area than the existing products
- Boring range :  $\varnothing 28$ - $\varnothing 130$ (mm)



## Code system



## Features

### Helical Type



- Improved capacity to discharge chips from deep holes
- Minimized damage to tools and insert due to chip clogging

<b>Extended Head Length</b>	Deep hole machining implemented
<b>Helical Type</b>	Improved capacity to discharge chips from deep holes

### Boring Area Optimization



- Max. diameter expanded owing to reinforced rigidity
- Boring range expanded per designation versus conventional boring range of DINE

<b>Coolant Hole (Direct Injection to Cutting Edge)</b>	<ul style="list-style-type: none"> <li>• Improved capacity to discharge chips</li> <li>• Improved capacity of machining</li> </ul>
--	--

## 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-DBCA-H

Helical type

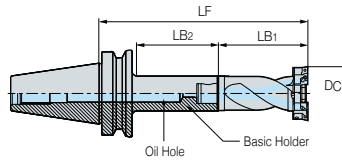


Fig. 1

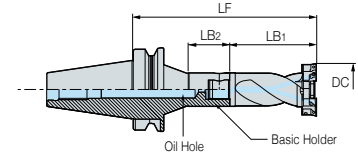


Fig. 2

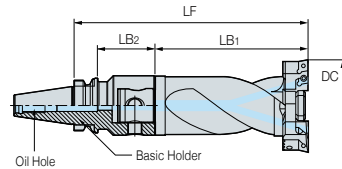
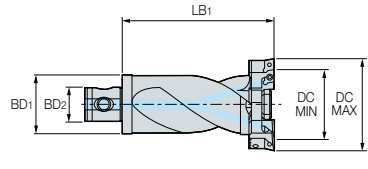


Fig. 3



Head

(mm)

Designation		Boring Range(DC)		BD2	BD1	LF	LB1	LB2	kg	Fig.
Head Designation	Arbor Designation	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	3
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	3
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

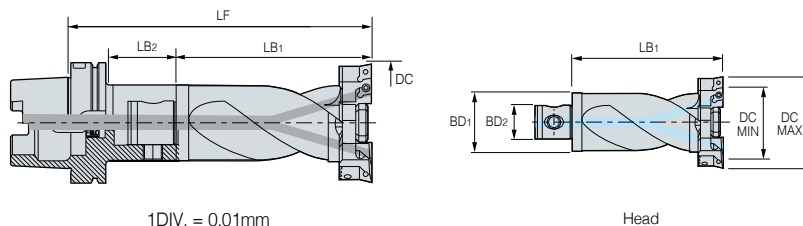
☞ Spare Part **E119**

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is installed

\* In the above table, the Arbor designation is an example designation 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-DBCA-H

Helical type



1DIV. = 0.01mm

Head

(mm)

Designation		Boring Range(DC)		BD <sub>2</sub>	BD <sub>1</sub>	LF	LB <sub>1</sub>	LB <sub>2</sub>	kg
Head Designation	Arbor Designation	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

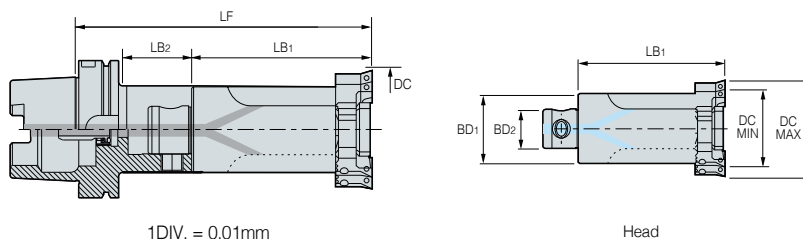
➔ Spare Part E119

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is installed

\* In the above table, the Arbor designation is an example designation 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-DBCA-S

Straight type



1DIV. = 0.01mm

Head

(mm)

Designation		Boring Range(DC)		BD <sub>2</sub>	BD <sub>1</sub>	LF	LB <sub>1</sub>	LB <sub>2</sub>	kg
Head Designation	Arbor Designation	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 E119

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is installed

\* In the above table, the Arbor designation is an example designation 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

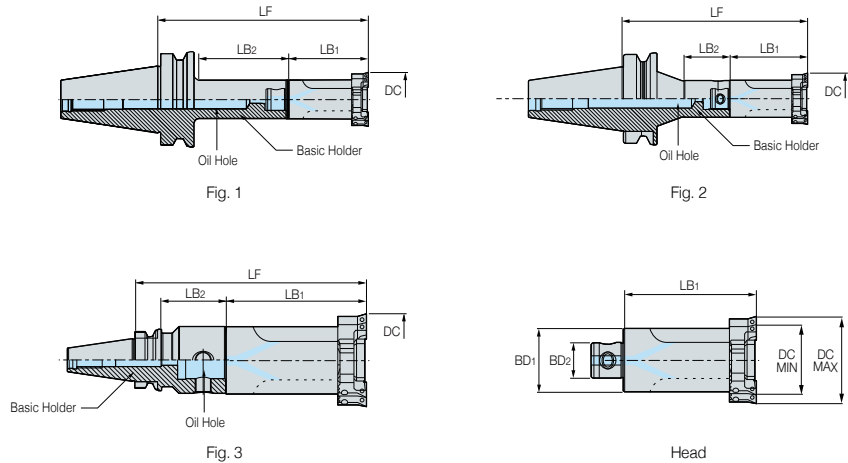
## Parts

Division	For separate purchase
Internal coolant system	

Classification by shank	
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

# BT-DBCA-S

Straight type



(mm)

Designation		Boring Range(DC)		BD2	BD1	LF	LB1	LB2	kg	Fig.
Head Designation	Arbor Designation	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	3
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	3
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 **E122**

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is installed

\* In the above table, the Arbor designation is an example designation 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

Straight type

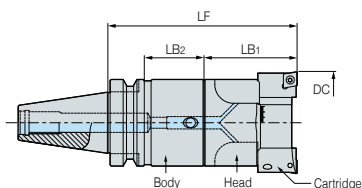


Fig. 1

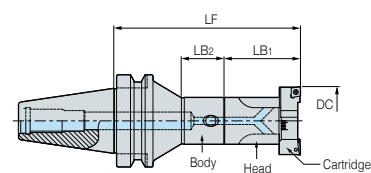


Fig. 2

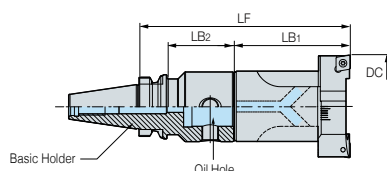
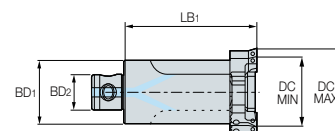


Fig. 3



Head

(mm)

Designation		Boring Range(DC)		BD2	BD1	LF	LB1	LB2	kg	Fig.
Head Designation	Arbor Designation	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	3
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	3
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 E122

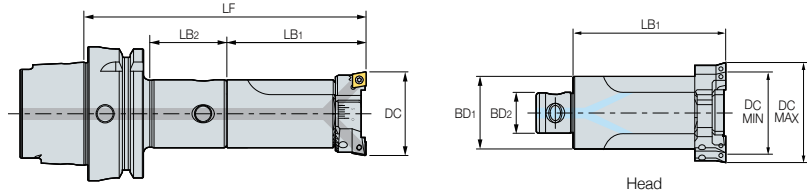
• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is installed

\* In the above table, the Arbor designation is an example designation 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(DC)		BD2	BD1	LF	LB1	LB2	kg
Head Designation	Arbor Designation	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 **E122**

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is installed

\* In the above table, the Arbor designation is an example designation 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

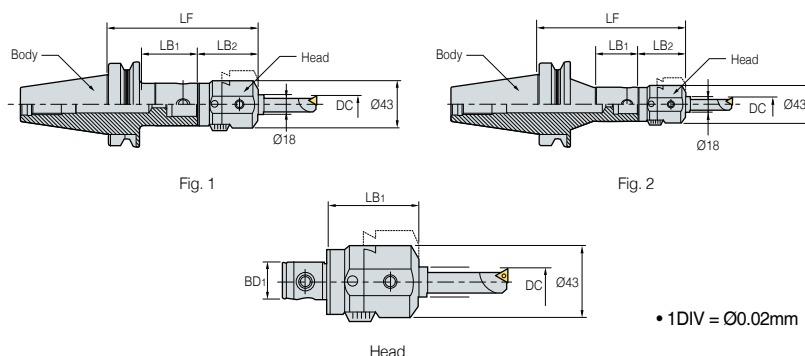
Basic									
Division	Head	Spring Pin	Wrench Bolt	Wrench	Cartridge	Set Screw	Wrench	Clamp Screw	Torx Wrench
<b>Parts</b>									
<b>Designation</b>									
<b>DBC2528S</b>	DBC2528	SP0308	BX0420	LW-3	BCC28-EC	BT0308	LW-1.5	BFTX02506N	TRX8
<b>DBC3238S</b>	DBC3238	SP0410	BX0525	LW-4	BCC38-EC	BT0310	LW-1.5	BFTX02506M	TRX8
<b>DBC5054S</b>	DBC5054	SP0616	BX0630	LW-5	BCC54-EC	BT0414	LW-2	BFTX0407N	TRX15
<b>DBC6374S</b>	DBC6374	SP1018	BX0635	LW-5	BCC74-EC	BT0520	LW-2.5	BFTX0511N	TRX20
<b>DBC80100S</b>	DBC80100	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
<b>Parts</b>									
<b>Designation</b>									
<b>DBC2528S</b>	DBC2528	SP0308	BX0415	LW-3	BCC28	BT0306	LW-1.5	FTKA02565	TRX7
<b>DBC3235S</b>	DBC3235	SP0410	BX0515	LW-4	BCC35	BT0308			
<b>DBC4046S</b>	DBC4046	SP0516	BX0620	LW-5	BCC46	BT0410	LW-2	FTNA0408	TRX15
<b>DBC5058S</b>	DBC5058	SP0616			BCC58	BT0412			
<b>DBC6374S</b>	DBC6374	SP1018	BX0830	LW-6	BCC74	BT0516	LW-2.5	BFTX0511N	TRX20
<b>DBC8094S</b>	DBC8094	SP1020	BX1035	LW-8	BCC94	BT0620	LW-3		
<b>DBC120S</b>	DBC120N	SP1020	BX0830	LW-6	BCC120	BT0830	LW-4	BFTX0511N	TRX20

# BT-SMB

## Small Micro Boring Bar



• 1DIV = Ø0.02mm

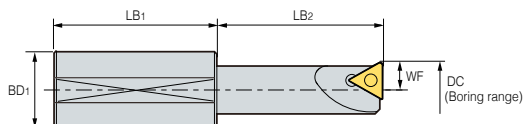
(mm)

Designation			Boring Range(DC)	LF	LB1	LB2	kg	Fig.
Head Designation	Arbor Designation	Bite Designation						
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 Range : 10mm

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is not available

### BB Bite(for SMB)



(mm)

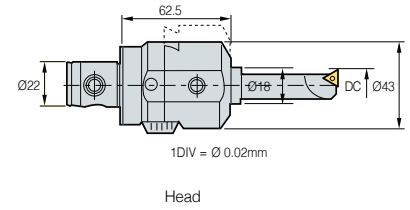
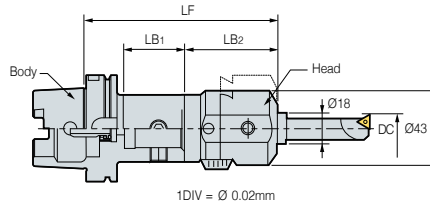
Designation	Boring Range(DC)		BD1	LB1	LB2	WF	kg	Insert	Screw	
	Min.	Max.								
BB	18-7(S)	7	27	18	30	30	3.5	0.1	TBGT0601□□L	BFTX0204A
	18-9(S)	9	29	18	30	40	4.5	0.1	TPGT0802□□L	BFTX0204A
	18-11(S)	11	31	18	30	45	5.5	0.1	TPGT1103□□L	BFTX0307A
	18-13(S)	13	33	18	40	45	6.5	0.1	TPGT1103□□L	BFTX0307A
	18-15(S)	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

### Parts

Division	Basic			For separate purchase	
	Boring Head	Taper Screw	Wrench	Boring Bite	MD Arbor
Parts					
Designation					
SMB	SMB4022	BTT1013F	LW-2.5	BB18	MD40F

# HSK-SMB

Small Micro Boring Bar

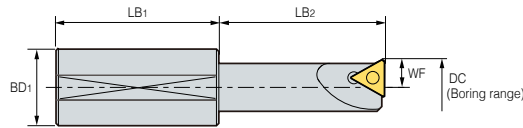


Designation			Boring Range(DC)	LF	LB1	LB2	kg
Head Designation	Arbor Designation	Bite Designation					
SMB4022	HSK63A-MD40F - 70	BB18-□(S)	Ø6.0~Ø34.0	132.5	41	62.5	0.6

\* Adjustment Range : 10mm

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is not available

## BB Bite(for SMB)



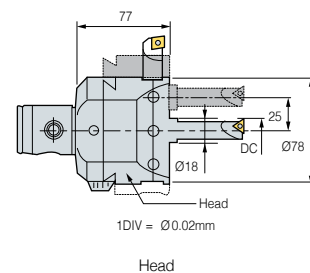
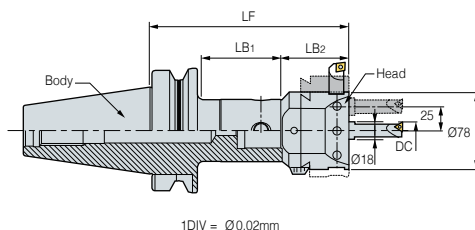
Designation	Boring Range(DC)		BD1	LB1	LB2	WF	kg	Insert	Screw	
	Min.	Max.								
BB	18-7(S)	7	27	18	30	30	3.5	0.1	TBGT0601□□L	BFTX0204A
	18-9(S)	9	29	18	30	40	4.5	0.1	TPGT0802□□L	BFTX0204A
	18-11(S)	11	31	18	30	45	5.5	0.1	TPGT1103□□L	BFTX0307A
	18-13(S)	13	33	18	40	45	6.5	0.1	TPGT1103□□L	BFTX0307A
	18-15(S)	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

## Parts

Basic				For separate purchase	
Division	Boring Head	Taper Screw	Wrench	Boring Bite	MD Arbor
Parts					
Designation					
SMB	SMB4022	BTT1013F	LW-2.5	BB18	MD40F

# BT-KMB

## Micro Boring



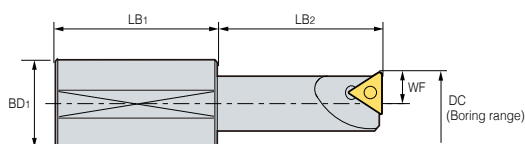
(mm)

Designation			Boring Range(DC)		LF	LB <sub>1</sub>	LB <sub>2</sub>	
Head Designation	Arbor Designation	Bite Designation						
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 Range : 17mm

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is not available

### BB Bite(for KMB)



(mm)

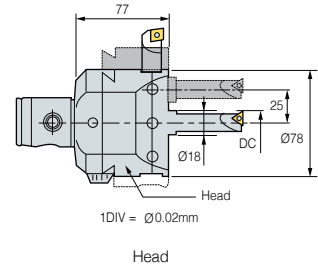
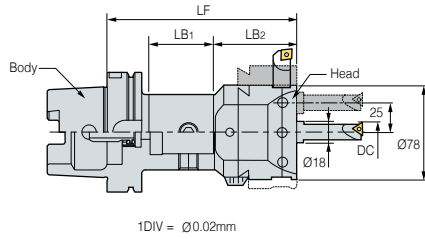
Designation	Boring Range(DC)				BD <sub>1</sub>	LB <sub>1</sub>	LB <sub>2</sub>	WF		Insert	Screw
	Center	Eccentric									
BB	18-7(S)	7	40	27	91	18	30	30	3.5	0.1	TBGT0601□□L BFTX0204A
	18-9(S)	9	42	29	93	18	30	40	4.5	0.1	TPGT0802□□L BFTX0204A
	18-11(S)	11	44	31	95	18	30	45	5.5	0.1	TPGT1103□□L BFTX0307A
	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

### Parts

Basic				For separate purchase	
Division	Boring Head	Taper Screw	Wrench	Boring Bite	MD Arbor
Parts					
Designation					
KMB	KMB6336	BTT1620F	LW-4.0	BB18	MD63F

# HSK-KMB

Micro Boring



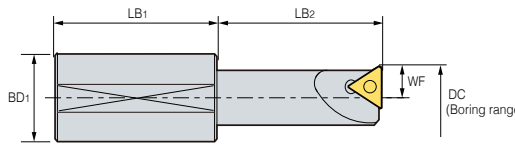
(mm)

Designation			Boring Range(DC)		LF	LB1	LB2	kg
Head Designation	Arbor Designation	Bite Designation	Center Hole	Ø8.0~Ø38.0				
KMB6336	HSK63A-MD63F-95	BB18-□(S)			172	69	77	2.2

\* Adjustment Range : 17mm

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is not available

## BB Bite(for KMB)



(mm)

Designation	Boring Range(DC)				BD1	LB1	LB2	WF	kg	Insert	Screw
	Center	Eccentric									
<b>BB</b>	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

## Parts

Basic				For separate purchase	
Division	Boring Head	Taper Screw	Wrench	Boring Bite	MD Arbor
Parts					
Designation					
KMB	KMB6336	BTT1620F	LW-4.0	BB18	MD63F

# BT-SMH

## Small Micro Boring Bar (Precision type)

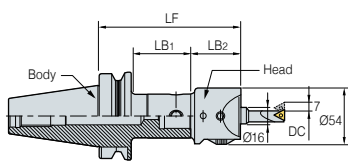


Fig. 1

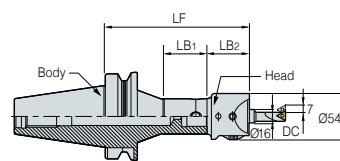
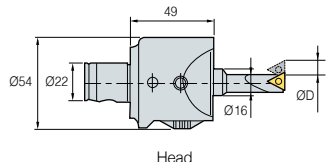


Fig. 2



Head

• 1DIV = Ø0.01mm

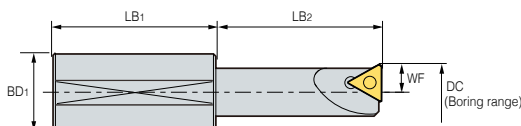
(mm)

Designation			Boring Range(DC)	LF	LB1	LB2	kg	Fig.
Head Designation	Arbor Designation	Bite Designation						
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 Range : 7mm

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is not available

### BB Bite(for SMH)



(mm)

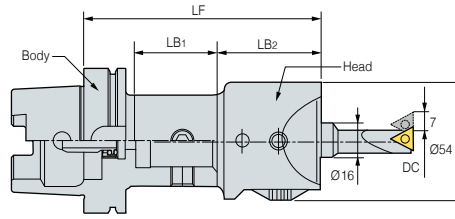
Designation	Boring Range(DC)	BD1	LB1	LB2	WF	Insert	Screw	Wrench		
									Min.	Max.
BB	16-5(S)	5	19	16	34	20	2.75	WBGT0601□□L	BFTX0203A	TRX06
	16-7(S)	7	21	16	34	30	3.5	TBGT0601□□L	BFTX0204A	TRX06
	16-9(S)	9	23	16	34	40	4.5	TPGT0802□□L	BFTX0204A	TRX06
	16-11(S)	11	25	16	34	45	5.5	TPGT1103□□L	BFTX0307A	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

### Parts

Basic				For separate purchase	
Division	Boring Head	Taper Screw	Wrench	Boring Bite	MD Arbor
Parts					
Designation					
SMH	SMH4022	BTT1013F	LW-3.0	BB16	MD40F

## HSK-SMH

Small Micro Boring Bar (Precision type)



• 1DIV = Ø0.01mm

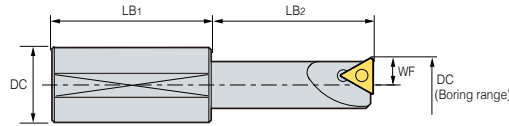
(mm)

Designation			Boring Range(DC)	LF	LB1	LB2	kg
Head Designation	Arbor Designation	Bite Designation					
SMH4022	HSK63-MD40F-70	BB16-□(S)	Ø6.0~Ø34.0	132.5	41	49	0.6

\* Adjustment Range : 7mm

• Head : Main component, Bite/Arbor : For separate purchase • Through coolant system is not available

### BB Bite(for SMH)



(mm)

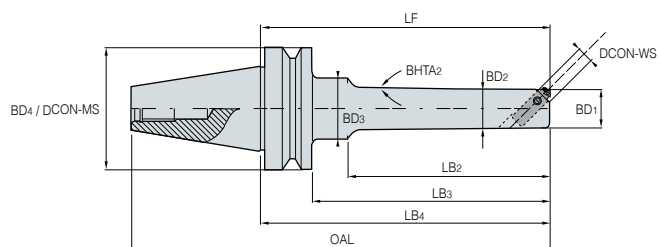
Designation	Boring Range(DC)		Insert	Screw	kg	
	Min.	Max.				
BB	16-7(S)	8	28	TBGT0601□□L	BFTX0204A	0.1
	16-9(S)	10	30	TPGT0802□□L	BFTX0204A	0.1
	16-11(S)	12	32	TPGT1103□□L	BFTX0307A	0.1
	16-13(S)	14	34	TPGT1103□□L	BFTX0307A	0.1
	16-15(S)	16	36	TPGT1604□□L	BFTX0307A	0.2
	16-17(S)	18	38	TPGT1604□□L	BFTX0307A	0.2

### Parts


Basic				For separate purchase	
Division	Boring Head	Taper Screw	Wrench	Boring Bite	MD Arbor
Parts					
Designation					
SMH	SMH4022	BTT1013F	LW-3.0	BB16	MD40F

# BT-BKA

## Micro Boring Bar



(mm)

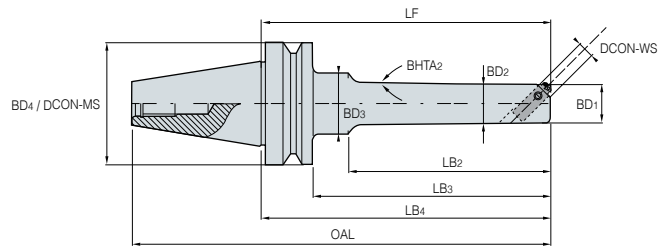
Designation	FZ UNIT	LF	LB1	LB2	BD1	BD2	DCON-WS	SSZ		
<b>BT30-</b>	<b>BKA28-150</b>	FZ10-□□-3[S]	150	123	-	25	-	10	M6	0.9
	<b>BKA36-150</b>	FZ12-□□-3[S]	150	125	-	32	-	12	M8	1.2
	<b>BKA45-150</b>	FZ16-□□-3[S]	150	128	-	40	-	16	M10	1.6
<b>BT40-</b>	<b>BKA23-150</b>	FZ8-□□-3[S]	150	95	40	20	22	8	M6	1.6
	<b>BKA23-225</b>	FZ8-□□-3[S]	225	95	40	20	22	8	M6	2.8
	<b>BKA28-165</b>	FZ10-□□-3[S]	165	122	50	25	26	10	M6	1.5
	<b>BKA28-225</b>	FZ10-□□-3[S]	225	125	50	25	26	10	M6	2.6
	<b>BKA36-165</b>	FZ12-□□-3[S]	165	133	60	32	35	12	M8	1.9
	<b>BKA36-225</b>	FZ12-□□-3[S]	225	193	60	32	35	12	M8	2.8
	<b>BKA45-165</b>	FZ16-□□-3[S]	165	133	70	40	44	16	M10	2.3
	<b>BKA45-225</b>	FZ16-□□-3[S]	225	208	70	40	44	16	M10	3
	<b>BKA56-165</b>	FZ20-□□-3[S]	165	-	70	50	54	20	M12	3
	<b>BKA56-240</b>	FZ20-□□-3[S]	240	-	70	50	54	20	M12	4.2
	<b>BKA72-165</b>	FZ25-□□-3[S]	165	-	-	63	-	25	M16	4
	<b>BKA72-240</b>	FZ25-□□-3[S]	240	-	-	63	-	25	M16	5.7
	<b>BKA90-165</b>	FZ32-□□-3[S]	165	-	100	80	-	32	M20	4.9
	<b>BKA90-240</b>	FZ32-□□-3[S]	240	-	100	80	-	32	M20	6.8

• Through coolant system is not available



## BT-BKA

Micro Boring Bar



(mm)

Designation	FZ UNIT	LF	LB1	LB2	BD1	BD2	DCON-WS	SSZ		
<b>BT50-</b>	<b>BKA23-150</b>	FZ8-□□-3[S]	150	95	40	20	22	8	M6	4.2
	<b>BKA23-225</b>	FZ8-□□-3[S]	225	95	40	20	22	8	M6	5.3
	<b>BKA28-165</b>	FZ10-□□-3[S]	165	122	50	25	26	10	M6	4.1
	<b>BKA28-225</b>	FZ10-□□-3[S]	225	122	50	25	26	10	M6	5.1
	<b>BKA36-165</b>	FZ12-□□-3[S]	165	122	60	32	35	12	M8	4.4
	<b>BKA36-225</b>	FZ12-□□-3[S]	225	182	60	32	35	12	M8	4.9
	<b>BKA45-165</b>	FZ16-□□-3[S]	165	122	70	40	44	16	M10	4.8
	<b>BKA45-225</b>	FZ16-□□-3[S]	225	182	70	40	44	16	M10	5.5
	<b>BKA56-165</b>	FZ20-□□-3[S]	165	122	70	50	54	20	M12	5.5
	<b>BKA56-240</b>	FZ20-□□-3[S]	240	197	70	50	54	20	M12	6.7
	<b>BKA72-165</b>	FZ25-□□-3[S]	165	122	80	63	68	25	M16	6.5
	<b>BKA72-240</b>	FZ25-□□-3[S]	240	197	80	63	68	25	M16	8.5
	<b>BKA90-165</b>	FZ32-□□-3[S]	165	122	90	80	-	32	M20	7.9
	<b>BKA90-240</b>	FZ32-□□-3[S]	240	197	-	80	-	32	M20	10.9
<b>BKA110-270</b>	FZ32-□□-3[S]	270	-	-	100	-	32	M20	14.8	

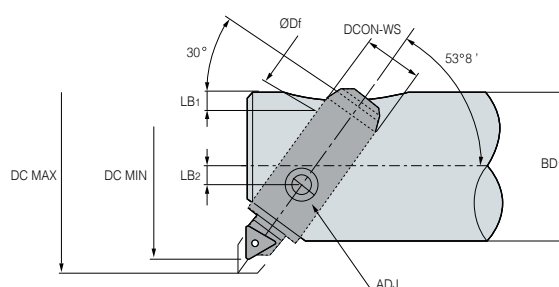
• Through coolant system is not available

### Parts

Basic		For separate purchase		
Division	Set Screw	Division	Unit	Wrench
<b>Parts</b>		<b>Parts</b>		
<b>Designation</b>		<b>Designation</b>		
<b>BKA23</b>	BTF0606	<b>BKA23</b>	FZ8-23-3(P10.K10)	LW-3
<b>BKA28</b>	BTF0606	<b>BKA28</b>	FZ10-28-3(S) FZ10-32-3(S)	LW-3
<b>BKA36</b>	BTF0808	<b>BKA36</b>	FZ12-36-3(S) FZ12-40-3(S)	LW-4
<b>BKA45</b>	BTF1010	<b>BKA45</b>	FZ16-45-3(S) FZ16-50-3(S)	LW-5
<b>BKA56</b>	BTF1212	<b>BKA56</b>	FZ20-56-3(S) FZ20-64-3(S)	LW-4
<b>BKA72</b>	BTF1616	<b>BKA72</b>	FZ25-72-3(S) FZ25-80-3(S)	LW-8
<b>BKA90</b>	BTF2020	<b>BKA90</b>	FZ32-90-3(S) FZ32-100-3(S)	LW-10
<b>BKA110</b>	BTF2020	<b>BKA110</b>	FZ32-110-3(S) FZ32-125-3(S)	LW-10

# FZ UNIT

## FZ Unit Inclined Mounting type



Designation	Boring Range(DC)		Insert Holder(ISO)	Insert(ISO)	BD <sub>1</sub>	LB <sub>1</sub>	ØDf	LB <sub>2</sub>	ADJ	DCON-MS	kg	
	Min.	Max.										
FZ8-	23-3(P10,K10)	23	29(32)	8Z3 (Brazed tip)	-	20	3	8	1.5	M6	8	0.04
	26-3(P10,K10)	26	32(34)	8Z3 (Brazed tip)	-	20	3	8	1.5	M6	8	0.04
FZ10-	28-3(S)	28	34(38)	U10Z3S	TBGT0601□□L	25	3.5	8	2	M6	10	0.1
	32-3(S)	32	38(44)	U10Z3S	TBGT0601□□L	25	3.5	8	2	M6	10	0.1
FZ12-	36-3(S)	36	44(48)	U12Z3S	TBGT0601□□L	32	4	10	2.5	M8	12	0.1
	40-3(S)	40	48(55)	U12Z3S	TBGT0601□□L	32	4	10	2.5	M8	12	0.1
FZ16-	45-3(S)	45	54(60)	U16Z3S	TBGT0802□□L	40	6.5	12	3	M10	16	0.1
	50-3(S)	50	59(68)	U16Z3S	TBGT0802□□L	40	6.5	12	3	M10	16	0.1
FZ20-	56-3(S)	56	68(78)	U20Z3S	TBGT0802□□L	50	7	16	5	M12	20	0.2
	64-3(S)	64	76(90)	U20Z3S	TBGT0802□□L	50	7	16	5	M12	20	0.2
FZ25-	72-3(S)	72	88(100)	U25Z3S	TPGT1103□□L	63	8	20	4	M16	25	0.3
	80-3(S)	80	96(114)	U25Z3S	TPGT1103□□L	63	8	20	4	M16	25	0.3
FZ32-	90-3(S)	90	114(126)	U32Z3S	TPGT1103□□L	80	10	25	6	M20	32	0.6
	100-3(S)	100	124(140)	U32Z3S	TPGT1103□□L	80	10	25	6	M20	32	0.6
	110-3(S)	110	134(150)	U32Z3S	TPGT1103□□L	100	10	25	12	M20	32	0.7
	125-3(S)	125	149(175)	U32Z3S	TPGT1103□□L	100	10	25	12	M20	32	0.8

• Through coolant system is not available

### Parts

Division	Basic					For separate purchase
	Housing Set	Spindle	Insert Screw	Torx Wrench	L-Wrench	Wrench
Parts						
Designation						
FZ8-23, 26-3, P10	8-23, 26-3	8Z3(P10)	-	-	LW-1.5	R0/N0
FZ8-23, 26-3, K10	8-23, 26-3	8Z3(K10)	-	-	LW-1.5	R0/N0
FZ10-28, 32-3(S)	10-28, 32-3	U10Z3-TB06	BFTX0204A	TRX6	LW-2.0	R2/N1
FZ12-36, 40-3(S)	12-36, 40-3	U12Z3-TB06	BFTX0204A	TRX6	LW-2.5	R2A/N2
FZ16-45, 50-3(S)	16-45, 50-3	U16Z3-TP08	BFTX0204A	TRX6	LW-3.0	N3
FZ20-56, 64-3(S)	20-56, 64-3	U20Z3-TP08	BFTX0204A	TRX6	LW-4.0	R4/N4
FZ25-72, 80-3(S)	25-72, 80-3	U25Z3-TP11	BFTX0307A	TRX10	LW-4.0	ZV25
FZ32-90, 100, 110, 125-3(S)	32-90, 100-3	U32Z3-TP11	BFTX0307A	TRX10	LW-5.0	R5/N5

# E Angular head

## ANGULAR HEAD

# ANGULAR HEAD

- Doubled effect by one equipment / Available for various angles
- Lighter aluminum body



### Code system



### Name of angular head parts



### 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)

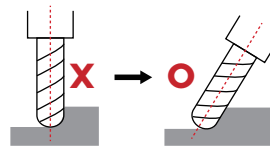
- Reinforced type Better performance by improving existing universal Angular head
  - Stability on large mold machining
  - Can use 32mm Ball Endmill



## KHU

### Universal type KHU (Free angle)

- Adjustable angle-type angular head that enables flexible machining
  - Wide vertical ( $0^{\circ}\sim 90^{\circ}$ ) and horizontal ( $0^{\circ}\sim 360^{\circ}$ ) 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%
  - Stability 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  $360^{\circ}$  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 ( $90^{\circ}$ type)

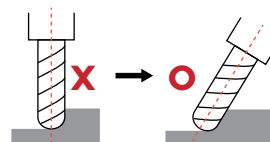
- Fixed angle type angular head that enables flexible machining
  - Adjusting angle up to  $360^{\circ}$
  - To use Tap-exclusive Collet, please contact us in advance
  - HSK and SK type are order made



## KAC

### Modular type KAC ( $45^{\circ}$ type)

- Fixed angle type angular head that enables flexible machining
  - Adjusting angle up to  $360^{\circ}$
  - To use Tap-exclusive Collet, please contact us in advance
  - $45^{\circ}$ -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

## KAH(90° type)\_Fixed Angle-type Angular Head

# BT-KAH

### Features

**Fixed angle type angular head that enables flexible machining**

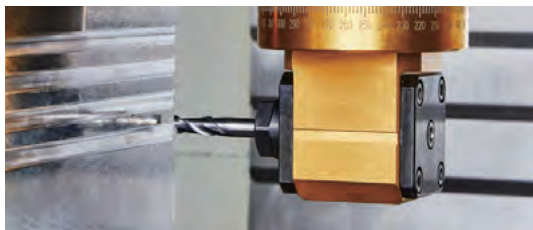
- Adjustable angle up to 360° degree
- HSK and SK types are customizable
- ATC (automatic tool change) available
- Tool rotates in the opposite direction to that of spindle

### BT-30 KAH Features

- A small angular head for small equipment (BT30)
- Light weight of 2.6 KG for easy installation
- Available multi-surface processing
- Its processing angle can be freely adjusted by 360° on both sides
- ER11 size collet applied

### BT-KAH Structure

- Uses spiral bevel gear (with axial angle of 90°)
- Reduced vibration and noise
- Small backlash
- Thanks to the use of a 1 : 1 gear ratio, can use without complex calculations
- Reverse-rotation direction compared to spindle (CW:CCW)



### Machining Example

Model : BT50-KAH20-200

Cutting tool	Workpiece	Depth of cut	RPMX	Feed (mm/min)	Feed (mm/rev)	BT50-KAH20-200
Ø16-2 Flute Endmill(HSS), Over length-40mm	S45C	3	700	98	0.14	
	S45C	4	500	60	0.12	
	Al	7	900	72	0.08	
	Al	4	1800	144	0.08	

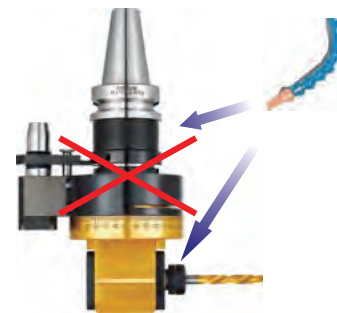
### Parts

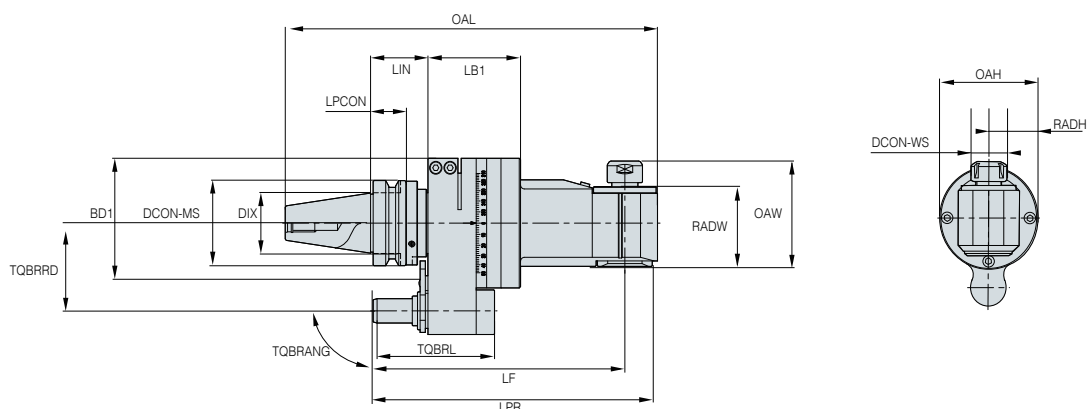
Angular head	Basic		Accessories	Positioning Block
	Nut	Spanner	GERC Collet	
KAH7	R11-AH	S-17	GERC11-ØD	
KHU10	R16-AH(M20)	S-25	GERC16-ØD	
KAH13	RU20-AH	35-38	GERC20-ØD	
KHU20	RU32-AH	48-52	GERC32-ØD	



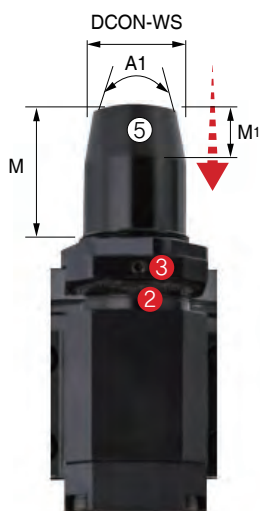
### Precautions

- Do not inject cutting oil direct to the Angular Head body.





**Positioning Pin**



Shank	M	M1	A1	DCON-WS
BT30	Max : 23 Min : 17	8	20°	Ø15
BT40	Max : 32 Min : 26	10	20°	Ø19.6
BT50	Max : 35 Min : 29	15	20°	Ø28

NO	Name
①	Head
②	Rotation Angle Split-gradation (Freely Adjustable for 360 Position)
③	Fix Pin Block
④	Jaw Key
⑤	Height Adjusting Wrench Hole

NO	Name	Designation
①	Head angle fix bolt	BX0618
②	Set screw	BT0404
③	Position pin height fix bolt	BX50630

Designation	DCON-MS	DIX	BD1	TOBRRD	OAH	DCON-WS	RADH	LF	LPR	TOBRL	TOBRANG	LPCON	LIN	LB1	OAL	RADW	OAW	Gear ratio	RPMX	Collet	kg
<b>BT30- KAH7-120</b>	46	42	72	55	40	11	20	120	140	61	90	22	56	39	188.4	24.5	61.5	1:1	5,000	GERC11	2.6
<b>BT40- KAH7-170</b>	63	50	96	65	40	11	20	170	190	94	90	27	44	71	255.4	24.5	61.5	1:1	5,000	GERC11	5.8
<b>KAH10-195</b>	63	50	96	65	58	16	29	195	220	94	90	27	44	71	285.4	32	78	1:1	5,000	GERC16	6.2
<b>KAH13-165</b>	63	50	96	65	60	20	30	165	193	94	90	27	44	71	258.4	35	88	1:1	5,000	GERC20	6.0
<b>KAH20-180</b>	63	50	96	65	76	32	38	180	218	94	90	27	44	71	283.4	49	120	1:1	3,500	GERC32	7.5
<b>BT50- KAH07-220</b>	100	87	114	80	40	11	20	220	240	104	90	38	57	54	341.8	24.5	61.5	1:1	3,500	GERC11	10.7
<b>KAH10-215</b>	100	87	114	80	58	16	29	215	240	104	90	38	57	54	341.8	32	78	1:1	3,500	GERC16	11.0
<b>KAH10-260</b>	100	87	114	80	58	16	29	260	285	104	90	38	57	54	386.8	32	78	1:1	3,500	GERC16	11.4
<b>KAH13-260</b>	100	87	114	80	60	20	30	260	288	104	90	38	57	54	389.8	35	88	1:1	3,500	GERC20	12.0
<b>KAH20-200</b>	100	87	114	80	76	32	38	200	238	104	90	38	57	54	339.8	49	120	1:1	3,500	GERC32	11.6
<b>KAH20-240</b>	100	87	114	80	76	32	38	240	278	140	90	38	57	54	379.8	49	120	1:1	3,500	GERC32	13.5

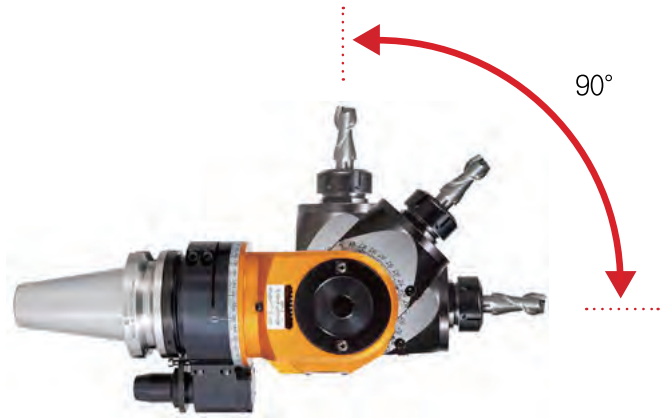
KHU(Free angle)\_Collet Type Angular Head (0°-90°)

## BT-KHU

### Features

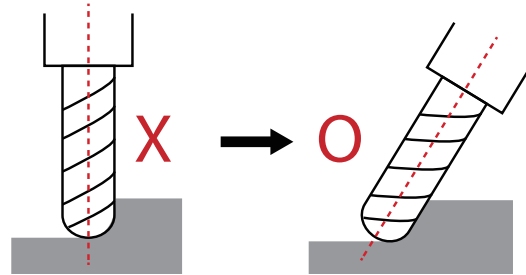
Adjustable angle-type angular head that enables flexible machining

- Wide vertical (0° ~90°) and horizontal (0° ~360°) machining angle range
- HSK and SK types are customizable



### Precautions

» Do not inject cutting oil direct to the Angular Head body.



Wear of the ball endmill blade and defective surface roughness of the workpiece can occur, so please slope the edge of the ball endmill when machining

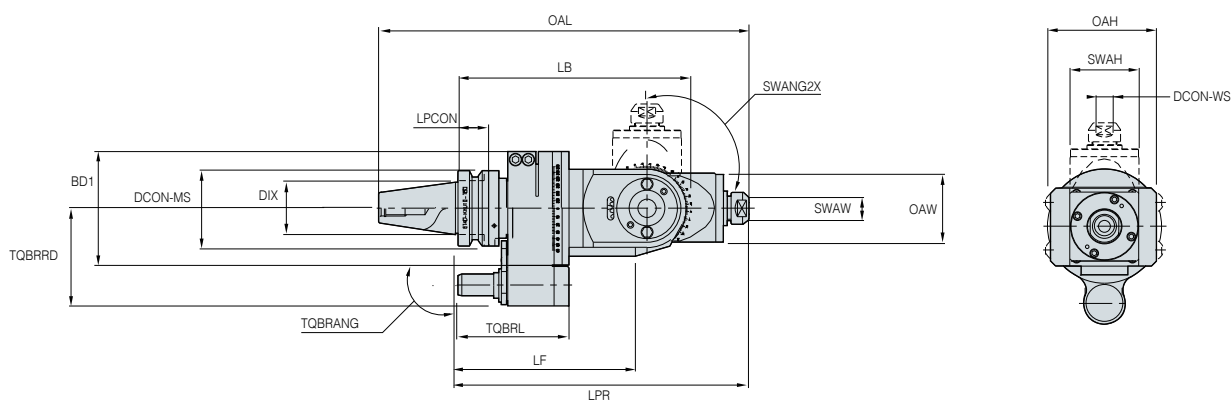
### Machining Example

Model : BT50-KHU20-195

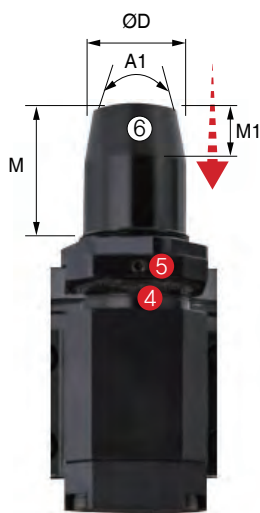
Cutting tool	Workpiece	Depth of cut	RPMX	Feed (mm/min)	Feed (mm/rev)	Cutting angle
Ø16-2 Flute Endmill(HSS), Over length-40mm	S45C	2	600	48	0.08	90°
	AL	3	1200	168	0.14	90°
	S45C	3	600	48	0.08	45°
	AL	5	1200	144	0.12	45°

### Parts

Angular head	Basic		Accessories
	Nut	Spanner	GERC Collet
KHU10	R16-AH	S-25	GERC16-ØD
KHU20	RU32-AH	48-52	GERC32-ØD



Positioning Pin



Shank size	M	M1	A	ØD
<b>BT40</b>	Max : 32 Min : 26	10	20°	Ø19.6
<b>BT50</b>	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
①	Tilt Axes fixing bolt	BX0618
②	Set screw	BT0404
③	Fixing bolts	BX50630

Designation	DCON-MS	DIX	BD1	TABBRD	LF	LPR	TOBRL	TOBRANG	LB	OAL	LPCON	SWANG2X	SWAW	OAW	OAH	SWAH	DCON-WS	Torque rate (IN:OUT)	Rotation Direction versus Spindle	RPMX	Collet	kg
<b>BT40- KHU10-160</b>	63	54	96	65	160	247	94	90	193	312.4	27	90	58	66	90	58	16	1:2	Normal rotation	6,000	GERC16	8.3
<b>BT50- KHU10-180</b>	100	87	114	80	180	267	104	90	213	368.8	38	90	58	66	90	58	16	1:2	Normal rotation	6,000	GERC16	11.5
<b>KHU20-195</b>	100	90	114	80	195	316	104	90	242	417.8	38	90	84	94	128	84	32	1:1	Normal rotation	3,000	GERC32	17.9



## Attachmaent type KAG

# BT-KAG

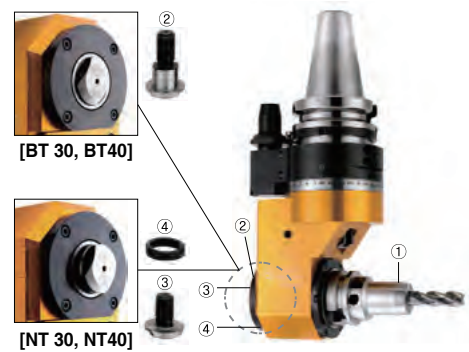


### Features

- Horizontal machining angle range from 0° to 360°
- Compatible with various tools for BT40 and BT50
- HSK and SK types are customizable
- Coolant types are to be ordered separately

### How to Tighten the Tool

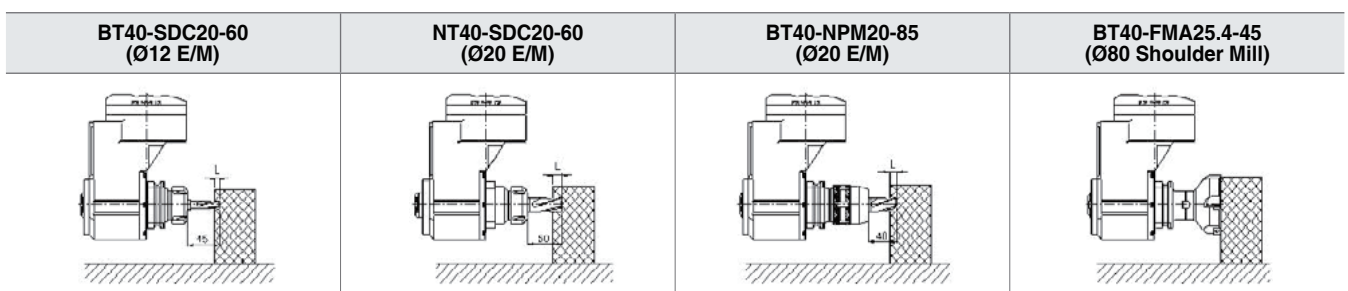
1. Insert the tool ① into the angular head spindle.
2. Tightly secure the tool ① using the fixing bolt ②. (BT type)
3. Tighten the tool ① by putting the ring ④ on the bolt ③. (NT type)

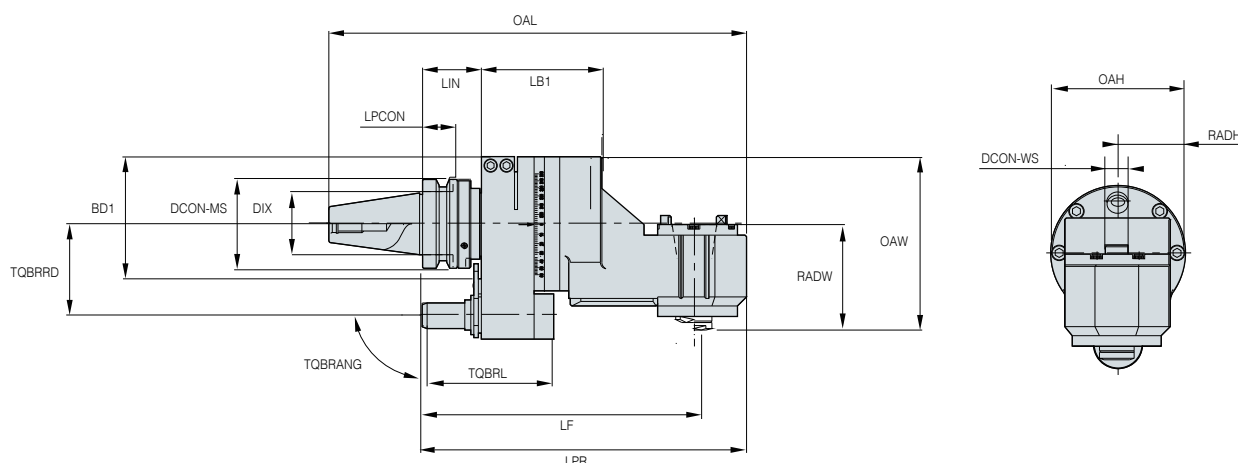


### Machining Example

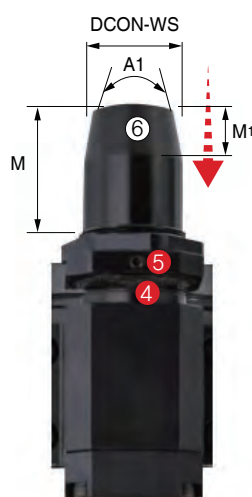
Model : BT50-KAG40-230

Cutting tool	Workpiece	Depth of cut	RPMX	Feed (mm/min)	Feed (mm/rev)
BT40-SDC20-60 Ø12-2 Flute Endmill (HSS)	S45C	3	400	72	0.09
	S45C	3	200	36	0.09
NT40-SDC20-60 Ø20-2 Flute Endmill (HSS)	S45C	4	500	50	0.05
	AL	10	1,000	100	0.05
BT40-NPM20-85 Ø20-2 Flute Endmill (HSS) over hang 40mm	S45C	3	400	72	0.09
	S45C	3	400	36	0.09
	AL	5	400	72	0.09
	AL	5	480	86	0.09
	AL	10	400	72	0.09
BT40-FMA25.4-45 Ø80 Shoulder mill (5 Flute-50L)	S45C	2	400	120	-
	S45C	1	200	60	-
	AL	2	600	150	-
	AL	1	600	150	-





**Positioning Pin**



Shank size	M	M1	A1	ØD
<b>BT40</b>	Max: 32 Min: 26	10	20°	Ø19.6
<b>BT50</b>	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	DCON-MS	DIX	BD1	TQBRRD	LF	LPR	TQBRL	TQBRANG	OAL	LIN	LB1	LPCON
<b>BT40- KAG30-195</b>	63	50	96	65	195	232.5	94	90	297.9	44	86	27
	<b>RADW</b>		<b>OAW</b>		<b>OAH</b>	<b>DCNWS</b>	<b>RADH</b>	<b>Gear Ratio</b>	<b>Rotation Direction versus Spindle</b>	<b>RPMX</b>	<b>Holder shank</b>	
	<b>BT</b>	<b>NT</b>	<b>BT</b>	<b>NT</b>								
	70	76.4	118	124.4	75	31.75	37.5	1:1	Normal Rotation	4,000	BT/NT30	7.2

Designation	DCON-MS	DIX	BD1	TQBRRD	LF	LPR	TQBRL	TQBRANG	OAL	LIN	LB1	LPCON
<b>BT50- KAG40-230</b>	100	87	114	80	230	276.5	104	90	378.3	57	88	38
	<b>RADW</b>		<b>OAW</b>		<b>OAH</b>	<b>DCNWS</b>	<b>RADH</b>	<b>Gear Ratio</b>	<b>Rotation Direction versus Spindle</b>	<b>RPMX</b>	<b>Holder shank</b>	
	<b>BT</b>	<b>NT</b>	<b>BT</b>	<b>NT</b>								
	95	102	152	159	93	44.45	46.5	1:1	Normal Rotation	3,000	BT/NT40	15.7

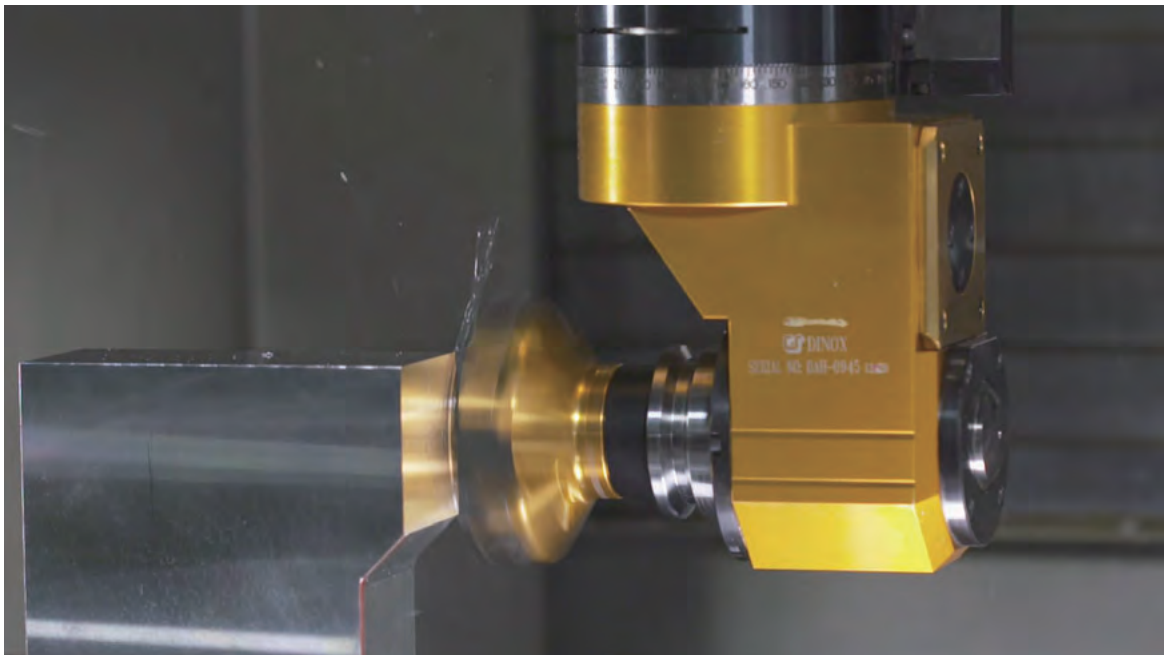
Attachment type HRAG(Reinforced)\_Attachment type

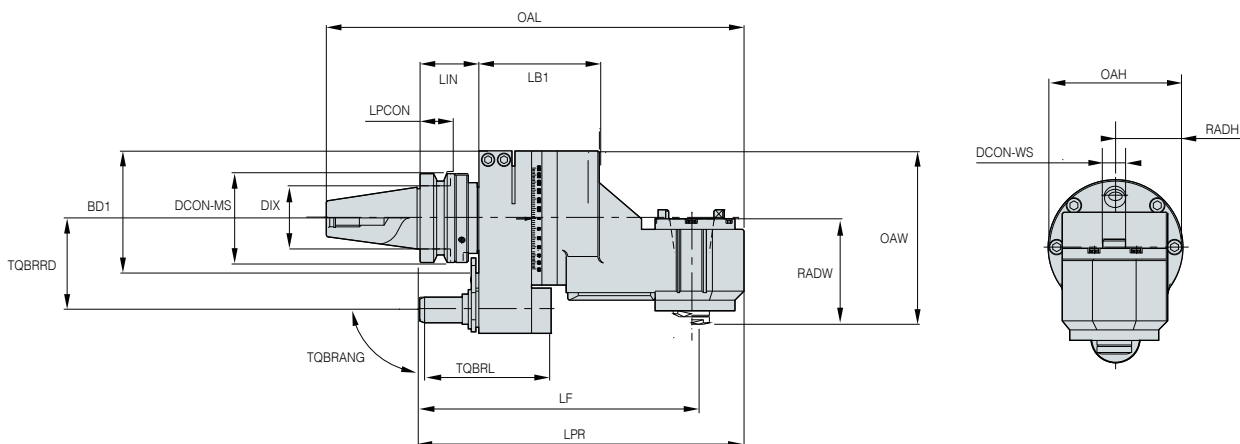
## BT-HRAG

### Features

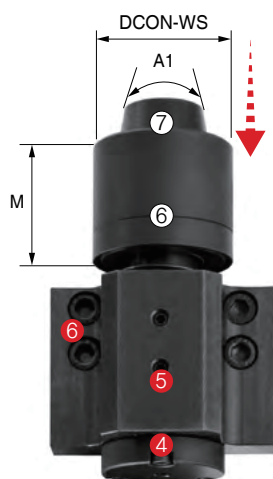
**HRAG that improves the rigidity of the attachment-type bracket by 200%**

- Provides stable operation of the face mill cutter
- Enhances compatibility with the machining device due to easy bracket disassembly/assembly even on the BT50 shank
- Improves product life cycle





**Positioning Pin**



Shank size	M	A1	ØD
<b>BT50</b>	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
①	Head fixed bolts	BX0660
②	Positioning ring set screw	MSST5-12
③	Rotating angle graduation screw	BT0648
④	Positioning pin height control bolt	BT0516
⑤	Positioning pin set screw	BT0512
⑥	Body position block set screw	BT0516
⑦	BT/NT Bolt	

Designation	DCON-MS	DIX	BD1	TQBRRD	LF	LPR	TQBRRL	TQBRANG	OAL	LIN	LB1	LPCON
<b>BT50- HRAG40-230</b>	100	88	136	80	230	276.5	103	90	378.3	57	88	38
	<b>RADW</b>		<b>OAW</b>		<b>OAH</b>	<b>DCNWS</b>	<b>RADH</b>	<b>RPMX</b>	<b>Holder shank</b>			
	<b>BT</b>	<b>NT</b>	<b>BT</b>	<b>NT</b>					<b>BT/NT40</b>			
	95	102	163	170	93	44.45	46.5	3000	<b>BT/NT40</b>		18.2	

Rigidity-reinforced Side Lock type MAH (reinforced series)/Angle Adjustment

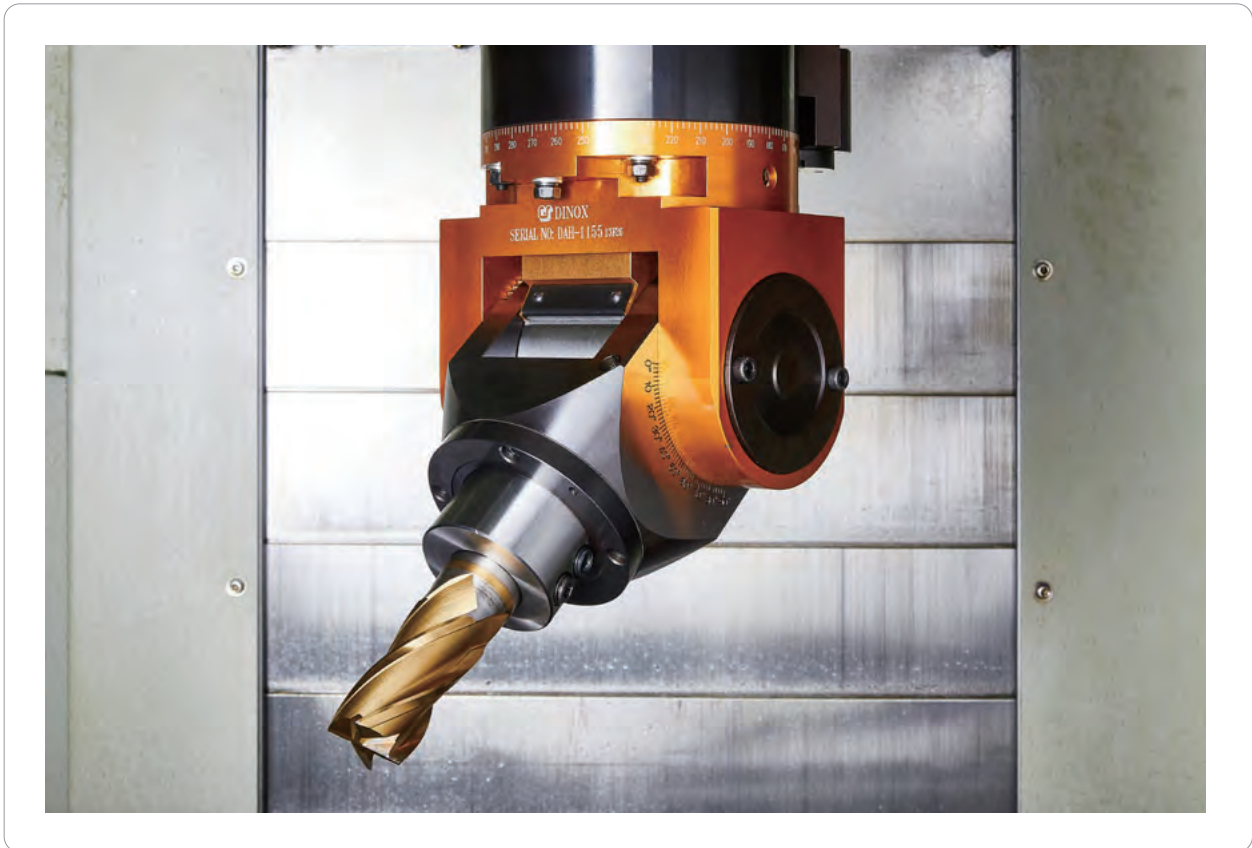
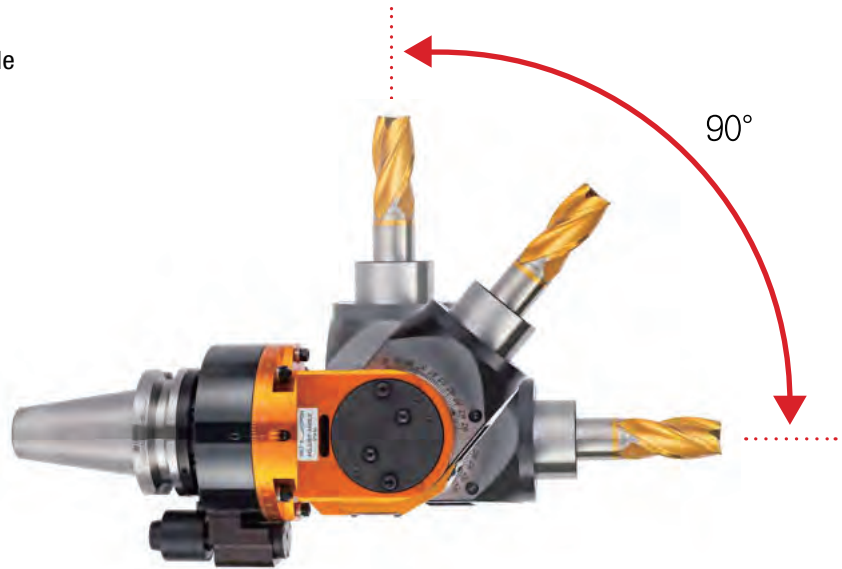
## BT-MAH

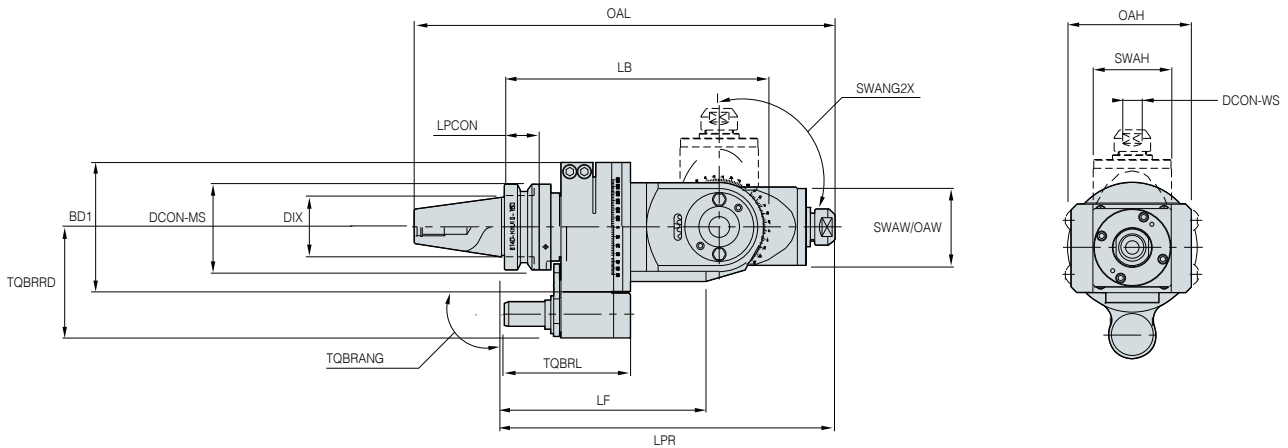
### Features

#### MAH for Mold Machining

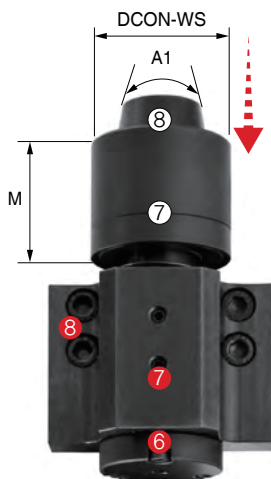
MAH ideal for mold machining by improving the performance of conventional universal type products

- Stability on large mold machining
- Tool diameter (D) 32mm ball endmill usable





**Positioning Pin**



Shank	M	A1	ØD
BT50	56.5	20°	Ø40

NO	Name
①	Inclination angle gradation (Axial positioning in 0°~90°)
②	Rotating angle gradation (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	형 번
①	Inclination angle gradation screw	BT1216
②	Head fixed bolts	BT0645
③	Rotating angle gradation screw	BT0640
④	Positioning ring set screw	MSST5-12
⑤	Tilt Axes fixing bolt	BH0616
⑥	Positioning pin height control bolt	BT0516
⑦	Positioning pin set screw	BT0512
⑧	Body position block set screw	BX0516

Designation	DCON-MS	DIX	BD1	TQBRRD	LF	LPR	TQBRL	TQBRANG	OAL	LB	LPCON
BT50- MAH32-200	100	55	136	80	200	325	103	90	426.8	247	38
	SWANG2X		SWAW / OAW		OAH	SWAH	DCON-WS	RPMX	Install tool		
	90		95		154	95	32	3,000	SIDE LOCK		19.6

KAC(45° type)\_Fixed Angle-type

## BT-KAC

### Features

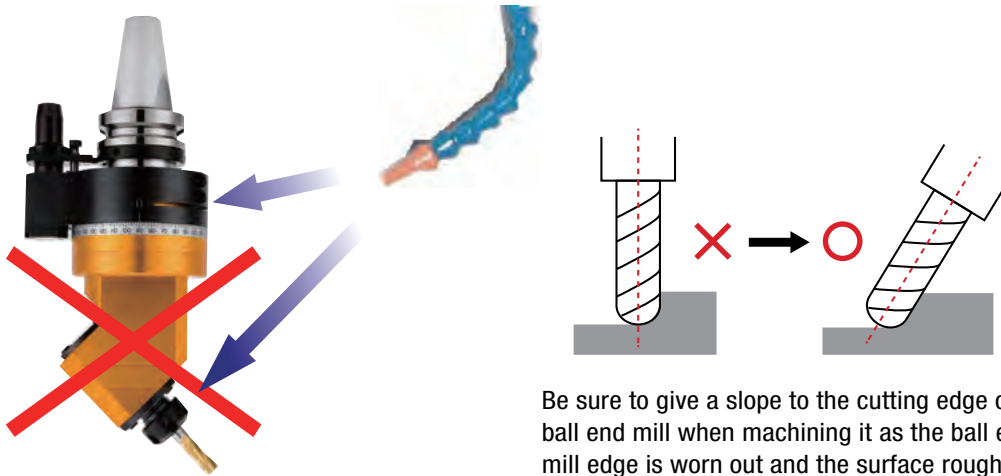
Fixed angle type angular head that enables flexible machining

- Adjustable angle up to 360 degree
- 45-degree fixed type angular head
- For BT40 types, please contact us separately



### Precautions

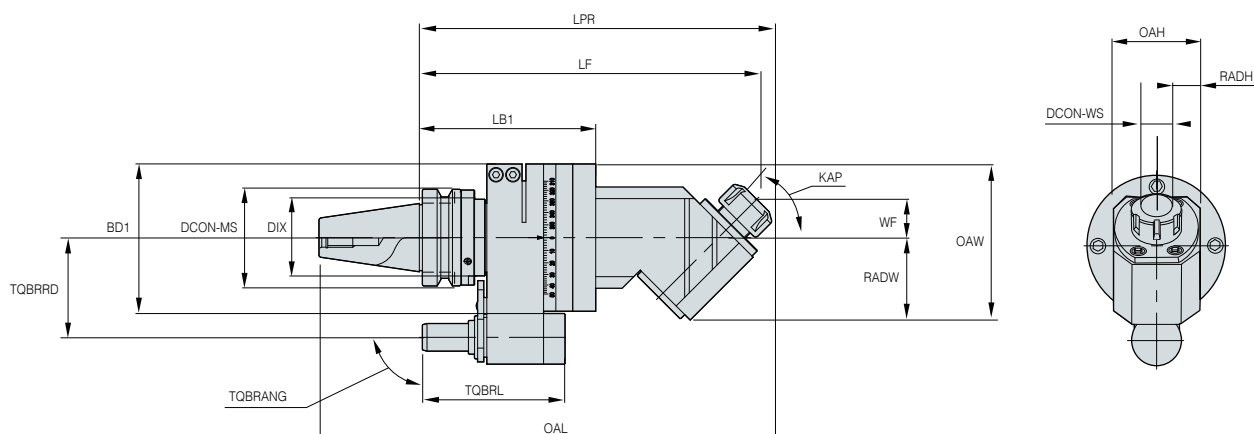
» Do not inject cutting oil direct to the Angular Head body.



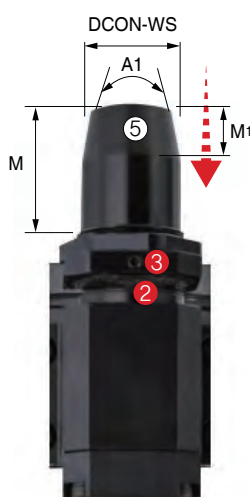
Be sure to give a slope to the cutting edge of a ball end mill when machining it as the ball end mill edge is worn out and the surface roughness of the workpiece becomes defective.

### Parts

Angular head	Basic		Accessories
	Nut	Spanner	GERC Collet
KAC10	R16-AH (M20)	S-25	GERC16-ØD
KAC10	RU20-AH	35-38	GERC20-ØD
KAC20	RU32-AH	48-52	GERC32-ØD



**Positioning Pin**



Shank	M	M1	A	DCON-WS
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
①	Head fixing bolts	BX0618
②	Set screw	BT0404
③	Fixing bolts	BX0630

Designation	DCON-MS	DIX	BD1	TQBRD	OAL	TQBRL	TQBRANG	LPR	LF	LB1	OAW	WF	RADW	KAP	OAH	DCON-WS	RADH	RPMXX	Collet	kg	
BT50-	KAC10-240	100	87	114	80	350.8	104	90	249	240	111	102	25	54	45	60	16	30	5,000	GERC16	9.7
	KAC13-240	100	87	114	80	352.8	104	90	251	240	111	102	25	54	45	60	20	30	5,000	GERC20	10.7
	KAC20-250	100	87	114	80	367.8	104	90	266	250	111	108	30	60	45	72	32	36	3,500	GERC32	11.7



Slim Angular Head

## BT-SAHA

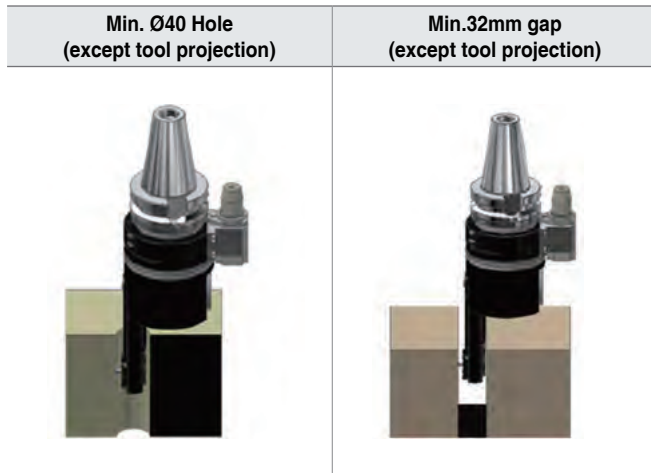


### Code system



- 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

### Machining Features



### Clamping Force

Division	Measurement	Measured value (N-m)			
		2.5	3	3.5	4
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 3.5N-m.

### Exclusive collet

Designation	Clamping range	Stock
SAH6-C3	3	•
SAH6-C4	4	•
SAH6-C6	6	•

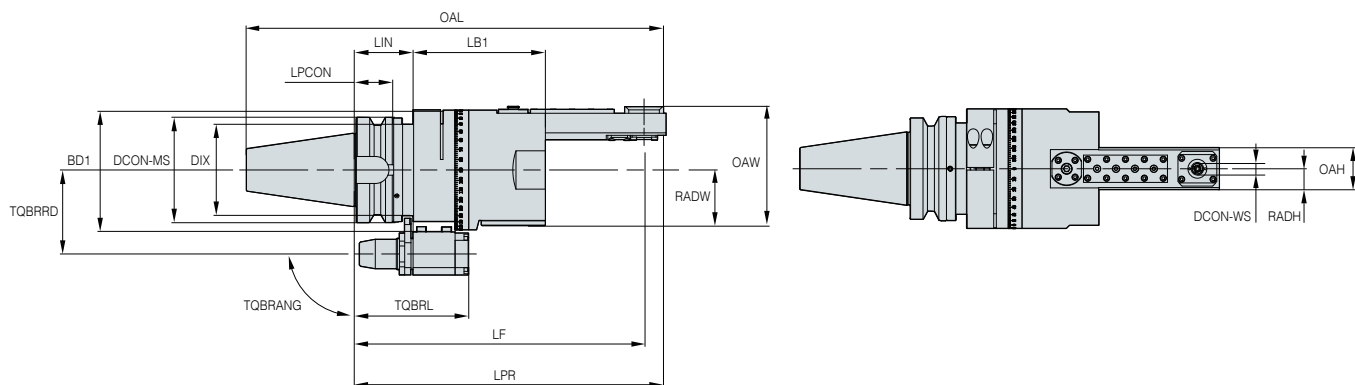


• 표시 : 재고관리품

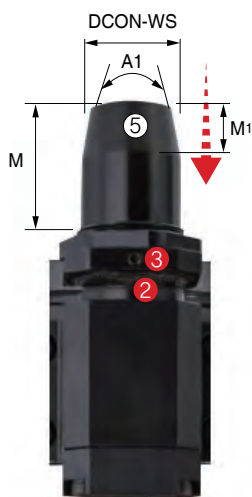
### How to clamp



01. Couple the tool with SAH dedicated collet
02. Insert the coupled tool into SAH and fix it with a dedicated tightening jig
03. Turn the bolt using a hexagonal wrench



**Positioning Pin**



Shank	M	M1	A	DCON-WS
<b>BT50</b>	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
①	Head fixing bolts	BX0618
②	Set screw	BT0404
③	Fixing bolts	BX0630

Designation	DCON-MS	DIX	BD1	TQBRRD	LF	LPR	TQBRL	TQBRANG	OAL	LIN	LB1	LPCON	OAW	RADW	OAH	DCON-WS	RADH	Rotation ratio (IN:OUT)	Rotation direction	RPMXX	kg
<b>BT50-SAH6-277</b>	100	87	114	80	277	298	104	90	399.8	57	126	38	113	53	40	10	20	1:1.37	CW:CW	3,500	15.2

# E POSITIONING BLOCK

## Positioning Block (For BT40)

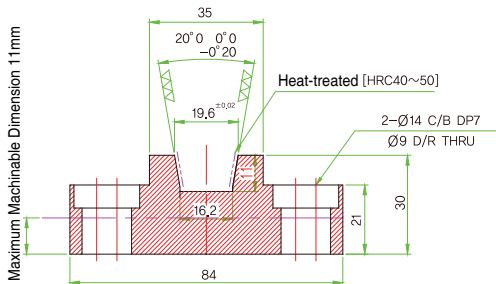
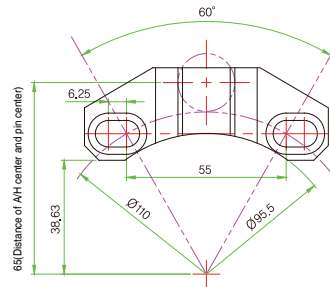
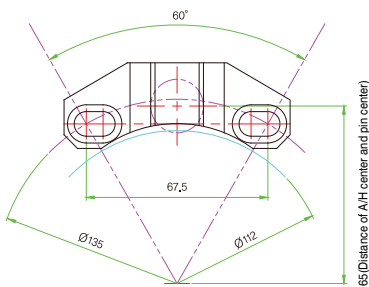
# POSITIONING BLOCK

### How to install the positioning block on the machine

#### BT40 Customer Standard type - Group A (60° Standard type)

- In case Min. PCD=110mm
- Spindle diameter less than Ø94 available
- Keep the minimum distance 55mm between bolts

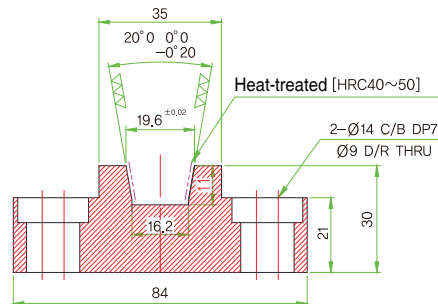
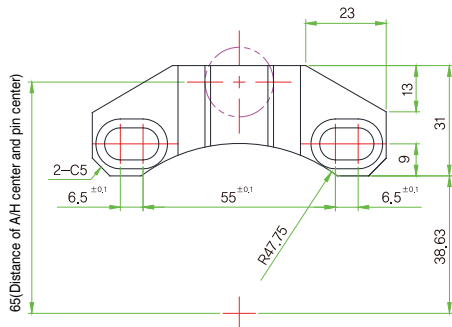
- In case Max. PCD=135mm
- Spindle diameter less than Ø112 available
- Keep the minimum distance 67.5mm between bolts



- Semi-finishing : Requires Block Height Machining
- The customer must machine the bottom of the block in person to use after determining the block height

※ Minimum block height : 19mm (based on the upper side)

- Only the taper part to be heat-treated
- Based on M10 in the case of less than M8, washer can be supplied



DINE Inc, provides the positioning block type as default. (Excluding BT30 Angular Head)

Positioning Block (For BT50)

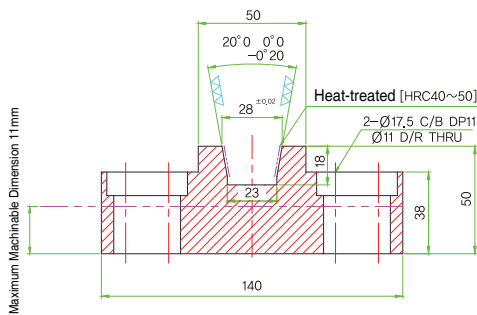
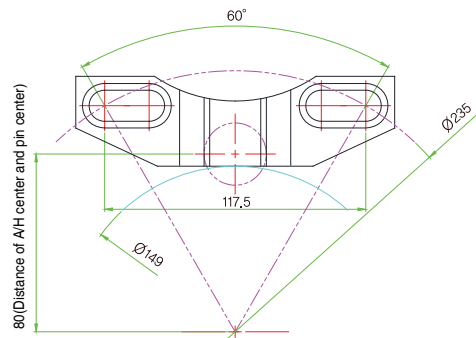
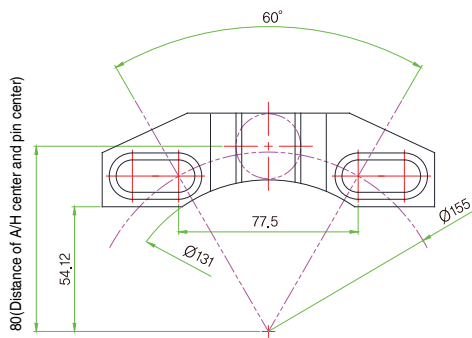
# POSITIONING BLOCK

**How to install the positioning block on the machine**

**BT50 Customer Standard type - Group A (60° Standard type)**

- In case Min. PCD=155mm
- Spindle diameter less than Ø130 available
- Keep the minimum distance 77.5mm between bolts

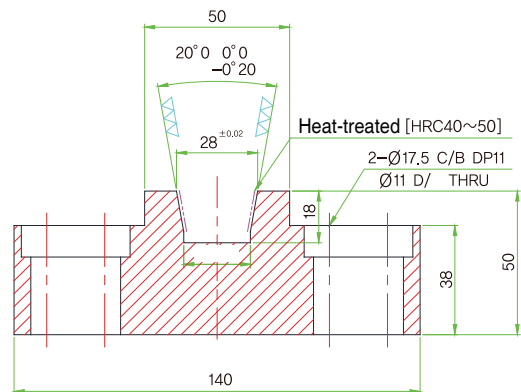
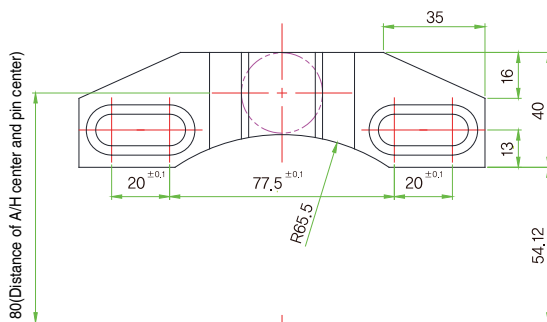
- In case Max. PCD=235mm
- Spindle diameter less than Ø148 available
- Keep the minimum distance 117.5mm between bolts



- Semi-finishing : Requires Block Height Machining
- The customer must machine the bottom of the block in person to use after determining the block height

※ Minimum block height : 28mm (based on the upper side)

- Only the taper part to be heat-treated
- Based on M10 in the case of less than M8, washer can be supplied



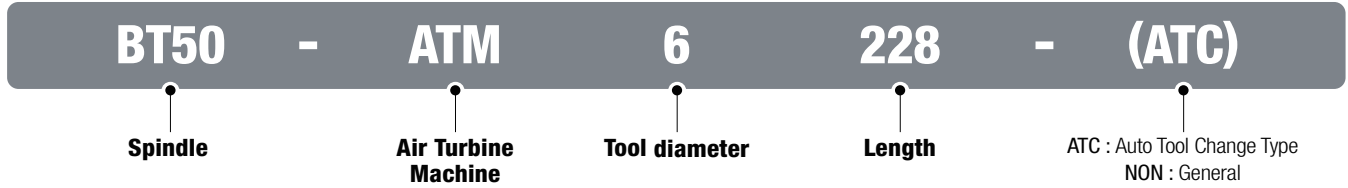
DINE Inc, provides the positioning block type as default. (Excluding BT30 Angular Head)

## Air Turbine Machine

# ATM



### Code system



### Features

- High-speed turbine rotation structure using compressed air (max. 50,000rpm)
- The conventional MCT can be compatible just by supplying high-pressure compressed air
- High-speed/precision machining is available regardless of the machine's age
- Continuous machining is possible for a long time due to rapid heat discharge

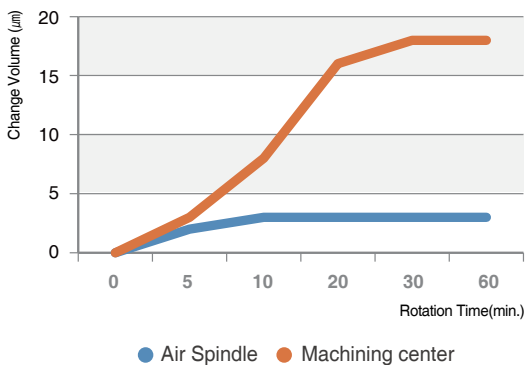
### What is Air Spindle?

The air spindle is able to rotate at a high-speed (50,000 RPM) using compressed air, and realize performance the same as that of a high-speed processor even in a standard (conventional) machining center

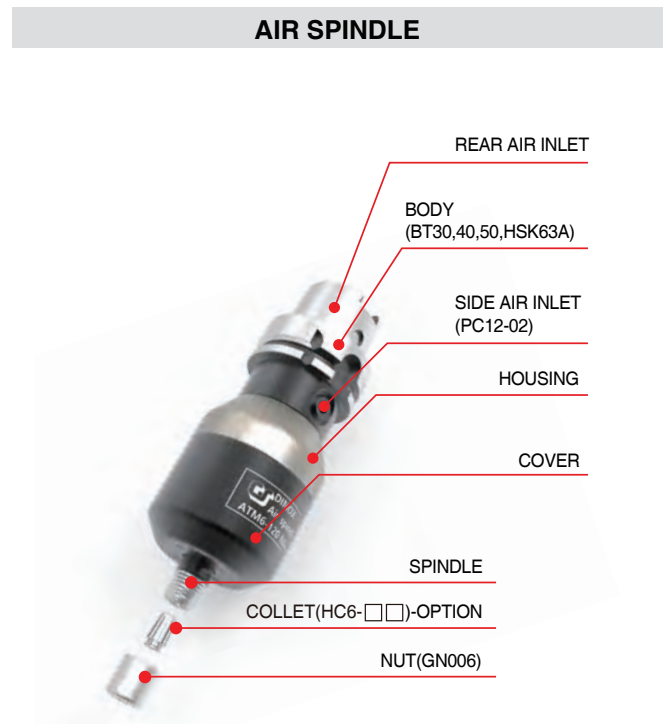
### Thermal Deformation Protection

- It prevents an increase in temperature of the spindle using an air blade rotation method
- Prevents the deformation of the Z-axis by thermal deformation of the spindle

Z-axis Change with Rotation Time



### Part Name



### General type



#### How to Use

- Use in an equipment able to spray air on the main axis
- Able to perform ATC as there is no external air hose to be connected

#### Precautions

- When spraying the air on the main axis, be careful about introduction of foreign



#### How to Use

- Connect an external air hose
- Connect it directly to the regulator and minimize the introduction of foreign substances

#### Precautions

- Must separate the hose from the product in case of ATC
- Be careful when the main axis rotates

### Auto Tool Change type





#### How to Use

- It is able to perform ATC and equipment rotation even on equipment with no air main
- The air is supplied on the Positioning Block, so ATC and equipment spindle rotation is possible
- The main axis can rotate at a low-speed, and the tool length can be corrected

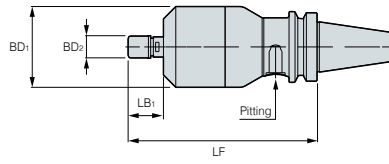
### Processing Test

Air spindle has a shank and a body in a prefabricated shape, so the shank (BT30, BT40, BT50, HSK63A) can be easily adapted to different types of equipment

Equipment	Air Spindle <HSK63A-ATM6-170>	Machining center <Hydraulic Chuck>
Materials	SCM440 (HRC40)	SCM440 (HRC40)
RPM	50,000	20,000
Cycle Time	146 min.	276 min.
Axial-directional Displacement	5 $\mu$ m	21 $\mu$ m
Surface Roughness		
Note	Improved processing speed and surface roughness	Lowered surface roughness and tool life

# BT-ATM

## Air Spindle General type

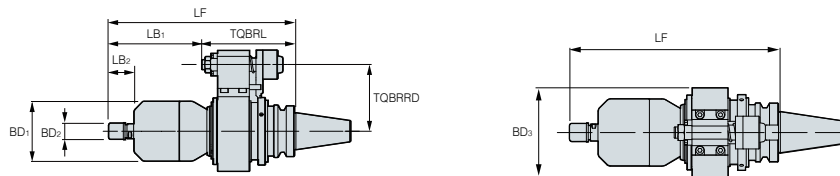


(mm)

Designation	BD1	BD2	LF	LB1	RPM (Based on 2 Bar of Regulator)	Pitting
<b>BT30</b> ATM6-176	72	19.5	176	31.5	MAX 50,000	PC12-02
<b>BT40</b> ATM6-171	72	19.5	171	31.5	MAX 50,000	PC12-02
<b>BT50</b> ATM6-182	72	19.5	182	31.5	MAX 50,000	PC12-02

• This product does not support the internal coolant system

## Air Spindle ATC type



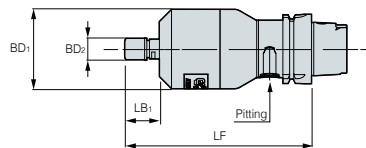
(mm)

Designation	BD1	BD2	BD3	LF	TQBRL	LB1	LB2	TQBRRD	RPM (Based on 2 Bar of Regulator)
<b>BT40</b> ATM6-227(ATC)	72	19.5	96	227	114	113	32	80	MAX.50,000
<b>BT50</b> ATM6-228(ATC)	72	19.5	96	228	115	113	32	80	MAX.50,000

• This product does not support the internal coolant system

# HSK-ATM

## Air Spindle General type

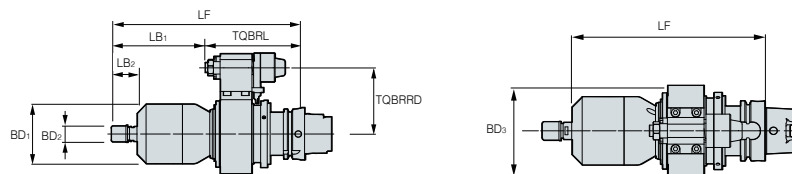


(mm)

Designation	BD1	BD2	LF	LB1	RPM (Based on 2 Bar of Regulator)	Pitting
<b>HSK63A</b> ATM6-170	72	19.5	170	31.5	MAX 50,000	PC12-02

• This product does not support the internal coolant system

## Air Spindle ATC type



(mm)

Designation	BD1	BD2	BD3	LF	TQBRL	LB1	LB2	TQBRRD	RPM (Based on 2 Bar of Regulator)
<b>HSK63A</b> ATM6-235(ATC)	72	19.5	96	235	122	113	32	80	MAX.50,000

• This product does not support the internal coolant system

Air Spindle Related Parts

# ATM(U) SPARE PART

**Basic**








(ATM)



(ATU)



**Parts**

**Basic**

<b>Images</b>					
<b>Components</b>	Air Spindle	Air Regulator	Fitting	Spanner	Nut
<b>Quantity</b>	1	1	2	1	1

Type	AIR SPINDLE						
Spec	ATM(U)6 (BT30,40,50,HSK63A)				ATM	ATU	
ATM components	No	Classification	Name	Designation	Quantity	Quantity	
	1	Basic Specifications	ATM(U)6	□□□-ATM(U)6-□□□	1	1	
	2		NUT	GN-06	1	1	
	3		Regulator	TPC PP3-03BG	1	1	
	4		Fitting		PC12-02	1	-
	5				PC12-03	1	2
	6		Spanner		GSK6-SPANNER	1	1
	7				S16 SPANNER	1	1
	8				S17 SPANNER	-	1
	9		Wrench		LW-1.5	-	1
	10				LW-2.5	-	1
	11				LW-3.0	-	1
12	LW-6.0				-	1	

**Parts (Accessories)**

Designation	Image	ØD1	L	MAX ØD	Distance	Positioning Block
HC6ØD(P)		10.5	25	6	1	

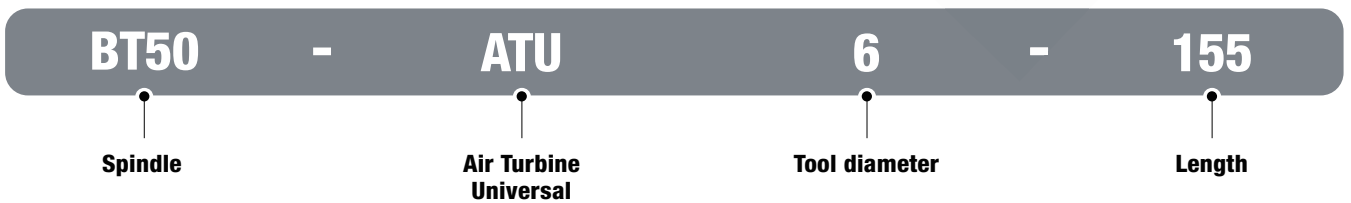


## Angle Adjustment Air Spindle\_(Universal type)

# ATU



### Code system



### Features

- Air spindle is applicable to multi-axis machining by adjusting the angle
- Air injection method can be selected (positioning pin or equipment main axis)
- ATC device is available

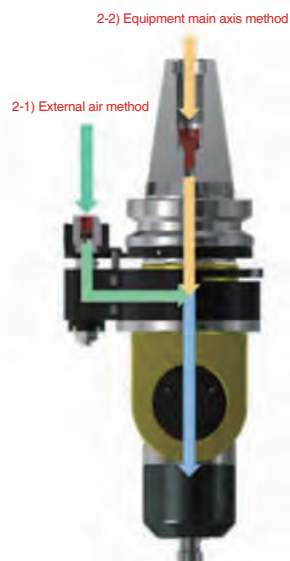
### Product Structure and Characteristics

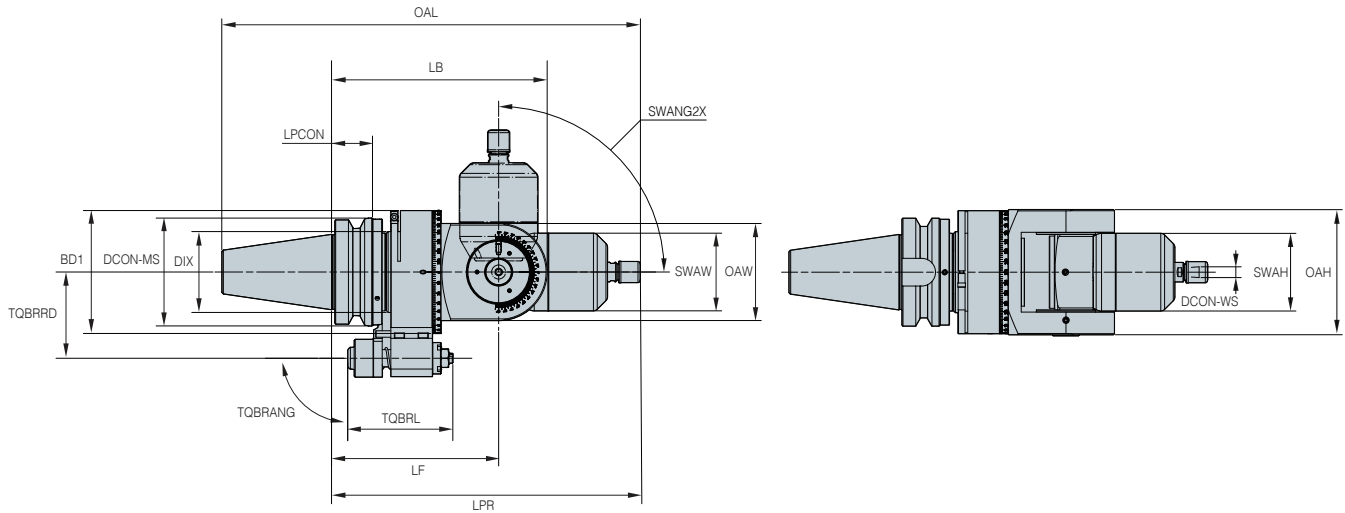
#### 1) Angle Control

- 1-1) Tilt Angle:  $-90^{\circ} \sim +90^{\circ}$
- 1-2) Rotation Angle:  $0^{\circ} \sim 360^{\circ}$

#### 2) Air Injection Method

- 2-1) External air method
- 2-2) Equipment main axis method





Designation	DCON-MS	DIX	BD1	TQBRD	LF	LPR	TQBRL	TQBRANG	
<b>BT50-ATU6-155</b>	100	75	114	80	155	286.5	97.5	90	
	LB	OAL	LPCON	SWANG2X	SWAW	OAW	OAH	SWAH	DCON-WS
	200	388.3	38	90	Ø72	90	116	Ø72	10

1. When using it, never rotate the main axis
2. Proper air pressure is based on the Max. RPM and a maximum of 50,000 RPM is available for both external air and main spindle method at approximately 3 bar of pressure
3. ATC is available

# E Technical Information for DAMPING PRO

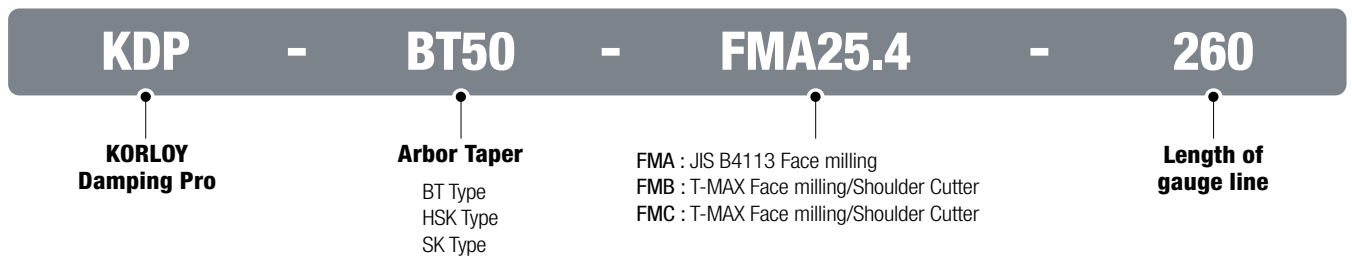
KORLOY Anti-Vibration tool



## 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



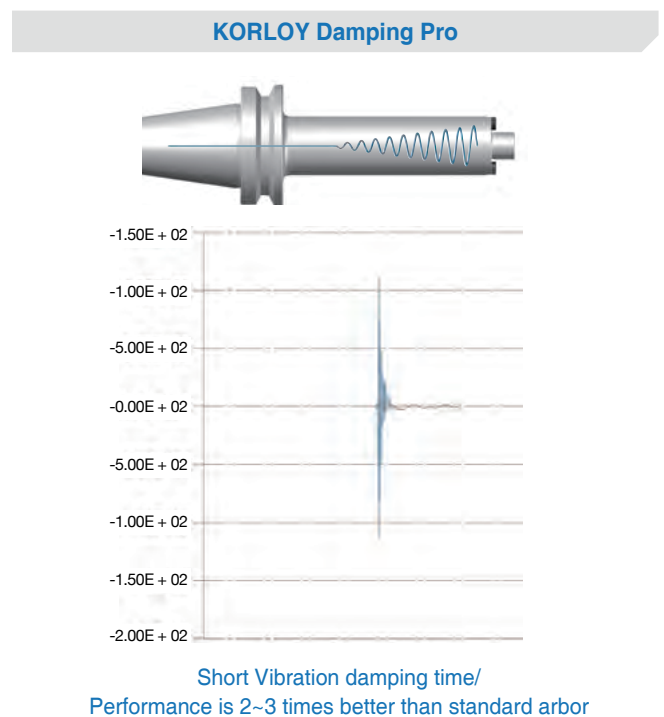
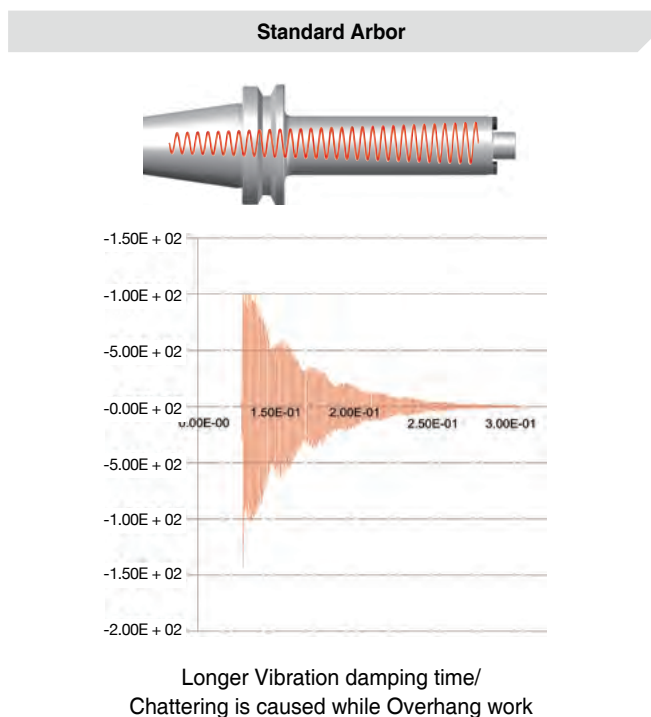
### Features



- **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



### Comparison of vibration damping time

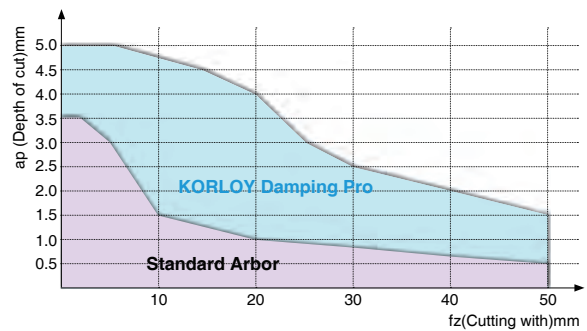


## Performance evaluation

**Cutting condition**  $f_z = 0.1(\text{mm/t})$ ,  $vc = 100 \text{ m/min}$

**Cutter** AMC4063HS, 6flute

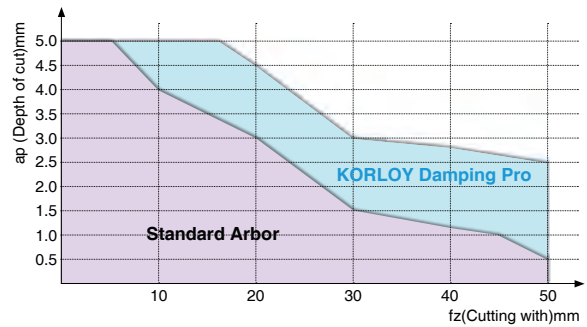
- Arbor**
- KDP-BT50-FMC22-210(Damping pro)
  - BT50-FMC22-210(General arbor)







**Cutting condition**  $f_z = 0.1(\text{mm/t})$ ,  $vc = 100 \text{ m/min}$

**Cutter** FMRC3063HRD-H, 6flute

- Arbor**
- KDP-BT50-FMC22-210(Damping pro)
  - BT50-FMC22-210(General arbor)

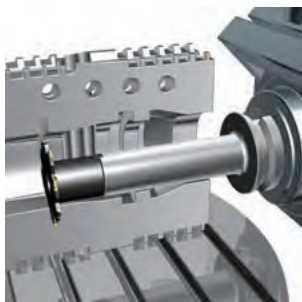


## Application examples

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**  
 $vc = 50 \text{ m/min}$   
 $f_z = 0.1 \text{ mm/t}$   
 $ae = 20 \text{ mm}$

#### KORLOY Damping Pro

**Cutting condition**  
 $vc = 100 \text{ m/min}$   
 $f_z = 0.1 \text{ mm/t}$   
 $ae = 20 \text{ mm}$

### Big size Crankshaft machining example

- General arbor:  $ap = 2 \text{ mm}$
- KORLOY DAMPING PRO:  $ap = 4 \text{ mm}$  available
- **2 times better productivity**



#### General arbor

**Cutting condition**  
 $vc = 100 \text{ m/min}$   
 $f_z = 0.15 \text{ mm/t}$   
 $ap = 2 \text{ mm}$

#### KORLOY Damping Pro

**Cutting condition**  
 $vc = 100 \text{ m/min}$   
 $f_z = 0.15 \text{ mm/t}$   
 $ap = 4 \text{ mm}$

# BT-FMA

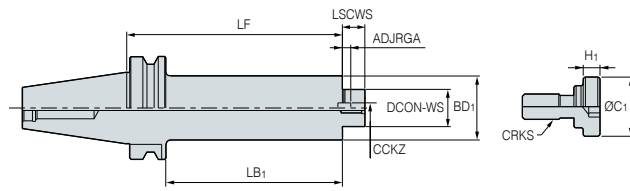


Fig. 1

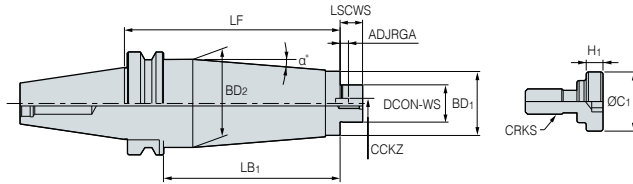


Fig. 2

Designation		DC	DCON-WS	LF	LB <sub>1</sub>	BD <sub>1</sub>	BD <sub>2</sub>	LSCWS	CCKZ	ADJRGA	CRKS	C <sub>1</sub>	H <sub>1</sub>	kg	Fig.	α°
<b>KDP-BT40 -</b>	<b>FMA25.4-210</b>	80	25.4	210	183	50	60	22	9.5	5	M12	33	10	5.42	2	1
	<b>FMA25.4-260</b>	80	25.4	260	233	50	60	22	9.5	5	M12	33	10	6.5	2	1.1
	<b>FMA31.75-210</b>	100	31.75	210	183	60	-	30	12.7	7	M16	40	10	5.94	1	-
	<b>FMA31.75-260</b>	100	31.75	260	233	60	-	30	12.7	7	M16	40	10	7.25	1	-
<b>KDP-BT50 -</b>	<b>FMA25.4-210</b>	80	25.4	210	172	50	78	22	9.5	5	M12	33	10	9.63	2	4
	<b>FMA25.4-260</b>	80	25.4	260	222	50	78	22	9.5	5	M12	33	10	11.8	2	3
	<b>FMA31.75-210</b>	100	31.75	210	172	60	85	30	12.7	7	M16	40	10	11.8	2	3
	<b>FMA31.7-260</b>	100	31.75	260	222	60	85	30	12.7	7	M16	40	10	13.6	2	2.5

(mm)

- The A type is for JIS B4113 Face milling
- The B type and C type are arbors for T-MAX Face Milling and shoulder cutter
- The weight (kg) shown in the chart does not include the weight of face cutter
  - Key and screw are clamped
  - Wrench is separately sold

## Parts

Basic					For separate purchase
Division	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
<b>Parts</b>					
<b>Designation</b>					
<b>FMA25.4</b>	K9.5 (B)	MBA-M12	BX0412	BX1225	LW-10
<b>FMA31.75</b>	K12.7 (D)	MBA-M16	BX0515	-	LW-14

# BT-FMC

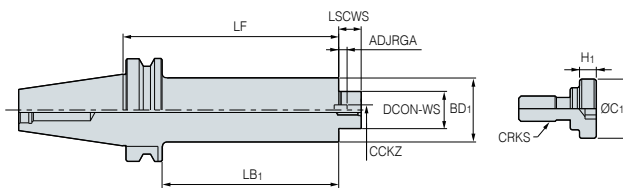


Fig. 1

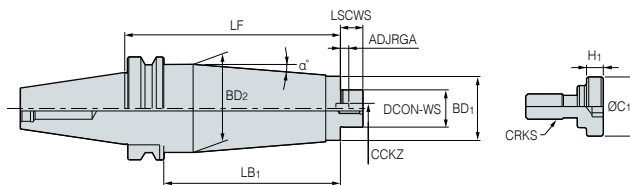








Fig. 2

(mm)

Designation	DC	DCON-WS	LF	LB <sub>1</sub>	BD <sub>1</sub>	BD <sub>2</sub>	LSCWS	CCKZ	ADJRGA	CRKS		Fig.	α°	
<b>KDP-BT40 -</b>	<b>FMC16-160</b>	40	16	160	133	38	-	17	8	5	M8	2.45	1	-
	<b>FMC22-210</b>	50/63	22	210	183	48	4.95	19	10	5.6	M10	4.37	2	0.1
	<b>FMC22-260</b>	50/63	22	260	233	48	60	19	10	5.6	M10	6.3	2	1.5
	<b>FMC27-210</b>	80	27	210	183	60	-	21	12	6.3	M12	6	1	-
	<b>FMC27-260</b>	80	27	260	233	60	-	21	12	6.3	M12	7.25	1	-
<b>KDP-BT50 -</b>	<b>FMC16-171</b>	40	16	171	133	38	-	17	8	5	M8	5.1	1	-
	<b>FMC22-210</b>	50/63	22	210	172	48	49.5	19	10	5.6	M10	7.3	2	0.1
	<b>FMC22-260</b>	50/63	22	260	222	48	62	19	10	5.6	M10	10	2	1
	<b>FMC27-210</b>	80	27	210	172	60	78	21	12	6.3	M12	10.6	2	2.5
	<b>FMC27-260</b>	80	27	260	222	60	78	21	12	6.3	M12	12.6	2	2
	<b>FMC27-320</b>	80	27	320	282	60	78	21	12	6.3	M12	14.8	2	1
	<b>FMC32-210</b>	100	32	210	172	78	-	24	14	7	M16	11.7	1	-
	<b>FMC32-260</b>	100	32	260	222	78	-	24	14	7	M16	14.2	1	-
<b>FMC32-330</b>	100	32	330	292	78	-	24	14	7	M16	16.6	1	-	

- The A type is for JIS B4113 Face milling
- The B type and C type are arbors for T-MAX Face Milling and shoulder cutter
- The weight (kg) shown in the chart does not include the weight of face cutter
  - Key and screw are clamped
  - Wrench is separately sold

## Parts

Division	Basic				For separate purchase
	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
<b>Parts</b>					
<b>Designation</b>					
<b>FMC16</b>	K8.0(A)	-	BX0310	BX0820	LW-6
<b>FMC22</b>	K10.0(C)	-	BX0412	BX1030	LW-8
<b>FMC27</b>	K12.0	MBA-M12	BX0616	-	LW-10
<b>FMC32</b>	K14.0	MBA-M16	BX0820	-	LW-14

# HSK-FMA

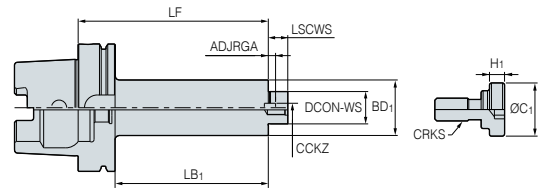


Fig. 1

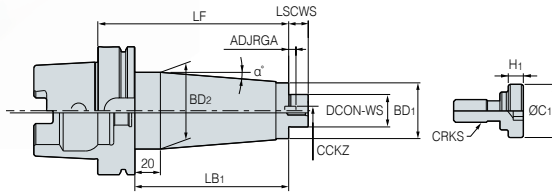


Fig. 2

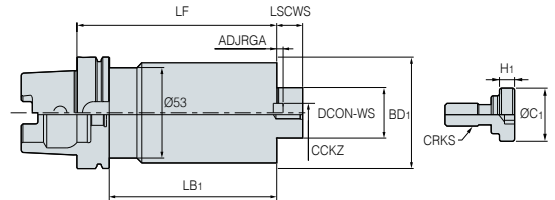


Fig. 3

(mm)

Designation	DC	DCON-WS	LF	LB <sub>1</sub>	BD <sub>1</sub>	BD <sub>2</sub>	LSCWS	CCKZ	ADJRGA	CRKS	C <sub>1</sub>	H <sub>1</sub>	kg	Fig.	α°	
<b>KDP-HSK63 -</b>	<b>FMA25.4-210</b>	80	25.4	210	184	50	53	22	9.5	5	M12	33	10	4.55	3	0.1
	<b>FMA25.4-260</b>	80	25.4	260	234	50	53	22	9.5	5	M12	33	10	5.6	3	0.1
	<b>FMA31.75-210</b>	100	31.75	210	184	60	-	30	12.7	7	M16	40	10	5.52	2	-
	<b>FMA31.75-260</b>	100	31.75	260	234	60	-	30	12.7	7	M16	40	10	6.9	2	-
<b>KDP-HSK100 -</b>	<b>FMA25.4-210</b>	80	25.4	210	181	50	78	22	9.5	5	M12	33	10	8.32	3	4
	<b>FMA25.4-260</b>	80	25.4	260	231	50	78	22	9.5	5	M12	33	10	10.5	3	3
	<b>FMA31.75-210</b>	100	31.75	210	181	60	85	30	12.7	7	M16	40	10	10.9	3	3
	<b>FMA31.75-260</b>	100	31.75	260	231	60	85	30	12.7	7	M16	40	10	12.8	3	2.5

- The A type is for JIS B4113 Face milling
- The B type and C type are arbors for T-MAX Face Milling and shoulder cutter
- The weight (kg) shown in the chart does not include the weight of face cutter
  - Key and screw are clamped
  - Wrench is separately sold

## Parts

Division	Basic				For separate purchase
	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
<b>Parts</b>					
<b>Designation</b>					
<b>FMA25.4</b>	K9.5(B)	MBA-M12	BX0412	BX1230	LW-10
<b>FMA31.75</b>	K12.7(D)	MBA-M16	BX0515	-	LW-14

# HSK-FMC

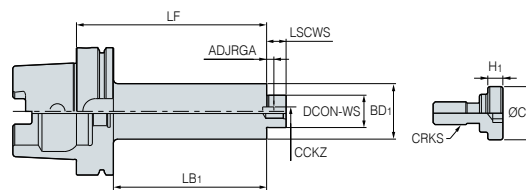
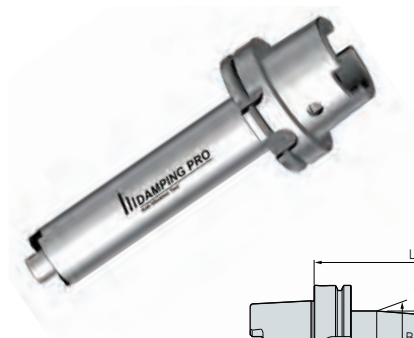


그림 1

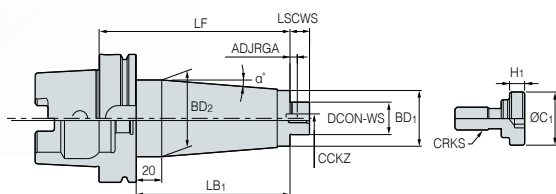


그림 2

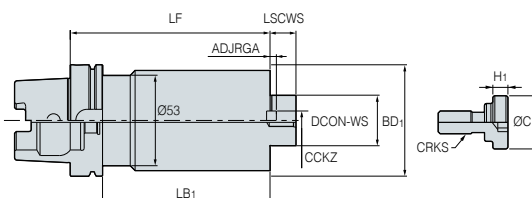


그림 3

(mm)

Designation	DC	DCON-WS	LF	LB1	BD1	BD2	LSCWS	CCKZ	ADJRGA	CRKS	kg	Fig.	α°	
KDP-HSK63 -	FMC16-160	40	16	160	134	38	-	17	8	5	M8	2.10	1	-
	FMC22-210	50/63	22	210	184	48	4.95	19	10	5.6	M10	3.82	1	0.1
	FMC22-260	50/63	22	260	234	48	62	19	10	5.6	M10	6.14	3	1.6
	FMC27-210	80	27	210	184	60	-	21	12	6.3	M12	5.53	2	-
	FMC27-260	80	27	260	234	60	-	21	12	6.3	M12	6.83	2	-
KDP-HSK100 -	FMC16-160	40	16	160	131	38	-	17	8	5	M8	3.45	1	-
	FMC22-210	50/63	22	210	181	48	49.5	19	10	5.6	M10	4.60	3	0.1
	FMC22-260	50/63	22	260	231	48	62	19	10	5.6	M10	8.10	3	1
	FMC27-210	80	27	210	181	60	78	21	12	6.3	M12	8.44	3	2.5
	FMC27-260	80	27	260	231	60	78	21	12	6.3	M12	10.40	3	2
	FMC27-320	80	27	320	291	60	78	21	12	6.3	M12	13.60	3	1
	FMC32-210	100	32	210	181	78	-	24	14	7	M16	10.20	1	-
	FMC32-260	100	32	260	231	78	-	24	14	7	M16	13.00	1	-
FMC32-330	100	32	330	301	78	-	24	14	7	M16	15.43	1	-	

- The A type is for JIS B4113 Face milling
- The B type and C type are arbors for T-MAX Face Milling and shoulder cutter
- The weight (kg) shown in the chart does not include the weight of face cutter
  - Key and screw are clamped
  - Wrench is separately sold

## Parts

Division	Basic				For separate purchase
	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Parts					
Designation					
FMC16	K8.0(A)	-	BX0310	BX0820	LW-6
FMC22	K10.0(C)	-	BX0412	BX1030	LW-8
FMC27	K12.0	MBA-M12	BX0616	-	LW-10
FMC32	K14.0	MBA-M16	BX0820	-	LW-14



# SK-FMC

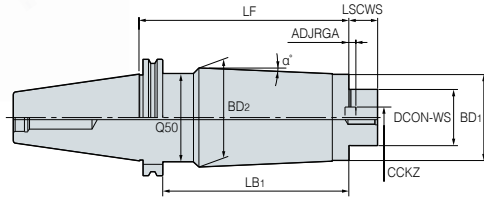


Fig. 2

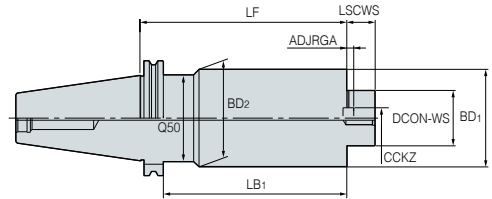


Fig. 1

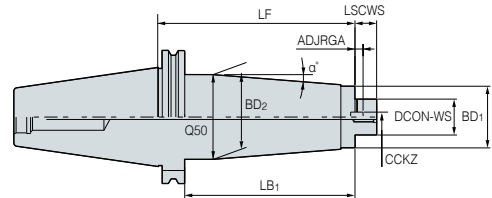


Fig. 3

(mm)

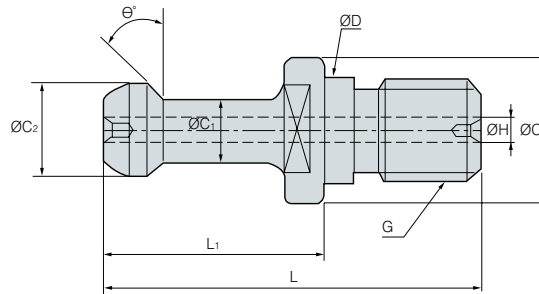
Designation	DC	DCON-WS	LF	LB <sub>1</sub>	BD <sub>1</sub>	BD <sub>2</sub>	LSCWS	CCKZ	ADJRGA	CRKS	kg	Fig.	α°	
<b>KDP-SK40 -</b>	<b>FMC22-210</b>	50/63	22	210	183.0	48	49.5	19	10	4.4	M10	4.4	3	0.1
	<b>FMC22-260</b>	50/63	22	260	233.0	48	60	19	10	5.6	M10	6.2	2	1.4
	<b>FMC27-210</b>	80	27	210	183.0	60	60	21	12	6.3	M12	5.9	1	-
	<b>FMC27-260</b>	80	27	260	233.0	60	60	21	12	6.3	M12	7.2	1	-
<b>KDP-SK50 -</b>	<b>FMC22-210</b>	50/63	22	210	190.9	48	49.5	19	10	5.6	M10	6.4	3	0.1
	<b>FMC22-260</b>	50/63	22	260	240.9	48	62	19	10	5.6	M10	9.1	3	1
	<b>FMC27-210</b>	80	27	210	190.9	60	78	21	12	6.3	M12	9.8	3	2.5
	<b>FMC27-260</b>	80	27	260	240.9	60	78	21	12	6.3	M12	12.4	3	1.8
	<b>FMC27-320</b>	80	27	320	300.9	60	78	21	12	6.3	M12	14.5	3	1.2
	<b>FMC32-210</b>	100	32	210	190.9	78	-	24	14	7	M16	11.5	1	-
	<b>FMC32-260</b>	100	32	260	240.9	78	-	24	14	7	M16	14	1	-
<b>FMC32-330</b>	100	32	330	310.9	78	-	24	14	7	M16	16.4	1	-	

- The A type is for JIS B4113 Face milling
- The B type and C type are arbors for T-MAX Face Milling and shoulder cutter
- The weight (kg) shown in the chart does not include the weight of face cutter
  - Key and screw are clamped
  - Wrench is separately sold

## Parts

Division	Basic				For separate purchase
	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
<b>Parts</b>					
<b>Designation</b>					
<b>FMC16</b>	K8.0(A)	-	BX0310	BX0820	LW-6
<b>FMC22</b>	K10.0(C)	-	BX0412	BX1030	LW-8
<b>FMC27</b>	K12.0	MBA-M12	BX0616	-	LW-10
<b>FMC32</b>	K14.0	MBA-M16	BX0820	-	LW-14

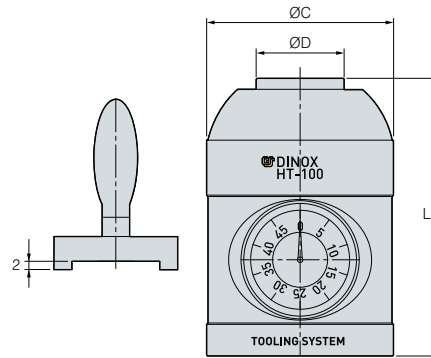
# Pull Stud Bolt



(mm)

Designation	DC	OC	OC <sub>1</sub>	OC <sub>2</sub>	L <sub>1</sub>	L	θ	G	OH
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

## HT



Designation	ØD	ØC	L
HT-100	32	68	100

(mm)

- Good for setting the Tool length at CNC machine
- No interference between height Touch setter and Tool makes safe work
- Location Accuracy:  $\pm 0.003$  mm



# TECHNICAL INFORMATION

## Technical information for TECHNICAL INFORMATION

### Technical Information I

- F2** Workpiece Material Grades
- F6** Steel, Non-Ferrous Metal Symbol List
- F7** SI Unit Conversion Table
- F8** Hardness Calculating Table

### Technical Information II

- F9** Inch
- F10** Metric - ISO6462, DIN138
- F11** Clamping Part of Milling Cutter (Oil-hole)
- F12** Technical Information for Milling
- F16** Technical Information for Tapers
- F19** The Comparison of Grade for Milling



## Workpiece Material Grades

### Carbon steel and alloy steel for structural use

Type	Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia	
	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT	
Carbon steel	SM10C	C10	S10C	1010	040A10 045A10 045M10	C10E C10R	XC10	-	
	SM15C	C15E4 C15M2	S15C	1015	055M15	C15E C15R	-	-	
	SM20C	-	S20C	1020	070M20 C22, C22E C22R	C22 C22E C22R	C22 C22E C22R	-	
	SM25C	C25 C25E4 C25M2	S25C	1025	C25 C25E C25R	C25 C25E C25R	C25 C25E C25R	-	
	SM30C	C30 C30E4 C30M2	S30C	1030	080A30 080M30 CC30 C30E C30R	C30 C30E C30R	C30 C30E C30R	30 Г	
	SM35C	C35 C35E4 C35M2	S35C	1035	C35 C35E C35R	C35 C35E C35R	C35 C35E C35R	35 Г	
	SM40C	C40 C40E4 C40M2	S40C	1039 1040	080M40 C40 C40E C40R	C40 C40E C40R	C40 C40E C40R	40 Г	
	SM43C	-	S43C	1042 1043	080A42	-	-	-	40 Г
	SM45C	C45 C45E4 C45M2	S45C	1045 1046	C45 C45E C45R	C45 C45E C45R	C45 C45E C45R	45 Г	
	SM48C	-	S48C	-	080A47	-	-	-	45 Г
	SM50C	C50 C50E4 C50M2	S50C	1049	080M50 C50 C50E C50R	C50 C50E C50R	C50 C50E C50R	50 Г	
	SM53C	-	S53C	1050 1053	-	-	-	-	50 Г
	SM55C	C55 C55E4 C55M2	S55C	1055	070M55 C55 C55E C55R	C55 C55E C55R	C55 C55E C55R	-	
	SM58C	C60 C60E4 C60M2	S58C	1059 1060	C60 C60E C60R	C60 C60E C60R	C60 C60E C60R	60 Г	
	Alloy steel	Nickel chromium steel	SNC236	-	SNC236	-	-	-	40XH
			SNC415(H)	-	SNC415(H)	-	-	-	-
SNC631(H)			-	SNC631(H)	-	-	-	30XH3A	
SNC815(H)			15NiCr13	SNC815(H)	-	655M13(655H13)	15NiCr13	-	
SNC836		-	SNC836	-	-	-	-		
Nickel chromium molybdenum steel		SNCM220	20NiCrMo2 20NiCrMoS2	SNCM220	8615 8617(H) 8620(H) 8622(H)	805A20 805M20 805A22 805M22	20NiCrMo2 20NiCrMoS2	20NCD2	-
		SNCM240	41CrNiMo2 41CrNiMoS2	SNCM240	8637 8640	-	-	-	
		SNCM415	-	SNCM415	-	-	-	-	
		SNCM420(H)	-	SNCM420(H)	4320(H)	-	-	-	20XH2M(20XHM)
		SNCM431	-	SNCM431	-	-	-	-	
		SNCM439	-	SNCM439	4340	-	-	-	
		SNCM447	-	SNCM447	-	-	-	-	
		SNCM616	-	SNCM616	-	-	-	-	
		SNCM625	-	SNCM625	-	-	-	-	
		SNCM630	-	SNCM630	-	-	-	-	
SNCM815		-	SNCM815	-	-	-	-		
Chromium steel	SCr415(H)	-	SCr415(H)	-	-	17Cr3 17CrS3	-	15X 15XA	
	SCr420(H)	20Cr4(H) 20CrS4	SCr420(H)	5120(H)	-	-	-	20X	
	SCr430(H)	34Cr4 34CrS4	SCr430(H)	5130(H) 5132(H)	34Cr4 34CrS4	34Cr4 34CrS4	34Cr4 34CrS4	30X	
	SCr435(H)	34Cr4 34CrS4 37Cr4 37CrS4	SCr435(H)	5135(H)	37Cr4 37CrS4	37Cr4 37CrS4	37Cr4 37CrS4	35X	
	SCr440(H)	37Cr4 37CrS4 41Cr4 41CrS4	SCr440(H)	5140(H)	530M40 41Cr4 41CrS4	41Cr4 41CrS4	41Cr4 41CrS4	40X	
	SCr445(H)	-	SCr445(H)	-	-	-	-	45X	

\*The above Alloy steel can supplied by domestic manufacturing

**Carbon steel and alloy steel for structural use**

Type		Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
		KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
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
		SCM430	-	SCM430	4130	-	-	-	30XM 30XMA
		SCM432	-	SCM432	-	-	-	-	-
		SCM435(H)	34CrMo4 34CrMoS4	SCM435(H)	(4135H) 4137(H)	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	35XM
		SCM440(H)	42CrMo4 42CrMoS4	SCM440(H)	4140(H) 4142(H)	708M70 709M40 42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	-
	SCM445(H)	-	SCM445(H)	4145(H) 4147(H)	-	-	-	-	
	Manganese steel and Manganese chromium steel	SMn420(H)	22Mn6(H)	SMn420(H)	1522(H)	150M19	-	-	-
		SMn433(H)	-	SMn433(H)	1534	150M36	-	-	30Г 2 35Г 2
		SMn438(H)	36Mn6(H)	SMn438(H)	1541(H)	150M36	-	-	35Г 2 40Г 2
		SMn443(H)	42Mn6(H)	SMn443(H)	1541(H)	-	-	-	40Г 2 45Г 2
		SMnC420(H) SMnC443(H)	-	SMnC420(H) SMnC443(H)	-	-	-	-	-
	Aluminum chromium molybdenum steel	SACM645	41CrAlMo74	SACM645	-	-	-	-	-

\* The above Alloy steel can supplied by domestic manufacturing

**Tool steel**

Type		Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
		KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
High speed steel	SKH2	HS18-0-1	SKH2	T1	BM 2  BM 35	S6/5/2  S6/5/2/5  S2/9/2	Z 85 WDCV  6-5-2-5		
	SKH3	-	SKH3	T4					
	SKH4	-	SKH4	T5					
	SKH10	-	SKH10	T15					
	SKH51	HS6-5-2	SKH51	M2					
	SKH52	HS6-6-2	SKH52	M3-1					
	SKH53	HS6-5-3	SKH53	M3-2					
	SKH54	HS6-5-4	SKH54	M4					
	SKH55	HS6-5-2-5	SKH55	M 35					
	SKH56	-	SKH56	M36					
	SKH57	HS10-4-3-10	SKH57	-					
	SKH58	HS2-9-2	SKH58	M7					
	SKH59	HS2-9-1-8	SKH59	M42					
	Alloy tool steel	STS11	-	SKS11					F2
STS2		-	SKS2	-					
STS21		-	SKS21	-					
STS5		-	SKS5	-					
STS51		-	SKS51	L6					
STS7		-	SKS7	-					
STS8		-	SKS8	-					
STS4		-	SKS4	-					
STS41		-	SKS41	-					
STS43		105V	SKS43	W2-9 1/ W2-8 1-2					
STS44		-	SKS44	-					
STS3		-	SKS3	-					
STS31		105WCr1	SKS31	-					
STS93		-	SKS93	-					
STS94		-	SKS94	-					
STS95		-	SKS95	-					
STD1		210Cr12	SKD1	D3					
STD11		-	SKD11	D2					
STD12		100CrMoV5	SKD12	A2					
STD4		-	SKD4	-					
STD5		X30WCrV9-3	SKD5	H21					
STD6		X37CrMoV5-1	SKD6	H11					
STD61		X40CrMoV5-1	SKD61	H13					
STD62		X35CrWMoV5	SKD62	H12					
STD7	32CrMoV12-28	SKD7	H10						
STD8	-	SKD8	H19						
STF3	-	SKT3	-						
STF4	55NiCrMoV7	SKT4	L6						

\* The above Alloy steel can supplied by domestic manufacturing

## Tool steel

Type	Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Free cutting carbon steel	SUM11	-	SUM11	1110				
	SUM12	-	SUM12	1109				
	SUM21	9S20	SUM21	1212				
	SUM22	11SMn28	SUM22	1213	230M07	9SMn28	S250	
	SUM22L	11SMnPb28	SUM22L	12L13		9SMnPb28	S250Pb	
	SUM23	-	SUM23	1215	240M07	9SMn36	S 300	
	SUM23L	-	SUM23L	-				
	SUM24L	11SMnPb28	SUM24L	12L14		9SMnPb36	S300Pb	
	SUM25	12SMn35	SUM25	-				
	SUM31	-	SUM31	1117				
	SUM31L	-	SUM31L	-				
	SUM32	-	SUM32	-				
	SUM41	-	SUM41	1137				
	SUM42	-	SUM42	1141				
	SUM43	44SMn28	SUM43	1144				
High carbon chromiom	STB1	-	SUJ1	-				
	STB2	B1	SUJ2	52100	534A99	100Cr6	100Cr6	
	STB3	B2	SUJ3	ASTM A 485 Grade 1				
	STB4	-	SUJ4	-				
	STB5	-	SUJ5	-				

\* The above Alloy steel can supplied by domestic manufacturing

## Stainless steel

Type		Korea	ISO	Japan	U.S.A		Great Britain	Germany	France	Russia
		KS	ISO	JIS	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Stainless steel	Austenitic	STS201	X12CrMnNiN17-7-5	SUS201	S20100	201	284S16	X12CrNi17-7	Z12CMN17-07Az	12X17-9AH4
		STS202	X12CrMnNiN18-9-5	SUS202	S20200	202	301S21	X2CrNiN18-7		07X16H6
		STS301	X10CrNi18-8	SUS301	S30100	301		X12CrNi17-7	Z11CN17-08	
		STS301L	X2CrNiN18-7	SUS301L						
		STS301J1		SUS301J1			302S25			12X18H9
		STS302		SUS302	S30200	302		X10CrNiS18-9	Z12CN18-09	
		STS302B	X12CrNiSi18-9-3	SUS302B	S30215	302B	303S21			
		STS303	X10CrNiS18-9	SUS303	S30300	303	303S41		Z8CNF18-09	12X18H10E
		STS303Se		SUS303Se	S30323	303Se		X5CrNi18-10		
		STS303Cu		SUS303Cu			304S31			08X18H10
		STS304	X5CrNi18-9 X2CrNi18-9	SUS304	S30400	304	304S11	X2CrNi19-11	Z7CN18-09	03X18H11
		STS304L	X2CrNi19-11	SUS304L	S30403	304L		X2CrNi18-10	Z3CN19-11	
		STS304N1	X5CrNi18-8	SUS304N1	S30451	304N			Z6CN19-09Az	
		STS304LN	X2CrNiN18-8	SUS304LN	S30453	304LN		X5CrNi18-12	Z3CN18-10Az	
		STS304J1		SUS304J1			305S19			06X18H11
		STS305	X6CrNi18-12	SUS305	S30500	305			Z8CN18-12	
		STS309S		SUS309S	S30908	309S	310S31	X5CrNiMo27-12-2	Z10CN24-13	10X23H18
		STS310S	X6CrNi25-20	SUS310S	S31008	310S	316S31	X5CrNiMo27-13-3	Z8CN25-20	
	STS316	X5CrNiMo17-12-2 X3CrNiMo17-12-3	SUS316	S31600	316	316S11	X2CrNiMo17-13-2 X2CrNiMo17-14-3	Z7CND17-12-02 Z6CND18-12-03	03X17H14M3	
	STS316L	X2CrNiMo17-12-2 X2CrNiMo17-12-3 X2CrNiMo18-14-3	SUS316L	S31603	316L			Z3CND17-12-02 Z3CND17-12-03		
	STS316N		SUS316N	S31651	316N	317S16	X6CrNiTi18-10			
	STS317		SUS317	S31700	317	321S31	X6CrNiNb18-10		08X18H10T	
	STS321	X6CrNiTi18-10	SUS321	S32100	321	347S31		Z6CNT18-10	08X18H12	
	STS347	X6CrNiNb18-10	SUS347	S34700	347		X6CrAl13	Z6CNNb18-10		
	STS384	X3NiCr18-16	SUS384	S38400	384	405S17		Z6CN18-16		
	STS405	X6CrAl13	SUS405	S40500	405			Z8CA12		
	STS410L		SUS410L				X6Cr17	Z3C14		
	STS429		SUS429	S42900	429	430S17	X7CrS18		12X17	
	STS430	X6Cr17	SUS430	S43000	430		X6CrMo17-1	Z8C17		
	STS430F	X7CrS17	SUS430F	S43020	430F	434S17		Z8CF17		
	STS434	X6CrMo17-1	SUS434	S43400	434			Z8CD17-01		
	STS444	X2CrMoTi18-2	SUS444	S44400	444			Z3CDT18-02		
	STSM27		SUSXM27	S44627			X10Cr13	Z1CD26-01		
STS403		SUS403	S40300	403	410S21					
STS410	X12Cr13	SUS410	S41000	410	416S21	X20Cr13	Z13C13			
STS416	X12CrS13	SUS416	S41600	416	420S29	X20CrNi17-2	Z11CF13	20X13		
STS420J1	X20Cr13	SUS420J1	S42000	420	431S29		Z20C13	20X17H2		
STS431	X19CrNi16-2	SUS431	S43100	431			Z15CN16-02			
STS440A	X70CrMo15	SUS440A	S44002	440A		X7CrNiAl17-7	Z70C15			
STS630	X5CrNiCuNb16-4	SUS630	S17400	S17400			Z6CNU17-04	09X17H7I0		
STS631	X7CrNiAl17-7	SUS631	S17700	S17700			Z9CNA17-07			
STS631J1		SUS631J1								

\* The above Alloy steel can supplied by domestic manufacturing

**➤ Casting or forging steel**

Type	Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia	
	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT	
<b>Casting Iron</b>	<b>Grey iron casting</b>	GC100 GC150 GC200 GC250 GC300 GC350	100,150, 200, 250, 300, 350	FC100 FC150 FC200 FC250 FC300 FC350	No 20 B No 25 B No 30 B No 35 B No 45 B No 50 B No 55 B	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	
	<b>Spheroidal graphite iron casting</b>	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	60-40-18 65-45-12 80-55-06 100-70-03	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	
	<b>Austempered Spheroidal graphite iron casting</b>	FCAD	-	FCAD	-	EN-GJS-	EN-GJS-	EN-GJS-	
	<b>Austenitic iron casting</b>	FCA-FCDA-	L-, S-	FCA-FCDA-	Type 1, 2, Type D-2, D-3A Class 1, 2	F1, F2, S2W, S5S	GGL-, GGG-	L-, S-	

**➤ Non-ferrous alloy**

Type	Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia		
	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT		
<b>Aluminum alloy</b>	<b>Aluminum alloy ingots for casting</b>	AC1B	Al-Cu4MgTi	AC1B	204.0	-	-	A-U5GT		
		AC2A	-	AC2A	-	-	-	-		
		AC2B	-	AC2B	319.0	-	-	-		
		AC3A	-	AC3A	-	-	LM-6	-		
		AC4A	-	AC4A	-	-	-	G(GK)-AlSi9Cu3	-	
		AC4B	-	AC4B	-	-	-	-	-	
		AC4C	Al-Si7Mg(Fe)	AC4C	356.0	LM-25	G(GK)-AlSi7Mg	A-S7G		
		AC4CH	Al-Si7Mg	AC4CH	A356.0	-	-	-		
		AC4D	Al-Si5Cu1Mg	AC4D	355.0	LM-16	-	-		
		AC5A	Al-Cu4Ni2Mg2	AC5A	242.0	-	G(GK)-AlMg5	A-U4NT		
		AC7A	-	AC7A	514.0	LM-5	-	-		
		AC8A	-	AC8A	-	LM-13	-	-	A-S12UNG	
		AC8B	-	AC8B	-	LM-26	-	-	A-S10UG	
		AC8C	-	AC8C	-	-	-	-	A-S10UG	
		AC9A	-	AC9A	-	LM-29	-	-	-	
		AC9B	-	AC9B	-	-	-	GD-AlSi12 (Cu)	A-S18UNG	
		<b>Aluminum alloy die casting</b>	ALDC1	Al-Si12CuFe	ADC1	A413.0	LM20	GD-AlSi10Mg	A-S13	
			ALDC2	-	ADC3	A360.0	-	GD-AlMg9	A-S9G	
	ALDC3		-	ADC5	518.0	-	-	A-G6		
	ALDC4		-	ADC6	-	-	GD-AlSi9Cu3	A-G3T		
	ALDC7		Al-Si8Cu3Fe	ADC10	A380.0	-	GD-AlSi9Cu3	-		
	ALDC7Z		Al-Si8Cu3Fe	ADC10Z	A380.0	LM24	-	-		
	ALDC8		-	ADC12	383.0	LM2	-	-		
	ALDC8Z		-	ADC12Z	383.0	LM2	-	-		
	ALDC9		-	ADC14	B390.0	LM30	EN AW-5052	-		
	<b>Aluminum alloy extruded shapes</b>	A5052S	-	A5052S	5052	EN AW-5052	EN AW-5454	EN AW-5052		
		A5454S	-	A5454S	5454	EN AW-5454	EN AW-5083	EN AW-5454		
		A5083S	AlMg4.5Mn0.7	A5083S	5083	EN AW-5083	EN AW-5086	EN AW-5083		
		A5086S	-	A5086S	5086	EN AW-5086	EN AW-6061	EN AW-5086		
		A6061S	AlMg1SiCu	A6061S	6061	EN AW-6061	EN AW-6063	EN AW-6061		
		A6063S	AlMg0.7Si	A6063S	6063	EN AW-6063	EN AW-7003	EN AW-6063		
		A7003S	-	A7003S	-	EN AW-7003	-	EN AW-7003		
		A7N01S	-	A7N01S	-	-	EN AW-7075	-		
		A7075S	AlZn5.5MgCu	A7075S	7075	EN AW-7075	-	EN AW-7075		

**➤ Heat resistant steel**

Type	Korea	ISO	Japan	U.S.A		Great Britain	Germany	France	Russia
	KS	ISO	JIS	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
<b>Heat resistant steel</b>	<b>Austenitic</b>	STR31		SUH31			331S42		Z35CNWS14-14
		STR35		SUH35			349S52	X53CrMnNi21-9	Z52CMN21-09-Az
		STR36		SUH36			349S54		Z55CMN21-09-Az
		STR37		SUH37	S63008		381S34		
		STR38		SUH38	S63017				
		STR309		SUH309			309S24	CrNi2520	Z15CN24-13
		STR310		SUH310	S30900		310S24		Z15CN25-20
		STR330		SUH330	S31000	309			Z12NCS35-16
		STR660		SUH660	N08330	310			Z6NCTV25-20
		STR661		SUH661	S66286	N08330		CrAl1205	
	<b>Ferritic</b>	STR21		SUH21	R30155			X6CrTi12	
		STR409	X6CrTi12	SUH409			409S19		Z6CT12
		STR409L	X2CrTi12	SUH409L	S40900				Z3CT12
		STR446		SUH446		409		X45CrSi9-3	Z12C25
	<b>Martensitic</b>	STR1		SUH1	S44600		401S45		Z45CS9
		STR3		SUH3	S65007	446			Z40CSD10
		STR4		SUH4			443S65		Z80CSN20-02
		STR11		SUH11					
		STR600		SUH600					
		STR616		SUH616	S42200				

\* 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	Group	Standard term	Code	
<b>Structural Steel</b>	Rolled Steel for Welded Structure	SWS	<b>Forged steel</b>	Carbon Steel Forging	SF	
	Rerolled Steel	SBR		Chromium Molybdenum Steel Forging	SFCM	
	Rolled Steel for General Structure	SB		Nickel Chromium Molybdenum Steel Forging	SFNCM	
	Light Gauge Steel for General Structure	SBC	<b>Cast iron</b>	Gray Cast iron	GC	
	Hot-rolled Steel Plate, Sheet/ Strip for Automobile Structural Use	SAPH		Spheroidal Graphite Cast iron	GCD	
<b>Steel Plate</b>	Cold-rolled Steel Sheet/Strip	SBC		Blackheart Malleable Cast iron	BMC	
	Hot-rolled Soft Steel Sheet/Strip	SHP		Whiteheat Malleable Cast iron	WMC	
<b>Steel Pipe</b>	Carbon Steel Pipe for Ordinary Piping	SPP	Pearlitic Malleable Cast iron	PMC		
	Carbon Steel Pipe for Boiler and Heat Exchanger	STH	<b>Cast steel</b>	Carbon Cast Steel	SC	
	Seamless Steel Pipe for High Pressure Gas Cylinder	STHG		High Tensile Strength Carbon Cast Steel & Low Alloy Cast Steel	HSC	
	Carbon Steel Pipe for General Structural Use	SPS		Stainless Cast Steel	SSC	
	Carbon Steel Pipe for Machine Structural Use	STST		Heat Resisting Cast Steel	HRSC	
	Alloy Steel Pipe for Structural Use	STA		High Manganese Cast Steel	HMnSC	
	Stainless Steel Pipe for Machine and Structural Use	STS-TK		Cast Steel for High Temperature and High Pressure Service	SCPH	
	Carbon Steel Square Pipe for General Structural Use	SPSR		<b>Casting</b>	Brass Casting	BsC
	Alloy Steel Pipe	SPA			High Strength Brass Casting	HBsC
	Carbon Steel Pipe for Pressure Service	SPPS	Bronze Casting		BrC	
	Carbon Steel Pipe for High Temperature Service	SPSR	Phosphoric Bronze Casting		PCB	
	Carbon Steel Pipe for High Pressure Service	SPPH	Aluminum Bronze Casting		AIBC	
	Stainless Steel Pipe	STSxT	Aluminum Alloy Casting		ACxA	
	<b>Iron and Steel</b>	Carbon Steel for Machine Structural Use	SMxxC, SMxxCK		Magnesium Alloy Casting	MgC
Aluminum Chromium Molybdenum Steel		SACM	Zinc Alloy Die Casting		ZnDC	
Chromium Molybdenum Steel		SCM	Aluminum Alloy Die Casting		Al DC	
Chromium Steel		SCr	Magnesium Alloy Die Casting		MgDC	
Nickel Chromium Steel		SNC	White Metal	WM		
Nickel Chromium Molybdenum Steel		SNCM	Aluminum Alloy Casting for Bearing	AM		
Manganese Steel and manganese Chromium Steel for Machine Structural Use		SMn, SMnC	Brass Alloy Casting for Bearing	KM		
<b>Special steel</b>	<b>Tool steel</b>	Carbon Tool Steel	STC			
		Hollow Drill Steel	SKC			
		Alloy Tool Steel	STS, STD, STF			
		High Speed Tool Steel	SKH			
	<b>Stainless steel</b>	Stainless Steel Bar	STS			
		<b>Heat resisting steel</b>	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					

## SI Unit Conversion Table

### Major SI unit conversion table

#### Force

N	kgf	dyn
1	$1.01972 \times 10^{-1}$	$1 \times 10^5$
9.80665	1	$9.80665 \times 10^5$
$1 \times 10^{-5}$	$1.01972 \times 10^{-6}$	1

#### Stress

Pa or N/m <sup>2</sup>	MPa or N/mm <sup>2</sup>	kgf/mm <sup>2</sup>	kgf/cm <sup>2</sup>	kgf/m <sup>2</sup>
1	$1 \times 10^{-6}$	$1.01972 \times 10^{-7}$	$1.01972 \times 10^{-5}$	$1.01972 \times 10^{-1}$
$1 \times 10^6$	1	$1.01972 \times 10^{-1}$	$1.01972 \times 10$	$1.01972 \times 10^5$
$9.80665 \times 10^6$	9.80665	1	$1 \times 10^2$	$1 \times 10^6$
$9.80665 \times 10^4$	$9.80665 \times 10^{-2}$	$1 \times 10^{-2}$	1	$1 \times 10^4$
9.80665	$9.80665 \times 10^{-6}$	$1 \times 10^{-6}$	$1 \times 10^{-4}$	1

#### Pressure

Pa	kPa	MPa	bar	kgf/cm <sup>2</sup>
1	$1 \times 10^{-3}$	$1 \times 10^{-6}$	$1 \times 10^{-5}$	$1.01972 \times 10^{-5}$
$1 \times 10^3$	1	$1 \times 10^{-3}$	$1 \times 10^{-2}$	$1.01972 \times 10^{-2}$
$1 \times 10^6$	$1 \times 10^3$	1	$1 \times 10$	$1.01972 \times 10$
$1 \times 10^5$	$1 \times 10^2$	$1 \times 10^{-1}$	1	1.01972
$9.80665 \times 10^4$	$9.80665 \times 10$	$9.80665 \times 10^{-2}$	$9.80665 \times 10^{-1}$	1

#### Work, Energy, Calorie

J	kW·h	kgf·m	kcal
1	$2.77778 \times 10^{-7}$	$1.01972 \times 10^{-1}$	$2.38889 \times 10^{-4}$
$3.60000 \times 10^6$	1	$3.67098 \times 10^5$	$8.60000 \times 10^2$
9.80665	$2.72407 \times 10^{-6}$	1	$2.34270 \times 10^{-3}$
$4.18605 \times 10^3$	$1.16279 \times 10^{-3}$	$4.26858 \times 10^2$	1

#### Power

W	kW	kgf·m/s	PS	kcal/h
1	$1 \times 10^{-3}$	$1.01972 \times 10^{-1}$	$1.35962 \times 10^{-3}$	0.860
$1 \times 10^3$	1	$1.01972 \times 10^2$	1.359 62	$8.60000 \times 10^2$
9.81 65	$9.80665 \times 10^{-3}$	1	$1.33333 \times 10^{-2}$	8.433 71
$7.355 \times 10^2$	$7.355 \times 10^{-1}$	$7.5 \times 10$	1	$6.32529 \times 10^2$
1.16279	$1.16279 \times 10^{-3}$	$1.18572 \times 10^{-1}$	$1.58095 \times 10^{-3}$	1

#### Specific heat

J/(kg·K)	kcal/(kg·°C) cal/(g·°C)
1	$2.38889 \times 10^{-4}$
$4.18605 \times 10^3$	1

#### Thermal conductivity

W/(m·K)	kcal/(h·m·°C)
1	$8.6000 \times 10^{-1}$
1.16279	1

#### Revolution per minute

min <sup>-1</sup>	s <sup>-1</sup>	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 (t)
	Standard ball 10mm	Cemented carbide ball 10mm	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

Vickers 50kgf  HV	Brinell 3000kgf HB		Rockwell				Shore  HS	Tensile strength (approximate value)  MPa (t)
	Standard ball 10mm	Cemented carbide ball 10mm	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		
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/mm<sup>2</sup>

2. The number in the blank is not generally used ranges

# Actual designation of Milling Cutter

## Inch Type

Fig. 1

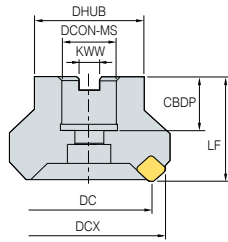


Fig. 2

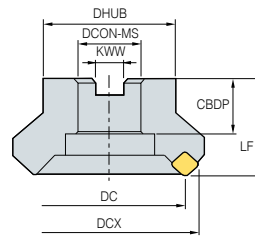


Fig. 3

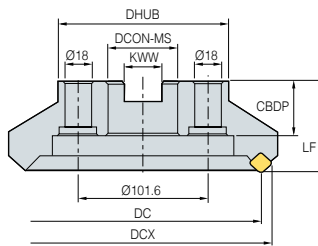
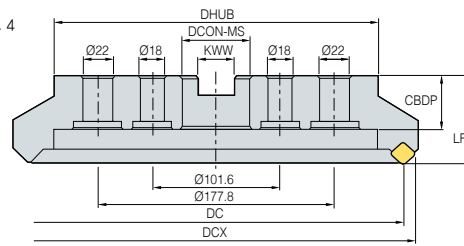


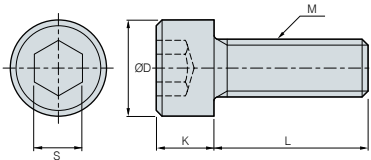
Fig. 4



## Internal inch type

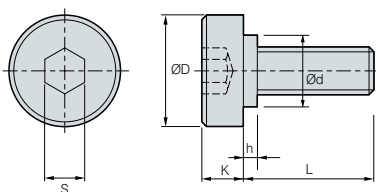
Dimensions (mm)						Fig.	Available arbors
DCX	DCON-MS	KWW	CBDP	LF	DHUB		
40	16	8.4	18	40	34	1	FMC16, SMA16
50	22	10.4	20	40	42	1	FMC22
63	22	10.4	20	40	49	1	FMC22
80	25.4	9.5	25	50	57	1	FMA25.4
100	31.75	12.7	32	50	67	2	FMA31.75, SMB31.75
125	38.1	15.9	38	63	87	2	FMA38.1
160	50.8	19	38	63	107	2	FMA50.8
200	47.625	25.4	38	63	130	3	FMA47.625
250	47.625	25.4	38	63	180	3	FMA47.625
315	47.625	25.4	38	63	240	4	-

## Wrench bolt



Designation	D	S	K	L	M	Cutter size
SB0825	13	6	8	25	M08×1.25	Ø40
SB1025	16	8	10	25	M10×1.50	Ø50, Ø63
SB1035	16	8	10	35	M10×1.50	Ø50, Ø63(HRM)
SB1230	18	10	12	30	M12×1.75	Ø80
SB1630	24	14	16	30	M16×2.0	Ø100
SB1645	24	14	16	45	M16×2.0	Ø80, Ø100(HRM)
SB2040	30	17	20	40	M20×2.5	Ø125

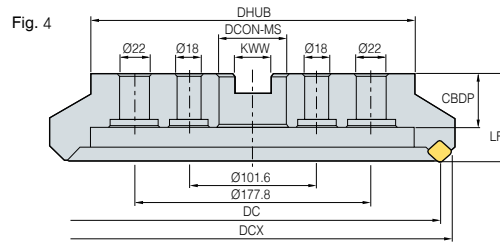
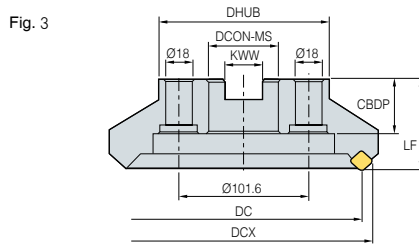
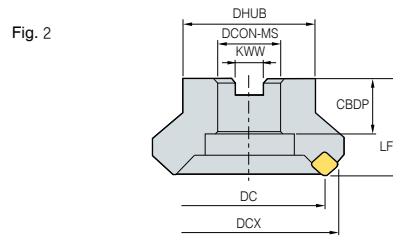
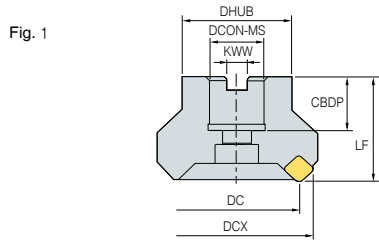
## Clamp bolt



Designation	Dimensions (mm)						Cutter size
	D	L	K	S	h	d	
M8×1.25	20	20	7	6	-	-	Ø40
M10×1.5	28	24	9	8	-	-	Ø50, Ø63
M12×1.75	33	28	10	10	2	23	Ø80
M16×2	40	32	10	14	5	23	Ø100
M20×2.5	50	40	14	17	5	27	Ø125
M24×3	64	46	14	19	9	37	Ø160

## Actual designation of Milling Cutter

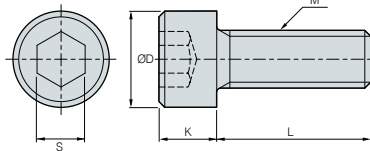
### ➤ Metric Type - ISO6462, DIN138



### ➤ Internal metric type

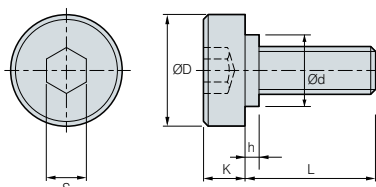
Dimensions (mm)						Fig.	Available arbors
DCX	DCON-MS	KWW	CBDP	LF	DHUB		
40	16	8.4	18	40	34	1	FMC16, SMA16
50	22	10.4	20	40	42	1	FMC22
63	22	10.4	20	40	49	1	FMC22
80	27	12.4	22	50	57	1	FMC27
100	32	14.4	28	50	67	2	FMC32
125	40	16.4	32	63	87	2	FMB40
160	40	16.4	32	63	107	2	FMB40
200	60	25.7	38	63	130	3	FMB60
250	60	25.7	38	63	180	3	FMB60
315	60	25.7	38	63	240	4	-

### ➤ Wrench bolt



Designation	DCON-MS	S	K	L	M	Cutter size
SB0825	13	6	8	25	M08x1.25	Ø40
SB1025	16	8	10	25	M10x1.50	Ø50, Ø63
SB1035	16	8	10	35	M10x1.50	Ø50, Ø63(HRM)
SB1230	18	10	12	30	M12x1.75	Ø80
SB1245	18	10	12	45	M12x1.75	Ø80(HRM)
SB1630	24	14	16	30	M16x2.0	Ø100
SB1645	24	14	16	45	M16x2.0	Ø100(HRM)
SB2040	30	17	20	40	M20x2.5	Ø125

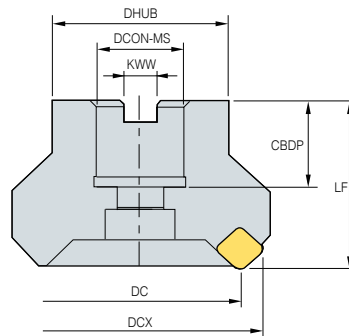
### ➤ Clamp bolt



Designation	Dimensions (mm)						Cutter size
	D	L	K	S	h	d	
M12x1.75	33	28	10	10	2	23	Ø80
M16x2	40	32	10	14	5	23	Ø100
M20x2.5	50	40	14	17	5	27	Ø125, Ø160

## Clamping Part of Milling Cutter (Oil-hole)

### Clamping part of milling cutter



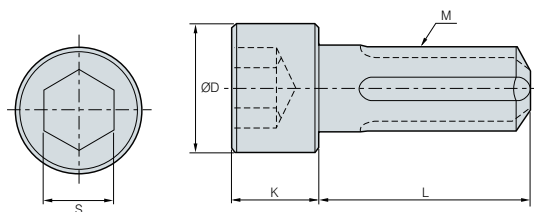
### Inch type

Dimensions (mm)						Available arbors
DCX	DCON-MS	KWW	CBDP	LF	DHUB	
40	16	8.4	19	40	34	FMC16, SMA16
50	22	10.4	21	40	42	FMC22
63	22	10.4	21	40	49	FMC22
80	25.4	9.5	24	50	57	FMA25.4, FMB25.4
100	31.75	12.7	32	63	67	FMA31.75, SMB31.75
125	38.1	15.9	35	63	87	FMA38.1, FMB38.1, FMC38.1

### Metric type

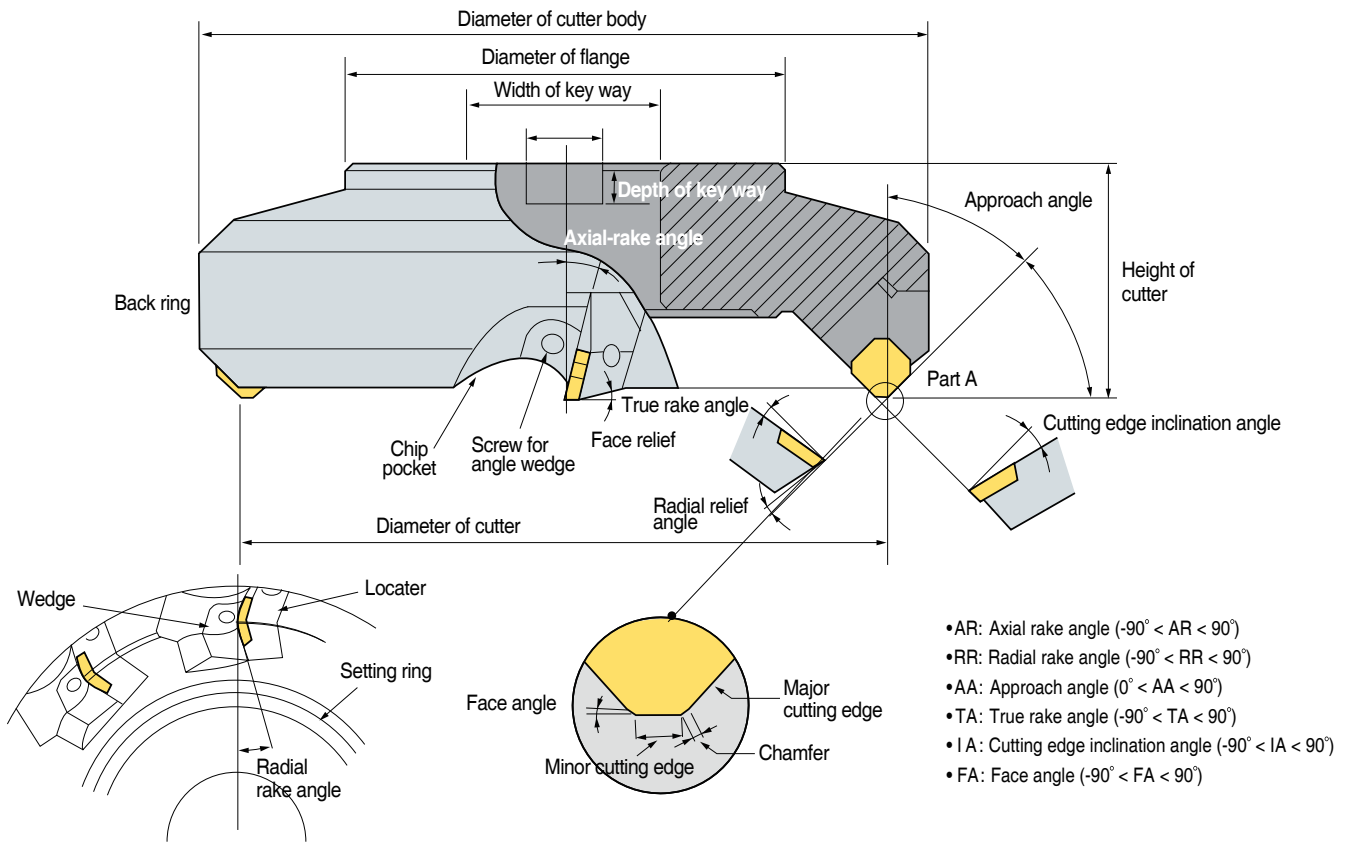
Dimensions (mm)						Available arbors
DCX	DCON-MS	KWW	CBDP	LF	DHUB	
40	16	8.4	19	40	34	FMC16, SMA16
50	22	10.4	21	40	42	FMC22
63	22	10.4	21	40	49	FMC22
80	27	12.4	23	50	57	FMC27
100	32	14.4	25	50	67	FMC32
125	40	16.4	29	63	87	FMB40/FMC40

### Wrench bolt



Designation	ØD	S	K	L	M	Cutter size
CB0825	13	6	8	25	M08×1.25	Ø40
CB1025	16	8	10	25	M10×1.50	Ø50, Ø63
CB1035	16	8	10	35	M10×1.50	Ø50, Ø63(HRM)
CB1230	18	10	12	30	M12×1.75	Ø80
CB1245	18	10	12	45	M12×1.75	Ø80(HRM)
CB1630	24	14	16	30	M16×2.0	Ø100
CB1645	24	14	16	45	M16×2.0	Ø100(HRM)
CB2040	30	17	20	40	M20×2.5	Ø125

## Milling cutter shape and designation



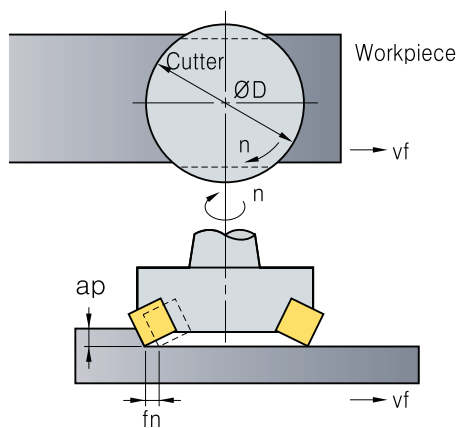
### The terminology and functions of cutting edge angle

No.	Tool failure	Symbol	Function	Effects
1	Axial rake angle	A.R	Chip flow direction	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 decrease, Corner edge strength weakens
6	Face angle	F.A	Controlling cutting edge strength, 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
<b>Division</b>				
<b>Use</b>	<ul style="list-style-type: none"> <li>• General machining of steel, cast iron, stainless steel</li> <li>• Machining soft steel that brings about built-up edge easily</li> <li>• Machining material having tendency to poor surface roughness</li> </ul>	<ul style="list-style-type: none"> <li>• Under interrupted cutting condition</li> <li>• Roughing of cast iron and steel</li> </ul>	<ul style="list-style-type: none"> <li>• Machining difficult to cut material</li> <li>• Roughing with deep depth of cut and wide width of cut in steel and cast iron</li> </ul>	<ul style="list-style-type: none"> <li>• Chip flows to center of cutter body</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• As for tough workpiece material It prevents built-up edge to improve surface roughness</li> <li>• Low cutting load and better machinability</li> </ul>	<ul style="list-style-type: none"> <li>• Strong cutting edge</li> <li>• Roughing of workpiece that has bad surface condition containing sand, mill scale</li> <li>• Double sided inserts can be applied(Economical)</li> <li>• Good chip control</li> </ul>	<ul style="list-style-type: none"> <li>• Good chip flow and machinability.</li> <li>• Suitable for machining of difficult-to-cut material</li> </ul>	-
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Weak cutting edge strength</li> <li>• Only single sided inserts are available (No economical)</li> <li>• Machine and cutter need enough power and rigidity</li> </ul>	<ul style="list-style-type: none"> <li>• Machine and cutter need enough power and rigidity</li> </ul>	<ul style="list-style-type: none"> <li>• Only single sided inserts are available (No economical)</li> </ul>	<ul style="list-style-type: none"> <li>• Since the chips flows toward the center of cutter. Chips scratch on machined surface</li> <li>• Bad chip flow</li> <li>• No economical</li> </ul>

**Major cutting formulas**



**● Cutting speed**

$$vc = \frac{\pi \cdot D \cdot n}{1000} \text{ (m/min)}$$

- vc: Cutting speed (m/min)
- D: Diameter of tool (mm)
- n: Revolution per minute (min<sup>-1</sup>)
- π: Circular constant (3.14)

**● Feed**

$$fz = \frac{vf}{z \cdot n} \text{ (mm/t)}$$

- fz: Feed per tooth (mm/t)
- vf: Feed per minute (mm/min)
- n: Revolution per minute (min<sup>-1</sup>)
- z: Number of tooth

**● Chip removal amount**

$$Q = \frac{L \cdot vf \cdot f_{ap}}{1000} \text{ (cm}^3\text{/min)}$$

- Q: Chip removal amount (cm<sup>3</sup>/min)
- L: Width of cut (mm)
- vf: Table feed (mm/min)
- ap: Depth of cut (mm)

**● Power requirement**

$$P_{kw} = \frac{Q \cdot kc}{60 \times 102 \times \eta} \quad P_{hp} = \frac{P_{kw}}{0.75}$$

- Pc: Power requirement (kW)
- H: Horse power requirement (hp) (mm/min)
- Q: Chip removal amount (cm<sup>3</sup>/min)
- kc: Specific cutting resistance (kgf/mm<sup>3</sup>)
- 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 (mm) (= Lw+D+2R)
- Lw: The length of workpiece (mm)
- D: The diameter of cutter body (mm)
- vf: Table feed (mm/min)
- R: Relief length (mm)

**● True rake angle/Cutting edge inclination angle**

True rake angle  $\tan(T) = \tan(R) \times \cos(AA) + \tan(A) \times \sin(C)$   
 Cutting edge inclination angle  $\tan(I) = \tan(A) \times \cos(AA) - \tan(R) \times \sin(C)$



## Values of specific cutting resistance

Workpiece	Tensile strength (kg/mm <sup>2</sup> ) and hardness	Specific cutting resistance according to various feed kc(MPa)				
		0.1 (mm/t)	0.2 (mm/t)	0.3 (mm/t)	0.4 (mm/t)	0.6 (mm/t)
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 (cm<sup>3</sup>/min) per rated horse power

Workpiece	Rated horse power	5Hp	10Hp	20Hp	30Hp	40Hp	50Hp
		<b>Steel</b>	Soft	32	75	163	295
	Medium	26	55	127	212	310	425
	hard	18	41	93	163	228	310
<b>Cast iron</b>	Soft	52	116	260	455	670	880
	Medium	32	75	163	295	425	570
	hard	26	55	127	212	310	425
<b>Bronze Brass</b>	Soft	77	163	390	670	980	1,280
	Medium	54	118	275	490	700	910
	hard	26	55	127	245	325	425
<b>Aluminum</b>		90	195	440	780	1,110	1,500

## Classification of surface roughness

Type	Symbol	How to calculate	Measured value
Maximum height	Rmax	<ul style="list-style-type: none"> <li>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 )</li> <li>Exclude extraordinary values (too small or big) that look like grooves or mountains</li> </ul>	
+10 point mean roughness	Rz	<ul style="list-style-type: none"> <li>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 )</li> </ul>	
Arithmetic mean roughness	Ra	<ul style="list-style-type: none"> <li>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 )</li> <li>Generally, Read measured value by Ra measurer</li> </ul>	

Finish mark		Grind Ra0.2	Grind Ra0.4	Grind Ra0.8	√ Ra1.6	√ Ra6.3	√
Surface roughness	Rmax	0.8s	1.6s	3.2s	6.3s	25s	Unspecified
	Rz	0.8z	1.6z	3.2z	6.3z	25z	
	Ra	0.2a	0.4a	0.8a	1.6a	6.3a	

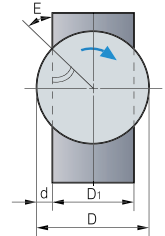
## Selection of MILL-MAX diameter (D)

### Selection by machine rigidity

Machine horse power (PS)	10~15	15~20	Over 20
Proper cutter body specification (mm)	Ø80~Ø100	Ø125~Ø160	Ø160~Ø200

### Selection by machine rigidity

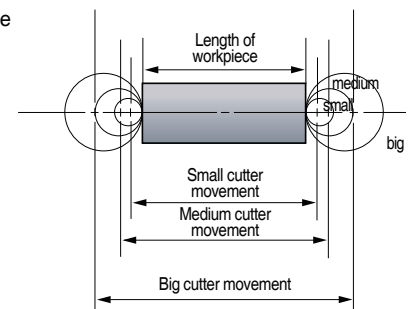
Workpiece	E	λ
Steel	+20°~-10°	3 : 2
Cast iron	Under +50°	5 : 4
Light alloy	Under +40°	5 : 3



D: External diameter of cutter body  
 D1: Width of workpiece  
 d: Projected part of cutter body  
 E: Engage angle  
 λ: 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	Dx (1~1.5)	Dx (1~4)	Dx1+α

ex) D = ø100 ⇒ 4" x(1~1.5) = 4~6

D is the size of cutter body converted into inch size

## 🔍 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
<b>Flank wear</b>	<ul style="list-style-type: none"> <li>• Improper insert grade</li> <li>• Improper cutting conditions</li> <li>• Chattering</li> </ul>	↓		↑			↑	↓		↑		↑
<b>Crater wear</b>	<ul style="list-style-type: none"> <li>• Improper cutting conditions</li> <li>• Improper insert grade</li> </ul>	↓	↓	↓	●	↑	↑			↓		↑
<b>Chipping</b>	<ul style="list-style-type: none"> <li>• Lack of insert toughness</li> <li>• Excessive feed</li> <li>• Excessive cutting load</li> </ul>			↓		↓	↓	↓		↑	↑	
<b>Built-up edge</b>	<ul style="list-style-type: none"> <li>• Improper cutting conditions</li> <li>• Improper cutting edge shape</li> <li>• Improper insert grade</li> </ul>	↑	↓			↑				↓		
<b>Chattering</b>	<ul style="list-style-type: none"> <li>• Improper cutting conditions</li> <li>• Lack of number of cutting teeth</li> <li>• Improper cutting edge shape</li> <li>• Bad chip flow</li> <li>• Unstable workpiece clamping</li> </ul>		↓	↓	●	↑		↑	↓	↓		
<b>Poor surface finish</b>	<ul style="list-style-type: none"> <li>• Built-up edge</li> <li>• Improper cutting conditions</li> <li>• Chattering</li> <li>• Bad chip flow</li> </ul>	↑	↓	↓	●	↑			↓	↑		
<b>Thermal crack</b>	<ul style="list-style-type: none"> <li>• Improper cutting conditions</li> <li>• Improper insert grade</li> </ul>	↓	↓	↓	⊙	↑				↑	↑	
<b>Fracture</b>	<ul style="list-style-type: none"> <li>• Improper insert grade</li> <li>• Excessive cutting load</li> <li>• Bad chip flow</li> <li>• Chattering</li> <li>• Excessive overhang</li> </ul>		↓	↓	●							↑

↑: Increase ↓: Decrease ●: use ⊙: Correct use

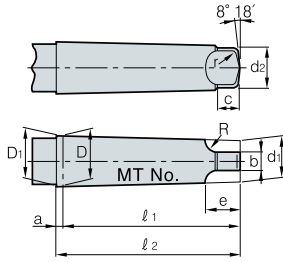
## 🔍 General formulas for milling

### ● Machine efficiency rate ( $\eta$ )

Power transmission mode	Efficiency rate (E)	Reference
Principal axis direct connection driving	0.90	
Belt driving	0.85	Double connection: $0.85 \times 0.85 \approx 0.70$
Starting driving	0.75	
Oil pressure driving	0.60~0.90	

(mm)

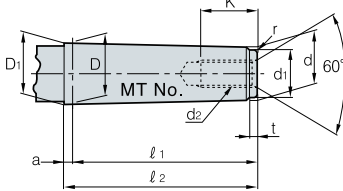
## Morse taper (Tang type)



MT No.	Taper	Taper angle (°)	D	a	D <sub>1</sub>	d <sub>1</sub>	ℓ <sub>1</sub>	ℓ <sub>2</sub>	d <sub>2</sub>	b	c	e	R	r
0	$\frac{1}{19.212}$	1°29'27"	9.045	3	9.201	6.104	56.5	59.5	6.0	3.9	6.5	10.5	4	1
1	$\frac{1}{20.047}$	1°25'43"	12.065	3.5	12.240	8.972	62.0	65.5	8.7	5.2	8.5	13.5	5	1.2
2	$\frac{1}{20.020}$	1°25'50"	17.780	5	18.030	14.034	75.0	80.0	13.5	6.3	10	16	6	1.6
3	$\frac{1}{19.922}$	1°26'16"	23.825	5	24.076	19.107	94.0	99.0	18.5	7.9	13	20	7	2
4	$\frac{1}{19.254}$	1°29'15"	31.267	6.5	31.605	25.164	117.5	124.0	24.5	11.9	16	24	8	2.5
5	$\frac{1}{19.002}$	1°30'26"	44.399	6.5	4.741	36.531	149.5	156.0	35.7	15.9	19	29	10	3
6	$\frac{1}{19.180}$	1°29'36"	63.348	8	63.765	52.399	210.0	218.0	51.0	19.0	27	40	13	4
7	$\frac{1}{19.231}$	1°29'22"	83.058	10	83.578	68.186	286.0	296.0	66.8	28.6	35	54	19	5

(mm)

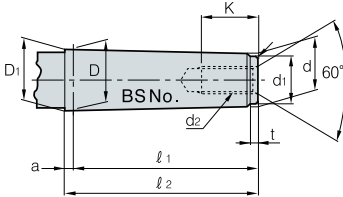
## Morse taper (Screw type)



MT No.	Taper	Taper angle (°)	D	a	D <sub>1</sub>	d	ℓ <sub>1</sub>	ℓ <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	k	t	r
0	$\frac{1}{19.212}$	1°29'27"	9.045	3	9.201	6.442	50	53	6	-	-	4	0.2
1	$\frac{1}{20.047}$	1°25'43"	12.065	3.5	12.230	9.396	53.5	57	9	M6	16	5	0.2
2	$\frac{1}{20.020}$	1°25'50"	17.780	5	18.030	14.583	64	69	14	M10	24	5	0.2
3	$\frac{1}{19.922}$	1°26'16"	23.825	5	24.076	19.759	81	86	19	M12	28	7	0.6
4	$\frac{1}{19.254}$	1°29'15"	31.267	6.5	31.605	25.943	102.5	109	25	M16	32	9	1
5	$\frac{1}{19.002}$	1°30'26"	44.399	6.5	4.741	37.584	129.5	136	35.7	M20	40	9	2.5
6	$\frac{1}{19.180}$	1°29'36"	63.348	8	63.765	53.859	182	190	51	M24	50	12	4
7	$\frac{1}{19.231}$	1°29'22"	83.058	10	83.578	70.058	250	260	65	M33	80	18.5	5

(mm)

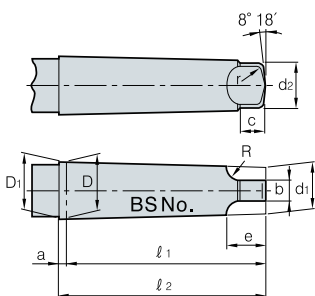
## Brown sharp taper (Screw type)



B&S No.	D	a	D <sub>1</sub>	d	d <sub>1</sub>	ℓ <sub>1</sub>	ℓ <sub>2</sub>	t	r	d <sub>2</sub>	K
4	10.221	2.4	10.321	8.890	8.0	31.0	34.2	2	0.2	-	-
5	13.286	2.4	13.386	11.430	10.0	44.4	46.8	3	0.2	-	-
6	15.229	2.4	15.330	12.700	11.0	60.0	62.7	3	0.2	M 8(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

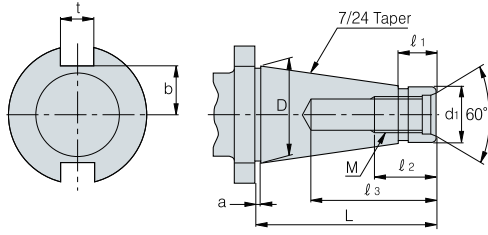
(mm)

## Brown sharp taper (Tang type)



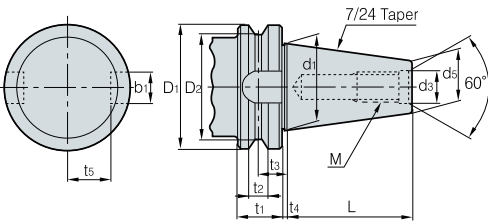
B&S No.	D	a	D <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	ℓ <sub>1</sub>	ℓ <sub>2</sub>	b	c	e	R	r
4	10.221	2.4	10.321	8.458	8.1	42.1	44.5	5.5	8.7	14.4	7.9	1.3
5	13.286	2.4	13.386	10.962	10.7	55.6	58.0	6.3	9.5	16.2	7.9	1.5
6	15.229	2.4	15.330	12.167	11.7	73.0	75.4	7.1	11.1	18.0	7.9	1.5
7	18.424	2.4	18.524	14.675	14.2	89.7	92.1	7.9	11.9	20.3	9.5	1.8
8	22.828	3.2	22.962	18.453	18.0	104.8	108.0	8.7	12.7	22.0	9.5	2.0
9	28.104	3.2	27.238	22.200	21.8	117.5	120.7	9.5	14.3	25.4	11.1	2.5
10	32.749	3.2	32.887	25.751	25.7	162.7	165.9	11.1	16.7	28.1	11.1	2.8
11	38.905	3.2	39.039	30.985	30.7	189.7	192.9	11.1	16.7	30.0	12.7	3.3
12	45.641	3.2	45.774	37.246	37.1	201.6	204.8	12.7	19.0	32.5	12.7	3.8
13	52.654	3.2	52.787	43.589	43.4	217.5	220.7	12.7	19.0	35.7	15.9	4.3
14	59.533	3.2	59.666	49.841	49.8	232.6	235.8	14.2	21.4	41.2	19.0	4.8
15	66.408	3.2	66.541	56.186	56.1	245.3	248.5	14.2	21.4	44.4	22.2	5.3
16	73.292	3.2	73.425	62.441	62.2	260.4	263.6	15.8	23.8	50.0	25.4	5.8

**Standard taper of american milling machine**



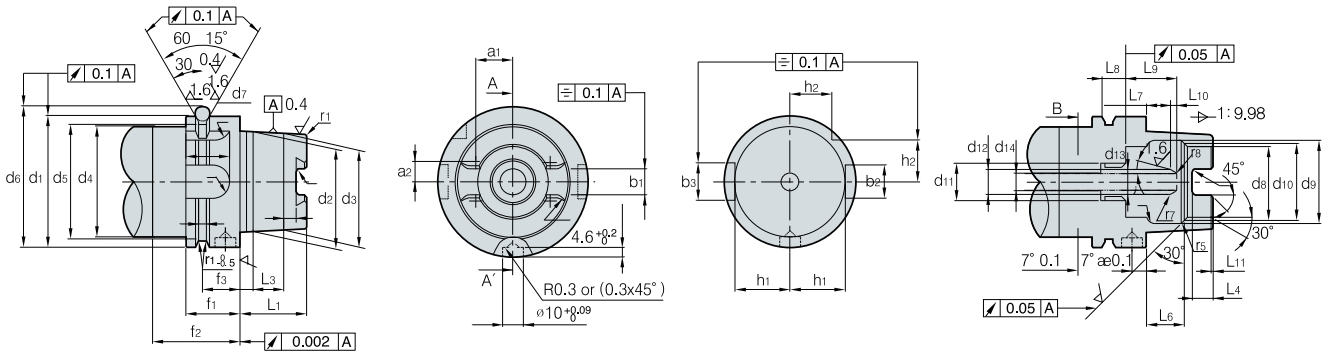
NT No.	Dimensions	D	D <sub>1</sub>	L	l <sub>1</sub>	M	l <sub>2</sub>	l <sub>3</sub>	a	t	b
30	1 $\frac{1}{4}$	31.750	17.40 <sup>-0.29</sup> <sub>-0.36</sub>	70	20	UNC 1/2"	24	50	1.6	15.9	6
40	1 $\frac{3}{4}$	44.450	25.32 <sup>-0.30</sup> <sub>-0.384</sub>	95	25	UNC 5/8"	30	60	1.6	15.9	22.5
50	2 $\frac{3}{4}$	69.850	39.60 <sup>-0.31</sup> <sub>-0.41</sub>	130	25	UNC 1"	45	90	3.2	25.4	35
60	4 $\frac{1}{4}$	107.950	60.20 <sup>-0.34</sup> <sub>-0.46</sub>	210	45	UNC 1 $\frac{1}{4}$ "	56	110	3.2	25.4	60

**Bottle grip taper**



BT No.	D <sub>1</sub>	D <sub>2</sub>	t <sub>1</sub>	t <sub>2</sub>	t <sub>3</sub>	t <sub>4</sub>	d <sub>1</sub>	d <sub>3</sub>	L	M	b <sub>1</sub>	t <sub>s</sub>	d <sub>s</sub>
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	M20×2.5	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)**

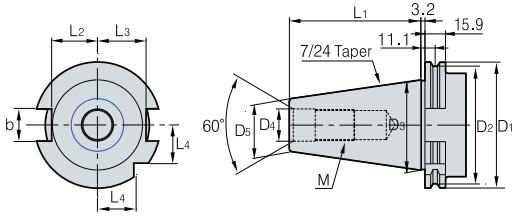


HSK No.	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>13</sub>	d <sub>14</sub>	a <sub>1</sub>	a <sub>2</sub>
50	10.54	12	14	50	38	36.90	42	43	59.3	7	26	32	29	M16X1	10	6.8	6.8	13.997	7.648
63	12.5	16	14	63	48	46.53	53	55	72.3	7	34	40	37	M18X1	12	8	8.4	17.862	9.25
100	20	20	14	100	75	72.80	85	92	109.75	7	53	63	58	M24X1.5	16	12	12	27.329	15.00

HSK No.	f <sub>1</sub>	f <sub>2</sub>	f <sub>3</sub>	f <sub>4</sub>	b <sub>1</sub>	b <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	L <sub>7</sub>	L <sub>8</sub>	L <sub>9</sub>	L <sub>10</sub>	L <sub>11</sub>	L <sub>12</sub>	r <sub>1</sub>	r <sub>2</sub>	r <sub>3</sub>	r <sub>4</sub>	r <sub>5</sub>	r <sub>6</sub>	r <sub>7</sub>	r <sub>8</sub>
50	26	42	18	3.75	2	15.5	25	5	11	7.5	4.5	14.13	10	10	23	3	1	19	1	1.5	2.38	6	0.5	1	2	6
63	26	42	18	3.75	28.5	20	32	6.3	14.7	10	6	18.13	10	12	24.5	3	1	21	1.2	1.5	3	8	0.6	1.5	3	8
100	29	45	20	3.75	44	31.5	50	10	24	15	10	28.56	12.5	16	28	3	1.5	24	2	2	3	12	1	1.5	3	10

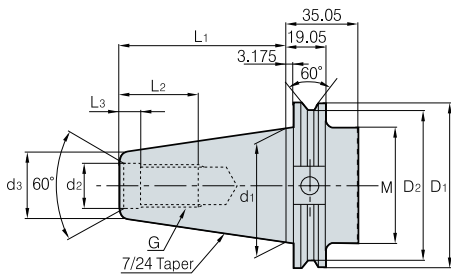
(mm)

## DIN 69871



Shank No	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L	b	M
30	50.0	44.3	31.75	13	17.8	47.8	16.4	19.0	33.5	16.0	M12x1.75
40	63.5	56.2	44.45	17	24.5	68.4	22.8	25.0	42.5	16.1	M16x2
45	82.5	57.2	57.15	21	33.0	82.7	29.1	31.3	52.5	19.3	M20x2.5
50	97.5	91.2	68.85	25	40.1	101.7	35.5	37.7	61.5	25.7	M24x3

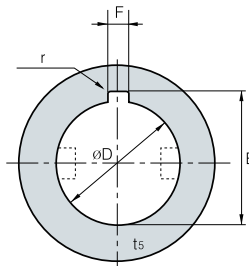
## CAT shank



Shank No	D <sub>1</sub>	D <sub>2</sub>	M	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	G
CAT40	63.5	56.36	M16x2	44.45	16.28	21.84	68.25	28.45	4.78	5/8-11
CAT45	82.55	75.41	M20x2.5	57.15	19.46	27.69	82.55	38.1	4.78	3/4-10
CAT50	98.43	91.29	M24x3	69.85	26.19	35.05	101.6	44.45	6.35	1-8

(mm)

## Standard of milling cutter hole (KSB3203)



### ● Type A

Diameter	øDH <sub>7</sub>	E	F	r
8	8 <sup>+0.015</sup> <sub>0</sub>	8.9 <sup>+0.25</sup> <sub>0</sub>	2 <sup>+0.16</sup> <sub>+0.06</sub>	0.4
10	10 <sup>+0.015</sup> <sub>0</sub>	11.5 <sup>+0.25</sup> <sub>0</sub>	3 <sup>+0.16</sup> <sub>+0.06</sub>	0.4
13	13 <sup>+0.018</sup> <sub>0</sub>	14.6 <sup>+0.25</sup> <sub>0</sub>	3 <sup>+0.16</sup> <sub>+0.06</sub>	0.6
16	16 <sup>+0.018</sup> <sub>0</sub>	17.7 <sup>+0.25</sup> <sub>0</sub>	4 <sup>+0.19</sup> <sub>+0.07</sub>	0.6
19	19 <sup>+0.021</sup> <sub>0</sub>	21.1 <sup>+0.25</sup> <sub>0</sub>	5 <sup>+0.19</sup> <sub>+0.07</sub>	1
22	22 <sup>+0.021</sup> <sub>0</sub>	24.1 <sup>+0.25</sup> <sub>0</sub>	6 <sup>+0.19</sup> <sub>+0.07</sub>	1
27	27 <sup>+0.021</sup> <sub>0</sub>	29.8 <sup>+0.25</sup> <sub>0</sub>	7 <sup>+0.23</sup> <sub>+0.08</sub>	1.2
32	32 <sup>+0.025</sup> <sub>0</sub>	34.8 <sup>+0.25</sup> <sub>0</sub>	8 <sup>+0.23</sup> <sub>+0.08</sub>	1.2
40	40 <sup>+0.025</sup> <sub>0</sub>	43.5 <sup>+0.3</sup> <sub>0</sub>	10 <sup>+0.23</sup> <sub>+0.08</sub>	1.2
50	50 <sup>+0.025</sup> <sub>0</sub>	53.5 <sup>+0.3</sup> <sub>0</sub>	12 <sup>+0.23</sup> <sub>+0.095</sub>	1.6
60	60 <sup>+0.030</sup> <sub>0</sub>	64.2 <sup>+0.3</sup> <sub>0</sub>	14 <sup>+0.275</sup> <sub>+0.095</sub>	1.6
70	70 <sup>+0.030</sup> <sub>0</sub>	75.0 <sup>+0.3</sup> <sub>0</sub>	16 <sup>+0.275</sup> <sub>+0.095</sub>	2
80	80 <sup>+0.030</sup> <sub>0</sub>	85.5 <sup>+0.3</sup> <sub>0</sub>	18 <sup>+0.275</sup> <sub>+0.095</sub>	2
100	100 <sup>+0.035</sup> <sub>0</sub>	107.0 <sup>+0.3</sup> <sub>0</sub>	24 <sup>+0.32</sup> <sub>+0.11</sub>	2.5

### ● Type B

Diameter	øDH <sub>7</sub>	E	F	r
$\frac{1}{2}$	12.70 <sup>+0.018</sup> <sub>0</sub>	14.17 <sup>+0.25</sup> <sub>0</sub>	2.38 <sup>+0.31</sup> <sub>+0.13</sub>	0.5
$\frac{5}{8}$	15.875 <sup>+0.018</sup> <sub>0</sub>	17.74 <sup>+0.25</sup> <sub>0</sub>	3.18 <sup>+0.31</sup> <sub>+0.13</sub>	0.8
$\frac{3}{4}$	19.050 <sup>+0.021</sup> <sub>0</sub>	20.89 <sup>+0.25</sup> <sub>0</sub>	3.18 <sup>+0.31</sup> <sub>+0.13</sub>	0.8
$\frac{7}{8}$	22.225 <sup>+0.021</sup> <sub>0</sub>	24.07 <sup>+0.25</sup> <sub>0</sub>	3.18 <sup>+0.31</sup> <sub>+0.13</sub>	0.8
1	25.40 <sup>+0.021</sup> <sub>0</sub>	28.04 <sup>+0.25</sup> <sub>0</sub>	6.35 <sup>+0.31</sup> <sub>+0.13</sub>	1.2
$1\frac{1}{4}$	31.750 <sup>+0.025</sup> <sub>0</sub>	35.18 <sup>+0.25</sup> <sub>0</sub>	7.94 <sup>+0.32</sup> <sub>+0.14</sub>	1.6
$1\frac{1}{2}$	38.10 <sup>+0.025</sup> <sub>0</sub>	42.32 <sup>+0.25</sup> <sub>0</sub>	9.53 <sup>+0.89</sup> <sub>+0.25</sub>	1.6
$1\frac{3}{4}$	44.450 <sup>+0.025</sup> <sub>0</sub>	49.48 <sup>+0.25</sup> <sub>0</sub>	11.11 <sup>+0.89</sup> <sub>+0.25</sub>	1.6
2	50.80 <sup>+0.03</sup> <sub>0</sub>	55.83 <sup>+0.25</sup> <sub>0</sub>	12.7 <sup>+0.89</sup> <sub>+0.25</sub>	1.6
$2\frac{1}{2}$	63.50 <sup>+0.03</sup> <sub>0</sub>	69.42 <sup>+0.25</sup> <sub>0</sub>	15.81 <sup>+0.89</sup> <sub>+0.25</sub>	1.6
3	76.20 <sup>+0.03</sup> <sub>0</sub>	82.93 <sup>+0.25</sup> <sub>0</sub>	19.05 <sup>+0.89</sup> <sub>+0.25</sub>	2.4
$3\frac{1}{2}$	88.90 <sup>+0.035</sup> <sub>0</sub>	98.81 <sup>+0.25</sup> <sub>0</sub>	22.23 <sup>+0.89</sup> <sub>+0.25</sub>	2.4
4	101.60 <sup>+0.035</sup> <sub>0</sub>	111.51 <sup>+0.25</sup> <sub>0</sub>	25.4 <sup>+0.89</sup> <sub>+0.25</sub>	2.4
$4\frac{1}{2}$	114.30 <sup>+0.035</sup> <sub>0</sub>	125.81 <sup>+0.25</sup> <sub>0</sub>	25.58 <sup>+0.89</sup> <sub>+0.25</sub>	3.2
5	127.0 <sup>+0.04</sup> <sub>0</sub>	140.08 <sup>+0.25</sup> <sub>0</sub>	31.75 <sup>+0.89</sup> <sub>+0.25</sub>	3.2

## The Comparison of Grade for Milling

### ◉ Cermet Milling Grades

ISO	Grade	KORLOY	Sandvik	SECO	WALTER	Kennametal	ISCAR	Tungaloy	Taegutec	Mitsubishi	Kyocera	Sumitomo	Hitachi	Dijet	Valenite
Milling P	P20			C15M MP1020		KT530M				MX3020 NX2525	TN60 TN620M	T2500A		CX75	
	P30	CN30	CT530				IC30N	NS740		MX3030 NX4545				CX90	

### ◉ Milling Grades

\* NC- : CVD Grade / PC- : PVD Grade

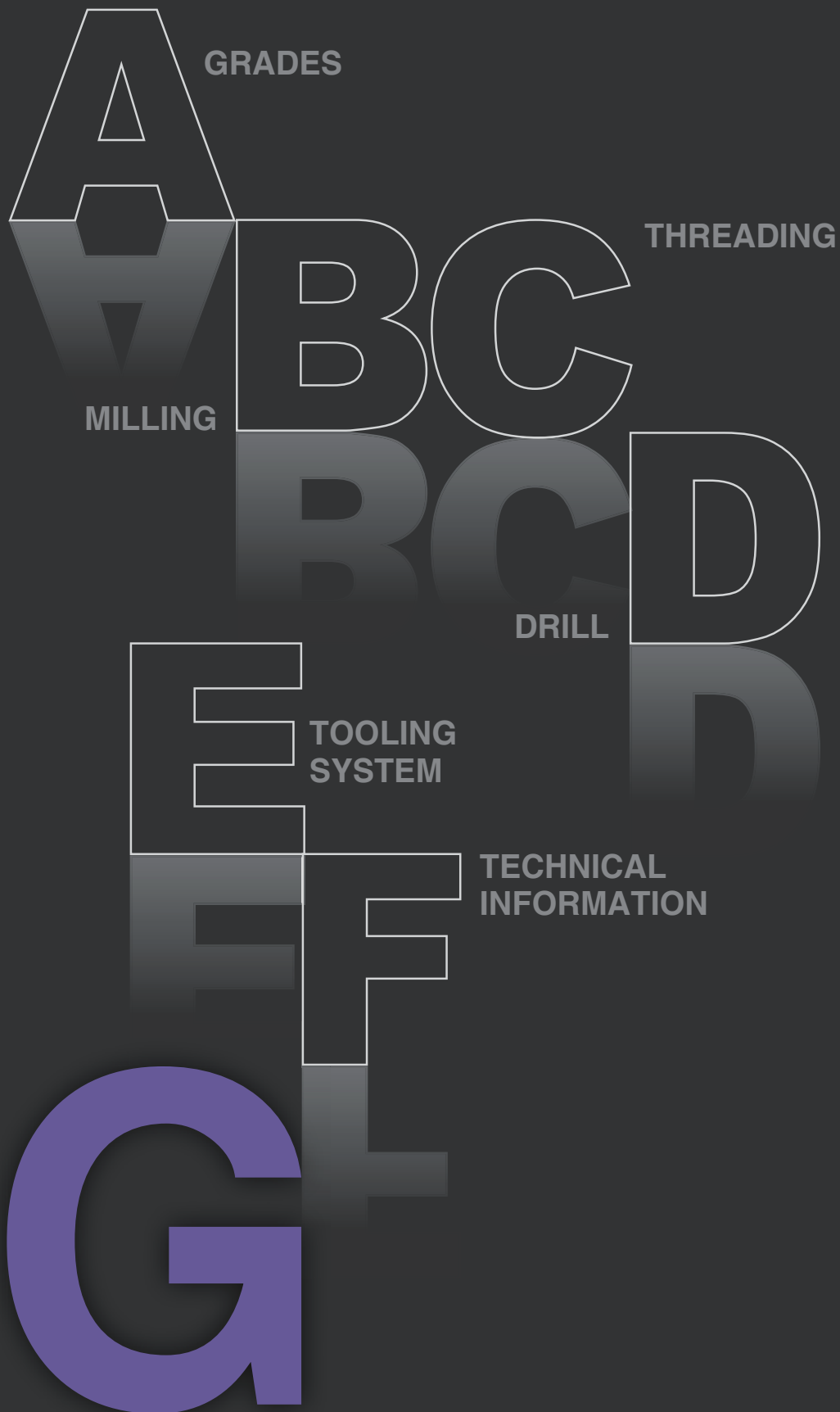
ISO	KORLOY 1st	Sandvik	SECO	WALTER	Kennametal	ISCAR	Tungaloy	Taegutec	Mitsubishi	Kyocera	Sumitomo	Hitachi	Dijet	Valenite	
Milling P M K		GC4210			WKP25S	IC5100									
		GC4220	MP1500	KCPM20					FH7020						
	NCM535 NC5330 NCM325	GC4230	MP2500 MS2500	KCPM30	WKP35S WKP35G	IC5400	T3130	TT8525 TT7800	F7030						
	NCM545 NCM335		MM4500	KC927M											
	NC5330		MP2500 MS2500				T3130								
	NCM535 NCM545	GC2040	MM4500												
			MK1500	KC907M KCK15	WAK15	IC5100	T1115 T1015		MC5020						
	NC5330		MK2000 MS2500	KC914M KCPK30	WKK25 WKP25S			TT7515 TT6800							
	NCM535		MK3000	KC917M	WKP35S WKP35G										

### ◉ Milling Grades

\* NC- : CVD Grade / PC- : PVD Grade

ISO	KORLOY 1st	Sandvik	SECO	WALTER	Kennametal	ISCAR	Tungaloy	Taegutec	Mitsubishi	Kyocera	Sumitomo	Hitachi	Dijet	Valenite
Milling P M S K	PC2005 PC2505 PC2010 PC2510	GC1010	MH1000	WHH15 WHH15X WXM15	KC505M KC510M KC515M	IC903	AH8015	TT2510 TT5505	MP8010	-	ACZ120	ATH08M JP4105 JP4115 JP4120	DH102 JC5003 JC8003 JC8008	VC935 SV510
	PC2015	-	-	-	-	-	-	TT5515	-	-	-	PN215 PN15M	-	-
	PC3700	P20A	F25M	WKP25S	KC525M KCSM30	IC380 IC810	AH330 AH7025	TT7080	-	PR630 PR730	ACP3000	CY250 JS4045	-	-
	PC5535 PC5300	GC1025 GC1130	MP3000 F32M	WKP35G WSM35S	KC530M KCPK30	IC900 IC808	AH130 AH725	TT9030 TT9080	VP15TF MP6120 MP6130	PR1025 PR1225	ACU2500	JP4120	JC5015 JC5118	-
	PC5400	-	F40M	WSP45S/G	KC735M KCPM40	IC830 IC330	AH140 AH740	TT8020 TT8080	VP30RT	PR1535	-	PTH30E JM4160	JC8050	V1N
	PC5300 PC5535	GC1030 GC1130 GC2030	F30M	WKP35G WSM35G	KC525M KC530M	IC380 IC808 IC840 IC882	AH120 AH725	TT9080 TT9030	MP7130 MP7030 VP15TF	PR1225 PR1525	ACM100 ACK300 ACU2500	JP4120 CY250	JC730U JC8015	-
	PC5400 PC9540	GC1040 GC2040	MM4500 MP2050 F40M	WSP45G	KCPM40 KCSM40	IC830 IC330	AH180 AH3135	TT8080 TT8020 TT7800	MP7140 VP30RT	PR1535	ACM200 ACM300	PTH30H JM4160	JC8050	VC936
	PC5300 PC5535	S30T GC1030 GC1130	F30M	WSM35G	KC525M KCSM30	IC380 IC330 IC840 IC882	-	TT9080 TT9030 TT3540	MP9120 V15TF	PR1525	ACM100 ACK300	JS1025	-	-
	PC5400 PC9540	S40T GC1040	MS2050 F40M	WSP45G WSM45X	KC725M KCSM40	IC830	AH140 AH4035	TT8080 TT8020 TT9540	MP9130 MP9030 MP9140	PR1535	ACM200 ACM300 ACS2500 ACS3000	PTH30H JM4160	-	-
	PC6100	GC1010 GC1020	MH1000	WKK25S/G	KC515M	-	AH110 AH710	TT6030 TT6080	MP8010	PR905 PR1510	ACK3000	ATH10E	JC5003 JC600	-
PC5535 PC5300	-	MK2050	WSM35S/G	KCK20	IC808	AH120 AH725	TT9080	VP15TF	PR1525 PR1810	ACU2500	CY9020	JC8015 JC5015	VN5	
PC5400	-	MK3000	WSP45S/G	KC524M	IC830	AH180	TT8020 TT8080	VP20RT	PR1535	-	-	JC5080	VC928 SV510	

# INDEX



**G2** Index (A~Z)



## A ~ Z

<b>Actual designation of Milling Cutter</b>	Technical InformationI	<b>F9</b>
<b>Aero Mill</b>	Milling	<b>B150</b>
<b>Aero Mill Mini</b>	Milling	<b>B155</b>
<b>Aero Mill Plus</b>	Milling	<b>B152</b>
<b>Alpha Mill</b>	Milling	<b>B173</b>
<b>Alpha Mill Nick</b>	Milling	<b>B167</b>
<b>Alpha Mill-X</b>	Milling	<b>B162</b>
<b>Angular head</b>	Tooling System	<b>E132</b>
<b>ATM</b>	Tooling System	<b>E150</b>
<b>ATM(U) SPARE PART</b>	Tooling System	<b>E153</b>
<b>ATU</b>	Tooling System	<b>E154</b>
<b>BFE</b>	Milling	<b>B329</b>
<b>BKA</b>	Tooling System	<b>E129</b>
<b>BRE</b>	Milling	<b>B337</b>
<b>BT Tooling System (Alpha Mill)</b>	Milling	<b>B344</b>
<b>BT Tooling System (Mono Tool)</b>	Milling	<b>B349</b>
<b>Center Drill</b>	Drill	<b>D82</b>
<b>Cermet Grade</b>	Grades & Chip Breakers	<b>A15</b>
<b>Chamfer Tools</b>	Milling	<b>B371</b>
<b>Chip Breakers for Drilling</b>	Grades & Chip Breakers	<b>A26</b>
<b>Chip Breakers for Milling</b>	Grades & Chip Breakers	<b>A19</b>
<b>Clamping Part of Milling Cutter (Oil-hole)</b>	Technical InformationI	<b>F11</b>
<b>CVD Coated Grades</b>	Grades & Chip Breakers	<b>A5</b>
<b>DBC</b>	Tooling System	<b>E121</b>
<b>DBCA</b>	Tooling System	<b>E118</b>
<b>DCJ</b>	Tooling System	<b>E41</b>
<b>DHC Collet</b>	Tooling System	<b>E20</b>
<b>DHE</b>	Tooling System	<b>E9</b>
<b>DHE/G</b>	Tooling System	<b>E19</b>
<b>DHE/S</b>	Tooling System	<b>E16</b>
<b>Diamond Coated Grades</b>	Grades & Chip Breakers	<b>A16</b>
<b>DINOX MAP</b>	Tooling System	<b>E4</b>
<b>DLC Coated Grades</b>	Grades & Chip Breakers	<b>A17</b>
<b>Double Mill</b>	Milling	<b>B62</b>
<b>Drill Available Insert</b>	Drill	<b>D9</b>
<b>DSC</b>	Tooling System	<b>E28</b>
<b>DSK</b>	Tooling System	<b>E68</b>
<b>DST</b>	Tooling System	<b>E83</b>
<b>DTN</b>	Tooling System	<b>E79</b>
<b>DZC</b>	Tooling System	<b>E23</b>
<b>EXT/RDC</b>	Tooling System	<b>E105</b>
<b>FBH</b>	Tooling System	<b>E112</b>
<b>FBH/B</b>	Tooling System	<b>E107</b>
<b>FBH/D</b>	Tooling System	<b>E114</b>

## A ~ Z

<b>FMA</b>	Tooling System	<b>E94</b>
<b>FMA</b>	Tooling System	<b>E158</b>
<b>FMC</b>	Tooling System	<b>E95</b>
<b>FMC</b>	Tooling System	<b>E159</b>
<b>FMR P-Positive</b>	Milling	<b>B244</b>
<b>Future Mill</b>	Milling	<b>B206</b>
<b>Future Mill (FMR)</b>	Milling	<b>B218</b>
<b>FZ UNIT</b>	Tooling System	<b>E131</b>
<b>GBE</b>	Milling	<b>B333</b>
<b>Gear Cutter</b>	Milling	<b>B427</b>
<b>Gear Cutter Order Form</b>	Milling	<b>B434</b>
<b>Gear Cutter Table</b>	Milling	<b>B426</b>
<b>GERC</b>	Tooling System	<b>E57</b>
<b>Grade System</b>	Grades & Chip Breakers	<b>A3</b>
<b>GSK</b>	Tooling System	<b>E71</b>
<b>Hardness Calculating Table</b>	Technical InformationI	<b>F8</b>
<b>HAVE</b>	Milling	<b>B341</b>
<b>HFM</b>	Milling	<b>B280</b>
<b>HFMD</b>	Milling	<b>B267</b>
<b>HRAG</b>	Tooling System	<b>E140</b>
<b>HRM</b>	Milling	<b>B299</b>
<b>HRMD</b>	Milling	<b>B288</b>
<b>HSK Tooling System (Alpha Mill)</b>	Milling	<b>B355</b>
<b>HSK Tooling System (Mono Tool)</b>	Milling	<b>B360</b>
<b>HSK Tooling System (Pro-V Mill)</b>	Milling	<b>B365</b>
<b>HSK Tooling System (Pro-X Mill)</b>	Milling	<b>B366</b>
<b>HT</b>	Tooling System	<b>E164</b>
<b>Indexable HOB</b>	Milling	<b>B435</b>
<b>Indexable HOB Cutter Order Form</b>	Milling	<b>B436</b>
<b>Indexable Reamer</b>	Drill	<b>D91</b>
<b>KAC</b>	Tooling System	<b>E144</b>
<b>KAG</b>	Tooling System	<b>E138</b>
<b>KAH</b>	Tooling System	<b>E133</b>
<b>KED Plus Drill</b>	Drill	<b>D29</b>
<b>KHU</b>	Tooling System	<b>E136</b>
<b>KING Drill</b>	Drill	<b>D11</b>
<b>KING Drill (For large diameter drilling)</b>	Drill	<b>D25</b>
<b>KING Drill (For through coolant system with a lathe)</b>	Drill	<b>D21</b>
<b>KMB</b>	Tooling System	<b>E125</b>
<b>KORLOY Cutters</b>	Milling	<b>B34</b>
<b>KORLOY Drills</b>	Drill	<b>D2</b>
<b>KORLOY Grade Index</b>	Grades & Chip Breakers	<b>A2</b>
<b>KORLOY Modular Adaptors</b>	Milling	<b>B45</b>
<b>KORLOY Shanks</b>	Milling	<b>B41</b>

## A ~ Z

Laser Mill	Milling	B324
MAH	Tooling System	E142
MD	Tooling System	E99
Mill Max	Milling	B47
Mill Max Heavy	Milling	B58
Mill Max Plus	Milling	B48
Milling Grade selections	Grades & Chip Breakers	A4
Milling Insert Code System (ISO)	Milling	B2
Milling Inserts	Milling	B3
Modular Adaptor	Milling	B400
MTA	Tooling System	E93
Multi Turn	Drill	D87
Multi-functional Chamfer Tool	Milling	B373
NPM	Tooling System	E34
O-ring Cutter	Milling	B368
OFH	Tooling System	E89
PCD Face Cutter	Milling	B157
PCD Insert Grades	Grades & Chip Breakers	A18
POSITIONING BLOCK	Tooling System	E148
Power Buster	Milling	B67
Pro-A Mill	Milling	B377
Pro-L Mill	Milling	B389
Pro-V Mill	Milling	B398
Pro-X Mill	Milling	B382
Pro-XL Mill	Milling	B394
Pull Stud Bolt	Tooling System	E163
PVD Coated Grades	Grades & Chip Breakers	A6
Rich Mill RM14	Milling	B140
Rich Mill RM16	Milling	B142
Rich Mill RM3	Milling	B80
Rich Mill RM4	Milling	B92
Rich Mill RM6	Milling	B110
Rich Mill RM8	Milling	B118
Rich Mill RM8-X	Milling	B136
Rich Mill RMR	Milling	B146
Rich Mill RMT8	Milling	B129
Rich Mill Table	Milling	B71
RTJW	Tooling System	E66
SAH	Tooling System	E146
SDC/P	Tooling System	E45
SDC/PL	Tooling System	E54
SI Unit Conversion Table	Technical InformationI	F7
Side Cutter	Milling	B410
Side Milling Cutter	Milling	B406

## A ~ Z

SLA	Tooling System	E90
SMB	Tooling System	E123
SMH	Tooling System	E127
Steel, Non-Ferrous Metal Symbol List	Technical InformationI	F6
T-Cutter	Milling	B374
Tangen-Pro (TP2P)	Milling	B310
Tangen-Pro (TP8P)	Milling	B318
Tank Mill	Milling	B306
TCA	Tooling System	E81
Technical Information for KING Drill (For through coolant system with a lathe)	Drill	D20
Technical Information for Aero Mill	Milling	B148
Technical information for Aero Mill Mini	Milling	B154
Technical Information for Aero Mill Plus	Milling	B151
Technical Information for Alpha Mill	Milling	B166
Technical Information for Alpha Mill-X	Milling	B158
Technical Information for BRE	Milling	B336
Technical Information for BT/HSK Tooling System	Milling	B343
Technical Information for Chamfer Tool	Milling	B369
Technical Information for Couple Mill	Milling	B420
Technical Information for Cube Mill	Milling	B419
Technical Information for DAMPING PRO	Tooling System	E156
Technical information for DBCA	Tooling System	E117
Technical information for DCJ	Tooling System	E40
Technical information for DCL	Tooling System	E39
Technical information for DHE	Tooling System	E8
Technical information for DHE/G	Tooling System	E18
Technical information for DHE/S	Tooling System	E15
Technical information for DSC	Tooling System	E24
Technical information for DSK	Tooling System	E67
Technical information for DST	Tooling System	E82
Technical information for DTN	Tooling System	E78
Technical information for DZC	Tooling System	E22
Technical information for ER/L	Tooling System	E64
Technical information for FBH/B	Tooling System	E106
Technical information for FBH/D	Tooling System	E113
Technical Information for FMR P-Positive	Milling	B239
Technical Information for Future Mill	Milling	B203
Technical Information for GBE	Milling	B330
Technical information for GERC	Tooling System	E56
Technical information for GSK	Tooling System	E70
Technical Information for HAVE	Milling	B339
Technical Information for HFM	Milling	B277
Technical Information for HFMD	Milling	B263
Technical Information for High feed Cutter	Milling	B417

## A ~ Z

Technical Information for HRMDouble	Milling	B283
Technical Information for Indexable Reamer	Drill	D88
Technical Information for KED Plus Drill	Drill	D26
Technical Information for KING Drill	Drill	D3
Technical Information for KING Drill (For large diameter drilling)	Drill	D24
Technical Information for Laser Mill	Milling	B320
Technical Information for Mill Max Heavy	Milling	B57
Technical Information for Milling	Technical Information II	F12
Technical Information for Multi Turn	Drill	D85
Technical information for NPM	Tooling System	E33
Technical Information for O-ring Cutter	Milling	B367
Technical Information for Power Buster	Milling	B64
Technical Information for Pro-A Mill	Milling	B375
Technical Information for Pro-L Mill	Milling	B387
Technical Information for Pro-V Mill	Milling	B395
Technical Information for Pro-X Mill	Milling	B380
Technical Information for Pro-XL Mill	Milling	B393
Technical Information for Rich Mill	Milling	B70
Technical Information for Rich Mill RM14	Milling	B137
Technical Information for Rich Mill RM16	Milling	B141
Technical Information for Rich Mill RM3	Milling	B77
Technical Information for Rich Mill RM4	Milling	B86
Technical Information for Rich Mill RM6	Milling	B107
Technical Information for Rich Mill RM8	Milling	B116
Technical Information for Rich Mill RM8-X	Milling	B134
Technical Information for Rich Mill RMR	Milling	B144
Technical Information for Rich Mill RMT8	Milling	B128
Technical information for RTJW	Tooling System	E65
Technical information for SDC/P	Tooling System	E44
Technical information for SDC/PL	Tooling System	E53
Technical Information for Shave Mill	Milling	B422
Technical Information for Shave Mill Ultra	Milling	B424
Technical Information for Side Milling Cutters	Milling	B404
Technical information for STER PAT.	Tooling System	E88
Technical Information for Tapers	Technical Information II	F16
Technical information for THE	Tooling System	E86
Technical Information for Thread Milling	Threading	C2
Technical Information for TP2P	Milling	B307
Technical Information for TP8P	Milling	B316
Technical Information for TPDB Plus Drill	Drill	D52
Technical Information for TPDB-DS	Drill	D65
Technical Information for TPDB-F	Drill	D75
Technical Information for TPDB-H	Drill	D69
Technical Information for TPDC Plus Drill	Drill	D37

## A ~ Z

Technical Information for Triple Mill	Milling	B256
Technical Information for Wind Mill	Milling	B413
Technical Information for WPDC	Drill	D79
TER	Tooling System	E85
THE	Tooling System	E87
The Comparison of Grade for Milling	Technical Information II	F19
Thread Milling Holders	Threading	C17
Thread Milling Inserts	Threading	C12
Tooling System Index	Tooling System	E2
TPDB Plus Drill	Drill	D58
TPDB-DS	Drill	D67
TPDB-F	Drill	D77
TPDB-H	Drill	D72
TPDC Plus Drill	Drill	D45
Triple Mill	Milling	B259
Turbo Mill	Milling	B59
Uncoated Carbide Grades	Grades & Chip Breakers	A14
Wind Mill	Milling	B415
Workpiece Material Grades	Technical Information I	F2
WPDC	Drill	D83

## A

<b>ADKA</b>	Milling Inserts	<b>B4</b>
<b>ADKT-ML</b>	Milling Inserts	<b>B4</b>
<b>ADKT-MM</b>	Milling Inserts	<b>B4</b>
<b>ADLT</b>	Milling Inserts	<b>B4</b>
<b>ADN(M)4000</b>	Mill Max	<b>B47</b>
<b>ADN(M)5000+</b>	Mill Max Plus	<b>B48</b>
<b>ADS4000</b>	Turbo Mill	<b>B59</b>
<b>ADS5000</b>	Turbo Mill	<b>B60</b>
<b>AE(M)4000</b>	Mill Max	<b>B49</b>
<b>AE(M)5000</b>	Mill Max	<b>B50</b>
<b>AFO(M)4000</b>	Double Mill	<b>B62</b>
<b>AFO(M)5000</b>	Double Mill	<b>B63</b>
<b>AMC(M)1000SE</b>	Alpha Mill	<b>B179</b>
<b>AMC(M)1500S</b>	Alpha Mill	<b>B174</b>
<b>AMC(M)2000M</b>	Alpha Mill	<b>B181</b>
<b>AMC(M)2000S</b>	Alpha Mill	<b>B175</b>
<b>AMC(M)2000SE</b>	Alpha Mill	<b>B179</b>
<b>AMC(M)3000M</b>	Alpha Mill	<b>B182</b>
<b>AMC(M)3000S</b>	Alpha Mill	<b>B176</b>
<b>AMC(M)3000S-K</b>	Alpha Mill	<b>B177</b>
<b>AMC(M)3000SE</b>	Alpha Mill	<b>B180</b>
<b>AMC(M)4000M</b>	Alpha Mill	<b>B183</b>
<b>AMC(M)4000S</b>	Alpha Mill	<b>B178</b>
<b>AMCM1000S</b>	Alpha Mill	<b>B173</b>
<b>American UNC</b>	Thread Milling Inserts	<b>C13</b>
<b>AMM type</b>	Modular Adaptors	<b>B45</b>
<b>AMM1000</b>	Alpha Mill	<b>B200</b>
<b>AMM1500</b>	Alpha Mill	<b>B201</b>
<b>AMM2000</b>	Alpha Mill	<b>B202</b>
<b>AMS1000M</b>	Alpha Mill	<b>B195</b>
<b>AMS1000MH</b>	Alpha Mill	<b>B198</b>
<b>AMS1000S</b>	Alpha Mill	<b>B184</b>
<b>AMS1000SE</b>	Alpha Mill	<b>B193</b>
<b>AMS1500M</b>	Alpha Mill	<b>B195</b>
<b>AMS1500MH</b>	Alpha Mill	<b>B198</b>
<b>AMS1500S</b>	Alpha Mill	<b>B185</b>
<b>AMS2000M</b>	Alpha Mill	<b>B196</b>
<b>AMS2000MH</b>	Alpha Mill	<b>B199</b>
<b>AMS2000S</b>	Alpha Mill	<b>B187</b>
<b>AMS2000SE</b>	Alpha Mill	<b>B193</b>
<b>AMS3000MH(-K)</b>	Alpha Mill	<b>B199</b>
<b>AMS3000S</b>	Alpha Mill	<b>B189</b>
<b>AMS3000S-K</b>	Alpha Mill	<b>B190</b>
<b>AMS3000SE</b>	Alpha Mill	<b>B194</b>

<b>AMS4000M</b>	Alpha Mill	<b>B197</b>
<b>AMS4000S</b>	Alpha Mill	<b>B191</b>
<b>AMXCM-AD17</b>	Alpha Mill	<b>B163</b>
<b>AMXS-AD10</b>	Alpha Mill	<b>B162</b>
<b>AMXS-AD10</b>	Alpha Mill	<b>B164</b>
<b>AMXS-AD12</b>	Alpha Mill	<b>B162</b>
<b>AMXS-AD12</b>	Alpha Mill	<b>B164</b>
<b>AMXS-AD17</b>	Alpha Mill	<b>B165</b>
<b>APD(M)-A</b>	Aero Mill Plus	<b>B150</b>
<b>APD(M)-PB</b>	Aero Mill Plus	<b>B152</b>
<b>APKT</b>	Milling Inserts	<b>B4</b>
<b>APKT-MA</b>	Milling Inserts	<b>B4</b>
<b>APKT-MA2</b>	Milling Inserts	<b>B4</b>
<b>APKT-MA3</b>	Milling Inserts	<b>B4</b>
<b>APKT-MF</b>	Milling Inserts	<b>B4</b>
<b>APKT-MM</b>	Milling Inserts	<b>B4</b>
<b>APLT</b>	Milling Inserts	<b>B5</b>
<b>APMT-MA</b>	Milling Inserts	<b>B5</b>
<b>APMT-MF</b>	Milling Inserts	<b>B5</b>
<b>APMT-ML</b>	Milling Inserts	<b>B5</b>
<b>APMT-MM</b>	Milling Inserts	<b>B6</b>
<b>APMT-MN</b>	Milling Inserts	<b>B6</b>

## B

<b>BAMPR-XAF</b>	Milling Inserts	<b>B7</b>
<b>BAMPR-XAW</b>	Milling Inserts	<b>B7</b>
<b>BAMPR-XAWR</b>	Milling Inserts	<b>B7</b>
<b>BFE</b>	BFE	<b>B329</b>
<b>BRE</b>	BRE	<b>B337</b>
<b>BSPT</b>	Thread Milling Inserts	<b>C15</b>
<b>BT Arbors type</b>	Modular Adaptors	<b>B45</b>
<b>BT-ATM</b>	Tooling System (ATM)	<b>E152</b>
<b>BT-BKA</b>	Tooling System (BKA)	<b>E129</b>
<b>BT-DBC</b>	Tooling System (DBC)	<b>E121</b>
<b>BT-DBCA-H</b>	Tooling System (DBCA)	<b>E118</b>
<b>BT-DBCA-S</b>	Tooling System (DBCA)	<b>E120</b>
<b>BT-DHE</b>	Tooling System (DHE)	<b>E10</b>
<b>BT-DHE/S</b>	Tooling System (DHE/S)	<b>E16</b>
<b>BT-DMC</b>	Tooling System (NPM)	<b>E38</b>
<b>BT-DSC</b>	Tooling System (DSC)	<b>E28</b>
<b>BT-DSC/M</b>	Tooling System (DSC)	<b>E28</b>
<b>BT-DSC/S</b>	Tooling System (DSC)	<b>E31</b>
<b>BT-DSK</b>	Tooling System (DSK)	<b>E68</b>
<b>BT-DST</b>	Tooling System (DST)	<b>E83</b>

## B

<b>BT-DTN</b>	Tooling System (DTN)	<b>E79</b>
<b>BT-FBH/B</b>	Tooling System (FBH/B)	<b>E107</b>
<b>BT-FBH/D</b>	Tooling System (FBH/D)	<b>E114</b>
<b>BT-FMA</b>	Tooling System (FMA)	<b>E94</b>
<b>BT-FMA</b>	Tooling System (FMA)	<b>E158</b>
<b>BT-FMC</b>	Tooling System (FMC)	<b>E96</b>
<b>BT-FMC</b>	Tooling System (FMC)	<b>E159</b>
<b>BT-GSK</b>	Tooling System (GSK)	<b>E71</b>
<b>BT-KMB</b>	Tooling System (KMB)	<b>E125</b>
<b>BT-MD</b>	Tooling System (MD)	<b>E101</b>
<b>BT-NPM</b>	Tooling System (NPM)	<b>E35</b>
<b>BT-NPU</b>	Tooling System (GSK)	<b>E76</b>
<b>BT-OFH</b>	Tooling System (OFH)	<b>E89</b>
<b>BT-SDC/P</b>	Tooling System (SDC/P)	<b>E47</b>
<b>BT-SDC/PL</b>	Tooling System (SDC/PL)	<b>E54</b>
<b>BT-SLA</b>	Tooling System (SLA)	<b>E90</b>
<b>BT-SMB</b>	Tooling System (SMB)	<b>E123</b>
<b>BT-SMH</b>	Tooling System (SMH)	<b>E127</b>
<b>BT30</b>	Modular Adaptor (BT)	<b>B402</b>
<b>BT30 AM1000HS</b>	BT Tooling System (Alpha Mill)	<b>B344</b>
<b>BT30/40 AM1000</b>	BT Tooling System (Mono Tool)	<b>B349</b>
<b>BT30/40 AM1500</b>	BT Tooling System (Mono Tool)	<b>B350</b>
<b>BT30/40 AM2000</b>	BT Tooling System (Mono Tool)	<b>B351</b>
<b>BT40</b>	Modular Adaptor (BT)	<b>B402</b>
<b>BT40 AM1500HS</b>	BT Tooling System (Alpha Mill)	<b>B345</b>
<b>BT40 AM2000HS</b>	BT Tooling System (Alpha Mill)	<b>B346</b>
<b>BT50</b>	Modular Adaptor (BT)	<b>B402</b>
<b>BT50 AM3000</b>	BT Tooling System (Mono Tool)	<b>B352</b>
<b>BT50 AM3000HS</b>	BT Tooling System (Alpha Mill)	<b>B347</b>
<b>BT50 AM4000</b>	BT Tooling System (Mono Tool)	<b>B353</b>
<b>BT50 AM4000HS</b>	BT Tooling System (Alpha Mill)	<b>B348</b>
<b>BT50 HAT4000</b>	BT Tooling System (Mono Tool)	<b>B354</b>

## C

<b>Carbide Shank type</b>	Modular Adaptors	<b>B45</b>
<b>CD</b>	Drill (Center Drill)	<b>D82</b>
<b>CDEW-NAF</b>	Milling Inserts	<b>B7</b>
<b>CDEW-NAW</b>	Milling Inserts	<b>B7</b>
<b>CDEW-XAF</b>	Milling Inserts	<b>B7</b>
<b>CDEW-XAW</b>	Milling Inserts	<b>B7</b>
<b>CDEW-XCF</b>	Milling Inserts	<b>B7</b>
<b>CDH</b>	Drill (Center Drill)	<b>D82</b>
<b>CE</b>	Chamfer Tool (Back & Front Chamfer)	<b>B371</b>

<b>CE</b>	Chamfer Tool (Long chamfer)	<b>B372</b>
<b>CE</b>	Chamfer Tool (Multi-functional)	<b>B373</b>
<b>CN30</b>	Cermet Grade	<b>A15</b>
<b>CNHQ</b>	Milling Inserts	<b>B7</b>
<b>CPMH</b>	Milling Inserts	<b>B7</b>
<b>CPMT</b>	Milling Inserts	<b>B8</b>

## D

<b>DBT-DHE</b>	Tooling System (DHE)	<b>E9</b>
<b>DBT-MD</b>	Tooling System (MD)	<b>E99</b>
<b>DBT-MD</b>	Tooling System (MD)	<b>E100</b>
<b>DBT-NPM</b>	Tooling System (NPM)	<b>E34</b>
<b>DBT-SDC/P</b>	Tooling System (SDC/P)	<b>E45</b>
<b>DC Collet</b>	Tooling System (DCJ Collet)	<b>E41</b>
<b>DCS Collet</b>	Tooling System (DCJ Collet)	<b>E42</b>
<b>DHC Collet</b>	Tooling System (DHC Collet)	<b>E20</b>
<b>DHC-(P) Collet</b>	Tooling System (DHC Collet)	<b>E21</b>
<b>DHE/G</b>	Tooling System (DHE/G)	<b>E19</b>
<b>DHJ Collet</b>	Tooling System (DHC Collet)	<b>E21</b>
<b>DJT</b>	Tooling System (DCJ Drill Chuck Arbor)	<b>E43</b>
<b>DP150</b>	PCD Insert Grades	<b>A18</b>
<b>DP200</b>	PCD Insert Grades	<b>A18</b>
<b>DP90</b>	PCD Insert Grades	<b>A18</b>
<b>DZC</b>	Tooling System (DZC)	<b>E23</b>

## E

<b>E2D</b>	Drill (KED Plus-2D)	<b>D29</b>
<b>E3D</b>	Drill (KED Plus-3D)	<b>D31</b>
<b>E4D</b>	Drill (KED Plus-4D)	<b>D33</b>
<b>E5D</b>	Drill (KED Plus-5D)	<b>D35</b>
<b>EF(M)4000</b>	Mill Max	<b>B51</b>
<b>EN(M)4000</b>	Mill Max	<b>B52</b>
<b>EPN(M)4000</b>	Mill Max	<b>B53</b>
<b>EPN(M)5000+</b>	Mill Max Plus	<b>B54</b>
<b>ER Collet</b>	Tooling System (GERC Collet)	<b>E60</b>
<b>ER/L Collet</b>	Tooling System (ER/L Collet)	<b>E64</b>
<b>EXT</b>	Tooling System (EXT/RDC)	<b>E105</b>
<b>DJT</b>	Tooling System (DCJ Drill Chuck Arbor)	<b>E43</b>
<b>DP150</b>	PCD Insert Grades	<b>A18</b>
<b>DP200</b>	PCD Insert Grades	<b>A18</b>
<b>DP90</b>	PCD Insert Grades	<b>A18</b>
<b>DZC</b>	Tooling System (DZC)	<b>E23</b>

F

FBB Bite	Tooling System (FBH/D)	E116
FMAC(M)3000	Future Mill	B206
FMAC(M)3000-A	Future Mill	B208
FMAC(M)4000	Future Mill	B207
FMAC(M)4000-A	Future Mill	B209
FMAS3000	Future Mill	B210
FMAS4000	Future Mill	B211
FMPC(M)3000	Future Mill	B212
FMPC(M)3000-A	Future Mill	B214
FMPC(M)4000	Future Mill	B213
FMPC(M)4000-A	Future Mill	B215
FMPS3000	Future Mill	B216
FMPS4000	Future Mill	B217
FMRC(M)3000	Future Mill	B225
FMRC(M)4000	Future Mill	B226
FMRC(M)4000	FMR P-Positive	B245
FMRC(M)5000	Future Mill	B227
FMRC(M)5000	FMR P-Positive	B246
FMRC(M)6000	Future Mill	B228
FMRC(M)6000	FMR P-Positive	B247
FMRCM3000	FMR P-Positive	B244
FMRM type	Modular Adaptors	B45
FMRM1000	Future Mill	B235
FMRM1500	Future Mill	B235
FMRM2000	Future Mill	B236
FMRM2500	Future Mill	B236
FMRM2500	FMR P-Positive	B252
FMRM3000	Future Mill	B237
FMRM3000	FMR P-Positive	B253
FMRM4000	Future Mill	B238
FMRM4000	FMR P-Positive	B254
FMRM5000	Future Mill	B238
FMRM5000	FMR P-Positive	B255
FMRS1000	Future Mill	B229
FMRS1500	Future Mill	B229
FMRS2000	Future Mill	B230
FMRS2500	Future Mill	B230
FMRS2500	FMR P-Positive	B248
FMRS3000	Future Mill	B231
FMRS3000	FMR P-Positive	B249
FMRS4000	Future Mill	B232
FMRS4000	FMR P-Positive	B250
FMRS5000	Future Mill	B233
FMRS5000	FMR P-Positive	B251

FMRS6000	Future Mill	B234
FMRS6000	FMR P-Positive	B251
FZ UNIT	Tooling System (FZ UNIT)	E131

G

GBE	GBE (Single-edge)	B333
GBE	GBE (Multi-edge)	B334
GBEM	GBE	B335
GBEM type	Modular Adaptors	B46
Gear Finishing Cutter	Gear Cutter (1 Step type, External gear)	B432
Gear Finishing Cutter	Gear Cutter (1 Step type, Internal / External gear)	B433
Gear Roughing Cutter	Gear Cutter (Step type)	B427
Gear Roughing Cutter	Gear Cutter (V shape type)	B428
Gear Semi-finishing Cutter	Gear Cutter (High rigid edge type, External gear)	B429
Gear Semi-finishing Cutter	Gear Cutter (High rigid edge type, Internal gear)	B431
GERC Collet	Tooling System (GERC Collet)	E57

H

H01	Uncoated Carbide Grades	A14
H05	Uncoated Carbide Grades	A14
HAVE	HAVE (Single-edge)	B341
HAVE	HAVE (Multi-edge)	B342
HC Collet	Tooling System (GSK)	E74
HDDCM 7000	Mill Max Heavy	B58
HDDCM 9000	Mill Max Heavy	B58
HECN	Milling Inserts	B8
HFMD(M)-LN10	HFMD	B268
HFMD(M)-LN06	HFMD	B267
HFMD(M) type	Modular Adaptors	B46
HFMD(M)-LN04	HFMD	B274
HFMD(M)-LN06	HFMD	B275
HFMD(M)-LN10	HFMD	B276
HFMD(M)-LN04	HFMD	B269
HFMD(M)-LN06	HFMD	B271
HFMD(M)-LN10	HFMD	B273
HFMM	HFM	B281
HFMM type	Modular Adaptors	B46
HFMS1000	HFM	B280
HPEN	Milling Inserts	B8
HPEN-WC	Milling Inserts	B8
HRMC(M)13	HRMD	B299
HRMC(M)15	HRMD	B300
HRMDC(M)09	HRMD	B288
HRMDC(M)13 DHUB	HRMD	B289

## H

<b>HRMDC(M)16</b>	HRMD	<b>B290</b>
<b>HRMDM type</b>	Modular Adaptors	<b>B46</b>
<b>HRMDM06</b>	HRMD	<b>B296</b>
<b>HRMDM09</b>	HRMD	<b>B297</b>
<b>HRMDM13</b>	HRMD	<b>B298</b>
<b>HRMDS06</b>	HRMD	<b>B291</b>
<b>HRMDS09</b>	HRMD	<b>B292</b>
<b>HRMDS13</b>	HRMD	<b>B294</b>
<b>HRMM type</b>	Modular Adaptors	<b>B46</b>
<b>HRMM08</b>	HRMD	<b>B304</b>
<b>HRMM10</b>	HRMD	<b>B305</b>
<b>HRMM13</b>	HRMD	<b>B305</b>
<b>HRMS08</b>	HRMD	<b>B301</b>
<b>HRMS10</b>	HRMD	<b>B301</b>
<b>HRMS13</b>	HRMD	<b>B302</b>
<b>HRMS15</b>	HRMD	<b>B303</b>
<b>HSK Arbors type</b>	Modular Adaptors	<b>B45</b>
<b>HSK-ATM</b>	Tooling System (ATM)	<b>E152</b>
<b>HSK-DBC</b>	Tooling System (DBC)	<b>E122</b>
<b>HSK-DBCA-H</b>	Tooling System (DBCA)	<b>E119</b>
<b>HSK-DBCA-S</b>	Tooling System (DBCA)	<b>E119</b>
<b>HSK-DHE</b>	Tooling System (DHE)	<b>E12</b>
<b>HSK-DHE/S</b>	Tooling System (DHE/S)	<b>E17</b>
<b>HSK-DSC/M</b>	Tooling System (DSC)	<b>E30</b>
<b>HSK-DST</b>	Tooling System (DST)	<b>E83</b>
<b>HSK-FBH/B</b>	Tooling System (FBH/B)	<b>E109</b>
<b>HSK-FBH/D</b>	Tooling System (FBH/D)	<b>E114</b>
<b>HSK-FMA</b>	Tooling System (FMA)	<b>E160</b>
<b>HSK-FMC</b>	Tooling System (FMC)	<b>E97</b>
<b>HSK-FMC</b>	Tooling System (FMC)	<b>E161</b>
<b>HSK-GSK</b>	Tooling System (GSK)	<b>E72</b>
<b>HSK-KMB</b>	Tooling System (KMB)	<b>E126</b>
<b>HSK-MD</b>	Tooling System (MD)	<b>E103</b>
<b>HSK-NPM</b>	Tooling System (NPM)	<b>E36</b>
<b>HSK-NPU</b>	Tooling System (GSK)	<b>E76</b>
<b>HSK-SDC/P</b>	Tooling System (SDC/P)	<b>E49</b>
<b>HSK-SDC/PL</b>	Tooling System (SDC/PL)	<b>E55</b>
<b>HSK-SLA</b>	Tooling System (SLA)	<b>E91</b>
<b>HSK-SMB</b>	Tooling System (SMB)	<b>E124</b>
<b>HSK-SMH</b>	Tooling System (SMH)	<b>E128</b>
<b>HSK100A</b>	Modular Adaptor (HSK)	<b>B403</b>
<b>HSK100A AM3000</b>	HSK Tooling System (Mono Tool)	<b>B363</b>
<b>HSK100A AM4000</b>	HSK Tooling System (Mono Tool)	<b>B364</b>
<b>HSK63A</b>	Modular Adaptor (HSK)	<b>B403</b>

<b>HSK63A AM1000</b>	HSK Tooling System (Mono Tool)	<b>B360</b>
<b>HSK63A AM1000HS</b>	HSK Tooling System (Alpha Mill)	<b>B355</b>
<b>HSK63A AM1500</b>	HSK Tooling System (Mono Tool)	<b>B361</b>
<b>HSK63A AM1500HS</b>	HSK Tooling System (Alpha Mill)	<b>B356</b>
<b>HSK63A AM2000</b>	HSK Tooling System (Mono Tool)	<b>B362</b>
<b>HSK63A AM2000HS</b>	HSK Tooling System (Alpha Mill)	<b>B357</b>
<b>HSK63A AM3000HS</b>	HSK Tooling System (Alpha Mill)	<b>B358</b>
<b>HSK63A AM4000HS</b>	HSK Tooling System (Alpha Mill)	<b>B359</b>
<b>HSK63A PAV-XD19</b>	HSK Tooling System (Pro-V Mill)	<b>B365</b>
<b>HSK63A/100A PAX5000</b>	HSK Tooling System (Pro-X Mill)	<b>B366</b>
<b>HT</b>	Tooling System (HT)	<b>E164</b>

## I

<b>Indexable HOB</b>	Indexable HOB	<b>B435</b>
<b>IRB</b>	Indexable Reamer (Stuffed Hole)	<b>D93</b>
<b>IRT</b>	Indexable Reamer (Throughout Hole)	<b>D92</b>
<b>ISO Metric</b>	Thread Milling Inserts	<b>C12</b>

## K

<b>K2D</b>	KING Drill-2D	<b>D11</b>
<b>K2D</b>	KING Drill (through coolant system with a lathe)-2D	<b>D21</b>
<b>K2D</b>	KING Drill (large diameter drilling)-2D	<b>D25</b>
<b>K3D</b>	KING Drill-3D	<b>D13</b>
<b>K3D</b>	KING Drill (through coolant system with a lathe)-3D	<b>D22</b>
<b>K3D</b>	KING Drill (large diameter drilling)-3D	<b>D25</b>
<b>K4D</b>	KING Drill-4D	<b>D16</b>
<b>K4D</b>	KING Drill (through coolant system with a lathe)-4D	<b>D23</b>
<b>K4D</b>	KING Drill (large diameter drilling)-4D	<b>D25</b>
<b>K5D</b>	KING Drill-5D	<b>D18</b>
<b>KEL-ANN</b>	Milling Inserts	<b>B8</b>
<b>KEL-MF</b>	Milling Inserts	<b>B8</b>
<b>KEL-QNN</b>	Milling Inserts	<b>B8</b>

## L

<b>LBE-MHD</b>	Laser Mill	<b>B328</b>
<b>LBE-MHD type</b>	Modular Adaptors	<b>B45</b>
<b>LBE08/10/12/16/20/25/30/32</b>	Laser Mill (Carbide Shank-Ball, Straight type)	<b>B324</b>
<b>LBE08/10/12/16/20/25/30/32</b>	Laser Mill (Steel Shank-Ball, Taper type)	<b>B325</b>
<b>LBE12/16/20/25/30/32</b>	Laser Mill (Steel Shank-Ball, Straight type)	<b>B325</b>
<b>LBH</b>	Milling Inserts	<b>B8</b>
<b>LBH-KF</b>	Milling Inserts	<b>B8</b>
<b>LBH-KH</b>	Milling Inserts	<b>B9</b>
<b>LBS</b>	Milling Inserts	<b>B9</b>

**L**

<b>LCF</b>	Milling Inserts	<b>B9</b>
<b>LDET-MA</b>	Milling Inserts	<b>B10</b>
<b>LFH</b>	Milling Inserts	<b>B9</b>
<b>LNCS</b>	Milling Inserts	<b>B10</b>
<b>LNE</b>	Milling Inserts	<b>B10</b>
<b>LNEX-MA</b>	Milling Inserts	<b>B11</b>
<b>LNKT-MA</b>	Milling Inserts	<b>B10</b>
<b>LNKT-ML</b>	Milling Inserts	<b>B11</b>
<b>LNKT-MM</b>	Milling Inserts	<b>B11</b>
<b>LNM(E)X-MF</b>	Milling Inserts	<b>B11</b>
<b>LNM(E)X-MM</b>	Milling Inserts	<b>B11</b>
<b>LNMX-MF</b>	Milling Inserts	<b>B12</b>
<b>LNMX-ML</b>	Milling Inserts	<b>B12</b>
<b>LNMX-MM</b>	Milling Inserts	<b>B12</b>
<b>Long Type</b>	Thread Milling Holders	<b>C16</b>
<b>LPEW</b>	Milling Inserts	<b>B12</b>
<b>LPMT-MF</b>	Milling Inserts	<b>B12</b>
<b>LPMW</b>	Milling Inserts	<b>B13</b>
<b>LRE10/12</b>	Laser Mill (Steel Shank-Corner R, Taper type)	<b>B327</b>
<b>LRE10/12/16/20/25/30/32</b>	Laser Mill (Carbide Shank-Corner R, Straight type)	<b>B326</b>
<b>LRE12/16/25/30/32</b>	Laser Mill (Steel Shank-Corner R, Straight type)	<b>B327</b>
<b>LRH</b>	Milling Inserts	<b>B9</b>
<b>LXET-MA</b>	Milling Inserts	<b>B13</b>
<b>LXET-ML</b>	Milling Inserts	<b>B13</b>

**M**

<b>MAPD000HR/L-Z0</b>	Aero Mill Mini	<b>B155</b>
<b>MAPDS000HR/L-Z0</b>	Aero Mill Mini	<b>B156</b>
<b>MAT</b>	Modular Adaptor (Steel shank)	<b>B400</b>
<b>MAT-C</b>	Modular Adaptor (Carbide shank)	<b>B401</b>
<b>MPMT</b>	Milling Inserts	<b>B14</b>
<b>MT</b>	Multi Functional (Multi-Turn)	<b>D85</b>

**N**

<b>NCM535</b>	CVD Coated Grades	<b>A5</b>
<b>NCM545</b>	CVD Coated Grades	<b>A5</b>
<b>ND3000</b>	Diamond Coated Grades	<b>A16</b>
<b>NPT</b>	Thread Milling Inserts	<b>C15</b>
<b>NPTF</b>	Thread Milling Inserts	<b>C15</b>
<b>NT-FMA</b>	Tooling System (FMA)	<b>E95</b>
<b>NT-NPM</b>	Tooling System (NPM)	<b>E37</b>

**O**

<b>OFCN</b>	Milling Inserts	<b>B14</b>
<b>OFCW</b>	Milling Inserts	<b>B14</b>
<b>OFKR-MA</b>	Milling Inserts	<b>B14</b>
<b>OFKR-MF</b>	Milling Inserts	<b>B14</b>
<b>OFKR-MM</b>	Milling Inserts	<b>B14</b>
<b>OFKT-MA</b>	Milling Inserts	<b>B14</b>
<b>OFKT-MF</b>	Milling Inserts	<b>B14</b>
<b>OFKT-MM</b>	Milling Inserts	<b>B15</b>
<b>ONHX-MA</b>	Milling Inserts	<b>B15</b>
<b>ONHX-MF</b>	Milling Inserts	<b>B15</b>
<b>ONHX-ML</b>	Milling Inserts	<b>B15</b>
<b>ONHX-MM</b>	Milling Inserts	<b>B15</b>
<b>ONHX-W</b>	Milling Inserts	<b>B15</b>
<b>ONMX-MF</b>	Milling Inserts	<b>B15</b>
<b>ONMX-MM</b>	Milling Inserts	<b>B15</b>
<b>ORC</b>	O-ring Cutter	<b>B368</b>
<b>ORG</b>	Milling Inserts	<b>B15</b>

**P**

<b>PAC(M)2000</b>	Pro-A Mill	<b>B377</b>
<b>PAC(M)4000</b>	Pro-A Mill	<b>B377</b>
<b>PALCM</b>	Pro-L Mill	<b>B389</b>
<b>PALS (Multi-edge)</b>	Pro-L Mill (Multi-edge)	<b>B392</b>
<b>PALS (Single-edge)</b>	Pro-L Mill (Single-edge)	<b>B390</b>
<b>PAM type</b>	Modular Adaptors	<b>B45</b>
<b>PAM2000</b>	Pro-A Mill	<b>B379</b>
<b>PAS2000</b>	Pro-A Mill	<b>B378</b>
<b>PAS4000</b>	Pro-A Mill	<b>B378</b>
<b>PAVCM-XD19</b>	Pro-V Mill	<b>B398</b>
<b>PAVS-XD19</b>	Pro-V Mill	<b>B399</b>
<b>PAXC(M)5000</b>	Pro-X Mill	<b>B382</b>
<b>PAXC(M)6000</b>	Pro-X Mill	<b>B383</b>
<b>PAXM type</b>	Modular Adaptors	<b>B45</b>
<b>PAXM5000</b>	Pro-X Mill	<b>B386</b>
<b>PAXS5000</b>	Pro-X Mill	<b>B384</b>
<b>PAXS6000</b>	Pro-X Mill	<b>B385</b>
<b>PBAC(M)5000</b>	Power Buster	<b>B67</b>
<b>PBPCM6000</b>	Power Buster	<b>B69</b>
<b>PBZC(M)5000</b>	Power Buster	<b>B68</b>
<b>PC2005</b>	PVD Coated Grades	<b>A9</b>
<b>PC2010</b>	PVD Coated Grades	<b>A9</b>
<b>PC2015</b>	PVD Coated Grades	<b>A9</b>
<b>PC2505</b>	PVD Coated Grades	<b>A9</b>



## P

PC2510	PVD Coated Grades	A9
PC3700	PVD Coated Grades	A7
PC5335	PVD Coated Grades	A11
PC5400	PVD Coated Grades	A10
PC5535	PVD Coated Grades	A12
PC6100	PVD Coated Grades	A6
PC9540	PVD Coated Grades	A8
PCD Face Cutter	PCD Face Cutter	B157
PD1005	DLC Coated Grades	A17
PD1010	DLC Coated Grades	A17
PES2000	Turbo Mill	B61
PES3000	Turbo Mill	B61
PES4000	Turbo Mill	B61
PF(M)4000	Mill Max	B55
PNEJ	Milling Inserts	B16
PNEJ-C	Milling Inserts	B16
PPN(M)4000	Mill Max	B56
Pull Stud Bolt	Tooling System (Pull Stud Bolt)	E163
PXL	Pro-XL Mill	B394

## Q

QCGT	Multi Functional insert (Multi-Turn)	D85
QCMT	Multi Functional insert (Multi-Turn)	D85

## R

RC	Milling Inserts	B16
RDC	Tooling System (EXT/RDC)	E106
RDCT-MA	Milling Inserts	B16
RDHW	Milling Inserts	B16
RDKT-MF	Milling Inserts	B17
RDKT-ML	Milling Inserts	B17
RDKT-MM	Milling Inserts	B17
RDKW	Milling Inserts	B17
REKR-MM	Milling Inserts	B17
RI	Drill Insert (Indexable Reamer)	D91
RM14XCM-XN06	Rich Mill	B140
RM16AC(M)6000	Rich Mill	B142
RM16AC(M)8000	Rich Mill	B143
RM3PC(M)3000	Rich Mill	B80
RM3PC(M)4000	Rich Mill	B81
RM3PC(M)5000	Rich Mill	B82
RM3PM type	Modular Adaptors	B45

RM3PM3000	Rich Mill	B85
RM3PM4000	Rich Mill	B85
RM3PS3000	Rich Mill	B83
RM3PS4000	Rich Mill	B84
RM4PC(M)3000	Rich Mill	B92
RM4PC(M)4000	Rich Mill	B93
RM4PFCB3000	Rich Mill	B99
RM4PFCB4000	Rich Mill	B100
RM4PFCP3000	Rich Mill	B103
RM4PFCP4000	Rich Mill	B104
RM4PHCB3000	Rich Mill	B101
RM4PHCB4000	Rich Mill	B102
RM4PHCP3000	Rich Mill	B105
RM4PHCP4000	Rich Mill	B106
RM4PM type	Modular Adaptors	B45
RM4PM3000	Rich Mill	B96
RM4PS3000	Rich Mill	B94
RM4PS4000	Rich Mill	B95
RM4ZC(M)3000	Rich Mill	B97
RM4ZC(M)4000	Rich Mill	B97
RM4ZM type	Modular Adaptors	B46
RM4ZM3000	Rich Mill	B98
RM4ZS3000	Rich Mill	B98
RM6PC(M)-WN08	Rich Mill	B111
RM6PCM-WN04	Rich Mill	B110
RM6PM type	Modular Adaptors	B46
RM6PM-WN04	Rich Mill	B114
RM6PM-WN08	Rich Mill	B115
RM6PS-WN04	Rich Mill	B112
RM6PS-WN08	Rich Mill	B113
RM8AC(M)4000	Rich Mill	B118
RM8AC(M)5000	Rich Mill	B120
RM8EC(M)4000	Rich Mill	B122
RM8EC(M)5000	Rich Mill	B124
RM8QC(M)4000	Rich Mill	B126
RMH8AC(M)4000	Rich Mill	B119
RMH8AC(M)5000	Rich Mill	B121
RMH8EC(M)4000	Rich Mill	B123
RMH8EC(M)5000	Rich Mill	B125
RMH8QC(M)4000	Rich Mill	B127
RMRC(M)-RN12	Rich Mill	B146
RMRS-RN12	Aero Mill	B147
RMT8A(M)4000	Rich Mill	B129
RMT8A(M)5000	Rich Mill	B130
RMT8E(M)4000	Rich Mill	B131
RMT8E(M)5000	Rich Mill	B132

R

<b>RMT8Q(M)4000</b>	Rich Mill	<b>B133</b>
<b>RMX8AC(M)-SA14</b>	Rich Mill	<b>B136</b>
<b>RNMX-ML</b>	Milling Inserts	<b>B17</b>
<b>RPCT-MA</b>	Milling Inserts	<b>B17</b>
<b>RPET-ML</b>	Milling Inserts	<b>B18</b>
<b>RPMT-MF</b>	Milling Inserts	<b>B18</b>
<b>RPMT-MM</b>	Milling Inserts	<b>B18</b>
<b>RPMW</b>	Milling Inserts	<b>B18</b>
<b>RTJW</b>	Tooling System (RTJW)	<b>E66</b>

S

<b>S-DTN</b>	Tooling System (DTN)	<b>E79</b>
<b>S-FBH</b>	Tooling System (FBH)	<b>E112</b>
<b>S-FBH/B</b>	Tooling System (FBH/B)	<b>E111</b>
<b>S-SDC</b>	Tooling System (SDC/P)	<b>E51</b>
<b>S-SDC/S</b>	Tooling System (SDC/P)	<b>E52</b>
<b>SAGX-ML</b>	Milling Inserts	<b>B18</b>
<b>SAGX-MM</b>	Milling Inserts	<b>B18</b>
<b>SCKN</b>	Milling Inserts	<b>B19</b>
<b>SDCN</b>	Milling Inserts	<b>B19</b>
<b>SEDT-MA</b>	Milling Inserts	<b>B19</b>
<b>SEDT-MF</b>	Milling Inserts	<b>B19</b>
<b>SEDT-MM</b>	Milling Inserts	<b>B19</b>
<b>SDKN-CM</b>	Milling Inserts	<b>B19</b>
<b>SDKN-MU</b>	Milling Inserts	<b>B20</b>
<b>SDKN-SU</b>	Milling Inserts	<b>B20</b>
<b>SDKR-MX</b>	Milling Inserts	<b>B20</b>
<b>SDMT-MM</b>	Milling Inserts	<b>B20</b>
<b>SDXT-MA</b>	Milling Inserts	<b>B20</b>
<b>SDXT-MF</b>	Milling Inserts	<b>B20</b>
<b>SDXT-MM</b>	Milling Inserts	<b>B20</b>
<b>SECA</b>	Milling Inserts	<b>B20</b>
<b>SECN</b>	Milling Inserts	<b>B21</b>
<b>SEET-MA</b>	Milling Inserts	<b>B21</b>
<b>SEET-MF</b>	Milling Inserts	<b>B21</b>
<b>SEET-MM</b>	Milling Inserts	<b>B21</b>
<b>SEEW</b>	Milling Inserts	<b>B21</b>
<b>SEEW-W</b>	Milling Inserts	<b>B21</b>
<b>SEKN-SU</b>	Milling Inserts	<b>B21</b>
<b>SEKR-MX</b>	Milling Inserts	<b>B22</b>
<b>SEMNI</b>	Milling Inserts	<b>B22</b>
<b>SEXT-MF</b>	Milling Inserts	<b>B22</b>
<b>SEXT-MM</b>	Milling Inserts	<b>B22</b>

<b>SEXT-MR</b>	Milling Inserts	<b>B22</b>
<b>SFCN</b>	Milling Inserts	<b>B22</b>
<b>SK-DHE</b>	Tooling System (DHE)	<b>E14</b>
<b>SK-DSC/M</b>	Tooling System (DSC)	<b>E30</b>
<b>SK-DST</b>	Tooling System (DST)	<b>E84</b>
<b>SK-DTN</b>	Tooling System (DTN)	<b>E80</b>
<b>SK-FBH/B</b>	Tooling System (FBH/B)	<b>E110</b>
<b>SK-FBH/D</b>	Tooling System (FBH/D)	<b>E115</b>
<b>SK-FMC</b>	Tooling System (FMC)	<b>E98</b>
<b>SK-FMC</b>	Tooling System (FMC)	<b>E162</b>
<b>SK-GSK</b>	Tooling System (GSK)	<b>E73</b>
<b>SK-MD</b>	Tooling System (MD)	<b>E104</b>
<b>SK-MTA</b>	Tooling System (MTA)	<b>E93</b>
<b>SK-NPM</b>	Tooling System (NPM)	<b>E37</b>
<b>SK-NPU</b>	Tooling System (GSK)	<b>E77</b>
<b>SK-SDC/P</b>	Tooling System (SDC/P)	<b>E50</b>
<b>SK-SLA</b>	Tooling System (SLA)	<b>E92</b>
<b>SNC(M)F-MF</b>	Milling Inserts	<b>B22</b>
<b>SNC(M)F-MM</b>	Milling Inserts	<b>B22</b>
<b>SNCN</b>	Milling Inserts	<b>B23</b>
<b>SNEF</b>	Milling Inserts	<b>B23</b>
<b>SNEU-MF</b>	Milling Inserts	<b>B23</b>
<b>SNEU-TBW</b>	Milling Inserts	<b>B24</b>
<b>SNEU-WMF</b>	Milling Inserts	<b>B24</b>
<b>SNEW</b>	Milling Inserts	<b>B24</b>
<b>SNEW-NAF</b>	Milling Inserts	<b>B24</b>
<b>SNEW-XAF</b>	Milling Inserts	<b>B24</b>
<b>SNEX</b>	Milling Inserts	<b>B24</b>
<b>SNEX-CU1</b>	Milling Inserts	<b>B24</b>
<b>SNEX-MA</b>	Milling Inserts	<b>B24</b>
<b>SNEX-ML</b>	Milling Inserts	<b>B24</b>
<b>SNEX-W</b>	Milling Inserts	<b>B26</b>
<b>SNHT-WX</b>	Milling Inserts	<b>B25</b>
<b>SNKN</b>	Milling Inserts	<b>B25</b>
<b>SNM(E)X-MF</b>	Milling Inserts	<b>B25</b>
<b>SNM(E)X-MM</b>	Milling Inserts	<b>B25</b>
<b>SNMX-MM</b>	Milling Inserts	<b>B18</b>
<b>SOKX</b>	Milling Inserts	<b>B26</b>
<b>SPB(M)</b>	Side Cutter	<b>B411</b>
<b>SPCN</b>	Milling Inserts	<b>B26</b>
<b>Special PCD Order Sheet</b>	PCD Face Cutter	<b>B157</b>
<b>SPEN-WC</b>	Milling Inserts	<b>B26</b>
<b>SPET-ND</b>	Drill Insert (KING Drill)	<b>D9</b>
<b>SPEX</b>	Milling Inserts	<b>B26</b>
<b>SPFN</b>	Milling Inserts	<b>B26</b>
<b>SPKN-MU</b>	Milling Inserts	<b>B27</b>

## S

<b>SPKN-SU</b>	Milling Inserts	<b>B27</b>
<b>SPKR-MX</b>	Milling Inserts	<b>B27</b>
<b>SPMN</b>	Milling Inserts	<b>B27</b>
<b>SPMT</b>	Milling Inserts	<b>B27</b>
<b>SPMT-KC</b>	Milling Inserts	<b>B27</b>
<b>SPMT-LD</b>	Drill Insert (KING Drill)	<b>D9</b>
<b>SPMT-MM</b>	Milling Inserts	<b>B27</b>
<b>SPMT-PD</b>	Drill Insert (KING Drill)	<b>D9</b>
<b>SPP(M)</b>	Side Cutter	<b>B410</b>
<b>SPS</b>	Side Cutter	<b>B412</b>
<b>ST-DSC/M</b>	Tooling System (DSC)	<b>E32</b>
<b>ST-DSC/S</b>	Tooling System (DSC)	<b>E32</b>
<b>ST-OFH</b>	Tooling System (OFH)	<b>E89</b>
<b>Standard Type</b>	Thread Milling Holders	<b>C16</b>
<b>Steel Shank type</b>	Modular Adaptors	<b>B45</b>

## T

<b>Taper Type</b>	Thread Milling Holders	<b>C16</b>
<b>TC Collet</b>	Tooling System (DCJ Collet)	<b>E43</b>
<b>TCA Tap Adapter</b>	Tooling System (TCA)	<b>E81</b>
<b>TEC(E)N</b>	Milling Inserts	<b>B27</b>
<b>TEEN</b>	Milling Inserts	<b>B27</b>
<b>TEH</b>	Tooling System (TEH)	<b>E87</b>
<b>TER Collet</b>	Tooling System (TER Collet)	<b>E85</b>
<b>TFCN</b>	Milling Inserts	<b>B28</b>
<b>TFE</b>	T-Cutter	<b>B374</b>
<b>THE</b>	Tank Mill	<b>B306</b>
<b>TNKT-ML</b>	Milling Inserts	<b>B28</b>
<b>TNKT-MM</b>	Milling Inserts	<b>B28</b>
<b>TNMX-NM</b>	Milling Inserts	<b>B28</b>
<b>TP2PC(M)-LN14</b>	TP2P	<b>B311</b>
<b>TP2PC(M)-LN17</b>	TP2P	<b>B312</b>
<b>TP2PCM-LN08</b>	TP2P	<b>B310</b>
<b>TP2PS-LN08</b>	TP2P	<b>B313</b>
<b>TP2PS-LN14</b>	TP2P	<b>B314</b>
<b>TP2PS-LN17</b>	TP2P	<b>B315</b>
<b>TP8PC(M)-SO14</b>	TP8P	<b>B318</b>
<b>TP8PS-SO14</b>	TP8P	<b>B319</b>
<b>TPCN</b>	Milling Inserts	<b>B28</b>
<b>TPD</b>	Drill Insert (TPDC Plus Drill)	<b>D45</b>
<b>TPD</b>	Drill Insert (TPDB Plus Drill)	<b>D58</b>
<b>TPD</b>	Drill Insert (TPDB-DS)	<b>D67</b>
<b>TPD</b>	Drill Insert (TPDB-H)	<b>D72</b>

<b>TPD</b>	Drill Insert (TPDB-F)	<b>D77</b>
<b>TPDB-DS(3D)</b>	Drill (TPDB-DS)	<b>D68</b>
<b>TPDB-DS(5D)</b>	Drill (TPDB-DS)	<b>D68</b>
<b>TPDB-DS(8D)</b>	Drill (TPDB-DS)	<b>D68</b>
<b>TPDB-F(1.5D)</b>	Drill (TPDB-F)	<b>D78</b>
<b>TPDB-H(3D)</b>	Drill (TPDB-H)	<b>D73</b>
<b>TPDB-H(4D)</b>	Drill (TPDB-H)	<b>D73</b>
<b>TPDB-H(5D)</b>	Drill (TPDB-H)	<b>D74</b>
<b>TPDB-H(8D)</b>	Drill (TPDB-H)	<b>D74</b>
<b>TPDB(10D)</b>	Drill (TPDB Plus)	<b>D63</b>
<b>TPDB(12D)</b>	Drill (TPDB Plus)	<b>D64</b>
<b>TPDB(3D)</b>	Drill (TPDB Plus)	<b>D60</b>
<b>TPDB(5D)</b>	Drill (TPDB Plus)	<b>D61</b>
<b>TPDB(8D)</b>	Drill (TPDB Plus)	<b>D62</b>
<b>TPDC(1.5D)</b>	Drill (TPDC Plus)	<b>D49</b>
<b>TPDC(10D)</b>	Drill (TPDC Plus)	<b>D51</b>
<b>TPDC(12D)</b>	Drill (TPDC Plus)	<b>D51</b>
<b>TPDC(3D)</b>	Drill (TPDC Plus)	<b>D49</b>
<b>TPDC(5D)</b>	Drill (TPDC Plus)	<b>D50</b>
<b>TPDC(8D)</b>	Drill (TPDC Plus)	<b>D50</b>
<b>TPDX(3D)</b>	Drill (TPDC Plus)	<b>D46</b>
<b>TPDX(5D)</b>	Drill (TPDC Plus)	<b>D46</b>
<b>TPDX(8D)</b>	Drill (TPDC Plus)	<b>D46</b>
<b>TPKN-MU</b>	Milling Inserts	<b>B29</b>
<b>TPKN-SU</b>	Milling Inserts	<b>B29</b>
<b>TPKR-MX</b>	Milling Inserts	<b>B29</b>
<b>TPMCM-TN16</b>	Triple Mill	<b>B259</b>
<b>TPMCM-TN20</b>	Triple Mill	<b>B260</b>
<b>TPMS-TN11</b>	Triple Mill	<b>B262</b>
<b>TPMS-TN16</b>	Triple Mill	<b>B261</b>
<b>TWX-KC</b>	Milling Inserts	<b>B29</b>

## V

<b>VCKT-MA</b>	Milling Inserts	<b>B29</b>
<b>VDKT-MA</b>	Milling Inserts	<b>B29</b>

## W

<b>WCMT-C20N</b>	Drill Insert (WPDC)	<b>D83</b>
<b>WCMT-C21N</b>	Drill Insert (WPDC)	<b>D83</b>
<b>WDKT-MH</b>	Milling Inserts	<b>B29</b>
<b>WFSB(M)</b>	Wind Mill (Boss type)	<b>B415</b>
<b>WFSP(M)</b>	Wind Mill (Plane type)	<b>B416</b>
<b>Whitworth(BSW, BSF, BSP, BSB)</b>	Thread Milling Inserts	<b>C14</b>
<b>WNGX-MA</b>	Milling Inserts	<b>B30</b>

**W**

<b>WNGX-ML</b>	Milling Inserts	<b>B30</b>
<b>WNGX-MM</b>	Milling Inserts	<b>B30</b>
<b>WNMX-MF</b>	Milling Inserts	<b>B30</b>
<b>WNMX-ML</b>	Milling Inserts	<b>B30</b>
<b>WNMX-MM</b>	Milling Inserts	<b>B30</b>
<b>WPDC(5D)</b>	Drill (WPDC Standard type)	<b>D83</b>
<b>WPDC(5D)</b>	Drill (WPDC Single insert cartridge type)	<b>D84</b>
<b>WPDC(5D)</b>	Drill (WPDC Dual insert cartridge type)	<b>D84</b>
<b>WPDC(6.5D)</b>	Drill (WPDC Standard type)	<b>D83</b>
<b>WPDC(6.5D)</b>	Drill (WPDC Single insert cartridge type)	<b>D84</b>
<b>WPDC(6.5D)</b>	Drill (WPDC Dual insert cartridge type)	<b>D84</b>
<b>WPDC(8D)</b>	Drill (WPDC Standard type)	<b>D83</b>
<b>WPDC(8D)</b>	Drill (WPDC Single insert cartridge type)	<b>D84</b>
<b>WPDC(8D)</b>	Drill (WPDC Dual insert cartridge type)	<b>D84</b>

**X**

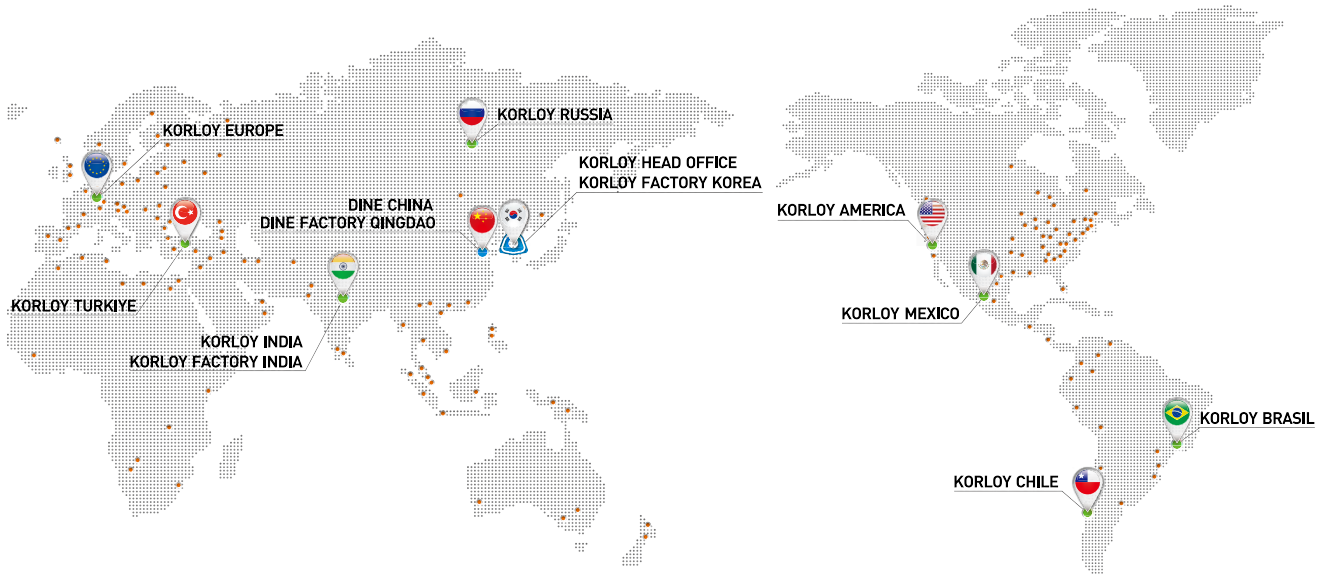
<b>XCET-KC</b>	Milling Inserts	<b>B31</b>
<b>XDET-MA</b>	Milling Inserts	<b>B31</b>
<b>XEKT-MA</b>	Milling Inserts	<b>B31</b>
<b>XEKT-ML</b>	Milling Inserts	<b>B31</b>
<b>XNCT-MA</b>	Milling Inserts	<b>B31</b>
<b>XNKT-ML</b>	Milling Inserts	<b>B32</b>
<b>XNKT-MM</b>	Milling Inserts	<b>B32</b>
<b>XNMX-ML</b>	Milling Inserts	<b>B32</b>
<b>XOET-ND</b>	Drill Insert (KING Drill)	<b>D10</b>
<b>XOMT-LD</b>	Drill Insert (KING Drill)	<b>D9</b>
<b>XOMT-PD</b>	Drill Insert (KING Drill)	<b>D9</b>
<b>XOMT-RD</b>	Drill Insert (KING Drill)	<b>D10</b>
<b>XPMT-MM</b>	Milling Inserts	<b>B32</b>

**Z**

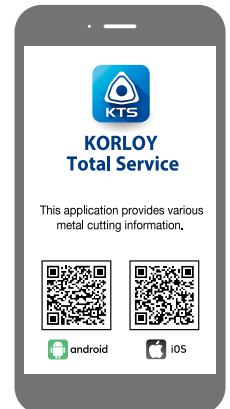
<b>ZDMT-R-MM</b>	Milling Inserts	<b>B33</b>
<b>ZPET-MM</b>	Milling Inserts	<b>B33</b>
<b>ZPMT-MM</b>	Milling Inserts	<b>B33</b>
<b>ZPMT-R-MM</b>	Milling Inserts	<b>B33</b>
<b>ZPMT-R-MR</b>	Milling Inserts	<b>B33</b>

# KORLOY Global Network

We stand to be the Global Top Manufacturer. Korea's Best. World's Best



**Head Office:** Holystar B/D, 326, Seocho-daero, Seocho-gu, Seoul, 06633, Republic of Korea  
Tel: +82-2-522-3181 Fax: +82-2-522-3184, +82-2-3474-4744 Web: [www.korloy.com](http://www.korloy.com) E-mail: [sales.khq@korloy.com](mailto:sales.khq@korloy.com)



## **KORLOY AMERICA**

620 Maple Avenue, Torrance, CA 90503, USA  
Tel: +1-310-782-3800 Toll Free: +1-888-711-0001 Fax: +1-310-782-3885  
E-mail: [sales.kai@korloy.com](mailto:sales.kai@korloy.com)

## **KORLOY INDIA**

Plot No. 415, Sector 8, IMT Manesar, Gurgaon 122051, Haryana, India  
Tel: +91-124-4391790 Fax: +91-124-4050032  
E-mail: [sales.kip@korloy.com](mailto:sales.kip@korloy.com)

## **KORLOY TURKIYE**

Serifali Mahallesi, Burhan Sokak NO: 34  
Dudullu OSB/Umraniye/Istanbul, 34775, Turkey  
Tel: +90-216-415-8874 E-mail: [sales.ktl@korloy.com](mailto:sales.ktl@korloy.com)

## **KORLOY RUSSIA**

123242, Moscow, vn.ter.g. municipal district Presnensky,  
per Kapranova, house 3 building 3, premises 1/3  
Tel: +7-495-280-1458 Fax: +7-495-280-1459 E-mail: [tech.sales@korloy.ru](mailto:tech.sales@korloy.ru)

## **KORLOY FACTORY INDIA**

Plot No. 415, Sector 8, IMT Manesar, Gurgaon 122051, Haryana, India  
Tel: +91-124-4391790 Fax: +91-124-4050032  
E-mail: [pro.kim@korloy.com](mailto:pro.kim@korloy.com)

## **KORLOY EUROPE**

Gablonzer Str. 25-27, 61440 Oberursel, Germany  
Tel: +49-6171-277-83-0 Fax: +49-6171-277-83-59  
E-mail: [sales.keg@korloy.com](mailto:sales.keg@korloy.com)

## **KORLOY BRASIL**

Av. Aruana 280, conj.12, WLC, Alphaville, Barueri,  
CEP06460-010, SP, Brasil  
Tel: +55-11-4193-3810 E-mail: [sales.kbl@korloy.com](mailto:sales.kbl@korloy.com)

## **KORLOY CHILE**

Av. Providencia 1650, Office 1009, 7500027  
Providencia-Santiago, Chile  
Tel: +56-229-295-490 E-mail: [sales.kcs@korloy.com](mailto:sales.kcs@korloy.com)

## **KORLOY MEXICO**

Avenida de las ciencias, No.3015, Interior 507, Juriquilla, Santa Fe,  
Queretaro, Queretaro, C.P. 76230  
Tel: +52-442-673-7388 E-mail: [sales.kml@korloy.com](mailto:sales.kml@korloy.com)

