



**Automotive Industry** 



Shipbuilding Industry

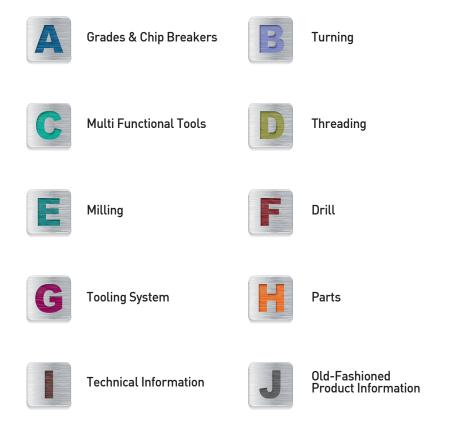


Railway Industry



# Index

Index



# 2022-2023 KORLOY CUTTING TOOLS



Turning



Milling



Holemaking



Endmilling

# **CONTENTS**

# GRADES&CHIP BREAKERS

#### **A** Grades

A02 KORLOY grades system

#### **Turning Grades**

A04 Turning grade selectionsA05 CVD coated gradesA10 PVD coated grades

A12 Uncoated Carbide grades

A13 Cermet grades

A15 Coated Cermet grades

#### **Milling Grades**

A16 Milling grade selections

A17 CVD coated grades

A18 PVD coated grades

A23 Uncoated Carbide grades

A24 Cermet grades

#### A Solid Endmills & Solid Drills

A25 Solid Endmills grade selections

A26 Solid Endmills grades

A27 Solid Drills grade selections

A28 Solid Drills grades

#### Others (Turning/Milling/Endmills)

A29 Diamond coated grades

A30 DLC coated grades

A31 cBN inserts grades

A36 PCD inserts grades

#### **Chip Breakers**

A37 Chip Breaker for Turning

A42 Chip Breaker for Milling

A49 Chip Breaker for Drilling

#### **TURNING**

#### В

#### **Turning Chip Breakers**

**B02** Application range of KORLOY main Chip Breakers

**B04** Recommended Chip Breakers for workpiece

**B16** Feature of Chip Breakers

#### **Inserts**

**B34** Turning Insert Code System (ISO)

B36 Turning Insert (Negative)

B73 Turning Insert (Positive)

B102 Aluminum Insert (Positive)

B110 cBN Inserts

B113 PCD Inserts

#### **Save Turn**

**B114** Technical Information for Save Turn

B115 Save Turn (Insert)

B116 Save Turn (Holder)

B119 Save Turn (Boring Bar)

#### **Auto Tools**

**B121** Technical Information for Auto tools

B122 ISO type

B127 KHP Coolant

B136 Blade type

B139 Multi Utility type

B142 KGT/MGT type

B145 MSB Tool

B151 Sleeve

#### **Multi Turn**

**B152** Technical Information for Multi Turn

B154 Multi Turn

#### **Bearing Solutions**

**B155** Technical Information for Bearing Solutions

**B156** Bearing Solutions

**B161** Special Order Form for Bearing Inserts

#### **External Tool Holder**

B162 External tool Holder Code System (ISO)

**B163** Index for External Holder

**B166** Instruction of External Holder assembly

B167 Double Clamp System

B172 Lever Lock System

B179 Wedge Clamp System

B181 Clamp on System

B183 Multi Lock System

B190 Screw on System

B197 Ceramic Holder

#### **High Pressure Coolant**

**B199** Technical Information for KHP Coolant

**B202** KHP Coolant

#### **Boring Bar**

B204 Boring Bar Code System (ISO)

B205 Index for Boring Bar

**B207** Instructions of Boring Bar assembly

B208 Double Clamp System

B210 Lever Lock System

**B212** Clamp on System

B213 Multi Lock System

**B215** Screw on System

B225 Compact Mini

#### **TURNING**

**HSK/KM Tooling system** 

B228 Technical Information for HSK/KM Tooling System

B230 Index for HSK/KM Tooling System

B231 HSK Tooling system B237 KM Tooling system

Cartridges

B241 Cartridge Code System (ISO)

B242 Index for Cartridge

B243 Clamp on System

B245 Screw on System

#### MULTI **FUNCTIONAL TOOLS**

**Application Example** 

C02 Application Example

C04 Technical Information for Multi Functional tools

**KGT** 

C07 Technical Information for KGT

C12 KGT

KGT Blade for Parting off C25

**MGT** 

C26 Technical Information for MGT

C28 MGT

MGT (Face grooving)

KGT/MGT Cartridge

Technical Information for KGT/MGT C39 Cartridge

C40 KGT/MGT Cartridge Holder

C41 KGT Cartridge

C42 MGT Cartridge

MGT Aluminum Wheel Series

Technical Information for MGT Aluminum Wheel

C44 MGT Aluminum Wheel

TB/TB-M

C47 Technical Information for TB/TB-M

C51 TB/TB-M

**K Notch** 

C55 Technical Information for K Notch

C57 K Notch

Saw Man

C60 Technical Information for Saw Man

C61 Saw Man

Saw Man-X

C63 Technical Information for Saw Man-X

C65 Saw Man-X

**Fine Tools** 

C67 **Technical Information for Fine Tools** 

C68 Fine Tools

**Grooving/Parting off** 

C70 IGH

C70 DBH

GFIP C71

Special Order Form

C72 Special Order Form for MGT

C73 Special Order Form for V-Pulley Insert

#### THREADING

**Threading Code System** D

Threading Holder/Insert Code System

**Technical Information for Threading** 

Technical Information for Threading D09 Threading Insert with Chip Breaker

**Thread Inserts** 

D10 Partial profile 60° Partial profile 55°

D12 ISO Metric

**Thread Inserts** D

American UN (UN, UNC, UNF, UNEF, UNS) D16

Whitworth (BSW, BSF, BSP, BSB) D18

British Standard Pipe Thread (BSPT) **D22** 

**D22** National Pipe Thread (NPT)

**D23** National Pipe Threads-Dryseal (NPTF)

D23 Round DIN405 (RD)

**D24** Trapez DIN103 (TR)

**D24** American ACME (ACME)

**D25** Stub ACME (STACME)

# **CONTENTS**

#### **THREADING**

Thread Inserts

D26 UNJ (Unified Constant Thread)

D28 American Buttress (ABUT)

D28 British Buttress (BBUT)

**D29** Metric Buttress (SAGE)/API

D30 API Buttress Casing (BUT)

D30 API Round Casing & Tubing (APIRD)

**D30** Extreme Line Casing (EL)

#### Thread Holders

D31 External Holder

D32 Internal Holder

**D33** Vertical Type Holder

#### **Thread Milling**

D34 Technical Information for Thread Milling

**D44** Thread Milling Insert

Thread Milling Holder

#### **MILLING**

Insert

**E02** Milling Insert Code System (ISO)

E04 Milling Inserts

E34 KORLOY Cutters

E42 KORLOY Shanks

**E45** KORLOY Modular Adaptors

#### **Face Milling Cutters**

E47 Mill-max (ISO)/Mill-max Plus (E48, E54)

E57 Mill-max Heavy

E59 Turbo Mill

E62 Double Mill

E64 Power Buster

E71 Rich Mill

E147 Aero Mill/Aero Mill-Plus/Aero Mill-Mini

E156 PCD face cutter

#### **Cutters for Molds**

E157 Alpha Mill/Alpha Mill Nick

E193 Alpha Mill-X

E201 Future Mill/Future Mill P-Positive

E254 Triple Mill

E262 HFMD

**E277** HFM

E284 HRMDouble

E300 HRM

E307 Tank Mill

E308 TP2P

E317 Laser Mill/GBE/BRE

E337 HAVE(Multi-edge, Single-edge)

**E341** Technical Information for BT/HSK Tooling System

E342 BT Tooling System (Alpha Mill, Mono-Tool)

E353 HSK Tooling System (Alpha Mill, Mono-Tool, Pro-V Mill)

E364 O-ring Cutter

E366 Chamfer Tool (Multi-functional, Solid)

E374 T-Cutter(TFE)

#### E Milling Cutter for Aluminum

E375 Technical Information for Pro-A Mill/

Pro-X Mill/Pro-L Mill/Pro-XL Mill/Pro-V Mill

E385 Pro-A Mill

E388 Pro-X Mill

E394 Pro-L Mill

E398 Pro-XL Mill

E401 Modular Adaptor (MAT/BT/HSK)

#### **Side Milling Cutters**

**E405** Technical Information for Side Milling Cutters

**E407** Side Milling Cutters

E411 Side Cutter

E414 Wind Mill

#### Milling Cutter for Cast iron at high feed

E418 Technical information for High feed Cutter

E420 Technical information for Cube Mill

E421 Technical information for Couple Mill

E423 Technical information for Shave Mill

E425 Technical information for Shave Mill Ultra

# **Detail Information of Milling Cutter** and Arbor

E426 Actual Designation of Milling Cutter and Arbor

#### **Gear Tools**

**E429** Technical information for Gear Cutter Tools

E430 Gear Cutter Table

E431 Gear Cutter

E439 Gear Cutter Order Form

E440 Indexable HOB

E441 Indexable HOB Cutter Order Form

**Indexable Drills** 

#### **DRILL**

**Technical Information for Drills** 

F54 **TPDB Plus Drill** 

F02 **KORLOY Drills** 

F63 TPDB-F

F03 Available Insert

> TPDB-H F68

**Indexable Drills** 

F75 Technical information for WPDC

F05 King Drill King Drill (for through coolant system F78 Center Drill

with a lathe)

**WPDC** F79

King Drill (for large diameter drilling) F24

Reamer

F26 KED Plus Drill

F37

F82 Indexable Reamer

#### **TOOLING SYSTEM**

#### **Tooling System**

TPDC Plus Drill

**Tooling System** 

G02 Tooling System Index G49 FMA

G04 DHE/S G07 DHE

G50 **FMC** 

DHC/DHJ Collet G11

G52 MD

G54 **EXT Bar RDC** Bar

G12 DSC G20 NPM G54 G55 FBH/B

G23 DCS/DC/TC

DBCA G62

Collet Chuck Series

**G66** DBC

G25 SDC/P **G68 SMB** 

G30 DSK

**KMB G70** 

G32 **GSK**  G72 SMH

G34 **GERC**  G74 **TBCA** 

**G36** ER

G79 TBC

**G37** ER/L

FBC G82

G38 RTJW

**G85** SAH

G40 NPU

G86 Angular Head

G41 DST

G94 DZC G95 DCJ

G43 TER Tap Collet G44 DTN

G96 DCL

TCA Tap Adaptor G46

**G97** DAMPING PRO

G47 SLA

G104 Others

#### **PARTS**

#### **Parts**

Shim

H02

H05

Cartridge/Chip Breaker

H06 Shim Pin

H03 Chip Cover/Clamp H07 Spring/Wrench

Coolant Bolt/Wrench Bolt H04

Stop Ring/Washer H07

**Parts** 

Pin/Screw

H04 Lever H07 Stopper/Nozzle

H05 Locator/Nut

# **CONTENTS**

# TECHNICAL INFORMATION

#### General Information I

I 02 Workpiece material grades

I 06 Steel, Non-ferrous metal symbol list

I 07 SI unit conversion table

**I 08** Hardness calculating table

I 09 Properties of Korloy grades

#### **Technical Information**

I 10 Technical Information for Turning

I 20 Technical Information for Milling

#### Technical Information

I 24 Technical Information for Tapers

I 27 Technical Information for Endmills

I 30 Technical Information for Drill

#### **General Information II**

I 36 The comparision of chip breakers

I 37 KORLOY Grades

I 40 The comparision of grades for Turning/Milling

# OLD-FASHIONED PRODUCT INFORMATION

# Old-fashioned product information

J02 Grade

J02 External Holder

**J02** Fine Tool

J03 Threading Tool

# J Old-fashioned product information

J03 Mill-Max

J04 Cen-Mill

J04 Jip Drill

J04 LPD/SPD/NPD

#### **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), Alluninyum (Al), Silicon (Si), Tantalum (Ta), Boron (B) etc and metal omponent like Cobalt (Co), Nickel (Ni), Chrom (Cr), Molybdenum (Mo) as binder. Cemented carbides tools have high hardness and specific gravity. Generally there's no smell but according to usage and treatment, appreance and color could be changed

#### 3. Precaution for CEMENTED CARBIDE tools

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

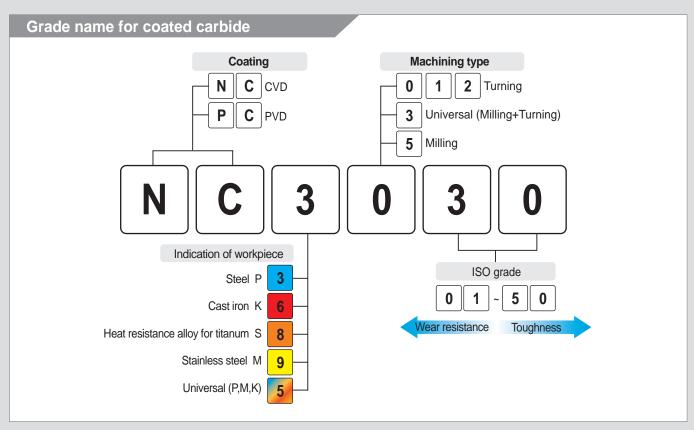
#### 4. Precaution for machining (grinding, welding, EDM) of CEMENTED CARBIDE tools

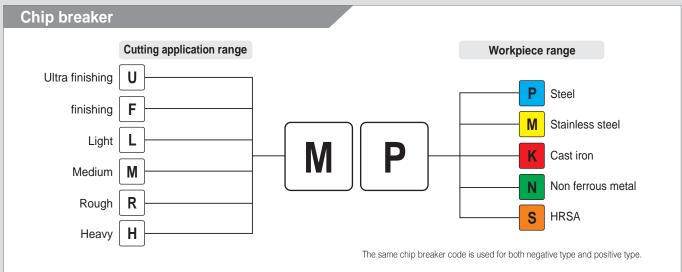
- 1) Surface condition can affect the toughness of the tool, so it is recommended to use a diamond grinding wheel.
- 2) Grinding of cemented carbide creates mist and dust. It contains harmful compositions like Cobalt (Co), thus it is recommended to use a mask, mist collection, and other protective facilities.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

#### 5. METALCUTTING SAFETY

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

#### **KORLOY Inc. Code System**





#### 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	ар	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	Mc	N.m
Thrust	Tc	N
Cycle time	tc	min
Tool life	Т	min
Flank wear	VB	mm
Crater wear	Kt	mm
Nose radius	r	mm

#### **Introduction of Digital Catalogue**

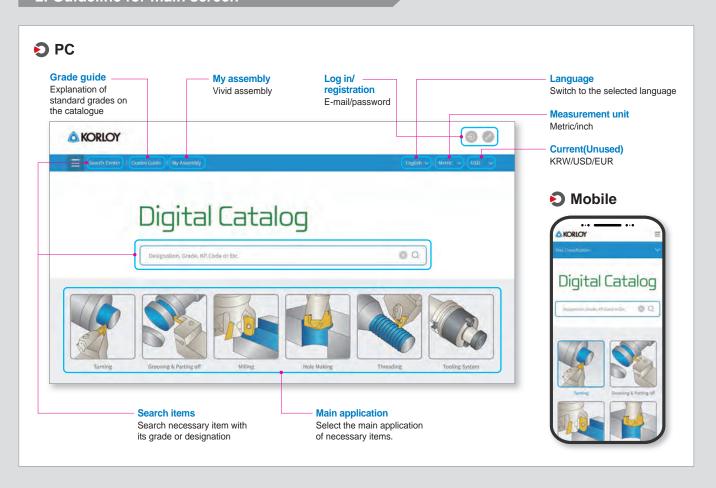
1. Connect to the digital catalogue on PC or mobile

https://catalog.korloy.com

#### 2. Guideline for main screen

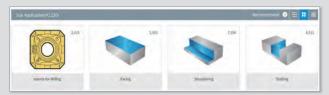
Special tooling

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



#### 3. Details

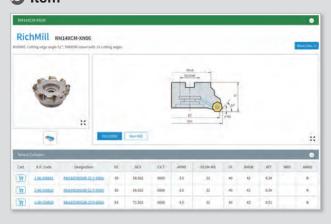
#### Sub application



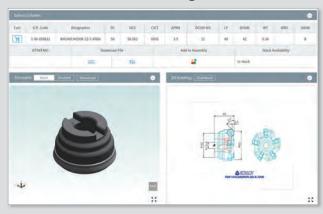
#### Item group

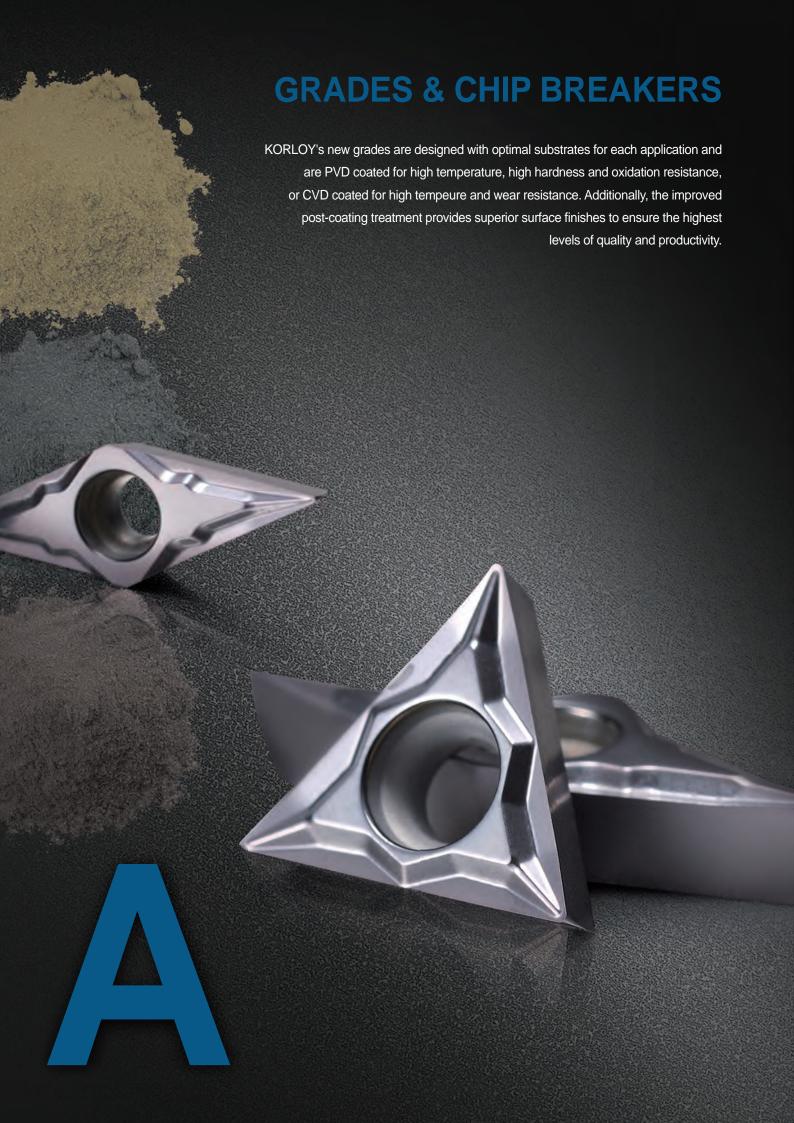


#### Item



#### ltem data, 2/3D modeling, etc.





#### **Grades**

A02 KORLOY grades system

#### **Turning Grades**

A04 Turning grade selections
 A05 CVD coated grades
 A10 PVD coated grades
 A12 Uncoated Carbide grades

A13 Cermet grades

A15 Coated Cermet grades

#### **Milling Grades**

A16 Milling grade selections
A17 CVD coated grades
A18 PVD coated grades
A23 Uncoated Carbide grades

A24 Cermet grades

#### **Solid Endmills & Solid Drills Grades**

A25 Solid Endmills grade selections

A26 Solid Endmills gradesA27 Solid Drills grade selections

A28 Solid Drills grades

#### Others (Turning/Milling/Endmills)

A29 Diamond coated grades
A30 DLC coated grades
A31 cBN inserts grades
A36 PCD inserts grades

#### **Chip Breakers**

A37 Chip Breaker for TurningA42 Chip Breaker for MillingA49 Chip Breaker for Drilling



# **Grades system**

#### **O** Cutting tool

	Р	Steel	ST10	ST20	ST30A
	M	Stainless steel	U20		
Uncoated	K	Cast iron	H01	H05	G10
carbide	S	Titanium alloy	H01	H05	
	N	Aluminum ally/Copper ally	H01	H05	
	Н	Hardened steel	H01		

	Р	Steel	NC3215	NC3225	NC3120	NC3030	NC5330	PC5300	PC5400	PC3035			
	M	Stainless steel	PC8105	PC8110	PC8115	PC8120	NC9115	NC9125	NC5330	NC9135	PC5300	PC9030	PC5400
Coated	K	Cast iron	NC6310	NC6315	NC5330	PC5300	PC5400						
carbide for turning	S	Heat resistant alloy	PC8105	PC8110	PC8115	PC8120	NC9125	NC9135	PC5300	PC5400			
	N	Non-ferrous metal	ND3000	PD1005	PD1010								
	Н	Hardened steel	PC8105	PC8110	PC8115								

	Р	Steel	NC3210	NC3225	NC3030	NC5330	PC3035
	M	Stainless steel	PC9030	PC5300			
Multi-	K	Cast iron	NC6315	PC5300			
functional	S	Heat resistant alloy	PC8110	PC5300			
	N	Non-ferrous metal	H01	H05			
	Н	Hardened steel	PC8110	PC5300			

Р	Steel	NC5330	NCM535	PC3700	PC5300	PC5400	NCM545
M	Stainless steel	NC5330	PC5300	PC9530	PC5400	PC9540	
K	Cast iron	PC6510	NC5330	NCM535	PC5300	PC5400	NCM545
S	Heat resistant alloy	PC5300	PC5400	PC9540			
N	Non-ferrous metal	ND3000	PD1005	PD1010			
Н	Hardened steel	PC2005	PC2010	PC2015	PC210F	PC2505	PC2510
	M K S	M Stainless steel K Cast iron S Heat resistant alloy N Non-ferrous metal	M Stainless steel NC5330 K Cast iron PC6510 S Heat resistant alloy PC5300 N Non-ferrous metal ND3000	M         Stainless steel         NC5330         PC5300           K         Cast iron         PC6510         NC5330           S         Heat resistant alloy         PC5300         PC5400           N         Non-ferrous metal         ND3000         PD1005	M         Stainless steel         NC5330         PC5300         PC9530           K         Cast iron         PC6510         NC5330         NCM535           S         Heat resistant alloy         PC5300         PC5400         PC9540           N         Non-ferrous metal         ND3000         PD1005         PD1010	M         Stainless steel         NC5330         PC5300         PC9530         PC5400           K         Cast iron         PC6510         NC5330         NCM535         PC5300           S         Heat resistant alloy         PC5300         PC5400         PC9540           N         Non-ferrous metal         ND3000         PD1005         PD1010	M         Stainless steel         NC5330         PC5300         PC9530         PC5400         PC9540           K         Cast iron         PC6510         NC5330         NCM535         PC5300         PC5400           S         Heat resistant alloy         PC5300         PC5400         PC9540           N         Non-ferrous metal         ND3000         PD1005         PD1010

	Р	Steel	PC3700	PC5300	PC5335	PC9530	PC9540	NC5330	NCM535
Coated carbide for drills, endmills	M	Stainless steel	PC5300	PC5335	PC9530	PC9540			
	K	Cast iron	PC6510	PC5300					
	S	Heat resistant alloy	PC5300	PC9530	PC9540				
	N	Non-ferrous metal	H01						

# **Grades system**

#### Cutting tool

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

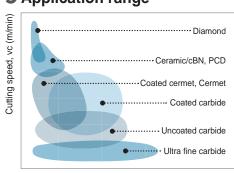
#### Wear resistance tool

Ultra fine grain cemented carbide	Z	Ultra fine grain cemented carbide	FS1	FA1	FCC	
Uncoated carbide	٧	Wear parts	D1	D2	D3	G5
	1	Corrosion resistance	IN10	IN20	IN40	

#### Mining tool

Uncoated carbide	Е	General	GR10	GR20	GR30	GR35	GR40

#### Application range



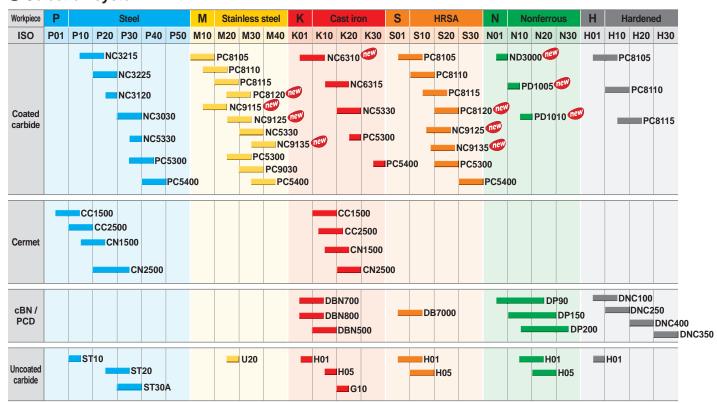
Feed rate, fn (mm/rev)



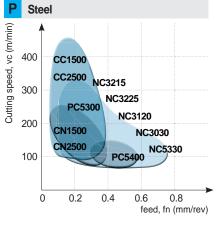
# A Turning Grades

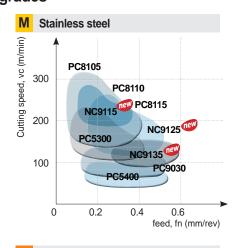
#### **Turning grade selections**

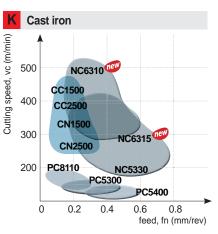
#### Selection system

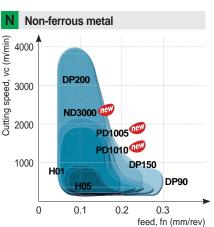


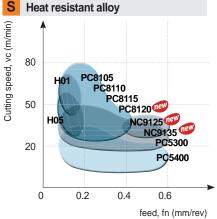
#### Application range of turning grades

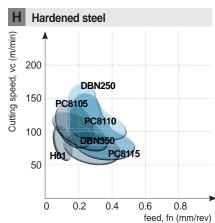














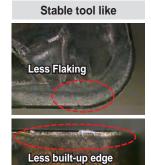
**Grades & Chip Breakers** 

# NC3215/NC3225

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

#### Features

- Stable tool life
- → Higher production stability
- Longer tool life & Higher removal rate
- → High cutting conditions and shorter cutting time available
- Ideal combination of a grade and chip breakers
- → Prolongs tool life
- → Wide applications ranging from roughing to finishing



Unstable tool life

Flaking

Built-upedge





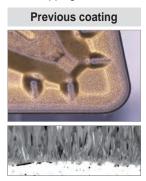
NC3215/NC3225

Competitor

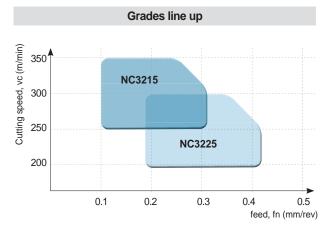
NC3215/NC3225

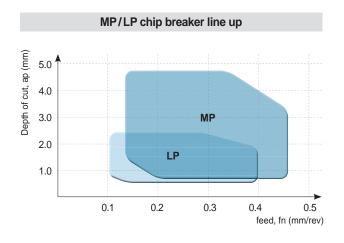
Disperse cutting force → Reduce chipping → Increase tool life → Improved productivity

# New coating



#### Application range





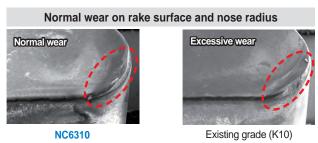


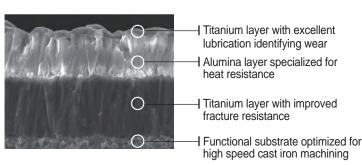
CVD coated grade for high efficiency and quality turning of cast iron

# NC6310 new / NC6315 new

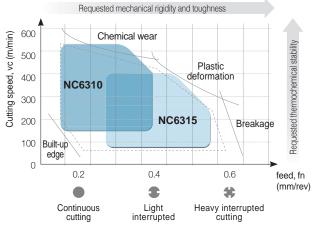
- CVD coating with improved wear resistance and chipping resistance.
- Solutions for the most common issues in cast iron machining: Preventing excessive wear on rake and flank surfaces of insert, chipping and burr

#### Features of NC6310



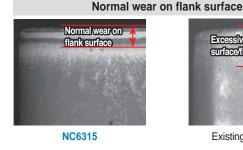


#### Recommended machining range for each grade



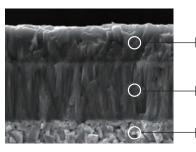
#### Features of NC6315







Existing grade (K15)



Alumina layer with better surface finish and improved wear resistance and welding resistance

H Titanium layer with improved fracture resistance

Functional substrate optimized for high feed and heavy interrupted cast iron machining

#### Turning grades for stainless steel

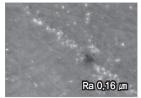
# NC9115 (NC9125 (NC9135 (NC9135

- Optimized for reducing built-up edges, notch wear, plastic deformation and burrs, and for machining stainless steel
- Ideal combination of a grade and MM/RM chip breakers for stable tool life and wide applications ranging from roughing to finishing
- Stable tool life even at high speeds, feeds and depth of cuts (for STS316, vc over 150 m/min available), shortening cutting time
- Excellent versatility responding to workpiece change, covering the austenite, the martensite and the ferrite
- NC9115 is for P20 class, mild steel and forged steel machining.

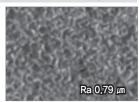
#### Features

• Improved surface finish thanks to the new lubricative CVD coating

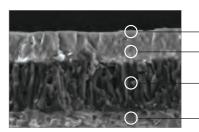
#### Lubricative coating layer to prevent built-up edge







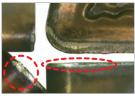
Existing coating



- Top coat with improved welding resistance
- Alumina coating layer for high speed cutting
- Titanium coating layer with stronger resistance to chipping
- Tough substrate optimized for continuous cutting and both light & heavy interruption

 $\bullet$  Lubricative coating layers  $\rightarrow$  Improves welding resistance

#### Inhibited built-up edge and blade damage



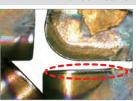




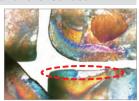
Competitor (M25)

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

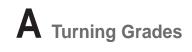
#### Inhibited wear on notch and relief surface



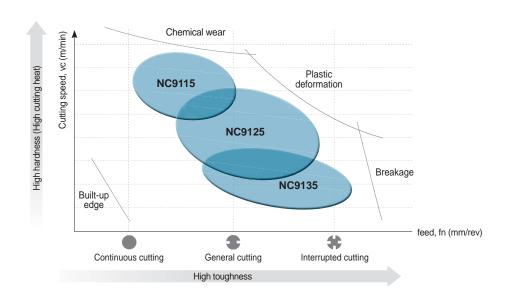




Competitor (M35)



#### Grades line up



#### Recommended grade and chip breaker per stainless steel type

#### [Austenitic stainless steel]

Grade	Cutting speed (m/min)									
	50 10		00	150		200		250		
NC9115						160		220		
NC9125						150	200			
NC9135				100	150					

#### [Duplex stainless steel]

Cundo	Cutting speed (m/min)									
Grade	50		100		150		200		250	
NC9115					120 1	160				
NC9125				100	140					
NC9135		60	100							

#### [Ferritic/Martensitic stainless steel]

Grade	Cutting speed (m/min)									
	5	0	10	00	15	50	20	00	25	50
NC9115						150			250	
NC9125					120			220		
NC9135				100	150					

#### [Precipitation hardened (PH) stainless steel]

		` '							
Ounds	Cutting speed (m/min)								
Grade	50	100	150	200	250				
NC9115	50	110							
NC9125	40	110							
NC9135	30	100							

#### **ᢒ** Selection system of CVD coated grade

,	Workpiece	Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
		Continuous cutting	NC3215	295 (170~420)	P10	
			NC3225	260 (150~370)	P15	NC3215
Р	Steel			200 (100 0.0)	P20	NC3225 NC3120
		Interrupted cutting	NC3120	260 (120~370)	P25	100120
			NC3030	205 (120~290)	P30	NC3030 NC5330
			NC5330	185 (110~260)	P35	1000000
		Continuous	NC9115	240 (220~260)	M10	NC9115
М	Stainless	cutting	NC9125		M20	NC9125 NC5330
IVI	steel	lata an ata d			M30	new
		Interrupted cutting	NC9135		M40	NC9135
		Continuous	NC6310	380 (300~500)	K10	NC6310 NC6315
K	Cast iron	cutting	NC6315	280 (200~400)	K20	NC0515
		Interrupted cutting	NC5330	190 (110~270)	K30	NC5330
s	HRSA	Continuous cutting	NC9125	9 40 (20~60)	S10	NC9125 new
3	пкън	Interrupted cutting	NC9135	40 (20~60)	S20	NC9125

#### The features of CVD coated grades

CVD Coated grades	ISO	Features
NC3215	P10~P15	Continuous machining of general steel and forged steel at high speed     Substrate with excellent thermal crack/plastic deformation resistance, coating with improved chipping resistance for continuous machining     MT-TiCN + Al <sub>2</sub> O <sub>3</sub> + TiN
NC3225	P20~P25	Universal grade for general steel and forged steel     1st recommended grade for general machining with the use of high toughness substrate and coating layer with improved welding/chipping resistance     • MT-TiCN + Al <sub>2</sub> O <sub>3</sub> + TiN
NC3120	P20~P25	Medium to roughing for steel     Combining excellent fracture resistance substrate with chipping resistance and heat resistance Al <sub>2</sub> O <sub>3</sub> increased stability     MT-TiCN + TiC + Al <sub>2</sub> O <sub>3</sub>
NC3030	P25~P35	Medium to low speed machining of steel and interrupted roughing     Harmony between substrate with excellent wear/fracture resistance and Al2O3 film with excellent thermal/chipping resistance     Increased stability in wide ranges of cutting conditions     MT-TiCN + TiC + Al2O3 + TiN
NC5330	P30~P35 M25~M35 K15~K25 S15~S25	Stainless Steel - General cutting for mild steel & forging steel     Excellent cutting performance in hard to cut materials which are vulnerable to built up edge, due to the high tough substrate with improved fracture resistance and the coated layers     MT-TiCN + Al <sub>2</sub> O <sub>3</sub> + TiN
NC9115 16W	M10~M20	High speed cutting for ferritic and martensitic stainless steels     MT-TiCN + Al <sub>2</sub> O <sub>3</sub> + TiN
NC9125	M20~M30	General cutting of stainless steel and heat resistant alloys     MT-TiCN + Al <sub>2</sub> O <sub>3</sub> + TiN
NC9135 100	M30~M40	Interrupted cutting of stainless steel and heat resistant alloys     MT-TiCN + Al <sub>2</sub> O <sub>3</sub> + TiN
NC6310 1000	K01~K10	High speed and continuous cutting of grey cast iron     Increased tool life due to coating layer with high wear resistance     MT-TiCN + Al <sub>2</sub> O <sub>3</sub> + TiN
NC6315	K10~K20	Universal grade for ductile and gray cast Iron     Excellent performance thanks to the alumina (Al <sub>2</sub> O <sub>3</sub> ) coating's improved grip on the tough substrate     MT-TiCN + Al <sub>2</sub> O <sub>3</sub>

#### Turning grade for heat resistant alloy and stainless steel

## PC8105

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

# PC8110

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

# PC8115

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

# PC8120 new

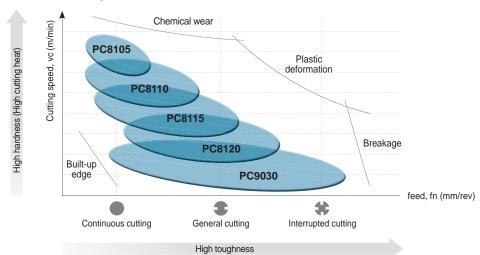
- Control technology for uniform ultra-fine substrate increases wear resistance and chipping resistance.
- The new PVD dioxide film enhances oxidation resistance and heating resistance.
- Special technology of coating surface treatment prevents chipping and realizes stable machining.

#### Features

# Features of PC8105/10/15 series It prevents wear at a high temperature to apply excellent surface roughness and coating with oxidation resistance and high hardness It improves wear resistance to equalize submicron matrix, secure stability between corners and improve chippingand wear resistance

# PC8120 ☐ PVD multi-layer → Reducing cracks ☐ PVD oxidation layer → Good oxidation resistance and heating resistance ☐ PVD nitride → Good wear resistance

#### Grades line up



#### Selection system of PVD coated grade

,	Workpiece	Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
		Continuous cutting	PC5300	175 (100~250)	P30	PC5300
Р	Steel	Interrupted	PC5500	145 (80~120)	P40	PC5400
		cutting	PC5400	125 (80~160)	P50	
			PC8105	175 (120~230)	M01	
		Continuous cutting	PC8110	160 (110~210)	M10	PC8105 PC8110
М	Stainless		PC8115/8120	150 (100~200)	M20	PC8110 PC8120 PC5300
141	steel		PC5300	135 (80~190)	M30	PC9030 PC5400 P
		Interrupted cutting	PC9030	130 (80~180)	M40	100400
			PC5400	110 (80~140)	M50	
		Continuous cutting	PC8110	135 (95~180)	K10	PC8110
K	Cast iron		1 00110	100 (95~ 100)	K20	PC5300
K	Cast IIOII	Interrupted cutting	PC5300	105 (75~140)	K30	PC5400
			PC5400	90 (65~120)	K40	7.00400
			PC8105	55 (40~70)	S01	PC8105
	Heat	Continuous cutting	PC8110	50 (35~65)	S10	PC8110 PC8120 PC8120
S	resistant		PC8115/8120	45 (30~60)	S20	PC5300
	alloy	Interrupted	PC5300	40 (20~60)	S30	PC5400
		cutting	PC5400	35 (20~50)	S40	
			PC8105	110 (80~140)	H01	PC8105
Н	Hardened	Interrupted cutting	PC8110	100 (70~130)	H05	PC8110
		333	PC8115	90 (65~115)	H10	PC8115

#### The features of PVD coated grades

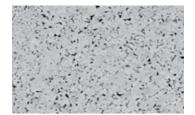
PVD Coated grades	ISO	Features
PC8105	M05~M15 S01~S10 H01~H05	<ul> <li>For high speed and continuous finishing of hard-to-cut materials and STS</li> <li>Excellent cutting performance with high wear resistance and oxidation resistance</li> <li>Ultra fine substrate and the new TiAIN coating layer</li> </ul>
M10~M20 K10~K20 S05~S15 H05~H10		For high speed and continuous medium cutting of hard-to-cut materials and STS  Excellent tool life with high wear/plastic deformation resistance at high temperature  New TiAIN coating layer and substrate with excellent thermal resistance
PC8115	M15~M25 S10~S20 H10~H15	<ul> <li>For medium to low speed and medium to rough cutting of hard-to-cut materials and STS</li> <li>Excellent tool life with high wear resistance and chipping resistance</li> <li>Ultra fine substrate and the new TiAlN coating layer</li> </ul>
PC8120 (16W)	M15~M25 S10~S20	<ul> <li>For hard-to-cut materials and STS roughing</li> <li>Applied ultra-fine substrate and new PVD oxidation layer</li> <li>Better chipping resistance and fracture resistance than PC8115</li> </ul>
PC5300	P30~P40 M20~M30 K20~K25 S15~S25	Universal grade for stainless,HRSA,steel and interrupted cast iron machining     High chipping and welding resistance for longer tool life     New TiAIN coating and ultra fine grain substrate adopted
PC9030	M25~M35	Medium,roughing and heavy interrupted cutting for stainless steel     TiAIN coating and ultra fine grain substrate adopted     High chipping and welding resistance for stable machining
PC5400	P35~P45 M30~M40 K30~K35 S25~S35	For medium cutting for hard-to-cut materials, stainless steel, steel, and cast iron at medium or low speed     Stable machinability with chipping resistance, fracture resistance and welding resistance     Ultra fine substrate with high toughness and new AlCiN layer

#### **Uncoated carbide grades**

#### Uncoated carbide grades for turning application of titanium

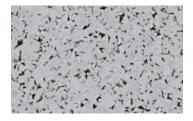
#### H01

- 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

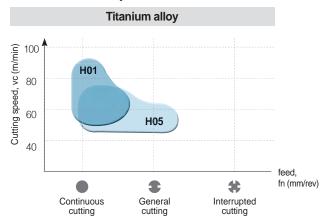


# H05

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



#### Grades line up



#### Selection system of uncoated carbide grades

	Workpiece	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
		ST10	110 (70~140)	P10	ST10
Р	Steel	ST20	80 (50~110)	P20	0700
		ST30A	70 (40~90)	P30	ST20 ST30A
M	Stainless steel	U20	70 (40~90)	M25	U20
	Cast iron	H01	105 (60~140)	K01	H01
K		H05	105 (60~140)	K10	H05
		G10	90 (50~120)	K20	G10
N	Aluminum alloy	H01	600 (450~750)	N10	H01
IN	Copper alloys	H05	425 (320~530)	N20	H05
	Titonium allau	H01	55 (40~70)	S01	H01
S	Titanium alloy	H05	50 (35~65)	S10	H01 H05
Н	High hardness steel	H01	80 (55~105)	H10	H01

#### Main composition and application range

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



#### The physical properties of uncoated carbide grades

Workpiece	Grade	Hardness (HRA)	TRS (kgf/mm²)	Young's modulus (10³kgf/mm²)	Thermal expansion coefficient (10-6/°C)	Thermal conductivity (cal/cm · sec·°C)
	ST10	92.1	175	48	6.2	25
Р	ST20	91.9	200	56	5.2	45
	ST30A	91.3	230	53	5.2	-
М	U20	91.1	210	-	-	88
IVI	ST30A	91.3	230	53	5.2	-
K	H01	92.9	210	66	4.7	109
K	G10	90.9	250	63	-	105
S	H01	92.9	210	66	4.7	109
3	H05	91.8	250	-	-	-

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

#### **Cermet grades**

#### Solution for turning application of steel

## CN1500

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

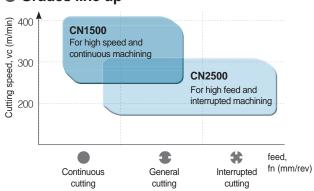
# CN2500

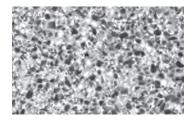
- For high interrupted machining of cold/hot forged steel and Sintered ferrous alloy at high feed and high depth of cut
- Excellent resistance against chipping, fracture and thermal crack
- Improved surface roughness acquired by optimized cutting edges

#### Recommended cutting condition

Division	Workpiece	Grade	Recommended cutting speed (m/min)					
DIVISION	workpiece	Grade	Minimum	Recommended	Maximum			
	SM10C,	CN1500	150	270	400			
	SS440	CN2500	130	240	350			
g	CM4FC	CN1500	150	250	350			
Turning	SM45C	CN2500	130	220	300			
	SCM440, Sintered	CN1500	120	220	300			
	Fe ferrous alloy	CN2500	100	200	250			

#### Grades line up

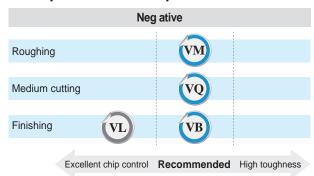






## **Cermet grades**

#### Chip breakers line up





#### Selection system of cermet grades

٧	Vorkpiece	Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
	Otral	Continuous cutting	CN1500	250 (150~350)	P10	CN1500
Р	Steel	Interrupted			P20	CN2500
		cutting	CN2500	220 (130~300)	P30	0142300

#### Comparison of chip breakers

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

#### Coated cermet grades

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

# CC1500 new

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



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

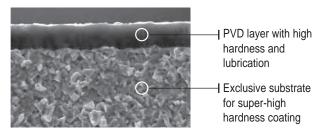
#### Recommended cutting condition

Division	Workpiece	Grade	Recommended cutting speed (m/min)				
DIVISION	workpiece	Grade	Minimum	Recommended	Maximum		
	SM10C,	CC1500	200	350	450		
	SS440	CC2500	180	290	400		
бı	SM45C	CC1500	200	300	400		
Turning	SIVI45C	CC2500	180	270	350		
2	SCM440, Sintered	CC1500	180	270	350		
	Fe ferrous alloy	CC2500	150	250	300		

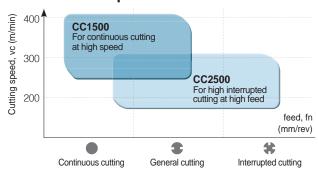
#### Chip breakers line up

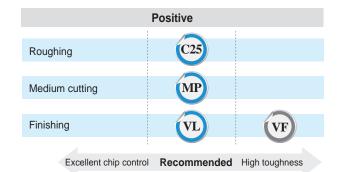
Negative									
Roughing	VM								
Medium cutting	vo								
Finishing VL	VB								
Excellent chip control	Recommended	High toughness							

#### Features



#### Grades line up





#### Selection system of coated cermet grades

Workpiece		Machining types Recommended grade		Recommended cutting speed (m/min)	ISO	Application range
		Continuous cutting	CC1500	325 (200~450)	P10	CC1500
Р	Steel				P20	CC2500
		Interrupted cutting	CC2500	265 (180~350)	P30	002500
v	Cost iron	Continuous cutting	CC1500	270 (180~350)	K10	CC1500
K	Cast iron	Interrupted cutting	CC2500	250 (150~300)	K20	CC2500

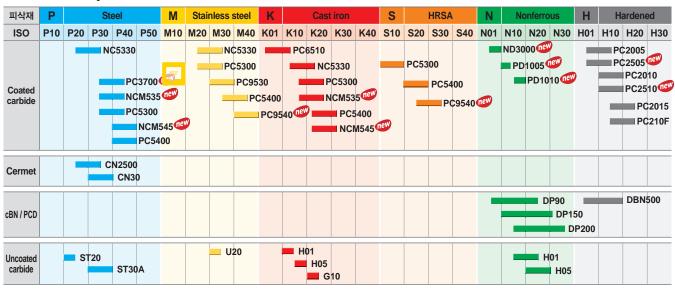
#### The features of coated cermet grade

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

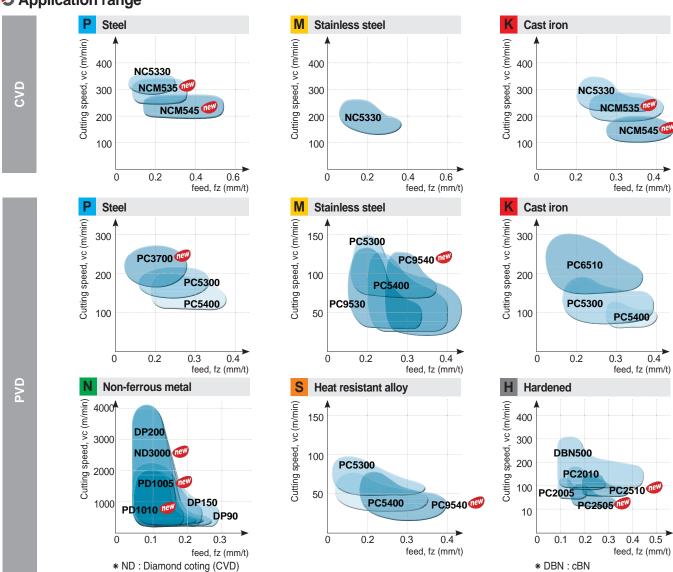
# A Milling Grades

#### Milling grade selections

#### Selection system



#### Application range



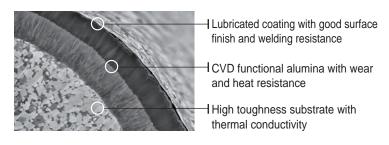
PD: DLC/DP: PCD (Uncoated)

#### Milling Solutions for Steel and Cast Iron

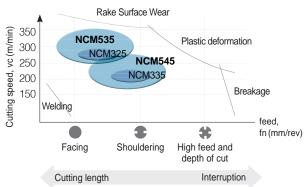
# NCM535 new/NCM545

- 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



#### Guideline for grade application



#### Selection system of CVD coated grades

_							
	Workpiece		Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
			Continuous	NC5330	200 (150~250)	P20	
		Steel Continuous cutting	INCOSSU	200 (150~250)	P25	NC5330	
			cutting	NCM535	300 (200~400)	P30	new
ľ				INCINIOSO	300 (200~400)	P35	NCM535
				NCM545	200 (150~250)	P40	NCM545
						P45	
n	Л	Stainless	inless Continuous	Continuous cutting NC5330	150 (120~180)	M10	NC5330
	<b>"</b>	steel	cutting			M20	NC3330
				NC5330	200 (150~250)	K10	
ŀ	Cast i	Cast iron	Continuous cutting	1403330		K20	NC5330 NCM535
			Cutting	NCM535 🚾	<b>2</b> 50 (200~300)	K30	NCM535 NCM545

#### The features of CVD milling grades

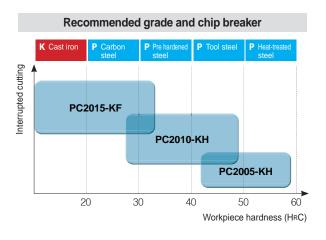
CVD Coated grades	ISO	Features					
NC5330	P20~P30 M20~M30 K15~K25	<ul> <li>For high speed milling of steel and stainless steel</li> <li>Superior wear resistance and chipping resistance grade for steel and stainless steel</li> <li>MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>					
NCM535 (TeV)	P30~P40 K20~K30	Rising CVD milling grade for high productivity in large steel and cast iron machining at high speed High toughness and thermal conductivity substrate and high functional CVD coating layer with heat resistance High chipping resistance and heat and crack resistance from excellent after treatment MT-TiCN + Al2O3					
NCM545	P40~P50 K30~K40	For steel and cast iron milling with high toughness     High toughness substrate and high functional CVD coating layer     High chipping resistance and heat and crack resistance from excellent after treatment     MT-TiCN + Al <sub>2</sub> O <sub>3</sub>					

#### PVD coated grades for finishing high hardened steel

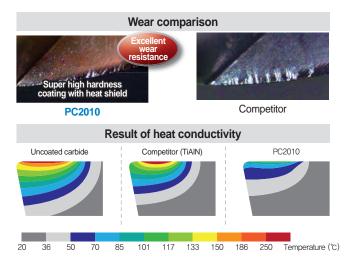
# PC2005/PC2010/PC2015

- 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



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

#### PVD coated grades for roughing high hardened steel

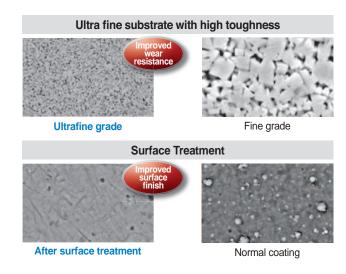
PC2505 (PC2510 (PC2510) (PC2510) (PC2510)

- 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

#### Recommended grade and chip breaker Cutting speed, vc (m/min) 280 PC3700 PC3600 240 PC5300 200 160 PC5400 120 PC2510 80 PC2505 40 30 40 50 60 Workpiece hardness (HRC)

#### Features



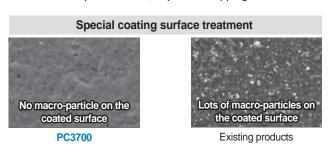
#### Milling grade specialized for steel



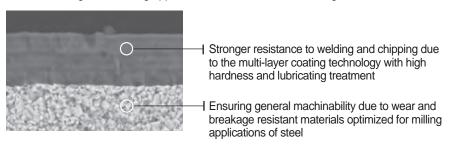
- Excellent chip removal rate due to a tough substrate specialized for steel, and lubricative PVD coating of high-hardness
- A highly chipping-resistant grade for minimized deviation and extended tool life under various cutting conditions

#### Features

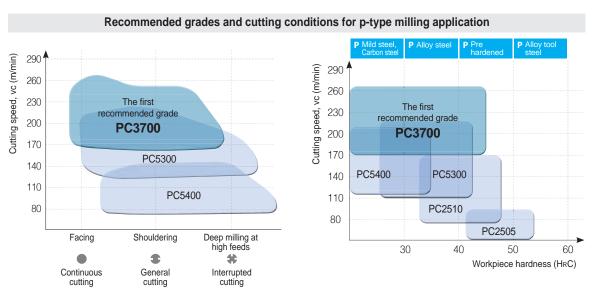
- Smooth surface due to special surface treatment
- → Smooth chip evacuation, improved chipping resistance and surface finish of the workpiece



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



#### Application range



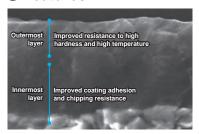


#### Universal PVD grade

## PC5300

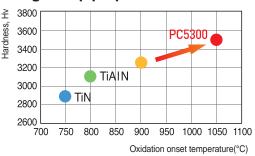
- · Advanced PVD coating with high hardness and high temp stability
- High tough substrate and coating films produce excellent surface finish
- Universal tooling capability covering P, M, K, S with this single grade, PC5300
- Stable machining resulting from excellent edge hardness and chipping resistance

#### Features



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

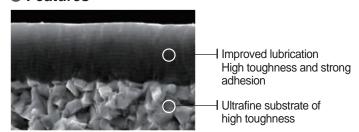
#### High temp properties

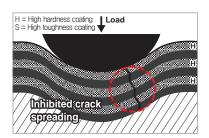


# PC5400

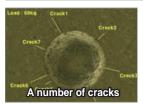
- New PVD coating layer with high toughness and lubrication
- High adhesive strength and toughness between the substrate and coating layer
- Excellent cutting edge strength and chipping resistance ensure stable machinability for P, M, K, S.

#### Features





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



Normal coating



High toughness coating

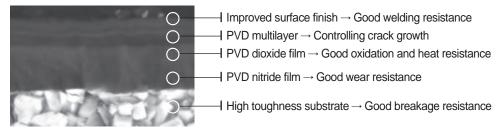


#### Optimal PVD grade for medium to rough cutting and highly interrupted milling in stainless steel

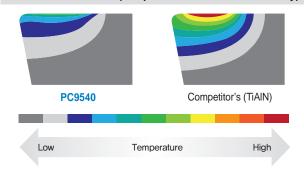
PC9540 rew

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

#### Features

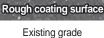


#### New PVD dioxide film (comparison of thermal conductivity)

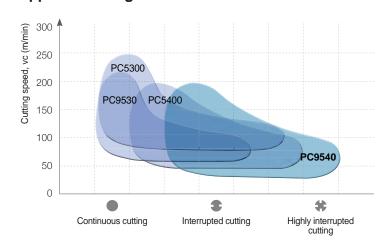


#### Special coating surface treatment technology





#### Application range



# A Milling Grades

#### Selection system of PVD coated grades

٧	/orkpiece	Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
		Continuous	PC3600	235 (180~290)	P20	PC3600
P	Steel	cutting	PC3700 @	235 (180~290)	P30	new
-	Steel	Interrupted	PC5300	195 (150~240)	P40	PC3700 PC5300 PC5400
		cutting	PC5400	145 (80~210)	P50	
		Continuous	PC5300	130 (100~160)	M20	PC5300
М	Stainless	cutting	PC9530	130 (100~160)	M30	PC9530
IVI	steel	Interrupted	PC5400	120 (95~155)	M40	PC95400 PC9540
		cutting	PC9540 @	110 (80~140)	M50	
	Cast iron	Continuous cutting	PC6510	180 (140~230)	K01	PC6510
K					K10	PC6510
IX.		Interrupted cutting	PC5300	145 (110~180)	K20	PC5300
			PC5400	125 (85~160)	K30	PC5400
		Continuous	PC5300	55 (40~70)	S10	
s	HRSA	cutting	FC5500	55 (40~70)	S20	PC5300
3	пком	Interrupted	PC5400	40 (30~50)	S30	PC95400 PC9540
		cutting	PC9540 @	40 (30~50)	S40	1 03540
			PC2005	60 (40~80)	H01	PC2005 PC2505 PC2505
н	High hardness	Continuous	PC2010	55 (40~70)	H10	PC2010 PC2510 PC2015 PC210F
П	steel	cutting	PC2015	50 (35~65)	H20	PG2015 PG210F
			PC210F	50 (35~65)	H30	

#### The features of PVD coated grades

PVD Coated grades	ISO	Features				
PC3600	P20~P30	Milling grade for medium and roughing of steel     New coating layer with superior wear resistance and oxidation resistance with high toughness substrate				
PC3700 new	P30~P40	Exclusive grade for milling grade     Lubricated and high hardness multi-layered coating				
PC5300	P30~P40 K20~K30 M20~M30 S15~S25	Superior universal grade for steel, cast iron, hard to cut material, stainless steel     New coating and ultra fine grain provide wear resistance and oxidation resistance     TiAIN Series new coating				
PC5400	P35~P45 K25~K35 M30~M40 S25~S35	<ul> <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>AlCiN series new coating</li> </ul>				
PC6510	K05~K15	High speed milling grade for cast iron and aluminum     K-Gold coating				
PC9530	M25~M35 S20~S30	Medium to rough cutting of hard to cut materials such as stainless steel, Cr-Ni steel, etc.     The toughest sub-micron substrate provides excellent cutting performance at high feed     TiAIN coating				
PC9540 (rew)	M35~M45 S30~S40	Exclusive high toughness grade for stainless steel milling     PVD dioxide film with good heat resistance				
PC2005	H01~H10 P01~P10 K01~K10	Exclusive for Laser Mill in milling of high hardness workpieces and press mold steel     Utmost wear resistance due to high hardness substrate and coating    Ultra high hardness K-Brown coating				
PC2010	H05~H15	Exclusive for Laser Mill in milling of pre hardened steel and plastic mold steel     High hardness enhanced cutting edges due to ultra fine WC and high contents binder for expanding application range to high hardness steel and pre hardened steel     Ultra high hardness K-Brown coating				
PC2015	H10~H20	Exclusive for Laser Mill in milling of carbon steel and cast    Highly lubricative K-SILVER coating     Lubricative coating layer and high contents substrate for machining mild steel and hard-to-cut cast materials				
PC210F	H10~H20 P25~P35 K15~K25 M15~M25 S10~S20	High speed milling grade for hardened steel, cast iron, and stainless steel(Laser Mill)     New coating and ultra fine grain provide wear resistance and oxidation resistance     TiAIN Series new coating				
PC2505 new	H01~H10	Roughing grade for high hardened steel and pressed die steel     Excellent wear resistance ideal for machining die steel and high hardened steel over HRC50				
PC2510 (1997)	H05~H15	Roughing grade for pre-hardened steel and plastic die steel     Stabilized toughness ideal for interrupted cutting of high hardened steel and wet cutting accompanied by massive thermal shock				

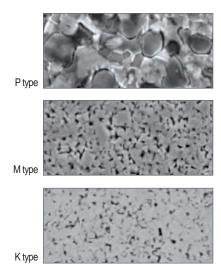
## **Uncoated carbide grades**

#### Features

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

#### Advantages

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



#### Selection system of uncoated carbide grade

	Workpiece	Grade	Recommended cutting speed (m/min)	ISO	Application range
Р	Steel	ST20	90 (70~110)	P20	ST20
-	Steel	ST30A	80 (60~100)	P30	ST30A
B.A	Stainless steel	U20	90 (70~110)	M20	U20
M	Stainless steel			M30	
K	Cast iron	H01, H05	150 (110~190)	K10	H01 H05
ĸ	Cast Iron	G10	120 (90~150)	K20	G10
N	Aluminum alloy	H01	600 (450~750)	N10	
-IN	Copper alloys	H05	425 (320~530)	N20	H01 H05

#### Main composition and application range

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

#### The physical properties of uncoated carbide grades

Workpiece	Workpiece Grade Hardness (HRA)		TRS (kgf/mm²)	Young's modulus (10³kgf/mm²)	Thermal expansion coefficient(10-6/°C)	Thermal conductivity (cal/cm·sec·°C)	
	ST10	92.1	175	48	6.2	25	
Р	ST20	91.9	200	56	5.2	45	
	ST30A	91.3	230	53	5.2	-	
М	U20	91.1	210	-	-	88	
К	H01	92.9	210	66	4.7	109	
, , , , , , , , , , , , , , , , , , ,	G10	90.9	250	63	-	105	

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



# **Cermet grades**

#### Features

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

#### Selection system of cermet grades

Workpiece		/orkpiece	Machining types	Grade	Recommended cutting speed (m/min)	ISO	Application range		
		Steel	Continuous cutting	CN2500	250 (200~300)	P20	CN2000		
			Interrupted cutting	CN30	150 (100~200)	P30			

#### The features of cermet grades

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

#### The physical properties of cermet grades

Workpiece	Grade	Hardness (Hv)	TRS (kgf/mm²)	SG (g•cm <sup>-3</sup> )
D.	CN2500	< 1800	210 <	6.8~7.0
P	CN30	< 1500	240 <	7.0~7.3

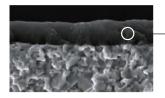


## Solid endmills grade selection

## PC303S/PC310U

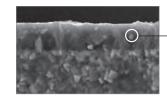
- Ultrafine substrate & high hardness coatings for excellent wear resistance
- Special surface treatment provides higher chipping resistance

#### Features



Exceptional wear resistance resulting from extremely hard coating layers

Features



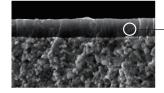
treatment technology

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

## PC315E

• Fine substrate & lubricative coatings for stable machinability

#### Features



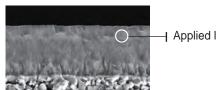
 Lubricative coatings for excellent machinability

## PC305H

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

· Applied high lubrication coating and special surface

#### Features



Applied layer of AlTisiN series

### Selection system

١	Norkpiece	Grade	ISO	Application range
		PC303S	P01	
		PC310U	P10	PC303S
Р	Steel		P20	1 00100
		PC315F	P30	PC315E         PC320         PC215F         PC215F
		PC320	P40	
		PC303S	M01	
М	Stainless	PC310U	M10	PC303S
IVI	steel	PC320S	M20	PC320S PC315E PC320 PC215F
		PC315E	M30	PG313E PG213F
		PC303S	K01	
		PC310U	K10	PC303S PC203F PC305H PC310U
K	Cast iron		K20	
		PC315E	K30	PC315E         PC320         PC215F
		PC320	K40	
s	HDCA	PC320S	S20	PC320S PC315E PC320 PC215F SL
3	HRSA	PC315E	S30	100100 10020
		ND3000 ໜ	N01	ND3000 new new
NI.	Nonferrous	ND2100 💖	N05	ND2100 PD1005 PD1010 PW H01 H05S
N	Nonterrous	PD3000	N10	ND2100 PD1005 PD1010 H01 H05S PC210C
		H01	N20	P02100
	High	PC303S	H01	
Н	hardness	PC203F	H10	PC303S PC203F PC305H PC310U
	steel	PC310U	H20	P63100



## Solid endmills grade

### Grade information for each product

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

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

### The features of Coated grades

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

<sup>\*:</sup> CVD

### Features of KORLOY endmills

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



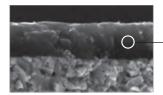
### Solid drills grades selection

### **Grades for Mach Solid Drill (MSD)**

## PC325U

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

#### Features



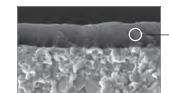
Increased welding resistance in medium to high speed cutting due to highly lubricative coating layers Increased wear resistance in carbon steel machining

### Grades for Mach Solid Drill (MSD)

## PC325T

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

#### Features



High heat and oxide resistance increase tool lifeIncreased wear.

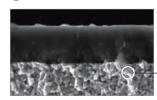
Good surface finish coating layer ensures lubrication and high quality in machining.

### **Grades for Mach Long Drill (MLD)**

# PC215G/PC315G

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

#### Features



H Exceptional wear resistance due to the ultrafine substrate

#### Selection system

١	Norkpiece	Grade	ISO	Application range
		PC215G	P01	
Р	Ctool	PC315G	P10	
P	Steel	PC325U	P20	PC215G PC315G
		PC230F	P30	PC325U PC230F
		PC215G	M01	
М	Stainless	PC315G	M10	
IVI	steel	PC205F	M20	PC215G PC315G PC325U
		PC325U	M30	1 00200
		PC215G	K01	
K	Cast iron	PC315G	K10	
, C	Castilon	PC205F K20 PC325U K30	K20	PC215G PC315G
			K30	PC325U
		ND2100	N05	ND2100 new
N	Nonferrous		FG2 FA1	
		FA1	N20	FGZ FAT
S	HRSA	PC325T	S20	PC325T
3	ПКЗА	FG3231	S30	100201



## Solid drills grades

### Grade information for each product

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

### The features of PVD coated grades

Workpiece	ISO	Features
PC325U	PC325U PC	
PC325T	M20~M30 S20~S30	Good wear resistance realizes HRSA machining at high temperature     Good wear and chipping resistance ensure stable machinability
PC215G	P15~P30 M15~M25 K15~K30	Universal grade for machining steel, cast iron, etc.     Stable cutting performance with excellent wear/chipping resistance
PC315G M15~M25		Universal grade for machining steel, cast iron, stainless steel, etc.     Stable cutting performance with excellent wear/chipping resistance     Increased welding resistance due to lubricative new coating at medium to high speed
		For machining general steel at medium to high speed     Stable cutting performance with excellent wear/chipping resistance
ND2100 100	N05~N10	For machining composite materials     Diamond-coated layers with excellent adhesion
FG2 / FA1 N05~N25 • Increased wear/chipping resistance with the use of ultra fir		Increased wear/chipping resistance with the use of ultra fine substrate

### Features of KORLOY drills

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

### **Diamond coated grades**

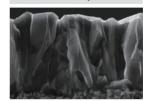
### Grade for graphite and ceramic

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

#### Surface of ND3000



Cross section of ND3000's coated layers



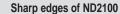
#### **Grade for composite materials**



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

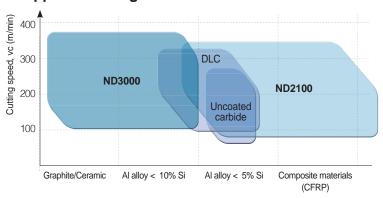
#### Surface of ND2100







### Application range



#### Selection system

	Workpiece		Grade	ISO	Application range
		Graphite/ Ceramic	ND3000 ໜ	N01	ND3000 new
N	Nonferrous	Al alloy	ND3000 100 ND2100 1000	N05	ND3000 ND2100
		Composite materials	ND2100 🚭	N10	

### The features of diamond coated grades

Grade	ISO	Features
ND3000 (1897)	N01~N05	<ul> <li>For continuous roughing of graphite, ceramic, and AI 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>
ND2100 (1887)	N05~N10	For continuous finishing of composite materials and AI alloy at high speeds     Stable machinability due to durable sharp edges     Nano-crystalline diamond coatings under particle control



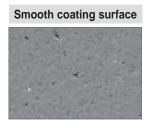
### **DLC** coated grades

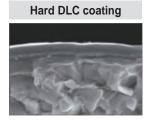
### **DLC-Coated Inserts for Non-Ferrous Metals**

# PD1005 (PD1010 (PD1010)

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

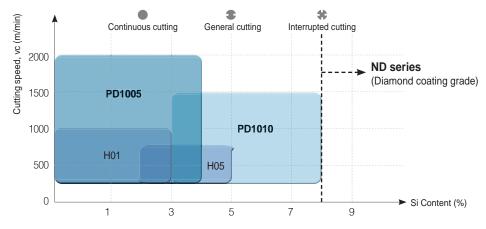
#### Features





Grade	Wear resistance and Welding resistance	Surface finish	Chip curl
Carbide non coated			
DLC PD1010			4

### Application range



#### Selection system

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

#### The features of DLC coating grades

Grade	ISO	Features
PD1005 (1647)	N05	<ul> <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	For medium to high and interrupted machining of aluminum alloy and Al-Si alloy     Stable tool life due to substrate with chipping resistance     High performance DLC coating with high hardness and low friction

### cBN inserts grades

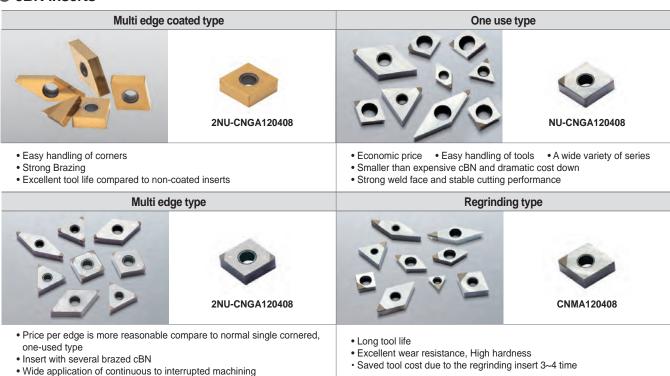
#### Features

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

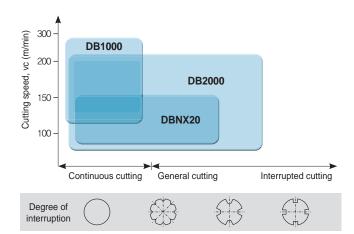
#### ▶ Insert type

High pro	esicion	Wear r	esistance	Productivity		
				0		
For regrinding type	One use type	Multi-corner type	Multi-corner type (coated)	Solid type	Grooving type	

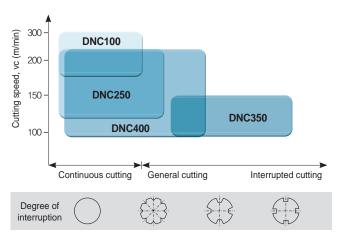
#### cBN inserts



### cBN application range



### Coated cBN application range





### Cutting condition of cBN grades

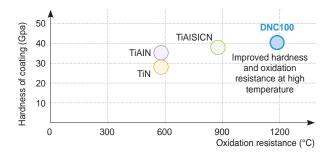
Wo	orkpiece	Grades		Insert color	Application	Cutting speed, vc (m/min)	Feed, fn (mm/rev)	Depth of cut, ap (mm)
			DNC100	•	Continuous cutting at high speed	180 300	0.03~0.3	0.03~0.3
			DNC250		Continuous and low interrupted cutting at high speed	120 220	0.05~0.3	0.05~0.3
		Coated	DNC300	9	Medium and low interrupted cutting	90 250	0.05~0.2	0.05~0.2
			DNC350		Medium and high interrupted cutting	90 150	0.05~0.3	0.05~0.3
н	High		DNC400	0	Continuous and medium interrupted cutting	90 220	0.05~0.3	0.05~0.5
_	hardness steel		DB1000		Continuous cutting at high speed	130 250	0.03~0.15	0.03~0.2
			DB2000		Medium and low interrupted cutting	80 200	0.03~0.2	0.03~0.3
			DBNX20		Highly efficient cutting	120 150	0.03~0.3	0.03~0.5
		Non coated	DBN250	0	Medium and low interrupted cutting	80 120	0.03~0.2	0.03~0.3
			DBN350		High interrupted cutting	120 220	0.03~0.2	0.03~0.3
s	HRSA		DB7000		Continuous cutting at high speed	100 300	0.05~0.2	0.1~1.0
K	Cast iron		DBN700A		Continuous cutting at high speed	500 2000	0.10~0.4	0.1~0.4

#### Coated cBN

## **DNC100**

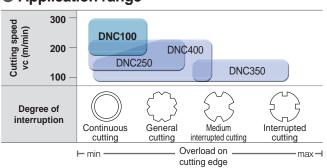
#### Features

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





### Application range



### Recommended cutting condition

Cutting speed vc (m/min)	180 300
Feed fn (mm/rev)	0.03
Depth of cut per time ap (mm)	0.03

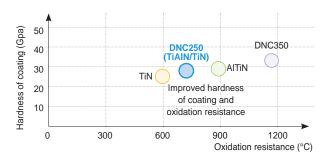
- Increased oxidation resistance and wear resistance due to high hardness coating layer
- Dramatically improved fracture resistance and chipping resistance

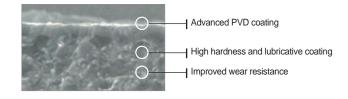
### Multi-corner coated cBN for high efficient cutting of heat-treated alloy

## **DNC250**

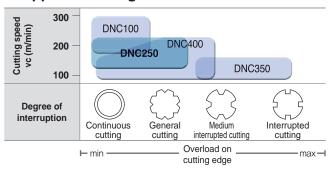
#### Features

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





#### Application range



#### Recommended cutting condition

Cutting speed vc (m/min)	120 220
Feed fn (mm/rev)	0.05
Depth of cut per time ap (mm)	0.05

#### Coated cBN

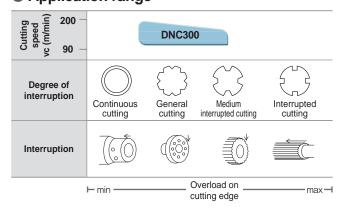
# **DNC300**

#### Features

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



#### Application range



#### Recommended cutting condition

Cutting speed vc (m/min)	90 200
Feed fn (mm/rev)	0.05
Depth of cut per time ap (mm)	0.05

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

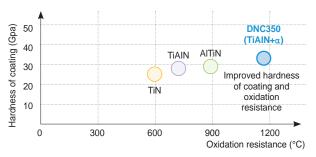


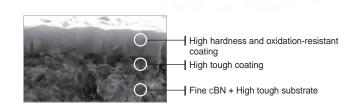
### Coated cBN for high interrupted cutting

## **DNC350**

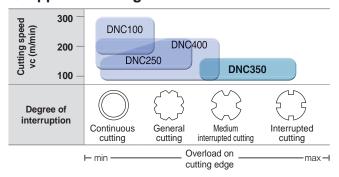
#### Features

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





### Application range



### Recommended cutting condition

Cutting speed vc (m/min)	90 150
Feed fn (mm/rev)	0.05
Depth of cut per time ap (mm)	0.05

#### Solid type coated cBN



#### Features

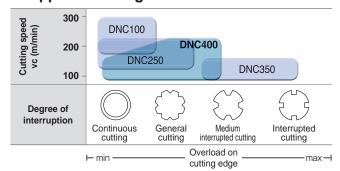
- For machining heat-treated steel in continuous and medium interrupted cutting
- Longer tool life due to coating layer
- Solid type for universal purpose

### Features of solid type cBN

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



#### Application range



#### Recommended cutting condition

	DNC400	0.05	0.3
Feed fn (mm/rev)	DNC250	0.05	0.3
	DNC350	0.05	0.3
	DNC400	0.05	0.5
Depth of cut per time ap (mm)	DNC400  DNC250	0.05	0.5

#### Non-coated cBN

## DB1000

#### Features

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



#### Non-coated cBN

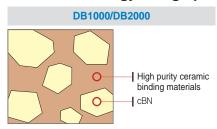
### DB2000

#### Features

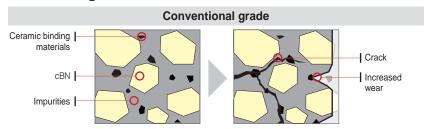
- Universal grade for overall machining of heat-treated
  - Stable tool life in continuous to low/medium interrupted cutting
- Both fracture resistance and wear resistance acquired with the use of pure ceramic binder
- Stable surface roughness



#### New technology of high purity ceramic binding materials

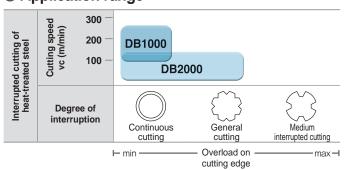


DB2000 dramatically minimizes impurities with the use of high purity ceramic binding materials and enhances thermal resistance and toughness.



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

### Application range



### Recommended cutting condition (DB1000)

Cutting speed vc (m/min)	130 250
Feed fn (mm/rev)	0.03 0.15
Depth of cut ap (mm)	0.03

### Recommended cutting condition (DB2000)

Cutting speed vc (m/min)	80 200
Feed fn (mm/rev)	0.03
Depth of cut ap (mm)	0.03



### **PCD** inserts grades

#### Features

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

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

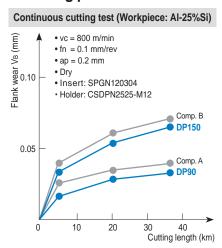
### PCD grade

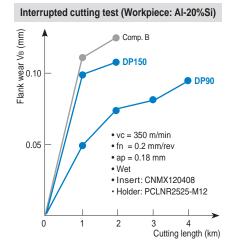
Grade	Features	Application	Grain size (μm)	Hardness (Hv)	TRS (kgf/mm²)
DP90	Coarse diamond grain has been used to get excellent wear resistance enough to machine cemented-carbide, high Si aluminum alloy	Cemented carbide Ceramic roughing High Si aluminum alloy Rock, Stone	25~30	50~65	≒1.10
DP150	By use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

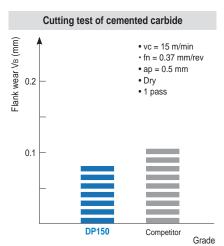
### Recommended cutting condition

Markning	Cutting anod (m/min)	Food (mm/rov)	Donth of out (mm)	Recomme	nded grade
Workpiece	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	<b>1</b> st	2 <sup>nd</sup>
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

#### Cutting performance

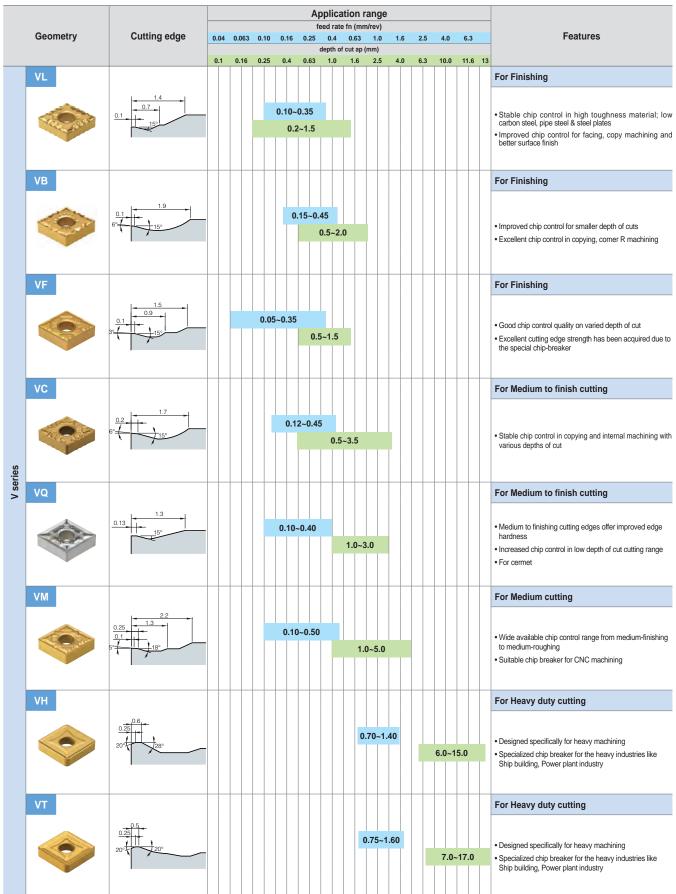












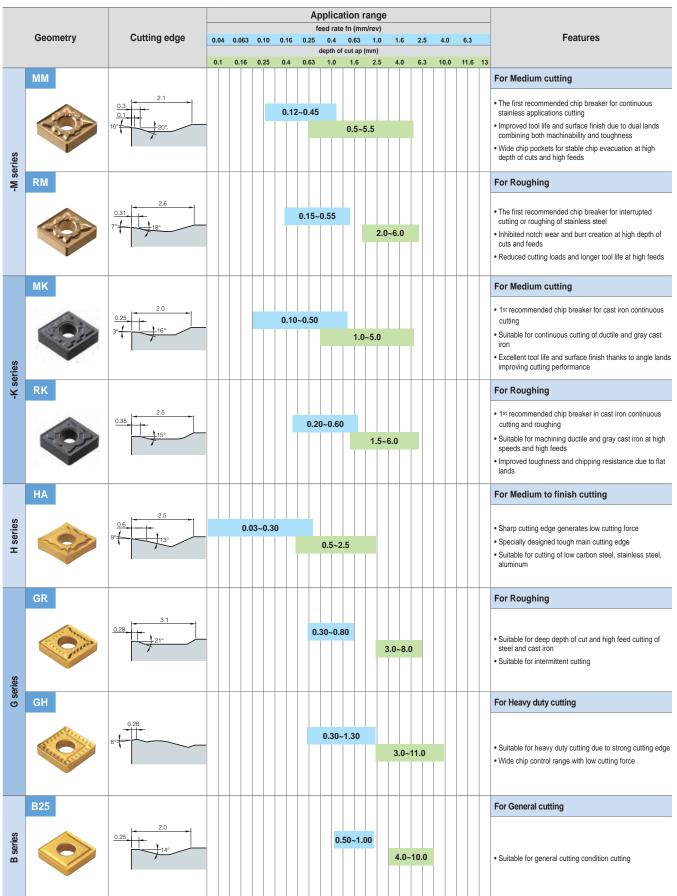
Notice: Application ranges are based on main cutting material





							Α	pplica	ation	n rang	je						
	Geometry	Cutting edge	0.04	0.063	0.10	0.16			0.63	3 1.0		2	2.5	4.0	6.3		Features
			0.1	0.16	0.25	5 0.4	0.63	1.0	1.6		4.0	6	6.3	10.0	11.6	13	
	VP1	12		0	).05~	0.20	5										High positive cutting edge     Reduced contract chip minimizes temperature to improve tool life
	VP2																For Medium to finish cutting
		2.5			0	0.05~0.	40	0.	5~4.0	0							Stable chip control and high machinability in copying with various depths of cut
	VP3																For Medium cutting
V series		0.5			0.	.05~0.4	15	0.	5~4.	5							High positive cutting edge with wide land Stable cutting performance in interrupted machining with high toughness Stable machinability and chip control in machining with high depth of cut
	VP4																For Roughing
		2.6 0.17 8° 18°	-				0.15~0	.45	1	.0~4.5	i						The first recommended chip breaker for inconel cutting High hard and resistant rake angle to prevent notch wear in roughing of rugged surfaces
	VR																For Roughing
	•	0.32	-				0.:	25~0.5	55	1.2	-7.0						High feed machining with the combination of wide land and pockets     Shallow chip breaker design prevents chip blocking at high feed     Decreased wear on major cutting edge due to special treatment on blade
	LP																For Medium to finish cutting
	Sec.	1.6 0.13 6° 1.2 1.20°				0.10	0~0.40	0.5~2	2.5								Angle land decreases cutting resistance for better surface roughness     Special dot design prevents chip blocking by clear chip breaking
	MP																For Medium cutting
-P series		0.2 5° 118°					0.15~0		).5~4	.5							Increased productivity due to excellent chip control in various conditions     Stable tool life by reducing cutting load at high speed and high feed
	СР											$\dagger$				+	For Medium to finish cutting
		2.0 0.15				0.12	2~0.35		i~3.5								Chip breaker with strong cutting edge in high interrupted finishing and medium cutting  Effective chip control in low depth of cut to high depth of cut due to 2-step rear angle

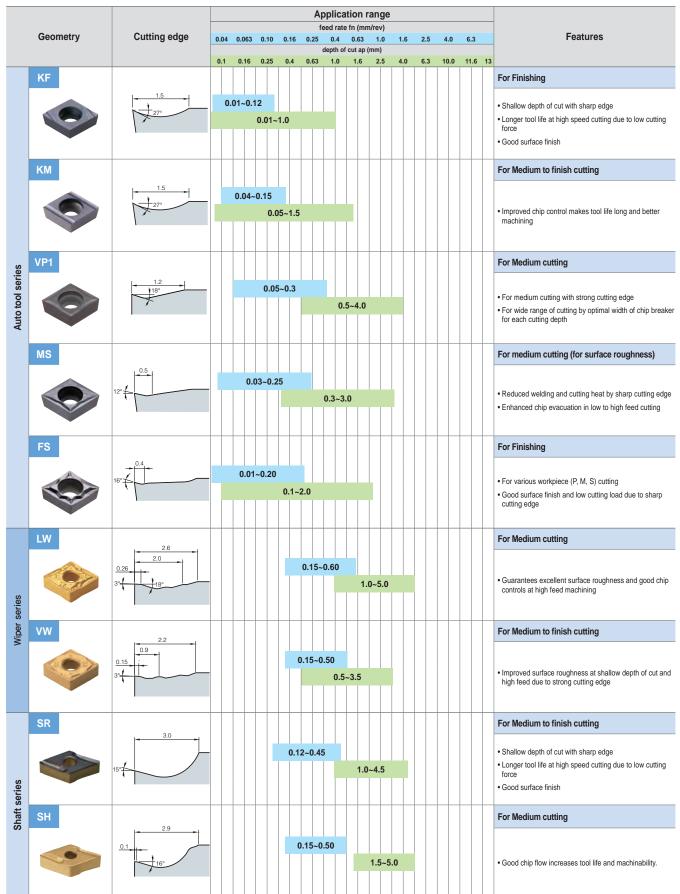




Notice: Application ranges are based on main cutting material



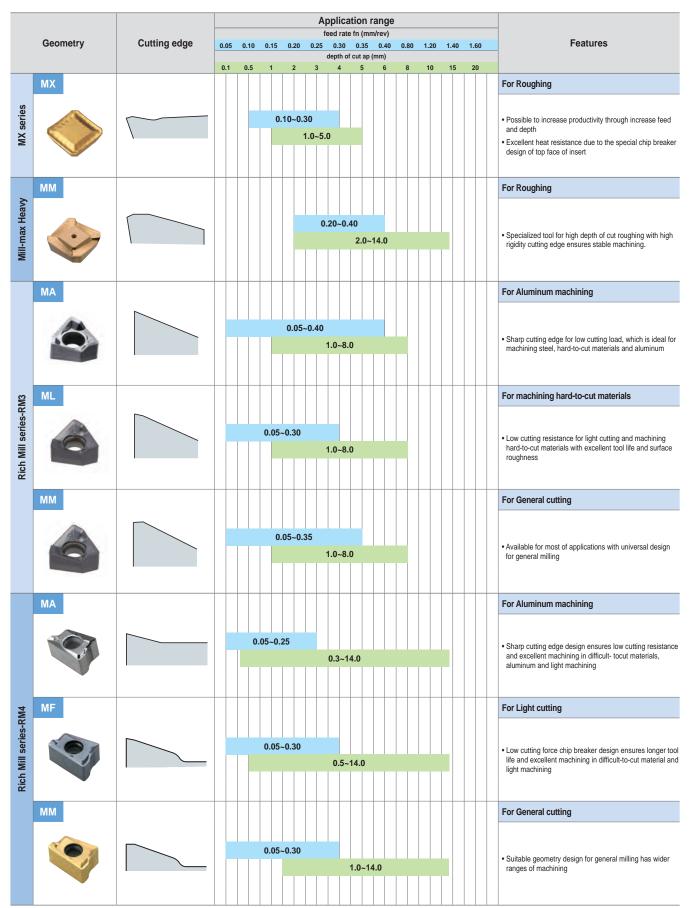
								pplica			)					
	Geometry	Cutting edge	0.04	0.063	0.10	0.16		0.4 depth o	0.63	1.0	1.6	2.5	4.0	6	.3	Features
C-Posi series	C25	0.15	0.1	0.16	0.25		0.63	1.0	1.0~	2.5	4.0	6.3	10.0	11	1.6 13	For Roughing  Suitable for interrupted cutting and cast iron machining Good surface finish due to low cutting force Suitable for both boring and outer diameter turning
H-Posi series	НМР	0.15				0.08	i~0.40	0.5	j~3.5							Excellent chip control at wide range of cutting conditions     Machining versatility over a wide range of materials
series	VF	0.6			0.05~	0.25	.5									For Finishing  Improved surface finish and size accuracy due to stable inner boring
V-Posi series	VL	0.6		0.	0.1	.20										For Finishing     Superior chip control in low carbon steel, pipes, and steel plates
P-Posi series	MP	0.2 7° 15°			0.05	~0.30		3.3~3.0								For Medium cutting
	FP	200		0.01	~0.20	)  ~1.0										For Finishing     For chip control in low depth of cut mild cutting     Enhanced surface finish and reduced cutting load
AL series	AK	25°			0.03	~0.40	0.1~4.	0								For Medium to finish cutting     Exclusive chip breaker for aluminum and aluminum alloy cutting
	AR	13°			0.	05~0	.50	0.	5~4.0							For Medium to finish cutting     High stability of cutting edge secures great performance in high speed and interrupted machining     High speed of medium and interrupted operation



Notice: Application ranges are based on main cutting material









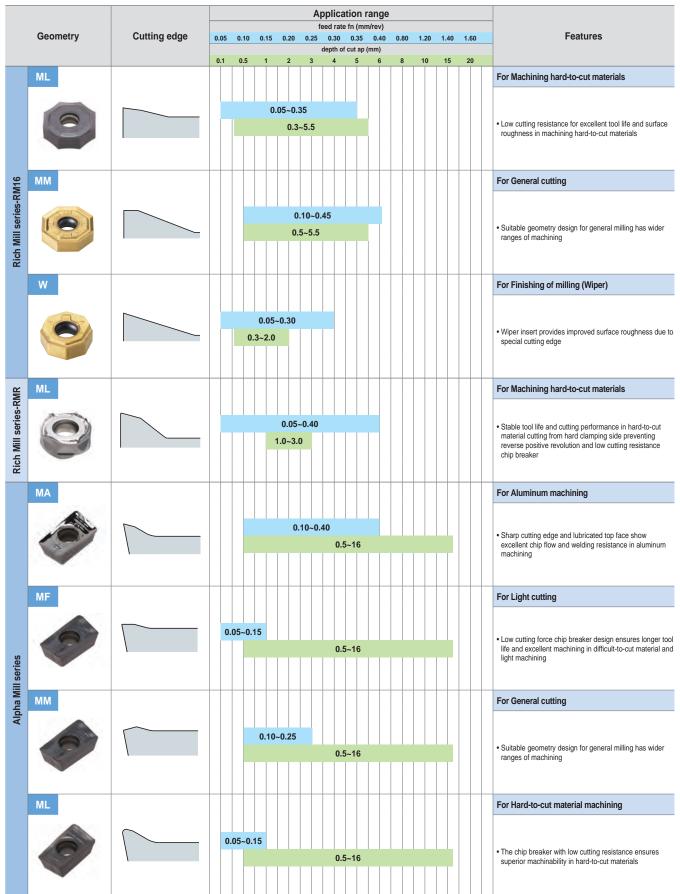


Notice: Application ranges are based on main cutting material





							F	Applica	ation	range	)					
	Geometry	Cutting edge	0.05	0.10	0.15	5 0.2	0.25	feed rate 0.30	0.35	0.40	0.80	1.20	1.40	) 1	.60	Features
			0.1	0.5	1	2	3	depth o	f cut ap 5	(mm)	8	10	15		20	
Rich Mill series-RMT8	MM				0.0	05~0.3		5~8.0								Suitable geometry design for general milling has wider ranges of machining
	ML															For Machining hard-to-cut materials
	0				0.0	1.0~										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
X-8/	ММ															For high hardness cutting
Rich Mill series-RM8-X	SAGX				0.0	05~0.3 1.0~										Stable tool life and good cutting quality due to double reverse positive relief surface and high rigidity chip breaker
	ММ															For General cutting
	SNMX					0.10~										For general cutting range with optimal shape for general milling
	ML															For HRSA cutting
series-RM14	Neutral				0.0	05~0.3 1.0~										Excellent cutting performance in heat resistance STS cutting from neutral type flat cutting edge and sharp chip breaker
	ML															For cast iron and STS cutting
Rich Mill	Right-handed				0.0	1.0~										Excellent cutting performance in general STS and cast iron cutting from right-handed helix cutting edge and sharp chip breaker
	MA															For Aluminum machining
Rich Mill series-RM16	•				0.0	05~0.3	0.3~5.5									Sharp cutting edge design ensures low cutting resistance and excellent machining in difficult- tocut materials, aluminum and light machining
ill ser	MF															For Light cutting
Rich M							05~0.40									Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining



Notice: Application ranges are based on main cutting material



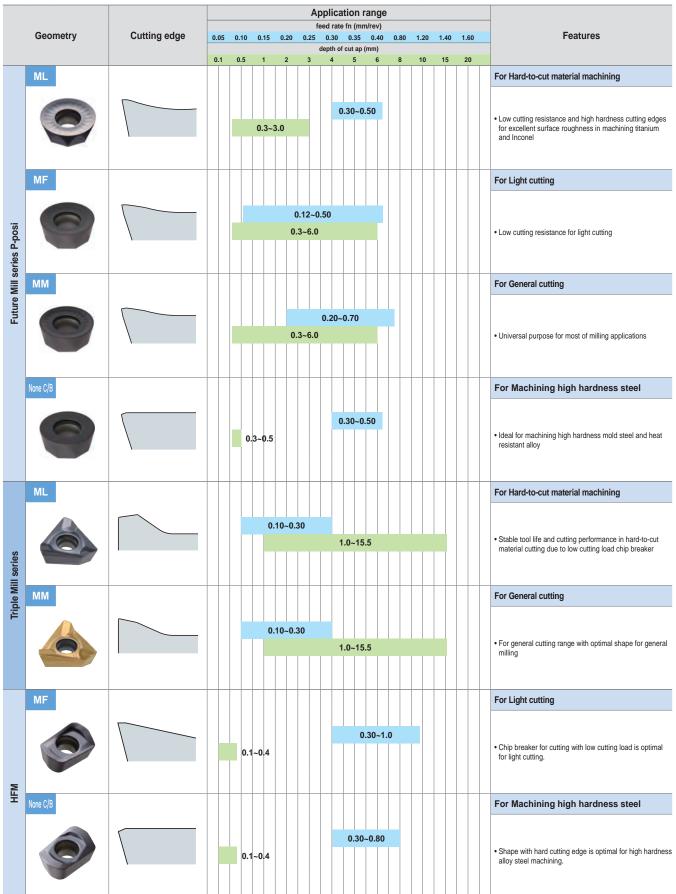


								Ap	plica	tior	n rar	ige						
	Geometry	Cutting edge	0.05	0.10	0.0.	15 0	.20 0.		eed rate 0.30				0.80	1.20	1.	.40	1.60	Features
			0.1	0.5	i 1	l	2	3	depth of 4	cut a		n) 6	8	10	1	15	20	
Alpha Mill series	MN				0.	10~0.	25		0.5	5~16	6							For Roughing (nick)      Design for easy chip cutting ensures high machinabilit toughing.
	ММ																	For General cutting
Alpha Mill-X series						0.05	~0.35		,	1.0~	16.5							Shape for general milling with most cutting range
na Mill	ML																	For Hard-to-cut material machining
Alph					0.	05~0.	30		,	1.0~	16.5							Chip breaker for cutting with low cutting load guarante long tool life and qualified machining in light cutting an HRSA machining.
	MF																	For Light cutting
				0.0	5~0.2		0.5~5.	0										Special design for light cutting of gummy materials like stainless steel and hard to machine material provide fi surface finish and longer tool life
	ММ																	For General cutting
Mill series					0.	05~0.	1.0	~5.0	0									Chip breaker design to cover general cutting condition provides wide available application range     Ground type and as sintered type is available
Future Mi	MR																	For Roughing
Fut						0.05	~0.35 1.	5~5	5.0									Strongest cutting edge strength provide stable tool life even in case of severe cutting with heavy intermittent heavy roughing
	MA																	For Aluminum machining
	0						.10~0.: 0.5~5.											Sharp cutting edge and lubricated top face show excellent chip flow and welding resistance in aluminun machining
posi	MA																	For Aluminum machining
Future Mill series P-posi							0.3~	6.0		0.30	0.60	0						Excellent surface roughness due to buffed surface in machining aluminum



# Chip Breakers A

## Chip breaker for milling

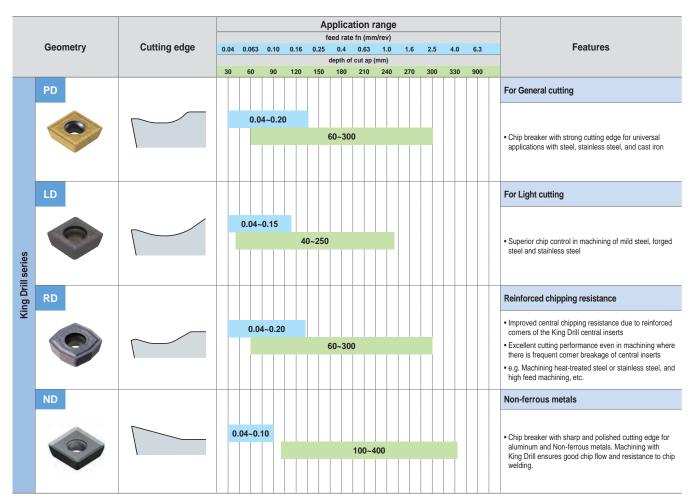


Notice: Application ranges are based on main cutting material





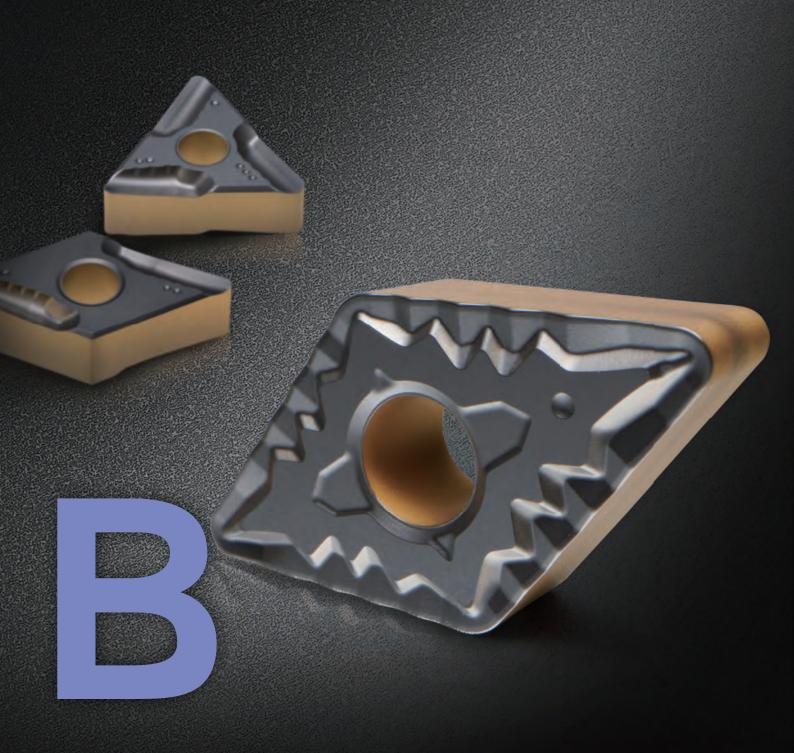
							A	Appli	icati	on ra	ange	)						
	Geometry	Cutting edge	0.05	0.10	0.15	0.20				n (mm 0.35		0.80	) 1.:	.20	1.40	1.	60	Features
			0.1	0.5	1	2	3	dept		ıt ap (ı 5	mm) 6	8	1	10	15	2	:0	
	ML			0.2~	1.0					0.30~	∙0.80							For Hard-to-cut material machining     Chip breaker for cutting with low cutting load and hard cutting edge ensure high qualified machining.
	MF				$\parallel$													For Light cutting
HFMD				0.2~	1.0					0.3	0~1.0	0						Chip breaker for cutting with low cutting load is for light cutting.
	ММ																	For General cutting
				0.2~	1.0					0.3	30~1	.20						Shape for general machining with high feed is available for most machining range.
	MA																	For Aluminum machining
					0.05~(	0.25			1.0	)~16.	.5							Sharp cutting edge for aluminum machining ensures good machinability.     Buffed surface realizes chip flow and welding resistance.
	ML			H														For Hard-to-cut material machining
TP2P	0				0.05~(	0.25			1.0	)~16.	.5							Chip breaker for cutting with low cutting load guarantees long tool life and qualified machining in light cutting and HRSA machining.
	MM							+										For General cutting
					0.05~0	0.25												
	0								1.0	)~16.	.5							Specialized shape for general slotting is applicable in most cutting ranges.
	MA																	For Aluminum machining
Pro-XL Mill	3			0.0	5~0.20	) )									1	0~:	57	Sharp cutting edge with buffing on the surface for aluminum machining ensures chip flow and welding resistance.
	MA			$\parallel$							+			$\parallel$				For Aluminum machining
≡																		
Pro-V Mill						0.10~(	0.30		1	.0~1	7							Shape for general slotting is applicable in most cutting
ā																		ranges.



Notice: Application ranges are based on main cutting material

# **TURNING**

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



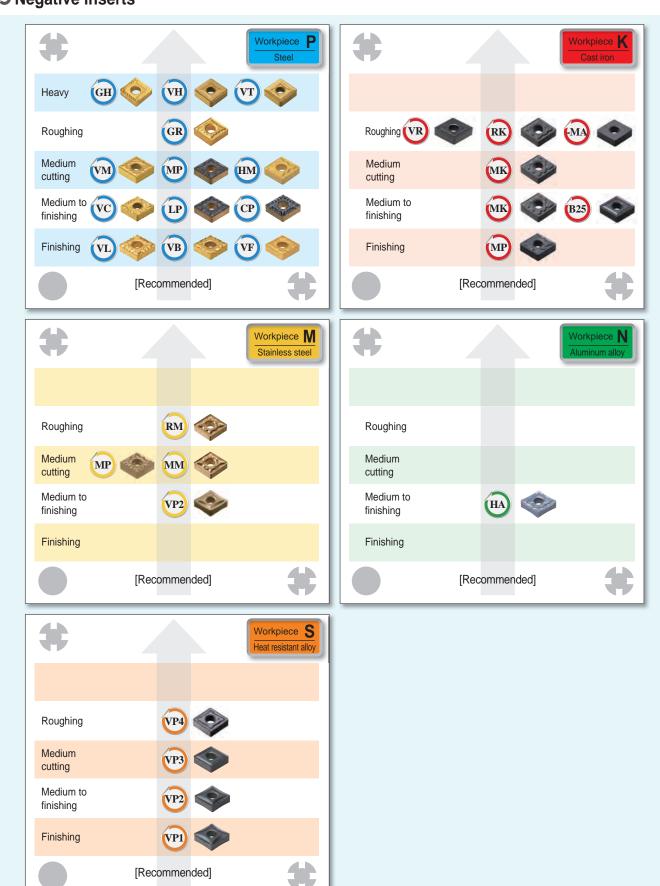
Turning Chip Breakers	Auto	Tools	High	Pressure Coolant
B02 Application range of KORLOY Main Chip Breakers	B121 B122	Technical Information for Auto Tools ISO Type	B199	Technical Information for KHP Coolant
B04 Recommended Chip Breakers for workpiece	B127	KHP Coolant	B202	KHP Coolant
B16 Feature of Chip Breakers	B136 B139	Blade Type Multi Utility Type		
	B142	KGT/MGT Type	Borin	g Bar
Inserts	B145 B151	MSB Tool Sleeve	B204	Boring Bar Code System (ISO)
B34 Turning Insert Code System (ISO) B36 Turning Insert (Negative)			B205 B207 B208	Index for Boring Bar Instruction of Boring Bar assembly Double Clamp System
B73 Turning Insert (Positive)	Multi	Turn	B210	Lever Lock System
B102 Aluminum Insert (Positive) B110 cBN Insert B113 PCD Insert	B152 B154	Technical Information for Multi Turn Multi Turn	B212 B213 B215	Clamp On System Multi Lock System Screw On System
			B225	Compact Mini
SAVE TURN	Beari	ng Solutions		
B114 Technical Information for SAVE TURN	B155	Technical Information for Bearing Solution	HSK/I	KM Tooling System
B115 SAVE TURN Insert B116 SAVE TURN Holder	B156	Bearing Solution	B228	Technical Information for
	D 4 6 4	0 110 1 5 ( 0 1 1 )		
B116 SAVE TURN Holder B119 SAVE TURN Boring Bar	B161	Special Order Form for Bearing Inserts	B230 B231	HSK / KM Tooling System Index for HSK / KM Tooling System
		Special Order Form for Bearing Inserts  nal Tool Holder		
			B231 B237	Index for HSK / KM Tooling System HSK Tooling System KM Tooling System
	Exter B162 B163	nal Tool Holder  External Tool Holder Code System (ISO) Index for External Holder	B231 B237 Cartri	Index for HSK / KM Tooling System HSK Tooling System KM Tooling System
	Exter B162 B163 B166	nal Tool Holder  External Tool Holder Code System (ISO) Index for External Holder Instruction of External Holder	B231 B237 Cartri B241	Index for HSK / KM Tooling System HSK Tooling System KM Tooling System  dges  Cartridge Code System (ISO)
	Exter B162 B163	nal Tool Holder  External Tool Holder Code System (ISO) Index for External Holder	B231 B237 Cartri	Index for HSK / KM Tooling System HSK Tooling System KM Tooling System  dges  Cartridge Code System (ISO) Index for Cartridge
	Exter B162 B163 B166 B167	nal Tool Holder  External Tool Holder Code System (ISO) Index for External Holder Instruction of External Holder Double Clamp System	B231 B237 Cartri B241 B242	Index for HSK / KM Tooling System HSK Tooling System KM Tooling System  dges  Cartridge Code System (ISO)

B190 Screw On SystemB197 Ceramic Holder



## Applications range of chip breakers

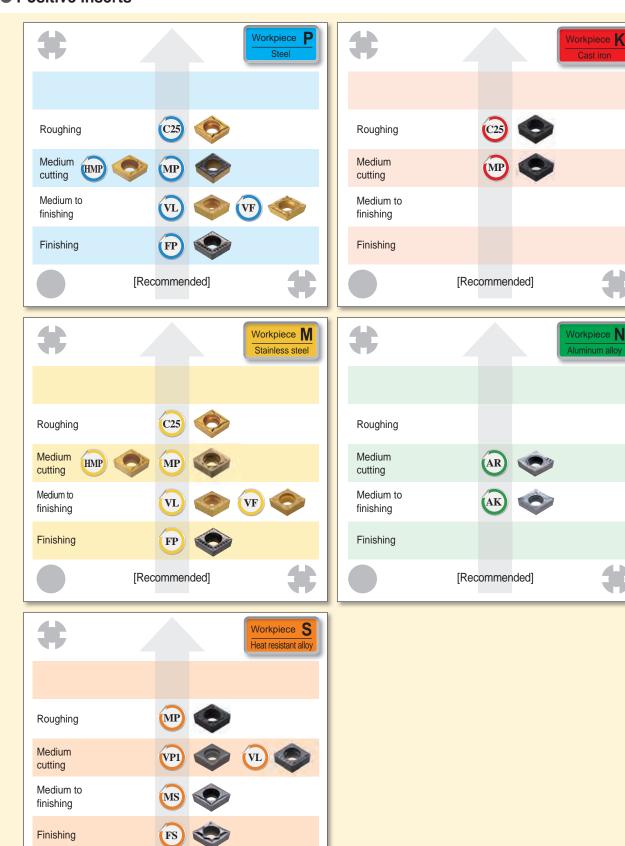
### Negative inserts



## Applications range of chip breakers

[Recommended]

#### Positive inserts







Materials: SM10C, SM15C, SM25C, SS400, SCr415, SCM415, etc. Soft steel

Hardness: under 180HB

IIai	uncss.	under 180H							Incort	shape		
	epth of cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Cutting Speed (m/min)	180°	<b>(55°)</b>	90°	Snape 60°	35°	80°
	0.2 ~ 0.8 ~ 1.5 Finishing	VL	0.7	0.10 ~ 0.20 ~ 0.35	NC3215 NC3225 CN1500 CN2500	305 250 260 230	D. B36	DNMG p. B43	p. B50	TNMG p. B58	P. B66	p. B68
	0.5 ~ 1.0 ~ 2.0 Finishing	VB	0.1 1.9	0.15 ~ 0.20 ~ 0.40	NC3215 NC3225 CN1500 CN2500	340 250 240 210	p. B36	DNMG p. B43		P. B58		<b>WNMG</b> р. В68
	0.5 ~ 1.0 ~ 1.5 Finishing	VF	301 15	0.05 ~ 0.15 ~ 0.35	NC3215 NC3220 NC3225 NC5330	305 270 270 210	p. B36	p. B43	p. B50	<b>TNMG</b> p. B58	p. B66	<b>Р.</b> В68
	0.5 ~  1.5  ~ 3.5  Medium to finishing	vc	02 1.7	0.12 ~ 0.25 ~ 0.45	NC3215 NC3220 NC3225 NC5330	285 250 255 200	p. B36	DNMG p. B44	p. B50	p. B59	vnmg p. B66	<b>WNMG</b> р. В68
tive	0.5 ~ 1.0     ~ 3.5 Medium to finishing	LP	0.13	0.10 ~ 0.25 ~ 0.40	NC3215 NC3225 NC5330	300 250 200	p. B36	DNMG p. B43	p. B50	p. B58	P. B66	p. B68
Negative	0.5 ~  1.3  ~ 3.5  Medium to finishing	VQ	0.13	0.12 ~ 0.2 ~ 0.42	NC3215 NC3225 NC5330	300 250 200	p. B38	p. B45	p. B52	p. B60	P. B67	p. B70
	0.5 ~  1.3  ~ 3.5  Medium to finishing	СР	0.15	0.1 ~ 0.28 ~ 0.35	NC3215P NC3225P	285 250	p. B36	DNMG p. B44	p. B50	p. B50	p. B66	p. B68
	0.5 ~ 1.5     ~ 4.5 Medium cutting	MP	02	0.15 ~ 0.30 ~ 0.45	NC3215 NC3225 NC5330	300 265 200	p. B37	DNMG p. B44	p. B51	D. B59	P. B66	p. B69
	1.0 ~ 2.5 ~ 5.0 Medium cutting	VM	0.25 1.3 0.1 1.8°	0.10 ~ 0.25 ~ 0.50	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	295 260 260 205 220 200	D. B37	DNMG p. B45	p. B51	TNMG p. B59	P. B67	WNMG p. B69
	1.5 ~  2.5  ~ 5.5  Medium cutting	нм	0.25	0.12 ~ 0.28 ~ 0.52	NC3215 NC3225 NC5330	300 265 200	D. B37	DNMG  p. B44	p. B51	D. B59	P. B66	p. B69





Workpiece

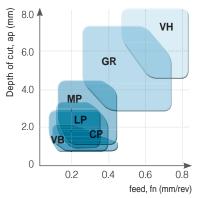
Materials: SM10C, SM15C, SM25C, SS400, SCr415, SCM415, etc. Soft steel

Hardness: under 180HB

Г	epth of					Cutting			Insert	shape		
	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	80°	(55°)	90°	60°	35°	80°
	1.0 ~ 3.0 ~ 4.5 Roughing	GR	0.28	0.20 ~ 0.35 ~ 0.50	NC3125 NC3225 NC5330	180~370 150~330 130~280	CNMG  p. B38	DNMG  D. B45	SNMG p. B52	TNMG p. B60		P. B69
egative	3.0 ~ 7.0 ~ 11.0 Heavy	GH	0.28	0.30 ~ 0.80 ~ 1.30	NC3125 NC3225 NC5330	180~370 150~330 130~280	p. B36 CNMM  p. B42	р. Б45	p. 852  SNMM	р. 600		p. 869
Neg	6.0 ~ 10.0 ~ 15.0 Heavy (General)	VH	20 25 28°	0.70 ~ 1.00 ~ 1.40	NC3215 NC3030 NC500H NC5330	50~250 50~150 50~150 50~150	P. B42		p. B57			
	7.0 ~ 12.0 ~ 17.0 Heavy (High feed cutting)	VT	200 200	0.75 ~ 1.20 ~ 1.60	NC3215 NC3030 NC500H NC5330	50~250 50~150 50~150 50~150	p. B42		p. B57			

•: The first recommended cutting condition

### P Negative







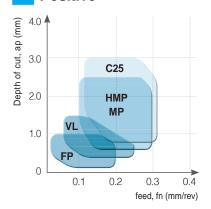
Materials: SM10C, SM15C, SM25C, SS400, SCr415, SCM415, etc. Soft steel

Hardness: under 180HB

г	Depth of					Cutting			Insert	shape		
	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	80°>	(55°)	90°	60°	35° →	80°
	0.1 ~ 0.5 ~ 1.0 Finishing	FP	200	0.01 ~ 0.06 ~ 0.20	NC3215 NC3225 CN1500 CN2500	350 270 260 240	p. B73	DCMT  p. B79	p. B84	P. B88	vB(C)MT p. B94	
	0.1 ~ 0.5 ~ 1.0 Medium to finishing	VL	0.6	0.05 ~ 0.10 ~ 0.20	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	305 270 270 210 260 240	<b>CCMT</b> p. B73	<b>р.</b> В79	p. B84	тсмт р. В88	<b>VB(C)MT</b> p. B94	
itive	0.1 ~ 0.5 ~ 1.5 Medium to finishing	VF	0.1	0.05 ~ 0.15 ~ 0.25	NC3215 NC3220 NC3225 NC5330 CC1500 CN1500 CN2500	305 270 270 210 260 250 230	D. B73	DCMT	p. B84	D. B88	p. B94	
Pos	0.6 ~ 1.5	HMP	0.15	0.10 ~ 0.20 ~ 0.30	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	320 285 285 225 240 220	р. В73	DCMT  p. B79	p. B84	TCMT  p. B88	VB(C)MT	
	0.6 ~ 1.0     ~ 2.5 Medium cutting	MP	0.2	0.10 ~ 0.20 ~ 0.30	NC3215 NC3225 CN1500 CN2500	300 250 240 200	р. В73	p. B79	p. B84	p. B88	vB(C)MT p. B94	
	0.8 ~ 2.0 ~ 3.0 Roughing	C25	0.15	0.12~ 0.25 ~ 0.32	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	320 285 285 225 230 210	р. В74	DCMT  p. B80	p. B84	р. В89		

•: The first recommended cutting condition

### P Positive



Workpiece

Materials: SM45C, SM55C, SCM430, SCM440, etc. General steel

Hardness: under 180~260HB

Г	epth of					Cutting			Insert	shape		
_	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	180°	<b>(55°)</b>	90°	60°	35°	80°
	0.5 ~ 1.0 ~ 2.0 Finishing	VB	0.1 1.9 6.4 1.5°	0.15 ~ 0.20 ~ 0.40	NC3215 NC3225 CN1500 CN2500	340 250 230 190	CNMG p. B36	DNMG p. B43		TNMG p. B58		WNMG p. B68
	0.5 ~ 1.0 ~ 1.5 Finishing	VF	0.1	0.08 ~ 0.15 ~ 0.35	NC3215 NC3225 NC5330	305 270 250	CNMG p. B36	DNMG p. B43	SNMG p. B50	TNMG p. B58	VNMG p. B66	WNMG p. B68
	0.5 ~ 1.0 ~ 3.5 Medium to finishing	VC	0.2	0.12 ~ 0.25 ~ 0.45	NC3215 NC3220 NC3225 NC5330	285 255 250 200	CNMG  P. B36	DNMG p. B44	SNMG  p. B50	TNMG p. B59	VNMG p. B66	WNMG p. B68
	0.5 ~ 1.0     ~ 2.5 Medium cutting	LP	1.6 0.13 6° 22°	0.10 ~ 0.25 ~ 0.40	NC3215 NC3225 NC5330	300 250 200	CNMG p. B36	DNMG p. B43	SNMG p. B50	TNMG p. B58	VNMG p. B66	WNMG p. B68
Negative	0.5 ~ 1.5   ~ 4.5 Medium cutting	MP	0.2	0.15 ~ 0.30 ~ 0.45	NC3215 NC3225 NC5330	300 250 200	CNMG p. B37	DNMG p. B44	SNMG p. B51	TNMG p. B59	VNMG p. B66	p. B69
	1.0 ~ 2.5 ~ 5.0 Medium cutting	VM	0.25 1.3 0.1 1.8 5.4	0.15 ~ 0.25 ~ 0.50	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	260 245 245 205 210 170	CNMG p. B37	DNMG p. B45	SNMG p. B51	TNMG p. B59	VNMG p. B67	WNMG p. B69
	1.0 ~ 3.0 ~ 4.5 Medium to roughing	GR	3.1 0.28	0.20 ~ 0.35 ~ 0.50	NC3125 NC3225 NC5330	180~370 150~330 130~280	CNMG p. B38	DNMG p. B45	SNMG p. B52	TNMG p. B60		WNMG p. B69
	6.0 ~ 10.0 ~ 15.0 Heavy (General)	VH	20 28	0.70 ~ 1.00 ~ 1.40	NC3215 NC3030 NC500H NC5330	50~250 50~150 50~150 50~150	CNMM p. B42		SNMM p. B57			
	7.0 ~ 12.0 ~ 17.0 Heavy (High feed cutting)	VT	20° 20°	0.75 ~ 1.20 ~ 1.60	NC3215 NC3030 NC500H NC5330	50~250 50~150 50~150 50~150	CNMM p. B42		P. B57			

•: The first recommended cutting condition





Materials: SM45C, SM55C, SCM430, SCM440, etc. General steel

Hardness: under 180~260HB

Г	epth of					Cutting			Insert	shape		
_	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	\$80°	(55°)	90°	60°	35°	80°
	0.1 ~ 0.5 ~ 1.0 Finishing	FP	200	0.01 ~ 0.06 ~ 0.20	NC3215 NC3225 CN1500 CN2500	350 270 260 240	<b>CCMT</b> p. B73	DCMT  p. B79	p. B84	<b>TCMT</b> p. B88	vB(C)MT	
	0.4 ~  0.5  ~ 1.0  Medium to finishing	VL	0.6	0.05 ~ 0.10 ~ 0.25	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	345 310 310 240 250 210	p. B73	p. B79	p. B84	p. B88	VB(C)MT  Decomposition of the property of the	
Positive	0.1 ~  0.5  ~ 1.5  Medium to finishing	VF	0.1	0.05 ~ 0.15 ~ 0.25	NC3215 NC3220 NC3225 NC5330 CC1500 CN1500 CN2500	265 300 300 230 260 240 210	p. B73	DCMT	p. B84	TC(P)MT	vB(C)MT  p. B94	
	0.6~ 1.5 ~ 2.5 Medium cutting	MP	72 155	0.10 ~ 0.15 ~ 0.30	NC3215 NC3225	300 250	р. В73	р. В79	p. B84	тс(Р)МТ р. В88	vB(C)MT  p. B94	
	0.8 ~ 2.0 ~ 3.0 Roughing	C25	0.15	0.12 ~ 0.15 ~ 0.32	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	320 285 285 225 230 200	р. В74	р. В80	р. В84	р. В89		

•: The first recommended cutting condition

Workpiece

Materials: SNC415, SNC815, SNCM240, SNCM439, STS12, STS61, etc

SCM440, Hardened steel

Hardness: 260~350HB

Depth of						Cutting	Insert shape						
_	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	(80°)	<b>√</b> 55°	90°	60°	35°	80°	
	0.5 ~ 1.0 ~ 2.0 Finishing	VB	0.1	0.15 ~ 0.20 ~ 0.40	NC3215 NC3225 CN1500 CN2500	200 148 220 200	p. B36	DNMG p. B43		p. B58		p. B68	
	0.5 ~ 1.0 ~ 1.5 Finishing	VF	0.1	0.08 ~ 0.15 ~ 0.30	NC3215 NC3220 NC3225	180 159 159	CNMG p. B36	DNMG p. B43	SNMG p. B50	TNMG p. B58	VNMG p. B66	P. B68	
	0.5 ~ 1.5 ~ 3.5 Medium to finishing	VC	6° 15°	0.12 ~ 0.25 ~ 0.45	NC3215 NC3220 NC3225 NC5330	168 148 150 200	CNMG  CNMG  P. B36	DNMG p. B44	SNMG p. B50	TNMG p. B59	VNMG p. B66	WNMG p. B68	
	0.5 ~ 1.0     ~ 2.5 Medium cutting	LP	1.6 0.13 6° 20°	0.10 ~ 0.25 ~ 0.40	NC3215 NC3225 NC5330	250 200 200	CNMG  p. B36	DNMG p. B43	SNMG p. B50	TNMG p. B58	vnmg p. B66	WNMG p. B68	
Negative	0.5 ~ 1.5 ~ 4.5 Medium cutting	MP	0.2	0.15 ~ 0.25 ~ 0.45	NC3215 NC3225 NC5330	250 200 200	CNMG p. B37	DNMG p. B44	SNMG p. B51	TNMG p. B59	VNMG p. B66	WNMG p. B69	
	1.0 ~  2.5  ~ 5.0  Medium cutting	VM	0.25 1.3 2.2 0.1 1.8° 5° 1.8°	0.15 ~ 0.25 ~ 0.50	NC3215 NC3220 NC3225 CN1500 CN2500	174 153 153 120 100	P. B37	DNMG p. B45	SNMG  p. B51	TNMG p. B59	VNMG p. B67	WNMG p. B69	
	1.0 ~  3.0  ~ 4.5  Medium to roughing	GR	0.28	0.20 ~ 0.35 ~ 0.50	NC3125 NC3225 NC5330	180~370 150~330 130~280	CNMG  p. B38	DNMG p. B45	SNMG p. B52	TNMG p. B60		WNMG p. B69	
	6.0 ~ 10.0 ~ 15.0 Heavy (General)	VH	20 280	0.70 ~ 1.00 ~ 1.40	NC3215 NC3030 NC500H NC5330	50~250 50~150 50~150 50~150	CNMM p. B42		D. B57				
	7.0 ~ 12.0 ~ 17.0 Heavy (High feed cutting)	VT	207	0.75 ~ 1.20 ~ 1.60	NC3215 NC3030 NC500H NC5330	50~250 50~150 50~150 50~150	D. B42		D. B57				

<sup>•:</sup> The first recommended cutting condition





Materials: SNC415, SNC815, SNCM240, SNCM439, STS12, STS61, etc

SCM440, Hardened steel

Hardness: 260~350HB

Depth of cut (mm)		C/B	Cutting edge	Feed (mm/rev)	Grades	Cutting Speed (m/min)	Insert shape						
							80°>	(55°)	90°	60°	35°	80°	
		FP					CCMT	DCMT	SCMT	TCMT	VB(C)MT		
	0.1 ~ 0.5 ~ 1.0 Finishing		20°4	0.01 ~ 0.06 ~ 0.20	NC3215 NC3225 CN1500 CN2500	350 270 260 240							
							p. B73	p. B79	p. B84	p. B88	p. B94		
	0.4 ~  0.5  ~ 1.5  Medium to finishing	VL	0.6	0.05 ~ 0.10 ~ 0.25	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	305 310 310 240 210 190	p. B73	<b>р.</b> В79	<b>р.</b> В84	<b>ТСМТ</b> р. В88	p. B94		
Positive	0.1 ~  0.5  ~ 1.5  Medium to finishing	VF	0.1	0.05 ~ 0.15 ~ 0.25	NC3215 NC3220 NC3225 NC5330 CC1500 CN1500 CN2500	330 300 300 230 260 250 240	p. B73	p. B79	p. B84	TC(P)MT  p. B88	vB(C)MT  p. B94		
	0.6 ~ 1.5 ~ 2.5 Medium cutting	MP	0.2	0.10 ~ 0.15 ~ 0.30	NC3215 NC3225 NC5300 CN1500 CN2500	305 285 225 240 220	p. B73	р. В79	p. B84	p. B88	vB(C)MT		
	0.8 ~ 2.0 ~ 3.0 Roughing	C25	0.15	0.12 ~ 0.15 ~ 0.32	NC3215 NC3220 NC3225 NC5330 CN1500 CN2500	320 285 285 225 100 80	p. B74	p. B80	р. В84	р. В89			

• The first recommended cutting condition

Workpiece M Stainless steel

Materials: STS304, STS316, STS430, STS630

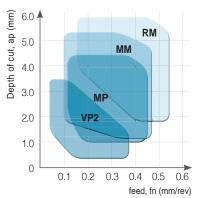
Ferrite, austenite, martensite, precipitation hardening stainless steels

Hardness: 135~300HB

Г	epth of					Cutting			Insert	shape		
	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	180°	(55°)	90°	60°	35°	80°
	0.5 ~ 1.5     ~ 4.0  Medium to finishing	VP2	2.5	0.10 ~ 0.20 ~ 0.40	PC8105 PC8110 PC8115 PC5300 PC5400	185 170 160 135 120	D. B41	DNMG  p. B47	p. B55	p. B63		wnmg  p. B71
tive	1.0 ~  2.0  ~ 4.5  Medium cutting	MP	0.2 5° 1 18°	0.15 ~ 0.23 ~ 0.45	PC8105 PC8110 PC8115 PC5300 PC5400	175 160 150 130 110	P. B37	DNMG p. B44	p. B51	p. B59	vnmg p. B66	P. B69
Negative	0.5 ~ 3.0 ~ 5.5 Medium cutting	MM	0.3 2.1 0.1 100 200	0.12 ~ 0.25 ~ 0.45	NC9115 NC9125 NC9135 PC8110 PC8115 PC5300	190 170 130 160 150 130	CNMG p. B40	DNMG p. B46	SNMG p. B54	TNMG p. B62	vnmg p. B67	p. B71
	2.0 ~ 4.0 ~ 6.0 Roughing	RM	2.6 0.31 7° 18°	0.15~ 0.30 ~ 0.55	NC9115 NC9125 NC9135 PC8110 PC8115 PC5300	190 170 130 160 150 130	p. B40	DNMG p. B47	p. B55	p. B63	P. B67	wnmg p. B71

•: The first recommended cutting condition

### M Negative







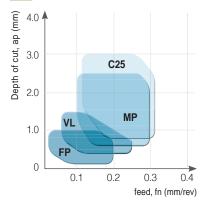
Materials: STS304, STS316, STS430, STS630

Ferrite, austenite, martensite, precipitation hardening stainless steels

Hardness: 135~300HB

Г	epth of					Cutting			Insert	shape		
	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	\$80°	<b>√</b> 55°	90°	60°	35°	80°
	0.1 ~ 0.5 ~ 1.0 Finishing	VL	0.6	0.05 ~ 0.10 ~ 0.20	PC8105 PC8110 PC8115 PC5300 PC5400 NC5330 NC9025	215 195 190 165 135 165 165	р. В73	<b>р.</b> В79	p. B84	р. В88	vB(c)MT	
tive	0.3 ~ 1.0 ~ 2.0 Medium to finishing	НМР	0.15	0.05 ~ 0.10 ~ 0.25	PC8105 PC8110 PC8115 PC5300 PC5400 NC5330 NC9025	190 175 170 135 120 150	р. В73	DCMT	p. B84	тсмт р. В88	vB(C)MT  p. B94	
Posi	0.3 ~ 1.5 ~ 3.0 Medium to finishing	MP	1.7	0.05 ~ 0.15 ~ 0.35	PC8105 PC8110 PC8115 PC5300 PC5400 NC5330 NC9025	190 175 170 135 120 150	р. В73	р. В79	p. B84	TC(P)MT  p. B88	vB(C)MT  p. B94	
	1.0 ~ 1.5 ~ 3.0 Medium cutting	C25	0.15	0.08 ~ 0.13 ~ 0.25	PC8110 PC5300 PC9030	170 1 <mark>55</mark> 155	р. В74	DCMT  p. B80	p. B84	тсмт р. В89		



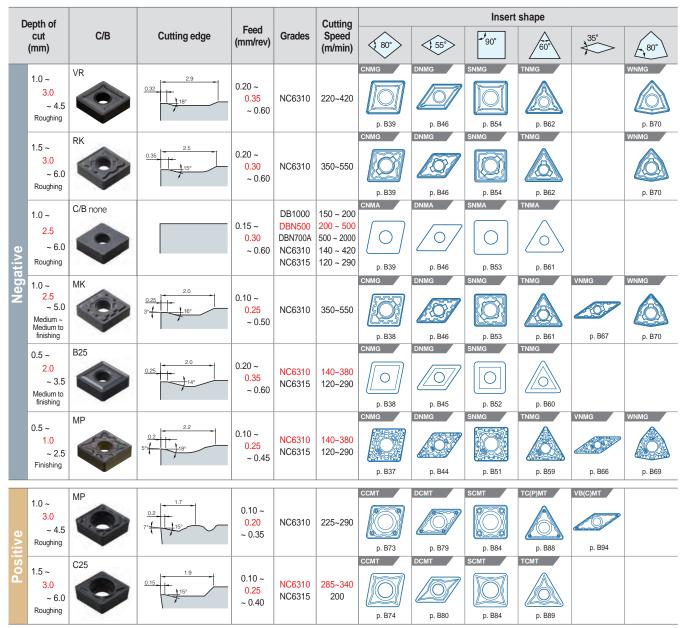


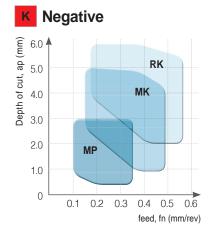
K

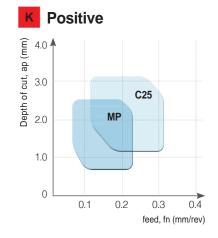
Materials: GC250, GC300, GCD400, GCD700, etc : Gray cast iron, Ductile cast iron

Hardness: 135~185HB

Tensile strength: under 450N/mm<sup>2</sup>









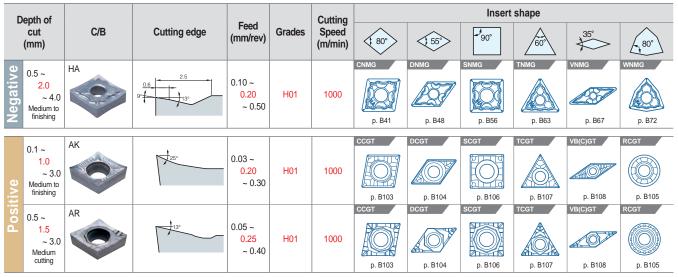


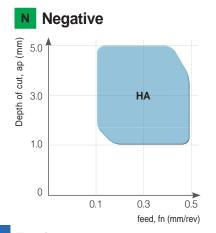
Materials: Aluminum alloy Hardness: 20~110HB

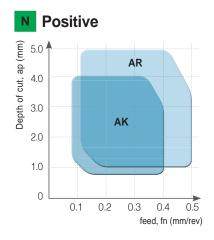
-	Depth of					Cutting			Insert	shape		
•	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	80°>	(55°)	90°	60°	35°	80°
Negative	0.5 ~ 2.0 ~ 6.0 Medium cutting	НА	9 13°	0.10 ~ 0.20 ~ 0.50	H01	500	D. B41	DNMG p. B48	p. B56	TNMG p. B63	P. B67	p. B72
tive	0.1 ~ 1.0 ~ 4.0 Medium to finishing	AK	25°	0.03 ~ 0.20 ~ 0.40	H01 ND1000 PD1000	1000 1000 1000	p. B103	p. B104	p. B106	p. B107	vB(C)GT  p. B108	P. B105
Posi	0.5 ~ 1.5 ~ 4.0 Medium cutting	AR	13°	0.05 ~ 0.30 ~ 0.50	H01 ND1000 PD1000	1000 1000 1000	p. B103	p. B104	p. B106	тсет р. В107	vB(C)GT  p. B108	P. B105

Materials: Copper, Bronze alloy

Hardness: 20~110HB





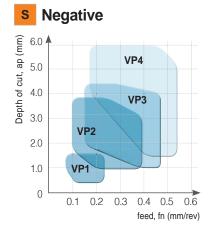


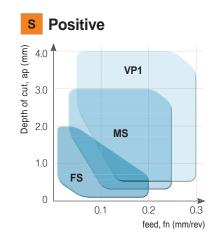
Workpiece S Heat resistant alloy

Materials: Inconel, Nimonic, Stellite, Ti alloy

Hardness: 160~350HB

Г	epth of					Cutting			Insert	shape		
	cut (mm)	C/B	Cutting edge	Feed (mm/rev)	Grades	Speed (m/min)	\$80°	(55°)	90°	60°	35°	80°
	0.1 ~ 0.5 ~ 1.5 Finishing	VP1	1.2	0.05 ~ 0.10 ~ 0.20	PC8110 PC5300 NC5330	60 50 50	CNGG p. B40	DNGG p. B47				
legative	0.5 ~ 1.5  ~ 4.0 Medium to finishing	VP2	2.5	0.10 ~ 0.20 ~ 0.40	PC8110 PC5300	60 45	p. B41	DNMG p. B47	p. B55	TNMG p. B63		p. B71
Neg	0.05 ~ 2.0 ~ 3.0 Medium cutting	VP3	0.5	0.05 ~ 0.15 ~ 0.25	PC8110 PC5300	60 40	p. B41	DNMG p. B47	p. B55	p. B63	p. B67	p. B71
	1.0 ~ 2.5 ~ 4.0 Roughing	VP4	0.17 8° 18°	0.15 ~ 0.20 ~ 0.35	PC8115	60 40	D. B41	DNMG p. B48	p. B55	p. B63		<b>WNMG</b> p. B71
	0.5 ~ 2.0 ~ 4.0 Medium cutting	VP1	12	0.05 ~ 0.23 ~ 0.30	PC8110 PC5300	60 45	p. B74	DCGT p. B81			p. B98	
Positive	0.2 ~ 1.0   ~ 2.5 Medium cutting	MS	12°	0.03 ~ 0.10 ~ 0.25	PC8110 PC5300	60 45	р. В74	<b>р.</b> В80			<b>VCGT</b> р. В98	
	0.1 ~ 0.8 ~1.5 Finishing	FS	16°	0.01 ~ 0.08 ~ 0.20	PC8110 PC5300	60 45	р. В74	p. B80		р. В89	<b>VCGT</b> р. В98	





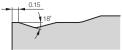
# CP Chip Breaker [For medium to finishing]

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

#### Features of CP chip breaker

#### ▶ Flat land

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



#### ▶ 2-steped back side

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





#### ► Side rake angle + continuous bumps

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

#### Performance evaluation

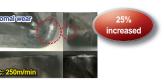
#### V-T (Vc-Tool life)

■ Workpiece Alloy steel (SCM440), External machining

Cutting condition vc (m/min) = 250, 300, 350, fn (mm/rev) = 0.3, ap (mm) = 0.5, wet

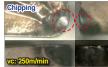
CP

Insert: CNMG120408-RM (NC9115) ■ Tools Holder: PCLNL2525-M12





vc (m/min)



Competitor A Competitor B

6000 5000

3500

2000 1000

Machining amout 4000

2500

2000

1000

500

Machining amout 1500

#### Application range

Depth of cut, ap (mm) 6.0 5.0 НМ 4.0 MP 3.0 CP rev 2.0 1.0 0  $0.10 \ 0.20 \ 0.30 \ 0.40 \ 0.50 \ 0.60$ feed, fn (mm/rev)

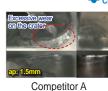
#### D-T (Depth of cut-Tool life)

■ Workpiece Alloy steel (SCM440), External machining

Cutting condition

vc (m/min) = 250, fn (mm/rev) = 0.2,ap (mm) = 0.50, 0.75, 1.00, 1.25, 1.50, wet

Insert : CNMG120408-CP (NC3215P) ■ Tools Holder: PCLNL2525-M12









**Turning** 

# FP Chip Breaker [For chip control in finishing]

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

#### Features of FP chip breaker

#### ► Concave form of semicircle-shaped bump

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

#### ▶ Semicircle-shaped bump

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



#### ▶ 3-dimensional side rake angle

· Ensuring surface finish and guiding chip to right diretion

#### ▶ Assistant bump on flank surface

- · Cutting long chip · Better chip curling in high depth of
- · Preventing chip twist

cut and low feed machining

#### Performance evaluation

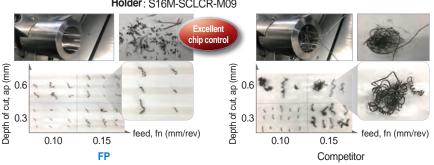
#### Chip control

■ Workpiece Mild steel (SM20C), Ø40 Internal machining

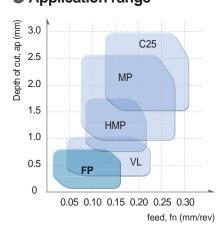
■ Cutting condition vc (m/min) = 200, n (rpm) = 1,600, fn (mm/rev) = 0.03, ap (mm) = 0.5, wet

Insert: CCMT09T304-FP (NC3215) ■ Tools

Holder: S16M-SCLCR-M09



#### Application range



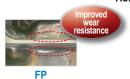
#### Surface finish

■ Workpiece Mild steel (SM20C), Ø30 External machining

■ Cutting condition vc (m/min) = 200, n (rpm) = 2,000, fn (mm/rev) = 0.08, ap (mm) = 0.8, wet

■ Tools Insert: CCMT09T304-FP (NC3215)

Holder: SCLCR1616-M09





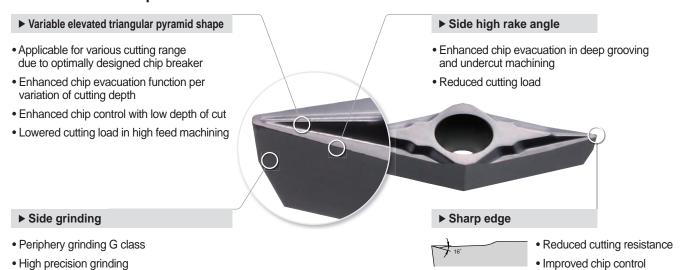




## FS Chip Breaker [For finishing]

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

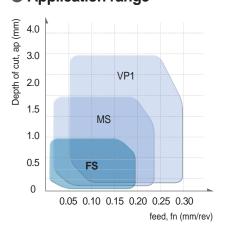
#### Features of FS chip breaker



#### Performance evaluation

#### Workpiece size and surface finish ■ Workpiece Stainless steel (STS406) vc (m/min) = 80, n (rpm) = 1,000, fn (mm/rev) = 0.05, ap (mm) = 0.1, wet■ Cutting condition Insert: VCGT110301-FS (PC8110) ■ Tools Holder: SVJCR1212-X11A 0.015 Ø 0.010 0.015 0.005 0.000 -0.005 Competito FS Competitor

### Application range



#### Wear resistance

■ Workpiece Alloy steel (SCM440)

■ Cutting condition vc (m/min) = 100, n (rpm) = 1,000, fn (mm/rev) = 0.05, ap (mm) = 0.5, wet





**Turning** 

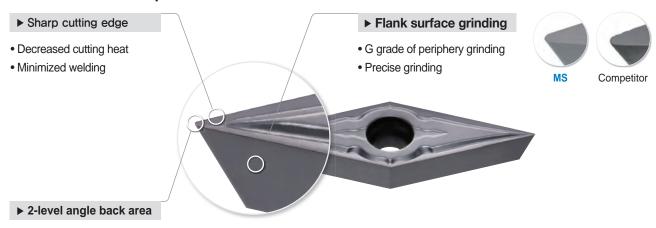
## MS Chip Breaker

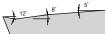


[ For medium to finishing ]

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

#### Features of MS chip breaker





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

#### Performance evaluation

▶ Ultra-fine substrate and high hardness coating

#### Wear resistance

- Workpiece
- Pure titanium (Grade4)
- Cutting condition vc (m/min) = 100, n (rpm) = 3,500, fn (mm/rev) = 0.03, ap (mm) = 0.5, wet
- Tools

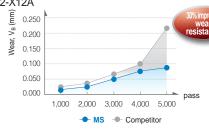
Insert: VCGT1203008FN-MS (PC8110)

Holder: SVJCR1212-X12A

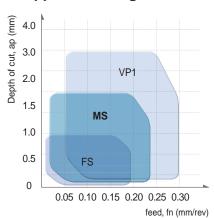
MS

ensurestable tool life.

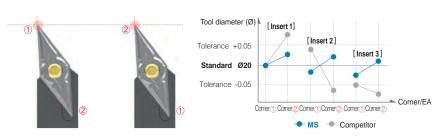




### Application range



#### **Dimension precision**



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

# LP Chip Breaker (For medium to finishing)

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

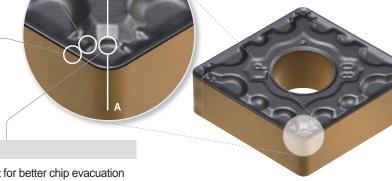
#### Features of LP chip breaker

#### ▶ Front dot

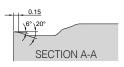
- · Higher stability of chip curls at high feed
- · Excellent chip control when copying
- Lower cutting force at low depth of cut and high feed

#### ▶ Variable land

- · Less crater wear
- · Prevents chipping on minor cutting edge



#### ▶ Flat zone



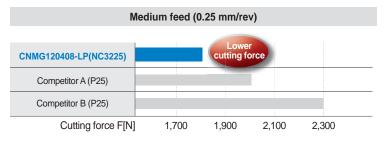
- Larger chip pocket for better chip evacuation at high feed
- Reduced cutting force with larger contact surface of chips

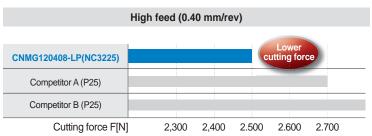
#### Performance evaluation (Evaluation of cutting force)

■ Workpiece SM45C, Ø100, External machining

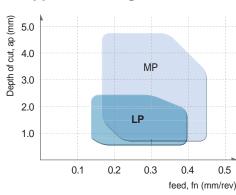
■ Cutting condition vc (m/min) = 250, ap (mm) = 1.0, fn (mm/rev) = 0.25/0.40, wet

■ Tools CNMG120408-□□





#### Application range



# MP Chip Breaker (For medium cutting)

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

#### Features of MP chip breaker

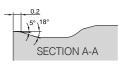
#### ▶ Front two step dot

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

#### ► Variable land

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

#### ▶ Flat zone



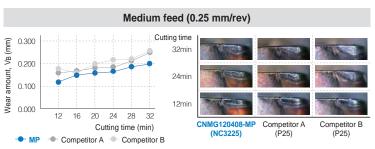
- Larger chip pocket for better chip evacuation at high feed
- Reduced cutting force with larger contact surface of chips

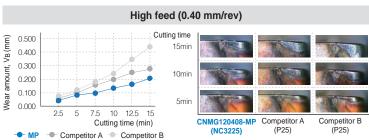
#### Performance evaluation

■ Workpiece Alloy steel (SCM440), Ø100, External machining

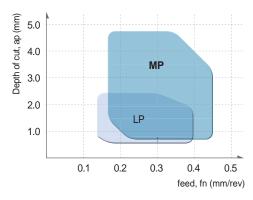
■ Cutting condition vc (m/min) = 280, ap (mm) = 1.5, fn (mm/rev) = 0.25/0.40, wet

■ Tools CNMG120408-□□





### Application range



## MM Chip Breaker (For medium cutting)

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

#### Features of MM chip breaker

#### **▶** Variable Land

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

#### **▶** Dual Land

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

#### **▶** Wide Chip Pocket

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

#### Performance evaluation

#### **Built-up edge**

■ Workpiece STS405 (Ferrite)

Cutting vc (m/min) = 180, fn (mm/rev) = 0.3, ap (mm) = 3.0, wet

■ Tools Insert : CNMG120408-MM (NC9125)

Holder: PCLNL2525-M12







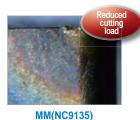
#### **Plastic deformation**

■ Workpiece STS316 (Austenite)

■ Cutting vc (m/min) = 200, fn (mm/rev) = 0.35, ap (mm) = 2.0, dry

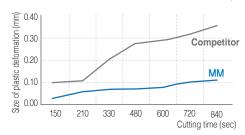
■ Tools Insert: CNMG120408-MM (NC9135)

Holder: PCLNL2525-M12





Competitor





## RM Chip Breaker (For roughing)

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

#### Features of RM chip breaker

#### ▶ Variable Land

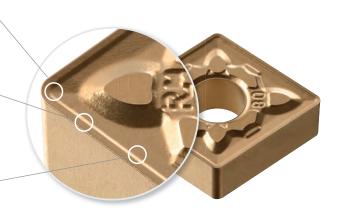
- · Excellent chip control and sharp cutting at low depths of cut
- · Delays crater wear
- · Prevents plastic deformation

#### ▶ Wide land & Gentle front angle

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

#### ▶ Stepped Design

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



#### Performance evaluation

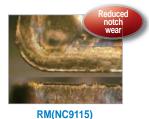
#### Notch wear

■ Workpiece STS410 (Martensite)

■ Cutting vc (m/min) = 150, fn (mm/rev) = 0.25, ap (mm) = 3.0, wet

■ Tools Insert: CNMG120408-RM (NC9115)

Holder: PCLNL2525-M12



RM(NC9115) Competitor

(EU) 1.00 Competitor

0.75 Competitor

0.00 30 60 90 120 150 180 210 Cutting time (sec)

Burr

■ Workpiece Duplex

■ Cutting vc (m/min) = 120, fn (mm/rev) = 0.2, ap (mm) = 2.0, dry

■ Tools Insert : CNMG120408-RM (NC9125)

Holder: PCLNL2525-M12





# MK Chip Breaker [For medium cutting]

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

#### Features of MK chip breaker

#### ► Angle land

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



Application range

#### ▶ Wide supporting area

- · Higher clamping stability
- · Prevents chipping at vibrations during operation

#### Performance evaluation

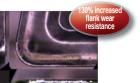
#### Wear resistance

GCD500(KS), Ø90 (Spherical tube) → Ø30 machining ■ Workpiece

Cutting vc (m/min) = 400, fn (mm/rev) = 0.35,conditions ap (mm) = 2.5, wet

30 passes with results of normal wear on rake/flank ■ Cutting time

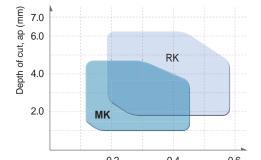
Insert: CNMG120408-MK (NC6315) ■ Tools Holder: DCLNR2525-M12



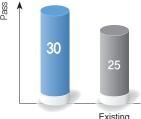




Existing product



feed, fn (mm/rev)



MK (NC6315)



# RK Chip Breaker (For roughing)

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

#### Features of RK chip breaker

#### ▶ Flat land

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



#### ▶ Wide supporting area

- · Higher clamping stability
- · Minimizes vibration and chipping.

#### Performance evaluation

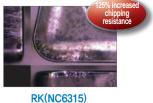
#### Impact resistance

GCD500 (KS), Ø90 (Triangular tube) → Ø30 machining ■ Workpiece

vc (m/min) = 380, fn (mm/rev) = 0.35,Cutting conditions ap (mm) = 2, wet

15 passes with results of normal rake surface wear and ■ Cutting time good chipping resistance

Insert: CNMG120408-RK (NC6315) ■ Tools Holder: DCLNR2525-M12



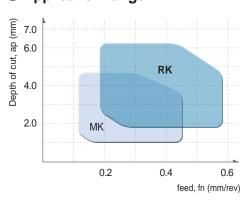


Existing product

Pass 30

**RK(NC6315)** 

### Application range



## VP1 Chip Breaker [For finishing]

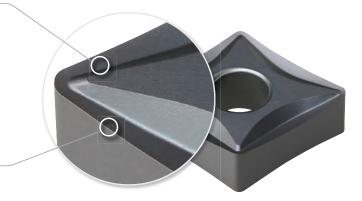
- Cutting edges designed in high-positive
  - Reduced contact area between rake surface and chip minimizes cutting heat and improved tool life
- Recommended cutting conditions: fn (mm/rev) = 0.05~0.2, ap (mm) = 0.1~1.5

#### Features of VP1 chip breaker

#### ▶ Optimized design for finishing

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





#### ▶ High-positive blade design

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

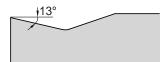
## VP2 Chip Breaker [For medium to finishing]

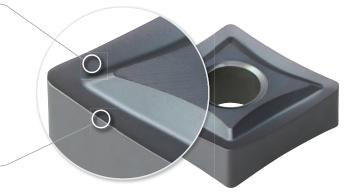
- High-positive cutting edge design/Side rake angle applied
  - Stable chip control improves machinability when ball machining at variable depths of cut
- Recommended cutting conditions: fn (mm/rev) = 0.1~0.4, ap (mm) = 0.5~4.5

### Features of VP2 chip breaker

#### ▶ Sharp blades and wide chip pockets

- Increase productivity
- · Ideal for medium to finish cutting





#### ▶ High-positive blade design

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

26

## VP3 Chip Breaker [For medium cutting]

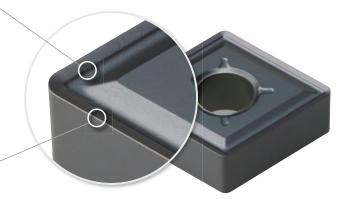
- High-positive cutting edge design/Wide land applied
  - Improved stability at interrupted cutting when toughness is required. Stable chip control and machinability at high depth of cut
- Recommended cutting conditions: fn (mm/rev) =  $0.1 \sim 0.45$ , ap (mm) =  $0.5 \sim 5.0$

#### Features of VP3 chip breaker

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

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





#### ▶ High-positive blade design / Wide land

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

## VP4 Chip Breaker 🚾 [For roughing]



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

#### Features of VP4 chip breaker

#### ▶ Rake angle design resistant to high hardness cutting

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



#### ▶ Wide chip pockets

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



## Single-sided VL Chip Breaker

[For finishing]

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



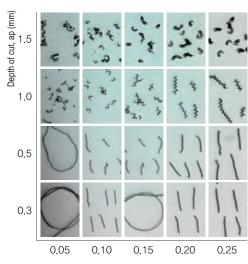
#### Features of VL chip breaker

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

#### Chip control test

■ Workpiece SCM440(Alloy steel), Ø50, Internal diameter turning ■ Cutting condition vc = 250 m/min, ap = 0.3~1.5 mm, fn = 0.05~0.25 mm/rev

■ Tools CCMT09T304-VL



feed, fn (mm/rev)

## Single-sided MP Chip Breaker

[ For medium to finishing ]

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

#### Features of MP chip breaker

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

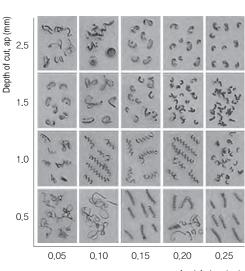
#### Chip control test

■ Workpiece

■ Cutting condition vc = 200 m/min, ap = 0.5~2.5 mm, fn = 0.05~0.25 mm/rev

■ Tools CCMT09T304-MP





feed, fn (mm/rev)

## VL Chip Breaker [For finishing]

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



#### Features of VL chip breaker

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

#### Chip control test

■ Workpiece SM20C

Cutting vc = 250 m/min, ap = 0.5 mmconditions fn = 0.2 mm/rev (Side), dry

DNMG150408-VL ■ Tools



**Chip Breakers** 

Competitor A



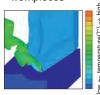
Competitor B



Competitor C

#### FEM Cutting simulation analysis in the design

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







## VB Chip Breaker [For finishing]

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

#### Features of VB chip breaker

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

#### Performance

Better machining Better Chip control



**VB Chip Breakers** 

Longer tool life







Conventional chip breaker



## VC Chip Breaker [For medium to finishing]

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

#### Features of VC chip breaker

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

#### Evaluation of chip control (Copying)









## VQ Chip Breaker [For medium to finishing\_For cermet]

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

#### Features of VQ chip breaker

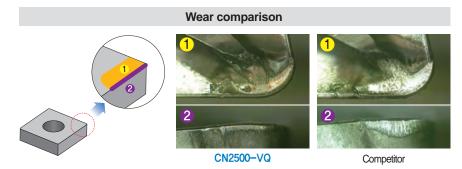
- · Three dimensional rake angle
- Improved surface finish thanks to sharp cutting performance
- Less cutting heat and longer tool life thanks to low cutting resistance
- · Beveled protruding structure
- Smooth chip flow at low depth of cuts
- Wide application range

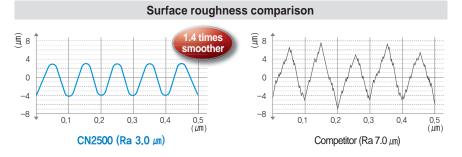
#### Performance evaluation

■ Workpiece SCM440(Alloy steel), Ø100, External diameter turning

vc = 280 m/min, ap = 1.5 mm,Cutting condition fn = 0.25 mm/rev

■ Tools CNMG120408-VQ (CN2500)







## VH/VT Chip Breaker [For heavy duty machining]

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

#### Features of VH chip breaker

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



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

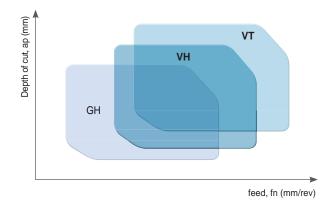
#### Features of VT chip breaker

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



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

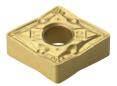
#### Applications range of chip breakers



## LW/VW Chip Breaker [For high feed cutting]

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

#### Features of LW chip breaker



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

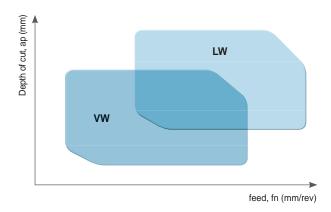
[For medium cutting]

#### Features of VW chip breaker



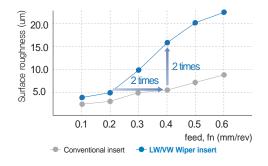
- Excellent Finishing applications Excellent chip control
- Insert design great for stable clmaping Chip breaker designed close to the cutting edge
- Similar cutting edge to C/B for medium strong cutting edge
- · 3 Dimensional dot design on cutting corner
  - reduces cutting force and good chip control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

#### Applications range of chip breakers

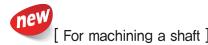




- High productivity
- Improved surface roughness
- High feed-reducing machining time
- Improved tool life due to reduce cutting force

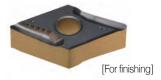


## SR/SH Chip Breaker [For machining a shaft]



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

#### Features of SR chip breaker



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

#### Features of SH chip breaker



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

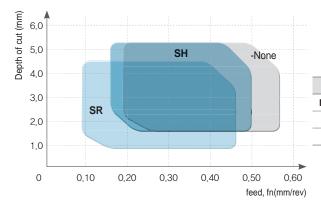
[For medium cutting]



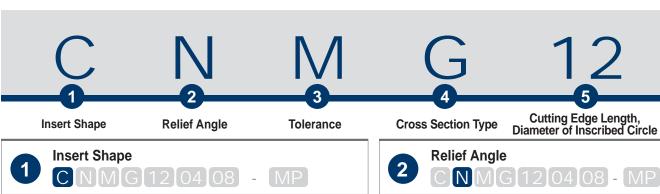
SR chip breaker

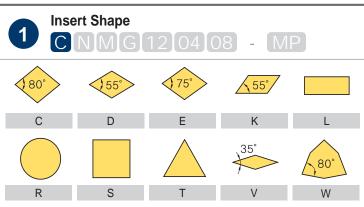
Other chip breakers

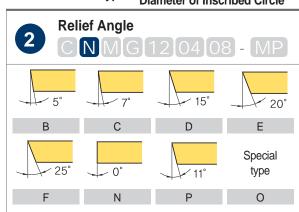
#### Applications range of chip breakers

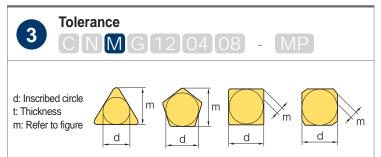


Machining	C/B	ap (mm)	fn (mm/rev)
Medium to rough cutting	-None	1.5~5.0	0.20~0.55
Medium cutting	SH	1.5~5.0	0.15~0.50
Finish cutting	SR	1.0~4.5	0.12~0.45









				(mm)
Class	d	m	- 1	t
А	±0.025	±0.005		±0.025
С	±0.025	±0.013		$\pm 0.025$
Н	±0.013	$\pm 0.013$		$\pm 0.025$
Е	±0.025	$\pm 0.025$		$\pm 0.025$
G	±0.025	$\pm 0.025$		$\pm 0.13$
J *	±0.05~±0.15	$\pm 0.005$		$\pm 0.025$
K *	±0.05~±0.15	$\pm 0.013$		$\pm 0.025$
L*	±0.05~±0.15	$\pm 0.025$		$\pm 0.025$
M *	±0.05~±0.15	$\pm 0.08  \pm 0.20$		$\pm 0.13$
N *	±0.05~±0.15	$\pm 0.08  \pm 0.18$		$\pm 0.025$
U *	±0.08~±0.25	$\pm 0.13  \pm 0.38$		±0.13

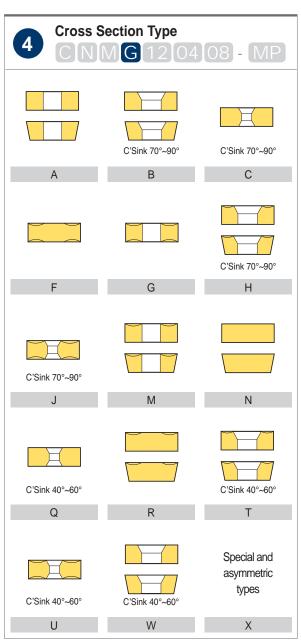
<sup>\*</sup> Sides are based on unground insert

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

d	Tolera	nce	on d	Tolerance on m							
u	J, K, L, M, N	1	U	M, N	- 1	U					
6.35	±0.05	1	$\pm 0.08$	±0.08		$\pm$ 0.13					
9.525	±0.05	1	$\pm 0.08$	±0.08	- 1	$\pm 0.13$					
12.7	±0.08		$\pm 0.13$	±0.13	-	$\pm 0.20$					
15.875	±0.10	-	$\pm 0.18$	±0.15	- 1	$\pm 0.27$					
19.05	±0.10		$\pm 0.18$	±0.15		$\pm 0.27$					
25.4	±0.13	-	$\pm 0.25$	±0.18	- 1	$\pm 0.38$					

#### Tolerance on D Insert Shape (Exceptional case)

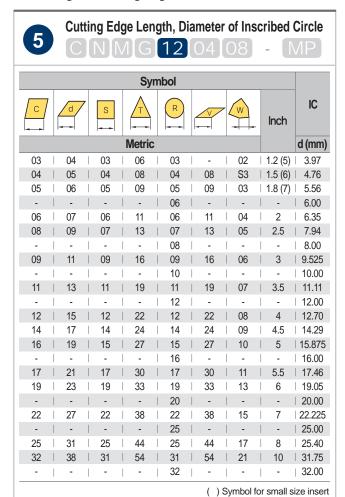
d	Tolerance on d	Tolerance on m
6.35	±0.05	±0.11
9.525	$\pm 0.05$	$\pm$ 0.11
12.7	$\pm 0.08$	$\pm 0.15$
15.875	±0.10	±0.18
19.05	$\pm$ 0.10	$\pm 0.18$

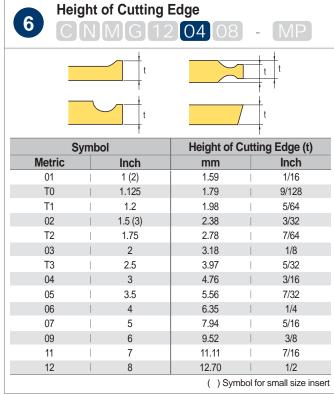


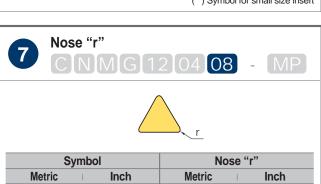
**Height of Cutting Edge** 

Nose "r"

**Chip Breaker for Turning** 







	3					
7	THE PARTY					9
	VL	VF	VB	VC	VQ	VW
			0	•		9
	VM	VR	GH	VH	VT	SR
		0				0
	НА	НМ	GR	VP1	VP2	VP3
	LP	MP	MM	RM	MK	RK
	Positi	ve Inse	rt Chip E	Breaker		
	FP	VL	HMP	MP	C25	AK
	FS	MS	VP1			
_						

**Chip Breaker for Turning** 

**Negative Insert Chip Breaker** 

8

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

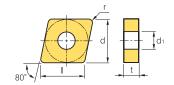
CP

AR

MP



## CNOC



	Dimensio	ons (mm)	
Size	d	t	d <sub>1</sub>
09	9.525	3.18	3.81
12	12.7	4.76	5.16
16	15.875	6.35	6.35

## Rhombic 80° Negative

	Steel	Р		#		•	•		#	#	#	•	•	3		#						Machining types
8	Stainless steel	M							\$	3	3			•	3	#	•	3	3	#		Madrining typoo
pie	Cast iron	K		#	3	3	3				3	3	3								3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N																			3	General cutting
Š	Heat resistant alloy, Titanium alloy	S													•	•	•	3	3		3	# Interrupted cutting
	Hardened steel	Н															•	3	3		3	- interrupted cutting

						Coa									Coa										Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
	VB	CNMG	120404-VB		•	•				•	•				•												0.15~0.35	0.30~2.00
ing	VB		120408-VB		•	•				•	•				•												0.15~0.45	0.50~2.00
Finishing			120412-VB								•																0.20~0.50	0.50~2.00
듄																												
		CNMG	090304-VF								•	•															0.07~0.30	0.50~1.50
	VF		090308-VF																								0.10~0.30	0.50~1.50
Finishing	VI		120404-VF									•			•												0.07~0.30	0.50~1.50
hish			120408-VF																								0.10~0.40	0.50~1.50
這	13		120412-VF																								0.10~0.50	0.60~1.50
	VL	CNMG	120404-VL	•	•																						0.05~0.25	0.10~1.00
Finishing	V L		120408-VL		•					•	•				•												0.10~0.35	0.20~1.50
ish	( O		120412-VL																								0.10~0.35	0.20~1.50
造	200																											
		CNMG	090304-LP																								0.07~0.30	
i i	LP		090308-LP							•	•																0.10~0.30	
inis	new		120404-LP							•	•				•												0.10~0.35	0.30~2.00
5			120408-LP								•																0.10~0.40	0.50~2.50
<u>.</u> <u>.</u>	33.3		120412-LP							•	•				•												0.13~0.45	0.80~3.00
Medium to finishing																												
		CNMG	090304-CP																									0.40~3.00
			090308-CP																									0.40~3.00
			090404-CP																									0.40~3.00
Medium to finishing	CP_		090408-CP																								0.10~0.30	0.40~3.00
inis	new		120404-CP						•																		0.10~0.35	0.50~3.50
to			120408-CP					•	•																			0.50~3.50
<u>.</u> <u>.</u>	-30-		120412-CP					•	•																			0.80~3.50
Mec			160608-CP					•	•																		0.15~0.40	
			160612-CP																								0.18~0.40	1.00~4.50
Б		CNMG	120404-VC							•	•				•												0.10~0.35	0.30~2.00
shii	VC		120408-VC							•	•				•												0.15~0.40	0.50~3.00
li li	as Alexander		120412-VC							•	•																0.15~0.45	0.50~3.00
E to	The Co																											
Medium to finishing																												

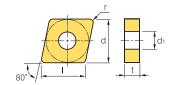
Cutting edge geometry A52~A61

<sup>•:</sup> Stock item

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173



<sup>€</sup> Code system B34~B35



	Dimension	ons (mm)	
Size	d	t	d₁
09	9.525	3.18	3.81
12	12.7	4.76	5.16
16	15.875	6.35	6.35
19	19.05	6 35	7 93

## Rhombic 80° Negative

	Steel		Р		#	\$		3	3	#	#	#	•	•	\$	#									Machining types
ဗ္ဗ	Stainless steel		M							3	3	3			3	#	3	#		3	3	#			
pie	Cast iron	4	K		#	3	3					3	\$	3										3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal		N																					3	General cutting
- ≥	Heat resistant alloy, Titanium alloy		S												•	•	3	#	•	3	3			3	
	Hardened steel	4	Н																•	3	3		•	3	# Interrupted cutting

				Cer	rmet	Coa	ated								Coa	ted								Unc	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	00000	PC3400	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		CNMG	090304-HM																							0.12~0.40	0.50~3.80
	1.15.4		090308-HM																							0.15~0.40	0.80~3.80
tij.	HM		120404-HM						•	•	•												•			0.05~0.30	0.90~5.00
Medium cutting			120408-HM						•	•	•							•					•			0.10~0.50	1.00~5.00
Ë	R. C.		120412-HM					•																		0.18~0.50	1.00~5.00
Me			190612-HM							•																0.13~0.60	1.30~7.00
		CNMG	090304-MP					•	•				•				•									0.10~0.40	0.40~3.80
			090308-MP						•				•				•									0.15~0.40	0.50~4.00
			090312-MP																							0.15~0.50	0.80~4.20
			090404-MP																							0.10~0.40	0.40~3.80
			090408-MP																							0.15~0.40	0.50~4.00
			090412-MP																							0.15~0.50	0.80~4.20
	MP		120404-MP					•	•				•	•		•	•	•				•				0.10~0.40	0.40~4.00
Medium cutting	new		120408-MP					•	•		•		•	•			•	•		•		•				0.15~0.45	0.50~4.50
ם כת			120412-MP					•	•				•			•	•	•				)				0.15~0.50	0.80~5.00
gin	33		120416-MP					•	•				•			•	•	•								0.28~0.55	1.00~5.00
Me	_		160608-MP					•	•				•			•	•	•								0.15~0.50	0.50~7.00
			160612-MP					•	•				•			•	•	•								0.18~0.60	0.80~7.00
			160616-MP					•	•				•													0.15~0.60	1.00~7.00
			190608-MP							•																0.15~0.60	0.50~8.50
			190612-MP							•							_									0.10~0.40	0.40~3.80
			190616-MP														•	•								0.15~0.40	0.50~4.00
		CNMG	090304-VM																							0.05~0.30	0.90~3.50
			090308-VM							•	•															0.10~0.45	1.00~3.50
			120404-VM	_	•					•	•		•					•								0.05~0.30	0.90~5.00
			120408-VM	•	•				•	•	•		•					•					•			0.10~0.50	1.00~5.00
			120412-VM							•	•		•									)				0.13~0.60	1.30~5.00
	VM		120416-VM										•													0.20~0.60	1.50~5.50
Iti	VIVI		160608-VM										•													0.10~0.50	1.00~6.70
n cn			160612-VM																							0.13~0.60	1.30~6.70
Medium cutting			190608-VM								•															0.13~0.65	1.30~7.00
Me			190612-VM										•														1.50~7.00
			190616-VM																							0.18~0.75	1.80~7.00
													-														

→ Cutting edge geometry A52~A61
→ Recommended chip breaker B04~B14

€ Code system B34~B35

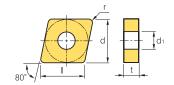
ullet : Stock item

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173



# B Turning Insert (Negative)





	Dimension	ons (mm)	
Size	d	t	d₁
09	9.525	3.18	3.81
12	12.7	4.76	5.16
16	15.875	6.35	6.35
19	19.05	6.35	7.93
25	25.4	9.52	9.12

## Rhombic 80° Negative

	Steel		Р		#	3		3	3	#	#	#	•		3		#							Machining types
9	Stainless steel		M							\$	3	3				3	#	\$ #	•	1	3	#		
pie	Cast iron	4	K		#	3	3					3	3	3									3	<ul> <li>Continuous cutting</li> </ul>
녻	Non-ferrous metal		N																				3	General cutting
ĕ	Heat resistant alloy, Titanium alloy		S														•	\$ #	•		3		3	# Interrupted cutting
	Hardened steel	4	Н																•	3	3		3	* interrupted cutting

			Cei	rmet	Coa	ated								Coat	ted								Unco	ated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500		NC3215	NC3225	NC3120	NC3030	NC3235	NC5330				NC9125	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		CNMG <b>120404-B25</b>	•	•			•	•		•		•					•	)							0.17~0.45	1.00~5.00
		120408-B25	•	•				•	•	•		•													0.23~0.60	1.50~5.00
		120412-B25		•				•		•		•													0.25~0.60	2.00~5.00
Medium to roughing	B25	160608-B25						•		•		•													0.25~0.60	2.00~6.50
ong		160612-B25						•				•													0.27~0.60	2.00~6.50
5		160616-B25						•				•													0.27~0.60	2.00~6.50
<u>=</u>		190604-B25								•		•													0.20~0.45	3.00~8.00
Med		190608-B25					•	•	•	•		•													0.25~0.60	3.00~8.00
_		190612-B25					•	•	•	•		•							1						0.30~0.60	3.00~8.00
		190616-B25					•	•																	0.23~0.70	3.00~8.00
		CNIN4C 420409 CD																							0.00 0.50	4.00.7.00
		CNMG 120408-GR						-	•					-											0.20~0.50	1.00~7.00
		120412-GR 120416-GR						•	_	_		_		•											0.25~0.60	1.80~6.00
		160608-GR									-			_		_			_	_	_				0.25~0.00	1.00~8.00
		160612-GR							•			•	•	•					-						0.25~0.70	1.30~8.00
5	GR	160616-GR							•																0.25~0.75	1.80~8.00
if	No.	190608-GR						_																	0.20~0.70	1.70~10.00
Roughing		190612-GR												-											0.30~0.75	1.70~10.00
		190616-GR					•	•	•	•		•		_			_		_						0.30~0.80	1.80~10.00
	_	190624-GR						Ť	Ť	Ť		Ť													0.35~0.85	2.00~12.00
		250724-GR																							0.40~1.00	2.30~15.00
		250924-GR							•	•		•													0.40~1.00	2.30~15.00
		CNMG <b>090304-VQ</b>																							0.05~0.30	0.50~3.50
ng		090308-VQ																							0.08~0.30	0.80~4.00
ishii	VQ	090408-VQ										•													0.05~0.30	0.50~3.50
ij		090412-VQ										•													0.08~0.30	0.80~4.00
臣		120404-VQ	•	•		•																			0.05~0.30	0.80~4.00
Medium to finishing		120408-VQ	•	•	•	•																			0.08~0.40	0.80~4.00
Ž	[Cermet]	120412-VQ																							0.10~0.40	0.80~4.00
		CNINAC 400404 5775											•												0.05.000	0.00 1.00
		CNMG 120404-MK											•	•											0.05~0.30	0.90~4.00
		120408-MK											•	-											0.10~0.50	1.00~5.00
<sub>D</sub>		120412-MK											•	•												1.30~5.00
Medium cutting	MK	120416-MK																								1.30~5.00
υ Ε	new	160608-MK																								1.80~7.00
inipi		160612-MK																								2.00~8.00
ž		160616-MK																								2.00~8.00
		190608-MK												•												2.50~9.00
		190612-MK												•												2.60~9.50
		190616-MK																							0.35~0.80	2.60~10.00

Cutting edge geometry A52~A61

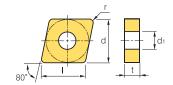
<sup>•:</sup> Stock item

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173

Recommended chip breaker B04~B14

**③** Code system B34∼B35

## CNO



	Dimension	ons (mm)	
Size	d	t	d₁
09	9.525	3.18	3.81
12	12.7	4.76	5.16
16	15.875	6.35	6.35
19	19.05	6.35	7 93

## Rhombic 80° Negative

	Steel		Р	•	#		\$	3	\$ #	#	#	•	•	\$	#									Machining types
ဗ္ဗ	Stainless steel		M						3	3	3			3	#	3	#		3	3	#			
pie	Cast iron		K		#	•	\$ 3				<b>3</b>	3	3									•	3	<ul> <li>Continuous cutting</li> </ul>
높	Non-ferrous metal	•	N																			•	3	General cutting
š	Heat resistant alloy, Titanium alloy		S												•	3	#		3	3			3	-
	Hardened steel		Н															•	3	3			3	# Interrupted cutting

				Cer	met	Coa	ted								Coa	ted								Unco	oated	Cutting (	Condition
	Inserts	Designa	tion	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		CNMA 0903	808																							0.10~0.30	0.50~3.00
		1204	104												•											0.15~0.60	1.00~5.00
		1204	804												•									•		0.15~0.60	1.00~6.00
		1204	112												•											0.15~0.70	1.50~6.00
		1204	116												•											0.20~0.80	2.00~6.00
		1606																								0.15~0.70	2.00~6.00
Roughing		1606													•											0.15~0.70	2.00~6.00
휼		1606	616												•											0.15~0.70	2.00~6.00
윤		1906													•												2.00~10.00
		1906													•											0.15~0.70	2.00~10.00
		1906	616												•											0.20~1.00	3.00~10.00
Roughing	RK	1204 1204 1606 1606 1906	104-RK 108-RK 112-RK 116-RK 508-RK 512-RK 516-RK 516-RK											•	• • • • • • • • • • • • • • • • • • •											0.20~0.47 0.20~0.50 0.28~0.53 0.28~0.63 0.28~0.70 0.28~0.72 0.28~0.74 0.35~0.78	1.30~6.00 1.50~6.00 1.80~6.00 2.00~6.00 1.80~7.00 2.00~8.00 2.00~8.00 2.60~9.50 2.60~10.00
		CNMG <b>120</b> 4	104-VR																							0.20~0.50	1.00~6.50
			108-VR																							0.25~0.55	1.20~7.00
			112-VR																							0.30~0.60	1.50~7.00
		1204	116-VR																							0.35~0.65	1.70~7.00
		1205	08-VR																							0.25~0.55	1.20~7.00
	VR	1205	12-VR																							0.30~0.60	1.50~7.00
ghing		1606	312-VR																							0.35~0.70	2.00~8.00
Roug		1606	316-VR																							0.35~0.75	2.20~8.00
<u>~</u>			312-VR					•	•																	0.35~0.70	2.00~10.00
		1906	616-VR					•	•																	0.35~0.75	2.20~10.00

**ᢒ** Cutting edge geometry **A52∼A61** 

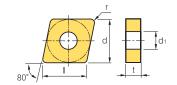
◆ Code system B34~B35

•: Stock item

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173

## **B** Turning Insert (Negative)

## CNOC



	Dimensio	ons (mm)	
Size	d	t	d₁
09	9.525	3.18	3.81
12	12.7	4.76	5.16
16	15.875	6.35	6.35
19	19.05	6.35	7.93
25	25.4	9.52	9 12

## Rhombic 80° Negative

	Steel		Р		#		3		3	\$ #	#	#	•	•	3		#									Machining types
ల్ర	Stainless steel		M							3	3	3				3	#	3	#	•	3	3	#			
çpie	Cast iron		K	•	#	•	\$	3				3	3	\$											3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal		N																					•	3	General cutting
ĕ	Heat resistant alloy, Titanium alloy		S									•				•	•	3	#	•	<b>3</b>	3		•	3	# Interrupted cutting
	Hardened steel	<b>-</b>	Н																	•	3	3			3	- interrupted cutting

			Cer	met	Coa	ited							Coa	ated								Uncoa	ted	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500			NC3215	NC3225	NC3120	NC3030	NC3235	NC6340			NC9125	NC9133	PC5400	PC8105	PC8110	PC8115	PC9030		H05	fn (mm/rev)	ap (mm)
		CNMG <b>090304-MM</b>																						0.08~0.35	0.50~5.00
		090308-MM													• (									0.10~0.40	0.50~5.00
		090312-MM																						0.12~0.45	0.50~5.00
		090404-MM																						0.08~0.35	0.50~5.00
		090408-MM																						0.10~0.40	0.50~5.00
		090412-MM																						0.12~0.45	0.50~5.00
	MM	120404-MM													• (		1			•				0.10~0.40	0.50~5.50
Medium cutting	A STORY	120408-MM													•		1			•				0.12~0.45	0.50~5.50
<u> </u>		120412-MM													•		1			•	•			0.15~0.60	0.50~5.50
<u>ii</u>		120416-MM													•									0.20~0.65	0.50~5.50
Med		160608-MM													•					•				0.12~0.45	0.50~7.00
_		160612-MM													•		1			•	•			0.15~0.60	0.50~7.00
		160616-MM													•					•	•			0.18~0.65	0.50~7.00
		190608-MM													• (		1			•				0.12~0.45	0.50~8.50
		190612-MM													• (				•	•	•			0.15~0.60	0.50~8.50
		190616-MM													• (					•	•			0.18~0.65	0.50~8.50
Roughing	RM	CNMG 120404-RM 120408-RM 120412-RM 160608-RM 160612-RM 190608-RM 190612-RM 190612-RM 190612-RM 190612-RM 190616-RM 250924-RM												•					•	•	•			0.20~0.60 0.25~0.70 0.40~1.20	2.00~6.00 2.00~6.00 2.00~6.00 2.00~8.00 2.00~8.00 2.00~8.00 2.00~10.00 2.00~10.00 2.00~10.00 4.00~14.00
Finishing	VP1	CNMG <u>120404-VP1</u> <u>120408-VP1</u>																	•			•		0.05~0.15	0.10~1.50 0.10~1.50
		CNGG <b>120402-VP1</b>																	•					0.01~0.10	0.10~1.00
5	VP1	120404-VP1																	•					0.05~0.15	0.10~1.50
Finishing		120408-VP1																	_					0.07~0.20	0.10~1.50
Finis		120.00 111																						0.01 0.20	3.10 1.00

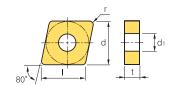
Cutting edge geometry A52~A61

В	Turning

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173

**③** Code system B34∼B35

<sup>•:</sup> Stock item



	Dimension	ons (mm)	
Size	d	t	d <sub>1</sub>
12	12.7	4.76	5.16
16	15.875	6.35	6.35
19	19.05	6.35	7.93

## Rhombic 80° Negative

	Steel		Р		#	\$		3	3	#	#	#	•	\$	#										Machining types
ဗ္ဗ	Stainless steel		M							3	3	3		3	#	3	#		3	3	3	#			
pie	Cast iron	4	K		#	3	3					3	3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal		N																				•	3	General cutting
≥	Heat resistant alloy, Titanium alloy		S									•		•		\$	#		\$	3	3		•	3	-
	Hardened steel		Н															•	3	3				3	# Interrupted cutting

		ed steel																									
					met										oate									Unco	ated	Cutting (	Condition
	Inserts	Designation	n	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	된	H05	fn (mm/rev)	ap (mm)
		CNMG <b>12040</b> 4	4-VP2						•										•	•				•		0.05~0.30	0.10~3.00
i i i	VP2	120408	8-VP2																					•		0.10~0.40	0.50~4.50
iiis		160608	8-VP2																							0.12~0.45	0.80~5.00
5		190608	8-VP2																							0.12~0.50	1.00~5.20
Medium to finishing		190612	2-VP2																							0.15~0.50	1.20~5.50
Med		190616	6-VP2																							0.18~0.50	1.50~5.50
		CNMG <b>12040</b> 4	4-VP3															•		•				•	•	0.05~0.30	0.10~3.00
		120408	8-VP3															•		•				•	•	0.10~0.40	0.50~4.50
		120412															•	•	•	•	•			•	•	0.12~0.50	0.50~5.00
ng	VP3	120416																								0.25~0.45	1.00~4.00
Medium cutting		160608																								0.15~0.35	0.80~6.00
Ę		160612																								0.20~0.40	1.00~6.00
edir		160616																								0.20~0.40	1.00~6.00
Σ		190608																								0.20~0.50	1.00~7.00
		190612	2-VP3																							0.25~0.55	1.00~8.00
		190616	6-VP3																							0.30~0.60	1.00~8.00
ng	VP3	CNGG 120404																	•	•	•			•		0.05~0.30	0.10~3.00
萋	VIS	120408	8-VP3																	•				•		0.10~0.40	0.50~4.50
Ę		120412	2-VP3																	•						0.12~0.50	0.50~5.00
Medium cutting																											
		CNMG 120408	8-VP4																		•	•				0.15~0.35	1.00~4.00
	VP4	120412	2-VP4																		•	•				0.20~0.40	1.00~4.00
	VP4	160608																								0.20~0.45	1.00~6.50
Roughing		160612	2-VP4																							0.25~0.50	1.50~6.50
bno		190608	8-VP4																		•	•				0.15~0.45	1.00~8.00
œ		190612	2-VP4																		•	•				0.20~0.50	1.20~8.50
guin	HA	CNMG <b>12040</b> 4	4-HA																				•	•		0.05~0.20	0.80~3.50
inish		120408	8-HA																	•			•	•		0.10~0.40	0.80~3.50
n to f	0	120412	2-HA																				•			0.13~0.55	0.80~3.50
Medium to finishing	The state of the s																										
	-	CNMG <b>12040</b> 4	4-VW																							0.10~0.30	0.50~3.00
5	VW	120408					$\vdash$	•																		0.15~0.50	0.50~4.00
shin		12040						_																		0.20~0.55	1.00~4.50
Finishing		120412																								3.20 0.00	7.00 4.00
	[Wiper]																										
	[ wiper]																										

**→** Cutting edge geometry **A52~A61 →** Recommended chip breaker **B04~B14** 

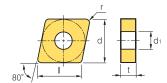
**ᢒ** Code system B34∼B35

ullet : Stock item

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173

# B Turning Insert (Negative)

## CNOC



	Dimens	ions (mm)	
Size	d	t	d₁
12	12.7	4.76	5.16
16	15.875	4.76~6.35	6.35
19	19.05	6.35	7.93
25	25.4	7.94~9.52	9.12

## Rhombic 80° Negative

	Steel	Р		#		\$	3	3	#	#	#	•	•	\$	#									Machining types
8	Stainless steel	M							3	3	<b>3</b>			3	#	3	#		3	3	#			
pie	Cast iron	K		#	•	\$ 3					<b>3</b>	\$	3									•	3	<ul> <li>Continuous cutting</li> </ul>
녻	Non-ferrous metal	N																				•	3	General cutting
×	Heat resistant alloy, Titanium alloy	S														3	#	•	3	3		•	3	-
	Hardened steel	Н																•	3	3			3	# Interrupted cutting

					Coa									Coa										Unc	oated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
gu	LW	CNMG <b>120408-LW</b>						•				•				•										0.15~0.60	1.00~5.00
慧		120412-LW						•								•										0.20~0.70	1.00~6.00
Medium cutting	[Wiper]																										
		CNMM <b>120408-GR</b>																								0.20~0.50	1.00~7.00
i iii	GR	120412-GR																								0.25~0.50	1.30~7.00
ᇙ	Comment	190612-GR								•																0.30~0.75	1.70~10.00
Medium cutting	711	190616-GR																								0.30~0.80	1.80~10.00
Me																											
		CNMM <b>120408-GH</b>						•		•		•														0.30~0.60	2.50~8.00
		120412-GH						•	•	•																0.30~0.70	2.50~8.00
		160412-GH																								0.30~0.70	2.50~8.00
		160424-GH																								0.30~1.20	2.50~8.00
		160612-GH								•																0.30~0.90	2.50~8.00
	GH	160616-GH																								0.30~1.20	2.50~8.00
	W. Dir	160624-GH																								0.30~1.50	2.50~8.00
Heavy		190608-GH										•														0.30~0.60	2.50~8.00
운	A6.10.	190612-GH							•	•		•														0.30~0.70	3.00~8.00
		190616-GH					•		•	•		•														0.45~0.90	3.00~8.00
		190624-GH							•			•														0.55~1.20	4.00~9.00
		250716-GH																								0.50~1.00	4.50~10.00
		250724-GH					•		•																	0.55~1.20	5.00~12.00
		250924-GH							•	•		•														0.55~1.20	5.00~12.00
		CNMM 190612-VH					•																			0.50~0.90	5.00~10.00
	VH	190616-VH					•																			0.50~1.10	5.00~10.00
_	VII	190624-VH					•																			0.60~1.20	6.00~12.00
Heavy		250724-VH					•																			0.70~1.40	6.00~15.00
Ŧ		250924-VH					•																			0.70~1.40	6.00~15.00
		CNMM 190612-VT					•			•		•														0.60~1.00	6.00~13.00
	VT	190616-VT					•																			0.60~1.10	5.00~10.00
>		190624-VT					•																			0.60~1.60	7.00~13.00
Heavy		250724-VT					•																			0.75~16.0	7.00~17.00
		250924-VT					•																			0.75~16.0	7.00~17.00
	[High feed cutting]																										

Cutting edge geometry A52~A61

<sup>•:</sup> Stock item

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173



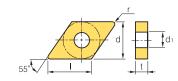
Recommended chip breaker B04~B14

<sup>◆</sup> Code system B34~B35

# Turning Insert (Negative)







	Dimens	sions (mm)	
Size	d	t	d₁
11	9.525	3.18~4.76	3.81
15	12.7	4.76~6.35	5.16

## Rhombic 55° Negative

	Steel		Р		#				3	\$ #	#	#	•	•			#									Machining types
క్ర	Stainless steel		M							3	3	3			•	3	#	3	#	•	3	3	#			
bje	Cast iron	4	K	•	#	•	3	3				3	3	3											3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																						3	General cutting
×	Heat resistant alloy, Titanium alloy		S													•	•	\$	#	•	3	3		•	3	
	Hardened steel	•	Н																	•	3	\$			1	# Interrupted cutting

				Cer	met	Coa	ated							Coa	ted								Uı	1002	ated	Cutting (	Condition
	Inserts	Designati		CN1500	CN2500	CC1500		NC3215	NC3225	NC3120	NC3030	NC3235	NC5330			NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115			Н05	fn (mm/rev)	ap (mm)
		DNMG 11040	04-VB																							0.05~0.25	0.30~2.00
		15040	04-VB	•	•	•	•	•	•																	0.10~0.35	0.30~2.00
	VB		08-VB	•	•	•	•	•	•				•			_		_		•						0.15~0.45	0.50~2.00
ing	VB		12-VB					•	•																	0.15~0.45	0.50~2.00
Finishing			04-VB	•	•	•	•	•	•				•													0.10~0.35	0.30~2.00
证			08-VB	•	•	•	•	•	•				•					•						_		0.15~0.45	0.50~2.00
			12-VB					•	•				•													0.20~0.50	0.50~2.50
		DNMG <b>1104</b> 0	02-VF																							0.05~0.20	0.20~1.00
		11040	04-VF										•													0.07~0.30	0.50~1.50
			08-VF																							0.10~0.40	0.50~1.50
	VF		04-VF																							0.07~0.30	0.50~1.50
Finishing			08-VF																					_		0.10~0.40	0.50~1.50
nisł	-000m		12-VF													_		_						_		0.15~0.50	0.60~1.50
ΙŒ			04-VF							•			•			_		_				_				0.13~0.30	0.50~1.50
			08-VF							•			•													0.10~0.40	0.50~1.50
		1506	12-VF																							0.15~0.50	0.60~1.50
		DNMG <b>1104</b> (	na-VI																							0.05~0.20	0.10~1.00
			04-VL						•				•													0.05~0.25	0.10~1.50
	VL		08-VL					•	•				•											7		0.05~0.30	0.20~1.50
<sub>Q</sub>	VL		12-VL					Ť																_		0.10~0.30	0.25~1.50
Finishing		15060	04-VL	•																						0.05~0.25	0.10~1.50
Ë		15060	08-VL	•				•	•				•											T		0.05~0.30	0.20~1.50
		1506	12-VL																							0.10~0.30	0.25~1.50
		DNMG 11040	02-LP																							0.06~0.30	0.25~1.20
			04-LP					•	•																	0.07~0.30	0.30~1.50
		11040	08-LP																							0.10~0.40	0.30~1.50
ng		11050	04-LP																							0.07~0.30	0.30~1.50
Medium to finishing	LP .		08-LP																					_		0.10~0.40	0.30~1.50
o fin	new		04-LP					•	•				•											_		0.10~0.35	0.30~2.00
E t			08-LP					•	•				•													0.10~0.40	0.50~2.50
ediu			12-LP					•	•				•											_		0.13~0.45	0.80~3.00
Ž			04-LP					•	•				•											_		0.10~0.35	0.30~2.00
			08-LP					•	•				•											_		0.10~0.40	0.50~2.50
		1506	12-LP					•																		0.13~0.45	0.80~3.00

Outting edge geometry A52~A61

**③** Code system B34∼B35

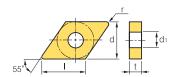
ullet : Stock item

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173









	Dimens	sions (mm)	
Size	d	t	d₁
11	9.525	3.18~4.76	3.81
15	12.7	4.76~6.35	5.16

## Rhombic 55° Negative

	Steel		Р		#	3		3		3	3	#	#	#			•		#						Machining types
ဗ္ဗ	Stainless steel		M									3	3	3				3	#	•	3	3	#		
pie	Cast iron	<b>-</b>	K		#	\$	3		3					3	3	3								3	<ul> <li>Continuous cutting</li> </ul>
X	Non-ferrous metal	<b>—</b>	N																					3	General cutting
š	Heat resistant alloy, Titanium alloy	<b>-</b>	S																	•	3	3		3	# Interrupted cutting
	Hardened steel	<b>-</b>	Н																	•	3	3		3	- interrupted cutting

			Cer	met	Coa	ated						(	Coate	d							1U	ncoate	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215 NC3225	NC3120	NC3030		NC5330		NC9115	NC9125	NC9135	PC8105	PC8110	00000			fn	ap (mm)
		DNMG <b>110404-CP</b>																					0.08~0.30	0.40~3.00
		110408-CP																					0.10~0.30	0.40~3.00
0		110504-CP																					0.08~0.30	0.40~3.00
ië		110508-CP																					0.10~0.30	0.40~3.00
Medium to finishing	CP	150404-CP						•															0.10~0.35	0.50~3.50
5	new	150408-CP						•															0.12~0.35	0.50~3.50
<u>=</u>	Silver War	150412-CP						•															0.13~0.35	0.80~3.50
Med		150604-CP						•															0.10~0.35	0.50~3.50
		150608-CP						•															0.12~0.35	0.50~3.50
		150612-CP						•															0.13~0.35	0.80~3.50
														_										
<u>g</u>		DNMG 150404-VC						- (	• •				_										0.10~0.35	0.30~2.00
shir	VC	150408-VC						•	• •				•										0.15~0.40	0.50~3.00
Ë	VC	150412-VC							• •											_		_	0.15~0.45	0.50~3.00
ם		150604-VC							• •				_							_		_	0.10~0.35	0.30~2.00
Medium to finishing		150608-VC							• •				•							_			0.15~0.40	0.50~3.00
₩		150612-VC						•	• •														0.15~0.45	0.50~3.00
		DNMG <b>110404-HM</b>									•												0.05~0.50	0.80~4.00
		110408-HM																					0.05~0.50	1.00~4.00
gu	1.15.4	150404-HM							•					_						+			0.10~0.30	0.90~5.00
Medium cutting	HM	150408-HM							_														0.10~0.50	1.00~5.00
Ē		150604-HM																				-	0.05~0.30	0.90~5.00
edir		150604-HM					_		•					Ť								-	0.10~0.50	1.00~5.00
Σ		150612-HM									•												0.18~0.50	1.00~5.00
		10001211111																					0.10 0.00	1.00 0.00
		DNMG <b>110404-MP</b>						(	• •				•			•	•						0.10~0.40	0.40~3.80
		110408-MP						(	• •				•			•	•						0.15~0.40	0.50~4.00
		110412-MP																					0.15~0.50	0.80~4.20
		110504-MP																					0.10~0.40	0.40~3.80
		110508-MP																					0.15~0.40	0.50~4.00
ō	MD	110512-MP																					0.15~0.50	0.80~4.20
uffi	MP	150404-MP						(	• •				•		•	•	•		•				0.10~0.40	0.40~4.00
E		150408-MP						(	• •				•		•	•	•	•	•				0.15~0.45	0.50~4.50
Medium cutting		150412-MP						(	• •				•		•				•				0.15~0.50	0.80~5.00
ž		150416-MP																					0.15~0.50	0.85~5.00
		150604-MP							• •				• •	)	•	•	•	•	•				0.10~0.40	0.40~4.00
		150608-MP						(	• •				• •	)	•	•	•	•					0.15~0.45	0.50~4.50
		150612-MP						(	• •				•		•	•	•	•	•				0.15~0.50	0.80~5.00
		150616-MP																					0.15~0.55	0.85~5.00

Cutting edge geometry A52~A61

<sup>• :</sup> Stock item

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173

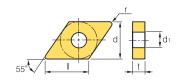


**ᢒ** Code system **B34~B35** 

# Turning Insert (Negative)







	Dimens	sions (mm)	
Size	d	t	d₁
11	9.525	4.76	3.81
15	12.7	4.76~6.35	5.16

## Rhombic 55° Negative

	Steel		Р		#		3			#	#	#	•	•		#									Machining types
ల్ర	Stainless steel		M							3	3	3			3	#	3	#		3	3	#			
pie	Cast iron	4	K		#	•	3	3				\$	3	<b>\$</b>									•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N																					3	General cutting
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S									•				•	3	#	•	3	3			3	# Interrupted cutting
	Hardened steel	4	Н																	3	3			3	* interrupted cutting

Medium cutting	Inserts VM		110404-VM 110408-VM 110412-VM	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120 NC3030	235	330	310	15	2 2	35	8	8	9	19	115	030			fn	ар
Medium cutting		DNMG	110408-VM				O	ž	S		NC3235	NC5330	NC6310	NC6315	NC9113	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된	H05	(mm/rev)	(mm)
Medium cutting	VM																								0.05~0.30	0.90~4.00
Medium cutting	VM		110/12 VM							•		•													0.10~0.50	1.00~4.00
Medium cutting	VM		110412-111																						0.13~0.50	1.30~4.00
Medium cutti	VIVI		150404-VM									•					•								0.05~0.30	0.90~5.00
Medium			150408-VM	•	•					•		•					•								0.10~0.50	1.00~5.00
Mediu			150412-VM									•					•	•							0.13~0.60	1.30~5.00
Ž			150604-VM		•					• •		•					•	•				•			0.05~0.30	0.90~5.00
			150608-VM							• •		•					•					•			0.10~0.50	1.00~5.00
			150612-VM									•					•								0.13~0.60	1.30~5.00
		DNMG	150404-B25		•			•	•			•													0.17~0.45	1.00~4.00
<u>ing</u>	B25		150408-B25		•				•			•													0.17~0.55	1.50~4.00
ngh			150412-B25						•			•													0.25~0.55	1.50~4.00
<u>0</u>			150604-B25	•				•	•	•		•													0.17~0.55	1.50~4.00
E			150608-B25					•	•	•		•										•			0.17~0.55	1.50~4.00
Medium to roughing			150612-B25						•			•													0.25~0.55	1.50~4.00
Ž																										
		DNMG	150408-GR					•		•															0.20~0.50	1.00~7.00
	GR		150412-GR																						0.25~0.90	1.30~7.00
Б	Cont.		150416-GR																						0.30~0.75	1.80~7.00
Roughing	-		150608-GR						•	• •		•	•												0.20~0.50	1.00~7.00
Ron			150612-GR						•	•															0.25~0.70	1.30~7.00
			150616-GR									•													0.20~0.75	1.80~7.00
		DNMC	110404-VQ		•																				0.05~0.30	0.50~3.50
		אואועוט	110404-VQ		_																				0.05~0.30	0.80~4.00
			110408-VQ																						0.00~0.40	1.00~4.00
	\( \( \)		110508-VQ									•		_			Н		_						0.08~0.40	0.80~4.00
	VQ		110500-VQ									•													0.00~0.40	1.00~4.00
hing	TOP		150404-VQ		•							_													0.10~0.40	0.80~3.50
finis			150404-VQ	•	•	•																			0.03~0.30	0.80~4.00
Medium to finishing	[Cermet]		150400-VQ																						0.10~0.40	0.50~4.00
<u> </u>			150604-VQ		•																				0.10~0.40	0.30~4.20
Med			150604-VQ	•	•	•	•																		0.03~0.30	0.80~4.00
			150608-VQ		_																				0.00~0.40	0.50~4.00
			130012-40																						0.10-0.40	0.00~4.20

**→** Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

€ Code system B34~B35

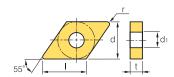
ullet : Stock item

	Available tool holders											
Designation	Page	Designation	Page									
MCKNR/L	B183	MCRNR/L	B184									
MCLNR/L	B183	PCBNR/L	B172									
MCMNN	B183	PCLNR/L	B173									









	Dimensions (mm)													
Size	d	t	d₁											
11	9.525	3.18~4.76	3.81											
15	12.7	4.76~6.35	5.16											
19	19.05	6.35	7.93											

## Rhombic 55° Negative

	Steel	Р		#	•	3	•	\$ 3	#	#	#	•	•	3		#									Machining types
క్ర	Stainless steel	M							3	3	3				3	#	3	#		3	3	#			
bje	Cast iron	K		#	•	3	3				<b>3</b>	\$	3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N																						3	General cutting
š	Heat resistant alloy, Titanium alloy	S									•						3	#	•	3	3			3	# Interrupted cutting
	Hardened steel	Н																	•	3	3			3	Thickney culting

DNMG   150404-MK   150402-MK   150404-MK   150404-MK   150408-MK   150404-MK   150608-MK   150404-MK   150404-MK   150608-MK   150404-MK   150404-MK   150608-MK   150404-MK   150608-MK   150608-MK   150608-MK   150604-MK   150608-MK   150608-MM   100608-MM   100608-MM					Cer	met	Coa	ated							Coa	ted								U	coate	Cutting	Condition
DNMG   150404-MK   150408-MK   150408-MK   150408-MK   150408-MK   150604-MK   150604-MK   150604-MK   150604-MK   150604-MK   150604-MK   150604-MK   150608-MK   150608-MK   150608-MK   150408-MK   150408-MK   150408-MK   150408-RK   150608-RK   150608-RK   150608-RK   150608-RK   150608-RK   150612-RK   150612-R		Inserts	De	esignation					NC3225	NC3120	NC3030	NC3235	NC5330				NC9125	NC9135	PC5300	PC5400	PC8105	PC8115	PC9030			fn	ар
150412-MK			DNMG												•												0.90~5.00
DNMA   110408   0.17-0.45   0.80-3.00   150404   150404   0.17-0.45   0.80-3.00   150412   0.25-0.55   0.80-4.00   150412   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150608   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150608   0.30-0.80   250-13.00   150608   0.30-0.80   250-13.00   150608   0.30-0.80   0.30-0.8	ng														•		_										
DNMA   110408   0.17-0.45   0.80-3.00   150404   150404   0.17-0.45   0.80-3.00   150412   0.25-0.55   0.80-4.00   150412   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150608   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150608   0.30-0.80   250-13.00   150608   0.30-0.80   250-13.00   150608   0.30-0.80   0.30-0.8	cutti	MK																						_			
DNMA   110408   0.17-0.45   0.80-3.00   150404   150404   0.17-0.45   0.80-3.00   150412   0.25-0.55   0.80-4.00   150412   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150608   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150608   0.30-0.80   250-13.00   150608   0.30-0.80   250-13.00   150608   0.30-0.80   0.30-0.8	Ē	new												•	•									L			
DNMA   110408   0.17-0.45   0.80-3.00   150404   150404   0.17-0.45   0.80-3.00   150412   0.25-0.55   0.80-4.00   150412   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150608   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150612   0.25-0.55   0.80-4.00   150608   0.30-0.80   250-13.00   150608   0.30-0.80   250-13.00   150608   0.30-0.80   0.30-0.8	edic														•												
150404   150408   0.17-0.55   0.40-4.00   150408   150408   0.25-0.55   0.80-4.00   150602	2			150612-MK											•											0.13~0.60	1.30~5.00
150404   150408   0.17-0.55   0.40-4.00   150408   150408   0.25-0.55   0.80-4.00   150602			DNIMA	110/08																				+		0.17~0.45	0.80~3.00
150408   150412			DIVIVIX																					+			
150412																	-										
150604	<sub>0</sub>														•		_								_		
150612	ghir																										
150612   190608   0.25-0.65   1.20-4.00   0.30-0.80   2.50-13.00   0.30-0.80   2.50-13.00   0.30-0.80   2.50-13.00   0.30-0.80   2.50-13.00   0.30-0.80   2.50-13.00   0.30-0.80   2.50-13.00   0.30-0.80   1.50-5.00   1.50-5.00   1.50-5.00   1.50-5.00   1.50-5.00   1.50-5.00   1.50-5.00   1.50-5.00   1.50-5.00   1.50-5.00   1.50-6.00   1.5	Rou														•												0.80~4.00
DNMG   150408-RK   150408-RK   150408-RK   150612-RK   150408-VR   150412-VR   150612-VR   150612-V															•												1.20~4.00
Tourn   Tou				190608																						0.30~0.80	2.50~13.00
DNMG   150412-NK																											
T50608-RK		DIC	DNMG																							0.15~0.50	1.50~5.00
DNMG   150408-VR	ing	RK		150412-RK											•											0.20~0.60	1.80~5.00
DNMG   150408-VR	dgn													•	•												1.50~5.00
Tourname   Tourname	윤			150612-RK											•									+		0.20~0.60	1.80~5.00
150412-VR   150608-VR   150612-VR   150612-VR   10.30-0.60   1.50-7.00   1.5			DNMG	150408-VR																				+		0.25~0.55	1 20~7 00
DNMG   110404-MM	<sub>0</sub>	VR	DIVIVIO																						_		
DNMG   110404-MM	ghir																_		_								
110408-MM	Rou																										1.50~7.00
110408-MM																											
110412-MM			DNMG	110404-MM																				)		0.08~0.35	0.50~5.00
110504-MM   0.08-0.35   0.50-5.00     110508-MM   0.10-0.40   0.50-5.00     110512-MM   0.12-0.45   0.50-5.00     150404-MM   0.12-0.45   0.50-6.40     150408-MM   0.150-6.40     150412-MM   0.15-0.60   0.50-6.40     150412-MM   0.15-0.60   0.50-6.40     150416-MM   0.15-0.60   0.50-6.00     150				110408-MM													•	•									
110508-MM																											
110512-MM																											
150404-MM															_		_		_		_			+			
130410-14101	ing	MM															_		_								
130410-14101	cutt	new															•							1			
130410-IIIII	E	The second second														•	-				_			<u>'</u>			
130410-IIIII	Medi										_				_		•							+			
150C04 MM																											
																											0.50~6.40
											_				-	•					-						0.50~6.40
						-					-				-							_					0.50~8.00
0.10-0.00																										0.10-0.00	3.00 -0.00

Cutting edge geometry A52~A61



	Available tool holders											
Designation	Page	Designation	Page									
MCKNR/L	B183	MCRNR/L	B184									
MCLNR/L	B183	PCBNR/L	B172									
MCMNN	B183	PCLNR/L	B173									

Recommended chip breaker B04~B14

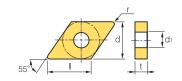
**ᢒ** Code system B34∼B35

ullet : Stock item

## Turning Insert (Negative)







	Dimens	sions (mm)	
Size	d	t	d₁
15	12.7	4.76~6.35	5.16

## Rhombic 55° Negative

	Steel	F	•		#				3	#	#	#	•	•		#									Machining types
පු	Stainless steel	N	/							3	3	3			3	#	3	#	•	3	3	#			
pie	Cast iron		(	•	#	•	3	3				\$	\$	3									•	<b>\$</b>	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	1	N.																					<b>\$</b>	General cutting
×	Heat resistant alloy, Titanium alloy		3									•				•	\$	#	•	3	3			<b>\$</b>	# Interrupted cutting
	Hardened steel		1																	3	3			3	Thiretrupted cutting

				met										Coa										Unco	ated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		DNMG <b>150404-RM</b>														•		•				•				0.10~0.50	2.00~6.00
		150408-RM													•	•	•	•				•				0.15~0.55	2.00~6.00
	DM	150412-RM																•				•				0.20~0.60	2.00~6.00
ing	RM	150416-RM																								0.25~0.70	2.00~6.00
Roughing		150604-RM														•	•	•				•	•			0.10~0.50	2.00~6.00
~		150608-RM													•	•	•				•		•			0.15~0.55	2.00~6.00
		150612-RM													•	•	•									0.20~0.60	2.00~6.00
		150616-RM																								0.25~0.70	2.00~6.00
		DNINAC 4E0404 VD4																				•				0.05.045	0.10~1.50
50	VP1	DNMG <u>150404-VP1</u> 150408-VP1																		-		-		•		0.05~0.15 0.07~0.20	0.10~1.50
Finishing	VPT	150406-VP1																		•		•		•		0.07~0.20	0.10~1.50
ië		150608-VP1				$\dashv$														•	•	•		•		0.03~0.13	0.10~1.50
		130000-41-1																				_				0.01 0.20	0.10 1.00
		DNGG <b>150404-VP1</b>																								0.05~0.15	0.10~1.50
<sub>D</sub>	VP1	150408-VP1																								0.07~0.20	0.10~1.50
Finishing		150604-VP1																								0.05~0.15	0.10~1.50
Ë		150608-VP1																								0.07~0.20	0.10~1.50
ng		DNMG <b>150404-VP2</b>																•	•	•	•	•		•		0.05~0.30	0.10~3.00
isi	VP2	150408-VP2																•	•	•	•	•		•		0.10~0.40	0.50~4.50
o fii	VIZ	150604-VP2																•	•	•	•	•		•		0.05~0.30	0.10~3.00
Ē		150608-VP2						•										•	•	•	•	•		•		0.10~0.40	0.50~4.50
Medium to finishing																											
		DNMG <b>150404-VP3</b>																•	•		•	•		•	•	0.05~0.30	0.10~3.00
g		150408-VP3																•	•		•	•		•	•	0.10~0.45	0.50~5.00
ishi	VP3	150412-VP3																•		•		•		•		0.12~0.50	0.50~5.00
lije l	VIO	150604-VP3																•	•	•	•	•			•	0.05~0.30	0.10~3.00
Ē		150608-VP3																•	•	•	•	•		•	•	0.10~0.45	0.50~5.00
Medium to finishing		150612-VP3																•	•	•		•		•	•	0.12~0.50	0.50~5.00
Σ																											
		DNGG <b>150404-VP3</b>																		•	•	•		•		0.05~0.30	0.10~3.00
		150408-VP3																		•	•	•		•		0.10~0.45	0.50~5.00
ting	VP3	150412-VP3																				•				0.12~0.50	0.50~5.00
cut	VIO	150604-VP3																			•	•		•		0.05~0.30	0.10~3.00
Medium cutting		150608-VP3																		•	•	•		•		0.10~0.45	0.50~5.00
Med		150612-VP3																		•	•	•		•		0.12~0.50	0.50~5.00

Cutting edge geometry A52~A61

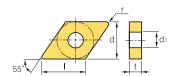
Recommended chip breaker B04~B14

€ Code system B34~B35

	Available	tool holders	
Designation	Page	Designation	Page
MCKNR/L	B183	MCRNR/L	B184
MCLNR/L	B183	PCBNR/L	B172
MCMNN	B183	PCLNR/L	B173







	Dimens	sions (mm)	
Size	d	t	d₁
15	12.7	4.76~6.35	5.16

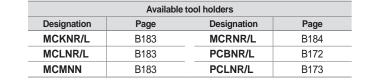
### Rhombic 55° Negative

	Steel	Р		#		3		3	#	#	#	•	3		#										Machining types
පු	Stainless steel	M							3	3	3			3	#	3	#	•	3	3	3	#			
pie	Cast iron	K		#	•	3	3				3	3											•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N																						3	General cutting
- ≥	Heat resistant alloy, Titanium alloy	S													•	3	#	•	3	3	3			3	-
	Hardened steel	Н																•	3	3				3	# Interrupted cutting

_		Harden	ed steel	Н																		3	Ŧ				3	· ·	
					Cer	met	Cos	ated							C	oate	d									Unc	oated	Cutting (	Condition
		Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330		NC9115		NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	H04	H05	fn (mm/rev)	ap (mm)
			DNMG	150408-VP4																								0.15~0.35	1.00~4.00
3	2	VP4		150412-VP4																								0.20~0.40	1.00~4.00
-	Kougning	new		150608-VP4																			•	•				0.15~0.35	1.00~4.00
å	2			150612-VP4																			•	•				0.20~0.40	1.00~4.00
	<u> </u>		DNMG	150404-HA																					•	•		0.05~0.30	0.80~3.50
1	Medium to finishing	НА	DIVIVIO	150408-HA																_					•	•		0.10~0.40	0.80~3.50
4		ПА		150604-HA																		•			•	•		0.05~0.30	0.80~3.50
				150608-HA																		_			•	•		0.10~0.40	0.80~3.50
2	8 <b>≥</b>			100000 1111																									
			DNMG	150404-VW																								0.10~0.35	0.30~3.00
,		VW		150408-VW																								0.10~0.40	0.30~3.00
		VVV		150604-VW																								0.10~0.35	0.30~3.00
	rinisning			150608-VW																								0.10~0.40	0.30~3.00
Ī		[Wiper]																											
			DNMG	150408-LW																								0.15~0.50	0.70~4.50
1	2	LW		150412-LW																								0.20~0.60	1.00~5.00
		LVV		150608-LW					•	•																		0.15~0.50	0.70~4.50
	Medium curing			150612-LW					•	•																		0.20~0.60	1.00~5.00
2	Me	[Wiper]																											
			DNMX	150404R-SR																								0.10~0.40	0.70~4.50
				150408R-SR																П								0.12~0.45	1.00~4.50
		CD		150604R-SR																								0.10~0.40	0.70~4.50
	2	SR		150608R-SR																								0.12~0.45	1.00~4.50
3	2			150404L-SR																								0.10~0.40	0.70~4.50
	Medium to mnishing			150408L-SR																								0.12~0.45	1.00~4.50
3	S S	[Shaft]		150604L-SR																								0.10~0.40	0.70~4.50
				150608L-SR																								0.12~0.45	1.00~4.50
			DNMX	150404R-SH																								0.15~0.30	1.00~4.00
				150408R-SH																								0.15~0.50	1.50~5.00
,		CLI		150604R-SH																								0.15~0.30	1.00~4.00
	Medium cuaing	SH		150608R-SH																								0.15~0.50	1.50~5.00
	ਰ =			150404L-SH																								0.15~0.30	1.00~4.00
				150408L-SH					-																			0.15~0.50	1.50~5.00
2	<b>E</b>	[Wiper]		150604L-SH					•																			0.15~0.30	1.00~4.00
				150608L-SH																								0.15~0.50	1.50~5.00
					1																								

Outting edge geometry A52~A61

<sup>•:</sup> Stock item

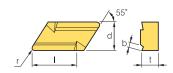




<sup>◆</sup> Code system B34~B35







	Dimensions (	mm)
Size	d	t
16	9.525	4.76

### Parallelogram 55° Negative

	Steel		Р		#		3		3	3	#	#	#	•	•	3		#								Machining types
ల్ర	Stainless steel		M								3	3	3				3	#	3	#	•	3	3	#		
çpie	Cast iron		K	•	#	•	3	3					3	\$	3										• 3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																						• 3	General cutting
Š	Heat resistant alloy, Titanium alloy		S										•				•		\$	#	•	3	3		• 3	# Interrupted cutting
	Hardened steel		Н																		•	3	\$		• 3	- interrupted cutting

				Cei	rmet	Coa	ated								Coa	ited									Unco	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
2	11	KNUX	160405R-11						•		•		•														0.20~0.35	1.00~6.00
Medium cutting			160410R-11								•																0.30~0.60	1.50~6.00
i i i i i i i i i i i i i i i i i i i			160405L-11						•	•	•		•														0.20~0.35	1.00~6.00
ž			160410L-11						•		•		•														0.30~0.60	1.50~6.00
_	12	KNUX	160405R-12						•		•		•														0.25~0.35	1.50~6.00
<u> </u>	12		160410R-12						•		•		•														0.40~0.70	1.50~6.00
Roughing			160405L-12																								0.25~0.35	1.50~6.00
~			160410L-12								•																0.40~0.70	1.50~6.00

**€** Cutting edge geometry A52~A61

€ Code system B34~B35

• : Stock item

	Available	tool holders	
Designation	Page	Designation	Page
CKJNR/L	B181	CKUNR/L	B212
CKNNR/L	B181		





	Dimens	sions (mm)	
Size	d	t	d₁
09	9.525	3.18	3.81
12	12.7	4.76	5.16
15	15.875	6.35	6.35
19	19.05	6.35	7.93
25	25.4	6.35~9.52	9.12
31	31 75	9.52	12.7

## O Round **Negative**

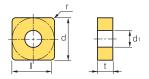
	Steel		Р		#	3		3	3	#	#	#	•	•	3		#									Machining types
8	Stainless steel		M							3	3	3				3	#	3	#		3	3	#			
pie	Cast iron	-	K		#	3	3					3	\$	3											3	<ul> <li>Continuous cutting</li> </ul>
동	Non-ferrous metal	•	N																					•	3	General cutting
š	Heat resistant alloy, Titanium alloy	<b>—</b>	S													•	•	3	#	•	3	3		•	3	
	Hardened steel	4	Н																	•	3	3		•	3	# Interrupted cutting

			Ce	rmet	Coa	ited								Coa	ited									Unco	ated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		RNMG 090300-B25																								0.90~4.50	0.09~0.90
	B25	120400-B25								•																1.20~4.80	0.12~1.20
<u>ख</u>	D23	150600-B25								•																1.15~1.50	1.50~7.50
General		190600-B25																								1.90~7.60	0.19~1.90
ග්		250600-B25																								2.50~10.0	0.25~2.50
		250900-B25								•																2.50~10.0	0.25~2.50
		310900-B25																								3.50~13.0	0.30~2.50

→ Cutting edge geometry A52~A61
→ Recommended chip breaker B04~B14

**③** Code system B34∼B35





	Dimension	ons (mm)	
Size	d	t	d <sub>1</sub>
09	9.525	3.18	3.81
12	12.7	4.76	5.16

	Steel	Р		#			3	•		#	#	#	•	•		#							Machining types
8	Stainless steel	M								3	3	3			3	#	•	3	3	#			
cpie	Cast iron	K	•	#	•	\$ 3		3				\$	\$	3							•	3	<ul> <li>Continuous cutting</li> </ul>
녻	Non-ferrous metal	N																				3	General cutting
×	Heat resistant alloy, Titanium alloy	S													•	•	•	3	3			3	# Interrupted cutting
	Hardened steel	Н															•	3	3			3	* interrupted cutting

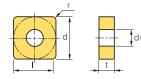
	Harden	ed steel	Н																		•	3	3			3	# Interrup	Lea culling
				Cer	met	Coa	ted								C	oate	ed								Unc	oated	Cutting (	Condition
	Inserts	D€	esignation	CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
	VB	SNMG	120404-VB	•		•	•			•	•																0.15~0.35	0.30~2.00
ng I	<b>∨</b> D		120408-VB	•	•	•	•			•	•																0.15~0.40	0.50~2.00
Finishing	0																											
		SNMG	090304-VF																								0.07~0.30	0.50~1.50
			090308-VF																								0.07~0.30	0.50~1.50
	VF		120404-VF																								0.07~0.30	0.50~1.50
Finishing			120408-VF												•												0.10~0.40	0.50~1.50
inis			120412-VF																								0.20~0.50	0.50~1.50
g Finishing	VL	SNMG	120408-VL 090308-LP 090408-LP																			•					0.10~0.35 0.10~0.30 0.10~0.30	0.20~1.50 0.30~1.50 0.30~1.50
ifi	LP _		120404-LP						-						•												0.10~0.35	0.30~2.00
inis	new		120404-LP						-						•												0.10~0.33	0.50~2.50
5	600		120400-LF 120412-LP						_		•		_														0.10~0.40	0.80~3.00
Medium to finishing																												
		SNMG	090304-CP						_																		0.08~0.30	0.40~3.00
			090308-CP						_																		0.10~0.30	0.40~3.00
ing	CP _		090404-CP						-																		0.08~0.30	0.40~3.00
inisi Isi	new		090408-CP 120404-CP					•	•				_														0.10~0.30 0.10~0.35	0.40~3.00
to f			120404-CP				$\dashv$	_	•																		0.10~0.35	
<u> </u>	30							•	_																		0.12~0.35	0.50~3.50
Medium to finishing			120412-CP					•																			0.13~0.35	0.80~3.50
inishing	VC	SNMG	120408-VC								•				•												0.15~0.40	0.50~3.50
Medium to finishing																												

Cutting edge geometry A52~A61

**ᢒ** Code system **B34~B35** 

		Available too	l holders		
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B185	MSRNR/L	B186	PSDNN	B175
MSDNN	B185	MSSNR/L	B187	PSKNR/L	B176
MSKNR/L	B186	PSBNR/L	B175	PSSNR/L	B177





	Dimens	sions (mm)	
Size	d	t	d <sub>1</sub>
09	9.525	3.18	3.81
12	12.7	3.18~4.76	5.16
15	15.875	4.76~6.35	6.35
19	19.05	4.76~6.35	7.93

	Steel		Р		#	3	•	\$ \$	#	#	#	•	•	<b>\$</b>		#									Machining types
8	Stainless steel		M						3	3	3				3	#	3	#	•	3	3	#			
pie	Cast iron	4	K		#	3	3				3	3	3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal		N																				•	3	General cutting
š	Heat resistant alloy, Titanium alloy		S													•	3	#	•	3	3		•	3	-
	Hardened steel		Н																•	3	\$		•	3	# Interrupted cutting

						Coa									Coa										Unco	ated	Cutting (	Condition
		Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	FC8113	PC9030	된	H05	fn (mm/rev)	ap (mm)
			SNMG <b>120404-HM</b>																								0.15~0.42	0.60~4.20
١,	_		120408-HM							•	•				•												0.10~0.50	1.00~5.00
		HM	120412-HM																					•			0.18~0.50	1.00~5.00
Modium	Medium cuaing																											
			SNMG <b>090304-MP</b>					•	•				•														0.10~0.40	0.40~3.80
			090308-MP					•	•				•														0.15~0.40	0.50~4.00
			090312-MP																								0.15~0.50	0.80~4.20
			090404-MP																								0.10~0.40	0.40~3.80
			090408-MP																								0.15~0.40	0.50~4.00
			090412-MP																								0.15~0.50	0.80~4.20
			120404-MP						•				•			•	•				•						0.10~0.40	0.40~4.00
Š	<u></u>	MP	120408-MP						•				•			•	•	•			•						0.15~0.45	0.50~4.50
	Medium cutting		120412-MP					•	•				•			•	•	•									0.15~0.50	0.80~5.00
			120416-MP						•				•				_				_						0.18~0.60	0.80~7.00
3	<u>g</u>	The state of the s	150608-MP																_								0.15~0.50	0.50~7.00
2	≥		150612-MP														_				_			4			0.18~0.60	0.80~8.50
			190608-MP														_		_								0.15~0.50	0.50~8.50
			190612-MP																								0.18~0.60	0.80~8.50
			SNMG <b>090304-VM</b>																								0.05~0.30	0.90~3.50
			090308-VM																T				T				0.10~0.50	1.00~3.50
			120404-VM	•									•						•	•							0.05~0.30	0.90~5.00
			120408-VM	•						•	•		•						•	•		•		•			0.10~0.50	1.00~5.00
			120412-VM										•						•	•							0.13~0.60	1.30~5.00
	9	VM	190612-VM																								0.25~0.60	2.50~7.50
	5	-	190616-VM																								0.25~0.60	2.50~7.50
	Medium cuting	The Park																										

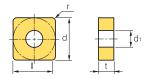
€ Cutting edge geometry A52~A61 € Recommended chip breaker B04~B14

€ Code system B34~B35

		Available to	ool holders		
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B185	MSRNR/L	B186	PSDNN	B175
MSDNN	B185	MSSNR/L	B187	PSKNR/L	B176
MSKNR/L	B186	PSBNR/L	B175	PSSNR/L	B177



## SNOC



	Dimens	sions (mm)	
Size	d	t	d₁
09	9.525	3.18	3.81
12	12.7	3.18~4.76	5.16
15	15.875	4.76~6.35	6.35
19	19.05	6.35	7.93
25	25.4	7.94~9.52	9.12

## Square 90° Negative

	Steel		Р		#	3		\$ 3	#	#	#	•		3		#									Machining types
9	Stainless steel		M						3	3	3				3	#	3	#	•	1	3	#			
pie	Cast iron	4	K		#	3	3				3	3	3											3	<ul> <li>Continuous cutting</li> </ul>
녻	Non-ferrous metal		N																				•	3	General cutting
×	Heat resistant alloy, Titanium alloy		S												•	•	3	#	•	3	3			3	-
	Hardened steel		Н																•	3	\$			3	# Interrupted cutting

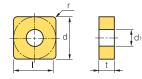
						ated								Coat										Unc	oated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		SNMG <b>090308-B25</b>																								0.17~0.45	0.80~3.50
		120404-B25						•		•																0.17~0.45	1.00~3.50
		120408-B25		•				•		•		•						•								0.23~0.60	1.50~5.00
		120412-B25		•				•		•																0.25~0.60	2.00~5.00
		120416-B25						•		•																0.35~0.70	2.50~5.00
	505	120420-B25																								0.40~0.70	3.00~5.00
bu	B25	150608-B25																								0.25~0.60	1.50~6.00
ighi		150612-B25																								0.25~0.60	2.00~6.00
ᅙ		150616-B25						•																		0.35~0.70	2.00~6.00
는 12		190608-B25					•	•		•																0.25~0.60	3.00~8.00
Medium to roughing		190612-B25					•	•		•		•														0.30~0.60	3.00~8.00
Me		190616-B25					•	•		•											•					0.35~0.70	3.00~8.00
		250716-B25																								0.35~0.70	4.00~12.00
		250724-B25					•					•														0.50 ~1.00	5.00~12.00
		250924-B25					•																			0.50~1.00	5.00~12.00
Roughing	GR	SNMG 120404-GR 120408-GR 120412-GR 150608-GR 150612-GR 190608-GR 190612-GR 190616-GR 190624-GR 250724-GR 250924-GR					•	•	•	•		•	•	•												0.45~1.20	0.08~6.00 1.00~7.00 1.00~7.00 1.00~7.00 1.40~7.00 1.70~9.00 1.70~9.00 1.90~12.30 2.00~12.50 2.60~14.00
Medium to finishing	VQ [Cermet]	SNMG 090304-VQ 090408-VQ 090412-VQ 120404-VQ 120408-VQ	_	•								•														0.05-0.30 0.08-0.30 0.10-0.30 0.05-0.30 0.08-0.40	0.50~3.50 0.80~4.00 1.00~4.00 0.80~4.00 0.80~4.00

**ᢒ** Cutting edge geometry **A52∼A61** 

<sup>•:</sup> Stock item

		Available to	ol holders		
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B185	MSRNR/L	B186	PSDNN	B175
MSDNN	B185	MSSNR/L	B187	PSKNR/L	B176
MSKNR/L	B186	PSBNR/L	B175	PSSNR/L	B177

<sup>€</sup> Code system B34~B35



	Dimens	sions (mm)	
Size	d	t	d <sub>1</sub>
09	9.525	3.18	3.81
12	12.7	3.18~4.76	5.16
15	15.875	4.76~6.35	6.35
19	19.05	4.76~6.35	7.93
25	25.4	6.35~9.52	9.12

	Steel		Р		#	3		\$ \$	#	#	#	•	•	\$	#									Machining types
8	Stainless steel		M						3	3	3			3	#	3	#		3	3	#			
pie	Cast iron	4	K		#	3	3				3	3	3									•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																			•	3	General cutting
š	Heat resistant alloy, Titanium alloy		S												•	3	#		3	3			3	# Interrupted cutting
	Hardened steel	4	Н															•	3	\$		•	3	- interrupted cutting

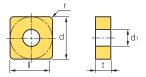
				Cer	rmet	Cos	ated							Coa	ited								Unc	oated	Cutting	Condition
	Inserts	De	esignation	CN1500		CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235 NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	0.0400	PC8110	PC8115	PC9030		H05	fn (mm/rev)	ap (mm)
		SNGG	090304R																						0.12~0.35	1.00~3.00
			090308R																						0.15~0.35	1.00~3.00
			120404R																						0.15~0.35	1.00~4.00
g			120408R																						0.15~0.35	1.00~4.00
Medium cutting			120412R																						0.15~0.35	1.00~4.00
E			090304L																						0.12~0.35	1.00~3.00
edin			090308L																						0.15~0.35	1.00~3.00
Ž			120404L																						0.15~0.35	1.00~4.00
			120408L																						0.15~0.35	1.00~4.00
			120412L																						0.15~0.35	1.00~4.00
		SNMG	090308-MK																						0.17~0.45	0.80~3.50
			120404-MK																						0.08~0.45	0.80~4.00
			120408-MK											•											0.10~0.50	1.00~5.00
_	D 41.6		120412-MK											•											0.13~0.60	1.30~5.00
Medium cutting	MK		120416-MK																						0.15~0.63	1.50~6.00
3	new		150608-MK																						0.25~0.60	1.80~6.00
di.			150612-MK																						0.20~0.70	1.80~7.00
Mec			150616-MK																						0.23~0.70	2.00~7.50
	4.1		190608-MK																						0.31~0.75	2.30~9.50
			190612-MK											•											0.33~0.78	2.50~10.00
			190616-MK																						0.35~0.78	2.70~10.00
		SNMA	090304																						0.10~0.45	0.50~4.50
			090308																						0.15~0.50	0.50~4.50
			090312																						0.20~0.50	0.50~4.50
			120402						П		Т														0.10~0.50	1.00~4.50
			120404						П								Т								0.15~0.60	1.00~5.00
			120408											•											0.15~0.70	1.00~6.00
			120412											•											0.20~0.80	1.50~6.00
			120416											•											0.30~1.00	2.00~6.00
hing			120420																						0.30~0.70	2.50~5.00
Roughing			150612						П																0.20~0.80	2.00~8.00
œ			150616						П					•											0.25~0.85	2.50~10.00
			190608																						0.20~0.80	2.00~10.00
			190612						П					•											0.20~0.80	2.00~10.00
			190616						П				•	•											0.25~0.85	2.50~10.00
			190624																						0.35~0.90	3.00~10.00
			250724																						0.40~1.00	3.00~13.00
			250924																						0.40~1.00	3.00~13.00

**→** Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

€ Code system B34~B35

		Available to	ool holders		
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B185	MSRNR/L	B186	PSDNN	B175
MSDNN	B185	MSSNR/L	B187	PSKNR/L	B176
MSKNR/L	B186	PSBNR/L	B175	PSSNR/L	B177





	Dimension	ons (mm)	
Size	d	t	d₁
09	9.525	3.18	3.81
12	12.7	4.76	5.16
15	15.875	6.35	6.35
19	19.05	6.35	7.93
25	25.4	7.94	9.12

	Steel		Р		#	3		\$ 3	#	#	#	•		3		#									Machining types
9	Stainless steel		M						3	3	3				3	#	3	#	•	1	3	#			
pie	Cast iron	4	K		#	3	3				3	3	3											3	<ul> <li>Continuous cutting</li> </ul>
녻	Non-ferrous metal		N																				•	3	General cutting
×	Heat resistant alloy, Titanium alloy		S												•	•	3	#	•	3	3			3	-
	Hardened steel		Н																•	3	\$			3	# Interrupted cutting

				Cer	met	Coa	ited								Coa	ed								Uncoated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330				NC9125	NC9135	PC5300	703400	PC8103	PC8115	PC9030		fn (mm/rev)	ap (mm)
		SNGA	090304																						0.17~0.50	0.50~4.50
			090308																						0.17~0.50	0.50~4.50
			120404																						0.15~0.60	1.50~8.00
ō			120408																						0.15~0.60	1.50~8.00
Roughing			120412																						0.20~0.80	1.50~8.00
Soui			150608																							2.00~10.00
			150616						_		_				_											2.00~10.00
			190608																							3.00~12.00
			190612																						0.20~0.80	3.00~12.00
		SNMG	120404-RK																						0.15~0.50	1.20~6.00
			120408-RK											•	•										0.23~0.53	1.50~6.00
	RK		120412-RK											•	•										0.28~0.53	1.80~6.00
bu	new		120416-RK												•										0.28~0.53	2.00~6.00
Roughing	1		150612-RK																						0.20~0.70	1.80~7.00
8			150616-RK																						0.23~0.70	2.00~7.50
			190612-RK																						0.33~0.78	2.50~10.00
			190616-RK																						0.35~0.78	2.70~10.00
		SNMG	120408-VR																						0.25~0.55	1.20~7.00
	VR		120412-VR																						0.30~0.60	1.50~7.00
Roughing			120416-VR																						0.35~0.60	2.00~7.00
bno			190612-VR					•	•																0.35~0.70	2.00~10.00
~			190616-VR						•																0.35~0.75	2.20~10.00
		SNING	090304-MM																						0.08~0.35	0.50~5.00
		SINIVIO	090308-MM																						0.10~0.40	0.50~5.00
			090312-MM						_		_				_				_						0.12~0.45	0.50~5.00
			090404-MM																						0.08~0.35	0.50~5.00
			090408-MM																						0.10~0.40	0.50~5.00
	N 4 N 4		120404-MM													•	•	• (				•	•		0.10~0.40	0.50~6.40
Medium cutting	MM		120408-MM												П	•	•	• (			•	•	•		0.12~0.45	0.50~6.40
cut			120412-MM														•	•				•	•		0.15~0.60	0.50~6.40
<u>E</u>			120416-MM																						0.18~0.65	0.50~6.40
Med			150608-MM																						0.12~0.45	0.50~8.00
			150612-MM														•	•				•	•		0.15~0.60	0.50~8.00
			150616-MM														•	•							0.18~0.65	0.50~8.00
			190608-MM													-	•	•				•			0.12~0.45	0.50~9.50
			190612-MM														•	•				•	•		0.15~0.60	0.50~9.50
			190616-MM														•	•					•		0.18~0.65	0.50~9.50
			250924-MM														(	•							0.20~0.80	1.00~10.00

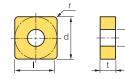
Cutting edge geometry A52~A61

<sup>• :</sup> Stock item

		Available to	ol holders		
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B185	MSRNR/L	B186	PSDNN	B175
MSDNN	B185	MSSNR/L	B187	PSKNR/L	B176
MSKNR/L	B186	PSBNR/L	B175	PSSNR/L	B177

<sup>→</sup> Recommended chip breaker B04~B14 → Code system B34~B35





Dimensions (mm)           Size         d         t         d₁           12         12.7         4.76         5.16           15         15.875         6.35         6.35           46         0.675         2.48,4.76         2.84													
Size	d	t	d₁										
12	12.7	4.76	5.16										
15	15.875	6.35	6.35										
16	9.525	3.18~4.76	3.81										
19	19.05	6.35	7.93										
25	25.4	7.94	9.12										

	Steel		Р		#	\$		\$ 3	#	#	#	•	3		#									Machining types
စ္မ	Stainless steel		M						3	3	3			3	#	3	#		3	3	<b>3</b>	#		
bje	Cast iron	4	K		#	3	3				3	3											3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	<b>—</b>	N																				3	General cutting
ĕ∣	Heat resistant alloy, Titanium alloy	<b>-</b>	S											•		3	#		3	3	3		3	-
	Hardened steel	4	Н															•	3	3			3	# Interrupted cutting

					rmet									Coat										Unco	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC3330	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		SNMG	120404-RM											•	•	•	•				•					0.10~0.50	2.00~6.00
			120408-RM											•	•	•	•			•	•		•			0.15~0.55	2.00~6.00
			120412-RM												•	•	•				•					0.20~0.60	2.00~6.00
			120416-RM																							0.25~0.70	2.00~6.00
	RM		150608-RM																							0.20~0.60	0.20~6.00
Roughing	new		150612-RM												•	•	•				•					0.20~0.60	2.00~8.00
l g			150616-RM																							0.25~0.70	2.00~8.00
윤	V		190608-RM													•					•					0.20~0.60	2.00~10.00
			190612-RM													•					•						2.00~10.00
			190616-RM												•	•										0.27~0.70	2.00~10.00
			190624-RM																							0.30~0.75	3.00~10.00
			250924-RM																							0.40~1.20	4.00~14.00
<u> </u>	VP2	SNMG	120404-VP2														•	•	•	•	•			•		0.05~0.35	0.10~3.00
ishir	VFZ		120408-VP2						•								•	•	•	•	•			•		0.10~0.45	0.50~4.50
Medium to finishing			120412-VP2														•	•	•	•	•			•		0.10~0.50	0.50~5.00
		SNMG	120404-VP3														•	•	•	•	•			•	•	0.05~0.30	0.10~3.00
			120408-VP3														•	•	•	•	•			•	•	0.10~0.45	1.00~5.00
			120412-VP3														•	•	•	•	•				•	0.12~0.50	1.00~5.00
5	VP3		120416-VP3																							0.25~0.45	0.50~4.00
量	VP3		160608-VP3																							0.15~0.35	0.80~6.00
Medium cutting			160612-VP3																							0.20~0.40	1.00~6.00
퍨			160616-VP3																							0.20~0.40	1.00~6.00
≥			190608-VP3																							0.15~0.35	0.80~7.00
			190612-VP3																							0.20~0.40	1.00~7.00
			190616-VP3																							0.25~0.45	1.00~7.00
	VP3	SNGG	120404-VP3																•	•				•		0.05~0.30	0.10~3.00
ıtti	VP3		120408-VP3															Т	•	•	•			•		0.10~0.45	1.00~5.00
n cr			120412-VP3																•	•	•					0.12~0.50	1.00~5.00
Medium cutting																										02 0.00	
		SNMG	120408-VP4																	П	•	•				0.15~0.35	1.00~4.00
	VP4		120412-VP4																		•	•				0.20~0.40	1.00~4.00
Bu	new		150612-VP4																		•	•				0.20~0.45	1.00~5.00
Roughing			190608-VP4																		•					0.20~0.50	1.00~9.00
Rog			190612-VP4																		•	•				0.23~0.55	1.00~9.00
			190616-VP4																			•				0.27~0.60	1.00~9.00

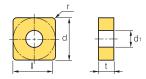
**→** Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

€ Code system B34~B35

		Available to	ool holders		
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B185	MSRNR/L	B186	PSDNN	B175
MSDNN	B185	MSSNR/L	B187	PSKNR/L	B176
MSKNR/L	B186	PSBNR/L	B175	PSSNR/L	B177



## SNOC



	Dimens	sions (mm)	
Size	d	t	d₁
09	9.525	3.18	3.81
12	12.7	4.76	5.16
15	15.875	6.35	6.35
19	19.05	6.35	7.93
25	25.4	7.94~9.52	9.12

## Square 90° Negative

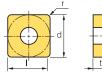
	Steel		Р		#	\$		3	3	#	#	#	•		\$	#								Machining types
8	Stainless steel		M							3	3	3			3	#	3	#	•	3	3	#		
cpie	Cast iron	4	K		#	3	3					3	\$	3									3	<ul> <li>Continuous cutting</li> </ul>
녻	Non-ferrous metal		N																				3	General cutting
ĕ	Heat resistant alloy, Titanium alloy		S									•			•	•	3	#	•	3	3		3	# Interrupted cutting
	Hardened steel		Н																•	3	3		3	* interrupted cutting

						Coa									Coa										Unco	ated	Cutting (	Condition
	Inserts	Designation		CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	년	H05	fn (mm/rev)	ap (mm)
DG .		SNMG <b>120404-</b>	HA																					•	•		0.10~0.35	0.80~3.50
ishi	HA	120408-H	HA																					•	•		0.10~0.40	0.80~3.50
- Ei	1	120412-l	HA																								0.13~0.55	0.80~3.50
Medium to finishing																												
		SNGN <b>090302</b>																									0.05~0.30	0.50~4.00
		090304																									0.10~0.35	0.50~4.00
		090308																									0.10~0.40	1.00~4.00
		120304																									0.13~0.50	1.30~5.00
		120308																									0.15~0.60	1.50~6.00
		120312																									0.17~0.60	1.70~6.00
		120402																									0.10~0.45	1.00~5.00
		120404																									0.13~0.50	1.30~5.00
		120408																									0.15~0.60	1.50~6.00
5		120412																									0.17~0.60	1.70~6.00
Roughing		120424																									0.20~0.65	2.00~6.00
on of		150402																									0.10~0.50	0.50~6.00
~		150408																									0.15~0.60	1.50~8.00
		150412																									0.17~0.60	2.00~8.00
		150416																									0.20~0.65	2.50~8.50
		190402																									0.10~0.60	2.00~8.50
		190412																									0.17~0.70	2.50~10.00
		190416																									0.20~0.75	2.50~10.00
		250604																									0.30~0.80	3.00~12.00
		250616																									0.35~1.00	4.00~12.00
		CALLIAL 400400																									0.00.000	4.50.5.00
70		SNUN <u>120408</u> 120412					_		_								_		-		_						0.23~0.60	1.50~5.00 2.00~5.00
hig																			-							_		
ond		190412 120412T	'NI						_										-							_	0.30~1.00	2.00~10.00
5		250724T										-															0.25~0.60	3.00~12.00
Medium to roughing		2507241	IN																								0.30~1.20	3.00~12.00
		SNMX <b>120408R</b>	!																								0.15~0.35	1.00~4.00
Medium cutting	0																											

Cutting edge geometry A52~A61

€ Code system B34~B35

		Available to	ol holders		
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B185	MSRNR/L	B186	PSDNN	B175
MSDNN	B185	MSSNR/L	B187	PSKNR/L	B176
MSKNR/L	B186	PSBNR/L	B175	PSSNR/L	B177



			Size
		<del></del> .	12
-		- <b>1</b> d₁	15
			19
_	t		25

	Dimens	sions (mm)	
Size	d	t	d <sub>1</sub>
12	12.7	4.76	5.16
15	15.875	6.35	6.35
19	19.05	6.35	7.93
25	25.4	7.94~9.52	9.12

	Steel	Р		#		3		3	3	#	#	#	•	•	3		#									Machining types
8	Stainless steel	M								3	3	3				3	#	3	#		3	3	#			
bje.	Cast iron	K	•	#	•	3	3					\$	\$	3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N																							3	General cutting
š	Heat resistant alloy, Titanium alloy	S										•				•	•	3	#	•	3	\$		•	3	# Interrupted cutting
	Hardened steel	Н																		•	\$	\$		•	3	- Interrupted cutting

				Cer	rmet	Coa	ated							(	Coa	ted									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500		CC1500			NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030		H05	fn (mm/rev)	ap (mm)
Medium cutting	0	SNGX	120408R																								0.15~0.35	1.00~4.00
Roughing	GR	SNMM	120408-GR 120412-GR 190612-GR 190616-GR								•																0.20~0.50 0.25~0.65 0.25~0.65 0.32~0.85	1.00~7.00 1.30~7.00 1.30~11.50 1.80~11.50
Heavy	GH	SNMM	120408-GH 120412-GH 150612-GH 190612-GH 190616-GH 190624-GH 250724-GH					0 0 0 0	•	•	•		•														0.30~0.60 0.30~0.70 0.30~0.70 0.30~0.70 0.45~1.00 0.55~1.20 0.55~1.20	2.50~8.00 2.50~8.00 2.50~8.00 3.00~8.00 4.00~9.00 4.00~9.00 5.00~12.00
Heavy	VH [General]		190612-VH 190616-VH 190624-VH 250716-VH 250724-VH 250920-VH 250924-VH					•			•																0.50~1.10 0.60~1.20 0.70~1.50 0.70~1.40 0.70~1.40	5.00~10.00 5.00~10.00 6.00~12.00 6.00~14.00 6.00~15.00 6.00~15.00 6.00~15.00
Heavy	VT [High feed cutting]	SNMM	190612-VT 190616-VT 190624-VT 250716-VT 250724-VT 250920-VT 250924-VT					•			•																0.60~1.10 0.60~1.60 0.75~1.60 0.75~1.60 0.75~1.60	6.00~13.00 6.00~13.00 7.00~13.00 7.00~15.00 7.00~15.00 7.00~15.00 7.00~17.00

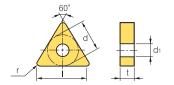
€ Cutting edge geometry A52~A61 € Recommended chip breaker B04~B14

€ Code system B34~B35

		Available to	ool holders		
Designation	Page	Designation	Page	Designation	Page
MSBNR/L	B185	MSRNR/L	B186	PSDNN	B175
MSDNN	B185	MSSNR/L	B187	PSKNR/L	B176
MSKNR/L	B186	PSBNR/L	B175	PSSNR/L	B177







	Dimens	sions (mm)	
Size	d	t	d₁
11	6.35	3.18	2.40
16	9.525	3.18~4.76	3.81
22	12.7	4.76	5.16

	Steel		Р		#		3		<b>\$</b>	•	\$ 3	#	#	#	•		<b>\$</b>		#						Machining types
පු	Stainless steel		M									3	3	3				3	#	•	3	3			
pie	Cast iron	4	K	•	#	•	3	3		3				3	\$	3							•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N																				•	3	General cutting
≥	Heat resistant alloy, Titanium alloy		S											•						•	3	3	•	3	# Interrupted cutting
	Hardened steel		Н																	•		\$	•	3	- interrupted cutting

	Harden	ed steel	Н						_										_		•	<b>1</b>	3		• 3	₩ IIIIeIIup	
				Cer		Coa										oate									Uncoated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01 H05	fn (mm/rev)	ap (mm)
		TNMG	160404-VB	•	•		•			•	•															0.10~0.35	0.30~1.50
	VB		160408-VB	•	•	•	•			•	•				•											0.15~0.45	0.50~7.00
ng	<b>A</b>		160412-VB							•	•															0.18~0.45	0.80~3.00
Finishing			220408-VB								•				•											0.15~0.45	0.50~2.50
늍			220412-VB																							0.20~0.50	0.70~2.50
		TNMG	160404-VL	•						•																0.05~0.25	0.10~1.00
	VL		160408-VL	•						•	•				•											0.10~0.35	0.20~1.50
ng	V L		160412-VL							•																0.15~0.40	0.20~1.50
Finishing			220408-VL																							0.10~0.35	0.20~1.50
듄	C. French		220412-VL																							0.10~0.35	0.50~2.00
		TNMG	110304-VF	•											•											0.05~0.20	0.20~1.00
			160404-VF												•											0.07~0.30	0.50~1.50
	VF		160408-VF							•					•											0.10~0.40	0.50~1.50
Finishing	VI		160412-VF																							0.15~0.50	0.50~1.50
ishi	6		220404-VF												•											0.10~0.40	0.50~1.50
늍	V 2.V		220408-VF																							0.10~0.40	0.50~1.50
		TNMG	110304-LP														_									0.07~0.30	0.30~1.50
ing			110308-LP							_	_				_		_									0.10~0.30	0.30~1.50
nish	LP		160404-LP							•	•				•				_							0.10~0.35	0.30~2.00
to fi			160408-LP							•	•				•		_									0.10~0.40	0.50~2.50
Medium to finishing			160412-LP								•															0.13~0.45	0.80~3.00
		TNMG	110304-CP																							0.08~0.26	0.40~2.50
			110308-CP																							0.10~0.26	0.40~2.50
<u>g</u>			160404-CP					•	•																	0.10~0.30	0.50~3.00
shir	CP		160408-CP					•	•																	0.12~0.30	0.50~3.00
fi	Tev Tev		160412-CP					•	•																	0.13~0.30	0.80~3.00
E to	5205e		220408-CP					•	•																	0.15~0.35	0.80~4.00
Medium to finishing			220412-CP					•	•																	0.18~0.35	1.00~4.00
Ž																											

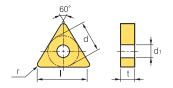
Cutting edge geometry A52~A61

→ Recommended chip breaker B04~B14

€ Code system B34~B35

		Available to	ol holders		
Designation	Page	Designation	Page	Designation	Page
MTENN	B187	PTFNR/L	B177	WTJNR/L	B179
MTFNR/L	B187	PTGNR/L	B178	WTXNR/L	B179
MTGNR/L	B188	PTTNR/L	B178		
MTJNR/L	B188	WTENN	B179		





	Dimens	sions (mm)	
Size	d	t	d <sub>1</sub>
11	6.35	3.18	2.40
16	9.525	3.18~4.76	3.81
22	12.7	4.76	5.16
27	15.875	6.35	6.35

	Steel		Р		#		3		\$ \$	#	#	#	•	•			#								Machining types
ల్ల	Stainless steel		M							3	3	3			•	3	#	3	#		3	3	#		
pie	Cast iron	4	K		#	•	3	3				\$	3	3										• 3	<ul><li>Continuous cutting</li></ul>
ž	Non-ferrous metal	4	N																					• 3	General cutting
Š	Heat resistant alloy, Titanium alloy		S													•	•	3	#	•	3	3		• 3	# Interrupted cutting
-	Hardened steel	4	Н																	•	3	\$		• 3	- Interrupted cutting

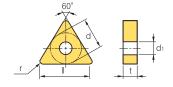
				Cei		Coa									Coa									Unc	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC3300	PC5400	PC8105	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		TNMG	160404-VC					•	•				•													0.10~0.35	0.30~2.00
<u>ng</u>			160408-VC					•	•				•													0.15~4.00	0.50~3.00
ish	VC		160412-VC						•				•													0.15~4.50	0.50~3.00
o ∰			220408-VC					•	•																	0.15~0.40	0.50~3.00
Medium to finishing	ARA		220412-VC					•	•																	0.15~0.45	0.50~3.00
		TNMG	110308-HM							•																0.17~0.40	1.50~3.00
			160404-HM						•	•	•							(					•			0.05~0.30	0.90~4.00
<sub>D</sub>	НМ		160408-HM					•	•	•	•												•			0.10~0.50	1.00~4.00
曹	1 1101		160412-HM																				•			0.13~0.60	1.30~4.00
2			220404-HM						•																	0.15~0.45	0.60~5.00
Medium cutting	has so all		220408-HM						•	•	•															0.18~0.48	0.80~5.80
Medium cutting	MP	TNMG	110308-MP 160404-MP 160408-MP 160412-MP 160416-MP 220404-MP 220408-MP 220412-MP 270612-MP					• • • • • • • • • • • • • • • • • • •	•				•	•		•										0.15~0.42 0.10~0.40 0.15~0.45 0.15~0.50 0.18~0.50 0.10~0.35 0.15~0.45 0.15~0.50 0.20~0.55 0.28~0.60	0.50~3.50 0.40~3.50 0.50~4.00 0.80~4.50 1.00~4.50 0.40~5.00 0.50~5.50 0.80~6.00 1.00~6.00 1.20~8.00
Medium cutting	VM		160404-VM 160408-VM 160412-VM 220404-VM 220408-VM 220412-VM	•	•			•	•	•	•		•							•			•			0.05~0.30 0.10~0.50 0.13~0.60 0.05~0.30 0.10~0.50 0.13~0.60	0.90-5.00 1.00-5.00 1.30-5.00 0.90-6.60 1.00-6.60 1.30-6.60

**→** Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

€ Code system B34~B35

		Available to	ol holders		
Designation	Page	Designation	Page	Designation	Page
MTENN	B187	PTFNR/L	B177	WTJNR/L	B179
MTFNR/L	B187	PTGNR/L	B178	WTXNR/L	B179
MTGNR/L	B188	PTTNR/L	B178		
MTJNR/L	B188	WTENN	B179		





	Dimens	sions (mm)	
Size	d	t	d <sub>1</sub>
11	6.35	3.18	2.40
16	9.525	4.76	3.81
22	12.7	4.76	5.16
27	15.875	6.35	6.35
33	19.05	9.52	7.93

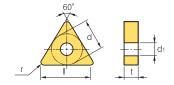
	Steel		Р		#		3		3	3	#	#	#	•	•	3		#									Machining types
8	Stainless steel		M								3	3	3				3	#	3	#		<b>3</b>	3	#			
pie	Cast iron		K		#	•	\$	3					3	3	3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal		N																						•	3	General cutting
×	Heat resistant alloy, Titanium alloy		S															•	\$	#	•	3	3		•	3	# Interrupted cutting
	Hardened steel	<b>-</b>	Н																		•	3	\$		•	3	- interrupted cutting

				Cer	met	Cos	ated							Coat	ed								Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330			NC9125	DC5300	PC5400	20700	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		TNMG	110308-B25																						0.17~0.40	1.50~3.00
			160404-B25						•		•		•												0.17~0.45	2.00~3.50
			160408-B25		•				•		•		•												0.17~0.55	2.00~3.50
			160412-B25		•								•												0.25~0.55	2.00~3.50
			160416-B25																						0.30~0.60	2.50~3.00
0			220404-B25						•		•		•												0.17~0.45	1.50~5.00
Medium to roughing	B25		220408-B25						•		•		•												0.17~0.55	2.00~5.00
οno	D23		220412-B25						•		•		•												0.25~0.55	2.00~5.00
9			220416-B25						•				•												0.30~0.60	2.00~5.00
틀			220424-B25																						0.35~0.70	3.00~7.00
<u>g</u>			220432-B25																						0.40~0.75	3.50~7.00
2			270608-B25								•														0.17~0.55	2.00~5.00
			270612-B25						•		•		•												0.25~0.55	3.00~7.00
			270616-B25																						0.30~0.60	3.00~7.00
			330716-B25																						0.35~0.70	3.00~9.00
			330924-B25																						0.40~0.80	3.00~9.00
		TNMG	160408-GR						•		•														0.20~0.50	1.00~7.00
			160412-GR						•																0.23~0.54	1.20~8.00
			220408-GR						•		•		•												0.22~0.61	1.10~7.80
	GR		220412-GR						•	•	•														0.28~0.78	1.20~7.80
ē			220416-GR								•														0.31~0.75	1.50~7.80
Roughing			270608-GR								•														0.31~0.75	1.50~7.80
逐			270612-GR						•	•	•														0.31~0.75	1.50~7.80
			270616-GR								•														0.36~1.00	1.60~7.80
			330924-GR								•														0.40~1.00	2.00~9.00
		TNCC	4004000 00																						0.00.000	0.40.4.50
	SC	TNGG	160402R-SC																						0.03~0.20	0.10~1.50
ng	30		160404R-SC											_		-		-	_	_						
Finishing			160402L-SC					_						_		_	_	_			_				0.03~0.20	0.10~1.50
뜶			160404L-SC																						0.05~0.25	0.30~2.00
		TNMG	110304-VQ																						0.05~0.30	0.50~3.00
ing	1/0		160404-VQ	•	•	•	•																		0.05~0.30	0.80~3.50
nis	VQ		160408-VQ	•	•	•	•																		0.08~0.40	0.80~3.50
io			160412-VQ																						0.10~0.40	0.80~3.50
Ē			220404-VQ																						0.05~0.35	0.80~4.00
Medium to finishing	[Cermet]																									

Cutting edge geometry A52~A61
 Recommended chip breaker B04~B14

€ Code system B34~B35

		Available to	ol holders		
Designation	Page	Designation	Page	Designation	Page
MTENN	B187	PTFNR/L	B177	WTJNR/L	B179
MTFNR/L	B187	PTGNR/L	B178	WTXNR/L	B179
MTGNR/L	B188	PTTNR/L	B178		
MTJNR/L	B188	WTENN	B179		



	Dimens	sions (mm)	
Size	d	t	d₁
11	6.35	3.18	2.40
16	9.525	3.18~4.76	3.81
22	12.7	4.76	5.16
27	15.875	6.35	6.35
33	19.05	9.52	7.93

	Steel		Р		#		3		3	3	#	#	#	•	•	3		#								Machining types
ల్ర	Stainless steel		M								3	3	3				3	#	3	#	•	3	3	#		
çpie	Cast iron		K		#	•	3	3					3	\$	3										• 3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																						• 3	General cutting
×	Heat resistant alloy, Titanium alloy	<b>-</b>	S															•	\$	#	•	3	3		• 3	# Interrupted cutting
	Hardened steel		Н																		•	3	\$		• 3	- interrupted cutting

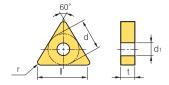
					Cer	met	Co	ated								Coa	ited									Unco	ated	Cuttina (	Condition
		Inserts	De	esignation	CN1500		CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330				NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030		H05	fn (mm/rev)	ap (mm)
Ī			TNGG	110304R		Ť		Ť						_					_	7					_		_	0.05~0.30	0.50~2.50
				160402R																								0.08~0.30	0.50~3.50
				160404R	•																							0.12~0.30	1.00~3.50
				160408R																								0.15~0.35	1.30~3.50
				220404R																								0.12~0.30	1.00~5.00
	ng			220408R																								0.15~0.35	1.30~5.00
	Medium cutting			220412R																								0.17~0.40	1.50~5.00
	E			110304L																								0.05~0.30	0.50~2.50
	릃			160402L																								0.08~0.30	0.50~3.50
	ž			160404L	•																							0.12~0.30	1.00~3.50
				160408L																								0.15~0.35	1.30~3.50
				220404L																								0.12~0.30	1.00~5.00
				220408L																								0.15~0.35	1.30~5.00
				220412L																								0.17~0.40	1.50~5.00
-			TNMG	160404-MK											•													0.05~0.30	0.90~3.50
			TIVIVIO	160408-MK												•		_		-		-	_					0.10~0.50	1.00~4.00
				160412-MK												•		_		-								0.12~0.60	1.20~4.50
	ing	MK_		160416-MK																								0.13~0.60	1.20~4.50
	Medium cutting	new		220404-MK																								0.17~0.45	1.50~5.00
	Ē	500		220408-MK																								0.21~0.50	1.30~5.50
	edii			220412-MK																								0.23~0.52	1.40~5.50
	2			220416-MK																								0.25~0.53	1.60~6.00
				270612-MK														П										0.25~0.55	3.00~7.00
			TNMA	110308																								0.05~0.30	0.50~3.00
				160404											•	•		_		_		_						0.10~0.30	1.00~4.00
				160408											•	•												0.10~0.40	1.00~4.00
				160412												•												0.10~0.50	1.50~4.50
				160416												•		_		_		_				_		0.15~0.55	1.50~4.50
				220404												_		_		_		_				_		0.10~0.35	1.00~4.00
	ng			220408												•												0.15~0.40	1.50~5.00
	Roughing			220412												•				_		-						0.20~0.50	1.50~5.00
	Rot	12.		220416												•												0.25~0.55	1.50~5.00
				220420																_		_						0.30~0.65	2.00~5.00
				220432 270608																-		-				_		0.35~0.70	2.00~5.00
				270608																-								0.20~0.45	3.00~7.00
				270612																		-				_			
				330924														_		-		-				_		0.30~0.65	3.00~7.00
				330324																								0.30~0.75	3.00~9.00

**→** Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

**③** Code system B34∼B35

		Available too	ol holders		
Designation	Page	Designation	Page	Designation	Page
MTENN	B187	PTFNR/L	B177	WTJNR/L	B179
MTFNR/L	B187	PTGNR/L	B178	WTXNR/L	B179
MTGNR/L	B188	PTTNR/L	B178		
MTJNR/L	B188	WTENN	B179		





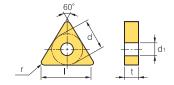
	Dimens	ions (mm)	
Size	d	t	d <sub>1</sub>
11	6.35	3.18	2.40
16	9.525	4.76	3.81
22	12.7	4.76	5.16
27	15.875	6.35	6.35

	Steel	Р		#		\$		\$ 3	#	#	#	•	•	3		#								Machining types
8	Stainless steel	M							3	3	3				3	#	3	#	•	3	3	#		
pie	Cast iron	K		#	•	3	3				3	3	3										• 3	<ul> <li>Continuous cutting</li> </ul>
, Y	Non-ferrous metal	N																					• •	General cutting
š	Heat resistant alloy, Titanium alloy	S													•		\$	#	•	3	3		• •	# Interrupted cutting
	Hardened steel	Н																	•	3	3		• 3	- Interrupted cutting

	Harden	eu steel																_	•	•			•		
					Coa								Coa										oated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	2000	PC5400	DC8105	PC8110	PC8115	PC9030	돧	H05	fn (mm/rev)	ap (mm)
		TNGA 110302																						0.05~0.30	0.20~3.00
		110304																						0.05~0.30	0.40~3.00
		160304																						0.10~0.35	0.40~4.00
		160402																						0.10~0.30	0.20~4.00
		160404																						0.10~0.35	0.40~5.00
5		160408																						0.12~0.40	0.50~5.00
Roughing		220304																						0.10~0.35	0.50~5.00
ino		220402																						0.05~0.30	0.20~3.00
12		220404																						0.10~0.35	0.40~5.00
		220408																						0.10~0.40	0.50~5.00
		220412																						0.12~0.45	1.00~5.50
		270612																						0.12~0.45	1.00~7.00
		270624																						0.20~0.55	2.00~7.00
		TNMG <b>160408-RK</b>											•											0.23~0.53	1.50~5.00
		160412-RK										•	•											0.28~0.53	1.80~5.00
5	RK	160416-RK											•											0.28~0.53	1.80~5.00
iri		220408-RK											•											0.23~0.53	1.50~6.00
Roughing	A DA	220412-RK											•											0.28~0.53	1.80~6.00
<u> </u>		220416-RK											•											0.28~0.63	2.00~6.00
		TNMG <b>160404-VR</b>																						0.20~0.50	0.80~7.00
		160408-VR																						0.25~0.55	1.20~7.00
	VR	160412-VR																						0.35~0.65	1.70~7.00
Roughing	<b>A</b>	160416-VR																						0.35~0.70	2.00~10.0
dgn		220408-VR																						0.35~0.70	2.00~10.0
&		220412-VR																						0.35~0.70	2.00~10.0
		220416-VR																						0.35~0.75	2.20~10.0
						_																			
		TNMG <u>160404-MM</u>												•	•				•	•	•			0.10~0.40	0.50~4.80
		160408-MM				_								•	• (				•	•	•			0.12~0.45	0.50~4.80
	D 42 4	160412-MM				_									•						•			0.18~0.65	0.50~4.80
Medium cutting	MM	160416-MM																						0.18~0.65	0.50~4.80
n cu	A	220404-MM																						0.10~0.40	0.50~6.50
dium		220408-MM				_									• (					•	•			0.12~0.45	0.50~6.50
Me		220412-MM				_									• •					•	•			0.15~0.60	0.50~6.50
		220416-MM				_																		0.18~0.65	0.50~6.50

② Cutting edge geometry A52-A61
③ Recommended chip breaker B04-B14
③ Code system B34-B35

		Available too	ol holders		
Designation	Page	Designation	Page	Designation	Page
MTENN	B187	PTFNR/L	B177	WTJNR/L	B179
MTFNR/L	B187	PTGNR/L	B178	WTXNR/L	B179
MTGNR/L	B188	PTTNR/L	B178		
MTJNR/L	B188	WTENN	B179		



	Dimens	sions (mm)	
Size	d	t	d <sub>1</sub>
16	9.525	4.76	3.81
22	12.7	4.76	5.16

	Steel		Р		#		3		3	3	#	#	#	•	\$	#										Machining types
క్ర	Stainless steel		M								3	3	3		3	#	3	#		3	3	3	#			
pie	Cast iron		K		#	•	\$	3					3	\$										•	\$	<ul><li>Continuous cutting</li></ul>
ž	Non-ferrous metal	1	N																						3	General cutting
ĕ	Heat resistant alloy, Titanium alloy		S										•				3	#	•	\$	3	3			3	# Interrupted cutting
	Hardened steel	4	Н																	3	3			•	\$	- interrupted cutting

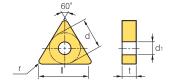
				met										oate										Unco	oated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	된	H05	fn (mm/rev)	ap (mm)
		TNMG <b>160404-RM</b>												•		•	•			•			•			0.10~0.50	2.00~5.50
		160408-RM												•		•				•			•			0.15~0.55	2.00~5.50
5	RM new	160412-RM													•	•										0.20~0.60	2.00~5.50
i i i		220408-RM														•										0.10~0.50	2.00~7.50
Roughing	FOR	220412-RM														•										0.15~0.55	2.00~7.50
"	1	220416-RM																								0.25~0.70	2.00~7.50
_		TNMG <b>160404-VP2</b>															•	•	•	•	•			•		0.05~0.30	0.10~3.00
ij	VP2	160408-VP2															•	•	•	•	•			•		0.10~0.45	0.50~5.00
sici		160412-VP2																•	•	•	•			•		0.13~0.55	0.80~3.30
Medium to finishing		220404-VP2																•		•						0.05~0.30	0.80~5.00
<u> </u>		220408-VP2																•		•						0.10~0.40	0.80~5.00
Mec																											
		TNMG <b>160404-VP3</b>															•	•	•	•	•			•		0.05~0.30	0.10~3.00
		160408-VP3															•	•	•	•	•			•	•	0.10~0.45	0.50~5.00
5	VP3	160412-VP3																								0.20~0.40	0.50~3.50
į	VIS	220404-VP3																								0.20~0.30	0.80~4.00
Medium cutting		220408-VP3																								0.25~0.35	0.80~5.00
Ë		220412-VP3																								0.30~0.40	1.00~5.00
ž		220416-VP3																								0.30~0.40	1.00~5.00
2	VP3	TNGG <b>160404-VP3</b>																	•	•	•			•		0.05~0.30	0.10~3.00
曹	VIS	160408-VP3																	•	•	•			•		0.10~0.45	0.50~5.00
Medium cutting																											
	VP4	TNMG <b>160408-VP4</b>																			•	•				0.15~0.35	1.00~4.00
<u> </u>	VF4	160412-VP4																			•	•				0.20~0.40	1.00~4.00
Roughing																											
		TNMG <b>160404-HA</b>																		•			•	•		0.05~0.30	0.80~3.50
ina	114	160408-HA																		•			•	•		0.10~0.40	0.80~3.50
nish	HA	160412-HA																								0.13~0.55	0.80~3.50
il o		220408-HA																					•			0.10~0.40	0.80~5.30
Medium to finishing																											

Cutting edge geometry A52~A61
 Recommended chip breaker B04~B14

€ Code system B34~B35

		Available to	ol holders		
Designation	Page	Designation	Page	Designation	Page
MTENN	B187	PTFNR/L	B177	WTJNR/L	B179
MTFNR/L	B187	PTGNR/L	B178	WTXNR/L	B179
MTGNR/L	B188	PTTNR/L	B178		
MTJNR/L	B188	WTENN	B179		





	Dimens	sions (mm)	
Size	d	t	d <sub>1</sub>
11	6.35	3.18	2.40
16	9.525	4.76	3.81
22	12.7	4.76	5.16
27	15.875	6.35	6.35

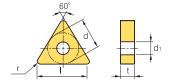
	Steel	Р		#	3		\$ 3	#	#	#	•		\$	#									Machining types
8	Stainless steel	M						3	3	3			3	#	3	#	•	3	3	#			
pie	Cast iron	K		#	3	3				3	\$	3									•	3	<ul> <li>Continuous cutting</li> </ul>
¥	Non-ferrous metal	N																			•	3	General cutting
- 8 ∣	Heat resistant alloy, Titanium alloy	S											•		3	#	•	3	3		•	3	-
	Hardened steel	Н															•	3	\$			3	# Interrupted cutting

	Harden	ed steel	Н								_				_					•	3	3		•	3	- interrup	
				Cei	rmet	Coat	ed							(	Coa	ted								Und	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	PC5300	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
	) () A (	TNMG	160404-VW	0	0	O	0	_	2 .	_	z	Z	z		Z	Z	2 2	2 (				-	<u> </u>	I		0.10~0.35	0.30~3.00
6	VW	1111110	160404 VV																							0.10~0.40	0.30~3.00
Finishing	[Wiper]																										
g	LW	TNMG	160408-LW																							0.15~0.50	0.70~4.50
豐			160412-LW																							0.20~0.60	1.00~5.00
Medium cutting	[Wiper]																										
		TNGN	110302																							0.05~0.25	0.20~2.50
			110304																							0.10~0.30	0.50~2.50
			110308																							0.10~0.30	0.80~2.50
			160302																							0.05~0.30	0.20~3.00
			160304																							0.10~0.30	0.50~4.00
			160308								_															0.10~0.40	0.80~4.00
ing			160404																							0.10~0.40	0.50~4.00
Medium cutting			160408																			_				0.10~0.40	1.00~4.00
를			160412								_									_		_				0.10~0.50	1.50~4.50
/ledi			220404												_											0.10~0.35	1.00~4.00
_			220408								_															0.15~0.40	1.50~5.00
			220412												_											0.20~0.50	1.50~5.00
			220416				_			_	_							_		_		_				0.25~0.55	1.50~5.00
			220424				_				_							_								0.30~0.65	2.00~5.00
			270630																							0.35~0.70	2.00~5.00
73		TNMX	160404R-SR																							0.10~0.35	0.70~3.50
hing	SR		160408R-SR																							0.12~0.40	1.00~3.50
finis	new		160404L-SR																							0.10~0.35	0.70~3.50
5	-		160408L-SR																							0.12~0.40	1.00~3.50
Medium to finishing	[Shaft]																										
		TNMX						•	•																	0.15~0.30	0.50~4.00
ng	SH		160408R-SH					•	•																	0.15~0.45	1.00~4.00
cutti			160404L-SH				_	_	•																	0.15~0.30	0.50~4.00
Medium cutting			160408L-SH						•																	0.15~0.45	1.00~4.00
Medi	[Shaft]																										

Outting edge geometry A52~A61

**③** Code system B34∼B35

		Available to	ol holders		
Designation	Page	Designation	Page	Designation	Page
MTENN	B187	PTFNR/L	B177	WTJNR/L	B179
MTFNR/L	B187	PTGNR/L	B178	WTXNR/L	B179
MTGNR/L	B188	PTTNR/L	B178		
MTJNR/L	B188	WTENN	B179		



	Dimens	sions (mm)	
Size	d	t	d₁
16	9.525	4.76	3.81
22	12.7	4.76	5.16
27	15.875	6.35	6.35
33	19.05	7.94~9.52	7.93

	Steel		Р		#	•	3		\$ \$	#	#	#	•	•	\$	#									Machining types
8	Stainless steel		M							3	3	3			3	#	3	#	•	3	3	#			
pie	Cast iron	1	K		#	•	3	3				<b>\$</b>	3	3									• 1	8	Continuous cutting
ž	Non-ferrous metal	1	N																				• 1	B 1	General cutting
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S									•				•	3	#	•	3	3		• 1		Interrupted cutting
	Hardened steel	4	Н																•	3	\$		• 1	2	• interrupted cutting

				Cer	met	Coa	ited							Coa	ted								Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500				NC3215	NC3225	NC3120	NC3030	NC3235	NC5330			NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115		H05	fn (mm/rev)	ap (mm)
		TNMX	160402R		•																				0.10~0.30	0.50~3.00
			160404R						•	•	•		•												0.12~0.30	1.00~3.50
			160408R						•	•	•														0.15~0.35	1.30~3.40
			220404R																						0.12~0.30	1.00~5.00
БG			220408R																						0.15~0.35	1.30~5.00
ghij			160404L						•	•	•														0.12~0.30	1.00~3.50
ē			160408L							•	•														0.15~0.35	1.30~3.40
Medium to roughing																										
		TNMM	220408-GR																						0.22~0.61	1.10~7.80
			220412-GR																						0.28~0.78	1.20~7.80
			220416-GR																						0.31~0.75	1.50~7.80
Roughing	GR																									
		TNMM	160408-GH																						0.20~0.50	1.00~7.00
			220408-GH																						0.25~0.60	1.30~7.00
			220412-GH						•																0.20~0.50	1.00~8.00
			220416-GH																						0.25~0.60	1.30~8.00
			270616-GH																						0.32~0.70	1.80~8.00
	GH		270624-GH																						0.35~0.50	1.80~13.00
>	72		330924-GH																						0.35~0.70	2.30~13.00
Heavy																										

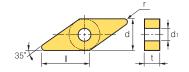
Cutting edge geometry A52~A61
 Recommended chip breaker B04~B14

€ Code system B34~B35

		Available too	ol holders		
Designation	Page	Designation	Page	Designation	Page
MTENN	B187	PTFNR/L	B177	WTJNR/L	B179
MTFNR/L	B187	PTGNR/L	B178	WTXNR/L	B179
MTGNR/L	B188	PTTNR/L	B178		
MTJNR/L	B188	WTENN	B179		







	Dimension	ons (mm)	
Size	d	t	d₁
16	9.525	4.76	3.81

## Rhombic 35° Negative

	Steel		Р		#	3		<b>\$</b>	•	\$ \$	#	#	#	•	•	\$	#						Machining types
පු	Stainless steel		M								3	3	3			3	#	•	3	3	#		
Bi.	Cast iron		K		#	3	3		3				3	3	3							3	<ul> <li>Continuous cutting</li> </ul>
춫	Non-ferrous metal	1	N																			3	General cutting
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S														•	•	3	3		3	# Interrupted cutting
	Hardened steel	4	Н																3	3		3	Thire in upied culting

	Harden	eu sieei	- 11																		_	•	•			•		
					met											oate									Unco	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		VNMG	160404-VB	•	•	•	•			•	•				•												0.10~0.35	0.30~1.50
ng	VB		160408-VB		•		•				•				•												0.15~0.45	0.50~2.00
Finishing			160412-VB								•																0.20~0.45	0.80~2.50
造	-000																											
		VNMG	160402-VF									•															0.06~0.20	0.30~1.00
ng	VF		160404-VF	•								•			•							•					0.08~0.30	0.50~1.50
Finishing			160408-VF	•							•	•			•												0.10~0.40	0.50~1.50
ᄩ			160412-VF																								0.15~0.50	0.50~1.50
		VNMG	160404-VL	•	•					•	•				•												0.05~0.20	0.10~1.00
ing	VL		160408-VL		•					•	•				•												0.10~0.25	0.20~1.50
Finishing	CHECK THE		160412-VL							•																	0.15~0.30	0.50~2.00
正																												
ing		VNMG	160404-LP							•	•																0.10~0.35	0.30~1.50
nish	LP 🚙		160408-LP							•	•																0.10~0.40	0.50~2.00
ij Q	new		160412-LP							•	•																0.10~0.45	0.80~2.50
Medium to finishing Medium to finishing Medium to finishing																												
ing		VNMG	160404-CP					•	•																		0.10~0.35	0.5~3.0
nish	CP		160408-CP					•	•																		0.12~0.30	0.5~3.0
tofi	new		160412-CP					•	•																		0.13~0.30	0.8~3.0
/edium	1																											
ling		VNMG	160404-VC	•		•				•	•																0.10~0.35	0.30~2.00
inish	VC		160408-VC								•																0.15~4.00	0.50~3.00
n to f	THE PARTY OF THE P		160412-VC							•	•																0.15~0.40	0.80~3.00
Mediun																												
<sub>D</sub>		VNMG	160404-HM									•	•											•			0.13~0.40	0.80~3.80
uttin	НМ		160408-HM								•	•	•											•			0.20~0.45	0.80~4.50
E	11101		160412-HM								•																0.10~0.60	1.00~4.00
Medium cutting																												
		VNMG	160404-MP							•	•				•			•	•	•	•	•					0.10~0.40	0.40~3.50
ting	MD		160408-MP							•	•				•	•		•	•	•	•	•					0.15~0.45	0.50~4.00
cut	MP		160412-MP							•	•				•												0.15~0.50	0.80~4.50
Medium cutting			160416-MP																								0.18~0.50	1.00~4.50
Mec																												



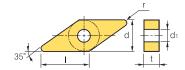
	Available	tool holders	
Designation	Page	Designation	Page
MVJNR/L	B188	MVVNN	B189
MVQNR/L	B189	MVUNR/L	B214

Cutting edge geometry A52~A61
 Recommended chip breaker B04~B14

<sup>◆</sup> Code system B34~B35

<sup>•:</sup> Stock item





	Dimension	ons (mm)	
Size	d	t	d₁
16	9.525	4.76	3.81
22	12.7	4.76	5.16

## Rhombic 35° Negative

	Steel		Р		#		3		3	3	#	#	#	•	3		#								Machining types
ဗ္ဗ	Stainless steel		M								3	3	3			3	#	3	#		3	3	#		
pie	Cast iron	1	K		#	•	3	3					3	3	\$									3	<ul> <li>Continuous cutting</li> </ul>
춫	Non-ferrous metal	•	N																					3	General cutting
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S														•	3	#	•	3	3		3	# Interrupted cutting
	Hardened steel	_ <	Н																	•	3	3		3	* interrupted cutting

				Cer	rmet	Coa	ited								Coa	ted									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		VNMG	160404-VM	•							•		•						•	•							0.08~0.45	0.50~3.50
ting			160408-VM						•		•		lacktriangle						•	lacktriangle		lacktriangle					0.10~0.50	1.00~4.00
3	VM		160412-VM																								0.20~0.50	1.50~4.00
<u><u>=</u></u>	Cont.		220404-VM																								0.08~0.45	1.00~5.00
Medium cutting			220408-VM																								0.10~0.50	1.50~5.00
<b>5</b> 1		VNMG	160404-VQ	•	•	•	•																				0.10~0.40	0.50~3.50
ië.			160408-VQ	•	•	•	•																				0.12~0.45	0.50~3.50
iji Ei	VQ		160412-VQ		Ť																						0.15~0.45	0.80~3.50
Medium to finishing	[Cermet]																											
		VNMG	160404-MK												•												0.08~0.45	0.50~3.00
韇	MK -		160408-MK											•	•												0.10~0.50	1.00~3.50
5 E	MK		160412-MK												•												0.20~0.50	1.50~4.00
Medium cutting																												
ng .		VNMG	160404-MM														•	•	•				•	•			0.10~0.40	0.50~4.80
薑	MM		160408-MM														•		•				•	•			0.12~0.45	0.50~4.80
Medium cutting			160412-MM																								0.15~0.60	0.50~4.00
		VNMG	160404-RM																								0.10~0.50	2.00~5.00
i∰.	DM -		160408-RM																								0.15~0.55	2.00~5.00
10 E	RM		160412-RM																								0.20~0.60	2.00~5.00
Medium cutting																												
		VNMG	160404-VP3																•	•	•	•	•			•	0.05~0.30	0.10~3.00
曹	VP3		160408-VP3																•	•	•	•	•		•	•	0.10~0.45	0.50~5.00
Ē			160412-VP3																								0.20~0.40	0.50~3.50
Medium cutting																												
		VNGG	160404-VP3																		•	•	•		•		0.05~0.30	0.10~3.00
uffi	VP3		160408-VP3																								0.10~0.45	0.50~5.00
Medium to finishing   Medium cutting	VIS																											
hing	114	VNGG	160408-HA																			•					0.10~0.40	0.80~3.50
Medium to finish	HA																											

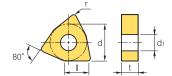
**→** Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

€ Code system B34~B35

	Available	tool holders	
Designation	Page	Designation	Page
MVJNR/L	B188	MVVNN	B189
MVQNR/L	B189	MVUNR/L	B214







	Dimension	ons (mm)	
Size	d	t	d <sub>1</sub>
06	9.525	4.76	3.81
08	12.7	4.76	5.16



## 

	Steel	Р		#		\$		3	•	\$ 3	#	#	#	•	•		#							Machining types
8	Stainless steel	M									3	3	3			3	#	•	3	3	#			
pie	Cast iron	K		#	•	3	3		\$				3	\$	3							•	3	<ul> <li>Continuous cutting</li> </ul>
, Y	Non-ferrous metal	N																				•	3	General cutting
×	Heat resistant alloy, Titanium alloy	S														•		•	3	3		•	3	-
	Hardened steel	Н																•	3	3			3	# Interrupted cutting

		100 31001																									
					Coa										ated									Unc	oated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215P	NC3225P	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC0313	NC9115	NC9125	NC9135	PC8105	PC8110	PC8115	PC9030	돧	H05	fn (mm/rev)	ap (mm)
	VB	WNMG <b>080404-VB</b>							•	•			(	•												0.10~0.35	0.30~1.50
ng	Alexander 1	080408-VB							•	•			(	•												0.15~0.45	0.50~2.00
Finishing	1	080412-VB							•	•																0.18~0.45	0.80~2.50
造	-																										
		WNMG 060404-VF											(	•												0.07~0.30	0.50~1.50
	VF	060408-VF																								0.10~0.40	0.50~1.50
ng	VI	080404-VF								•	•		(	•												0.07~0.30	0.50~1.50
Finishing	1000	080408-VF											(	•												0.10~0.40	0.50~1.50
듄	VSV	080412-VF																								0.20~0.50	0.50~1.50
	VL	WNMG 060404-VL																								0.05~0.25	0.20~1.50
ρc	V L	080404-VL																								0.05~0.25	0.10~1.00
shir		080408-VL								•			-	•												0.10~0.35	0.20~1.50
Finishing	- 10.01																										
		WNMG <b>06T308-LP</b>																								0.07~0.30	0.30~1.50
		060404-LP																								0.07~0.30	0.30~1.50
i i	LP 🚄	060408-LP								•																0.10~0.30	0.30~1.50
inis	new	080404-LP							•	•			(	•												0.10~0.35	0.30~2.00
5	5	080408-LP							•	•			(	•												0.10~0.40	0.50~2.50
Medium to finishing	2000	080412-LP							•	•				•												0.13~0.45	0.80~3.00
Mec		W/N N A C 000 40 4 0 D																								0.00.000	0.40.000
		WNMG 060404-CP				_						-						_								0.08~0.30	0.40~3.00
ρ		060408-CP				_												_								0.10~0.30	0.40~3.00
shir	CP	080404-CP				-		-				-						_								0.10~0.35	0.50~3.50 0.50~3.50
i i	(IEW)	080408-CP				-		-				_		-		+	_	_								0.12~0.35	
n to	305	080412-CP								_	_	_		_	_	_	_	_								0.13~0.35	0.80~3.50
Medium to finishing	Carried and	080416-CP																								0.14~0.35	0.80~3.50
<u> </u>		WNMG <b>080404-VC</b>							•	•																0.15~0.40	0.15~4.00
ishii	VC	080408-VC								•																0.15~0.45	0.15~4.50
to fin	3	080412-VC							•	•			(	•												0.15~0.45	0.15~4.50
Medium to finishing	Sign Sign Sign Sign Sign Sign Sign Sign																										

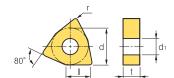
Cutting edge geometry A52~A61
 Recommended chip breaker B04~B14

**ᢒ** Code system **B34~B35** 



	Available	tool holders	
Designation	Page	Designation	Page
MWLNR/L	B189	WWLNR/L	B180
PWLNR/L	B211		





	Dimensio	ons (mm)	
Size	d	t	d₁
06	9.525	4.76	3.81
80	12.7	4.76	5.16

## 

	Steel		Р		#		\$	3	\$ #	#	#	•	•	\$	#									Machining types
ဗ္ဗ	Stainless steel		M						3	3	3			3	#	3	#		3	3	#			
pie	Cast iron		K		#	•	\$ 3				3	3	3									•	3	<ul> <li>Continuous cutting</li> </ul>
춫	Non-ferrous metal		N																				3	General cutting
š	Heat resistant alloy, Titanium alloy		S													3	#	•	3	3			3	# Interrupted cutting
	Hardened steel	4	Н															•	3	3			3	- interrupted cutting

						ated								Coa										Unco	ated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		WNMG <b>060404-HM</b>												•												0.15~0.43	0.42~3.00
<u>B</u>	HM	060408-HM							•	•													•			0.10~0.50	1.00~4.00
隻		080404-HM							•	•													•			0.15~0.42	0.50~4.20
E	608	080408-HM					•	•	•	•		•											•			0.10~0.50	1.00~5.00
Medium cutting	he at the	080412-HM																					•			0.10~0.50	1.00~5.00
		W. W. A. G																									
		WNMG <u>06T304-MP</u>																4								0.10~0.40	0.40~2.80
		06T308-MP					_	_				_				_		_								0.15~0.45	0.50~3.00
		060404-MP					•	•				•	_			•		-								0.10~0.40	0.40~2.80
ting	MP _	060408-MP						•					•			•		_								0.15~0.45	0.50~3.00
Medium cutting	new	060412-MP															_	_				_				0.15~0.50	0.80~3.20
<u>E</u> .		080404-MP					•	•				•			•	•		+		•	•	•				0.10~0.40	0.40~4.00
Med		080408-MP						•				•			•	•	_			•	•	•				0.15~0.45	0.50~4.50
_		080412-MP						•				•			•	•		_		•	•					0.15~0.50	0.80~5.00
		080416-MP										•														0.18~0.55	0.10~5.00
		WNMG <b>060404-VM</b>										•					(	•	•							0.10~0.45	1.00~3.50
		060408-VM						•	•			•					(	•	•							0.10~0.50	1.00~4.00
		060412-VM																								0.13~0.60	1.30~4.00
ting	VM	080404-VM							•			•					(	•	•							0.05~0.30	0.90~5.00
t t		080408-VM						•		•		•					(	•	•		•		•			0.10~0.50	1.00~5.00
<u><u>=</u></u>		080412-VM										•					(	•	•							0.10~0.50	1.00~5.00
Medium cutting		080416-VM																								0.10~0.50	1.20~5.00
Б		WNMG 080404-B25					•	•				•														0.17~0.45	1.00~5.00
ighii	B25	080408-B25					•	•		•		•														0.23~0.60	1.50~5.00
5		080412-B25					•	•				•														0.25~0.60	2.00~5.00
Medium to roughing																											
		WNMG 080404-GR																								0.15~0.50	0.08~6.00
	CD	080408-GR						•	•	•		•	•													0.20~0.50	1.00~7.00
<u>g</u>	GR	080412-GR					•	•	•	•		•	•													0.25~0.50	1.30~7.00
Roughing		080416-GR						Ė		Ė								Ħ								0.25~0.60	1.80~6.00
Rou																											

→ Cutting edge geometry A52~A61
→ Recommended chip breaker B04~B14

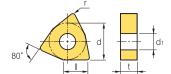
**③** Code system B34∼B35

	Available	tool holders	
Designation	Page	Designation	Page
MWLNR/L	B189	WWLNR/L	B180
PWLNR/L	B211		









	Dimension	ons (mm)	
Size	d	t	d₁
06	9.525	4.76	3.81
08	12.7	4.76	5.16



## ♠ Trigon 80° Negative

	Steel		Р		#		3		3	3	#	#	#	•	•	3		#									Machining types
ల్ర	Stainless steel		M								3	3	3				3	#	3	#		3	3	#			
çpie	Cast iron		K	•	#	•	\$	3					3	\$	3										• ;	3	<ul> <li>Continuous cutting</li> </ul>
¥	Non-ferrous metal	4	N																						• :	3	General cutting
×	Heat resistant alloy, Titanium alloy		S															•	3	#	•	3	3		• ;	3	# Interrupted cutting
	Hardened steel		Н																		•	3	3		• ;	3	- interrupted cutting

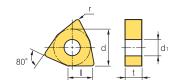
	Inserts	Designation			Coate								ated									ated	Cutting C	Condition
	Inserts	Designation	2	0	0 0																l .			
			CN1500	CN2500	CC1500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	DC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된 된	H05	fn (mm/rev)	ap (mm)
		WNMG <b>060404-VQ</b>																					0.05~0.30	0.50~4.00
g	VQ	060408-VQ																					0.08~0.30	0.80~4.00
Medium to finishing	VQ	060412-VQ																					0.10~0.30	1.00~4.00
ij		080404-VQ		•	•																		0.05~0.30	0.50~4.00
	3-0	080408-VQ	•	•	•	)																	0.08~0.40	0.80~4.00
흥		080412-VQ																					0.10~0.35	0.80~3.50
Me	[Cermet]																							
		WNMG <u>060408-MK</u>										•											0.08~0.30	0.80~2.50
g	MK	080404-MK										•											0.10~0.45	1.00~3.00
畫	MK	080408-MK										•											0.10~0.50	1.00~3.50
Ē		080412-MK										•											0.10~0.50	1.00~4.00
Medium cutting		080416-MK																					0.13~0.50	1.20~4.20
2																								
		WNMA <b>060404</b>																					0.10~0.30	0.50~3.00
		060408										•											0.10~0.30	0.50~3.00
		060412																					0.10~0.40	1.00~3.00
ng		080404										•											0.15~0.60	1.00~5.00
Roughing		080408										•											0.15~0.60	1.00~6.00
逐		080412										•											0.15~0.70	1.50~6.00
		080416																					0.15~0.70	1.50~6.00
		WNMG 060408-RK																					0.10~0.40	1.00~3.50
		060412-RK																					0.23~0.40	1.50~5.00
	RK	080404-RK										•											0.23~0.50	1.50~6.00
<u>ng</u>	new	080408-RK									•	•											0.23~0.53	1.50~6.00
Roughing		080412-RK										•											0.28~0.53	1.80~6.00
8		080416-RK										•											0.25~0.60	2.00~6.00
		WNMG <b>060408-VR</b>																					0.20~0.40	1.00~6.00
		080404-VR																					0.20~0.50	0.80~7.00
	VR	080408-VR																					0.25~0.55	1.20~7.00
hing		080412-VR																					0.30~0.60	1.50~7.00
Roughing		080416-VR																					0.40~0.60	1.50~4.00
Σ.																								

⊕ Cutting edge geometry A52-A61 ⊕ Recommended chip breaker B04-B14 ⊕ Code system B34-B35



	Available	tool holders	
Designation	Page	Designation	Page
MWLNR/L	B189	WWLNR/L	B180
PWLNR/L	B211		





	Dimension	ons (mm)	
Size	d	t	d <sub>1</sub>
06	9.525	4.76	3.81
08	12.7	4.76	5.16
13	19.05	6.35	7.93

## 

	Steel		Р		#		3		3	\$ #	#	#	•	\$	#									Machining types
క్ర	Stainless steel		M							3	3	3		3	#	3	#		3	3	3	#		
pie	Cast iron		K		#	•	\$	3				3	3										3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal		N																				3	General cutting
š	Heat resistant alloy, Titanium alloy		S													3	#	•	3	3	3		3	# Interrupted cutting
	Hardened steel	4	Н															•	3	3			3	- interrupted cutting

				met										oate										Unco	ated	Cutting (	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC8120	PC9030	된	H05	fn (mm/rev)	ap (mm)
		WNMG <b>06T304-MM</b>																								0.08~0.35	0.50~4.00
		06T308-MM																								0.10~0.40	0.50~4.00
		06T312-MM																								0.12~0.45	0.50~4.00
g	MM	060404-MM																								0.08~0.35	0.50~4.00
Medium cutting		060408-MM														•										0.10~0.40	0.50~4.00
_ €	Sen 1	060412-MM														•										0.12~0.45	0.50~4.00
ediu		080404-MM														•				•						0.10~0.40	0.50~4.00
Ž		080408-MM												•		•										0.12~0.45	0.50~4.00
		080412-MM												•		•										0.15~0.60	0.50~4.00
		WNMG <b>060404-RM</b>													•	•										0.10~0.50	1.50~3.00
	RM _	060408-RM														•										0.15~0.55	1.50~3.00
50	new	060412-RM														•										0.20~0.60	1.50~3.00
iĒ		080404-RM														•	•				•		•			0.10~0.50	2.00~4.00
Roughing	1	080408-RM												•		•				•						0.15~0.55	2.00~4.00
<u>~</u>		080412-RM												•	•	•	•				•					0.20~0.60	2.00~4.00
Medium to finishing	VP2	WNMG 080404-VP2 080408-VP2 080412-VP2						•									•	•	•	•	•			•		0.10~0.45 0.12~0.50 0.05~0.30	0.50~5.00 0.50~5.00 0.10~3.00
Medium		WNMG <u>060408-VP3</u>																								0.06~0.38	0.40~3.50
ing	VP3	060412-VP3																								0.06~0.38	0.40~3.50
Medium cutting	VIS	080404-VP3															•	•	•	•	•			•	•	0.10~0.45	0.50~5.00
Ē		080408-VP3															•	•	•	•	•			•	•	0.12~0.50	0.50~5.00
<b>Jedi</b>		080412-VP3															•	•	•	•	•			•		0.05~0.30	0.10~3.00
2		130612-VP3																								0.20~0.40	1.00~5.00
Medium cutting	VP3	WNGG <b>080404-VP3</b>																								0.10~0.45	0.50~5.00
	VP4	WNMG 080408-VP4																			•	•				0.15~0.35	1.00~4.00
<u></u>	VP4	080412-VP4																			•					0.20~0.40	1.00~4.00
Roughing		330.12 11.4																								,	

**→** Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

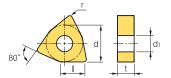
**③** Code system B34∼B35

	Available	tool holders	
Designation	Page	Designation	Page
MWLNR/L	B189	WWLNR/L	B180
PWLNR/L	B211		









	Dimension	ons (mm)	
Size	d	t	d <sub>1</sub>
06	9.525	4.76	3.81
08	12.7	4.76	5.16
10	15.875	6.35	6.35
13	19.05	6.35	7.93



## ♠ Trigon 80° Negative

	Steel	Р		#	\$		\$ 3	#	#	#	•	•	\$	#								Machining types
ဗ္	Stainless steel	M						3	3	3			3	#	3	#	•	3	3	#		3 7/10
pie	Cast iron	K		#	\$	3				3	3	\$									• 3	<ul> <li>Continuous cutting</li> </ul>
ar S	Non-ferrous metal	N																			• \$	General cutting
×	Heat resistant alloy, Titanium alloy	S											•		\$	#	•	3	3		• \$	
	Hardened steel	Н															•	3	3		• 3	# Interrupted cutting

		eu sieei																								
				met									Coa										Uncoa	ted	Cutting C	Condition
	Inserts	Designation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된 :	Н05	fn (mm/rev)	ap (mm)
		WNMG <b>060404-HA</b>																				•	•		0.05~0.30	0.10~3.00
hing	HA	060408-HA																				•	•		0.10~0.40	0.80~3.50
inis	A	080404-HA																							0.05~0.30	0.80~3.50
fo	5	080408-HA																							0.10~0.40	0.80~3.50
Medium to finishing		080412-HA																							0.13~0.55	0.80~3.50
		WNMG 060404-VW																							0.05~0.30	0.40~3.00
	VW	060408-VW																							0.08~0.30	0.40~3.50
	V V V	080404-VW																							0.10~0.30	0.50~3.00
Finishing		080408-VW																							0.15~0.50	0.50~4.00
inis		080412-VW																							0.18~0.50	1.00~4.00
	[Wiper]																									
		WNMG <b>060408-LW</b>					•	•							•										0.15~0.60	0.50~3.50
ē	LW	060412-LW																							0.20~0.70	0.80~3.50
Œ		080408-LW						•			•				•										0.15~0.60	1.00~5.00
Medium cutting	[Wiper]	080412-LW					•																		0.20~0.70	1.00~6.00
		WNMX <b>080404R-SR</b>																							0.10~0.35	0.70~3.00
ie l	SR 🧫	080408R-SR																							0.12~0.40	1.00~3.00
inis	new	080404L-SR																							0.10~0.35	0.70~3.00
Medium to finishing	[Shaft]	080408L-SR																							0.12~0.40	1.00~3.00
		WNMX <b>080404R-SH</b>																							0.15~0.30	1.00~4.00
වු	SH	080408R-SH																							0.15~0.50	1.50~5.00
曹		080404L-SH																							0.15~0.30	1.00~4.00
Ē		080408L-SH																							0.15~0.50	1.50~5.00
Medium cutting	[Shaft]																									
guil	B25	WNMM 100608-B25							(	•															0.30~0.80	3.00~8.00
Medium to roughing		130612-B25																							0.40~0.90	4.00~10.00
Med																										

→ Cutting edge geometry A52~A61
→ Recommended chip breaker B04~B14

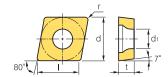
◆ Code system B34~B35



	Available	tool holders	
Designation	Page	Designation	Page
MWLNR/L	B189	WWLNR/L	B180
PWLNR/L	B211		







	Dimension	ons (mm)	
Size	d	t	d₁
06	6.35	2.38	2.8
09	9.525	3.97	4.4
12	12.7	4.76	5.5

# Rhombic **80° Positive** Relief Angle: 7°

Steel • \* • \* • \* \* \* \* • • \* Machining types Workpiece Stainless steel • ± • ± Cast iron Continuous cutting Non-ferrous metal General cutting Heat resistant alloy, Titanium alloy # Interrupted cutting Hardened steel

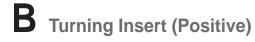
				Cer	met	Co	ated								Coa	ated									Unco	ated	Cutting (	Condition
	Incorto	D,	ocianation						52	2	2	32	2				52	32	0	0	22	0	C .					
	Inserts	De	esignation	CN1500	CN2500	CC150	CC2500	NC321	NC3225	NC312	NC303	NC323	NC5330	NC631	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC810	PC8110	283	PC9030	된	H05	fn (mm/rev)	ap (mm)
(F)		CCMT	060202-FP		•																						0.01 - 0.10	0.05 - 0.08
Finishing(Mild steel)	FP _		060204-FP		•		•		•								•					•					0.01 - 0.10	
	new		09T302-FP		•																						0.01 - 0.10	0.05 - 1.00
ing(			09T304-FP		•	•	•		•								•					•					0.01 - 0.10	0.10 - 1.00
nish	100		09T308-FP		•	•	•		•								•					•					0.04 - 0.12	0.10 - 1.00
证	[Mild steel]																											
		CCMT	060202-VF						•										•								0.05~0.20	0.30~1.00
	VF		060204-VF		•				•										•			•					0.10~0.25	0.30~1.00
ing	VI		09T302-VF						•																		0.04~0.16	0.80~1.50
Finishing			09T304-VF		•				•										•			•					0.05~0.20	0.30~1.50
造	1		09T308-VF		•				•				•						•								0.10~0.25	0.30~1.50
			120404-VF						•																		0.07~0.22	0.10~2.00
		CCMT	060202-VL																								0.04~0.18	0.20~1.40
			060204-VL	•	•	•	•	•	•				•			•	•	•	•	•	•						0.04~0.10	0.08~0.90
	VL		060208-VL						•				•				•										0.06~0.12	0.10~1.00
ing			09T304-VL	•	•	•	•	•	•				•			•	•	•	•	•	•		•		•	•	0.05~0.10	0.10~1.00
Finishing	12g 32		09T308-VL	•	•	•	•		•				•			•	•		•	•	•		•		•	•	0.08~0.15	0.10~1.00
证	100		120404-VL																								0.06~0.12	0.30~1.50
			120408-VL																								0.08~0.15	0.30~1.50
			120412-VL																					_			0.08~0.15	0.30~1.50
		CCMT	060202-HMP	•	_								_						•			•		•			0.03~0.12	0.10~1.50
			060204-HMP		•					•	•		•						•			•		•			0.06~0.17	0.20~2.40
Medium to finishing			060208-HMP							•	•		•						•			•	_				0.08~0.23	0.40~2.40
nish	HMP		09T302-HMP							_	_				_							•					0.07~0.22	0.10~2.00
를 Q			09T304-HMP		•					•	•		•		•				•			•	_	•			0.08~0.23	0.30~3.00
Ē			09T308-HMP		•				_	•	•		•						•			•					0.10~0.30	0.50~3.00
<u>ē</u>			120404-HMP						•	•	•		_						•				_				0.09~0.27	0.30~3.60
2			120408-HMP							•	•		•						•		_			•			0.24~0.36	1.00~3.60
			120412-HMP																					4			0.14~0.43	0.70~3.60
		00147	000000 110		_			_					_				•			•							0.04.045	0.00 1.50
		CCMT	060202-MP		•	•	•	•	•				•				•		•	•	•	•					0.04~0.12	0.20~1.50
			060204-MP		•	•	•		•				•		•						•						0.05~0.15	0.30~1.50
hing	MD		060208-MP																								0.07~0.15	
nis	MP		09T302-MP		•	•	•		_				•			•	•	•	•	•	•							0.30~2.00
Medium to finisl			09T304-MP		•	•	•	•	•				•	•	•	•	•	•	•	•	•						0.08~0.25	
E			09T308-MP		•	•	•		•				•		•		•				•						0.10~0.30	
ledi			120404-MP						•						•								4				0.10~0.30	
_			120408-MP						•					•			•										0.15~0.35	0.80~3.50
			120412-MP														•										0.25~0.40	1.00~3.50

Cutting edge geometry A52~A61

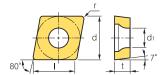
**③** Code system B34∼B35

	Availa	ble tool holders												
Designation Page Designation Page														
SCACR/L B123, 190 SCLCR/L B123, 190, 215, 225														









	Dimension	ons (mm)	
Size	d	t	d₁
06	6.35	2.38	2.8
09	9.525	3.97	4.4
12	12.7	4.76	5.5

# Rhombic **80° Positive**Relief Angle: 7°

	Steel	Р		#		3		3	3	#	#	#	•		3		#									Machining types
ల్ర	Stainless steel	M								3	3	3				3	#	3	#		3	3	#			3 77 7
bje.	Cast iron	K		#	•	3	3					3	3	3										•	3	<ul><li>Continuous cutting</li></ul>
ž	Non-ferrous metal	N																							3	General cutting
ĕ	Heat resistant alloy, Titanium alloy	S										•						3	#	•	3	3			3	# Interrupted cutting
	Hardened steel	Н																		•	3	3		•	3	- interrupted cutting

				Cer	met	Coa	ited								Coa	ted									Unc	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		ССМТ	060202-C25	•	•	•	•	2	<u>Z</u>	Z	2	Z	2	Z	Z		Z		•	•	_	•	<u>п</u>		I	T	0.03~0.12	0.40~2.00
		OOWII	060204-C25	•	•	•	•	•	•	•	•		•	•	•				•	•		•		•			0.05~0.15	0.60~2.30
5	005		060208-C25	•	•	•	•	•	•		•		•		•				•	•		•		_			0.07~0.20	0.80~2.30
Medium cutting	C25		09T302-C25																								0.05~0.20	0.50~2.50
ರ ೯			09T304-C25	•	•	•	•	•	•	•	•		•	•	•				•	•		•		•			0.08~0.25	0.80~3.00
ğ			09T308-C25	•	•	•	•	•	•	•	•		•	•	•				•	•		•		•			0.10~0.30	1.00~3.00
ž			120404-C25					•	•		•		•	•	•				•	•		•					0.10~0.32	0.80~3.00
			120408-C25	•	•	•	•	•	•	•	•		•	•	•				•	•		•					0.12~0.36	1.20~3.50
			120412-C25						•				•		•												0.15~0.40	1.40~3.50
		CCMT	060204-VP1																								0.06~0.12	0.10~1.50
	VP1		09T304-VP1																								0.06~0.20	0.10~1.50
ing			09T308-VP1																								0.08~0.20	0.50~2.00
Finishing			120404-VP1																								0.08~0.22	0.20~2.00
造			120408-VP1																								0.10~0.25	0.50~2.00
			120412-VP1																								0.10~0.30	0.80~2.50
		CCGT	060201-FS																•			•					0.01~0.18	0.03~1.60
		CCGT	060201-FS																•			•					0.01~0.18	0.03~1.60
	FS _		060202-FS										-						•			•					0.02~0.20	0.04~1.70
ing	new		09T301-FS										-						•			•					0.04~0.21	0.00~1.80
Finishing			09T302-FS																•			•					0.02~0.23	0.05~2.00
证			09T304-FS																•			•					0.04~0.23	0.08~2.00
	[High precision]		09T308-FS																•			•					0.06~0.25	0.10~2.20
		CCGT	060201MFN-FS																								0.01~0.18	0.03~1.60
	FS _		060202MFN-FS																								0.02~0.20	0.04~1.70
g.	rs new		060204MFN-FS																								0.04~0.21	0.06~1.80
Finishing			09T301MFN-FS																								0.01~0.20	0.04~1.80
Fini			09T302MFN-FS																								0.02~0.23	0.05~2.00
	[ Utra high precision ]		09T304MFN-FS										_														0.04~0.23	0.08~2.00
	[ out high precision]		09T308MFN-FS																								0.06~0.25	0.10~2.20
D.	N 40	CCGT	09T301-MS																•			•					0.02~0.23	0.05~2.00
tting	MS		09T302-MS																•			•					0.02~0.25	0.03~2.50
ium cutting			09T304-MS																•			•					0.05~0.25	0.09~2.50
																			-									2.00
Med	[High precision]																											
gui	MS	CCGT	09T301MFN-MS																•			•					0.02~0.23	
cutti	new		09T302MFN-MS																•			•					0.03~0.25	0.07~2.50
E <sub>D</sub>			09T304MFN-MS																			•					0.05~0.25	0.09~2.50
Medium cutting	[Utra high precision]																											

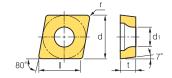
② Cutting edge geometry A52-A61
③ Recommended chip breaker B04-B14
③ Code system B34-B35



	Availa	able tool holders	
Designation	Page		
SCACR/L	B123, 190	SCLCR/L	B123, 190, 215, 225

## Turning Insert (Positive)





	Dimensi	ons (mm)	
Size	d	t	d₁
* 03	3.5	1.39	1.9
* 04	4.3	1.79	2.3
06	6.35	2.38	2.8
09	9.525	3.97	4.4

\*: The d and t are special dimensions,

# Rhombic **80° Positive**Relief Angle: 7°

	Steel	4	Р	•	#	•	\$ •	3	\$ #	#	#	•	•	3		#									Machining types
စ္သ	Stainless steel	<	M						3	3	3			•	3	#	3	#	•	3	3	#			macriming types
pie	Cast iron	4	K	•	#	•	\$ 3				3	3	3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																					3	General cutting
×	Heat resistant alloy, Titanium alloy	<	S													•	3	#	•	3	3			•	# Interrupted cutting
	Hardened steel	◂	Н																•	3	3		•	3	The interrupted cutting

				Ce	rme	Coa	ited							Coa	ited									Uncoated	Cutting (	Condition
	Incorts		ocianotio-						53	0 9	ک بر	ŭ 5	0			5	32	0	0	Z,	0	2	0	JiioJaleu		
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3233 NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	HO5 HO5	fn (mm/rev)	ap (mm)
		CCGT	060201-VP1															•		•	•	•		•	0.05~0.06	0.06~1.00
			060202-VP1															•		•	•	•		•	0.03~0.10	0.08~1.50
	VP1		060204-VP1															•		•	•	•		•	0.05~0.12	0.10~1.50
5			09T301-VP1															•		•	•	•		•	0.03~0.13	0.06~1.00
shin			09T302-VP1															•		•	•	•		•	0.04~0.15	0.08~1.50
Finishing			09T304-VP1															•		•				•	0.06~0.20	0.10~1.50
	(High procision)																									
	[High precision]																									
		CCGT	060201MFN-VP1															•			•				0.03~0.06	0.06~1.00
			060202MFN-VP1															•			•				0.03~0.10	0.08~1.50
			060204MFN-VP1															•			•				0.05~0.12	0.10~1.50
	VP1		09T301MFN-VP1															•			•				0.03~0.13	0.06~1.00
ing			09T302MFN-VP1															•			•				0.04~0.15	0.08~1.50
Finishing			09T304MFN-VP1															•							0.06~0.20	0.10~1.50
	[ Utra high precision ]																									
	*	CCET	0301005R																						0.01~0.05	0.10~0.30
		CCET	0301005K																						0.01~0.05	0.10~0.30
																									0.01~0.05	0.10~0.30
			030102R 030104R				_																		0.01~0.05	0.10~0.30
			030104K 0401005R		_						_														0.01~0.03	0.10~0.50
			0401003K 040101R								-														0.01~0.10	0.10~0.50
			040101R 040102R								_														0.01~0.10	0.10~0.50
			040102R 040104R				_																		0.01~0.10	0.10~0.50
			0301005L				-															-			0.01~0.10	0.10~0.30
5			0301003L 030101L																						0.01~0.05	0.10~0.30
Finishing			030101L 030102L																				•	•	0.01~0.05	0.10~0.30
inis			030102L 030104L				_																		0.01~0.05	0.10~0.30
			0401005L				_																		0.01~0.03	0.10~0.50
			0401003L 040101L																						0.01~0.10	0.10~0.50
			040101L 040102L				_																•			0.10~0.50
			040102L 040104L																				•			0.10~0.50
			0401042																						0.01 0.10	0.10 0.00
		<u> </u>																								

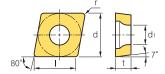
Cutting edge geometry A52~A61

**ᢒ** Code system B34∼B35

	Availa	ble tool holders												
Designation Page Designation Page														
SCACR/L	B123, 190	SCLCR/L	B123, 190, 215, 225											

## B Turning Insert (Positive)





	Dimension	ons (mm)	
Size	d	t	d₁
*03	3.5	1.39	1.9
*04	4.3	1.79	2.3
06	6.35	2.38	2.8
09	9 525	3 97	44

\*: The d and t are special dimensions.

# Rhombic **80° Positive**Relief Angle: 7°

	Steel		Р		#		3	•	<b>\$</b>	\$ #	#	#	•	•	\$	#									Machining types
ဗ္ဗ	Stainless steel		M							3	3	3			3	#	3	#	•	<b>3</b>	3	#			
pie	Cast iron	<b>-</b>	K		#	•	3	3				3	\$	3									•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal		N																					3	General cutting
×	Heat resistant alloy, Titanium alloy		S									•			•	•	3	#	•	3	3		•	3	# Interrupted cutting
-	Hardened steel	<b>-</b>	Н																•	3	3		•	3	- interrupted cutting

				Cer	met	Coa	ited							Coa	ited									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6315		NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	F04	H05	fn (mm/rev)	ap (mm)
	*	CCGT	0301003R-KF															•			•					0.01~0.05	0.10~0.30
			030101R-KF															•			•					0.01~0.05	0.10~0.30
			030102R-KF															•			•					0.01~0.05	0.10~0.30
			030104R-KF															•			•					0.01~0.05	0.10~0.30
			0401003R-KF															•			•					0.01~0.10	0.10~0.50
			040101R-KF															•			•					0.01~0.10	0.10~0.50
			040102R-KF															•			•					0.01~0.10	0.10~0.50
			040104R-KF															•			•					0.01~0.10	0.10~0.50
			0602003R-KF																							0.01~0.06	0.04~1.30
			060201R-KF																							0.02~0.08	0.05~1.50
			060202R-KF																							0.03~0.11	0.06~1.70
			09T3003R-KF																							0.02~0.08	0.05~1.50
	KF		09T301R-KF																							0.03~0.11	0.06~1.70
ing	IXI		09T302R-KF															_			_					0.04~0.15	0.08~2.00
Finishing			0301003L-KF					_										•			•	_				0.01~0.05	0.10~0.30
ш			030101L-KF															•			•					0.01~0.05	0.10~0.30
	[High precision]		030102L-KF					_										•			•	_				0.01~0.05	0.10~0.30
			030104L-KF					_										•			•					0.01~0.05	0.10~0.30
			0401003L-KF					_										•			•	_	_			0.01~0.10	0.10~0.50
			040101L-KF															-			•					0.01~0.10	0.10~0.50 0.10~0.50
			040102L-KF 040104L-KF					_										•			•					0.01~0.10	0.10~0.50
			0602003L-KF					_														_	_			0.01~0.10	0.10~0.30
			0602003L-KF					_																		0.01~0.08	0.04~1.50
			060201L-KF																							0.02~0.08	0.05~1.30
			09T3003L-KF																							0.03~0.11	0.05~1.70
			09T3003L-KF					-															_			0.02~0.00	0.05~1.70
			09T301L-KF																							0.03~0.11	0.08~2.00
			0010022 111																							0.04 0.10	0.00 2.00
		CCET	0602005MFR-KF															•			•					0.01~0.06	0.04~1.30
		0021	060201MFR-KF															•			•					0.02~0.08	0.05~1.50
			060202MFR-KF															•			•					0.03~0.11	0.06~1.70
			09T3005MFR-KF															•			•					0.02~0.08	0.05~1.50
	IZE.		09T301MFR-KF															•			•					0.03~0.11	0.06~1.70
hing	KF		09T302MFR-KF															•			•					0.04~0.15	0.08~2.00
shir			0602005MFL-KF															•			•					0.01~0.06	
Finis			060201MFL-KF															•			•					0.02~0.08	0.05~1.50
	[ Utra high precision ]		060202MFL-KF															•			•					0.03~0.11	0.06~1.70
	[ Out myn precision]		09T3005MFL-KF															•			•					0.02~0.08	
			09T301MFL-KF															•			•					0.03~0.11	0.06~1.70
			09T302MFL-KF															•			•					0.04~0.15	0.08~2.00

Cutting edge geometry A52~A61

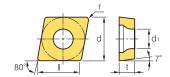
**③** Code system B34∼B35



	Availa	ble tool holders	
Designation	Page	Designation	Page
SCACR/L	B123, 190	SCLCR/L	B123, 190, 215, 225

## Turning Insert (Positive)





	Dimension	ons (mm)	
Size	d	t	d₁
06	6.35	2.38	2.8
09	9.525	3.97	4.4

# Rhombic **80° Positive**Relief Angle: 7°

	Steel		Р		#		3		\$ 3	#	#	#	•	•	3		#									Machining types
စ္မ	Stainless steel		M							3	3	3				3	#	3	#	•	3	3	#			
pie	Cast iron	4	K	•	#	•	3	3				3	3	3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	1	N																					•	3	General cutting
š	Heat resistant alloy, Titanium alloy	<b>-</b>	S														•	3	#		3	3				# Interrupted cutting
	Hardened steel	4	Н																	•	3	\$		•	3	- interrupted cutting

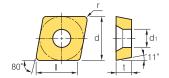
				Cer	met		ited								Coa	ited									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		CCGT	0602003R-KM																•								0.01~0.06	0.04~1.30
			060201R-KM																•			•					0.02~0.08	0.05~1.50
			060202R-KM																•			•		•			0.03~0.11	0.06~1.70
			060204R-KM																•			•					0.04~0.13	0.04~1.70
			09T3003R-KM																•								0.02~0.08	0.06~1.50
			09T301R-KM																•			•					0.03~0.11	0.06~1.70
			09T302R-KM																•			•					0.04~0.15	0.08~2.00
a ii	KM		09T304R-KM																•			•					0.05~0.16	0.10~2.00
inis			0602003L-KM																•								0.01~0.06	0.04~1.30
to f			060201L-KM																•			•					0.02~0.08	0.05~1.50
<u>=</u>			060202L-KM																•			•					0.03~0.11	0.06~1.70
Medium to finishing	[High precision]		060204L-KM																•								0.04~0.13	0.04~1.70
_	[g p. co]		09T3003L-KM																								0.02~0.08	0.06~1.50
			09T301L-KM																•								0.03~0.11	0.06~1.70
			09T302L-KM																•								0.04~0.15	0.08~2.00
			09T304L-KM																								0.05~0.16	0.10~2.00
		CCET	0602005MFR-KM																•			•					0.01~0.06	0.04~1.30
			060201MFR-KM																•								0.02~0.08	0.05~1.50
			060202MFR-KM																•			•					0.03~0.11	0.06~1.70
			09T3005MFR-KM																•								0.02~0.08	0.05~1.50
	1404		09T301MFR-KM																•			•					0.03~0.11	0.06~1.70
hing	KM		09T302MFR-KM																•			•					0.04~0.15	0.08~2.00
inis			0602005MFL-KM																								0.01~0.06	0.04~1.30
5			060201MFL-KM																								0.02~0.08	0.05~1.50
<u> </u>			060202MFL-KM																								0.03~0.11	0.06~1.70
Medium to finishing	[ Utra high precision ]		09T3005MFL-KM																•			•					0.02~0.08	0.05~1.50
			09T301MFL-KM																•			•					0.03~0.11	0.06~1.70
			09T302MFL-KM																•			•					0.04~0.15	0.08~2.00

	Availa	ble tool holders	
Designation	Page	Designation	Page
SCACR/L	B123, 190	SCLCR/L	B123, 190, 215, 225









	Dimension	ons (mm)	
Size	d	t	d₁
06	6.35	2.38	2.8
08	7.94	2.38	3.4
09	9.525	3.18	4.4

# Rhombic **80° Positive**Relief Angle: 11°

	Steel		Р		#		3		\$ 3	#	#	#	•	•	3		#									Machining types
8	Stainless steel		M							3	3	3				3	#	3	#	•	3	3	#			
çpie	Cast iron	4	K		#	•	\$	3				3	3	3										•	3	<ul> <li>Continuous cutting</li> </ul>
녻	Non-ferrous metal		N																					•	3	General cutting
ĕ	Heat resistant alloy, Titanium alloy		S									•				•	•	3	#	•	<b>3</b>	3		•	3	# Interrupted cutting
	Hardened steel		Н																			3			3	Thierrupted cutting

				Cei	met	Coa	ted								Coa	ited									Uncoa	ated	Cutting C	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		CPMT	080204-VF																								0.05~0.20	0.30~1.20
			080208-VF																								0.10~0.25	0.30~1.20
	VF		090304-VF						_				•						_								0.05~0.20	0.30~1.50
ing	VI		090308-VF				_						•														0.10~0.25	0.30~1.50
Finishing																												
		CPMT	080204-VL						_		_								_								0.03~0.08	0.08~1.00
			080208-VL																								0.04~0.12	0.10~1.00
	VL		090304-VL																								0.05~0.10	0.10~1.00
ing			090308-VL																								0.08~0.15	0.10~1.00
Finishing																												
ing		CPGT	090308-HMP																								0.05~0.20	0.70~2.00
Medium to finishing	HMP																											
		CPMT	060204-C25																								0.05~0.15	0.60~2.30
Medium cutting	C25																											
		CPGT	080202																Ц								0.06~0.20	0.10~2.00
			080204	•																							0.08~0.20	0.30~2.00
			080208																								0.10~0.25	0.50~2.00
			090302						_																		0.04~0.20	0.30~1.50
Finishing			090304	•					_		_								_								0.06~0.25	0.50~2.00
nish			090308																								0.08~0.30	0.70~2.50
E.																												

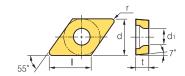
② Cutting edge geometry A52-A61
③ Recommended chip breaker B04-B14
③ Code system B34-B35



Available	tool holders
Designation	Page
SCLPR/L	B216







	Dimension	ons (mm)	
Size	d	t	d₁
07	6.35	2.38	2.8
11	9.525	3.97	4.4



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

0 \* 0 \* 0 \* \* \* \* \* 0 0 \* Steel Machining types Workpiece Stainless steel • : • : • : Cast iron Continuous cutting Non-ferrous metal General cutting Heat resistant alloy, Titanium alloy # Interrupted cutting Hardened steel

				Cer			ated								Coa									Unco	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		DCMT	070202-FP		•		_	•	_	_	_	_			_	_						_	_	-	_	0.01~0.10	0.05~0.08
			070204-FP	•	•	•	•	•	•								•				•					0.01~0.10	0.10~0.90
	FP 🚙		070208-FP																							0.01~0.10	0.10~1.00
Finishing	new		11T302-FP		•			•																		0.01~0.10	0.05~1.00
inis			11T304-FP	•	•	•	•	•	•								•				•					0.01~0.10	0.10~1.00
"	[Mild steel]		11T308-FP		•		•		•								•				•					0.04~0.12	0.10~1.00
	[willd Steel]																										
		DCMT	070202-VF		•				•												•					0.03~0.10	0.06~1.00
	,		070204-VF		•				•										•		•					0.05~0.20	0.30~1.20
ing	VF		11T302-VF	•					•																	0.04~0.15	0.08~1.50
Finishing			11T304-VF		•				•									(	•		•					0.05~0.20	0.30~1.50
造			11T308-VF		•														•							0.10~0.25	0.30~1.50
		DCMT	070202-VL																							0.02~0.10	0.06~0.80
		DCIVIT	070202-VL 070204-VL	•	•	•	•	•	•				•			•	•		• •					•	•	0.02~0.10	0.08~0.00
			070204-VL					•	•				•													0.04~0.10	0.10~1.00
50	VL		11T302-VL																			_				0.00~0.12	0.10~1.00
ri Ç	and the same of th		11T302-VL						•				•								•				•	0.05~0.10	0.10~1.00
Finishing			11T308-VL		•		•		•				•												•	0.08~0.15	0.10~1.00
			11T312-VL		Ť		Ť		_				_				_					Ť		-		0.08~0.15	0.30~1.50
			111012 12																							0.00 0.10	0.00 1.00
		DCMT	070202-HMP								•												•			0.03~0.12	0.10~1.50
ing			070204-HMP							•	•		•					(	•		•		•			0.06~0.17	0.20~2.30
nish	HMP		070208-HMP							•	•										•		•			0.08~0.23	0.40~2.30
iii o			11T302-HMP		_						•								•		•		•			0.04~0.22	0.10~2.00
Ē			11T304-HMP		•				•	•	•		•						•		•		•			0.08~0.23	0.30~3.00
Medium to finishing			11T308-HMP							•	•		•						•		•		•			0.10~0.30	0.50~3.00
		DCMT	070202-MP						•				•						• •			•				0.04~0.12	0.12~1.80
		DCIVI I	070202-MP 070204-MP		•								•													0.04~0.12	0.12~1.80
ng			070204-MP										•													0.03~0.15	0.30~1.80
Medium to finishing	MP <sub>rew</sub>		11T302-MP																							0.06~0.22	0.30~1.80
b fin	(LEW)		11T302-MP		•		•	•	•				•	•		•										0.04~0.15	0.50~2.00
豆			11T304-MP	•	•	•	•		•					•	•							•				0.00~0.20	0.50~2.30
nipa			11T300-MP		_												•		_			-				0.10~0.30	0.80~3.00
Ž																										3.20 0.00	3.00 0.00

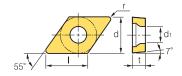
Cutting edge geometry A52~A61

**③** Code system B34∼B35

	Available t	tool holders	
Designation	Page	Designation	Page
SDACR/L	B190	SDQCR/L	B217
SDJCR/L	B123, 191	SDUCR/L	B218
SDNCN	B124, 191	SDZCR/L	B219

## B Turning Insert (Positive)





		Dimensio	ons (mm)	
5	Size	d	t	d <sub>1</sub>
	07	6.35	2.38	2.8
	11	9.525	3.97	4.4



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

	Steel		Р		#		\$	3	\$ #	#	#	•	•	\$	#									Machining types
ల్ర	Stainless steel	<	M						3	3	<b>3</b>			3	#	3	#		3	3	#			3 7/10
bje.	Cast iron	4	K		#	•	\$ 3				<b>3</b>	\$	\$									•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																			•	3	General cutting
š	Heat resistant alloy, Titanium alloy	<	S												•	3	#	•	3	3		•	3	
-	Hardened steel	<b>4</b>	Н															•		3		•	3	# Interrupted cutting

				Cei	met	Coa	ated								Coat	ted									Unco	ated	Cutting C	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	년	H05	fn (mm/rev)	ap (mm)
		DCMT	070202-C25		•	•	•	•	•				•						•	•		•					0.03~0.15	0.30~2.00
			070204-C25		•	•	•		•		•		•		•				•	•		•					0.05~0.20	0.50~2.50
ting	C25		070208-C25		•		•		•		•		•		•				•								0.06~0.25	0.80~2.50
품	023		11T302-C25	•	•	•	•		•				•						•	•							0.04~0.25	0.50~2.50
<u><u>=</u></u>			11T304-C25	•	•	•	•		•		•		•		•				•	•							0.08~0.30	0.80~3.00
Medium cutting			11T308-C25	•	•	•	•	•	•	•	•		•	•	•				•	•		•		•			0.10~0.30	1.00~3.00
		DCMT	070204-VP1																								0.05~0.12	0.10~1.50
ng	VP1		11T304-VP1																								0.06~0.20	0.10~1.50
Finishing	1		11T308-VP1																								0.08~0.23	0.10~1.50
뜶																												
		DCGT	070201-FS																•			•					0.01~0.18	0.03~1.60
			070202-FS																•								0.02~0.20	0.04~1.70
	FS		11T301-FS																•								0.01~0.20	0.04~1.80
iri	new		11T302-FS																•								0.02~0.23	0.05~2.00
Finishing			11T304-FS																•			•					0.04~0.23	0.08~2.00
"	[High precision]		11T308-FS																•			•					0.06~0.25	0.10~2.20
	[riigii precision]																											
		DCGT	070201MFN-FS																								0.01~0.18	0.03~1.60
			070202MFN-FS																								0.02~0.20	0.04~1.70
	FS 🦱		11T301MFN-FS																								0.01~0.20	0.04~1.80
i i i	new		11T302MFN-FS																								0.02~0.23	0.05~2.00
Finishing			11T304MFN-FS																								0.04~0.23	0.08~2.00
ı.	[ Utra high precision ]		11T308MFN-FS																								0.06~0.25	0.10~2.20
<u>ත</u>		DCGT	11T301-MS																•			•					0.02~0.23	0.05~2.00
Iti	MS <sub>new</sub>		11T302-MS																•			•					0.03~0.25	0.07~2.50
3 C	(IEI)		11T304-MS																•								0.05~0.25	0.09~2.50
Medium cutting	[High precision]																											
		DCGT	11T301MFN-MS																•			•					0.02~0.23	0.05~2.00
ing	NAC		11T302MFN-MS																•			•					0.03~0.25	0.07~2.50
Medium cutting	MS		11T304MFN-MS																•			•					0.05~0.25	0.09~2.50
E I																			•									
ledi																												
2	[ Utra high precision ]																											
				_																								



	Available t	tool holders	
Designation	Page	Designation	Page
SDACR/L	B190	SDQCR/L	B217
SDJCR/L	B123, 191	SDUCR/L	B218
SDNCN	B124, 191	SDZCR/L	B219

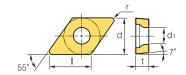
<sup>→</sup> Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

**③** Code system B34∼B35

<sup>•:</sup> Stock item







	Dimension	ons (mm)	
Size	d	t	d₁
07	6.35	2.38	2.8
11	9.525	3.97	4.4

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

	Steel		Р		#		\$	3	\$ #	#	#	•	•	\$	#								Machining types
ဗ္ဗ	Stainless steel		M						3	3	3			3	#	3	#	•	3	3	#		
pie	Cast iron	4	K		#	•	\$ 3				3	3	3									3	<ul> <li>Continuous cutting</li> </ul>
춫	Non-ferrous metal	•	N																			3	General cutting
š	Heat resistant alloy, Titanium alloy	<b>-</b>	S											•		3	#	•	3	3		•	# Interrupted cutting
	Hardened steel	4	Н															•	3	3		3	- interrupted cutting

				Cer	met	Coa	ited								Coa	ted									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		DCGT	070201-VP1	0	0	0	0	z	_	Z	Z	Z	Z	Z	Z	Z	Z	Z	•		•	•	•	_	•		0.03~0.06	0.06~1.00
	\ /D1	D001	070202-VP1																•		•	•	•		•		0.03~0.10	0.08~1.50
ing	VP1		070204-VP1																•		•	•	•		•		0.05~0.12	0.10~1.50
Finishing			11T301-VP1																•			•					0.03~0.13	0.06~1.00
ш	[High precision]		11T302-VP1																•		•	•	•		•		0.04~0.15	0.08~1.50
	[riight precision]		11T304-VP1																•		•	•	•		•		0.06~0.20	0.10~1.50
		DCGT	070201MFN-VP1																•			•					0.03~0.06	0.06~1.00
	) /D4		070202MFN-VP1																•			•					0.03~0.10	0.08~1.50
ing	VP1		070204MFN-VP1																•			•					0.05~0.12	0.10~1.50
Finishing			11T301MFN-VP1																•			•					0.03~0.13	0.06~1.00
造	filter blak om sleker 1		11T302MFN-VP1																•			•					0.04~0.15	0.08~1.50
	[ Utra high precision ]		11T304MFN-VP1																•			•					0.06~0.20	0.10~1.50
		DCGT	0702003R-KF																•			•					0.01~0.06	0.04~1.30
			070201R-KF																•			•					0.02~0.08	0.05~1.50
			070202R-KF																•			•					0.03~0.11	0.06~1.50
			070204R-KF																•			•					0.04~0.13	0.04~1.70
			11T3003R-KF																•			•					0.02~0.08	0.05~1.50
	KF		11T301R-KF																•			•		_			0.03~0.11	0.06~1.70
ور و			11T302R-KF																•			•		•			0.04~0.15	0.08~2.00
Finishing			11T304R-KF																•			•					0.05~0.16	0.10~2.00
ᇤ	[High precision]		0702003L-KF																•			•					0.01~0.06	0.04~1.30
	(g p. co)		070201L-KF																•			•					0.02~0.08	0.05~1.50
			070202L-KF																•			•					0.03~0.11	0.06~1.50
			070204L-KF																•			•					0.04~0.13	0.04~1.70
			11T3003L-KF																•			•					0.02~0.08	0.05~1.50
			11T301L-KF																•			•					0.03~0.11	0.06~1.70
			11T302L-KF																•			•					0.04~0.15	0.08~2.00
		DCET	11T304L-KF 0702005MFR-KF																•			•					0.05~0.16	0.10~2.00
		DCET	0702005WFR-KF																•			•					0.01~0.00	0.04~1.50
			070201MFR-KF																•			•					0.02~0.06	0.05~1.50
			11T3005MFR-KF																•			•					0.03~0.11	0.05~1.70
	KF		11T3003MIFK-KF																•			•					0.02~0.00	0.05~1.70
ing			11T301MFR-KF																•			•					0.03~0.11	0.08~2.00
Finishing			0702005MFL-KF														_		•			•					0.01~0.06	0.04~1.30
Ē	[ Utra high precision ]		0702003MT E-KF																•			•					0.02~0.08	0.05~1.50
			070202MFL-KF																•			•					0.03~0.11	0.06~1.70
			11T3005MFL-KF																•			•					0.02~0.08	0.05~1.50
			11T301MFL-KF																•			•					0.03~0.11	0.06~1.70
			11T302MFL-KF																•			•					0.04~0.15	0.08~2.00
			1113UZWIFL-KF																								0.04~0.15	0.08~2.00

Cutting edge geometry A52~A61

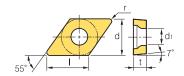
€ Code system B34~B35

	Available t	ool holders	
Designation	Page	Designation	Page
SDACR/L	B190	SDQCR/L	B217
SDJCR/L	B123, 191	SDUCR/L	B218
SDNCN	B124, 191	SDZCR/L	B219



## **B** Turning Insert (Positive)





	Dimensio	ons (mm)	
Size	d	t	d <sub>1</sub>
07	6.35	2.38	2.8
11	9.525	3.97	4.4



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

	Steel		Р		#		3		\$ \$	#	#	#	•	•	\$	#								Machining types
ဗ္ဗ	Stainless steel		M							3	3	3			3	#	3	#	•	3	3	#		
pie	Cast iron	4	K		#	•	3	3				3	3	3									3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N																				3	General cutting
×	Heat resistant alloy, Titanium alloy		S												•	•	3	#	•	3	3		3	-
	Hardened steel		Н																•	3	\$		3	# Interrupted cutting

				Cer	met	Coa	ated								Coa	ted									Uncoa	ted	Cutting C	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		DCGT	0702003R-KM																•			•					0.01~0.06	0.04~1.30
			070201R-KM																•			•					0.02~0.08	0.05~1.50
			070202R-KM																•			•					0.03~0.11	0.06~1.50
			070204R-KM																•								0.04~0.13	0.04~1.70
			11T3003R-KM																•			•					0.02~0.08	0.05~1.50
			11T301R-KM																•			•					0.03~0.11	0.06~1.70
gu			11T302R-KM																•			•					0.04~0.15	0.08~2.00
ishi	KM		11T304R-KM																•								0.05~0.16	0.10~2.00
Jii C			0702003L-KM																•			•					0.01~0.06	0.04~1.30
Medium to finishing			070201L-KM																•								0.02~0.08	0.05~1.50
ğ	[High precision]		070202L-KM																•								0.03~0.11	0.06~1.50
ž	[riight prodictor]		070204L-KM																•								0.04~0.13	0.04~1.70
			11T3003L-KM																•			•					0.02~0.08	0.05~1.50
			11T301L-KM																•								0.03~0.11	0.06~1.70
			11T302L-KM																•			•					0.04~0.15	0.08~2.00
			11T304L-KM																•								0.05~0.16	0.10~2.00
		DCET	0702005MFR-KM																•			•					0.01~0.06	0.04~1.30
			070201MFR-KM																•			•					0.02~0.08	0.05~1.50
			070202MFR-KM																•			•					0.03~0.11	0.06~1.70
			11T3005MFR-KM																•			•					0.02~0.08	0.05~1.50
<u></u> g			11T301MFR-KM																•			•					0.03~0.11	0.06~1.70
ishii	KM		11T302MFR-KM																•			•					0.04~0.15	0.08~2.00
fin			0702005MFL-KM																•			•					0.01~0.06	0.04~1.30
Medium to finishing			070201MFL-KM																•			•					0.02~0.08	0.05~1.50
diu	[ Utra high precision ]		070202MFL-KM																•			•					0.03~0.11	0.06~1.70
ž			11T3005MFL-KM																•			•					0.02~0.08	0.05~1.50
			11T301MFL-KM																•			•					0.03~0.11	0.06~1.70
			11T302MFL-KM																•			•					0.04~0.15	0.08~2.00

② Cutting edge geometry A52-A61
③ Recommended chip breaker B04-B14
③ Code system B34-B35

Available tool holders			
Designation	Page	Designation	Page
SDACR/L	B190	SDQCR/L	B217
SDJCR/L	B123, 191	SDUCR/L	B218
SDNCN	B124, 191	SDZCR/L	B219



	Dimension	ons (mm)	
Size	d	t	d₁
08	8.0	3.18	3.35
10	10.0	3.97	3.6
12	12.0	4.76	4.2
16	16.0	6.35	5.2
20	20.0	6.35	6.5
25	25.0	7.94	7.25
32	32.0	9.52	9.55

# Round R° Positive Relief Angle: 7°

	Steel		Р		#	•	3		\$ \$	#	#	#	•	•	3		#									Machining types
క్ర	Stainless steel		M							3	3	\$			•	3	#	3	#	•	3	3 :	*			
þie	Cast iron	4	K		#		3	3				3	3	3											3	<ul> <li>Continuous cutting</li> </ul>
ź	Non-ferrous metal		N																					•	3	General cutting
Š	Heat resistant alloy, Titanium alloy		S									•				•	•	3	#	•	3	3		•	3	# Interrupted cutting
_	Hardened steel		Н																	•	3	3		•	3	_

				Cer	met	Coa	ited								Coa	ted									Unco	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H04	H05	fn (mm/rev)	ap (mm)
	\ / \ /	RCMT	0803M0-VM																								0.05~0.30	0.80~2.50
ting	VM		10T3M0-VM																								0.05~0.35	0.90~3.00
Medium cutting			1204M0-VM																								0.10~0.50	1.00~3.50
<u> </u>			1606M0-VM																								0.13~0.60	1.30~6.50
Mec																												
		RCMX	1003M0								•		•														0.25~0.50	1.50~4.00
			1204M0						•		•		•		•												0.30~0.60	2.50~5.00
ting	10000		1606M0						•		•		•		•												0.40~0.70	3.00~7.00
Medium cutting			2006M0								•																0.48~0.90	3.50~9.00
<u>.</u>			2507M0								•																0.55~1.20	4.00~12.00
<b>Sed</b>			3209M0								•				•												0.65~1.50	5.00~15.00

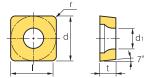
→ Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

€ Code system B34~B35

	Available	tool holders	
Designation	Page	Designation	Page
PRDCN	B174	PRGCR/L	B175







	Dimension	ons (mm)	
Size	d	t	d <sub>1</sub>
09	9.525	3.97	4.4
12	12.0	4.76	4.2

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

	Steel		Р		#	3		3	3	#	#	#	•	•	3		#									Machining types
ల్ల	Stainless steel		M							3	3	3				3	#	3	#	•	3	3	#			
pie	Cast iron	4	K	•	#	3	3					3	3	3										•	3	<ul><li>Continuous cutting</li></ul>
놓	Non-ferrous metal	4	N																					•	3	General cutting
Š	Heat resistant alloy, Titanium alloy		S													•		\$	#	•	3	3		•	3	# Interrupted cutting
	Hardened steel		Н																	•	3	\$		•	3	- Interrupted cutting

_		50 31001																								
						Coa									ated									Uncoated	Cutting (	Condition
	Inserts		esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235 NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	fn (mm/rev)	ap (mm)
	FP _	SCMT	09T304-FP		•			•																	0.01~0.10	0.10~1.00
Finiching	[Mild steel]		09T308-FP	•	•		•	•	•							•					•				0.04~0.12	0.10~1.00
	VF	SCMT	09T304-VF						•									•							0.05~0.20	0.30~1.50
Finishing																										
		SCMT	09T304-VL		•			•	•			•	)		•	•	•	•	•	•	•	•			0.05~0.10	0.10~1.00
	VL		09T308-VL		•		•	•	•			•			•	•		•	•	•	•	•			0.08~0.15	0.10~1.00
Finishing																										
		SCMT	09T304-HMP							•	•							•					•		0.08~0.23	0.30~3.00
5	P HMP		09T308-HMP								•							•					•		0.10~0.30	0.50~3.00
			120404-HMP																						0.09~0.27	0.30~3.60
Modium to finishing			120408-HMP								•							•					•		0.12~0.36	0.60~3.60
		SCMT	09T304-MP					•	•			•	)	•	•	•	•	•		•	•				0.05~0.25	0.30~2.80
,	<b>.</b>		09T308-MP					•	•			•	)	•	•	•	•	•			•				0.10~0.30	0.50~2.80
i	MP		120404-MP					•	•							•	•	•							0.10~0.30	0.50~2.80
ini	IVII		120408-MP					•	•					•	•	•	•	•		•	•				0.15~0.35	0.80~3.50
Madina to finishing			120412-MP																						0.25~0.40	1.00~3.50
		SCMT	060204-C25								•														0.08~0.25	0.40~2.50
5	<sup>2</sup> C25		09T304-C25	•	•	•	•	•	•		•	•	)	•				•	•		•				0.08~0.25	0.60~3.00
. <u>.</u>	525		09T308-C25	•	•	•	•	•	•	•	•	•	•	•				•	•		•				0.10~0.30	1.00~3.00
			120404-C25	•	•	•	•	•	•			•	)	•				•	•		•		•		0.10~0.30	0.80~3.80
Modium to finishing			120408-C25	•	•	•		•	•	•	•	•		•				•	•		•		•		0.12~0.38	1.20~3.80
Mod																										



	Available	tool holders	
Designation	Page	Designation	Page
SSBCR/L	B192	SSKCR/L	B193, 219
SSDCN	B192	SSSCR/L	B193, 245

Cutting edge geometry A52~A61
 Recommended chip breaker B04~B14

<sup>◆</sup> Code system B34~B35



	Dimension	ons (mm)	
Size	d	t	d₁
09	9.525	3.18	3.4
12	12.7	4.76	-
15	15.875	4.76	-
19	19.05	4.76	-
25	25.4	6.35	-

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

	Steel		Р		#	3		3	3	#	#	#		3		#									Machining types
8	Stainless steel		M							<b>\$</b>	3	3			3	#	3	#	•	3	3	#			
pie	Cast iron	4	K		#	3	3					\$	\$ 3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																				•	3	General cutting
×	Heat resistant alloy, Titanium alloy	<b>-</b>	S									•			•	•	\$	#	•	3	3		•	3	# Interrupted cutting
	Hardened steel		Н																	3	\$		•	3	Hinterrupted cutting

				Cer	rmet	Coa	ited							Coa	ted									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500				NC3215	NC3225	NC3120	NC3030	NC3235	NC5330		NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030		H05	fn (mm/rev)	ap (mm)
Finishing	VL	SPMT	09T304-VL 09T308-VL																							0.04~0.18	0.20~1.40
Finishing	VF	SPMT	090304-VF 090308-VF																							0.05~0.20 0.10~0.25	0.30~1.50 0.30~1.50
Finishing	F	SPMR	090304-F 120304-F						•		•															0.05~0.20 0.10~0.25	0.30~2.00
Finishing	F	SPGR	090304-F 120304-F																							0.05~0.20 0.10~0.25	0.30~2.00 0.50~2.00
Medium cutting	M	SPMR	090308-M 120308-M 120312-M						•		•															0.10~0.40 0.10~0.40 0.20~0.40	1.00~3.50 1.50~4.00 1.50~4.00
Medium cutting	M	SPGR	090308-M 120308-M																							0.10~0.40 0.20~0.40	1.00~3.50 1.50~4.00
Medium to finishing		SPUN	120304 120308 120308SN 150412 190412 190416 250620								•															0.10-0.30 0.15-0.40 0.15-0.40 0.20-0.50 0.20-0.50 0.25-0.60 0.30-0.80	1.00-5.00 1.00-5.00 1.00-5.00 1.00-5.00 1.50-7.00 2.00-7.00 3.00-10.0

→ Cutting edge geometry A52~A61
→ Recommended chip breaker B04~B14

**ᢒ** Code system B34~B35

	Available	tool holders	
Designation	Page	Designation	Page
CSDPN	B181	SSKPR/L	B219
CSKPR/L	B182		





	Dimension	ons (mm)	
Size	d	t	d₁
06	6.35	2.38	2.8
07	6.35	2.38	2.8
09	9.525	3.18	3.4~4.4
12	12.7	3.18	-
15	15.875	4.76	-
19	19.05	4.76	-

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

	Steel		Р		#	3		3	<b>3</b>	#	#	#		•	3		#								Machining types
9	Stainless steel		M							3	3	3				3	#	\$	#	•	3	3	#		
pie	Cast iron	4	K		#	3	3					\$	3	3										3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																					3	General cutting
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S									•						3	#	•	3	3		3	# Interrupted cutting
	Hardened steel	_ <	Н																	•	3	3		3	- interrupted cutting

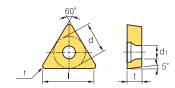
				Cer	met	Coa	ted								Coa	ited									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030		H05	fn (mm/rev)	ap (mm)
		SPGN	070202																								0.03~0.10	0.50~2.00
			070208																								0.10~0.25	0.70~3.00
			090302																								0.03~0.10	0.50~3.00
			090304																								0.08~0.20	0.70~3.50
			090308																								0.10~0.25	0.70~3.50
			120302																								0.03~0.20	0.50~3.00
			120304																								0.08~0.20	1.00~5.00
			120308								•																0.10~0.25	1.00~5.00
			120312																								0.15~0.30	1.00~5.00
			120316																								0.18~0.33	1.00~5.00
			120402																								0.03~0.20	0.50~3.00
_			120404																								0.08~0.20	1.00~5.00
l id			120408																								0.10~0.25	1.00~5.00
inis			120412																								0.15~0.30	1.00~5.00
tof			120416																								0.18~0.33	1.00~5.00
Medium to finishing			120430																								0.20~0.60	2.00~5.00
Med			120440																								0.25~0.70	3.00~5.00
			150404																								0.08~0.20	1.50~7.00
			150408																								0.10~0.25	1.50~7.00
			150412																								0.15~0.30	1.50~7.00
			150416																								0.18~0.33	1.50~7.00
			150420																								0.20~0.45	1.50~7.00
			190404																								0.08~0.20	1.50~9.00
			190408																								0.10~0.25	1.50~9.00
			190412																								0.15~0.45	1.50~9.00
			190416																								0.18~0.60	1.50~9.00
			190424																								0.25~0.70	2.50~9.00
guil		SPGA	060204																								0.50~0.25	0.50~2.00
inis			090308T	•																							0.10~0.25	0.70~3.00
5			090308T-Z																								0.10~0.25	0.70~3.00
Medium to finishing			* Note: 08T: corner C0,8 08T-Z: corner R0,8																									
		SPGT	090304R																								0.08~0.23	0.30~3.00
hing			090308R																								0.10~0.30	0.50~3.00
inis			090304L																								0.08~0.23	0.30~3.00
to f			090308L																								0.10~0.30	0.50~3.00
Medium to finishing																												

Outting edge geometry A52-A61 → Recommended chip breaker B04-B14 → Code system B34-B35



	Available	tool holders	
Designation	Page	Designation	Page
CSDPN	B181	SSKPR/L	B219
CSKPR/L	B182		





	Dimension	ons (mm)	
Size	d	t	d₁
06	3.97	1.59	2.16



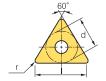
# Triangular **60° Positive** Relief Angle: 5°

	Steel		Р		#		3	•	\$ \$	#	#	#	•		•		#									Machining types
စ္မ	Stainless steel		M							3	3	3				3	#	3	#	•	3	3	#			
bje	Cast iron	4	K		#	•	3	\$				3	\$	3										•	3	<ul> <li>Continuous cutting</li> </ul>
춫	Non-ferrous metal	•	N																						3	General cutting
ĕ∣	Heat resistant alloy, Titanium alloy	<b>-</b>	S									•				•	•	\$	#	•	3	3			3	# Interrupted cutting
	Hardened steel	4	Н																	•	3	3			3	The interrupted cutting

				Cer	met	Coa	ated								Coa	ted									Unco	oated	Cutting C	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
	VL	TBMT	060102-VL																								0.03~0.06	0.05~0.60
Finishing																												
		TBGT	060102L																					•	•		0.05~0.20	0.10~1.30
_			060104L																								0.08~0.20	0.10~1.30
Finishing																												

● Cutting edge geometry A52-A61 ● Recommended chip breaker B04-B14 ● Code system B34-B35

적원	용홀더
Designation	Page
STUBR/L	B225





	Dimensio	ons (mm)	
Size	d	t	d₁
06	6.35	2.38	2.8
09	5.56	2.38	2.5
11	6.35	2.38	2.8
16	9.523	3.97	4.4
22	12.7	4.76	-

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

	Steel	Р		#	3		\$ 3	#	#	#	•	•	\$	#									Machining types
ల్ల	Stainless steel	M						3	3	3			<b>3</b>	#	3	#	•	3	3	#			
pie	Cast iron	K	•	#	3	3				3	\$	3									•	3	<ul> <li>Continuous cutting</li> </ul>
춪	Non-ferrous metal	N																				3	General cutting
ĕ	Heat resistant alloy, Titanium alloy	S													3	#	•	3	3			3	
	Hardened steel	Н															•	3	3			3	# Interrupted cutting

					met										oate									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9113	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
	FP _	TCMT	060201-FP																							0.00~0.08	0.05~0.07
ng	new		110202-FP		•																					0.01~0.10	0.05~0.08
Finishing			110204-FP		•																					0.01~0.10	0.10~0.90
造	[ Mild steel ]																										
		TCMT	110202-VF																							0.03~0.13	0.06~0.70
	VF		110204-VF															•								0.05~0.20	0.30~1.20
ng	VI		110208-VF															•								0.10~0.25	0.30~1.20
Finishing			16T302-VF																							0.05~0.15	0.10~1.30
듄			16T304-VF						•			(	•					•								0.05~0.20	0.30~1.50
		TCMT	090208-VL																							0.08~0.20	0.10~1.20
	VL		110204-VL																							0.05~0.15	0.10~1.30
ing	V L		110208-VL																							0.08~0.20	0.10~1.30
Finishing			16T304-VL		•	•	•	•	•									•		•	•	•				0.05~0.20	0.30~1.50
Ē	- Thursday		16T308-VL		•	•	•	•				(						•		•		•				0.05~0.20	0.30~1.50
		TCMT	090204-HMP							•													•			0.06~0.17	0.20~2.30
		TCIVIT											-					_								0.06~0.17	0.20~2.30
g			090208-HMP										-					_									0.40~2.30
ishii	HMP		110202-HMP		•													•			•		•			0.03~0.15	
fi			110204-HMP		_						•							•					•			0.06~0.19	0.20~2.50
E to			110208-HMP		•								_					•			•		•			0.09~0.26	
Medium to finishing			16T304-HMP		•					•	-							•					•			0.08~0.23	0.30~3.00
₩			16T308-HMP								•							•								0.10~0.30	0.50~3.00
		TCMT	090204-MP														•	)								0.05~0.18	0.10~1.00
			090208-MP										_					)								0.08~0.20	0.10~1.20
			110202-MP					•	•			(	•					)		•	•					0.03~0.12	0.20~1.50
50			110204-MP					•	•			(	•					)		•	•					0.05~0.15	0.20~1.50
hin	MP		110208-MP					•	•			(	•					•		•	•					0.10~0.28	0.25~2.00
Medium to finishing			16T302-MP										_													0.08~0.25	0.20~1.50
to			16T304-MP	•	•	•	•	•	•			(	•	•				•	•	•	•	•				0.08~0.20	0.30~2.50
ium			16T308-MP	•	•	•	•	•	•			(	•	•				•	•	•	•	•				0.10~0.30	0.50~2.50
Med			16T312-MP					•	•			(	•					)			•					0.20~0.40	0.50~2.50
			220408-MP																							0.20~0.40	0.50~3.50

**→** Cutting edge geometry A52~A61 **→** Recommended chip breaker B04~B14

€ Code system B34~B35



	Available t	tool holders	
Designation	Page	Designation	Page
STACR/L	B124, 193	STTCR/L	B194, 246
STFCR/L	B194, 245	STWCR/L	B246
STGCR/L	B194		

#### TC O

# 60°

	Dimension	ons (mm)	
Size	d	t	d₁
08	8.0	3.18	3.35
09	5.56	2.38	2.5
11	6.35	2.38	2.8
16	9.525	3.97	4.4

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

	Steel		Р		#	3		3	3	#	#	#	•	•	\$	#									Machining types
క్ర	Stainless steel		M							3	3	3			3	#	3	#		3	3	#			
bje	Cast iron		K		#	3	3					3	\$	3									•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																				•	3	General cutting
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S									•			•	•	\$	#	•	3	3		•	3	# Interrupted cutting
	Hardened steel	4	Н																•	3	3			3	Thierrupted cutting

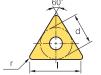
		anderica steer																									
						Coat								Coa										Unco	ated	Cutting (	Condition
	Inserts	Des	ignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120 NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		TCMT (	090204-C25	•		•	•		•	•	)	•		•				•	•							0.06~0.18	0.40~2.50
			090208-C25	•	•		•		•			•		•				•	•							0.08~0.25	0.80~2.50
Š	<sup>2</sup> C25		110202-C25	•	•		•		•			•						•	•							0.04~0.12	0.40~2.00
Modium cutting		_	110204-C25	•	•		•		•	•	)	•		•				•	•	-						0.06~0.20	0.60~2.50
8		_	110208-C25	•			•		•	•	)	•		•				•	•	-			•			0.08~0.25	0.80~2.50
= = =		_	16T304-C25	•		•	•		• (	•	)	•		•				•	•				•			0.08~0.28	0.80~3.00
2		_	16T308-C25	•	•		•		•	•	)	•		•				•	•				•			0.10~0.30	1.00~3.00
	VP1	TCMT '	16T304-VP1																							0.06~0.20	0.10~1.50
2	VEI	7	16T308-VP1																							0.08~0.23	0.10~1.50
Gidaidia																											
		TCGT '	110201-FS															•			•					0.01~0.16	0.03~1.40
	FS	_	110202-FS															•			•					0.02~0.18	0.04~1.50
Finishing	new new	-	110204-FS															•			D					0.04~0.19	0.06~1.60
: ·	[High precision]																										
	FS		110201MFN-FS				_									_				_		_				0.01~0.16	0.03~1.40
5		_	110202MFN-FS																			_				0.02~0.18	0.04~1.50
Diidoinia	[Utra high precision]	_	110204MFN-FS																							0.04~0.19	0.06~1.60
		_	090204-VP1																	_						0.04~0.18	0.10~1.00
5	VP1	_	16T304-VP1																							0.06~0.20	0.10~1.50
- Cuidainia		_	16T308-VP1																							0.08~0.23	0.10~1.50
		TCGT (	0802003R-KF																							0.01~0.06	0.04~1.30
		(	080201R-KF																							0.02~0.08	0.05~1.50
	KF		080202R-KF																							0.03~0.11	0.06~1.70
	2 🛕	(	0802003L-KF																							0.01~0.06	0.04~1.30
Finishing		_	080201L-KF																							0.02~0.08	0.05~1.50
ij		_(	080202L-KF																							0.03~0.11	0.06~1.70
	[High precision]																										

Cutting edge geometry A52~A61

€ Code system B34~B35

	Available t	ool holders	
Designation	Page	Designation	Page
STACR/L	B124, 193	STTCR/L	B194, 246
STFCR/L	B194, 245	STWCR/L	B246
STGCR/L	B194		





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t	- 1

	Dimension	ons (mm)	
Size	d	t	d <sub>1</sub>
06	3.97	1.59	2.15
09	5.56	2.38	2.8
14	8.2	3.0	3.8



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

	Steel		Р		#		3	•	<b>\$</b>	\$ #	#	#	•	•	\$	#								Machining types
క్ర	Stainless steel		M							3	3	<b>3</b>			3	#	3	#		3	3	#		
Bi.	Cast iron	4	K		#	•	3	3				<b>3</b>	\$	3									3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N																				<b>3</b>	General cutting
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S														3	#	•	3	3		3	# Interrupted cutting
	Hardened steel		Н																•	3	3		3	Third in the internation of the international continuity

				Cei	rmet	Coa	ted								Coa	ted									Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
ing		TOEH	060102L																								0.05~0.17	0.10~1.50
to finishing			090204L																								0.05~0.20	0.30~2.50
tofi			140304L																								0.05~0.25	0.30~2.50
Medium																												

Outting edge geometry A52~A61 → Recommended chip breaker B04~B14 → Code system B34~B35

•: Stock item

	Available	tool holders	
Designation	Page	Designation	Page
STFPR/L	B221	STUPR/L	B226
CTFPR/L	B182	CTGPR/L	B182





	Dimens	sions (mm)	
Size	d	t	d₁
09	5.56	2.38	3.0
11	6.35	3.18	3.4
16	9.525	3.18~4.76	4.4



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

	Steel	Р		#	3		3	3	#	#	#	•		\$	#									Machining types
క్ర	Stainless steel	M							3	3	3			3	#	3	#		3	3	#			
pie	Cast iron	K		#	3	3					3	3	3									•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N																				•	3	General cutting
Š	Heat resistant alloy, Titanium alloy	S													•	3	#	•	3	3		•	3	# Interrupted cutting
	Hardened steel	Н																	3	3		•	3	- interrupted cutting

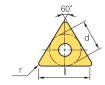
				Cei	met	Coa	ated								Coa	ited									Unco	ated	Cutting C	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		TPMT	090202-FP		•	•	•																				0.01~0.09	0.05~0.07
			090204-FP	•	•	•	•		•																		0.01~0.09	0.10~0.08
	ED		110302-FP		•	•	•		•								•					•					0.01~0.10	0.05~0.08
ng	FP new		110304-FP	•	•	•	•		•								•					•					0.01~0.10	0.10~0.90
Finishing			110308-FP	•	•	•	•		•								•					•					0.04~0.10	0.10~1.00
ᄩ			160404-FP		•																						0.01~0.10	0.10~1.00
	The state of the s		160408-FP		•																						0.04~0.12	0.10~1.00
	[Mild steel]																											

Outting edge geometry A52~A61 → Recommended chip breaker B04~B14 → Code system B34~B35



	Available	tool holders	
Designation	Page	Designation	Page
STFPR/L	B221	STUPR/L	B226
CTFPR/L	B182	CTGPR/L	B182





_	_	- <b>d</b> 1
_	t	11°

	Dimensions (mm)												
Size	d	t	d₁										
09	5.56	2.38	3.0										
11	6.35	3.18	3.4										
16	9.525	3.18~4.76	4.4										
22	12.7	4.76	-										

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

	Steel		Р		#		3		3	3	#	#	#	•		3		#									Machining types
8	Stainless steel		M								3	3	3				3	#	3	#	•	3	3	#			
pie	Cast iron	4	K		#	•	3	3					\$	3	3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N																						•	3	General cutting
×	Heat resistant alloy, Titanium alloy	<b>-</b>	S										•					•	\$	#	•	3	3		•	3	# Interrupted cutting
	Hardened steel	=	Н																		•	3	3			3	Hinterrupted cutting

				Cer	met		ted								Coa	ted								Unc	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	20400	PC8105	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		TPMT	110304-VF	ਹ	ਹ	Ö	Ö	ž	ž	ž	ž	ž	ž	ž	ž	ž	ž		•	ב ו	1 0		<u>~</u>	Ť	Ĭ	0.05~0.20	0.30~1.50
<u> </u>	VF	IFIVII	110304-VF						•				•									)				0.10~0.25	0.30~1.50
Finishing			160404-VF																							0.05~0.20	0.30~2.00
Ë			160408-VF																							0.10~0.25	0.30~2.00
		TPMT	090204-VL																							0.04~0.10	0.10~0.90
	VL		090208-VL																							0.06~0.12	0.10~1.00
<u></u> g	٧L		110304-VL	•	•	•	•	•	•				•			•	•	•	• (			•				0.05~0.15	0.10~1.30
Finishing			110308-VL					•									•	•								0.08~0.20	0.10~1.30
ᄩ			160404-VL																							0.05~0.20	0.30~1.50
			160408-VL																							0.05~0.20	0.30~1.50
		TPMT	090202-MP																							0.03~0.15	0.10~1.00
			090204-MP																							0.05~0.18	0.10~1.00
ig	MP _		110302-MP																							0.03~0.12	0.20~1.50
finis	1VII new		110304-MP	•	•	•	•	•	•								•	•	• (							0.05~0.20	0.20~1.50
5			110308-MP					•	•								•	•								0.10~0.28	0.30~2.00
Medium to finishing	4		160402-MP																							0.06~0.20	0.30~2.50
Mec			160404-MP					•	•																	0.08~0.20	0.30~2.50
			160408-MP						•																	0.10~0.30	0.50~2.50
		TPMR	090202-F												_		_									0.05~0.15	0.10~1.00
	F		090204-F																							0.05~0.15	0.10~1.00
و و	1		110302-F						_	_	_				_								_			0.05~0.15	0.10~1.50
Finishing			110304-F						•	•	•				•		_						•			0.05~0.20	0.30~1.50
Ë			110308-F						_	_					_		_						_			0.05~0.25	0.30~1.50
			160304-F						•	•	•		•				_				•	)	•			0.08~0.25	0.50~2.00
			160308-F																							0.08~0.25	0.50~3.00
		TDCD	110202 E																							0.05~0.15	0.10~1.50
50	F	TPGR	110302-F 110304-F				_		_						_		_									0.05~0.15	0.10~1.50
ig			160304-F																	-						0.03~0.20	0.50~1.50
Finishing			100304-1																							0.00~0.23	0.30~2.00
-																											
		TPMR	110304-M																							0.10~0.25	0.70~3.00
Д.		I I IVIIX	110308-M								•				•											0.13~0.30	1.00~3.00
Medium cutting	M		160304-M								•				•											0.10~0.25	1.00~5.00
2			160308-M						•	•	•				•											0.13~0.30	1.00~5.00
dig			160312-M						_		•				_											0.15~0.35	1.00~5.00
Me			220408-M						•		-															0.13~0.30	1.50~7.00
				_																				_			

→ Cutting edge geometry A52~A61
→ Recommended chip breaker B04~B14

**③** Code system B34∼B35

	Available tool holders											
Designation	Page	Designation	Page									
STFPR/L	B221	STUPR/L	B226									
CTFPR/L	B182	CTGPR/L	B182									

#### TP OC

# 600

Ŧ		₫dı
	t	₹11°

Dimensions (mm)											
Size	d	t	d <sub>1</sub>								
09	5.56	2.38	-								
11	6.35	2.38~3.18	3.4								
16	9.525	3.18~4.76	4.4								
22	12.7	4.76	-								
27	15.875	4.76~6.35	-								
33	19.05	7.94~9.52	7.93								

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

	Steel	Р		#		\$		3	3	#	#	#			3		#									Machining types
ల్ల	Stainless steel	M								3	3	3			•	3	#	3	#	•	3	3	#			
bje.	Cast iron	K		#	•	3	3					3	3	3										•	3	<ul> <li>Continuous cutting</li> </ul>
춪	Non-ferrous metal	N																						•	3	General cutting
š	Heat resistant alloy, Titanium alloy	S										•				•	•	\$	#	•	3	3			3	# Interrupted cutting

						Coa									Coa										Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	PC9030	H05	fn (mm/rev)	ap (mm)
<u>g</u>	М	TPGR	110308-M																								0.13~0.30	1.00~3.00
曹	IVI		160308-M																								0.13~0.30	1.00~5.00
Medium cutting																												
		TPUN	090308														_										0.10~0.30	
			110208														_										0.15~0.40	1.00~3.00
			110304																								0.10~0.30	1.00~3.00
			110308																								0.15~0.40	1.00~3.00
			160304								•																0.10~0.30	1.00~5.00
ing			160308								•						_		•								0.15~0.40	1.00~5.00
Medium to finishing			160308TN																				_				0.15~0.40	1.00~5.00
ill o			160312																				_				0.20~0.50	1.50~5.00
툍			160312TN														_										0.20~0.50	1.50~5.00
			220404														_		_								0.10~0.30	1.50~7.00
2			220408								•						_										0.15~0.40	1.50~7.00
			220412														_										0.20~0.50	1.50~7.00
			220412TN														_										0.20~0.50	1.50~7.00
			330620																								0.30~0.70	3.00~10.00
		TPGN	090204																								0.07~0.20	0.70~2.00
			110302																								0.05~0.15	0.50~2.00
			110304								•														•		0.07~0.20	0.70~3.00
			110308								•														•		0.10~0.25	1.00~3.00
			160302																								0.05~0.18	1.00~5.00
			160304						•		•														•		0.07~0.20	1.00~5.00
			160308						•		•														•		0.10~0.25	1.00~5.00
g			160310																								0.10~0.25	1.00~5.00
Medium to finishing			160312																								0.15~0.30	1.00~5.00
i ii e			160316																								0.15~0.30	1.00~5.00
重			160404																								0.07~0.20	1.00~5.00
			220404								•																0.07~0.20	1.50~7.00
Ž			220408								•																0.10~0.25	1.50~7.00
			220412								•																0.15~0.30	1.50~7.00
			220430																								0.30~0.45	1.50~7.00
			220440																								0.30~0.50	1.50~7.00
			270408																								0.15~0.25	3.00~8.00
			270608																								0.15~0.25	3.00~8.00

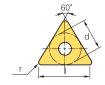
Cutting edge geometry A52~A61

€ Code system B34~B35



Available tool holders											
Designation	Page	Designation	Page								
STFPR/L	B221	STUPR/L	B226								
CTFPR/L	B182	CTGPR/L	B182								







	Dimensions (mm)											
Size	d	t	d₁									
08	4.76	2.38	2.3									
09	5.56	2.38	3.0									
11	6.35	3.18	3.4									
16	9.525	3.18~4.76	4.4									



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

	Steel		Р		#	3		3	3	#	#	#	•		3		#								Machining types
ဗ္ဗ	Stainless steel		M							3	3	\$				3	#	\$ #	•	3	\$	#			
bje	Cast iron	4	K		#	3	3					3	3	3									•	3	<ul> <li>Continuous cutting</li> </ul>
본	Non-ferrous metal	<b>-</b>	N																				•	3	General cutting
š	Heat resistant alloy, Titanium alloy	<b>-</b>	S									•					•	\$ #	•	3	3		•	3	- ·
	Hardened steel		Н																•	\$	\$		•	3	# Interrupted cutting

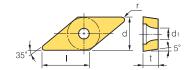
		l																										
					met											ated									Unco	oated	Cutting (	Condition
	Inserts	D€	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	된	H05	fn (mm/rev)	ap (mm)
		TPGH	080202L																								0.01~0.12	0.06~1.70
ng			080204L	•																							0.01~0.15	0.08~1.70
Finishing			110202L																								0.01~0.12	0.06~2.00
ᇤ			110204L																								0.01~0.15	0.08~2.00
		TPGT	080202R																								0.05~0.20	0.30~1.50
			110302R																								0.05~0.20	0.30~1.50
			110304R																								0.05~0.20	0.50~2.00
			110308R																								0.07~0.25	0.50~2.00
lië,			160404R																								0.05~0.20	0.70~3.00
inis			160408R																								0.05~0.20	0.70~3.00
Medium to finishing			080202L																					•			0.05~0.20	0.30~1.50
<u>=</u>			110302L																								0.05~0.20	0.30~1.50
Med			110304L																								0.05~0.20	0.50~2.00
_			110308L																								0.07~0.25	0.50~2.00
			160404L																								0.05~0.20	0.70~3.00
			160408L																								0.05~0.20	0.70~3.00
ing		TPGX	090202L																								0.10~0.20	0.30~1.00
nish			090204L		•																						0.10~0.25	0.50~1.00
to fi			090208L																								0.10~0.30	1.00~1.00
Medium to finishing			110304L																								0.10~0.25	0.50~1.20
훌																												

**→** Cutting edge geometry **A52~A61 →** Recommended chip breaker **B04~B14** 

◆ Code system B34~B35

	Available	tool holders	
Designation	Page	Designation	Page
STFPR/L	B221	STUPR/L	B226
CTFPR/L	B182	CTGPR/L	B182





	Dimens	ions (mm)											
Size d t d <sub>1</sub>													
11	6.35	3.18	2.8										
16	9.525	4.76	4.4										

#### \_\_\_\_\_

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

	Steel		Р		#	\$		\$ 3	#	#	#	•	•	3		#									Machining types
စ္မ	Stainless steel		M						3	3	3				3	#	3	#	•	3	3	#			
pie	Cast iron	1	K		#	\$	3				3	3	\$										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	•	N																				•	3	General cutting
š	Heat resistant alloy, Titanium alloy		S													•	3	#	•	3	3		•	3	# Interrupted cutting
-	Hardened steel	<b>-</b>	Н																•	3	3		•	3	- Interrupted cutting

					met										Coa										Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		VBMT	110302-FP																								0.01~0.10	0.05~0.08
5	FP 👜		110304-FP		•																						0.01~0.10	0.10~0.90
Finishing	new		110308-FP		•								_		_						_						0.01~0.10	0.10~1.00
ΪΞ			160404-FP	•	•	•	•		•								•					•					0.01~0.10	0.10~1.00
	[Mild steel]		160408-FP		•		•		•								•					•					0.04~0.12	0.10~1.00
		VBMT	110302-VB																								0.05~0.15	0.20~1.20
			110304-VB																								0.06~0.18	0.20~1.20
			110308-VB																								0.08~0.20	0.60~1.20
hing	VB		160402-VB																								0.06~0.20	0.05~1.00
Finishing			160404-VB	•	•				•																		0.08~0.20	0.20~1.50
"			160408-VB	•	•				•																		0.10~0.23	0.50~1.50
			160412-VB																								0.12~0.25	0.80~1.50
		VBMT	160404-VF	•	•				•				•						•			•					0.05~0.20	0.30~1.00
ing	VF	V DIVI I	160408-VF	-	•				_				Ť						•								0.10~0.25	0.30~1.00
Finishing																												
		VBMT	110302-VL																								0.03~0.20	0.20~1.20
			110304-VL																								0.04~0.20	0.20~1.20
5	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		110308-VL																								0.08~0.20	0.20~1.20
Finishing	VL		160402-VL																								0.03~0.20	0.30~1.50
i≝	000		160404-VL		•	•	•		•				•			•	•	•	•		•	•	•				0.05~0.20	0.30~1.50
			160408-VL		•	•	•		•				•				•		•		•	•	•				0.10~0.20	0.30~1.50
			160412-VL													•					•	•	•				0.10~0.25	0.30~1.50
D D		VBMT	110304-HMP							•														•			0.03~0.20	0.15~2.70
Shir	45		110308-HMP							•																	0.05~0.25	0.40~2.70
fini	HMP		160404-HMP							•	•		•		•				•			•		•			0.07~0.20	0.20~2.70
E to			160408-HMP						•	•	•		•						•			•		•			0.09~0.27	0.50~2.70
Medium to finishing			160412-HMP																								0.11~0.32	0.50~2.70
2		VBMT	110302-MP																								0.04~0.14	0.20~1.50
		V DIVII	110304-MP					•	•																		0.05~0.15	0.20~1.50
ing			110304-MP					•	•								-										0.10~0.28	0.30~2.00
ishi	MD		160402-MP						_				-		-				_								0.06~0.16	0.30~2.00
o fii	MP		160404-MP	•	•	•	•	•	•				•	•	-	•	•	•	•	•	•	•	•				0.08~0.20	0.30~2.00
E			160408-MP	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•				0.10~0.25	0.50~2.30
Medium to finishing			160412-MP	•	•			•	•				•			•	•	•	•		•	•	•				0.10~0.35	0.50~2.30

Cutting edge geometry A52~A61

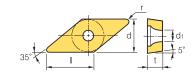


	Available t	tool holders	
Designation	Page	Designation	Page
SVABR/L	B195	SVVBN	B196
SVHBR/L	B195	SVQBR/L	B222
SVJBR/L	B125, 195	SVUBR/L	B223

<sup>€</sup> Code system B34~B35

<sup>•:</sup> Stock item





	Dimens	sions (mm)												
Size	Size d t d <sub>1</sub>													
11	6.35	2.38~3.18	2.8~3.4											
16	9.525	4.76	4.4											

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

	Steel		Р		#	•	\$		3	3	#	#	#	•	•	3		#									Machining types
8	Stainless steel		M								3	3	3				3	#	3	#	•	3	3	#			
pie	Cast iron	4	K		#	•	3	3					\$	3	3										•	3	■ Continuous cutting
ž	Non-ferrous metal	-	N																							3	General cutting
×	Heat resistant alloy, Titanium alloy	<b>-</b>	S										•				•	•	\$	#	•	3	3			3	# Interrupted cutting
	Hardened steel	<b>-</b>	Н																		•	3	3			3	- interrupted cutting

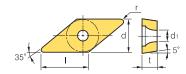
				Cei	met										Coa	ted									Unco	ated	Cutting C	Condition
	Inserts	D€	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
ing		VBMT	160404								•			•													0.07~0.20	0.50~1.50
Medium to finishing   Medium to finishing			160408						•	•	•				•									•			0.15~0.25	0.70~2.00
<u>B</u>		VBGT	160404																								0.07~0.20	0.50~1.50
Medium to finish			160408																								0.15~0.25	0.70~2.00
		VBMT	160402-VP1																								0.04~0.20	0.16~1.50
	1/54		160404-VP1																								0.05~0.20	0.18~1.80
Finishing	VP1		160408-VP1																								0.06~0.20	0.20~1.80
		VBGT	110301-FS																•			•					0.01~0.16	0.03~1.40
			110302-FS																•			•					0.02~0.18	0.04~1.50
			110304-FS																•			•					0.04~0.19	0.06~1.60
g.	FS 🔬		160401-FS																•			•					0.01~0.16	0.04~1.80
Finishing			160402-FS																•			•					0.02~0.18	0.05~2.00
Fin	[High precision]		160404-FS																•			•					0.04~0.19	0.08~2.00
		VBGT	110301MFN-FS																								0.01~0.16	0.03~1.40
			110302MFN-FS																								0.02~0.18	0.04~1.50
			110304MFN-FS																								0.04~0.19	0.06~1.60
ing	FS new		160401MFN-FS																								0.01~0.16	0.04~1.80
Finishing			160402MFN-FS																								0.02~0.18	0.05~2.00
iĒ	[ Utra high precision ]		160404MFN-FS																								0.04~0.19	0.08~2.00
		VBGT	110302-VP1																								0.03~0.10	0.08~1.50
			160402-VP1																								0.04~0.20	0.16~1.50
Finishing	VP1		160404-VP1																								0.05~0.20	0.18~1.80

Cutting edge geometry A52~A61
 Recommended chip breaker B04~B14

**③** Code system B34∼B35

	Available t	ool holders	
Designation	Page	Designation	Page
SVABR/L	B195	SVVBN	B196
SVHBR/L	B195	SVQBR/L	B222
SVJBR/L	B125, 195	SVUBR/L	B223





	Dimensio	ons (mm)	
Size	d	t	d <sub>1</sub>
11	6.35	3.18	2.8

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

	Steel		Р		#		\$ •	\$	#	#	#	•	•	\$	#									Machining types
ల్ల	Stainless steel		M						3	3	<b>3</b>			3	#	3	#	•	3	3	#			
pie	Cast iron	<b>-</b>	K		#	•	\$ 3				<b>3</b>	\$	3									•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N																			•	3	General cutting
š	Heat resistant alloy, Titanium alloy	<b>-</b>	S												•	3	#	•	3	3		•	3	# Interrupted cutting
-	Hardened steel	<b>-</b>	Н															•	3	3		•	3	- Interrupted cutting

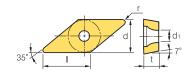
				Cei	met	Coa	ated								Coa	ated									Unc	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		VBGT	1103003R-KF																•								0.01~0.06	0.04~1.30
			110301R-KF																•								0.02~0.08	0.05~1.50
5	KF		110302R-KF																•								0.03~0.13	0.06~1.70
Finishing	N.F		1103003L-KF																•								0.01~0.06	0.04~1.30
inis			110301L-KF																•			•					0.02~0.08	0.05~1.50
"	[High precision]		110302L-KF																•								0.03~0.13	0.06~1.70
		VBGT	1103003R-KM																								0.01~0.06	0.04~1.30
<u>ing</u>			110301R-KM																								0.02~0.08	0.05~1.50
ishi	KM		110302R-KM																								0.03~0.13	0.06~1.70
ē.			1103003L-KM																								0.01~0.06	0.04~1.30
Medium to finishing			110301L-KM																								0.02~0.08	0.05~1.50
_ipe	[ High precision ]		110302L-KM																								0.03~0.13	0.06~1.70
Ž																												

② Cutting edge geometry A52-A61
③ Recommended chip breaker B04-B14
③ Code system B34-B35

	Available t	ool holders	
Designation	Page	Designation	Page
SVABR/L	B195	SVVBN	B196
SVHBR/L	B195	SVQBR/L	B222
SVJBR/L	B125, 195	SVUBR/L	B223







	Dimension	ons (mm)	
Size	d	t	d₁
08	4.76	2.38	2.3
11	6.35	3.18	2.8~3.4
16	9.525	4.76	4.4

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

	Steel		Р		#	•	\$		3	3	#	#	#	•	•	3		#									Machining types
8	Stainless steel		M								3	3	3				3	#	3	#	•	3	3	#			
pie	Cast iron	4	K		#	•	3	3					3	3	3										•	3	■ Continuous cutting
ž	Non-ferrous metal	-	N																							3	General cutting
×	Heat resistant alloy, Titanium alloy	<b>-</b>	S										•				•	•	\$	#	•	3	3			3	# Interrupted cutting
	Hardened steel	<b>-</b>	Н																		•	3	3			3	- interrupted cutting

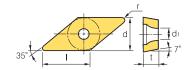
				Cer	rmet	Coa	ated								Coa	ted								Un	coated	Cutting (	Condition
	Inserts	D€	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8115	PC9030	<u> </u>	H05	fn (mm/rev)	ap (mm)
		VCMT	080202-FP					•																		0.01~0.10	0.05~0.08
			080204-FP				•																			0.01~0.10	0.10~0.90
<u>n</u>	FP new		080408-FP				•																			0.04~1.00	0.10~1.00
Finishing			160404-FP																							0.01~0.10	0.10~1.00
늍	[Mild steel]		160408-FP	•	•		•	•	•								•									0.04~0.12	0.10~1.00
		VCMT	080202-VF																							0.05~0.20	0.30~1.00
_	\		080204-VF										•													0.10~0.25	0.30~1.00
hing	VF		110304-VF						•																	0.03~0.18	0.15~1.20
Finishing			160404-VF						•				•													0.04~0.20	0.15~1.50
•																											
		VCMT	080202-VL					•	•				•					(	•					+		0.03~0.08	0.10~0.80
			080204-VL					•	•				•					(	•							0.04~0.10	0.10~0.90
_	\ /I		160404-VL					•	•							•	•	•			• (					0.05~0.20	0.30~1.50
hing	VL		160408-VL					•	•								•	•			• (					0.05~0.20	0.30~1.50
Finishing	- Oak		160412-VL																							0.10~0.25	0.30~1.50
Medium to finishing	HMP	VCMT	160404-HMP 160408-HMP							•	•								•				•	_		0.10~0.25 0.13~0.33	0.30~2.60 0.60~2.60
2		VCMT	080202-MP						•															$\perp$		0.03~0.15	0.10~1.00
		0.01011	080204-MP					•	•										+							0.05~0.18	0.10~1.00
6			110302-MP						Ť										T							0.06~0.18	0.20~1.80
shin	MD		110304-MP																							0.06~0.18	0.20~1.80
ij	MP		160404-MP					•	•						•	•	•	•			• (					0.08~0.18	0.30~2.00
٦ to			160408-MP					•	•						•	•	•	• (	•		• (					0.10~0.23	0.50~2.30
Medium to finishing			160412-MP													•	•	•			• (					0.10~0.33	0.50~2.30
Me																											
		VCMT	160404-VP1																							0.05~0.20	0.18~1.80
ng	VP1		160408-VP1																							0.06~0.20	0.20~1.80
Finishing																											

→ Cutting edge geometry A52~A61
→ Recommended chip breaker B04~B14

**③** Code system B34∼B35

	Available to	ol holders	
Designation	Page	Designation	Page
SVJCR/L	B125, 196, 222	SVQCR/L	B223
SVVCN	B196	SVUCR/L	B223





	Dimension	ons (mm)	
Size	d	t	d₁
11	6.35	3.18	2.8~3.4
12	7.5	3.18	2.8
16	9.525	4.76	4.4

#### Rhombic 35° Positive Relief Angle: 7°

	Steel		Р		#		3		\$ \$	#	#	#	•	•	\$	#									Machining types
ဗ္ဗ	Stainless steel		M							3	3	<b>3</b>			3	#	3	#		3	3	#			
pie	Cast iron		K		#	•	3	3				<b>3</b>	3	3									•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N																					3	General cutting
×	Heat resistant alloy, Titanium alloy		S												•	•	\$	#	•	3	3			3	# Interrupted cutting
	Hardened steel		Н																•	3	3		•	3	- interrupted cutting

				Co	mot	Coa	atod								Coa	tod									Unco	atod	Cutting	Condition
									'n	0	0	2	0				Ŋ	ιΩ	0	0	2	0	2	0	UIICO	aidu		
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H04	H05	fn (mm/rev)	ap (mm)
		VCGT	110301-FS																•			•					0.01~0.16	0.03~1.40
			110302-FS																•			•					0.02~0.18	0.04~1.50
5	FS		110304-FS																•			•					0.04~0.19	0.06~1.60
ih:	new		160401-FS																•								0.01~0.16	0.04~1.80
Finishing			160402-FS																•			•					0.02~0.18	0.05~2.00
	[High precision]		160404-FS																•								0.04~0.19	0.08~2.00
		VCGT	110301MFN-FS																								0.01~0.16	0.03~1.40
			110302MFN-FS																								0.02~0.18	0.04~1.50
	FS		110304MFN-FS																								0.04~0.19	0.06~1.60
Finishing	new		160401MFN-FS																								0.01~0.16	0.04~1.80
inis			160402MFN-FS																								0.02~0.18	0.05~2.00
-	[ Utra high precision ]		160404MFN-FS																								0.04~0.19	0.08~2.00
Đị.		VCGT	110301-MS																•			•					0.02~0.23	0.05~2.00
uffi.	MSℯℯℴ		110302-MS																•			•					0.03~0.25	0.07~2.50
<u>ت</u>			110304-MS																•			•					0.05~0.25	0.09~2.50
Medium cutting	[High precision]																											
		VCGT	110301MFN-MS																•			•					0.02~0.23	0.05~2.00
tti tti	N 4 C		110302MFN-MS																•			•					0.03~0.25	0.07~2.50
5	MS		110304MFN-MS																•								0.05~0.25	0.09~2.50
Medium cutting	[ Utra high precision ]																											
		VCGT	1203008FN-MS																•			•					0.02~0.20	0.04~1.80
<u>B</u>			120301FN-MS																•			•					0.03~0.26	0.06~2.20
üffi	MS		120302FN-MS																•			•					0.05~0.28	0.08~2.80
Ę			120304FN-MS																•								0.06~0.30	0.10~2.80
Medium cutting	[ Utra high precision ]																											
		VCGT	110301-VP1																•		•	•	•		•		0.02~0.15	0.05~0.50
			110302-VP1																•		•	•	•		•		0.02~0.18	0.10~1.00
bu	VP1		110304-VP1																•		•	•	•		•		0.03~0.18	0.15~1.20
Finishing	Day.		160404-VP1						•																		0.05~0.20	0.18~1.80
듄	[High precision]		160408-VP1					•																			0.06~0.20	0.20~1.80

→ Cutting edge geometry A52~A61
→ Recommended chip breaker B04~B14

**ᢒ** Code system B34∼B35

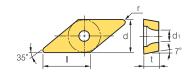
ullet : Stock item



	Available to	ol holders	
Designation	Page	Designation	Page
SVJCR/L	B125, 196, 222	SVQCR/L	B223
SVVCN	B196	SVUCR/L	B223







	Dimension	ons (mm)	
Size	d	t	d <sub>1</sub>
11	6.35	3.18	2.8~3.4
12	7.5	3.18	2.8

# Rhombic **35° Positive**Relief Angle: 7°

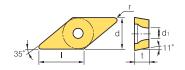
	Steel		Р		#	3		3	3	#	#	#	•	•		#									Machining types
క్ర	Stainless steel		М							3	3	3			3	#	3	#	•	3	3	#			
pie	Cast iron	4	K		#	3	3					\$	\$ 3										•	3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	-	N																					3	General cutting
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S									•				•	\$	#	•	3	3			3	l
	Hardened steel	-	Н																•	3	3			3	# Interrupted cutting

				Cer	met	Coa	ated								Coa										Unco	ated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		VCGT	110301MFN-VP1		_		Ŭ	_	_	_	_		_	Ī	_	_	_	_	•	_		•		_	_	_	0.02~0.15	0.05~0.50
			110302MFN-VP1																•			•					0.02~0.18	0.10~1.00
	VP1		110304MFN-VP1																•			•					0.03~0.18	0.15~1.20
iii	VFI		1203008FN-VP1																								0.03~0.12	0.06~1.20
Finishing			120301FN-VP1																								0.04~0.13	0.08~1.20
_	[ Utra high precision ]		120302FN-VP1																								0.04~0.15	0.08~1.20
			120304FN-VP1																								0.06~0.20	0.10~1.50
		VCGX	120300MFR-VP1																•			•					0.02.040	0.05~0.50
		VCGX																	•			•	-				0.02~0.10	0.05~0.50
ng	VP1		120301MFR-VP1 120302MFR-VP1																•			•	_				0.02~0.15	0.05~0.50
Finishing			120302MFR-VP1																•			•	-				0.02~0.16	0.10~1.00
듄	[ Utra high precision ]		120304MFR-VP1																•			•	-				0.05~0.20	0.12~1.20
			120300WIFK-VFT																								0.05~0.20	0.15~1.20
		VCGT	1103003R-KF																								0.01~0.06	0.04~1.30
			110301R-KF																				П				0.02~0.08	0.05~1.50
В	KF		110302R-KF																					•			0.03~0.13	0.06~1.70
Finishing			1103003L-KF																								0.01~0.06	0.04~1.30
듄	[High precision]		110301L-KF																								0.02~0.08	0.05~1.50
	[Tilgit precision]		110302L-KF																								0.03~0.13	0.06~1.70
		VOET																										
		VCET	1103005MFR-KF																•			•					0.01~0.06	0.04~1.30
	VΕ		110301MFR-KF																•			•	_				0.02~0.08	0.05~1.50
hing	KF		110302MFR-KF																•			•	_				0.03~0.11	0.06~1.70
Finishing			1103005MFL-KF																•			•	_				0.01~0.06	0.04~1.30
ш.	[ Utra high precision ]		110301MFL-KF																•			•	-				0.02~0.08	0.05~1.50
			110302MFL-KF																				_				0.03~0.11	0.06~1.70
		VCGT	1103003R-KM																								0.01~0.06	0.04~1.30
			110301R-KM																								0.02~0.08	0.05~1.50
<u>g</u> r	KM		110302R-KM																					•			0.03~0.13	0.06~1.70
Finishing			1103003L-KM																								0.01~0.06	0.04~1.30
ᄩ	[High precision]		110301L-KM																								0.02~0.08	0.05~1.50
	[ Liight breedaloll]		110302L-KM																								0.03 ~0.13	0.06~1.70
ing		VCET	1103005MFR-KM																•			•					0.02~0.08	0.05~1.50
nish	KM		110301MFR-KM																•			•					0.03~0.11	0.06~1.70
iji o			110302MFR-KM																•			•	_				0.04~0.15	0.08~2.00
E	[ Utra high precision ]		1103005MFL-KM																•			•			_		0.02~0.08	0.05~1.50
Medium to finishing	[ oda nign precision]		110301MFL-KM																•			•	_				0.03~0.11	0.06~1.70
2			110302MFL-KM																•				_				0.04~0.15	0.08~2.00

**③** Code system B34∼B35

	Available to	ol holders	
Designation	Page	Designation	Page
SVJCR/L	B125, 196, 222	SVQCR/L	B223
SVVCN	B196	SVUCR/L	B223





	Dimension	ons (mm)	
Size	d	t	d₁
08	6.35	2.38	2.3
11	6.35	3.18	2.8



# Rhombic **35° Positive** Relief Angle: 11°

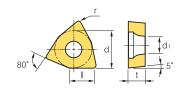
	Steel		Р		#	3		3	3	#	#	#			3		#								Machining types
9	Stainless steel		M							\$	3	3				3	#	\$	#	•	1	3	#		
çpie	Cast iron	4	K		#	3	3					3	3	3										3	<ul> <li>Continuous cutting</li> </ul>
녻	Non-ferrous metal		N																					3	General cutting
š	Heat resistant alloy, Titanium alloy		S									•				•	•	3	#	•	3	3		3	-
	Hardened steel		Н																	•	3	\$		3	# Interrupted cutting

				Cer	met	Coa	ited								Coa	ited									Unco	oated	Cutting (	Condition
	Inserts	D	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	F04	H05	fn (mm/rev)	ap (mm)
		VPGT	110301-VP1																•		•	•	•				0.02~0.15	0.05~0.50
2	P1		110302-VP1																		•		•				0.02~0.18	0.10~1.00
Finiching			110304-VP1																		•		•				0.03~0.18	0.15~1.20
i	[High precision]																											
		VPGT	110301MFN-VP1																•			•					0.02~0.15	0.05~0.50
Š	₽ VP1		110302MFN-VP1																•			•					0.02~0.18	0.10~1.00
Finishing			110304MFN-VP1																•			•					0.03~0.18	0.15~1.20
ů	[ Utra high precision ]																											
		VPET	0802005MFR-KF																•			•					0.01~0.12	0.05~0.50
			080201MFR-KF																			•					0.02~0.15	0.05~0.50
	, KF		080202MFR-KF																•			•					0.02~0.18	0.10~1.00
. <u>s</u>			0802005MFL-KF																•			•					0.01~0.12	0.05~0.50
Finishing	[ Utra high precision ]		080201MFL-KF																•			•					0.02~0.15	0.05~0.50
	[ out mgm prodictor]		080202MFL-KF																•								0.02~0.18	0.10~1.00
		VPET	0802005MFR-KM																•			•					0.01~0.12	0.05~0.50
2			080201MFR-KM																•			•					0.02~0.15	0.05~0.50
.id	KM		080202MFR-KM																•			•					0.02~0.18	0.10~1.00
<u>:</u>			0802005MFL-KM																•			•					0.01~0.12	0.05~0.50
1	(Ultra blak ann i i i		080201MFL-KM																•			•					0.02~0.15	0.05~0.50
Madium to finishing	[ Utra high precision ]		080202MFL-KM																•			•					0.02~0.18	0.10~1.00
2	<b>E</b>																											

Outting edge geometry A52-A61 → Recommended chip breaker B04-B14 → Code system B34-B35

	Available	tool holders	
Designation	Page	Designation	Page
SVABR/L	B195	SVVBN	B196
SVJBR/L	B125, 195		





	Dimension	ons (mm)	
Size	d	t	d₁
02	3.97	1.59	2.2
S3	4.76	2.38	2.4



# Trigon **80° Positive** Relief Angle: 5°

	Steel	Р		#		3	3	\$ #	#	#	•	•	<b>3</b>		#							Machining types
క్ర	Stainless steel	M						3	3	3				3	#	3	#		3	3 #		3 7/7
bje.	Cast iron	K	•	#	•	3	\$			3	3	3									3	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N																			3	General cutting
Š	Heat resistant alloy, Titanium alloy	S								•						3	#		3	3	3	# Interrupted cutting
	Hardened steel	Н																•	3	3	3	Thierrupted cutting

				Cei	rmet	Coa	ited								C	oate	d								Unc	oated	Cutting (	Condition
	Inserts	De	esignation	CN1500	CN2500	CC1500	CC2500	NC3215	NC3225	NC3120	NC3030	NC3235	NC5330	NC6310	NC6315	NC9115	NC9125	NC9135	PC5300	PC5400	PC8105	PC8110	PC8115	PC9030	H01	H05	fn (mm/rev)	ap (mm)
		WBGT	020102R																								0.01~0.05	0.10~0.30
gu			S30204R																								0.01~0.10	0.10~0.50
Shi			020102L																					•			0.01~0.08	0.10~0.40
ill.			S30202L																								0.01~0.08	0.10~0.40
= tc			S30204L																								0.01~0.10	0.10~0.50
Medium to finishing																												

Cutting edge geometry A52~A61
 Recommended chip breaker B04~B14

€ Code system B34~B35

Available to	ool holders
Designation	Page
SWUBR/L	B227

#### **Technical Information for Aluminum**

#### AK special chip breaker for aluminum

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



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

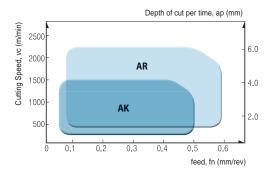
#### AR special chip breaker for aluminum

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

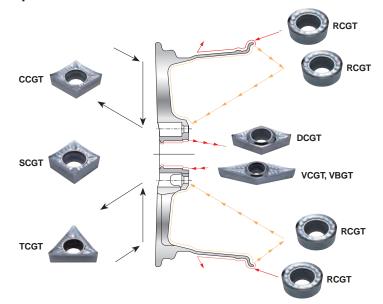


- Flat corner cutting edge improved productivity at high feed machining and ensures good surface roughness and reliability owing to strong cutting edge
- Specially buffed on top face controls chip flow reducing built-up edge
- KORLOY's own technology applied for cutting edge and corner shape controlling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

#### AK and AR chip breaker specially developed for aluminum



	Recommendation range	Grades
AK	ap = 0.1~5.0 mm fn = 0.03~0.5 mm/rev	H01 (Uncoated cemented carbides K10~K20) ND1000 (Diamond coating) PD1000 (DLC coating)
AR	ap = 0.5~6.0 mm fn = 0.05~0.6 mm/rev	H01 (Uncoated cemented carbides K10~K20) ND1000 (Diamond coating) PD1000 (DLC coating)



#### Features of H01 and cutting conditions

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

Work	piece	Hardness (HB)	kc (MPa)	vc (m/min)	fn (mm/rev)
Aluminum alloy	before heat treatment 50~70		500~600	1000~2500	0.1~0.6
(forged)	after heat treatment	90~110	700~900	300~1000	0.1~0.5
Aluminum alloy	before heat treatment	70~80	700~800	300~1000	0.1~0.6
(cast)	after heat treatment	80~100	800~950	200~600	0.1~0.4
Copper alloy	Copper alloy – 90-		700	250~600	0.1~0.5
Non-ferrous metal, etc.	_	100	1700	150~300	0.1~0.6



### Aluminum Insert (Positive)









	Dimension	ons (mm)	
Size	d	t	d₁
06	6.35	2.38	2.8
09	9.525	3.97	4.4
12	12.7	4.76	5.5



# Rhombic **80° Positive** Relief Angle: 7°

	Steel		Р						Mac
9	Stainless steel		M						1
bje	Cast iron		K						Cor
Ž	Non-ferrous metal		N	#	•	#	3	#	<b>3</b> Ger
š	Heat resistant alloy, Titanium alloy		S						# Inte
	Hardened steel	<b>—</b>	Н						# Inte

achining types

- ontinuous cutting
- eneral cutting
- terrupted cutting

		Н							
				Coated		Unco	oated	Cutting (	Condition
Inserts	D	esignation	PC5040	PD1005	PD1010	H04	H05	fn (mm/rev)	ap (mm)
	CCGT	060202-AK	•			•	•	0.01~0.12	0.05~3.0
		060204-AK	•		•	•	•	0.02~0.15	0.10~3.0
		060208-AK				•	•	0.02~0.20	0.10~4.0
		09T302-AK	•		•	•	•	0.02~0.20	0.05~3.0
		09T304-AK	•		•	•	•	0.02~0.30	0.10~5.0
		09T308-AK	•			•	•	0.03~0.50	0.10~5.0
		120402-AK				•	•	0.02~0.30	0.05~4.0
ΔK		120404-AK	•		•	•	•	0.03~0.50	0.10~5.0
AK		120408-AK				•	•	0.04~0.80	0.10~5.5
	CCGT	060202-AR 060204-AR				•	•	0.02~0.30 0.03~0.35	0.30~4.0 0.50~4.5
		060204-AR						0.04~0.50	0.50~4.5
		09T302-AR				•	•	0.03~0.45	0.30~4.0
		09T304-AR				•	•	0.04~0.50	0.50~4.5
		09T308-AR				•	•	0.05~0.60	0.50~6.0
		120402-AR						0.04~0.50	0.30~5.0
		120404-AR				•	•	0.05~0.60	0.50~6.0
AR		120408-AR				•	•	0.06~0.65	0.50~6.0
AR		120412-AR				_		0.08~0.70	0.50~6.5



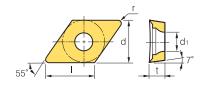
◆ Code system B34~B35

Available tool holders								
Designation	Page	Designation	Page					
SCACR/L	B123, 190	SCLCR/L	B123, 190, 215					

### **B** Aluminum Insert (Positive)







	Dimensio	ons (mm)	
Size	d	t	d₁
07	6.35	2.38	2.8
11	9.525	3.97	4.4



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

	Steel	Р						
စ္သ	Stainless steel	M						$\vdash$
pie	Cast iron	K						1
ž	Non-ferrous metal	N	#	•	#	3	#	1
š	Heat resistant alloy, Titanium alloy	S						1
-	Hardened steel	Н						

Machining types

Continuous cutting

**●** General cutting

# Interrupted cutting

	dened steel	п							
				Coated		Unco	ated	Cutting C	ondition
Inserts	De	esignation	PC5040	PD1005	PD1010	H01	H05	fn (mm/rev)	ap (mm)
	DCGT	070202-AK	•			•	•	0.01~0.20	0.05~3.00
		070204-AK	•		•	•	•	0.02~0.30	0.10~4.00
		070208-AK	•			•	•	0.03~0.40	0.10~4.00
		11T302-AK	•		•	•	•	0.02~0.30	0.05~4.00
		11T304-AK	•		•	•	•	0.03~0.50	0.10~5.00
		11T308-AK	•		•	•	•	0.03~0.50	0.10~5.00
		11T312-AK				•	•	0.04~0.60	0.15~5.00
AK									
	DCGT	070202-AR				•	•	0.02~0.30	0.30~4.00
		070204-AR				•	•	0.03~0.40	0.50~5.00
		070208-AR				•	•	0.04~0.50	0.50~5.00
		11T302-AR						0.03~0.45	0.30~6.00
		11T304-AR				•	•	0.04~0.50	0.50~6.00
		11T308-AR				•	•	0.05~0.60	0.50~6.00
		11T312-AR				•	•	0.08~0.65	0.50~6.50
AR									

Cutting edge geometry A52~A61

**③** Code system B34∼B35



	Available tool holders									
Designation Page Designation Page										
SDACR/L	B190	SDQCR/L	B217							
SDJCR/L	B123, 191	SDUCR/L	B218							
SDNCN	B124, 191	SDZCR/L	B219							

### Aluminum Insert (Positive)









	Dimensions (mm)										
Size	Size d t d <sub>1</sub>										
06	6.0	2.38	2.8								
08	8.0	3.18	3.35								
10	10.0	3.18~3.97	4.4								
12	12.0	4.76	4.4								

	Relief Angle: 7°
	Steel
စ္မ	Stainless steel

	Steel	Р				
8	Stainless steel	M				
bje	Cast iron	K				
ž	Non-ferrous metal	N	#	•	#	#
Š	Heat resistant alloy, Titanium alloy	S				
	Hardened steel	Н				

Continuous cutting **●** General cutting

Machining types

# Interrupted cutting

				Coated		Unc	oated	Cutting C	ondition
Inserts	D	esignation	PC5040	PD1005	PD1010	H01	H05	fn (mm/rev)	ap (mm)
	RCGT	0602M0-AK				•	•	0.05~0.20	0.50~2.00
		0803M0-AK				•	•	0.05~0.25	0.50~2.50
		1003M0-AK				•	•	0.10~0.30	1.00~3.00
		1204M0-AK				•	•	0.10~0.35	1.00~3.50
AK									
	RCGT	0602M0-AR 0803M0-AR						0.05~0.20 0.05~0.25	0.50~2.00 0.50~2.50
		1003M0-AR				•	•	0.10~0.30	1.00~3.00
		10T3M0-AR 1204M0-AR						0.10~0.30 0.10~0.35	1.00~3.00 1.00~3.50
AR		1204mo-All						0.10-0.33	1.00-0.30

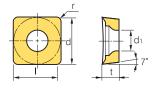
€ Cutting edge geometry A52~A61 € Recommended chip breaker B04~B14

◆ Code system B34~B35

Available tool holders									
Designation Page Designation Page									
SRDCN	B191	SRGCR/L	B192						

### B Aluminum Insert (Positive)

SC O



Dimensions (mm)										
Size	d	t	d <sub>1</sub>							
09	9.525	3.97	4.4							
12	12.7	4.76	5.5							



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

	Steel		Р						Machining types
ల్ల	Stainless steel		M						3 37
pie	Cast iron	•	K	$\mathbf{ ightarrow}$					<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal		N	lacksquare	#	•	#	#	<b>■</b> General cutting
ĕ	Heat resistant alloy, Titanium alloy		S	$\geq$					# Interrupted cutting
	Hardened steel	•	Н	$\triangleright$					# Interrupted cutting

				Coated		Unc	oated	Cutting (	Condition
Inserts	D	esignation	PC5040	PD1005	PD1010	H01	H05	fn (mm/rev)	ap (mm)
	SCGT	09T302-AK	•				•	0.02~0.30	0.10~4.00
		09T304-AK	•			•	•	0.04~0.40	0.10~5.00
		09T308-AK				•	•	0.03~0.40	0.10~5.00
		120404-AK				•	•	0.03~0.50	0.10~5.00
		120408-AK				•	•	0.04~0.60	0.15~5.50
		120416-AK						0.04~0.60	0.15~5.50
AK									
	SCGT	09T302-AR 09T304-AR 09T308-AR				•	•	0.03~0.40 0.04~0.50 0.04~0.50	0.50~5.00 0.50~6.00 0.50~6.50
		120404-AR				•	•	0.05~0.60	0.50~6.50
		120408-AR						0.05~0.60	0.50~7.00
AR		120416-AR						0.05~0.60	0.50~7.00

Cutting edge geometry A52~A61

**ᢒ** Code system **B34~B35** 

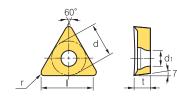


Available tool holders										
Designation	Page	Designation	Page							
SSBCR/L	B192	SSKCR/L	B193							
SSDCN	B192	SSSCR/L	B193							





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



Dimensions (mm)										
Size	d	t	d <sub>1</sub>							
09	5.56	2.38	2.5							
11	6.35	2.38	2.8							
16	9.525	3.97	4.4							

	Steel	Р						
8	Stainless steel	M						
çpie	Cast iron	K	D					
=	Non-ferrous metal	N		#	•	#	3	#
8	Heat resistant alloy, Titanium alloy	S						
-	Hardened steel	Н						

Machining types

- Continuous cutting
- **●** General cutting
- # Interrupted cutting

			Coated		Unco	oated	Cutting Condition	
Inserts	Designation	PC5040	PD1005	PD1010	H04	H05	fn (mm/rev)	ap (mm)
	TCGT 090202-AK				•	•	0.01~0.12	0.05~3.00
	090204-AK				•	•	0.02~0.15	0.10~4.00
	110202-AK	•			•	•	0.02~0.20	0.05~4.00
	110204-AK	•			•	•	0.03~0.30	0.10~4.00
	110208-AK				•	•	0.03~0.40	0.10~5.00
	16T302-AK				•	•	0.02~0.30	0.05~5.00
	16T304-AK				•	•	0.03~0.40	0.10~5.50
	16T308-AK				•	•	0.03~0.50	0.10~5.50
AK	16T312-AK				•	•	0.04~0.60	0.15~5.50
	16T316-AK				•	•	0.05~0.80	0.15~5.50
	16T325-AK						0.06~0.90	0.20~7.00
	TCGT 090202-AR						0.02~0.18	0.30~3.00
	090204-AR				•	•	0.02~0.25	0.30~5.00
	110202-AR						0.02~0.30	0.30~4.00
	110204-AR				•	•	0.03~0.40	0.30~5.00
	110208-AR						0.04~0.45	0.50~6.00
	16T302-AR				•	•	0.03~0.45	0.30~5.00
	16T304-AR				•	•	0.04~0.50	0.50~6.00
	16T308-AR				•	•	0.05~0.60	0.50~6.00
AR	16T312-AR						0.06~0.65	0.50~6.00
	16T316-AR						0.08~0.70	0.50~6.50
	16T325-AR						0.10~0.10	0.80~7.00

**ᢒ** Cutting edge geometry **A52∼A61** 

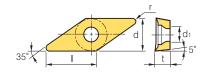
◆ Code system B34~B35

	Available tool holders										
Designation	Page	Designation	Page								
STACR/L	B193	STTCR/L	B194, 246								
STFCR/L	B194	STWCR/L	B246								
STGCR/L	B194										



### B Aluminum Insert (Positive)





Dimensions (mm)										
Size	d	t	d₁							
11	6.35	3.18	2.8							
16	9.525	4.76	4.4							



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

	Steel	Р						Machining types
8	Stainless steel	M						
pie	Cast iron	K						<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N	#	•	#	3	#	General cutting
ĕ∣	Heat resistant alloy, Titanium alloy	S						# Interrupted cutting
	Hardened steel	Н						# interrupted cutting

Пан	dened steel	п							
				Coated		Unco	ated	Cutting C	Condition
Inserts		Designation	PC5040	PD1005	PD1010	H01	H05	fn (mm/rev)	ap (mm)
	VBGT	110302-AK				•	•	0.02~0.15	0.05~3.00
		110304-AK				•	•	0.02~0.15	0.10~4.00
		110308-AK					•	0.03~0.18	0.10~5.00
		160402-AK						0.03~0.30	0.05~4.00
		160404-AK				•	•	0.03~0.40	0.10~5.00
		160408-AK				•	•	0.03~0.50	0.10~5.00
		160412-AK					•	0.05~0.60	0.10~5.50
AK									
The state of the s									
	VBGT							0.02~0.35	0.30~3.00
		110304-AR						0.03~0.45	0.30~4.00
		110308-AR						0.03~0.50	0.50~6.00
		160402-AR						0.04~0.45	0.30~5.00
		160404-AR				•	•	0.04~0.50	0.50~6.00
		160408-AR				•	•	0.05~0.60	0.50~6.00
		160412-AR						0.05~0.70	0.50~6.50
ΛD									
AR									
<u> </u>					_				

→ Cutting edge geometry A52~A61 → Recommended chip breaker B04~B14

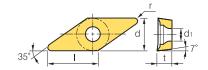
◆ Code system B34~B35



	Available tool holders								
Designation	Page	Page Designation							
SVABR/L	B195	SVVBN	B196						
SVHBR/L	B195	SVQBR/L	B222						
SVJBR/L	B125, 195	SVUBR/L	B223						

### Aluminum Insert (Positive)





	Dimension	ons (mm)	
Size	d	t	d₁
11	6.35	3.18	2.8
13	7.94	3.18	3.4
16	9.525	4.76	4.4
22	12.7	5.56	5.6



# Rhombic 35° Positive Relief Angle: 7°

	Steel	F								Г
ల్ల	Stainless steel	N	1							$\vdash$
Bi.	Cast iron	K		$\triangleright$						1
Ž	Non-ferrous metal	N		lacksquare	#	•	#	3	#	1
š	Heat resistant alloy, Titanium alloy	S								1
	Hardened steel	F								1

Machining types

- Continuous cutting
- General cutting
- # Interrupted cutting

П	ardened steel	Н						7	
				Coated		Unco	ated	Cutting C	ondition
Inserts	De	esignation	PC5040	PD1005	PD1010	F9	H05	fn (mm/rev)	ap (mm)
	VCGT	110301-AK				•		0.02~0.15	0.05~3.00
		110302-AK	•			•	•	0.02~0.20	0.05~3.0
		110304-AK	•		•	•	•	0.02~0.25	0.10~4.0
		110308-AK				•	•	0.03~0.30	0.10~5.0
		130302-AK	•			•	•	0.02~0.35	0.10~5.0
		130304-AK	•			•	•	0.03~0.35	0.10~5.0
		130308-AK						0.04~0.40	0.10~5.0
		160402-AK				•	•	0.02~0.30	0.05~5.0
AK		160404-AK			•	•	•	0.03~0.40	0.10~5.0
O Marie		160408-AK			•	•	•	0.03~0.50	0.10~5.0
The state of the s		160412-AK				•	•	0.03~0.50	0.10~5.0
		220516-AK				•	•	0.03~0.60	0.10~7.0
		220525-AK					•	0.05~0.70	0.10~7.0
		220530-AK				•	•	0.08~1.00	0.10~7.0
	VCGT	110301-AR						0.02~0.20	0.10~3.0
	VCGT	110301-AR						0.02~0.20	0.10~3.0
		110302-AR				•	•	0.02~0.25	0.30~3.0
		110304-AR				•	•	0.03~0.35	0.30~4.0
		110308-AR						0.04~0.45	0.50~6.0
		130302-AR					•	0.02~0.40	0.50~3.0
		130304-AR				•	•	0.03~0.45	0.50~4.0
		130308-AR						0.04~0.50	0.50~5.0
		160402-AR				•	•	0.03~0.40	0.30~5.0
ΛD		160404-AR				•	•	0.04~0.50	0.50~6.0
AK		160408-AR				•	•	0.05~0.60	0.50~6.0
AR		160412-AR						0.06~0.65	0.50~6.5
		220516-AR						0.10~0.65	0.80~6.5
		220525-AR				_		0.10~0.70	0.80~7.0
		220530-AR				•	•	0.12~0.75	1.00~7.0



◆ Code system B34~B35

	Available tool holders									
Designation	Page	Designation	Page							
SVJCR/L	B125, 196, 222	SVQCR/L	B223							
SVVCN	B196	SVUCR/L	B223							



### CBN

#### **Multi-Corner Type (Negative)**

Dimensions (mm)									
Size	d	t	d <sub>1</sub>						
12	12.7	4.76	5.16						
15	12.7	4.76~6.358	3.4						
16	9.525	4.76	3.81						

Designation   S					C	oate	d			ı	Jnco	oated	l			Available t	ool holders	
2NU-CNGA   120404	Inserts	Designa	tion	9	3250	300	320	3400	000	00	1250	1350	700A	1X20	Dosig	nation	Pa	190
2NU-CNGA   120404F				Na	S	PNO	NG ON O	PNO	DB1	DB2	DBN	DBN	DBN/	DBN	Design	nation	Ра	ige
120404T		2NU-CNGA													DCBNR/L		B167	
120404W					•		•										B167/B208	
120404WF			120404T		•		•		•						MCKNR/L		B183	
120408			120404W		•										MCLNR/L		B183/B213	
120408F					•										MCMNN		B183	
120408T				•	•	•	•		•	•			•			PCBNR/L B172	B172	
120408WF   120412F   120					•		•								PCLNR/L		B173/B210	
120408WF   120412F   120412F   120412F   120412F   120412F   120412F   120412W   120412WT   120412WT   120412WT   120408   1204					•		•		•									
120412					•		•		•				•					
120412F										•								
120412T				•	•	•												
120412W	80°				_		_											
120412WT   T-2NU-CNGA 120404   120408   0   120408   0   120408   0   120408   0   120408   0   120408   0   120408   0   120408   0   120408   0   120412   0   0   0   0   0   0   0   0   0	Nega				_		•		_									
T-2NU-CNGA 120404   120408   4   120408   4   120408   4   120408   4   120408   4   120408   4   120408   4   120408   4   120412   4   120408   4   120408   4   120404   4   4   120408					•								•					
120408		T 01111 0110 4			_				•									
4NU-CNGA 120404		1-2NU-CNGA			_													
120408		40111 0010 0					•											
120412   4NS-CNGA   120408   120412   6		4NU-CNGA			-													
4NS-CNGA 120408 120412 2NU-DNGA 150404 150404F 150404F 150404T 150408F 150604 150608 4NU-DNGA 150608 150412 150604 150608 4NS-DNGA 150608 150612 4NU-SNGA 120404 150608 4NS-DNGA 150608 150612 4NU-SNGA 150608 15060					-		•											
120412		ANS CNCA			•													
2NU-DNGA		4N3-CNGA			Н													
150404F		2NI I-DNGA						•							DD INR/I		R168	
150404T		ZNO-DNOA				Ť	_											
150408					-		-											
150408F						•	_			•	•							
150408T						Ť				_	Ť							
150412					_		_		•	•								
150412F					•		•											
150412T					•		•											
Nega	DNOO				•		•								PDUNR/L			
Nega	55°		150604	•	•		•											
150408	Nega		150608	•	•		•											
150412		4NU-DNGA	150404		•		•											
150608			150408		•		•											
4NS-DNGA 150608			150412		•		•											
150612			150608		•													
SN   DSBNR/L   MSBNR/L   B168   B185   B186/B213   MSRNR/L   B185   B186/B213   MSRNR/L   B185   B186/B213   MSRNR/L   B185   B186/B213   MSRNR/L   B187   B176/B211   B176/		4NS-DNGA						_										
120408								•										
MSRNR/L MSSNR/L B186 B187 PSBNR/L PSDNN B175 B176 PSKNR/L B187 PSKNR/L B187 PSKNR/L B187 B176/B211  3NU-TNGA 160404		4NU-SNGA			-													
Solution	$SN \cap \bigcirc$		120408										•					
3NU-TNGA 160404																		
3NU-TNGA 160404	O 90°															B1/6		
160404T	Nega														PSKNR/L		B176/B211	
160404T		3NIII-TNCA	160404				•			•	•		•		MTFNN	MTFNP/I	B187	B187/R214
160408	TNICO	SINO-TINGA			_		_											
160408F							•								PTFNR/L PTGNR/L B177/B211 B17 PTTNR/L WTENN B178 B17			
160408T	60°						Ť						_					
160412	Nega				_													
2NU-VNGA 160404 • • • • • MVJNR/L B188 MVQNR/L B189 MVUNR/L B189 MVUNR					Ė		•										-	-
160404F		2NU-VNGA		•	•	•	-				•		•		MVJNR/L		B188	
160404T					•													
35° Nega 160408 • • • • • MVVNN B189 160408F • • • • • • • • • • • • • • • • • • •	$VN\bigcirc\bigcirc$				•		•								MVUNR/L B214			
160408F	25°			•	•	•	•		•	•	•		•					
160408T ● ●	Nega				•		•											
	11094				•		•			•								
		T-2NU-VNGA	160408		•				•									

#### CBN

#### **Multi-Corner Type (Positive)**

	Dimensions (mm)										
Size	d	t	d₁								
06	6.35	2.38	2.8								
07	6.35	2.38	2.8								
09	9.525	3.97	4.4								
11	9.525	3.97	4.4								
16	9.525	4.76	3.81								

															525 4.76 3.81
					oate					Jnco				Available	tool holders
Inserts	Designa	tion	DNC100	DNC250	DNC300	DNC350	DNC400	DB1000	<b>DB2000</b>	DBN250	DBN350	DBN700A	DBNX20	Designation	Page
	2NU-CCGW	060202		•										SCACR/L	B190
		060202T		•										SCLCR/L	B190/B215/B225
		060204		•					•						
		060204F		•											
		060204T		•											
CCOO		060208						•							
80°		09T302		•											
Posi		09T304	•	•		•		•		•		•			
		09T304T		•											
		09T308	•	•		•			•	•		•			
		09T308T		•		_									
	2MIT DCC/M	09T308W		•		_				_				00400/	D400
	2NU-DCGW	070204		•		_		•						SDACR/L SDJCR/L	B190 B191
		070208 070208T		•		_		•						SDNCN	B191
		11T302		•		_								SDQCR/L	B217
		11T304	•	•		•		•		•				SDUCR/L	B217
DCOO		11T304F		•		_		_		_				SDZCR/L	B219
55°		11T304T		•											
Posi		11T308	•	•		•				•		•			
		11T308T		•											
	T-2NU-DCGW	11T304		•											
		11T308		•		•									
$TC \bigcirc \bigcirc$	3NU-TCGW	090204		•										STACR/L	B193
		090204F		•										STFCR/L	B194/B220
60° Posi		090204T		•										STGCR/L STTCR/L	B194 B194
	3NU-TPGW	110304		•		•		•	•			•		0110102	5101
		110304F		•											
		110304T		•											
		110308		•		•		•	•			•			
•		110308F		•											
TP()()		110308T		•											
	3NU-TPGN	110308						•	•					CTFPR/L	B182/B212
60°		160304		•										CTGPR/L	B182
		160308		•						_				OTEDD#	D400/D040
	3NU-TPGB	110304		•		_				•				CTCPP/L	B182/B212
		110304T 110308		•		_				•				CTGPR/L	B182
		110308F		•											
•		110308T													
	2NU-VBGW	160402		•										SVABR/L	B195
		160404	•	•		•		•		•		•		SVHBR/L	B195
\/D \		160404F		•										SVJBR/L B195	
VBOO		160404T		•										SVQBR/L	B222
35° Posi		160408	•	•		•			•	•				SVUBR/L	B223
Posi		160408F		•											
		160408T		•											
-	T-2NU-VBGW			_		•									
	2NU-VCGW	160404		•		•									
		160404F		•											
VCOO		160404T 160408		•		-									
750		160408F													
35° Posi		160408T		•				•	•						
7 001	T-2NU-VCGW			•											
		160408		•											



#### CBN

#### Regrinding Type (Negative/Positive)

	Dimensio	Dimensions (mm)							
Size	d	t	d₁						
09	9.525	3.97	4.4						
11	6.35~9.525	3.8~3.97	3.4~4.4						
12	12.7	4.76	5.16						

Dimensions (mm)										
Size	d	t	d <sub>1</sub>							
15	12.7	4.76	5.16							
16	9.525	4.76	3.81~4.4							

								Available t	tool holders								
Inserts	Desig	nation	DNC100	DNC250	DNC300	DNC350	DNC400	DB1000	<b>DB2000</b>	DBN250	DBN350	DBN700A	DBNX20	Designation		Pa	ge
	CNMA	120404								•				DCBNR/L	MCKNR/L	B167	B183
		120408								•			•	DCLNR/L	MCLNR/L	B167/B208	B183/B213
CNOO	T-CNMA	120408								•				PCBNR/L	MCMNN	B172	B183
80° Nega														PCLNR/L		B173/B210	
	DNMA	150404								•				DDJNR/L	MDJNR/L	B168	B184
		150408								•	•			MDNNN	MDQNR/L	B184	B185
DNOO															PDJNR/L		B173
55° Nega														PDNNR/L PDUNR/L	PDSNR/L	B187   B188   B177/B211   B178	B210
	TNMA	160404								•				MTENN	MTFNR/L	B187	B187/B214
<b>TN1</b>		160408								•				MTGNR/L	MTJNR/L		B188
TNOO														PTFNR/L	PTGNR/L		
60°														PTTNR/L	WTENN		B179
Nega Nega														WIJNR/L	WTXNR/L	B179	B179
	T-VNMA	160404								•				MVJNR/L		B188	
	VNMA	160404								•		_		MVQNR/L			
VNOO		160408								•				MVUNR/L			
35° Nega														MVVNN		D103	
	CCMW	09T304								•				SCACR/L		B190	
CC 80° Posi														SCLCR/L		B190/B215	/B225
	DCGW	11T308								•				SDACR/L		B190	
DC OO	T-DCGW	11T308								•				SDJCR/L		B191	
50° Posi														SDNCN		B191	
	VBMW	160404								•				SVABR/L		B195	
		160408								•				SVHBR/L		B195	
VBOO														SVJBR/L		B195	
35°														SVQBR/L		B222	
Posi														SVUBR/L		B223	
	T-TPGB	110304									•			CTFPR/L		B182/B212	
TD ( ^ *	TPGB	110304								•	•			CTGPR/L		B182	
TP OO		110308								•							
60° Posi																	
	1																: Stock iten

#### Insert (Negative/Positive)

	Dimensions (mm)													
Size	d	t	d <sub>1</sub>											
06	6.35	2.38	2.8											
07	6.35	2.38	2.8											
08	7.94	2.38	3.4											
09	9.525	3.18	4.4											

	Dimens	ions (mm)	
Size	d	t	d₁
11	9.525	3.97	4.4
12	12.7	4.76	5.16
15	12.7	4.76	5.16
16	9.525	4.76	3.81

				9.525	3.18	4.4 1	<b>b</b> 9.52		
				PCD			Available to	ool holders	S
Inserts	Des	signation	DP90	DP150	DP200	Designation		Page	
	CNMM	120404		•		DCBNR/L	DCLNR/L	B167	B167
CNOO		120408		•		MCKNR/L	MCLNR/L	B183	B183
80°						MCMNN	PCBNR/L	B183	B172
Nega						PCLNR/L		B173	
	DNMM	150404		•		DDJNR/L	MDJNR/L	B168	B184
DNOO		150408		•		MDNNN	MDQNR/L	B184	B185
55°						MDUNR/L	PDJNR/L	B213	B173
Nega						PDNNR/L	PDSNR/L	B174	B210
						PDUNR/L		B210	
	CCMW	120404		•		SCACR/L		B190	
CCOO 🚕	CCMT	060202		•		SCLCR/L		B190/B21	5/B225
80°		060204		•					
Posi		09T304		•					
		09T308		•					
	DCMT	070202		•		SDACR/L		B195	
DCOO _		070204		•		SDJCR/L		B191	
		11T302		•		SDNCN SDQCR/L		B191	
55° Posi		11T304 11T308		•		SDUCR/L		B217 B218	
	DCGT	11T306		•		SDZCR/L		B219	
	TPGW	080204		•		3DZCR/L		DZ 19	
TP OO	III OVV	090204		•		_			
		090208		•					
60° Posi		110304		•					
1 001		110308		•					
	VBGW	160404		•					
	VBMT	110304		•		SVHBR/L		B195	
\		110308		•		SVJBR/L		B195	
VBOO		160404		•		SVUBR/L		B223	
VC OO		160408		•					
35°	VCMT	110304		•		SVVCN		B196	
Posi		110308		•					
		160404		•					
		160408		•					
TP OO	TPGN	110304		•					
		110308		•					
60° Posi									
	SPGN	090304		•		CSDPN		B181	
SP OO						CSKPR/L		B182/B21	2
90° Posi									
• : Stock item									

#### Economical small insert with powerful cutting performance

#### SAVE TURN

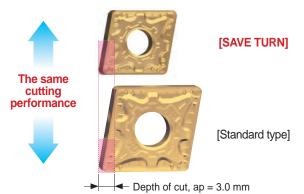
- Strongly recommended turning insert for machining smaller diameter than Ø100
- Small but powerful and economical insert which performs the same like standard-sized inserts under the depth of cut of 3.0 mm

#### Features

# Comparison of insert sizes 12.7 mm Down Size 4.76 mm [Standard type] [SAVE TURN]

• Optimized size of the same performance like the standard type

#### Comparison of cutting performance

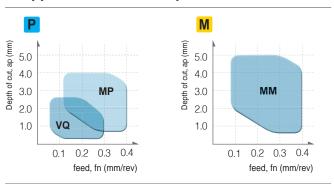


• Performs the same like standard type inserts under the depth of cut of 3.0 mm

#### Features of chip breaker

Insert shape	Cutting edge	Features
VQ		For finishing steel     Efficient chip breaking and low cutting resistance     Various application available at low depth of cut     Recommended depth of cut: 0.5~2.5 mm
MP		For medium cutting of steel dots for improved chip control in medium cutting to finishing Stable chip evacuation at high depth of cu Stable tool life due to lower cutting loads a high feed Recommended depth of cut: 0.5~4.0 mm
MM		For medium cutting of stainless steel     Limits plastic deformation caused by heat     Stable tool life thanks to the balanced     cutting performance and toughness     Stable chip flow at high speeds and feeds     Recommended depth of cut: 0.5~5.0 mm

#### Application area of chip breaker



**VQ**: Depth of cut, ap = 0.5~2.5 mm/feed, fn = 0.05~0.30 mm/rev MP: Depth of cut, ap = 0.5~4.0 mm/feed, fn = 0.15~0.40 mm/rev

**MM**: Depth of cut, ap =  $0.5 \sim 5.0 \text{ mm/feed}$ , fn =  $0.10 \sim 0.40 \text{ mm/rev}$ 

#### Application example

#### Alloy steel (SCM440)

Cutting conditions

vc (m/min) = 250, fn (mm/rev) = 0.25 ap (mm) =  $2.0 \sim 3.0$ , continuous cutting, wet

Cutting Result



CNMG090408-HM SAVE TURN

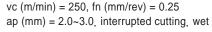


CNMG120408-HM Standard type

#### Alloy steel (SCM440)

Cutting conditions

Cutting Result





CNMG090408-HM SAVE TURN



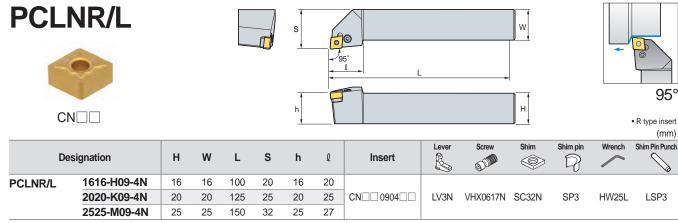
CNMG120408-HM Standard type



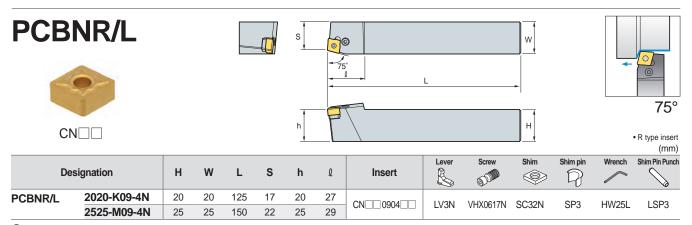
#### Insert

-				Coated					Dimensions (mm)				cutting c	onditions		Available		
Type	Picture	Des	signation	NC3215	NC3225	NC5330	NC6310	NC9125	NC9135	PC9030	d	t	r	d₁	ap (mm)	fn (mm/rev)	Configuration	tool holders page
	CNMG-VQ	CNMG	090408-VQ			•					9.525	4.76	8.0	3.81	0.50~2.50	0.08~0.30		
	and the same of th		090412-VQ			•					9.525	4.76	1.2	3.81	0.50~2.50	0.10~0.30	dı	B116
																	80° d t	B119
	CNMG-MP	CNMG	090404-MP								9.525	4.76	0.4	3.81	0.50~4.00	0.10~0.40	<u></u>	
be	CIVIO IVII		090408-MP								9.525	4.76	0.8	3.81	0.50~4.00	0.15~0.40		B116
C type			090412-MP								9.525	4.76	1.2	3.81	0.50~4.00	0.15~0.45	- dı	B119
J																	80° d	
	CNMG-MM	CNMG	090404-MM								9.525	4.76	0.4	3.81	0.50~5.00	0.08~0.35		
	A CONTRACTOR OF THE PARTY OF TH		090408-MM								9.525	4.76	8.0	3.81	0.50~5.00	0.10~0.40	- dı	B116
			090412-MM								9.525	4.76	1.2	3.81	0.50~5.00	0.12~0.45		B119
																	80° d d	
	DNMG-VQ	DNMG	110508-VQ			•					9.525	5.56	0.4	3.81	0.50~2.50	0.08~0.30		B116
			110512-VQ			•					9.525	5.56	8.0	3.81	0.50~2.50	0.10~0.30		B117
																	553	B119 B120
	DNMG-MP	DNMG	110504-MP								9.525	5.56	0.4	3.81	0.50~4.00	0.10~0.40		
be	DIVIVIO IVII		110508-MP								9.525	5.56	0.8	3.81	0.50~4.00	0.15~0.40		B116 B117
D type			110512-MP								9.525	5.56	1.2	3.81	0.50~4.00	0.15~0.45	d1	B119
																	55° d t	B120
	DNMG-MM	DNMG	110504-MM								9.525	5.56	0.4	3.81	0.50~5.00	0.08~0.35	<u>_</u>	D440
			110508-MM								9.525	5.56	0.8	3.81	0.50~5.00	0.10~0.40		B116 B117
			110512-MM								9.525	5.56	1.2	3.81	0.50~5.00	0.12~0.45		B119 B120
																	55° d t	D120
	SNMG-VQ	SNMG	090408-VQ			•					9.525	4.76	0.4	3.81	0.50~2.50	0.08~0.30		
	A		090412-VQ								9.525	4.76	0.8	3.81	0.50~2.50	0.10~0.30	du du	B117 B118
	To part of																90° d t	B120
	SNMG-MP	SNMG	090404-MP								9.525	4.76	0.4	3.81	0.50~4.00	0.10~0.40	<u></u>	
be	SINIVIG-IVIF		090408-MP								9.525	4.76	0.8	3.81	0.50~4.00	0.15~0.40		B117
S type			090412-MP								9.525		1.2	3.81	0.50~4.00	0.15~0.45	d1	B118 B120
U)																	90° d t	B120
	SNMG-MM	SNMG	090404-MM								9.525	4.76	0.4	3.81	0.50~5.00	0.08~0.35		
	A		090408-MM								9.525	4.76	0.8	3.81	0.50~5.00	0.10~0.40	Id.	B117 B118
	SOF		090412-MM								9.525	4.76	1.2	3.81	0.50~5.00	0.12~0.45		B120
																	90°	
	WNMG-VQ	WNMG	060404-VQ								9.525	4.76	0.4	3.81	0.30~2.00	0.06~0.30		
			060408-VQ								9.525	4.76	0.8	3.81	0.50~2.00	0.08~0.30		B119
	49A		060412-VQ								9.525	4.76	1.2	3.81	0.50~2.00	0.10~0.30	80° d t	B120
	WNMG-MP	WNMG	060404-MP	•	•	•		•			9.525	4.76	0.4	3.81	0.50~3.50	0.10~0.40	1	
be	VVIVIVIG-IVIP		060408-MP	•	•	•	•	•			9.525		0.8	3.81	0.50~3.50	0.15~0.40		B119
W type			060412-MP								9.525		1.2	3.81	0.50~3.50	0.15~0.45	dı.	B120
>																	80° d t	
	WNMG-MM	WNMG	060404-MM								9.525	4.76	0.4	3.81	0.50~4.00	0.08~0.35	<u> </u>	
	VVIVIO-IVIIVI		060408-MM					•	•	•	9.525		0.8	3.81	0.50~4.00	0.10~0.40		B119
			060412-MM					•	•	•	9.525		1.2	3.81	0.50~4.00	0.12~0.45	di	B120
																	80° d t	
															1	1	I.	

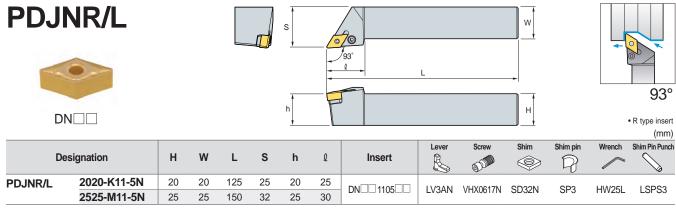
### **B** SAVE TURN Holder



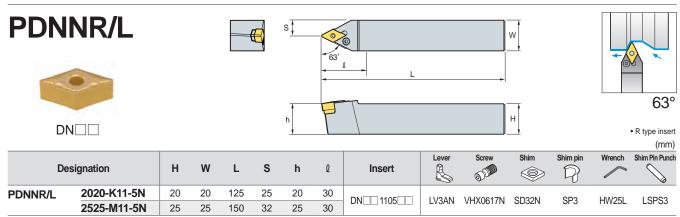
Applicable inserts B115



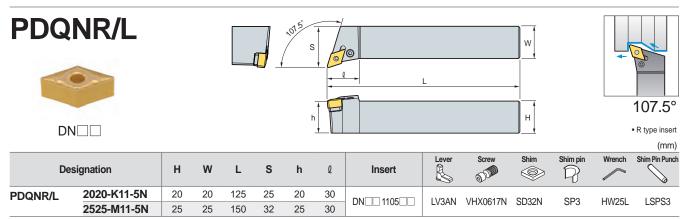
Applicable inserts B115



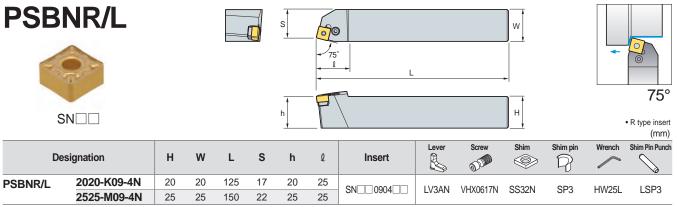
Applicable inserts B115



<sup>→</sup> Applicable inserts B115

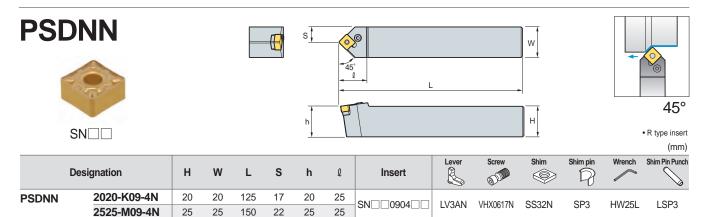


Applicable inserts B115

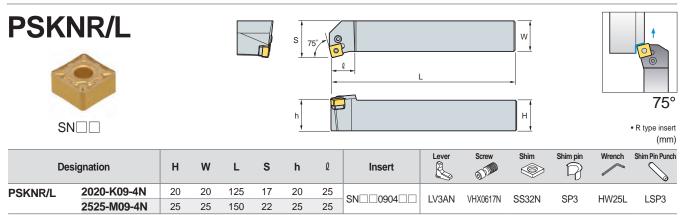


Applicable inserts B115

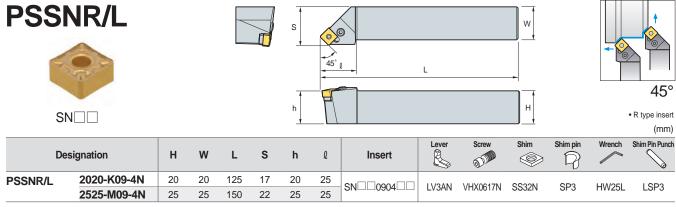
### **B** SAVE TURN Holder



Applicable inserts B115



Applicable inserts B115

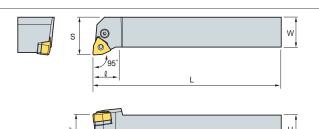


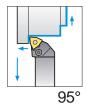
Applicable inserts B115





WN





• R type insert (mm)

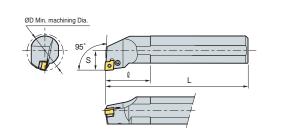
De	signation	Н	W	L	s	h	Q	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
PWLNR/L	1616-H06	16	16	100	20	16	20							
	2020-K06	20	20	125	25	20	20	WN□□0604□□	LV3AN	VHX0617N	SS32N	SP3	HW25L	LSP3
	2525-M06	25	25	150	32	25	20							

Applicable inserts B115

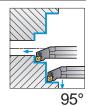
# PCLNR/L



CN







• R type insert

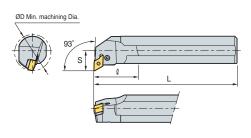
Designation	ØD	Ød	Н	L	s	Q	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S20Q-PCLNR/L-09-4N	25	20	18	180	13	50		LV3B	VHX0512B	_	_	HW20L	-
S25R-PCLNR/L-09-4N	32	25	23	200	17	50	CN□□0904□□	LV3B	VHX0512B	SC32N	SP3	HW20L	-
S32S-PCLNR/L-09-4N	40	32	30	250	22	50		LV3N	VHX0617N	SC32N	SP3	HW25L	_

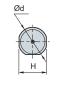
Applicable inserts B115

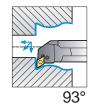
# PDUNR/L



DN







• R type insert (mm)

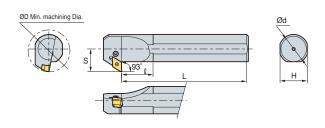
Designation	ØD	Ød	Н	L	s	Q	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S32S-PDUNR/L-11-5N	40	32	30	250	22	30	DN 1105	LV3AN	VHX0617N	SD32N	SP3	HW25L	
S40T-PDUNR/I -11-5N	50	40	38	300	27	50	ווט ווט ווט ווט	LVJAN	V   \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	SUSZIN	373	□vVZ3L	_

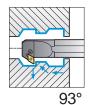
Applicable inserts B115

# **B** SAVE TURN Boring Bar

# PDZNR/L







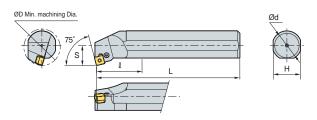
• R type insert (mm)

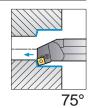
Designation	ØD	Ød	н	L	s	Q	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S32S-PDZNR/L-11-5N	40	32	30	250	22	30	DN□□1105□□	LV3AN	VHX0617N	SD32N	SP3	HW25L	
S40T-PDZNR/L-11-5N	50	40	38	300	27	50		LVSAIN	VIIV0011IN	SDSZIN	373	HWZOL	_

<sup>→</sup> Applicable inserts B115

# **PSKNR/L**







• R type insert (mm)

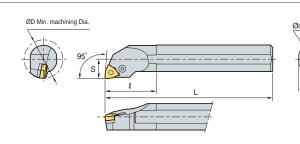
Designation	ØD	Ød	Н	L	s	Q	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S25R-PSKNR/L-09-4N	32	25	23	200	17	32	SN□□0904□□	LV3B	VHX0512B	-	-	HW20L	_
S32S-PSKNR/L-09-4N	40	32	30	250	22	32	3NLL0904LL	LV3N	VHX0617N	SS32N	-	HW25L	-

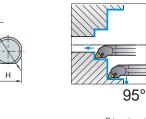
Applicable inserts B115

# **PWLNR/L**



 $WN \square \square$ 





• R type insert (mm)

Designation	ØD	Ød	Н	L	s	Q	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim Pin Punch
S20S-PWLNR/L-06	25	20	18	250	13	40		LV3B	VHX0512B				
S25R-PWLNR/L-06	32	25	23	200	17	40	WN□□0604□□	LV3D	VUVOSISD	_	-	_	_
S32S-PWLNR/L-06	44	32	30	250	22	45		LV3B	VHX0617B	SW317	SW317	HW25L	LSPS3

Applicable inserts B115

# **Excellent for precision machining**

# **Auto Tools**

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





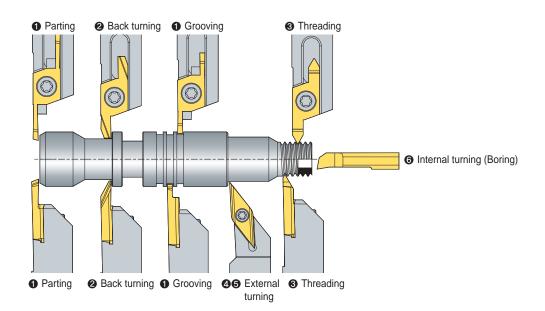








Application example



#### Index

Specification		(	Parting a	nd Grooving	1		2	Back turnii	ng
Holder	SXGNR/L	SXGNR/L	SBHR/L	SBHR/L	MGEHR/L	KGEHR/L	SXGNR/L	SXGNR/L	SBHR/L
Insert	SG	SC	SBG	SBC	MGMN	KGMN	SB	SGB	SBB
Holder size	10~20mm	10~20mm	10~16mm	10~16mm	10~16mm	10~16mm	10~20mm	10~20mm	10~16mm
Insert shape	F	8			9	3/	8	**	0 9
Cutting width	1~3mm	1~3mm	0.7~2.0mm	0.7~2.0mm	1.5~2.5mm	1.5~2.5mm	2~4mm	2~3mm	3.18mm
ØDmax	Ø18	Ø18	Ø16	Ø16	Ø32	Ø32	Tmax 8.0	Tmax 8.5	Tmax 8.0
Page	B140	B140	B137	B137	B144	B143	B140	B140	B137

Specification	Three	eading
Holder	SXGNR/L	SBHR/L
Insert	ST	SBT
Shank diameter	10~20mm	10~16mm
Insert shape	8	0
ØDmin	Pitch ranges 0.5~1.5 / 1.5~3.0	Pitch ranges 0.2~1.5 / 1.0~2.0
Page	B140	B137

Specification	4 Extern	al turning a	and Copy n	nachining	6 Externa	al turning a	nd Facing
Holder	SDJCR/L	SDNCN	SVJBR/L	SVJCR/L	SCACR/L	SCLCR/L	STACR/L
Insert	DC□T	DC□T	VB□T	VC□T	CC□T	CC□T	TC□T
Holder size	8~16mm	8~16mm	10~16mm	10~16mm	8~16mm	8~16mm	8~10mm
Insert shape	<b>(</b>	1		<b>*</b>	0	9	
Feature		Offse	et "0"			Offset "0"	
Page	B123	B124	B125	B125	B123	B123	B124

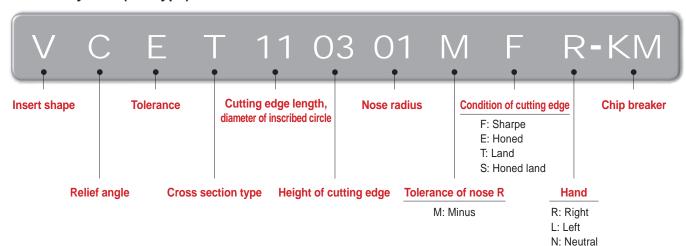
Specification		CC□T TB□T TP□T WB□T -												
Holder	SCLCR/L	STUBR/L	STUPR/L	SWUBR/L	MSB									
Insert	CC□T	ТВ□Т	TP□T	WB□T	-									
Shank diameter	Ø4~Ø10	Ø8	Ø8	Ø5~Ø8	Ø4~Ø6									
Insert shape	0	0	0	0)	Arria .									
ØDmin	Ø5	Ø8	Ø10	Ø5.5	Ø3.2									
Page	B225	B225	B226	B227	B147~B151									

# **Auto Tools (ISO type)**

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



#### Code system (ISO type)



### VP1/MS/FS chip breaker

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



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



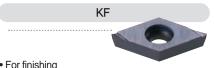
- · Good surface finish for medium cutting
- Preventing welding in titanium machining
- Increasing chip evacuation in high feed machining
- · Protecting cutting edge due to structure for good chip evacuation



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

### KF/KM chip breaker, ground type for grooving

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



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



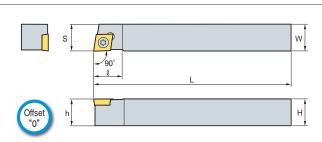
- · For medium cutting to finishing
- Better chip flow due to wide chip pockets
- · Longer tool life and better cutting action due to improved chip evacuation
- Excellent surface roughness













Only SCACR/L1010-X09A is designed as above

90°

• R type insert (mm)

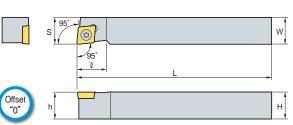
С	Designation	Н	W	L	S	h	Q	Insert	Screw	Wrench
SCACR/L	0808-X06A	8	8	120	8	8	10	CC□T0602□□	FTKA02565	TW07P
	1010-X06A	10	10	120	10	10	10	CC_10602	F1KA02505	10076
	1010-X09A	10	10	120	12	10	13			
	1212-X09A	12	12	120	12	12	16	CC□T09T3□□	FTKA0410	TW15P
	1616-X09A	16	16	120	16	16	16			

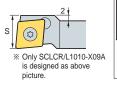
Applicable inserts B73~B77, B103

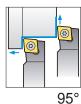




CC□T







• R type insert (mm)

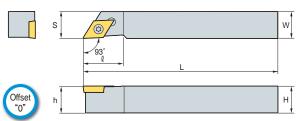
Г	Designation	Н	W	L	S	h	Q	Insert	Screw	Wrench
SCLCR/L	0808-X06A	8	8	120	8	8	10	CC□T0602□□	FTKA02565	TW07P
	1010-X06A	10	10	120	10	10	10		F1KA02505	10076
	1010-X09A	10	10	120	12	10	13			
	1212-X09A	12	12	120	12	12	16	CC□T09T3□□	FTKA0410	TW15P
	1616-X09A	16	16	120	16	16	16			

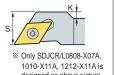
<sup>→</sup> Applicable inserts B73~B77, B103

# SDJCR/L

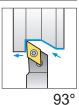


 $DC \square T$ 





※ Only SDJCR/L0808-X07A, 1010-X11A, 1212-X11A is designed as above picture.



• R type insert

											()
Designation		н	W	L	s	h	K	Q	Insert	Screw	Wrench
SDJCR/L	0808-X07A	8	8	120	10	8	2	18	DC□T0702□□	FTKA02565	TW07P
1010-X	1010-X07A	10	10	120	10	10	-	15		F1KA02565	TVVU/P
	1010-X11A	10	10	120	14	10	4	18			
	1212-X11A	12	12	120	14	12	2	18	DC□T11T3□□	FTKA0410	TW15P
	1616-X11A	16	16	120	16	16	-	22			

<sup>→</sup> Applicable inserts B79~B82, B104

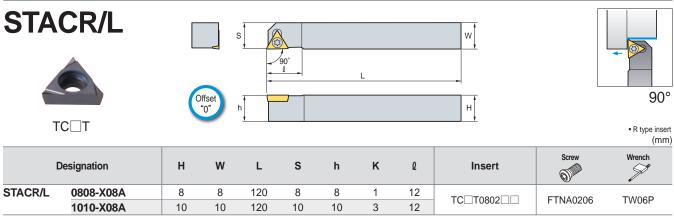
# **B** Auto Tools (ISO Type)

# SDNCN Spherical Spherical

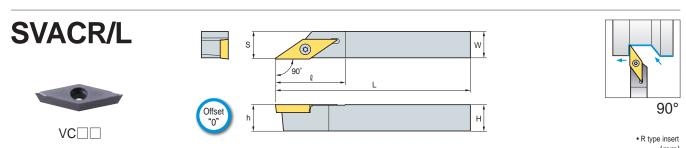
• R type insert (mm)

	Designation	н	W	L	s	h	Insert	Screw	Wrench
SDNCN	0808-X07A	8	8	120	4	8	DC□T0702□□	FTKA02565	TW 07P
	1010-X07A	10	10	120	5	10		F1KA02505	TVV 0/P
	1010-X11A	10	10	120	7	10			
	1212-X11A	12	12	120	6	12	DC□T11T3□□	FTKA0410	TW 15P
	1616-X11A	16	16	120	8	16			

Applicable inserts B79~B82, B104



<sup>→</sup> Applicable inserts B88~B89, B107



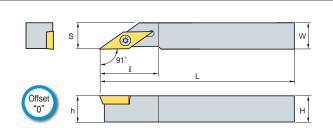
	Designation	н	W	L	s	h	Q	Insert	Screw	Wrench
SVACR/L	0808-X12A	8	8	120	8.5	8	26			
1010-X12A 1212-X12A 1616-X12A	1010-X12A	10	10	120	10.5	10	26	VC□□ T1203□□	FTKA02565	TWOZD
	1212-X12A	12	12	120	12.5	12	26			TW07P
	1616-X12A	16	16	120	16.5	16	26			
SVACR/L	0808-X12C	8	8	120	8.5	8	26			
	1010-X12C	10	10	120	10.5	10	26	VC□□ X1203□□	FTKA02565	TIMO 7 D
	1212-X12C	12	12	120	12.5	12	26	VGLL     1203LL	F1NAU2303	TW07P
	1616-X12C	16	16	120	16.5	16	26			

<sup>→</sup> Applicable inserts B97~B99, B109











• R type insert (mm)

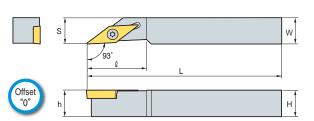
ſ	Designation	Н	W	L	s	h	Q	Insert	Screw	Wrench
SVAPR/L	0808-X11A	8	8	120	8	8	22	VP□□ T1103□□	FTKA02565 TW07F	
	1010-X11A	10	10	120	10	10	22			TW07P
	1212-X11A	12	12	120	12	12	22			
	1616-X11A	16	16	120	16	16	24			

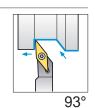
Applicable inserts B100

# SVJBR/L









• R type insert (mm)

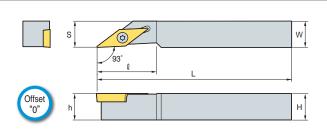
С	Designation	Н	W	L	S	h	Q	Insert	Screw	Wrench
SVJBR/L	1010-X11A	10	10	120	10	10	22			
	1212-X11A	12	12	120	12	12	22	VB□T1103□□	FTKA02565	TW07P
	1616-X11A	16	16	120	16	16	24			

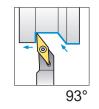
<sup>→</sup> Applicable inserts B94~B96, B108

# SVJCR/L



 $VC \square \square$ 



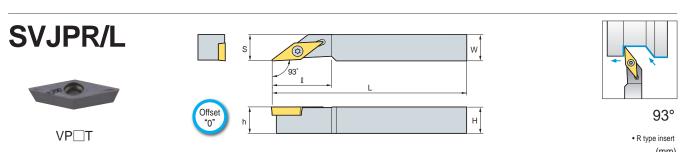


• R type insert (mm)

Ι	Designation	Н	W	L	S	h	Q	Insert	Screw	Wrench
SVJCR/L	1010-X11A	10	10	120	10	10	22			
	1212-X11A	12	12	120	12	12	22	VC□T1103□□	FTKA02565	TW07P
	1616-X11A	16	16	120	16	16	24			
	0810-X12A	8	10	120	10	8	26			
	1010-X12A	10	10	120	10	10	26	VC□T1203□□	FTKA02565	TW07P
	1212-X12A	12	12	120	12	12	26	VC_11203	F1KA02505	10076
	1616-X12A	16	16	120	16	16	26			
SVJCR/L	0810-X12C	8	10	120	10	8	26			
	1010-X12C	<b>010-X12C</b> 10 10 120 10	10	10	26	VC□X1203□□	FTKA02565	TMOZD		
	1212-X12C	12	12	120	12	12	26	VG□∧1203□□	F1NAU2505	TW07P
	1616-X12C	16	16	120	16	16	26			

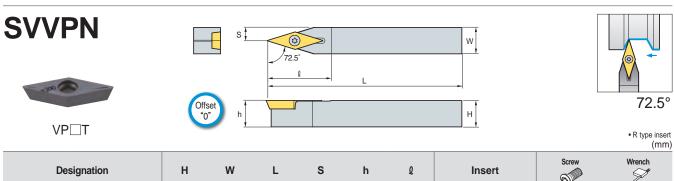
<sup>→</sup> Applicable inserts B97~B99, B109

# **B** Auto Tools (ISO Type)



D	esignation	н	w	L	s	h	Q	Insert	Screw	Wrench
SVJPR/L 08	0810-X11A	8	10	120	8	10	22	VP□T1103□□	FTKA02565	TW07P
	1010-X11A	10	10	120	10	10	22			
	1212-X11A	12	12	120	12	12	22			
	1616-X11A	16	16	120	16	16	24			

<sup>→</sup> Applicable inserts B100



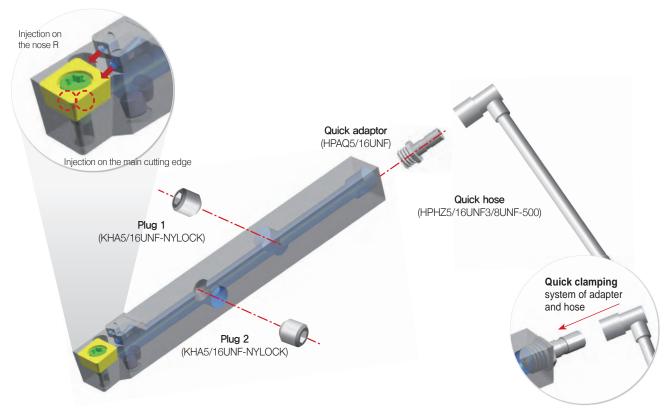
	Designation	Н	W	L	s	h	Q	Insert	Screw	Wrench
	0808-X11A	8	8	120	4	8	24		FTKA02565	
	1010-X11A	10	10	120	5	10	24			TM07D
	1212-X11A	12	12	120	6	12	24	VPLITIUSLL	F1KA02505	TW07P
	1616-X11A	16	16	120	8	16	28			

Applicable inserts B100

# **Auto Tools (KHP Coolant)**

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

### Structure of holder



\* Quick adapter and quick hose are sold separately

#### Parts

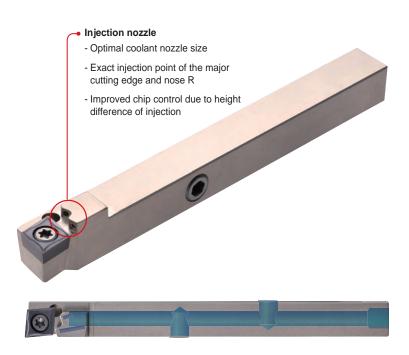
	Shape	Configuration	Length	Q clamping S clampin dimensions
Quick to straight	HPHZ5/16UNF3/8UNF-500	Q QUICK S	500 mm	UNF5/16 -
Quick adaptor	HPAQ5/16UNF	UNF5/16 QUICK	18.5 mm	UNF5/16

# **B** Auto Tools (KHP Coolant)

#### Features



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

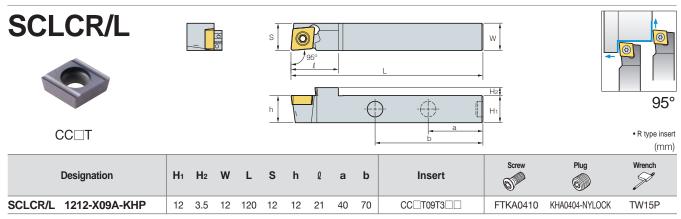


#### Parts

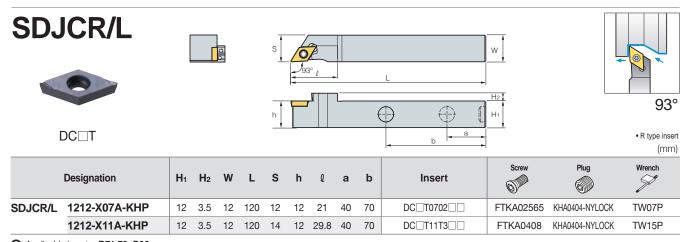
Devision	Designation	Shape
Adaptor	HPA3/8UNF1/8PF	G1/8 (PF1/8) UNF3/8
Blank	HPB1/8PF	G1/8 (PF1/8)
Quick adaptor	HPAQ5/16UNF	UNF5/16 QUICK

### High pressure hose

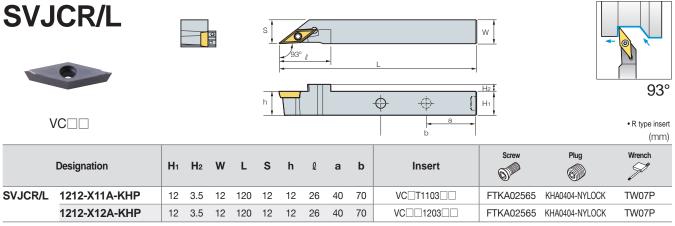
	length	Q clamping dimensions	S clamping dimensionss	
Quick to straight (HPHZ5/16UNF3/8UNF-500)	Q UNF3/8 Q QUICK S	500 mm	UNF5/16	-



Applicable inserts B66-69, B91



Applicable inserts B71-73, B92



<sup>◆</sup> Applicable inserts B86~B87, B97

# B Auto Tools (ISO)

				ated		Uncoated		Dime	nsions	(mm)			
Picture	Designation	PC5300	PC8105	PC8110	PC8115	H04	ı	d	t	r	d <sub>1</sub>	Configuration	on
	0301003R-KF	•		•			3.6	3.5	1.39	0.03	1.9		
	030101R-KF	•		•			3.5	3.5	1.39	0.10	1.9		
	030102R-KF	•		•			3.5	3.5	1.39	0.20	1.9		
	030104R-KF	•		•			3.5	3.5	1.39	0.40	1.9		
	0401003R-KF	•		•			4.4	4.3	1.79	0.03	2.3		
	040101R-KF	•		•			4.4	4.3	1.79	0.10	2.3		
	040102R-KF	•		•			4.3	4.3	1.79	0.20	2.3		
	040104R-KF	•		•			4.3	4.3	1.79	0.40	2.3		
	0602003R-KF 060201R-KF						6.6	6.35	2.38	0.03	2.8		
	060201R-KF						6.2	6.35	2.38	0.10	2.8		
	09T3003R-KF						9.8	9.525	3.97	0.03	4.4		
00T KE	09T301R-KF						9.6	9.525	3.97	0.10	4.4	r	
CGT-KF	09T302R-KF						9.2	9.525	3.97	0.20	4.4		
	0301003L-KF	•		•			3.6	3.5	1.39	0.03	1.9	<del>  ((   ))  </del>  d	H
	030101L-KF	•		•			3.5	3.5	1.39	0.10	1.9		
	030102L-KF	•		•			3.5	3.5	1.39	0.20	1.9	80°	-t
Finishing	030104L-KF	•		•			3.5	3.5	1.39	0.40	1.9		
igh precision)	0401003L-KF	•		•			4.4	4.3	1.79	0.03	2.3		
	040101L-KF	•		•			4.4	4.3	1.79	0.10	2.3		
	040102L-KF	•		•			4.3	4.3	1.79	0.20	2.3		
	040104L-KF	•		•			4.3	4.3	1.79	0.40	2.3		
	0602003L-KF						6.6	6.35	2.38	0.03	2.8		
	060201L-KF						6.4	6.35	2.38	0.10	2.8		
	060202L-KF						6.2	6.35	2.38	0.20	2.8 4.4		
	09T3003L-KF 09T301L-KF						9.8	9.525 9.525	3.97	0.03	4.4		
	09T301L-KF						9.0	9.525	3.97	0.10	4.4		
	060201MFR-KF 060202MFR-KF 09T3005MFR-KF	•		•			6.4 6.2 9.8	6.35 6.35 9.525	2.38 2.38 3.97	< 0.10 < 0.20 < 0.05	2.8 2.8 4.4		
CETVE	09T301MFR-KF	•		•			9.6	9.525	3.97	< 0.10	4.4	<u></u>	
CET-KF	09T302MFR-KF	•		•			9.2	9.525	3.97	< 0.20	4.4		
	0602005MFL-KF	•		•			6.6	6.35	2.38	< 0.05	2.8		
	060201MFL-KF	•		•			6.4	6.35	2.38	< 0.10	2.8		
	060202MFL-KF	•		•			6.2	6.35	2.38	< 0.20	2.8		-t
Finishing	09T3005MFL-KF	•		•			9.8	9.525	3.97	< 0.05	4.4	80°	ı ţ
high precision)	09T301MFL-KF	•		•			9.6	9.525	3.97	< 0.10	4.4		
	09T302MFL-KF	•		•			9.2	9.525	3.97	< 0.20	4.4		
	0602003R-KM 060201R-KM	•		•			6.6 6.4	6.35 6.35	2.38	0.03	2.8		
	060201R-KM	•		•			6.2	6.35	2.38	0.10	2.8		
	060204R-KM	•		•			6.2	6.35	2.38	0.40	2.8		
	09T3003R-KM	•		•			9.8	9.525	3.97	0.03	4.4		
	09T301R-KM	•		•			9.6	9.525	3.97	0.10	4.4		
	09T302R-KM	•		•			9.2	9.525	3.97	0.20	4.4	J / /	
CGT-KM	09T304R-KM	•		•			9.2	9.525	3.97	0.40	4.4		1
	0602003L-KM	•		•			6.6	6.35	2.38	0.03	2.8	l d	#
	060201L-KM	•		•			6.4	6.35	2.38	0.10	2.8		
1	060202L-KM	•		•			6.2	6.35	2.38	0.20	2.8	000	
lium to finishing	060204L-KM	•		•			6.2	6.35	2.38	0.40	2.8	80° 71   1	. 1
igh precision)	09T3003L-KM	•		•			9.8	9.525	3.97	0.03	4.4		
	09T301L-KM	•		•			9.6	9.525	3.97	0.10	4.4		
	09T302L-KM	•		•			9.2	9.525	3.97	0.20	4.4		
	09T304L-KM	•		•			9.2	9.525	3.97	0.40	4.4		
ı						1 1						I .	

Picture				Coa	ated		Uncoated		Dime	nsions	(mm)		
CCET-KM	Picture	Designation	PC5300	PC8105	PC8110	PC8115	H03	1	d	t	r	d1	Configuration
CCET-KM			•		•								
CCET-KM			H										
O9T301MFR-KM	CCFT-KM		_										<u>_r</u>
Medium cutling (Was high precision)   Geologo MFN-KM													
Medium of limbhing (Utra high precision)   Medium curing (Utra high			•		•								
Mediun cutting (Ura high precision)   OST302MFN-MS   OST302MFN-M			-										
CCGT-KS	Medium to finishing												80°
DST301MFL-KM	(Utra high precision)		-										
CCGT-FS			•		•								
CCGT-MS		09T302MFL-KM	•		•			9.2	9.525	3.97	< 0.20	4.4	
060204FS	CCGT-FS		-										<u>_r</u>
OBT301-FS	new												
OBT302-FS			-										
CCGT-FS			•		•								
Section   Sect													800
CCGT-MS	(Fright precision)		•		•								00 //4 2/
060204MFN-FS   097301MFN-FS   9.8   9.525   3.97   < 0.10   4.4   097304MFN-FS   9.8   9.525   3.97   < 0.20   4.4   097304MFN-FS   9.2   9.525   3.97   < 0.40   4.4   097304MFN-FS   9.2   9.525   3.97   < 0.40   4.4   097304MFN-FS   9.2   9.525   3.97   < 0.40   4.4   097304MFN-FS   9.8   9.525   3.97   < 0.80   4.4   097304-MS   9.8   9.525   3.97   < 0.20   4.4   097304-MS   9.6   9.525   3.97   < 0.40   4.4   097304-MS   9.6   9.525   3.97   < 0.40   4.4   097304-MS   9.6   9.525   3.97   < 0.40   4.4   097304-MFN-MS   9.8   9.525   3.97   < 0.40   4.4   097304-MFN-MS   9.8   9.525   3.97   < 0.40   4.4   097304-MFN-MS   9.6   9.525   3.97   < 0.40   4.4   097304-MFN-MF   9.8   9.525   3.97   < 0.40   4.4   097304-MFN-MF   9.6   6.6   6.35   2.38   < 0.40   2.8   097304-MFN-MF   9.6   9.525   3.97   < 0.40   4.4   097304-MFN-MF   9.6   6.6   6.35   2.38   < 0.40   2.8   0.40   2.8   097304-MFN-MF   9.6   6.6   6.35   2.38   < 0.40   2.8   097304-MFN-MF   9.6   6.5   6.35   2.38   < 0.40   2.8   097304-MFN-MFN-MFN-MFN-MFN-MFN-MFN-MFN-MFN-MFN													<u>r</u>
Nedium cutting (High precision)   Nedium cutting (High precision)   Nedium cutting (Utra high precision)   Nedium cutting (Utra high precision)   Nedium cutting (High precision)   Nedium cutting (High precision)   Nedium cutting (Utra high precision)	new												
OPT304MFN-FS		09T301MFN-FS						9.8	9.525	3.97	< 0.10	4.4	
OPT308MFN-FS													
OgT301-MS   OgT301-MS   OgT302-MS   OgT302-MS   OgT302-MS   OgT304-MS   OgT304-MFN-MS   OgT													800 1
OPT302-MS	CCCTMS		•		•								r
Medium cutting (High precision)         09T301MFN-MS         9.8         9.525         3.97         < 0.10         4.4           09T302MFN-MS         9.6         9.525         3.97         < 0.20         4.4           09T304MFN-MS         9.2         9.525         3.97         < 0.40         4.4           Medium cutting (Utra high precision)         09T304MFN-MS         9.2         9.525         3.97         < 0.40         4.4           G0202-VP1         60202-VP1         6.6         6.35         2.38         0.10         2.8           60204-VP1         6.6         6.2         6.35         2.38         0.40         2.8           09T301-VP1         9.8         9.525         3.97         0.10         4.4           09T302-VP1         9.6         9.6         9.525         3.97         0.10         4.4           09T304-VP1         9.6         9.2         9.525         3.97         0.40         4.4           0CCGT-VP1         6.6         6.35         2.38         0.10         2.8           06020MFN-VP1         9.6         9.2         9.525         3.97         0.40         4.4           09T301MFN-VP1         9.6         6.2         6.35 <th></th> <th></th> <th>•</th> <th></th> <th>•</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>			•		•								
CCGT-MS		09T304-MS	•		•			9.2	9.525	3.97	0.40	4.4	
CCGT-MS   O9T301MFN-MS   O9T302MFN-MS   O9T302MFN-MS   O9T302MFN-MS   O9T304MFN-MS   O9T304-VP1   O9T30													800
Medium cutting (Utra high precision)	CCGT-MS		•		•			9.8	9.525	3.97	< 0.10	4.4	
Medium cutting (Utra high precision)         60201-VP1         6.6         6.35         2.38         0.10         2.8           60202-VP1         6.4         6.35         2.38         0.20         2.8           60204-VP1         6.2         6.35         2.38         0.40         2.8           09T301-VP1         9.8         9.525         3.97         0.10         4.4           09T302-VP1         9.6         9.525         3.97         0.40         4.4           09T304-VP1         9.2         9.525         3.97         0.40         4.4           060201MFN-VP1         6.6         6.35         2.38         < 0.10	new		_										
CCGT-VP1       60201-VP1       60202-VP1		091304MFN-MS	•		•			9.2	9.525	3.97	< 0.40	4.4	d t
60202-VP1		60201-VP1	•	•	•	•	•	6.6	6.35	2.38	0.10	2.8	\
O9T301-VP1			•	•	•	•	•	6.4	6.35	2.38	0.20	2.8	
Prinishing (High precision)   Prin													
CCGT-VP1							_						
060202MFN-VP1       ●       6.4       6.35       2.38       < 0.20       2.8         060204MFN-VP1       ●       6.2       6.35       2.38       < 0.40       2.8         09T301MFN-VP1       ●       9.8       9.525       3.97       < 0.10       4.4         09T302MFN-VP1       ●       9.6       9.525       3.97       < 0.20       4.4			<u> </u>				_						80° \   -       -
060202MFN-VP1       ●       6.4       6.35       2.38       < 0.20       2.8         060204MFN-VP1       ●       6.2       6.35       2.38       < 0.40       2.8         09T301MFN-VP1       ●       9.8       9.525       3.97       < 0.10       4.4         09T302MFN-VP1       ●       9.6       9.525       3.97       < 0.20       4.4	CCGT-VP1		-										r
09T301MFN-VP1         ●         9.8         9.525         3.97         < 0.10			_										
Finishing 09T302MFN-VP1 • 9.6 9.525 3.97 < 0.20 4.4			<u> </u>										<del>                                     </del>
Tillotting A	Finishing												
		09T304MFN-VP1	•		•								80° \
0702003R-KF													
070201R-KF       ●       7.8       6.35       2.38       0.10       2.8         070202R-KF       ●       7.8       6.35       2.38       0.20       2.8													
070204R-KF													
11T3003R-KF • 11.6 9.525 3.97 0.03 4.4			-										
DCGT-KF 11T301R-KF • 11.6 9.525 3.97 0.10 4.4	DCGT-KF		-										
11T302R-KF • 11.6 9.525 3.97 0.20 4.4													
11T304R-KF			-										
Finishing 070201L-KF • 7.8 6.35 2.38 0.10 2.8	Finishing												550 1
(High precision) <b>070202L-KF</b> •		070202L-KF	•		•				6.35				
070204L-KF • 7.8 6.35 2.38 0.40 2.8													
11T3003L-KF • 11.6 9.525 3.97 0.03 4.4			_										
11T301L-KF     ●     11.6     9.525     3.97     0.10     4.4       11T302L-KF     ●     11.6     9.525     3.97     0.20     4.4			H										
11T304L-KF • 11.6 9.525 3.97 0.40 4.4													

# B Auto Tools (ISO)

				ated		Uncoated		Dime	nsions	(mm)		
Picture	Designation	PC5300	PC8105	PC8110	PC8115	H01	ı	d	t	r	d1	Configuration
	0702005MFR-KF	•		•			7.8	6.35	2.38	< 0.05	2.8	
	070201MFR-KF	•		•			7.8	6.35	2.38	< 0.10	2.8	
	070202MFR-KF	•		•			7.8	6.35	2.38	< 0.20	2.8	
CET-KF	11T3005MFR-KF	•		•			11.6	9.525	3.97	< 0.05	4.4	<u></u>
	11T301MFR-KF	•		•			11.6	9.525	3.97	< 0.10	4.4	
	11T302MFR-KF	•		•			11.6	9.525	3.97	< 0.20	4.4	
	0702005MFL-KF	•		•			7.8	6.35	2.38	< 0.05	2.8	
Finishing	070201MFL-KF	•		•			7.8	6.35	2.38	< 0.10	2.8	55°X
a high precision)	070202MFL-KF	•		•			7.8	6.35	2.38	< 0.20	2.8	
	11T3005MFL-KF	•		•			11.6	9.525	3.97	< 0.05	4.4	
	11T301MFL-KF 11T302MFL-KF			•			11.6 11.6	9.525	3.97	< 0.10	4.4	
	0702003R-KM	•		•			7.8	6.35	2.38	0.03	2.8	
	0702003K-KW	•		•			7.8	6.35	2.38	0.10	2.8	
	070201R-KW	•		•			7.8	6.35	2.38	0.20	2.8	
	070202R-KM			•			7.8	6.35	2.38	0.40	2.8	
	11T3003R-KM	•		•			11.6	9.525	3.97	0.03	4.4	
	11T301R-KM	•		•			11.6	9.525	3.97	0.10	4.4	· ·
CGT-KM	11T302R-KM	•		•			11.6	9.525	3.97	0.20	4.4	
	11T304R-KM	•		•			11.6	9.525	3.97	0.40	4.4	
	0702003L-KM	•		•			7.8	6.35	2.38	0.03	2.8	
	070201L-KM	•		•			7.8	6.35	2.38	0.10	2.8	55
dium to finishing	070202L-KM	•		•			7.8	6.35	2.38	0.20	2.8	
High precision)	070204L-KM	•		•			7.8	6.35	2.38	0.40	2.8	
	11T3003L-KM	•		•			11.6	9.525	3.97	0.03	4.4	
	11T301L-KM	•		•			11.6	9.525	3.97	0.10	4.4	
	11T302L-KM	•		•			11.6	9.525	3.97	0.20	4.4	
	11T304L-KM	•		•			11.6	9.525	3.97	0.40	4.4	
	000000000000000000000000000000000000000											
	0702005MFR-KM	•		•			7.8	6.35	2.38	< 0.05	2.8	
	070201MFR-KM	•		•			7.8	6.35	2.38	< 0.10	2.8	
	070202MFR-KM 11T3005MFR-KM			•			7.8 11.6	6.35 9.525	2.38	< 0.20	2.8	
CET-KM	11T3005WFR-KW			•			11.6	9.525	3.97	< 0.05	4.4	r
	11T301MFR-KM			•			11.6	9.525	3.97	< 0.10	4.4	
	0702005MFL-KM	•		•			7.8	6.35	2.38	< 0.25	2.8	
	0702003Mi E 14M	•		•			7.8	6.35	2.38	< 0.10	2.8	
dium to finishing	070202MFL-KM	•		•			7.8	6.35	2.38	< 0.20	2.8	55
a high precision)	11T3005MFL-KM	•		•			11.6	9.525	3.97	< 0.05	4.4	
	11T301MFL-KM	•		•			11.6	9.525	3.97	< 0.10	4.4	
	11T302MFL-KM	•		•			11.6	9.525	3.97	< 0.20	4.4	
	070201-FS	•		•			7.6	6.35	2.38	0.10	2.8	_
CGT-FS	070202-FS	•		•			7.5	6.35	2.38	0.20	2.8	
TeV	11T301-FS	•		•			11.6	9.525	3.97	0.10	4.4	
V	11T302-FS	•		•			11.6	9.525	3.97	0.20	4.4	
Finishing	11T304-FS	•		•			11.6	9.525	3.97	0.40	4.4	550
High precision)	11T308-FS	•		•			11.6	9.525	3.97	0.80	4.4	<sup>30</sup>
	070201MFN-FS						7.6	6.35	2.38	< 0.10	2.8	, , , , , , , , , , , , , , , , , , ,
CGT-FS	070201MFN-FS						7.5	6.35	2.38	< 0.10	2.8	
new	11T301MFN-FS						11.6	9.525	3.97	< 0.10	4.4	
	11T302MFN-FS						11.4	9.525	3.97	< 0.20	4.4	
Final date	11T304MFN-FS						11.2	9.525	3.97	< 0.40	4.4	55°
Finishing a high precision)	11T308MFN-FS						11.0	9.525	3.97	< 0.80	4.4	<sup></sup>
CGT-MS	11T301-MS	•		•			11.6	9.525	3.97	0.10	4.4	
new	11T302-MS	•		•			11.6	9.525	3.97	0.20	4.4	
1	11T304-MS	•		•			11.6	9.525	3.97	0.40	4.4	
Medium cutting												55
High precision)	44T204MEN MC						11.0	0.505	2.07	.0.40	1 1	, I
CGT-MS	11T301MFN-MS	•		•			11.6	9.525	3.97	< 0.10	4.4	
	11T302MFN-MS 11T304MFN-MS	•		•			11.6	9.525 9.525	3.97	< 0.20	4.4	
	111304WFW-W3	•					11.6	9.525	3.97	< 0.40	4.4	
Medium cutting												

				ated		Uncoated		Dime	nsions	(mm)		
Picture	Designation	PC5300	PC8105	PC8110	PC8115	H01	ı	d	t	r	d1	Configuration
	070201-VP1	•	•	•	•	•	7.8	6.35	2.38	0.10	2.8	
DCGT-VP1	070202-VP1	•	•	•	•	•	7.8	6.35	2.38	0.20	2.8	
O as	070204-VP1	•	•	•	•	•	7.8	6.35	2.38	0.40	2.8	
	11T301-VP1	•		•			11.6	9.525	3.97	0.10	4.4	
Finishing	11T302-VP1	•	•	•	•	•	11.6	9.525	3.97	0.20	4.4	5.5
(High precision)	11T304-VP1	•	•	•	•	•	11.6	9.525	3.97	0.40	4.4	- 33.40
	070201MFN-VP1	•		•			7.8	6.35	2.38	< 0.10	2.8	
DCGT-VP1	070202MFN-VP1	•		•			7.8	6.35	2.38	< 0.20	2.8	
	070204MFN-VP1	•		•			7.8	6.35	2.38	< 0.40	2.8	
	11T301MFN-VP1	•		•			11.6	9.525	3.97	< 0.10	4.4	
Finishing	11T302MFN-VP1	•		•			11.6	9.525	3.97	< 0.20	4.4	55° 7°
Utra high precision)	11T304MFN-VP1	•		•			11.6	9.525	3.97	< 0.40	4.4	
	0802003R-KF						8.15	4.76	2.38	0.03	2.38	
TCGT-KF	080201R-KF						8.0	4.76	2.38	0.10	2.38	60°
	080202R-KF						7.7	4.76	2.38	0.20	2.38	
	08020003L-KF						8.15	4.76	2.38	0.03	2.38	
Elet 11	080201L-KF						8.0	4.76	2.38	0.10	2.38	
Finishing (High precision)	080202L-KF						7.7	4.76	2.38	0.20	2.38	
	110201-FS	•		•			9.3	6.35	2.38	0.10	2.8	60°
TCGT-FS	110201-FS	•		•			9.1	6.35	2.38	0.20	2.8	
new	110204-FS	•		•			8.6	6.35	2.38	0.40	2.8	
												dı
Finishing												7°
(High precision)	110201MFN-FS						9.3	6.35	3.18	< 0.10	3.4	eu.
TCGT-FS	110201MFN-FS						9.1	6.35	3.18	< 0.10	3.4	~ ~ <u>~</u>
new	110204MFN-FS						8.6	6.35	3.18	< 0.40	3.4	
	11020-11111 14 1 0						0.0	0.00	0.10	V 0. 10	0.1	dı dı
Finishing												70
Jtra high precision)	1103003R-KF	•		•			7.8	6.25	2.38	0.03	2.8	
VBGT-KF	1103003K-KF	•		•			7.8	6.35	2.38	0.03	2.8	-
V DG I-KI	110301K-KF			•			7.8	6.35	2.38	0.20	2.8	
	1103002K TKI	•		•			11.6	9.525	3.97	0.03	4.4	d Hall
Finishina	110301L-KF	•		•			11.6	9.525	3.97	0.10	4.4	35
Finishing (High precision)	110302L-KF	•		•			11.6	9.525	3.97	0.20	4.4	33 1, 1
	44000000 1/84						7.0	0.05	0.00	0.00		
VBGT-KM	1103003R-KM 110301R-KM	•		•			7.8	6.35	2.38	0.03	2.8	_
↑ DO 1-1/101	110301R-KM			•			7.8	6.35 6.35	2.38	0.10	2.8	
6	110302K-KW	•		•			11.6	9.525	3.97	0.20	4.4	
	1103003L-KW	•		•			11.6	9.525	3.97	0.10	4.4	35 5
Medium to finishing (High precision)	110301L-KM	•		•			11.6	9.525	3.97	0.20	4.4	· ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '
	440004 50						44.5	0.07	0.40	0.45	0.0	
	110301-FS	•		•			11.0	6.35	3.18	0.10	2.8	
VBGT-FS	110302-FS	•		•			11.0	6.35	3.18	0.20	2.8	
new	110304-FS 160401-FS	•		•			11.0 16.3	6.35 9.525	3.18 4.76	0.40	2.8 4.4	
Finish	160401-FS 160402-FS	•		•			16.1	9.525	4.76	0.10	4.4	35.9
Finishing (High precision)	160404-FS	•		•			15.7	9.525	4.76	0.40	4.4	
VBGT-FS	110301MFN-FS						10.8	6.35	3.18	< 0.10	2.8	_
new	110302MFN-FS						10.6	6.35	3.18	< 0.20	2.8	
	110304MFN-FS 160401MFN-FS						11.4	6.35 9.525	3.18 4.76	< 0.40	2.8 4.4	
Finishing	160401MFN-FS						16.1	9.525	4.76	< 0.10	4.4	35° t
Utra high precision)	160402MFN-FS						15.7	9.525	4.76	< 0.40	4.4	] - <del>  -   -  </del>
	1103003R-KF						11.0	6.35	3.18	0.03	2.8	
VCGT-KF	110301R-KF						11.0	6.35	3.18	0.10	2.8	r
	110302R-KF						11.0	6.35	3.18	0.20	2.8	
	1103003L-KF						11.0	6.35	3.18	0.03	2.8	
Finishing (High precision)	110301L-KF						11.0	6.35	3.18	0.10	2.8	35°X
,g p. 00.01011)	110302L-KF						11.0	6.35	3.18	0.20	2.8	]

# B Auto Tools (ISO)

			Coa	ated		Uncoated		Dime	nsions	(mm)		
Picture	Designation	PC5300	PC8105	PC8110	PC8115	H01	ı	d	t	r	d1	Configuration
	1103005MFR-KF	•		•			11.0	6.35	3.18	< 0.05	2.8	
VCET-KF	110301MFR-KF	•		•			11.0	6.35	3.18	< 0.10	2.8	]
	110302MFR-KF	•		•			11.0	6.35	3.18	< 0.20	2.8	
	1103005MFL-KF	•		•			11.0	6.35	3.18	< 0.05	2.8	
Finishing	110301MFL-KF	•		•			11.0	6.35	3.18	< 0.10	2.8	35
(Utra high precision)	110302MFL-KF	•		•			11.0	6.35	3.18	< 0.20	2.8	-
	1103003R-KM						11.0	6.35	3.18	0.03	2.8	
VCGT-KM	110301R-KM						11.0	6.35	3.18	0.10	2.8	
	110302R-KM						11.0	6.35	3.18	0.20	2.8	
	1103003L-KM						11.0	6.35	3.18	0.03	2.8	
Medium to finishing	110301L-KM						11.0	6.35	3.18	0.10	2.8	35°X- 1
(High precision)	110302L-KM						11.0	6.35	3.18	0.20	2.8	-
	1103005MFR-KM	•		•			11.0	6.35	3.18	< 0.05	2.8	
VCET-KM	110301MFR-KM	•		•			11.0	6.35	3.18	< 0.10	2.8	
	110302MFR-KM	•		•			11.0	6.35	3.18	< 0.20	2.8	
	3005MFL-KM	•		•			11.0	6.35	3.18	< 0.05	2.8	
Medium to finishing Utra high precision)	301MFL-KM	•		•			11.0	6.35	3.18	< 0.10	2.8	35 1
Cara mgm prodicion,	302MFL-KM	•		•			11.0	6.35	3.18	< 0.20	2.8	
	110301-FS	•		•			11.0	6.35	3.18	0.10	2.8	_
VCGT-FS_	110302-FS	•		•			11.0	6.35	3.18	0.20	2.8	<u></u>
new	110304-FS	•		•			11.0	6.35	3.18	0.40	2.8	
	160401-FS	•		•			16.3	9.525	4.76	0.10	4.4	
Finishing	160402-FS	•		•			16.1	9.525	4.76	0.20	4.4	35° 1 t
(High precision)	160404-FS	•		•			15.7	9.525	4.76	0.40	4.4	_
	110301MFN-FS						10.8	6.35	3.18	< 0.10	2.8	
VCGT-FS_	110302MFN-FS						10.6	6.35	3.18	< 0.20	2.8	, , , , , , , , , , , , , , , , , , ,
new	110304MFN-FS						11.4	6.35	3.18	< 0.40	2.8	
	160401MFN-FS						16.3	9.525	4.76	< 0.10	4.4	d H
Finishing	160402MFN-FS						16.1	9.525	4.76	< 0.20	4.4	35°
(Utra high precision)	160404MFN-FS						15.7	9.525	4.76	< 0.40	4.4	
VCGT-MS	110301-MS	•		•			10.8	6.35	3.18	0.10	2.8	<u>r</u>
VCG 1-IVIS	110302-MS	•		•			10.6	6.35	3.18	0.20	2.8	
	110304-MS	•		•			11.4	6.35	3.18	0.40	2.8	
Medium cutting (High precision)												35°
	11T301MFN-MS	•		•			10.8	6.35	3.18	< 0.10	2.8	
VCGT-MS	11T302MFN-MS	•		•			10.6	6.35	3.18	< 0.20	2.8	
	11T304MFN-MS	•		•			11.4	6.35	3.18	< 0.40	2.8	
Medium cutting (Utra high precision)												35° \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
VCGT-VP1	110301-VP1	•	•	•	•	•	11.0	6.35	3.18	0.10	2.8	,
	110302-VP1	•	•	•	•	•	11.0	6.35	3.18	0.20	2.8	
(A) (A)	110304-VP1	•	•	•	•	•	11.0	6.35	3.18	0.40	2.8	
Finishing (High precision)												35
	110301MFN-VP1	•		•			11.0	6.35	3.18	< 0.10	2.8	r
VCGT-VP1	110302MFN-VP1	•		•			11.0	6.35	3.18	< 0.20	2.8	
90	110304MFN-VP1	•		•			11.0	6.35	3.18	< 0.40	2.8	
Finishing Utra high precision)												35
	1203008FN-MS	•		•			11.0	7.50	3.00	< 0.08	2.8	
VCGT-MS	1203006FN-WS			•			11.0	7.50	3.00	< 0.08	2.8	
8	120301FN-MS	•		•			11.0	7.50	3.00	< 0.10	2.8	
Medium cutting	120304FN-MS	•		•			11.0	7.50	3.00	< 0.40	2.8	35
Utra high precision)	4000001177						4					x  - 't '
JCCV VD1	120300MFR-VP1	•		•			11.0	7.50	3.18	< 0.00	2.8	-
VCGX-VP1	120301MFR-VP1	•		•			11.0	7.50	3.18	< 0.10	2.8	
(9)	120302MFR-VP1	•		•			11.0	7.50	3.18	< 0.20	2.8	4
Finishing	120304MFR-VP1 120308MFR-VP1	•		•			11.0	7.50	3.18	< 0.40	2.8	
(Utra high precision)	12USUOIVIFK-VP1	•					11.0	7.50	3.18	< 0.80	2.8	35
Chamfer type												
	<u> </u>											1

			Coa	ated		Uncoated		Dime	nsions	(mm)		
Picture	Designation	PC5300	PC8105	PC8110	PC8115	H01	ı	d	t	r	d1	Configuration
	080201R-KF	•		•			8.0	4.76	2.38	0.10	2.3	
	080202R-KF	•		•			8.0	4.76	2.38	0.20	2.3	
	1103003R-KF	•		•			11.0	6.35	3.18	0.03	2.8	
	110301R-KF	•		•			11.0	6.35	3.18	0.10	2.8	
	110302R-KF	•		•			11.0	6.35	3.18	0.20	2.8	-
VPGT-KF	080201L-KF	•		•			8.0	4.76	2.38	0.10	2.3	-
VPG1-KF	080201L-KF	•		•			8.0	4.76	2.38	0.20	2.3	
	1103003L-KF	•		•			11.0	6.35	3.18	0.03	2.8	
F1 1 1 1	1103003E-KI	•		•			11.0	6.35	3.18	0.10	2.8	
Finishing (High precision)	110301L-KF	•		•			11.0	6.35	3.18	0.10	2.8	35°V 11
(-g., p ,	1100022.10						11.0	0.00	0.10	0.20	2.0	
	0802005MFR-KF	•		•			8.0	6.35	2.38	< 0.05	2.3	
	080201MFR-KF	•		•			8.0	6.35	2.38	< 0.10	2.3	
\/DET !/-	080202MFR-KF	•		•			8.0	6.35	2.38	< 0.20	2.3	]
VPET-KF	0802005MFL-KF	•		•			8.0	6.35	2.38	< 0.05	2.3	
0	080201MFL-KF	•		•			8.0	6.35	2.38	< 0.10	2.3	
Finishing (Utra high precision)	080202MFL-KF	•		•			8.0	6.35	2.38	< 0.20	2.3	35
	080201R-KM 080202R-KM	•		•			8.0	4.76 4.76	2.38	0.10	2.3	
	1103003R-KM	•		•			11.0	6.35	3.18	0.20	2.8	-
	1103003R-KM	•		•			11.0	6.35	3.18	0.03	2.8	-
	110301R-KW	•		•			11.0	6.35	3.18	0.10	2.8	-
VPGT-KM	080201L-KM	•		•				4.76			2.3	_
				•			8.0		2.38	0.10		
	080202L-KM						8.0	4.76	2.38	0.20	2.3	
Medium to finishing	1103003L-KM	•		•			11.0	6.35	3.18	0.03	2.8	110
(High precision)	110301L-KM	•		•			11.0	6.35	3.18	0.10	2.8	35°X
	110302L-KM	•		•			11.0	6.35	3.18	0.20	2.8	
	0802005MFR-KM	•		•			8.0	6.35	3.18	< 0.05	2.8	
	080201MFR-KM	•		•			8.0	6.35	3.18	< 0.10	2.8	-
	080202MFR-KM	•		•			8.0	6.35	3.18	< 0.20	2.8	-
VPET-KM	0802005MFL-KM	•		•			8.0	6.35	3.18	< 0.05	2.8	- -
VPE I-KIVI	080201MFL-KM	•		•			8.0	6.35	3.18	< 0.10	2.8	
	080202MFL-KM	•		•			8.0	6.35	3.18	< 0.20	2.8	
Medium to finishing (Utra high precision)							0.0	0.00		1 0.120	2.0	35 11"
	110301-VP1	•	•	•	•	•	11.0	6.35	3.18	0.10	2.8	_
VDCT VD1	110302-VP1	•	•	•	•	•	11.0	6.35	3.18	0.20	2.8	-
VPGT-VP1	110304-VP1	•	•	•	•	•	11.0	6.35	3.18	0.40	2.8	
Medium cutting (High precision)												35 d d d d d d d d d d d d d d d d d d d
	110301MFN-VP1	•		•			11.0	6.35	3.18	< 0.10	2.8	
\(DCT\):::	110302MFN-VP1	•		•			11.0	6.35	3.18	< 0.20	2.8	
VPGT-VP1  Medium cutting (Ute high presides)	110304MFN-VP1	•		•			11.0	6.35	3.18	< 0.40	2.8	35 d d d d d d d d d d d d d d d d d d d
(Utra high precision)												

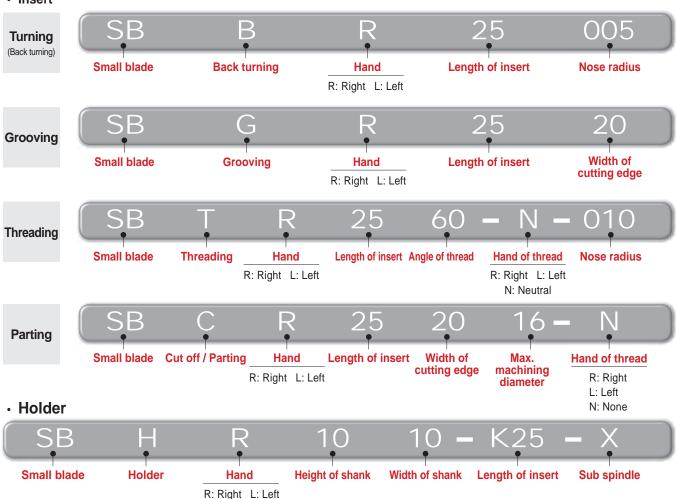
# **B** Auto Tools (Blade Type)

# Auto tools (Blade type)

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

#### Code system





#### Types of blade insert

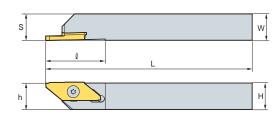


# SBHR/L



SBBR SBGR SBTR SBCR





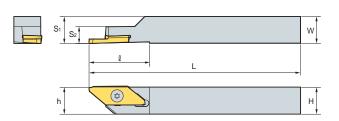
										(mm)
	Designation	н	W	L	S	h	Q	Insert	Screw	Wrench
SBHR/L	1010-K25	10	10	125	10	10	27			
	1212-K25	12	12	125	12	12	27	SB□R/L25	FTKA0409S	TW09P
	1616-K25	16	16	125	16	16	27			

# SBHR/L-X (Sub spindle)



SBBR SBGR SBTR SBCR





(mm) Designation S2 Q h Insert 1010-K25-X 7.5 SBHR/L 125 10 10 10 10 27 SB R/L25 FTKA0407S TW09P 1212-K25-X 12 27 12 125 12 7.5 12

on					Coa	ated					Dim	ensi	ons (ı	mm)					
icati	Picture	Des	signation	PC	8110	PC!	5300									Pitch	range	Configuration	Feed direction
Application				R	L	R	L	1	α	t	r	La	ar	f	<b>D-</b> мах		Max.	-	
		SBBR/L	25005	•	•	•	•	25	59	3.18	0.05	-	-	-	-	-	-		
			25010	•	•	•	•	25	59	3.18	0.10	-	-	-	-	-	-		
ng	40		25020	•	•	•	•	25	59	3.18	0.20	-	-	-	-	-	-	t r	
Back turning	SBBR/L																	a	
		SBGR/L	2505	•	•	•	•	25	-	-	0.05	0.5	1.35	-	-	-	-		
			2510	•	•	•	•	25	-	-	0.05	1.0	2.75	-	-	-	-	La	
50	400		2515	•	•	•	•	25	-	-	0.05	1.5	3.75	-	-	-	-	<del>-</del>	
, in	1		2520	•	•	•	•	25	-	-	0.05	2.0	3.75	-	-	-	-	ar	<b> </b>
Grooving			2525	•	•	•	•	25	-	-	0.05	2.5	3.75	-	-	-	-	<u> </u>   1	
တ	SBGR/L																		
		SBTR/L	2560-N-005	•	•	•	•	25	-	-	0.05	-	-	1.59		0.2	2.0		_
			2560-N-010	•	•	•	•	25	-	-	0.10	-	-	1.59	-	1.0	2.0	-fr	
g	1		2560-R-005	•	•	•	•	25	-	-	0.05	-	-	0.6	-	0.2	1.5		
Threading			2560-R-010	•	•	•	•	25	-	-	0.10	-	-	0.6	-	1.0	1.5		
hre			2560-L-005	•	•	•	•	25	-	-	0.05	-	-	0.6	-	0.2	1.5		
F	SBTR/L		2560-L-010	•	•	•	•	25	-	-	0.10	-	-	0.6	-	1.0	1.5	<b>V V</b> <u>V</u>	
																		LNR	

# **B** Auto Tools (Blade Type)

### Insert

ion				Co	ated					Dim	ensic	ons (ı	nm)					
icat	Picture	Designation	PC	B110	PC:	5300									Pitch	range	Configuration	Feed direction
Application			R	L	R	L	I	α	t	r	La	ar	f	<b>D-</b> мах	Min.	Max.		
		SBCR/L 250708-N	•	•	•	•	25	0	-	0.05	0.7	4.3	-	8	-	-		_
		251012-N	•	•	•	•	25	0	-	0.05	1.0	6.3	-	12	-	-	La	
		251512-N	•	•	•	•	25	0	-	0.05		6.3	-	12	-	-		<del></del>
		252016-N	•	•	•	•	25	0	-	0.05	2.0	8.3	-	16	-	-	ar D <sub>max</sub>	│
		250708-R	•	•	•	•	25	15	-	0.05	0.7	4.3	-	8	-	-		
		251012-R	•	•	•	•	25	15	-	0.05	1.0	6.3	-	12	-	-	La	
		251512-R	•	•	•	•	25	15	-	0.05	1.5	6.3	-	12	-	-		
		252016-R	•	•	•	•	25	15	-	0.05	2.0	8.3	-	16	-	-	α Dmax	│     │ <u>│</u> <u>†</u> │
Parting off	SBCR/L																	
arti	OBOTUL	250708-L	•	•	•	•	25	15	-	0.05		4.3	-	8	-	-		
<u> </u>		251012-L	•	•	•	•	25	15	-	0.05		6.3	-	12	-	-	La <del></del>	
		251512-L	•	•	•	•	25	15	-	0.05		6.3	-	12	-	-	α D <sub>max</sub>	<del></del>
		252016-L	•	•	•	•	25	15	-	0.05		8.3	-	16	-	-	da l	
		251012-T	•	•	•	•	25	0	-	0.05		6.3	-	12	-	-		
		251512-T	•	•	•	•	25	0	-	0.05		6.3	-	12	-	-	La	
		<u>252016-T</u>	•	•	•	•	25	0	-	0.05	2.0	8.3	-	16	-	-	ar I Dmax	

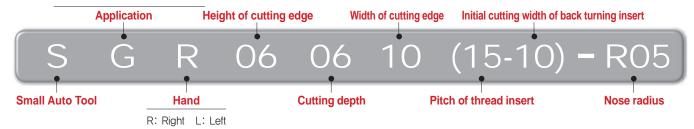
•: Stock item

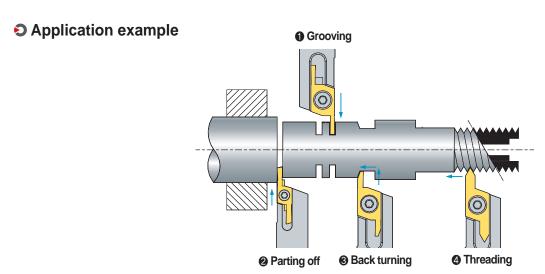
# **Auto Tools (For multi utility)**

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

#### Code system

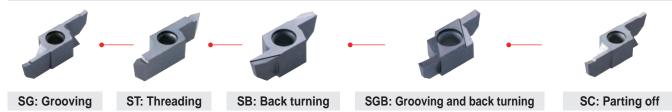
B: Back turning G: Grooving C: Parting off T: Threading GB: Grooving and back turning





### Types of multifunctional insert

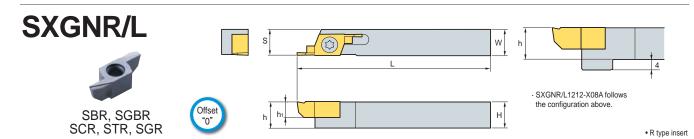
Possible to apply various types of blade inserts to one holder (Ex: All designations of 06 size inserts can be applied to one 06 size holder.)



#### Recommended cutting conditions

		Turi	ning	Groo	oving	Partii	ng off	Back t	urning
	Workpiece	Cutting speed, vc (m/min)	Feed, fn (mm/rev)						
В	Carbon steel	50~150	0.01~0.25	50~150	0.02~0.08	50~150	0.01~0.08	50~150	0.01~0.25
-	Free cutting steel	30~150	0.02~0.25	30~150	0.02~0.08	30~150	0.01~0.08	30~150	0.01~0.25
M	Stainless steel	50~120	0.02~0.20	30~120	0.02~0.05	30~120	0.02~0.05	30~120	0.02~0.20
N	Non-ferrous metal	70~200	0.03~0.25	70~200	0.03~0.10	70~200	0.03~0.10	70~200	0.03~0.30

# **B** Auto Tools (For multi utility)



										(mm)
Γ	Designation	н	W	L	s	h	h1	Insert	Screw	Wrench
SXGNR/L	1010-X06A	10	10	125	10	10	6			
	1212-X06A	12	12	125	12	12	6	S□R/L 06	FTNA 0408	TW 15P
	1616-X06A	16	16	125	16	16	6	3□R/L 00	F I INA 0400	TW ISP
	2020-X06A	20	20	125	20	20	6			
	1212-X08A	12	12	130	12	12	8			
	1616-X08A	16	16	130	16	16	8	S□R/L 08	FTNA 0411	TW 15P
	2020-X08A	20	20	130	20	20	8			

o				Coa	ated			Dim	ensi	ons (r	nm)				
icati	Picture	D	esignation	PCS	9030	_								Configuration	Feed
Application			· ·	R	L	b <sub>1</sub>	b	W	L	r	h	Т-мах	ØD		direction
		SBR/L	060520-10-R00			1	2	8	22	0	6	5.5	-		
			060520-10-R05			1	2	8	22	0.05	6	5.5	-		
			060520-10-R10			1	2	8	22	0.1	6	5.5	-		
			060630-20-R00			2	3	8	24	0	6	6.5	-		
gu	SBR/L		060630-20-R05			2	3	8	24	0.05	6	6.5	-	W b <sub>1</sub> b	
Back turning			060630-20-R10			2	3	8	24	0.1	6	6.5	-	T-MAX	+
S K			080630-20-R00			2	3	8	23	0	8	6.5	-	70°	
Ba			080630-20-R05			2	3	8	23	0.05	8	6.5	-	h	T T
			080630-20-R10			2	3	8	23	0.1	8	6.5	-		101
			080840-20-R00			2	4	8	27	0	8	8.5	-	10°	
			080840-20-R05			2	4	8	27	0.05	8	8.5	-		
			080840-20-R10			2	4	8	27	0.1	8	8.5	-		
		SCR/L	060610-R00			-	1	8	24	0	6	-	11		
			060610-R05	•		-	1	8	24	0.05	6	-	11		
			060610-R10	•		-	1	8	24	0.1	6	-	11		
			060615-R00			-	1.5	8	24	0	6	-	11		
			060615-R05	•		-	1.5	8	24	0.05	6	-	11		
			060615-R10	•		-	1.5	8	24	0.1	6	-	11		
			060620-R00			-	2	8	24	0	6	-	11		
	005"		060620-R05	•		-	2	8	24	0.05	6	-	11	15° ØDmax.	
=	SCR/L		060620-R10	•		-	2	8	24	0.1	6	-	11	W machining diameter	- <del> -</del>
Parting off			081015-R00 081015-R05			-	1.5	8	31	0	8	-	18		
į			081015-R05 081015-R10			-	1.5	8	31	0.05	8		18 18		1 1
<u> </u>			081015-R10			-	2	<u> </u>	31	0.1	8		18		[9]
			081020-R05			-	2	8	31	0.05	8	÷	18	85	
			081020-R03	•		-	2	8	31	0.03	8	-	18		
			081025-R00			-	2.5	8	31	0.1	8		18		
			081025-R05	•		-	2.5	8	31	0.05	8		18		
			081025-R10	•		-	2.5	8	31	0.00	8		18		
			081030-R00			-	3	8	31	0	8		18		
			081030-R05	•		-	3	8	31	0.05	8	-	18		
			081030-R10			-	3	8	31	0.1	8	-	18		

# Insert

ion			Coa	ated			Dim	ensio	ns (	mm)					
Application	Picture	De	signation	PCS	9030		,					~-	D':	Configuration	Feed direction
Арр				R	L	b	W	L	r	h	Т-мах	ØD	Pitch		direction
		SGR/L	060610-R00			1	8	24	0	6	-	11	-		
			060610-R05	•		1	8	24	0.05	6	-	11	-		
			060610-R10	•		1	8	24	0.1	6	-	11	-		
			060615-R00			1.5	8	24	0	6	-	11	-		
			060615-R05	•		1.5	8	24	0.05	6	-	11	-		
			060615-R10	•		1.5	8	24	0.1	6	-	11	-		
			060620-R00			2	8	24	0	6	-	11	-	_	
			060620-R05 060620-R10	•		2	8 8	24	0.05	6	-	11	-	ØDmax.	
6	SGR/L		081015-R00			1.5	8	31	0.1	8		18	_	W diameter	
Grooving			081015-R05			1.5	8	31	0.05	8		18	-		<u>                                    </u>
ğığ			081015-R10			1.5	8	31	0.1	8		18	-	h	, <mark>©</mark>
			081020-R00			2	8	31	0	8	_	18	-	8.	<b> </b>
			081020-R05	•		2	8	31	0.05	8	-	18	-	-	
			081020-R10			2	8	31	0.1	8	-	18	-		
			081025-R00			2.5	8	31	0	8	-	18	-		
			081025-R05			2.5	8	31	0.05	8	-	18	-		
			081025-R10			2.5	8	31	0.1	8	-	18	-		
			081030-R00			3	8	31	0	8	-	18	-		
			081030-R05			3	8	31	0.05	8	-	18	-		
		CODD#	081030-R10			3	8	31	0.1	8	-	18	-		
		SGBR/L	0604520-R00			2	8	22	0	6	4.5	-	-		
			0604520-R05 0604520-R10			2	- 8 - 8	22	0.05	6	4.5	-	-		
			0604525-R00			2.5	8	22	0.1	6	4.5	-	_	TMAY	
ing			0604525-R05			2.5	8	22	0.05	6	4.5	-	_	T-MAX	
ţţ			0604525-R10			2.5	8	22	0.1	6	4.5	_	-	b	
gc	SGBR/L		0605530-R00			3	8	24	0	6	5.5	-	-	w w	
Grooving and back turning			0605530-R05			3	8	24	0.05	6	5.5	-	-		
gan			0605530-R10			3	8	24	0.1	6	5.5	-	-		
Ž			0805525-R00			2.5	8	24	0	8	5.5	-	-	h	Į <mark>U</mark>
iroo			0805525-R05			2.5	8	24	0.05	8	5.5	-	-	8°	101
<del>U</del>			0805525-R10			2.5	8	24	0.1	8	5.5	-	-	-	
			0806530-R00			3	8	26	0	8	6.5	-	-		
			0806530-R05			3	8	26	0.05	8	6.5	-	-		
		STR/L	0806530-R10 06073215			3.2	8	26	0.1	8	6.5 7	_	- 0 E 1 E		
		SIK/L	06073215			3.2	8		0.06		7		0.5-1.5 1.5-3.0		
			08103215			3.2	- 8				10.5		0.5-1.5		
			08103230			3.2	8		0.19		10.5		1.5-3.0		
Threading	STR/L													T-MAX W	

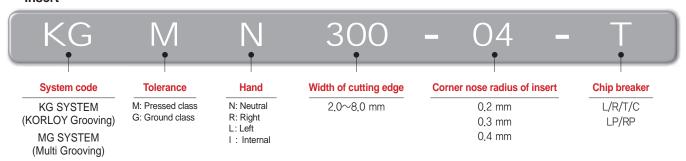
• : Stock item

# AutoTools (KGT/MGT type)

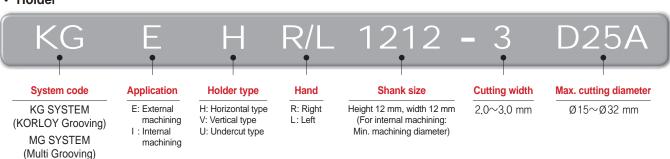
- · Grooving insert for automatic lathes
- Exclusive holder for automatic lathes
- Economic double sided insert
- Strong clamping system secures stable machining and precision.
- A wide selection of chip breakers according to various cutting conditions such as low/high feed, continuous/interrupted machining, etc.

#### Code system

Insert



Holder



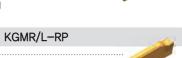
#### Chip breaker line-up

#### **KGT Type**

# KGMN-L Sharp cutting edge For low feed machining • For small diameter parts KGMN-T • Sharp cutting edge • Stronger chip control For turning and grooving

• Strong cutting edge • For high feed machining

• For iInterrupted cutting • Right/Left handed



# **MGT Type**

- · Easier chip control by narrowing chip width with the use of chip breaker on rake surface center
- · Smooth chip flow by small dots in external machining
- · Available for both external machining and grooving

#### KGMN-R

- Reinforced cutting edge
   For high feed machining
- · For interrupted cutting

#### KGMR/L-LP

- Sharp cutting edge
- For low feed machining

· Alloy steel

• Small diameter component • Right/Left handed

#### KGMN-C

- Improved chip control
- Copying Cast iron
- · Carbon steel
- Stainless

#### MGMN-G

Relief

- · Specially designed chip breaker allows narrower chips to promote better chip flow with the use of
- · Exclusive chip breaker for grooving







(mm)

# KGEHR/L-D00A



KGGN KRGN

**KGMN** KGMR/L **KRMN** 

# Grooving, turning, parting off ØD Max н

Dan	i			Dim	ensions (	mm)			Incort	Screw	Wrench
Des	ignation	Н	W	L1	L	S	h1	ØD_MAX	Insert	<b>O</b>	
KGEHR/L	1010-2-D20A	10	10	19	125	10.2	2	20			
	1212-2-D25A	12	12	19	125	12.2	2	25	KGMN200-□-□ KGMR/L200-□-□		
	1414-2-D25A		14	19	125	14.2	-	25	KRMN200-C		
	1616-2-D32A	16	16	24	125	16.2	-	32		ETNA0412	TW15L
	1212-3-D25A	12	12	19	130	12.4	2	25	KGMN300-□-□ KGMR/L300-□-□		
	1616-3-D32A	16	16	24	130	16.4	-	32	KRMN300-C		

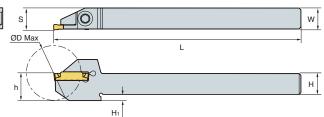
# KGEHR/L-D00B

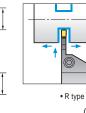
### Grooving, turning, parting off



KGGN KRGN

**KGMN** KGMR/L **KRMN** 





(mm)

Doo	ianation			Dimension	ons (mm)			Insert	Screw	Wrench
Des	signation	Н	W	L	s	h1	ØD_MAX	Illsert	<b>O</b>	
KGEHR/L	1010-2-D30B	10	10	125	10.2	6.6	30			
	1212-2-D25B	12	12	125	12.5	3.5	25	KGMN200-□-□ KGMR/L200-□-□		
	1212-2-D30B	12	12	125	12.2	3.5	30	KRMN200-C		
	1616-2-D32B	16	16	125	16.2	-	32		MHA0512	HW40L
	1212-3-D25B	12	12	125	12.4	3.5	25	KGMN300-□-□		
	1212-3-D32B	12	12	125	12.4	3.5	32	KGMR/L300-□-□		
1	1616-3-D32B	16	16	125	16.4	-	32	KRMN300-C		

#### **⊘** KGT Insert

uo						C	oate	ed				Dime	nsions	(mm)		
Application	Picture	D	esignation	NC3120	NC3225	NC5330	NC6315	PC3035	PC5300	PC9030	b	r	ı	d	α°	Configuration
	KGMN-L	KGMN	200-02-L		•	•		•	•	•	2.0	0.2	20	1.7	-	d
gu	KGIVIIN-L		300-02-L		•	•		•	•	•	3.0	0.2	20	2.3	-	d
Grooving	1															7° 7
	KCMNI D	KGMN	200-02-R		•	•		•	•	•	2.0	0.2	20	1.7	-	
off off	KGMN-R		300-02-R		•	•		•	•	•	3.0	0.2	20	2.3	-	d <sub>j</sub>
Grooving. Parting off																7°
D <sub>0</sub>	L/CNANLT	KGMN	200-02-T		•	•	•	•	•	•	2.0	0.2	20	1.7	-	
Ė	KGMN-T		300-02-T		•	•	•	•	•	•	3.0	0.2	20	2.3	-	d <sub>j</sub>
į			300-04-T		•	•	•	•	•	•	3.0	0.4	20	2.3	-	
Grooving-turning	The state of the s															7°

# **B** Auto Tools (KGT/MGT type)

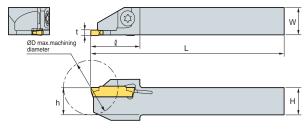
# **⊙** KGT Insert

o						С	oate	ed				Dime	nsions	(mm)		
Application	Picture	D	esignation	NC3120	NC3225	NC5330	NC6315	PC3035	PC5300	PC9030	b	r	I	d	α°	Configuration
ff (pa)	KGMR-LP	KGMR	200-6D-LP			•			•		2.0	0.2	20	-	6	b
Parting off (Right handed)			200-15D-LP			•			•		2.0	0.2	20	-	15	<u>α                                      </u>
Parti ight	3		300-6D-LP			•			•		3.0	0.2	20	-	6	
			300-15D-LP			•			•		3.0	0.2	20	-	15	117
Parting off (Right handed)	KGMR-RP	KGMR	200-6D-RP			•			•		2.0	0.2	20	-	6	<b>₩</b> b
ng o			200-15D-RP			•			•		2.0	0.2	20	-	15	α Ι
Parti	-		300-6D-RP			•			•		3.0	0.2	20	-	6	
_ =			300-15D-RP			•			•		3.0	0.2	20	-	15	-11/
# (pa	KGML-LP	KGML	200-6D-LP								2.0	0.2	20	1.7	6	d b
ing o			200-15D-LP								2.0	0.2	20	1.7	15	1 8 7
Parting off (Left handed)	3		300-6D-LP								3.0	0.2	20	2.3	6	
			300-15D-LP								3.0	0.2	20	2.3	15	-17°
ed j#	KGML-RP	KGML	200-6D-RP								2.0	0.2	20	1.7	6	d) b
ng c			200-15D-RP								2.0	0.2	20	1.7	15	I a r
Parting off (Left handed)			300-6D-RP								3.0	0.2	20	2.3	6	
_==			300-15D-RP								3.0	0.2	20	2.3	15	17°
<u>ත</u>	KRMN-C	KRMN	200-C		•	•	•	•	•		2.0	1.0	20	1.7	-	d <sub>j</sub>
Copying			300-C		•	•	•	•	•		3.0	1.5	20	2.2	-	T T
Cop																7°-

•: Stock item

# MGEHR/L







• R type insert (mm)

				()						
D	esignation	ØD	H = h	W	L	Q	t	Insert	Screw	Wrench
MGEHR/L	1010-X15A	20	10	10	125	18	1.5	MGMN150-G	ETNA 0412	TW 15L
	1212-X15A	25	12	12	125	19.5	1.5	IVIGIVIN 150-G	ETNA 0412	TVV TOL
	1010-X20A	20	10	10	125	18	2	MOMNIOOO M		
	1212-X20A	25	12	12	125	19.5	2	MGMN200-M MGMN200-G	ETNA 0412	TW 15L
	1616-X20A	32	16	16	125	25	2	WIGIVIIV200-G		
	1010-X25A	20	10	10	125	20	2.5	MOMNOFO M		
	1212-X25A	25	12	12	125	20	2.5	MGMN250-M MGMN250-G	ETNA 0412	TW 15L
	1616-X25A	32	16	16	125	25	2.5	IVIGIVIIVZ3U-G		

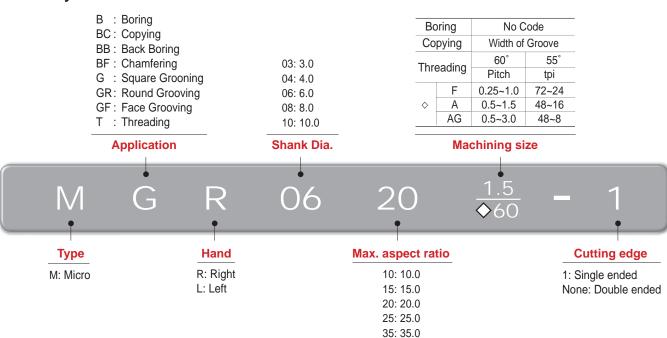
# **⊙** MGT Insert

on						Co	oate	da			Un	coa	ted		Dime	nsions	(mm)		
Application	Picture	Des	signation	NC3120	NC3225	NC3030	NC5330	NC6315	PC5300	PC9030	H01	G10	ST30A	b	r	ı	d	t	Configuration
	MGMN-G	MGMN	150-G		•	•			•	•	•			1.5	0.15	16.0	1.2	3.5	d
ng			200-G	•	•	•				•	•			2.0	0.2	16.0	1.6	3.5	Ed De Jo
Grooving			250-G		•	•			•	•				2.5	0.2	18.5	2.0	3.85	
	MGMN-M	MGMN	200-M	•	•	•	•		•	•	•			2.0	0.2	16.0	1.6	3.5	d
ing	1		250-M	•	•	•			•	•				2.5	0.2	18.5	2.0	3.85	b pos
Grooving	0																		ti 7°

# **Auto Tools (MSB tool)**

- High hardness grade guarantees longer tool life
- Various kinds of machining (Fitting, Valve, Medical parts, Automobile component, and Semiconductor equipment) are available
- Various types of MSB tools (Boring, Grooving, Threading)

#### Code system



#### MSB tool code system

	Types	Appli	cation	Designation
01		Boi	ring	MBR/L○○☆☆
02	Paring	Сор	ying	MBCR/L○○☆☆
03	Boring	Back	Boring	MBBR/L○○☆☆
04		Cham	fering	MBFR/L○○☆☆
05		Square (	Grooning	MGR/L○○☆☆-□□
06	Grooving	Round (	Grooving	MGRR/L○○☆☆─□□
07		Face G	rooving	MGFR/L○○00-□□
08	Throading	Partial	60°	MTR/L○○☆☆-◇60
	Threading	raniai	55°	MTR/L○○☆☆-◇55

#### Details

	00		Shan	k Dia.	
	☆☆		Max. dept	h of boring	
Marks			Width o	f groove	
IVIAI KS			F	0.25~1.0	72~24
	$\Diamond$	Pitch/tpi	А	0.5~1.5	48~16
			AG	0.5~3.0	48~8

# **B** Auto Tools (MSB tool)

#### Grades

Grades	Coating	Application and features
Z12M	Carbide	Ultra fine grain substrate ensures superior wear resistance and toughness Application: Cast iron, Aluminum alloy and Non-ferrous metals machining
PC30M	TiN coating	TiN coated ultra fine grain substrate ensures long tool life Application: Stainless steel, heat resisting alloy and hard-to-cut material machining

### Machining types

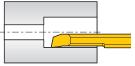




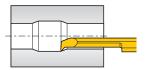


# Types

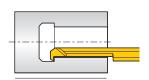




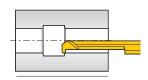
Boring
Min. dia. of machining: Ø3.2



**Copying**Min. dia. of machining: Ø4.2

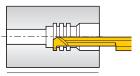


**Back Boring**Min. dia. of machining: Ø3.2

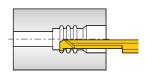


Chamfering
Min. dia. of machining: Ø4.2

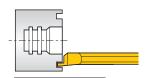
Grooving



**Square Grooving** Min. dia. of machining: Ø3.2

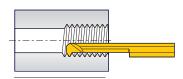


Round Grooving Min. dia. of machining: Ø3.2



Face Grooving
Min. dia. of machining: Ø6.0

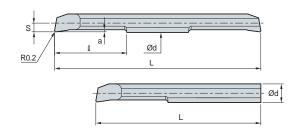
Threading



**Threading**Min. dia. of machining: Ø3.3

# **Boring**







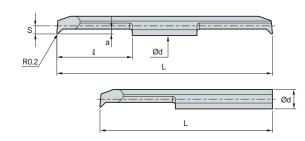
(mm)

	Twin E	dge			Single E	dge			Min.dia.		Overal	length	Detailed cu	utting edge
	a a la matia m	Coated	Uncoated		aciemetic n	Coated	Uncoated	Ød	of ma-	Q	ı	_		S
D	esignation	PC30M	Z12M	ט	esignation	PC30M	Z12M		chining		Double ended	Single ended	а	3
MBR	0310	•		MBR	0310-1			3.0	3.2	10	40	35	0.5	1.4
	0315	•			0315-1			3.0	3.2	15	50	45	0.5	1.4
	0410	•			0410-1					10	40	35		
	0415	•			0415-1			4.0	4.2	15	50	45	0.6	1.9
	0420	•			0420-1					20	60	50		
	0610	•			0610-1 0615-1					10	45	40		
	0615	•						6.0	6.2	15	55	45	0.75	2.9
	0620	•			0620-1					20	65	50		
	0810	•			0810-1					10	50	45		
	0820	•			0820-1			8.0	8.2	20	70	60	0.8	3.9
	0830				0830-1					30	80	70		
	1015	•			1015-1					15	60	60		
	1025	•			1025-1			10.0	10.2	25	80	70	1.0	4.9
	1035	•			1035-1					35	100	80		

•: Stock item

# Copying





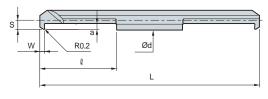


(mm)

	Twin Ed	ge			Single E	dge			Min.dia.		Overal	l length	Detailed cu	utting edge
D	esignation	Coated	Uncoated	Do	signation	Coated	Uncoated	Ød	of ma-	Q	ı	L	2	S
De	signation	PC30M			_	PC30M	Z12M		chining		Double ended	Single ended	а	3
MBCR	0410	•		MBCR	0410-1					10	40	35		
	0415	•			0415-1			4.0	4.2	15	50	45	1.0	1.9
	0420	•			0420-1					20	60	50		
	0610	•			0610-1					10	45	40		
	0615	•			0615-1			6.0	6.2	15	55	45	1.3	2.9
	0620	•			0620-1					20	60	50		

# **Back Boring**









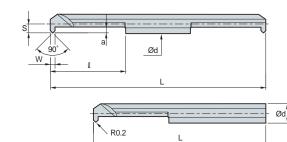
(mm)

	Twin Ed	ge			Single E	dge			Min.dia.		Overall	length	Detail	ed cutting	j edge
D	a lamation	Coated	Uncoated	De	aignation.	Coated	Uncoated	Ød	of ma-	Q	ı	-	w		s
De	esignation	PC30M	Z12M	De	esignation	PC30M	Z12M		chining		Double ended	Single ended	VV	а	3
MBBR	0310	•		MBBR	0310-1			3.0	3.2	10	40	35	1.5	0.8	1.4
	0315	•			0315-1			3.0	3.2	15	50	45	1.5	0.6	1.4
	0410	•			0410-1					10	40	35			
	0415	•			0415-1			4.0	4.2	15	50	45	2.0	1.3	1.9
	0420	0420-1		20	60	50									
	0610	● 0610-1			10	45	40								
	0615	•			0615-1			6.0	6.2	15	55	45	2.0	1.9	2.9
	0620	•			0620-1					20	65	50			

• : Stock item

# **Chamfering**







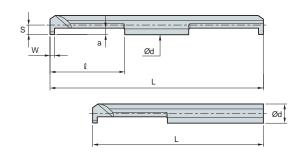


(mm)

	Twin Edge Coated Uncoa				Single	Edge			Min.dia.		Overal	l length	Detail	ed cutting	g edge
D	olemetica	Coated	Uncoated	De	olenetien	Coated	Uncoated	Ød	of ma-	Q	I	L	W		s
Dŧ	esignation	PC30M	Z12M	De	esignation	PC30M	Z12M		chining		Double ended	Single ended	VV	а	3
MBFR	0410	•		MBFR	0410-1					10	40	35			
	0415	•			0415-1			4.0	4.2	15	50	45	0.8	1.0	1.9
	0420	•			0420-1					20	60	50			
	0610	•			0610-1					10	45	40			
	0615	•			0615-1			6.0	6.2	15	55	45	1.4	1.2	2.9
	0620	•			0620-1				20	20	65	50			

# **Square Grooving**







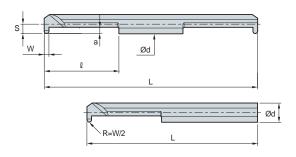
(mm)

	Twin Ed	lge			Single E	dge			Min.dia.		Overal	l length	Detail	ed cutting	g edge
	nolemetics	Coated	Uncoated		a alamatia n	Coated	Uncoated	Ød	of ma-	Q	I	L	w		S
D	esignation	PC30M	Z12M	D	esignation	PC30M	Z12M		chining		Double ended	Single ended	VV	а	3
MGR	0310-1.0	•		MGR	0310-1.0-1					10	40	35	1.0		
	0315-1.0	•			0315-1.0-1			3.0	3.2	15	50	45	1.0	0.8	1.4
	0310-1.5	•			0310-1.5-1			3.0	3.2	10	40	35	1.5	0.0	1.4
	0315-1.5	•			0315-1.5-1					15	50	45	1.5		
	0410-1.0	•			0410-1.0-1					10	40	35	1.0		
	0420-1.0				0420-1.0-1					20	60	50	1.0		
	0410-1.5				0410-1.5-1			4.0	4.2	10	40	35	1.5	1.4	1.9
	0420-1.5				0420-1.5-1			4.0	4.2	20	60	50	1.5	1.4	1.9
	0410-2.0	•			0410-2.0-1					10	40	35	2.0		
	0420-2.0				0420-2.0-1					20	60	50	2.0		
	0610-1.0	•			0610-1.0-1					10	45	40	1.0		
	0620-1.0	•			0620-1.0-1				20 10 20 0 6.2	65	50	1.0			
	0610-1.5	•			0610-1.5-1					10	45	40	1.5	1.8	
	0620-1.5	•			0620-1.5-1			6.0		20	65	50	1.0	1.0	2.9
	0610-2.0	•			0610-2.0-1			0.0	0.2	10	45	40	2.0		2.3
	0620-2.0	•			0620-2.0-1					20	65	50	2.0		
	0610-2.5	•			0610-2.5-1					10	45	40	2.5	2.0	
	0620-2.5	•			0620-2.5-1					20	65	50	2.0	2.0	
	0820-1.5	•			0820-1.5-1								1.5	2.5	
	0820-2.0	•			0820-2.0-1			8.0	8.2	20	70	60	2.0	2.0	3.9
	0820-2.5	•			0820-2.5-1			0.0	0.2	20	70		2.5	3.5	0.0
	0820-3.0	•			0820-3.0-1				0 10.2				3.0	0.0	
	1025-1.5	•			1025-1.5-1								1.5	2.5	
	1025-2.0	•			1025-2.0-1			10.0		25	80	70	2.0	2.0	4.9
	1025-2.5	•			1025-2.5-1			10.0	10.2	20		, ,	2.5	3.5	7.0
	1025-3.0	•			1025-3.0-1								3.0	3.5	

• : Stock item

# **Round Grooving**







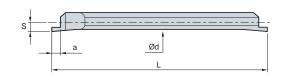
(mm)

	Twin Edg	ge			Single Ed	dge			Min.dia.		Overal	length	Detaile	ed cutting	g edge
Docia	nation	Coated	Uncoated	De	signation	Coated	Uncoated	Ød	of ma-	Q	ı	_	w		s
Desig	nauon	PC30M	Z12M	De	signation	PC30M	Z12M		chining		Double ended	Single ended	VV	а	3
MGRR 03	310-0.8	•		MGRR	0310-0.8-1			3.0	3.2	10	40	35	0.8	0.8	1.4
03	315-0.8	•			0315-0.8-1			3.0	3.2	15	50	45	0.6	0.6	1.4
04	110-1.0	•			0410-1.0-1			4.0	4.2	10	40	35	1.0	1.0	1.9
04	120-1.0	•			0420-1.0-1			4.0	4.2	20	60	50	1.0	1.0	1.9
06	610-1.0	•			0610-1.0-1					10	45	40	1.0		
06	620-1.0	•			0620-1.0-1					20	65	50	1.0		
06	610-1.5	•			0610-1.5-1			6.0	6.2	10	45	40	1.5	2.0	2.9
06	520-1.5	•			0620-1.5-1			6.0	0.2	20	65	50	1.5	2.0	2.9
06	610-2.0	•			0610-2.0-1					10	45	40	2.0		
06	520-2.0	•			0620-2.0-1					20	65	50	2.0		
08	320-1.0	•			0820-1.0-1								1.0		
08	320-1.5	•			0820-1.5-1			8.0	8.2	20	70	60	1.5	2.3	3.9
80	320-2.0				0820-2.0-1			10.0 10.2				2.0			
10	25-1.0	•			1025-1.0-1								1.0		
10	)25-1.5	•			1025-1.5-1				.0 10.2 25	25	25 80 70	1.5	2.8	4.9	
10	25-2.0	•			1025-2.0-1							2.0			

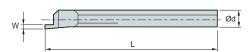
•: Stock item

# **Face Grooving**







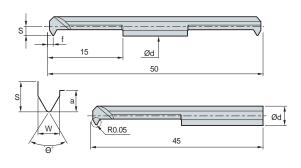


(mm)

	Twin Ed	ge		Single Edge			Min.dia.	Overal	length	Detail	ed cutting	g edge		
D		Coated	Uncoated		-1	Coated	Uncoated	Ød	of ma-		_	14/		
De	esignation	PC30M	Z12M	De	esignation	PC30M	Z12M		chining	Double ended	Single ended	W	а	S
MGFR	0400-1.0	•		MGFR	0400-1.0-1			4.0	6.0	50	45	1.0	1.5	1.8
	0400-1.5	•			0400-1.5-1			4.0	6.0	30	45	1.5	2.0	1.0
	0600-1.0	•			0600-1.0-1							1.0	1.5	
	0600-1.5	•			0600-1.5-1			6.0	8.5	50	45	1.5	2.0	2.9
	0600-2.0	•			0600-2.0-1							2.0	2.5	
	0800-1.0	•			0800-1.0-1							1.0	1.5	
	0800-1.5	•			0800-1.5-1							1.5	2.0	
	0800-2.0	•			0800-2.0-1			8.0	10.4	70	60	2.0	2.5	3.9
	0800-2.5	•			0800-2.5-1			6.0	10.4	70	00	2.5	3.0	
	0800-3.0	•			0800-3.0-1							3.0	3.5	
					0800-3.5-1							3.5	4.0	
	1000-2.0	•			1000-2.0-1							2.0	2.5	
	1000-2.5	•			1000-2.5-1							2.5	3.0	
	1000-3.0	•			1000-3.0-1			10.0	10.4	90	70	3.0	3.5	4.9
	1000-3.5	•			1000-3.5-1			10.0	12.4	80	10	3.5	4.0	4.9
	1000-4.0	•			1000-4.0-1							4.0	4.5	
	1000-4.5			]	1000-4.5-1							4.5	5.0	

# **Threading**







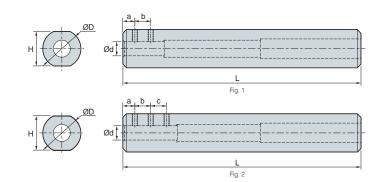
(mm)

	Twin Edge Single Edge								Min.dia.		Threading		Detail	ed cutting	g edge
D	noismotion	Coated	Uncoated	D.	Designation		Uncoated	Ød	of ma-	w	Pitch	θ°	s		£
De	esignation	PC30M	Z12M	PC30M Z12M			chining	VV	/ tpi	Ð	3	а	ı		
MTR	0315-F60			MTR	0315-F60-1			3.0	3.3	1.2	05.40		1.45	4.0	0.0
	0415-F60	•			0415-F60-1			4.0	4.3	1.2	0.5~1.0 60°	60°	1.95	1.2	0.6
	0615-A60	•			0615-A60-1			6.0	6.2	2.0	0.5~1.5		2.90	2.2	1.0
	0315-F55	•			0315-F55-1 0415-F55-1			3.0	3.3			1.45	1.0	0.0	
	0415-F55	•						4.0	4.3	1.2	48~24	55°	1.95	1.2	0.6
	0615-A55	•			0615-A55-1			6.0	6.2	2.0	28~16		2.90	2.2	1.0

• : Stock item

# SLEEVE

# SL(SLEEVE)



	1.	_	ı	_
- 1	ı	т	r	т

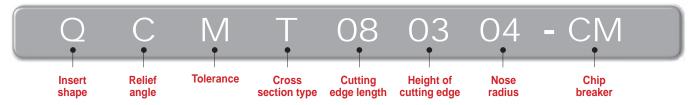
										(11111)
Designation	Ød	а	b	С	ØD	н	L	Screw	Wrench	Fig.
SL1603	3	5	-	-	16	14	100	M3	HW15L	
SL1604	4	5	6	-	16	14	100	M4	HW20L	1
SL1605	5	5	8	-	16	14	100	M4	HW20L	
SL1606	6	5	6	6	16	14	100	M4	HW20L	2
SL1607	7	5	6	8	16	14	100	M4	HW20L	2
SL2008	8	5	10	10	20	18	100	M4	HW20L	2
SL2010	10	5	10	10	20	18	100	M5	HW20L	2

\* Fine tolerance and surface roughness

# **Multi Turn**

#### Code system

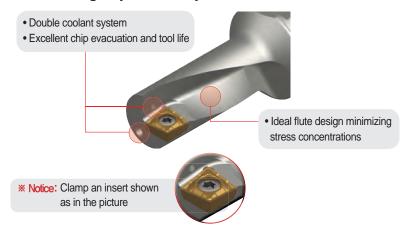
Insert

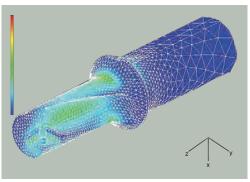


Holder



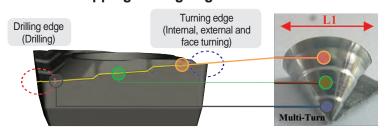
### Tool design by FEM analysis

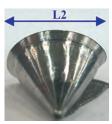




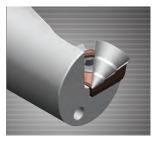
 Minimized stress during cutting, prevented damage from vibration and longer tool life Optimized design

### Creative stepping cutting edge





- Special chip formed by edge geometry better chip
- Evacuation due to small radius width of chip curl



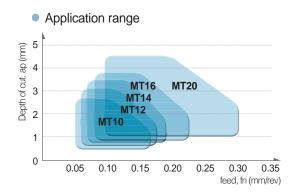


Comparison	Multi turn	Competitor A	Competitor B
fn (mm/rev) = 0.08	#	W	*
Feed fn (mm/rev) = 0.10	V	W	V
Chip width (rate)	80%	100%	120%

# User's guide

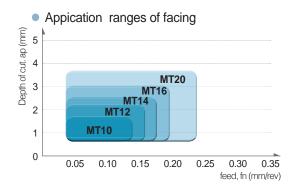
### External / Internal turning



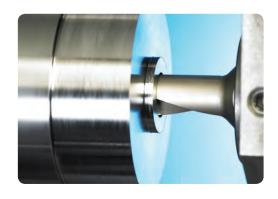


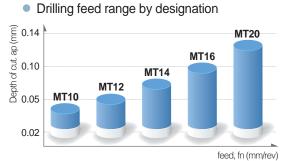
### **Facing**





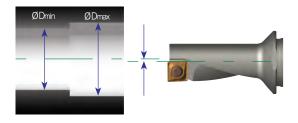
### **Drilling**





#### 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



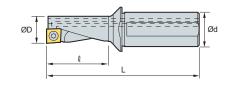
Drill diameter is adjustable by the offset compensation

# **B** Multi Turn

# MT(Multi-Turn)







								(mm)
	Designation	ØD	Ød	Q	L	Insert	Screw	Wrench
MT	10R/L-2.25D	10	12	22.5	69.5	QC□T050204	FTNA0204S	TW06P
	12R/L-2.25D	12	16	27.0	78.0	QC□T060204	FTNA02205S	TW06P
	14R/L-2.25D	14	16	31.5	83.5	QC□T070304	FTKA02555	TW07P
	16R/L-2.25D	16	20	36.0	94.0	QC□T080304	FTNA0306	TW09P
	20R/L-2.25D	20	25	45.0	111.0	QC□T10T304	FTNA03508	TW15P
	25R/L-2.25D	25	32	56.5	130.0	QC□T130408	FTNC04509	TW20S
	32R/L-2.25D	32	40	72.0	160.0	QC□T170508	FTNC04511	TW20S

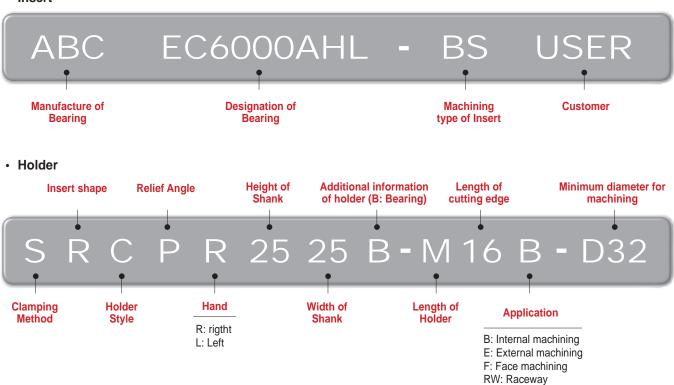
				Coa	ated		Unco	oated		Dime	nsions	(mm)		
Picture	De	signation	NC3120	NC3225	NC6315	PC5300	H01	H05	ı	d	t	r	Ød1	Configuration
	QCMT	050204-CM		•	•	•			5.0	5.4	2.10	0.4	2.3	<u>r</u>
		060204-CM		•	•	•			6.0	6.4	2.38	0.4	2.5	
		070304-CM		•	•	•			7.0	7.4	3.18	0.4	2.8	d I d
		080304-CM		•	•	•			8.0	8.4	3.18	0.4	3.4	
		10T304-CM		•		•			10.0	10.4	3.97	0.4	4.0	7°
		130408-CM		•		•			12.7	13.5	4.76	8.0	5.5	87°
		170508-CM		•	•	•			16.7	17.5	5.56	8.0	5.5	
	QCGT	050204-CA					•		5.0	5.4	2.10	0.4	2.3	
		060204-CA					•		6.0	6.4	2.38	0.4	2.5	
		070304-CA					•		7.0	7.4	3.18	0.4	2.8	
		080304-CA					•		8.0	8.4	3.18	0.4	3.4	d   d   d   d   d   d   d   d   d   d
		10T304-CA					•		10.0	10.4	3.97	0.4	4.0	7°
		130408-CA					•		12.7	13.5	4.76	8.0	5.5	87° 1
		170508-CA					•		16.7	17.5	5.56	0.8	5.5	

BS: Bearing Shield

# **Bearing Solution**

#### Code system

Insert



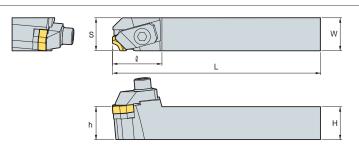


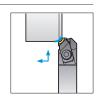
# **B** Bearing Solution

# CMSN...F Type









• R type insert (mm)

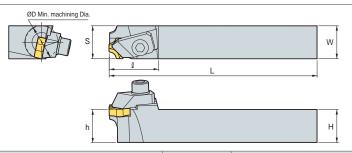
Des	ignation	Н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CMSNR/L	2020B-L12F	20	20	140	21	20	33	MC12□□	CH6R/L1B	BHAGGO	SX42CB	SS0308	HW50L
	2023B-L12F	20	23	140	24	20	33	MC12□□-BR	CHOR/LIB	DHAU020	3A42UB	330300	HVVOUL
	2525B-L15F	25	25	140	26	25	35	MC15□□	CH6R/L1B	BHA0620	SX52CB	SS0408	HW50L

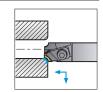
# CMSN...B Type





MC12□□ MC12□□-BR





• R type insert (mm)

[	Designation		н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CMSNR/L	2020B-L12B-D28	28	20	20	140	21	20	33		CH6R/L1B	BHA0620	SX42CB	SS0308	HW50L
	2525B-L12B-D28	28	25	25	140	26	25	33	MC12□□	CH6R/L1B	BHA0620	SX42CB	SS0308	HW50L
	1620B-L12B-D20	20	16	20	140	18	16	32	MC12□□-BR	CH6R/L1B	BHA0620	-	-	HW50L
	2023B-L12B-D28	28	20	23	140	24	20	33	1	CH6R/L1B	BHA0620	SX42CB	SS0308	HW50L

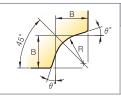
#### Insert

o			Cermet		Dim	ensions (	(mm)		
Application	Picture	Designation	CN2500	R	θ°	В	d	t	Configuration
		MC0906		0.6	12	1.8	9.525	3.18	
		MC0910		1.0	12	2.4	9.525	3.18	
		MC1206		0.6	18	1.8	12.7	4.76	
		MC1210		1.0	18	2.4	12.7	4.76	
		MC1212		1.2	18	2.2	12.7	4.76	
		MC1215		1.5	18	3.0	12.7	4.76	
<sub>ත</sub>		MC1220		2.0	18	3.8	12.7	4.76	x ⊢ B →
Ē	d t	MC1225		2.5	18	2.8	12.7	4.76	$\theta^{\circ}$
±e	1	MC1525		2.5	18	4.0	15.875	5.56	\$
R-Chamfering		MC1530		3.0	18	4.7	15.875	5.56	B
ပု		MC1540		4.0	20	4.7	15.875	5.56	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
4		MC1206-BR		0.6	18	1.8	12.7	4.76	$\theta^{d}$
		MC1210-BR		1.0	18	2.4	12.7	4.76	-
		MC1212-BR		1.2	18	2.2	12.7	4.76	
		MC1215-BR		1.5	18	3.0	12.7	4.76	
		MC1220-BR		2.0	18	3.2	12.7	4.76	
		MC1230-BR		3.0	18	3.7	12.7	4.76	
		MC1235-BR		3.5	18	3.9	12.7	4.76	

#### Special order-form

• : Stock item

Configuration



Designation

CN2500

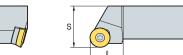
B

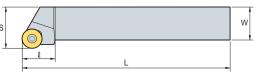
_						
		v	n	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<b>n</b>	$\sim$
	71	ш		•		

# SRGP...E Type



RPGT1203M0 RPGT1604M0 RPGT2004M0







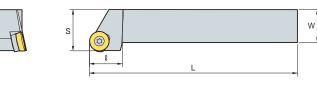
• R type insert (mm)

De	Designation		W	L	S	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
SRGPR/L	2020B-L12E	20	20	140	25	20	20	RPGT1203M0	FTKA0410	SR1203S	SHXN0609F	TW15P
	2020B-L16E	20	20	140	25	20	20	RPGT1604M0	FTNA0513	SR16T3S	SHXN0712F	TW20P
	2525B-L20E	25	25	140	32	25	30	RPGT2004M0	FTNA0513	SR20T3S	SHXN0712F	TW20P

# SRGP...F Type



RPGT1203M0 RPGT1604M0 RPGT2004M0







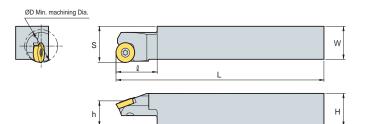
• R type insert (mm)

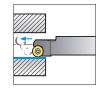
Designation		Н	w	L	s	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
SRGPR/L	2020B-L12F	20	20	140	25	20	20	RPGT1203M0	FTKA0410	SR1203S	SHXN0609F	TW15P
	2020B-L16F	20	20	140	25	20	20	RPGT1604M0	FTNA0513	SR16T3S	SHXN0712F	TW20P
	2525B-L20F	25	25	140	32	25	30	RPGT2004M0	FTNA0513	SR20T3S	SHXN0712F	TW20P

# SRCP...B Type



RPGT0802M0 RPGT1203M0 RPGT1604M0

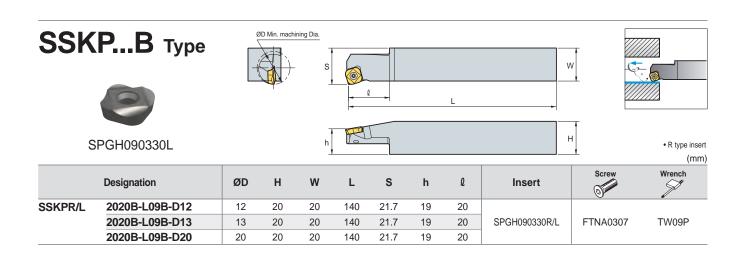




Designation		ØD	н	W	L	s	h	Q	Insert	Screw	Wrench
SRCPR/L	2020B-L08B-D12	12	20	20	140	21.5	15.5	25	RPGT0802M0	FTKA0305	TW09P
	1919B-L12B-D15	15	19	19	140	21	16	25	RPGT1203M0	FTNA0408	TW15P
	2020B-L12B-D20	20	20	20	140	22	15.5	25	RPGT1203M0	FTNA0408	TW15P
	2525B-L16B-D32	32	25	25	140	27	20	30	RPGT1604M0	FTKA0510	TW20P

# **B** Bearing Solution

#### ØD Min. machining Dia. CSKP...B Type W Н SPGR120440L R type insert (mm) Clamp Screw Wrench Designation ØD W L S h Q Insert 10 miles CSKPR/L 2022B-L12B-D30 140 37 SPGR120440R/L CH5R1 CHX0510 HW30L 20 22 27 20 30

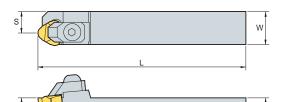


#### Insert

e			Cermet		Dimension	ons (mm)		
Application	Picture	Designation	CN2500	r	d	d <sub>1</sub>	t	Configuration
		RPGT0802M0		-	8	3.4	2.38	
		RPGT1203M0		-	12	4.4	3.18	
		RPGT1604M0		-	16	5.5	4.76	(((+))) + + 1 d <sub>1</sub>
		RPGT2004M0		-	20	5.5	4.76	11°
								- d   t   '
5		SPGR120440L		4.0	12.7	-	4.76	r
Internal turnin	Internal turning							d t 11°
_		SPGH090330L		3.0	9.525	3.4	3.18	. r
								di

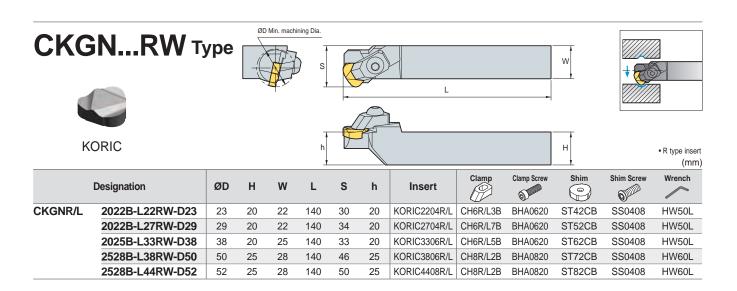


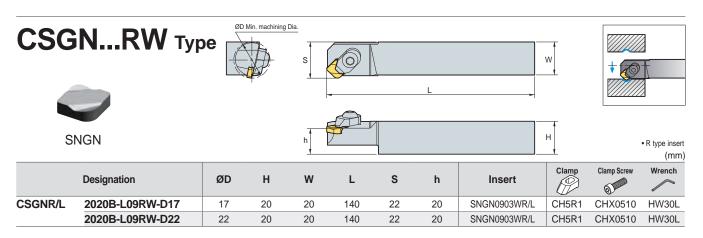




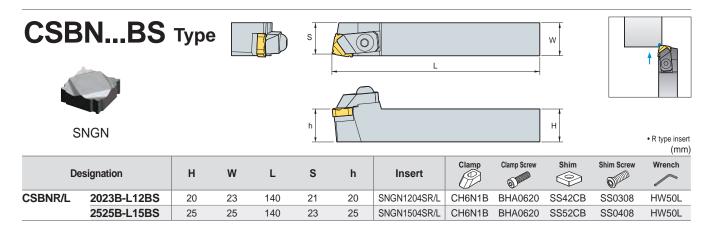


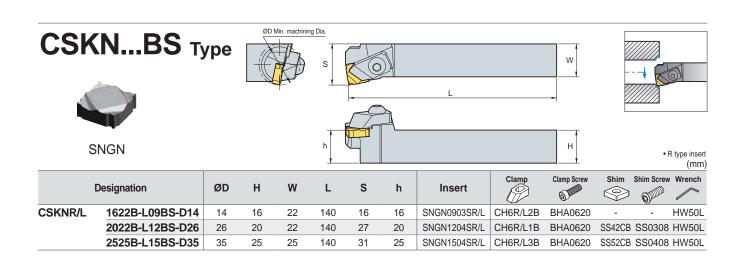
Designation		Н	w	L	S	h	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Wrench
CKFNR/L	2020B-L22RW	20	20	140	12.5	20	KORIC2204R/L	CH6N1B	BHA0620	ST42CB	SS0408	HW50L
	2022B-L27RW	20	22	140	13	20	KORIC2704R/L	CH8R/L1B	BHA0820	ST52CB	SS0408	HW60L
	2025B-L33RW	20	25	140	16	20	KORIC3306R/L	CH8R/L1B	BHA0820	ST62CB	SS0408	HW60L
	2533B-L44RW	25	33	140	21	25	KORIC4408R/L	CH8R/L1B	BHA0820	ST82CB	SS0408	HW60L

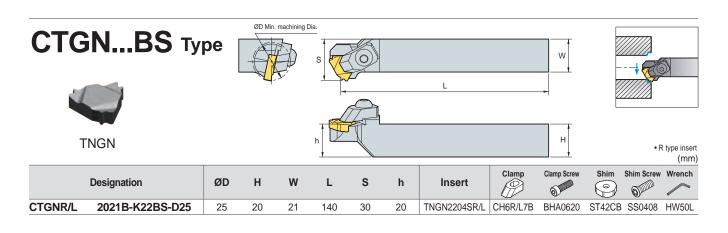




# **B** Bearing Solution

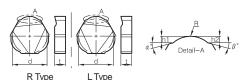






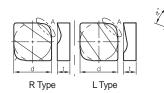
## **Machining Race-way**

#### S KORIC... R/L Type



		d	t	R	h <sub>1</sub>	h <sub>2</sub>	α°	β°
KORIC	2204R/L	12.7	4.76					
	2704R/L	15.875	4.76					
	3306R/L	19.05	6.0					
	3806R/L	22.225	6.0					
	4408R/L	25.4	8.0					

#### SNGN... WR/L Type



		d	t	R	h <sub>1</sub>	h <sub>2</sub>	α°	β°
SNGN	0903WR/L	9.525	3.18					
	1504WR/L	15.875	4.76					
	1905WR/L	19.05	5.56					

### **Machining for Bearing shield**

#### S KORIC... R/L Type







R Type





L Type

		d	t	L <sub>1</sub>	L <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	R <sub>1</sub>	R <sub>2</sub>	α°	β°
SNGN	0903SR/L	9.525	3.18								
	1204SR/L	12.7	4.76								
	1504SR/L	15.875	4.76								

#### TNGN...SR/L Type





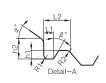






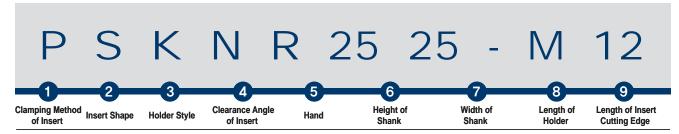


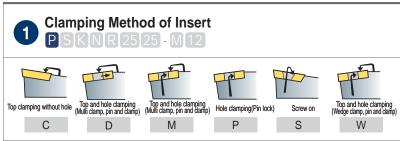
L Type

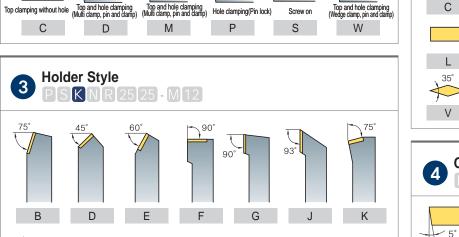


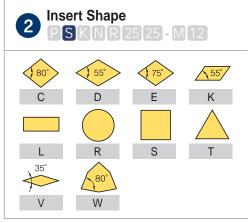
		d	t	L <sub>1</sub>	L <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	R <sub>1</sub>	R <sub>2</sub>	α°	β°
TNGN	02204SR/L	12.7	4.76								

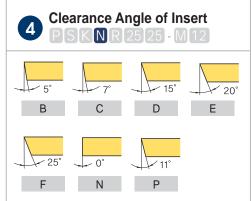
# B External tool Holder Code System(ISO)

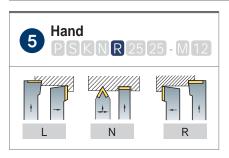


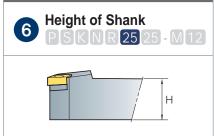


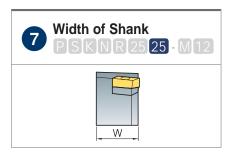


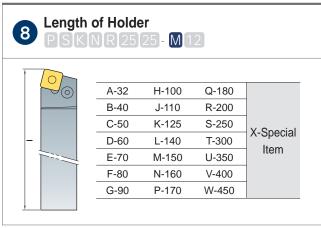


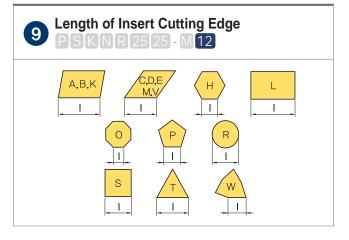












# **Double Clamp System**

Cutting Shape	+ 6	<b>†</b>	+	+				<b>1</b>		+
Designation	DCBNR/L	DCKNR/L	DCLNR/L	DDJNR/L	DSBNR/L	DSDNN	DSKNR/L	DSSNR/L	DTFNR/L	DTGNR/L
Approach angle	75°	75°	95°	93°	75°	45°	75°	45°	90°	90°
Page	B167	B167	B167	B168	B168	B169	B169	B169	B170	B170
Turning	•		•	•	•	•		•		•
Copying				•						
Facing		•	•				•	•	•	
Chamfering						•				
Back turning			•	•						
Cutting Shape			+							
Designation	DVJNR/L	DVVNN	DWLNR/L							
Approach angle	93°	72.5°	95°							
Page	B170	B171	B171							
Turning	•	•	•							
Copying	•	•								
Facing			•							
Chamfering										
Back turning	•		•							

# Lever Lock System

Cutting Shape	<b>◆ ○ ○</b>			<b>♦</b>		<b>→</b>		<b>←</b>	0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Designation	PCBNR/L	PCKNR/L	PCLNR/L	PDJNR/L	PDNNR/L	PRDCN	PRGCR/L	PSBNR/L	PSDNN	PSKNR/L
Approach angle	75°	75°	95°	93°	62.5°	-	-	75°	45°	75°
Page	B172	B172	B173	B173	B174	B174	B175	B175	B176	B176
Turning	•	•	•	•	•	•	•	•	•	
Copying				•	•	•	•			
Facing			•							•
Chamfering										
Back turning			•	•						
Cutting Shape	1	<u></u>	+ 0	•	1					
Designation	PSSNR/L	PTFNR/L	PTGNR/L	PTTNR/L	PWLNR/L					
Approach angle	45°	90°	90°	60°	95°					
Page	B177	B177	B178	B178	B178					
Turning	•		•	•	•					
Copying										
Facing	•	•			•					
Chamfering				•						
Back turning					•					

# Wedge Clamp System

Cutting Shape		-		+			
Designation	WTENN	WTJNR/L	WTXNR/L	WWLNR/L			
Approach angle	60°	93°	105°	95°			
Page	B179	B179	B179	B180			
Turning	•	•	•	•			
Copying	•	•	•				
Facing				•			
Chamfering							
Back turning		•	•	•			

## **Clamp on System**

Cutting Shape	*		+	<u>†</u>				
Designation	CKJNR/L	CKNNR/L	CSDPN	CSKPR/L	CTFPR/L	CTGPR/L		
Approach angle	93°	62.5°	45°	75°	90°	90°		
Page	B181	B181	B181	B182	B182	B182		
Turning	•	•	•			•		
Copying	•	•						
Facing				•	•			
Chamfering								
Back turning	•							

# Multi Lock System

Cutting Shape			<b>1</b>							+
Designation	MCKNR/L	MCLNR/L	MCMNN	MCRNR/L	MDJNR/L	MDNNN	MDQNR/L	MSBNR/L	MSDNN	MSKNR/L
Approach angle	75°	95°	50°	75°	93°	62.5°	107.5°	75°	45°	75°
Page	B183	B183	B183	B184	B184	B184	B185	B185	B185	B186
Turning		•	•	•	•	•	•	•	•	
Copying					•	•	•			
Facing	•	•								•
Chamfering										
Back turning		•			•		•			

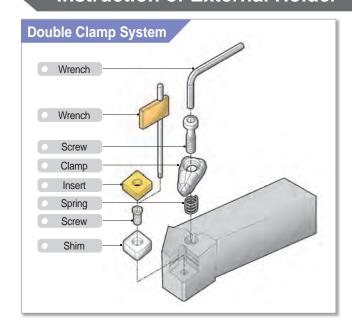
Cutting Shape	+	1	204	1	<b>*</b>	+	+	+		
Designation	MSRNR/L	MSSNR/L	MTENN	MTFNR/L	MTGNR/L	MTJNR/L	MVJNR/L	MVQNR/L	MVVNN	MWLNR/L
Approach angle	75°	45°	60°	90°	90°	93°	93°	117.5°	72.5°	95°
Page	B186	B187	B187	B187	B188	B188	B188	B189	B189	B189
Turning	•	•	•		•	•	•	•	•	•
Copying			•			•	•	•	•	
Facing		•		•		•				•
Chamfering										
Back turning						•	•	•		•

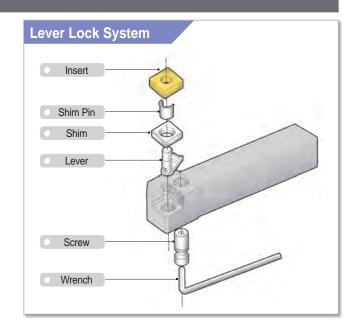
Sc	rew on	Syste	m							
Cutting Shape	+ 0	0	4 0 V	+0	+0	<b>O</b>		4	+ 60	3
Designation	SCACR/L	SCLCR/L	SDACR/L	SDJCR/L	SDNCN	SRDCN	SRGCR/L	SSBCR/L	SSDCN	SSKCR/L
Approach angle	90°	95°	90°	93°	62.5°	-	-	75°	45°	75°
Page	B190	B190	B190	B191	B191	B191	B192	B192	B192	B192
Turning	•	•	•	•	•	•	•	•	•	
Copying			•	•	•	•	•			
Facing		•								•
Chamfering										
Back turning		•		•						
Cutting Shape	+	•		4		(1)				
Designation	SSSCR/L	STACR/L	STFCR/L	STGCR/L	STTCR/L	SVABR/L	SVHBR/L	SVJBR/L	SVJCR/L	SVVBN
Designation Approach angle	SSSCR/L 45°	STACR/L 90°	STFCR/L 90°	STGCR/L 90°	STTCR/L	SVABR/L 90°	<b>SVHBR/L</b> 107.5°	SVJBR/L 93°	SVJCR/L 93°	<b>SVVBN</b> 72.5°
Approach angle	45°	90°	90°	90°	60°	90°	107.5°	93°	93°	72.5°
Approach angle Page	45° B193	90° B193	90°	90° B194	60° B194	90° B195	107.5° B195	93° B195	93° B196	72.5° B196
Approach angle Page Turning	45° B193	90° B193	90°	90° B194	60° B194	90° B195	107.5° B195	93° B195	93° B196	72.5° B196
Approach angle Page Turning Copying	45° B193	90° B193	90° B194	90° B194	60° B194	90° B195	107.5° B195	93° B195	93° B196	72.5° B196
Approach angle Page Turning Copying Facing	45° B193	90° B193	90° B194	90° B194	60° B194	90° B195	107.5° B195	93° B195	93° B196	72.5° B196
Approach angle Page Turning Copying Facing Chamfering	45° B193	90° B193	90° B194	90° B194	60° B194	90° B195 •	107.5° B195	93° B195 •	93° B196 •	72.5° B196
Approach angle Page Turning Copying Facing Chamfering	45° B193	90° B193	90° B194	90° B194	60° B194	90° B195 •	107.5° B195	93° B195 •	93° B196 •	72.5° B196
Approach angle Page Turning Copying Facing Chamfering Back turning	45° B193	90° B193	90° B194	90° B194	60° B194	90° B195 •	107.5° B195	93° B195 •	93° B196 •	72.5° B196
Approach angle Page Turning Copying Facing Chamfering Back turning  Cutting Shape	45° B193	90° B193	90° B194	90° B194	60° B194	90° B195 •	107.5° B195	93° B195 •	93° B196 •	72.5° B196
Approach angle Page Turning Copying Facing Chamfering Back turning  Cutting Shape  Designation	45° B193  • SVVCN	90° B193	90° B194	90° B194	60° B194	90° B195 •	107.5° B195	93° B195 •	93° B196 •	72.5° B196
Approach angle Page Turning Copying Facing Chamfering Back turning  Cutting Shape  Designation Approach angle	45° B193  SVVCN 72.5°	90° B193	90° B194	90° B194	60° B194	90° B195 •	107.5° B195	93° B195 •	93° B196 •	72.5° B196
Approach angle Page Turning Copying Facing Chamfering Back turning  Cutting Shape  Designation Approach angle Page	45° B193  SVVCN 72.5° B196	90° B193	90° B194	90° B194	60° B194	90° B195 •	107.5° B195	93° B195 •	93° B196 •	72.5° B196
Approach angle Page Turning Copying Facing Chamfering Back turning  Cutting Shape  Designation Approach angle Page Turning	45° B193  SVVCN  72.5° B196	90° B193	90° B194	90° B194	60° B194	90° B195 •	107.5° B195	93° B195 •	93° B196 •	72.5° B196

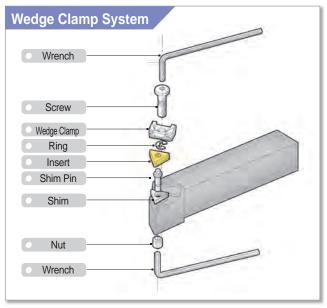
CE	Tallic	noidei							
Cutting Shape	1	+	+ (i)	4	*	<u></u>	4-0		
Designation	CCNLR/L	CRDNN	CRGNR/L	CSDNN	CSKNR/L	CTFNR/L	CTGNR/L		
Approach angle	95°	-	-	45°	75°	90°	90°		
Page	B197	B197	B197	B197	B198	B198	B198		
Turning	•	•	•	•			•		
Copying			•						
Facing	•				•	•			
Chamfering									
Back turning	•								

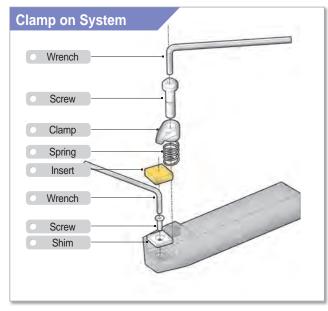
Chamfering Back turning

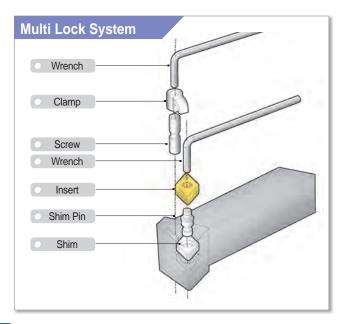
### **Instruction of External Holder**

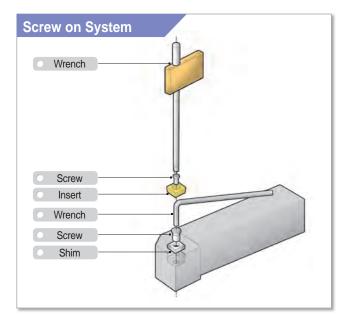






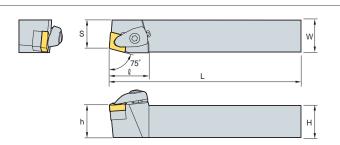






# DCBNR/L







75°

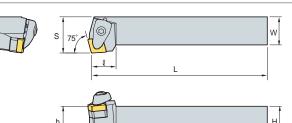
•	K	type	ınsen
		(	mm)

Des	signation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DCBNR/L	2020-K12	20	20	125	17	20	31							
	2525-M12	25	25	150	22	25	31	CN□□1204□□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	HW30P
	3225-P12	32	25	170	22	32	31							
	2525-M16	25	25	150	22	25	36	CN□□1606□□	CVH5	CHX0622	SC54V	FTNA0511	QDD0011	HW40L
	3232-P16	32	32	170	27	32	36	CNTOOO	CVHS	CHAU022	30341	FINAUSII	SEKUOTI	HW40L
	3232-P19	32	32	170	27	32	40	CN□□1906□□	CVH6	CHX0622	SC63V	FTNA0511	SPR0811	HW40L
	4040-S19	40	40	250	35	40	40	CIVELIBOOLE	CVIIO	CHAUUZZ	30031	TINAUJII	3F10011	11VV40L

<sup>→</sup> Applicable inserts B36~B42

# DCKNR/L







75°

• R type insert

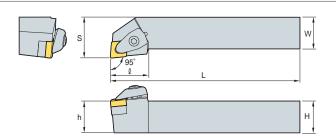
Des	signation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DCKNR/L	2020-K12	20	20	125	25	20	21							
	2525-M12	25	25	150	32	25	21	CN□□1204□□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	HW30P
	3225-P12	32	25	170	32	32	21							
	3232-P16 4040-S16	32	32	170	40	32	26	CN 1606	CVH5	CHAUCUS	SCE4V/	FTNA0511	SPR0811	HW40L
		40	40	250	50	40	26	CINIOUO	СУПЭ	CHX0022	3C34V	FINAUSII	3PK0011	HVV40L
_														

<sup>◆</sup> Applicable inserts B36~B42

## DCLNR/L



CN





95°

• R type insert (mm)

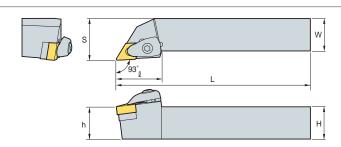
Des	ignation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DCLNR/L	2020-K09	20	20	125	25	20	24.5	CN 0903	CVH3	CHX0415	SC32V	ETI/A0207	SPR0510	HW25P
	2525-M09	25	25	150	32	25	24.5	CINITIOA02TT	CVII3	CHX0413	3C32V	FTNAU307	SPRUSIU	HWZ3P
	2020-K12	20	20	125	25	20	30							
	2525-M12	25	25	150	32	25	30	CN 1204	CVH4	CHX0518	SC44V	ETI/A0440	SPR0714	HW30P
	3225-P12 3232-P12 2525-M16	32	25	170	32	32	30	CIN1204	CVH4	CHXU310	3C44V	F1KA0410	SPR0/14	HWSUP
		32	32	170	40	32	30							
		25	25	150	32	25	36							
	3225-P16	32	25	170	32	32	36	CN1606	CVH5	CHX0622	SC54V	FTNA0511	SPR0811	HW40L
	3232-P16	32	32	170	40	32	36							
2525-M19 3225-P19 3232-P19	2525-M19	25	25	150	32	25	40							
	3225-P19	32	25	170	32	32	40	CN 1906	CVH6	CHX0622	ecesy/	FTNA0511	CDD0011	HW40L
	3232-P19	32	32	170	40	32	40	GINLL 1900LL	CVHO	OHA0022	3003V	LICOVALL	SFRU011	HVV4UL
	4040-S19	40	40	250	50	40	40							

# B Double Clamp System

# DDJNR/L









93°

•	K	type	inser
		(	mm)

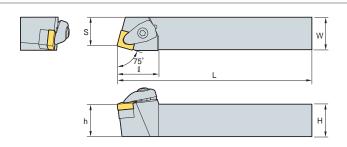
														(111111)
Des	signation	н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	. <b>.</b>									0				Fr
DDJNR/L	2020-K11	20	20	125	25	20	30							
	2525-M11	25	25	150	32	25	30	DN□□1104□□	CVH3	CHX0415	SD32V	FTKA0307	SPR0510	HW25P
	3225-P11 3232-P11 2020-K15 2525-M15	32	25	170	32	32	30		CVIIS	CHX0415	SDSZV	FTRAU307	3PK0310	HVV23P
		32	32	170	40	32	30							
		20	20	125	25	20	35							
		25	25	150	32	25	35		CVH4	CHX0518	CD 40\/	TTI/ A 0 44 0	SPR0714	HW30P
	3225-P15	32	25	170	32	32	35	- DN□□1506□□	CVH4	CHX0518	SD43V	FTKA0410	5PR0/14	HVV3UP
	3232-P15	32	32	170	40	32	35							
	2020-K15-3	20	20	125	25	20	35							
	2525-M15-3 3232-P15-3	25	25	150	32	25	35	DN□□1504□□	CVH4	CHX0518	SD44V	FTKA0410	SPR0714	HW30P
		32	32	170	40	32	35							

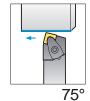
<sup>◆</sup> Applicable inserts B43~B48

# **DSBNR/L**



SN





)		Fr
307	SPR0510	HW25P
410	SPR0714	HW30P
F44	0000044	1.11.4.4.01

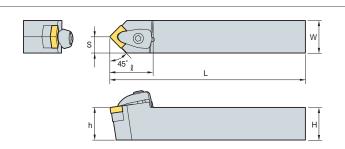
Des	signation	Н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DSBNR/L	2020-K09	20	20	125	17	20	25	SN 0903	CVH3	CHX0415	SS32V	FTKA0307	CDD0E10	HW25P
	2525-M09	25	25	150	22	25	25	3IN0903	CVII3	CHX0415	3332V	FINAUSUI	3PK0310	ПVVZЭР
	2020-K12	20	20	125	17	20	32							
	2525-M12 3225-P12 3232-P12	25	25	150	22	25	32	SN 1204	CVH4	CHX0518	22111/	FTKA0410	SDD0714	HW30P
		32	25	170	22	32	32	3N1204	CVH4	CHAUSTO	33 <del>44</del> V	FINAU410	3FK0/14	HVVSUF
		32	32	170	27	32	32							
	2525-M15	25	25	150	22	25	38							
	3225-P15	32	25	170	22	32	38	SN□□1506□□	CVH5	CHX0622	SS54V	FTNA0511	SPR0811	HW40L
	3232-P15 3232-P19	32	32	170	27	32	38							
		32	32	170	27	32	43	SN□□1906□□	CVH6	CHX0622	SS64V	FTNA0511	CDD0011	HW40L
	4040-S19	40	40	250	35	40	43	311 1900	CVHO	CHAU022	33041	FINAUSII	SERVOIT	

<sup>◆</sup> Applicable inserts B50~B57

# **DSDNN**



SN





45°

• R type insert (mm)

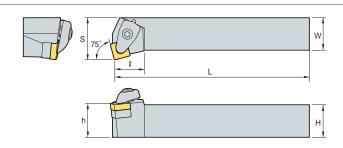
De	signation	н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DSDNN	2020-K09	20	20	125	10	20	26.5	SN□□0903□□	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	HW25P
	2020-K12	20	20	125	10	20	33							
	2525-M12	25	25	150	12.5	25	33	SN□□1204□□	CVH4	CHX0518	SS44V	FTKA0410	SDD0714	HW30P
	3225-P12 3232-P12 2525-M15 3232-P15 3232-P19	32	25	170	12.5	32	33	311 1204 1	CVH4	CHAUSTO	3344V	FIRAU410	3FN0/14	HWOOF
		32	32	170	16	32	33							
		25	25	150	12.5	25	39.4	SN□□1506□□	CVH5	CHX0622	SS54V	FTNA0511	SPR0811	HW25P
		32	32	170	16	32	38	311 1500	CVIII	CHAU022	33341	FIINAUSTI	SERUOTI	ПИУДЭГ
		32	32	170	16	32	43	SN□□1906□□	CVH6	CHX0622	SS64V	FTNA0511	SPR0811	HW40L
	4040-S19	40	40	250	20	40	45	31V 1900 1	CVIII	UΠΛ0022	3304V	LICOWILL	3FN0011	HVV4UL

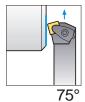
<sup>◆</sup> Applicable inserts B50~B57

# **DSKNR/L**



SN





• R type insert (mm)

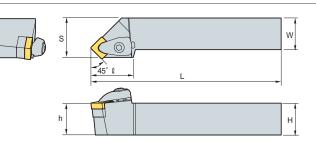
Des	ignation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DSKNR/L	2020-K09	20	20	125	25	20	20	SN 0903 0	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	HW25P
	2020-K12	20	20	125	25	20	23							
	2525-M12 3232-P12 3232-P15 3232-P19 4040-S19	25	25	150	32	25	23	SN = 1204 = =	CVH4	CHX0518	SS44V	FTKA0410	SPR0714	HW30P
		32	32	170	40	32	23							
		32	32	170	40	32	28	SN 1506	CVH5	CHX0622	SS54V	FTNA0511	SPR0811	HW40L
		32	32	170	40	32	35	SN□□1906□□	CVH6	CHX0622	SC64V	FTNA0511	CDD0011	HW40L
		40	40	250	50	40	43	311 1900	CVHO	CHAUUZZ	30041	FINAUSTI	SFRUOTI	HVV4UL

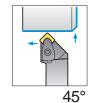
<sup>◆</sup> Applicable inserts B50~B57

# **DSSNR/L**



SN





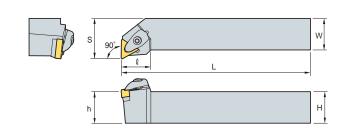
• R type insert (mm)

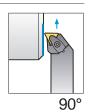
														(
Des	signation	н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DSSNR/L	2020-K09	20	20	125	25	20	28.5	SN 0903	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	HW25P
	2020-K12	20	20	125	25	20	35							
	2525-M12	25	25	150	32	25	35	SN□□1204□□	CVH4	CHX0518	CC14\/	FTKA0410	SDD0714	HW30P
	3225-P12	32	25	170	32	32	35	311 1204	CVII4	CHAUSTO	3344V	FINAU410	3FK0/14	HWOUF
	3232-P12	32	32	170	40	32	35							
	2525-M15	25	25	150	32	25	38.5	SN□□1506□□	CVH5	CHX0622	SS54V	FTNA0511	CDD0011	HW40L
_	3232-P15	32	32	170	40	32	38.5	311 1506 1	CVHS	CHX0022	3334V	FINAUSII	SPRUOTI	⊓VV4UL
	3232-P19	32	32	170	40	32	46	SN□□1906□□	CVH6	CHX0622	SS64V	FTNA0511	CDD0011	HW40L
	4040-S19	40	40	250	50	40	46	311 1900	CVHO	CHX0022	3304V	FIICUAVIIT	SPRUOTI	HVV4UL

### DTFNR/L



 $\mathsf{TN} \square \square$ 





R type insert

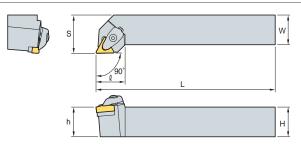
														(mm)
De	signation	н	w	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DTFNR/L	2020-K16	20	20	125	25	20	24.5							
	2525-M16	25	25	150	32	25	24.5	TN□□1604□□	CVH3	CHX0415	ST32V	FTKA0307	SPR0510	HW25P
	3232-P16	32	32	170	40	32	23.5							
	2525-M22	25	25	150	32	25	33							
	3225-P22	32	25	170	32	32	33	TN□□2204□□	CVH4	CHX0518	ST44V	FTKA0410	SPR0714	HW30P
	3232-P22	32	32	170	40	32	33							

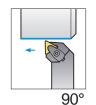
<sup>◆</sup> Applicable inserts B58~B65

# DTGNR/L



 $\mathsf{TN}\square\square$ 





• R type insert

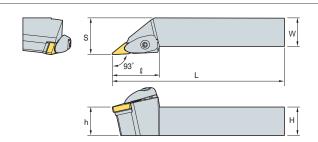
														(111111)
Des	signation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DTGNR/L	2020-K16	20	20	125	25	20	24.5							
	2525-M16	25	25	150	32	25	24.5	TN□□1604□□	CVH3	CHX0415	ST32V	FTKA0307	SPR0510	HW25P
	3232-P16	32	32	170	40	32	24.5							
	2525-M22	25	25	150	32	25	32.6							
3225	3225-P22	32	25	170	32	32	32.6	TN□□2204□□	CVH4	CHX0518	ST44V	FTKA0410	SPR0714	HW30P
	3232-P22	32	32	170	40	32	32.6							

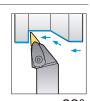
<sup>◆</sup> Applicable inserts B58~B65

# **DVJNR/L**



VN





93°

(mm)

• R type insert

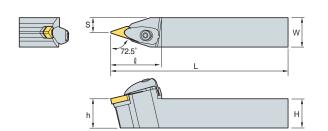
Des	signation	Н	w	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DVJNR/L	2020-K16	20	20	125	25	20	41.5							
	2525-M16	25	25	150	32	25	41.5	VN□□1604□□	CVH3V	CHX0518	SV32V	FTNA03508 S	SPR0714	HW30P
	3232-P16	32	32	170	40	32	41.5							

<sup>◆</sup> Applicable inserts B66~B67

# **DVVNN**









72.5°

• R type insert (mm)

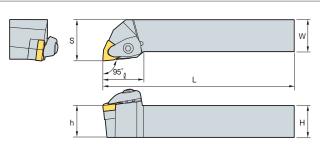
De	Designation 2020 K46		W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DVVNN	2020-K16	20	20	125	10	20	40							
	2525-M16	25	25	150	12.5	25	40	VN□□1604□□	CVH3V	CHX0518	SV32V	FTNA03508	SPR0714	HW30P
	3232-P16	32	32	170	16	32	40							

<sup>◆</sup> Applicable inserts B66~B67

# **DWLNR/L**



 $WN \square \square$ 





95°

Des	ignation	Н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DWLNR/L		20	20	125	25	20	26	WNDD 0604DD	CVH3	CHX0415	CMANA	ETK A 0207	CDD0E10	LIMOED
	2525-M06	25	25	150	32	25	26	WN□□ 0604□□	CVIIS	CHX0413	3VV32V	FTRAU307	3PK0310	HWZ3P
2	2020-K08	20	20	125	25	20	32	WN□□ 0804□□	CVH4	CHV0E10	CMAAN	FTKA0410	CDD0714	H/N/20D
	2525-M08	25	25	150	32	25	32	WIN 0004	CVH4	CHV0010	3VV44V	FINAU410	SPK0/14	HVV3UP

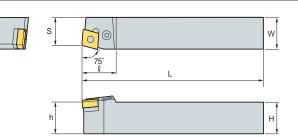
<sup>◆</sup> Applicable inserts B68~B72

# **B** Lever Lock System

# PCBNR/L









• R type insert (mm)

Des	ignation	н	W	L	s	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PCBNR/L	2020-K12	20	20	125	17	20	27							
	2525-M12	25	25	150	22	25	27	CN□□ 1204□□	LV4	VHX0821	SC42	SP4	HW30L	LSPS4
	3225-P12	32	25	170	22	32	27							
	2525-M16	25	25	150	22	25	33	CN□□ 1606□□	LV5	VHX0825	SC53	SP5	HW30L	LSPS6
	3232-P16	32	32	170	27	32	33	CN 1000	LVJ	VI IA0025	3033	353	TIVVOUL	LOFOU
	3232-P19	32	32	170	27	32	36	CN□□ 1906□□	LV6N	VHX1027N	SC63N	SP6N	HW40L	LSPS6
	4040-S19	40	40	250	35	40	36	CN 1900	LVOIN	VIIATUZIN	SCOSIN	SPON	HVV40L	LOPOU
	4040-S25	40	40	250	35	40	47	CN□□ 2509□□	LV8N	VHX1236N	SC84N	SP8N	HW50L	LSPS8
4040-S25	4040-S25-5	40	40	250	35	40	47	CN□□ 2507□□	LVOIN	VII/ 1/2001N	3C04IN	SPOIN	HWOOL	LOPOO
	5050-T25	50	50	300	43	50	47	CN□□ 2509□□	LV8N	VHX1236N	SC84N	SP8N	HW50L	LSPS8

<sup>→</sup> Applicable inserts B36~B42

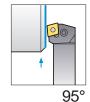
# **PCKNR/L**



CN







W

95

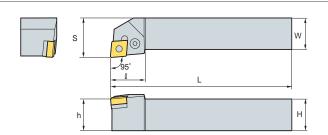
Des	Designation 2020 K42		w	L	s	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PCKNR/L		20	20	125	25	20	27							
3	2525-M12	25	25	150	32	25	27	CN□□ 1204□□	LV4	VHX0821	SC42	SP4	HW30L	LSPS4
	3225-P12	32	25	170	40	32	30							
	3232-P16	32	32	170	40	32	26	- CN□□ 1606□□	LV5	VHX0825	SC53	SP5	HW30L	HW30L
	4040-S16	40	40	250	50	40	25	CNUL 1606	LVS	VHAU023	3033	3F0	HVVSUL	HVVOUL

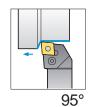
<sup>◆</sup> Applicable inserts B36~B42

# PCLNR/L









• R type insert

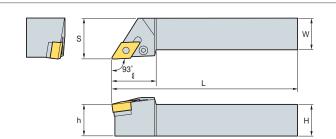
Des	signation	н	w	L	s	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PCLNR/L	1616-H09	16	16	100	20	16	20							
	2020-K09	20	20	125	25	20	22	CN□□ 0903□□	LV3	VHX0617	SC32	SP3	HW25L	LSPS3
	2525-M09	25	25	150	32	25	22							
	1616-H12	16	16	100	20	16	28							
	2020-K12	20	20	125	25	20	28							
	2525-M12	25	25	150	32	25	28	CN□□ 1204□□	LV4	VHX0821	SC42	SP4	HW30L	LSPS4
	3225-P12	32	25	170	32	32	28							
	3232-P12	32	32	170	40	32	28							
	2525-M16	25	25	150	32	25	33	CN□□ 1606□□	LV5	VHX0825	SC53	SP5	ПМЗОГ	LSPS5
	3232-P16	32	32	170	40	32	33	CNLL 1000LL	LVS	VHXU023	3033	373	HVVSUL	LSPSS
	2525-M19	25	25	150	32	25	36							
	3225-P19	32	25	170	32	32	36							
	3232-P19	32	32	170	40	32	36	CN□□ 1906□□	LV6N	VHX1027N	SC63N	SP6N	HW40L	LSPS6
	4040-P19	40	40	170	50	40	36							
	4040-S19	40	40	250	50	40	36							
	4040-S25	40	40	250	50	40	47	- CN□□ 2509□□	LV8N	VHX1236N	SC04N	SP8N	LIMEO	LSPS8
	5050-T25	50	50	300	60	50	47	CINLL 2009LL	LVOIN	V □ \ 1230 \	3C04IN	SPOIN	HVVOUL	LOPO
	4040-S25-5 5050-S25-5	40	40	250	50	40	47	CN□□ 2507□□	LV8N	VHX1236N	SC04NI	SP8N	HW50L	LSPS8
		50	50	300	60	50	47		LVOIN	V II A I Z JOIN	3004IN	SPOIN	HUCVIE	LOPOÖ

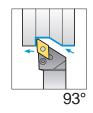
<sup>◆</sup> Applicable inserts B36~B42

# PDJNR/L









Des	signation	н	W	L	S	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PDJNR/L	1616-H11	16	16	100	20	16	25							
	2020-K11	20	20	125	25	20	25	DN	LV3	VHX0617	SD317	SP3	HW25L	LSPS3
	2525-M11	25	25	150	32	25	30							
	2020-K15 2525-M15	20	20	125	25	20	35							
		25	25	150	32	25	35	DN□□ 1506□□	LV4B	VHX0821	SD42	SP4	HW30L	LSPS4
	3225-P15	32	25	170	32	32	35		LV4D	VIIAU021	3042	3F4	HWOOL	LOF 04
	3232-P15	32	32	170	40	32	35							
	2020-K15-3	20	20	125	25	20	35							
	2525-M15-3	25	25	150	32	25	35	DN□□ 1504□□	LV4	VHX0821	SD42	SP4	HW30L	LSPS4
	3232-P15-3	32	32	170	40	32	35							

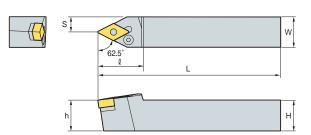
<sup>◆</sup> Applicable inserts B43~B48

# **B** Lever Lock System

# PDNNR/L









62.5°
• R type insert

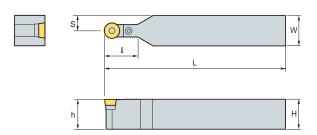
														(mm)
Des	signation	н	w	1	s	h	0	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
500	signation .		•••				~	moore		900		4		
PDNNR/L	2020-K15	20	20	125	8	20	37							
	2525-M15	25	25	150	12.5	25	37	DN 1506	LV4B	VHX0821	SD42	SP4	HW30L	LSPS4
	3232-P15	32	32	150	16	32	37	DINCE 1300	LV4D	VI1/10021	3042	3F4	HWOOL	LOF04
	4025-M15	40	25	170	12.5	32	37							
	2525-M15-3	25	25	150	12.5	25	37	DN□□ 1504□□	LV4	VHX0821	SD42	SP4	HW30L	LSPS4
4	4025-M15-3	40	25	150	12.5	25	37		LV4	VII/10021	3042	354	HVVJUL	LOF 04

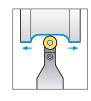
<sup>◆</sup> Applicable inserts B43~B48

# **PRDCN**



**RCMX** 





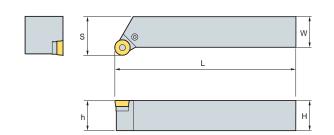
De	Designation PRDCN 2020-M10		w	L	s	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PRDCN	2020-M10	20	20	150	10	20	24	RCMX1003M0	LR10	VHX0514	SR10	SP3	HW20L	LSPS3
	2525-M10	25	25	150	12.5	25	24	KCIVIX 1003IVIO	LKIU	VII/0014	3110	353	HVVZUL	LOFOO
	2525-M12	25	25	150	12.5	25	24							
	2020-K12	20	20	125	10	20	24	RCMX1204M0	LR12	VHX0617	SR12	SP3	HW25L	LSPS3
	3225-Q12	32	25	180	12.5	32	24							
	2525-Q16	25	25	180	12.5	25	30							
	3225-Q16	32	25	180	12.5	32	30	RCMX1606M0	LR16	VHX0621	SR16	SP4	HW25L	LSPS4
	3232-Q16	32	32	180	16	32	35							
	3232-Q20	32	32	180	16	32	40	RCMX2006M0	LR20	VHX0823	SR20	SP20	HW30L	LSPS5
4040-S25 4040-T25 5050-U32	4040-S25	40	40	250	20	40	42	RCMX2507M0	LR25	VHX1030	SR25	SP6N	HW40L	LSPS6
	4040-T25	40	40	300	20	40	42	NGIVIAZ507IVIU	LRZS	V IIV 1090	SN23	SPON	HW40L	LOPOD
	50	50	350	25	50	52	RCMX3209M0	LR32	VHX1236	SR32	SP8N	HW50L	LSPS8	

Applicable inserts B83, B105

# PRGCR/L



RCMX





• R type insert (mm)

Des	signation	н	W	L	S	h	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PRGCR/L	2020-K10	20	20	125	25	20	RCMX1003M0	LR10	VHX0514	SR10	SP3	HW20L	LSPS3
	2525-M10	25	25	150	32	25	RCIVIA TOUSIVIU	LKIU	VII/U014	SKIU	373	⊓VVZUL	LSPSS
	2020-K12 2525-M12	20	20	125	25	20							
	2525-M12	25	25	150	32	25	RCMX1204M0	LR12	VHX0617	SR12	SP3	HW25L	LSPS3
	3225-P12	32	25	170	32	32							
	2525-M16	25	25	150	32	25	RCMX1606M0	LR16	VHX0621	SR16	SP4	HW25L	LSPS4
	3225-P16 3232-P20	32	25	170	32	32	RCIVIA I OUDIVIU	LKIO	V II A U 0 Z I	3110	3P4	HVVZ3L	LSP34
		32	32	170	40	32	RCMX2006M0	LR20	VHX0823	SR20	SP5-1	HW30L	LSPS5
	4040-S25	40	40	250	50	40	RCMX2507M0	LR25	VHX1030	SR25	SP6N	HW40L	LSPS6

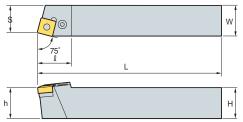
<sup>◆</sup> Applicable inserts B83, B105

# **PSBNR/L**



SN







75°

• R type insert (mm)

Des	signation	Н	W	L	S	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PSBNR/L	1616-H09	16	16	100	13	16	21	SN□□0903□□	LV3	VHX0617	SS32	SP3	HW25L	LSPS3
	2020-K09	20	20	125	17	20	23	0110000000	LVJ	VIIAOOII	0002	01 0	TIVVZJL	LOI 00
	2020-K12	20	20	125	17	20	28							
	2525-M12	25	25	150	22	25	28	SN□□1204□□	LV4	VHX0821	SS42	SP4	HW30L	LSPS4
	3225-P12	32	25	170	22	32	28	311 1204	LV4	V 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3342	354	HVVSUL	LOF 34
	3232-P12	32	32	170	27	32	28							
	3232-P12 2525-M15	25	25	150	22	25	35	SN□□1506□□	LV5	VHX0825	SS53	SP5	HW30L	LSPS5
	3232-P15	32	32	170	27	32	35	SNULLISUOLL	LVS	VIIA0025	3333	3F3	HWOOL	LOFOO
	3232-P19	32	32	170	27	32	40	SN□□1906□□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	4040-S19	40	40	250	35	40	40	311 1900 1	LVOIN	VIIX IUZ/IN	330311	SFUN	HVV40L	LOFOU
	4040-S25	40	40	250	35	40	50	SN□□2507□□						
	4040-S25-6	40	40	250	35	40	50	50 SN 2507	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	5050-T25	50	50	300	43	50	50		LVOIN	VIIV 1520IA	3304IN	SFOIN	HVVOUL	LOP 30
	5050-T25-6	50	50	300	43	50	46							

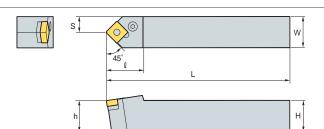
<sup>◆</sup> Applicable inserts B50~B57

# **B** Lever Lock System

# **PSDNN**









De	signation	Н	W	L	S	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PSDNN	1616-H09	16	16	100	8	16	23	SN□□0903□□	LV3	VHX0617	SS32	SP3	HW25L	LSPS3
	2020-K12	20	20	125	10	20	30							
	2525-M12	25	25	150	12.5	25	30	SN□□1204□□	LV4	VHX0821	SS42	SP4	HW30L	LSPS4
	3225-P12	32	25	170	12.5	32	30	SIN 1204	LV4	V 11/1002 I	3342	3F4	HWYSUL	LOF 34
	3232-P12 2525-M15 3232-P15	32	32	170	16	32	40							
		25	25	150	12.5	25	40	SN□□1506□□	LV5	VHX0825	SS53	SP5	HW30L	LSPS5
		32	32	170	16	32	40	311 1300 1	LVS	VII/0023	3333	353	HWOOL	LOFOO
	3225-P19	32	25	170	12.5	32	40							
	3232-P19	32	32	170	16	32	40	SN□□1906□□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	4040-S19	40	40	250	20	40	40							
	4040-S25	40	40	250	20	40	50	SN 2507	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	5050-T25	50	50	300	25	50	50	SIN2507	LVOIN	VIIA IZSON	3304IN	SPON	HWYOUL	LOPOO
	4040-S25-6	40	40	250	20	40	50	SN 2509	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	5050-T25-6	50	50	300	25	50	50	SINLL 2009LL	LVOIN	VIIVISON	3304IN	SPON	HWYOUL	LOPOO

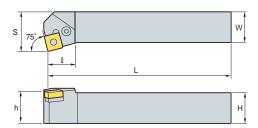
<sup>◆</sup> Applicable inserts B50~B57

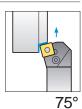
# **PSKNR/L**



 $SN \square \square$ 







• R type insert (mm)

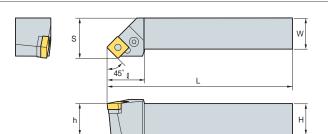
Des	signation	н	W	L	S	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PSKNR/L	1616-H09	16	16	100	20	16	17	SN□□ 0903□□	LV3	VHX0617	SS32	SP3	HW25L	LSPS3
	2020-K09	20	20	125	25	20	20	2IN 0903	LVS	VHX0017	3332	373	HWZSL	Loros
	2020-K12	20	20	125	25	20	23							
	2525-M12 3232-P12	25	25	150	32	25	23	SN□□1204□□	LV4	VHX0821	SS42	SP4	HW30L	LSPS4
-	3232-P12	32	32	170	40	32	23							
	3232-P12 2525-M15	25	25	150	32	25	28	SN□□1506□□	LV5	VHX0825	SS53	SP5	HW30L	LSPS5
	3232-P15	32	32	170	40	32	28	SNU1506	LV5	VHXU825	5553	525	HVV3UL	L5P55
	3232-P19	32	32	170	40	32	41.5	CNDD400CDD	LVCN	\/LIV4007NI	SS63N	CDCN	1.11/4/4/01	LSPS6
	4040-S19	40	40	250	50	40	41.5	SN□□1906□□	LV6N	VHX1027N	2203IA	SP6N	HW40L	L3P30
4	4040-S25	40	40	250	50	40	46	SN□□2507□□						
	4040-S25-6	40	40	250	50	40	46	SN□□2509□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	5050-T25-6	50	50	300	60	50	37.5	SN□□2509□□	1					

<sup>→</sup> Applicable inserts B50~B57

# **PSSNR/L**









45°

• R type insert (mm)

														()
									Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
Des	signation	Н	W	L	S	h	Q	Insert		900		7		
PSSNR/L	1616-H09	16	16	100	20	16	25	SN□□0903□□	LV3	VHX0617	SS32	SP3	HW25L	LSPS3
	2020-K12	20	20	125	25	20	30							
	2525-M12	25	25	150	32	25	36	SN□□1204□□	1374	\/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	0040	SP4	HW30L	LSPS4
	3225-P12	32	25	170	32	32	36	3N1204	LV4	VHX0821	SS42	3P4	HVVSUL	LSP34
	3232-P12	32	32	170	40	32	40							
	3232-P12 2525-M15	25	25	150	32	25	36	SN□□1506□□	LV5	VHX0825	SS53	SP5	HW30L	LSPS5
	3232-P15	32	32	170	40	32	45	311 1300	LVS	VHX0023	3333	353	HWOOL	LOFOO
	3232-P19	32	32	170	40	32	41.5							
	4040-R19	40	40	200	50	40	41.5	SN□□1906□□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	4040-S19	40	40	250	50	40	41.5							
	4040-S25	40	40	250	50	40	48	SN2507	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	4040-S25-6	40	40	250	50	40	48	SN□□2509□□	LVÖIN	V II A I Z 30 I N	3364IN	SPON	⊓vv50L	LOPOS

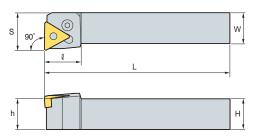
<sup>→</sup> Applicable inserts B50~B57

# PTFNR/L



 $\mathsf{TN} \square \square$ 







90°

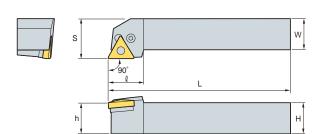
Des	signation	н	W	L	s	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PTFNR/L	1616-H16	16	16	100	20	16	20							
	2020-K16 2525-M16 2525-M22	20	20	125	25	20	20	TN□□1604□□	LV3	VHX0617	ST317	SP3	HW25L	LSPS3
		25	25	150	32	25	20							
		25	25	150	32	25	25	TN□□2204□□	LV4	VHX0821	ST42	SP4	HW30L	LSPS4
	3232-P22	32	32	170	40	32	25	11N22U4	LV4	V	3142	3P4	HWOOL	LSP34
	3232-P27	32	32	170	40	32	34	TN□□2706□□	LV5	VHX0825	ST53	SP5	HW30L	LSPS5
	4040-S27	40	40	250	50	40	34	INLL2/06LL	LVS	V II AU825	3153	375	⊓vv30L	LOPOD

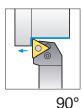
<sup>→</sup> Applicable inserts B58~B65

### PTGNR/L



 $\mathsf{TN} \square \square$ 





R type insert

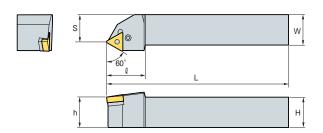
														(111111)
Des	signation	н	w	L	s	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PTGNR/L	1212-F11	12	12	80	16	12	16							
	1616-H11	16	16	100	20	16	18	TN□□1103□□	LV2	VHX0509B	_		HW20L	
	2020-K11	20	20	125	25	20	19	INLLIIUSLL	LVZ	VUV0009D	-	-	HVV20L	-
	2525-M11	25	25	150	32	25	20							
	1616-H16 2020-K16	16	16	100	20	16	20							
		20	20	125	25	20	20	TN□□1604□□	LV3	VHX0617	ST317	SP3	HW25L	LSPS3
	2525-M16	25	25	150	32	25	20	11N10U4	LVS	VII/001/	31317	373	HWZSL	Lorss
	3232-P16	32	32	170	40	32	20							
	2525-M22	25	25	150	32	25	28	TN□□2204□□	LV4	VHX0821	ST42	SP4	HW30L	LSPS4
3	3232-P22	32	32	170	40	32	28	INLL2204LL	LV4	V II A U 8 Z I	3142	3P4	HW30L	L3P34
	3232-P27	32	32	170	40	32	33	TN□□2706□□	LV5	VHX0825	ST53	SP5	HW30L	LSPS5
	4040-S27	40	40	250	50	40	33	111111111111111111111111111111111111111	LVS	V II AU023	3133	373	HW30L	LOPOD

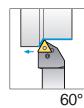
<sup>→</sup> Applicable inserts B58~B65

## PTTNR/L



 $\mathsf{TN} \square \square$ 





• R type insert (mm)

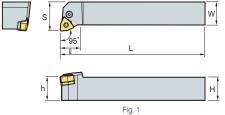
Des	signation	Н	W	L	s	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch
PTTNR/L	1616-H16 2020-K16	16	16	100	13	16	25							
	2020-K16	20	20	125	17	20	25	TN□□1604□□	LV3	VHX0617	ST317	SP3	HW25L	LSPS3
2020-K16 2525-M16	25	25	150	22	25	32								
	2525-M22	25	25	150	22	25	32	TN□□2204□□	LV4	VHX0821	ST42	SP4	HW30L	LSPS4

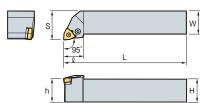
<sup>→</sup> Applicable inserts B58~B65

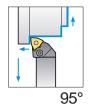
# **PWLNR/L**











\_\_\_\_ \_\_\_ Fig. 2

<ul> <li>R type insert</li> </ul>
(mm)

Des	signation	н	w	L	s	h	Q	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Punch	Fig.
PWLNR/L	1616-H06	16	16	100	20	16	20							<u> </u>	
	2020-K06	20	20	125	25	20	20	WN0604	LV3	VHX0617	SW317	SP3	HW25L	LSPS3	1
2020-K06 2525-M06	25	25	150	32	25	20									
	2020-K08	20	20	125	25	20	26	WNDDOOADD	LV4	VHX0821	014/40	SP4	HW30L	LSPS4	2
	2525-M08	25	25	150	32	25	26	WN 0804 0	LV4	VIIAU021	SW42	3F4	HWOOL	LOF 04	

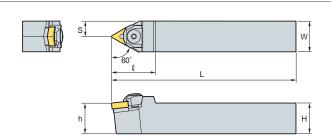




## **WTENN**



 $\mathsf{TN} \square \square$ 





60°

R type inse	ert
(mm	)

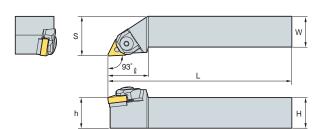
D	esignation	Н	W	L	S	h	Q	Insert	Wedge Clamp Screw	Stopper Ring	Shim	Shim Pin	Nut	Wrench
WTENN		20	20	125	10	20	36	TN□□1604□□	CMH6R6 MHX062	26 ER04	ST32M	SP3M-1	N0407	HW30L
	2525-M16	25	25	150	12.5	25	36		CIVINORO IVINAUOZ	0 ERU4	3 I 32IVI	SP3M	NU407	HVVOUL
2525-M16 2525-M22 3232-P22	25	25	150	12.5	25	42	TN 2204	CMH6R1 MHX062	26 ER04	ST43M	SP4M	N0508	HW30L	
	32	32	170	16	32	42		CIVINOR I IVINAUOZ	0 ERU4	S143IVI	SP4IVI	OUCUM	HVVSUL	

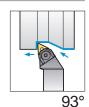
<sup>◆</sup> Applicable inserts B58~B65

# WTJNR/L



 $\mathsf{TN}\square\square$ 





• R type insert

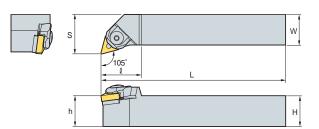
														(111111)
Des	signation	н	w	L	s	h	Q	Insert	' '	opper Ring		Shim Pin	Nut	Wrench
WTJNR/L	2020-K16	20	20	125	25	20	33				S	SP3M-1		
	2525-M16	25	25	150	32	25	33	TN□□1604□□	CMH6R6 MHX0626 E	ER04 S	T32M _	SP3M	N0407	HW30L
	3232-P16	32	32	170	40	32	33					SPSIVI		
	2525-M22	25	25	150	32	25	35		CMH6R1 MHX0626 E	-D04 C	TAOM	SDAM	NOEGO	LIMIZOL
_	3232-P22	32	32	170	40	32	35	INUU2204UU	CIVINOR I IVINAU020 E	-KU4 5	143101 3	5F4IVI	800001	⊓vv30L

<sup>◆</sup> Applicable inserts B58~B65

# WTXNR/L



 $\mathsf{TN}\square\square$ 





105°

• R type insert (mm)

Des	ignation	Н	W	L	S	h	Q	Insert	Wedge Clamp Screw	Stopper Ring		Shim Pin	Nut	Wrench
WTXNR/L	2020-K16	20	20	125	25	20	30					SP3M-1		
	2525-M16	25	25	150	32	25	33		CMH6R6 MHX0626	ER04	ST32M	SP3M	N0407	HW30L
	3232-P16	32	32	170	40	32	33					SPSIVI		

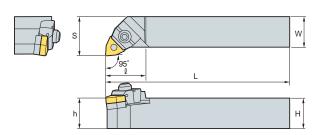
<sup>→</sup> Applicable inserts B58~B65

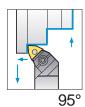
# **B** Wedge Clamp System

# WWLNR/L









• R type insert (mm)

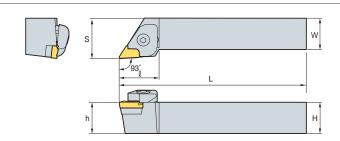
															(mm)
Desi	ignation	н	W	L	S	h	Q	Insert	Wedge Clamp	A	Stopper Ring	Shim	Shim Pin	Nut	Wrench
										0	" "		0		
WWLNR/L	2020-K08	20	20	125	25	20	32		CMH6R/L3				SP2M		LIMON
	2525-M08	25	25	150	32	25	33	WN□□0804□□	CMH6R2	ИНХ0630	CR05	SW43M	SP4M	N0508	HW30L HW40L
	3232-P08	32	32	170	40	32	33		CMH6R2				SP4IVI		11114-OL

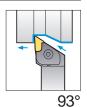
◆ Applicable inserts B68~B72

# CKJNR/L



 $KN\square$ 





• R type insert (mm)

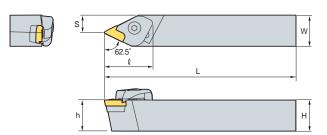
De	esignation	Н	W	L	S	h	Q	Insert	Clamp Clamp Screw	Spring	Shim	Pin + Spring Shim Screw	Wrench
CKJNR	2020-K16	20	20	125	25	20	32						
	2525-M16	25	25	150	32	25	32						
	3225-M16	32	25	150	32	32	32	   KN□□1604□□R	CTUED1 CUVOSSE	SR3	SK33C	PN0515 SR4 SHX0310	HW20L
	3225-W16 3225-P16 3232-P16		25	170	32	32	32	KINDD 1004DDK	CIHORI CHAU025	SKS	SNSSC	SR4	HW40L
	3232-P16	32	32	170	40	32	32						
	4040-R16	40	40	200	50	40	32						
CKJNL	2020-K16	20	20	125	25	20	32						
	KJNL 2020-K16 2525-M16	25	25	150	32	25	32	 	CTH6L1 CHX0625	SR3	SK33CL	PN0515 SHX0310	HW20L
	3232-P16	32	32	170	40	32	32	NINIOU4L	CINOLI CHXU025	SKJ	SNSSUL	SR4 SHX0310	HW40L
	4040-R16	40	40	200	50	40	32						

Applicable inserts B49

# **CKNNR/L**



 $\mathsf{KN} \square \square$ 





62.5°

• R type insert (mm)

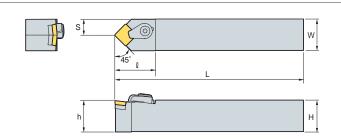
De	esignation	н	w	L	S	h	Q	Insert	Clamp	Clamp Screw	Spring	Shim	Pin + Spring	Shim Screw	Wrench
CKNNR	2525-M16	25	25	150	14.3	25	37	KN□□ 1604□□R	CTU6D1	CHX0625	SR3	SK33C	PN0515	CHAUSTU	HW20L HW40L
	3232-P16	32	32	170	16.8	32	37	KIN 1004K	CITIONI	CHX0023	SNS	SNSSC	SR4	31170310	HW40L
CKNNL	2525-M16	25	25	150	14.3	25	37	KN□□ 1604□□L	CTUCI 1	CHX0625	CD2	CK33C	PN0515	CHV0310	HW20L HW40L
	3232-P16	32	32	170	16.8	32	37	KIN 1004L	CINOLI	CHX0023	SKS	SNSSC	L SR4	3070310	HW40L
<b>~</b>															

Applicable inserts B49

# **CSDPN**



SP□R





De	signation	Н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	C-Ring	Wrench
CSDPN	1616-H09	16	16	100	8	16	30	SP□R 0903□□	CH53R1	CH0515C	SS32C	SP3C	CR03C	HW25L
	2525-M12	25	25	150	12.5	25	35	SP□R 1203□□	CH6R5	CHX0622C	SS42C	SP3C	CR04C	HW30L

<sup>◆</sup> Applicable inserts B85~B86

# Clamp on System

#### CSKPR/L w 75° Н SP\_R R type insert (mm) Shim Pin Clamp Screw Shim C-Ring Wrench 0 W Designation Н L S h Q Insert 7 9

32

SP□R 1203□□

CH6R5 CHX0414C

SS42C

SP3C

CR04C

HW30L

2525-M12

25

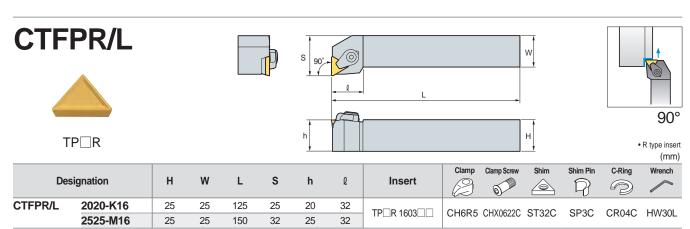
25

150

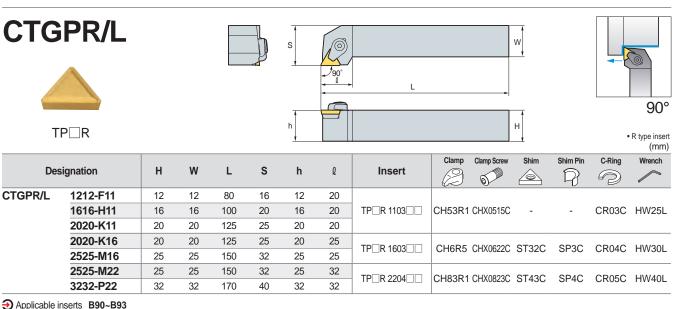
32

20

CSKPR/L



<sup>→</sup> Applicable inserts B90~B93



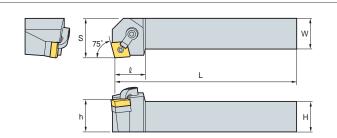
Applicable inserts B90∼B93

<sup>→</sup> Applicable inserts B85~B86

# MCKNR/L



CN





75°

R type insert

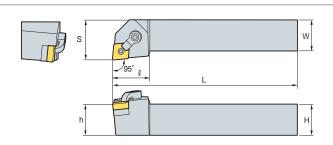
													(mm)
Des	ignation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCKNR/L	2020-K12	20	20	125	25	20	32						
	2525-M12	25	25	150	32	25	32	CN□□1204□□	CDH6N	DHA1/4-25	SC43D	SP4D	HW31.8L HW23.8L
	3232-P12	32	32	170	40	32	32						111120.0L

◆ Applicable inserts B36~B42

# MCLNR/L



 $CN\square\square$ 





95°

• R type insert (mm)

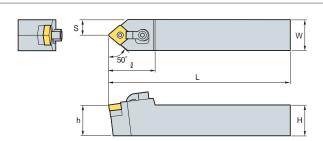
Des	signation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCLNR/L	1616-H09	16	16	100	20	16	25			DUA40.00			
	2020-K09	20	20	125	25	20	25	CN 0903	CDH7N	DHA10-32- 19	SC32D	SP3DS	HW23.8L HW19.8L
	2525-M09	25	25	150	32	25	25			10			
	2020-K12	20	20	125	25	20	32						
	2525-M12	25	25	150	32	25	32	CN□□1204□□	CDH6N	DHA1/4-25	SC43D	SP4D	HW31.8L
	3225-P12	32	25	170	32	32	32	CN1204	CDHON	DHA 1/4-23	3C43D	3P4D	HW23.8L
	3232-P12	32	32	170	40	32	32						
	2525-M16	25	25	150	32	25	33						
	3232-P16	32	32	170	40	32	33	CN 1606	CDH8N	DHA5/16-32	SC53D	SP5D	HW39.7L HW31.8L
	4040-S16	40	40	250	50	40	33						
	2525-M19	25	25	150	32	25	38						
	3232-P19	32	32	170	40	32	38	CN 1906	CDH8N	DHA5/16-32	SC63D	SP6D	HW39.7L HW35.7L
	4040-S19	40	40	250	50	40	38						111100.72
	4040-S25	40	40	250	50	40	38	CN□□2507□□	CDH8N3	DHA3/8-35	SC84D	SP8D	HW39.7L HW47.6L

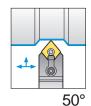
◆ Applicable inserts B36~B42

# **MCMNN**



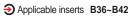
 $\mathsf{CN} \square \square$ 





R type insert

													(111111)
De	esignation	н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCMNN	2020-K12	20	20	125	10	20	32						
	2525-M12	25	25	150	12.5	25	32	CN1204	CDH6N	DHA1/4-25	SC43D	SP4D	HW31.8L HW23.8L
	3232-P12	32	32	170	16	32	32						111120.02
	2525-M16	25	25	150	12.5	25	40	CN□□1606□□	CDH8N	DHA5/16-32	SC53D	SP5D	HW39.7L
	3232-P16	32	32	170	16	32	40	CINCIDIOUOLI	CDHON	DHA5/10-32	3C33D	3P3D	HW31.8L
	3232-P19	32	32	170	16	32	40	CN□□1906□□	CDH8N	DHA5/16-32	SD63D	SP6D	HW39.7L
	4040-S19	40	40	250	20	40	32	CINCLE 1900	CDUOIN	DHA3/10-32	30030	3700	HW35.7L

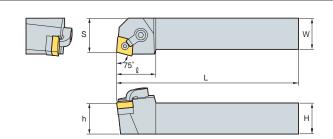


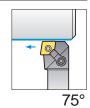
# **B** Multi Lock System

## MCRNR/L









• R type insert (mm)

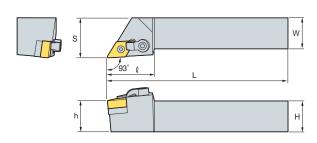
Des	ignation	Н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCRNR/L	2020-K12	20	20	125	22	20	32	CN□□1204□□	CDH8N1	DHA5/16-32	SC43D	SP4D	HW39.7L
	2525-M12	25	25	150	27	25	32	CIVE 1204	CDITONT	DI IA3/ 10-32	3043D	3F 4D	HW23.8L
	2525-M16	25	25	150	27	25	33	CN□□1606□□	CDH8N1	DHA5/16-32	SC53D	SP5D	HW39.7L
	3232-P16	32	32	170	35	32	33	CINLLIBUOLL	CDHONI	DHA3/10-32	3C33D	3P3D	HW31.8L
	3232-P19	32	32	170	35	32	38	CN□□1906□□	CDH8N1	DHA5/16-32	SC63D	SP6D	HW39.7L
	4040-S19	40	40	250	43	40	38	CIN1906	CDHONI	DHA3/10-32	30030	3700	HW35.7L

<sup>→</sup> Applicable inserts B36~B42

# MDJNR/L



 $\mathsf{DN} \square \square$ 





• R type insert (mm)

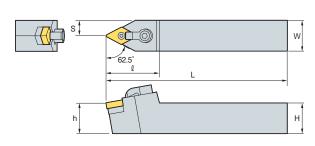
Des	signation	Н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MDJNR/L	2020-K11	20	20	125	25	20	32	DN□□1104□□	CDH6N	DHA1/4-19	SD32D	SP3D	HW31.8L
	2525-M11	25	25	150	32	25	32		CDHON	DHA 1/4-19	3D32D	3P3D	HW19.8L
	2020-K15-3	20	20	125	25	20	36						
	2525-M15-3	25	25	150	32	25	36	DN□□1504□□	CDH6N	DHA1/4-25	SD43D	SP4D	HW31.8L HW23.8L
	2525-M15-3 3232-P15-3	32	32	170	40	32	36						111120.02
	2020-K15	20	20	125	25	20	36						
	2525-M15	25	25	150	32	25	36	DN□□1506□□	CDH6N	DHA1/4-25	SD43D	SP4DL	HW31.8L HW23.8L
	3232-P15	32	32	170	40	32	36						111120.0L

Applicable inserts B43~B48

# **MDNNN**



 $\mathsf{DN} \square \square$ 





62.5°

													(mm)
Desi	ignation	Н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MDNNN	2525-M15-3	25	25	150	12.5	25	41	DN□□1504□□	CDH8N	DHA5/16-32	SD43D	SP4D	HW39.7L HW23.8L
	2525-M15	25	25	150	12.5	25	41	DN□□1506□□	CDH8N	DHA5/16-32	SD43D	SP4DL	HW39.7L HW23.8L

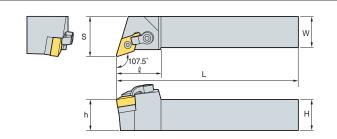
<sup>◆</sup> Applicable inserts B43~B48



# MDQNR/L



 $\mathsf{DN} \square \square$ 





107.5°

• R type insert (mm)

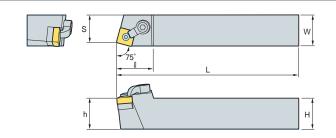
Des	ignation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MDQNR/L	2525-M15-3 3232-P15-3	25 32	25 32	150 170	32 40	25 32	36 36	DN1504	CDH6N	DHA1/4-25	SD43D	SP4D	HW31.8L HW23.8L
	2525-M15	25	25	150	32	25	36	DND 450000	001101	DUM 4/4 05	00.400	00.401	HW31.8L
	3232-M15	32	32	170	40	32	36	DN□□1506□□	CDH6N	DHA1/4-25	SD43D	SP4DL	HW23.8L

<sup>→</sup> Applicable inserts B43~B48

## MSBNR/L



SN





75°

• R type insert (mm)

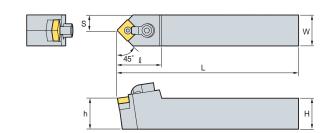
Des	signation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSBNR/L	2020-K12	20	20	125	17	20	32	- SN□□1204□□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L
	2525-M12	25	25	150	22	25	32	3IN1204	CDHOINT	DHA3/10-32	3343D	3F4D	HW23.8L
	2525-M15	25	25	150	22	25	35	SN□□1506□□	CDH8N	DHA5/16-32	SS53D	SP5D	HW39.7L
	3232-P15	32	32	170	22	32	35	311 1300	CDHON	DHA3/10-32	33330	3530	HW31.8L
	3232-P19	32	32	170	27	32	40	- SN□□1906□□	CDH8N	DHA5/16-32	SS63D	SP6D	HW39.7L
	4040-S19	40	40	250	35	40	40	311 1900	CDHON	DHA3/10-32	3303D	3500	HW35.7L

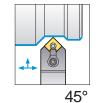
<sup>→</sup> Applicable inserts B50~B57

# **MSDNN**



SN





(mm)

De	signation	н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSDNN	1616-H09	16	16	100	8	16	28	SN□□0903□□	CDH7N	DHA10-32-19	SS32D	SP3DS	HW19.8L
	2020-K09	20	20	125	10	20	28	311 0903	CDITIN	DIIA10-32-19	3332D	31303	HW23.8L
	2020-K12 2525-M12 3225-P12 2525-M15	20	20	125	10	20	32						
		25	25	150	12.5	25	32	SN□□1204□□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L HW23.8L
		32	25	170	12.5	32	32						110020.0L
		25	25	150	12.5	25	35						
	3225-P15	32	25	170	12.5	32	35	SN□□1506□□	CDH8N	DHA5/16-32	SS53D	SP5D	HW39.7L
	3232-P15	32	32	170	16	32	35	SIN1506	CDH8N	DHA5/16-32	2223D	252D	HW31.8L
	4040-S15	40	40	250	20	40	35						
	3232-P19	32	32	170	16	32	42	CN - 400C	CDLION	DIIAE/40 22	CCCCD	CDCD	HW39.7L
	4040-S19	40	40	250	20	40	42	SN□□1906□□	CDH8N	DHA5/16-32	SS63D	SP6D	HW35.7L

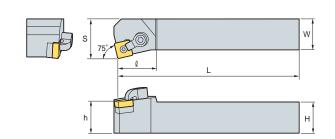
<sup>●</sup> Applicable inserts B50~B57

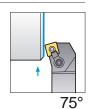
# **B** Multi Lock System

# MSKNR/L









R type insert

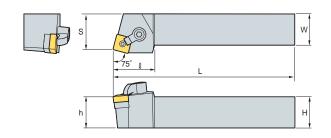
Des	ignation	н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSKNR/L	1616-H09	16	16	100	20	16	28	SN 0903	CDH7N	DHA10-32-19	SS32D	SP3DS	HW19.8L
	2020-K09	20	20	125	22	20	28	311 0903	CDH/N	DHA10-32-19	3332D	35303	HW23.8L
	2020-K12 2525-M12	20	20	125	25	20	32						1 114/00 71
		25	25	150	32	25	32	SN□□1204□□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L HW23.8L
		32	25	170	32	32	32						
		25	25	150	32	25	35	SN□□1506□□	CDH8N	DHA5/16-32	SS53D	SP5D	HW39.7L
	3232-P15	32	32	170	40	32	35	3N1300	CDHON	DHA5/10-32	33330	3530	HW31.8L
	3232-P19	32	32	170	40	32	40	SN□□1906□□	CDH8N	DHA5/16-32	SS63D	SP6D	HW39.7L
	3232-P19 4040-S19	40	40	250	50	40	40	3NUL 1900	CDUOIN	DHA5/10-32	3303D	3700	HW35.7L
	4040-S25	40	40	250	50	40	40	SN□□2507□□	CDH8N3	DHA3/8-35	SS84D	SP8D	HW47.6L HW39.7L

<sup>◆</sup> Applicable inserts B50~B57

# MSRNR/L









75°

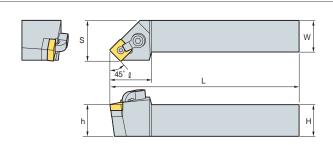
Des	ignation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSRNR/L	1616-H09	16	16	100	17	16	28	SN□□0903□□	CDH7N	DHA10-32-19	SS32D	SP3DS	HW19.8L
	2020-K09	20	20	125	22	20	28	31100903000	CDH/N	DHA10-32-19	3332D	37303	HW23.8L
	2020-K12 2525-M12	20	20	125	22	20	32	SN□□1204□□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L
	2525-M12	25	25	150	27	25	32	3NUL 1204	CDHOINT	DHA3/10-32	3343D	3P4D	HW23.8L
	2525-M15	25	25	150	27	25	35	SN□□1506□□	CDH8N	DHA5/16-32	SS53D	SP5D	HW39.7L
	3232-P15	32	32	170	35	32	35	311 1300 1	CDHOIN	DHA3/10-32	3333D	3230	HW31.8L
	3225-P19	32	25	170	27	32	40						
	3232-P19	32	32	170	35	32	40	SN□□1906□□	CDH8N	DHA5/16-32	SS63D	SP6D	HW39.7L HW35.7L
	4040-S19	40	40	250	43	40	40						11W00.7 L
	4040-S25	40	40	250	43	40	40	SN□□2507□□	CDH8N3	DHA3/8-35	SS84D	SP8D	HW47.6L HW39.7L

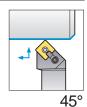
<sup>◆</sup> Applicable inserts B50~B57

# MSSNR/L



SN





• R type insert

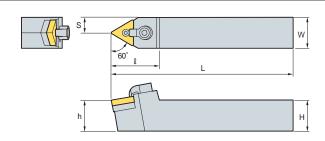
Des	ignation	н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MSSNR/L	1616-H09	16	16	100	20	16	28	SN□□0903□□	CDH7N	DHA10-32-19	SS32D	SP3DS	HW19.8L
	2020-K09	20	20	125	25	20	28	311 0903	CDH/N	DHA 10-32-19	333ZD	35303	HW23.8L
	2020-K12	20	20	125	25	20	32	SN□□1204□□	CDH8N1	DHA5/16-32	SS43D	SP4D	HW39.7L
	2525-M12	25	25	150	32	25	32	3N1204	CDHOINT	DHA3/10-32	3343D	3F4D	HW23.8L
	2525-M12 2525-M15 3232-P15	25	25	150	32	25	35	SN□□1506□□	CDH8N1	DHA5/16-32	SS53D	SP5D	HW39.7L
		32	32	170	40	32	35	311 1300	CDITION	DI IA3/10-32	3333D	3130	HW31.8L
	3232-P19	32	32	170	40	32	40	SN□□1906□□	CDH8N1	DHA5/16-32	SS63D	SP6D	HW39.7L
	4040-S19	40	40	250	50	40	40	31N1900	CUTOINI	DHA5/10-32	3303D	3700	HW35.7L

<sup>◆</sup> Applicable inserts B50~B57

### **MTENN**



 $\mathsf{TN} \square \square$ 





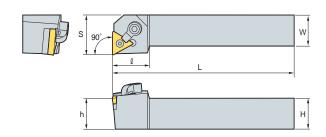
													(111111)
De	esignation	н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTENN	2020-K16	20	20	125	10	20	32	TN 1604	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L
	2525-M16	25	25	150	12.5	25	32	111001004	ODITIN	DI IA 10-02-19	01020	OI 3D	HW19.8L
	2525-M22	25	25	150	12.5	25	35	TN□□2204□□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L HW23.8L
	3232-P27	32	32	170	16	32	35	TN□□2706□□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L HW31.8L
	4040-S33	40	40	250	20	40	40	TN□□3307□□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

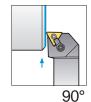
<sup>◆</sup> Applicable inserts B58~B65

## MTFNR/L



 $\mathsf{TN} \square \square$ 





• R type insert

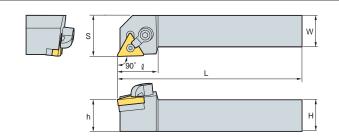
													(111111)
De	signation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTFNR/L	1616-H16	16	16	100	20	16	32						
	2020-K16 2525-M16 2525-M22 3232-P22 4040-S22 3232-P27 4040-S27	20	20	125	25	20	32	TN□□1604□□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L HW19.8L
		25	25	150	32	25	32						111110.02
		25	25	150	32	25	32						
		32	32	170	40	32	32	TN□□2204□□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L HW23.8L
		40	40	250	50	40	32						110020.00
		32	32	170	40	32	35	TN 2706	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L
		40	40	250	50	40	35	INLLZ700LL	CDHOINT	DHA5/10-32	31330	3530	HW31.8L
	4040-S33	40	40	250	50	40	40	TN□□3307□□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

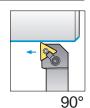
<sup>→</sup> Applicable inserts B58~B65

# MTGNR/L



 $\mathsf{TN} \square \square$ 





• R type insert (mm)

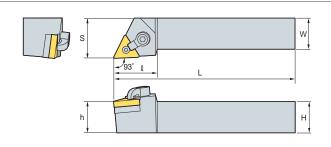
Des	ignation	н	W	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTGNR/L	1616-H16	16	16	100	20	16	32						1.114/00.01
	2020-K16 2525-M16 2525-M22 3232-P22 3232-P27 4040-S27	20	20	125	25	20	32	TN□□1604□□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L HW19.8L
		25	25	150	32	25	32						111110.02
		25	25	150	32	25	32	TN2204	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L
		32	32	170	40	32	32		CDHONT	DHA3/10-32	3143D	3F4D	HW23.8L
		32	32	170	40	32	35	TN□□2706□□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L
		40	40	250	50	40	35		CDHOINT	DHA3/10-32	31330	3530	HW31.8L
	4040-S33	40	40	250	50	40	40	TN□□3307□□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

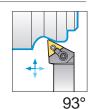
<sup>●</sup> Applicable inserts B58~B65

# MTJNR/L



 $\mathsf{TN} \square \square$ 





• R type insert (mm)

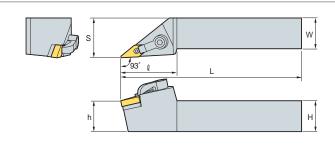
D	esignation	Н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTJNR/L	2020-K16	20	20	125	25	20	32	TN□□1604□□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L
	2525-M16 2525-M22	25	25	150	32	25	32	111001004	ODITIN	DIIA10-32-13	01320	01 00	HW19.8L
	2525-M22	25	25	150	32	25	32	TN□□2204□□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L
	3232-P22	32	32	170	40	32	32	111 2204	CDITION	DI IA3/10-32	31430	3F 4D	HW23.8L
	3232-P27	32	32	170	40	32	35	TN□□2706□□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L
	4040-S27	40	40	250	50	40	35	11100270000	CDHOINT	DHA3/10-32	31330	3530	HW31.8L
	4040-S33	40	40	250	50	40	40	TN□□3307□□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

<sup>◆</sup> Applicable inserts B58~B65

# MVJNR/L



VN





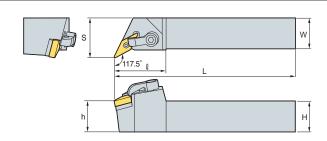
Des	signation	н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MVJNR/L	2020-K16	20	20	125	25	20	44						
	2525-M16	25	25	150	32	25	45.5	VN□□1604□□	CDH8N2	DHA5/16-32	SV32D	SP3D	HW39.7L HW19.8L
	3232-P16	32	32	170	40	32	55.5						
	2525-M22	25	25	150	32	25	56						
	3232-P22	32	32	170	40	32	55	VN□□2204□□	CDH8N2	DHA5/16-32	SV43D	SP4D	HW39.7L HW23.8L
	4040-S22	40	40	250	50	40	65						111120.02

<sup>→</sup> Applicable inserts B66~B67

# **MVQNR/L**



VN





117.5°

• R type insert (mm)

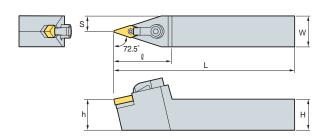
Des	ignation	Н	W	L	S	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MVQNR/L	2020-K16	20	20	125	25	20	42						
	2525-M16	25	25	150	32	25	42	VN□□1604□□	CDH8N2	DHA5/16-32	SV32D	SP3D	HW39.7L HW19.8L
	3232-P16	32	32	170	40	32	37						1100 13.0L

<sup>→</sup> Applicable inserts B66~B67

# **MVVNN**



 $\mathsf{VN} \square \square$ 





72.5°

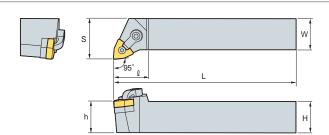
													(mm)
		ш	101				•		Clamp	Clamp Screw	Shim	Shim Pin	Wrench
Des	Designation		W	L	S	h	Q	Insert	A			6000m	
MVVNN	2020-K16	20	20	125	25	20	42	VN□□1604□□	CDH8N2	DHA5/16-32	SV32D	SP3D	HW39.7L
	2525-M16	25	25	150	32	25	42	VIN1004	CDHoinz	DHA5/10-32	37320	3730	HW19.8L

<sup>→</sup> Applicable inserts B66~B67

## MWLNR/L



 $WN \square \square$ 





95°

													()
Des	ignation	н	w	L	s	h	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MWLNR/L		20	20	125	25	20	32						
2525-M06 3232-P06	25	25	150	32	25	32	WN□□0604□□	CDH7N	DHA10-32-19	SW32D	SP3D	HW19.8L HW23.8L	
	3232-P06	32	32	170	40	32	32						
	2020-K08	20	20	125	25	20	32						1 1140 4 01
	2525-M08	25	25	150	32	25	32	WN□□0804□□	CDH6N	DHA1/4-21	SW43D	SP4D	HW31.8L HW23.8L
	3232-P08	32	32	170	40	32	32						111120.02

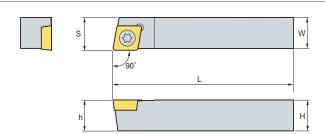
<sup>◆</sup> Applicable inserts B68~B72

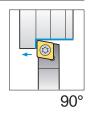
# B Screw on System





 $CC \square T$ 





• R type insert (mm)

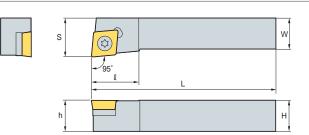
Des	ignation	н	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SCACR/L	1010-E06	10	10	70	10.5	10	CC□□T0602□□	FTKA02565	-	-	TW07P
	1212-F09	12	12	80	12.5	12	CC T09T3	FTKA03508	-	-	TW15P

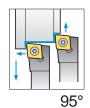
<sup>◆</sup> Applicable inserts B73~B77, B103

# SCLCR/L



 $CC \square T$ 





• R type insert (mm)

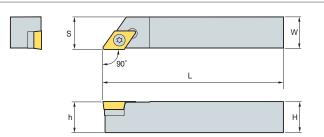
Des	signation	н	w	L	s	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
SCLCR/L 0808-D06 1010-E06 1212-F09 1616-H09 2020-K09	08	80	60	10	08	10	CC□T0602□□	FTKA02565			TW07P	
	1010-E06	10	10	70	16	10	10	CC_10002	FTRA02505	-		1 007 F
	1212-F09	12	12	80	20	12	16	CC_T09T3	FTGA03508	-	-	TW15P
	1616-H09	16	16	100	20	16	16					
	2020-K09	20	20	125	25	20	16					
	2525-M09	25	25	150	32	25	26	CC□T09T3□□	FTGA0411F	SC42S	SHXN0610F	TW15P, HW40L
	2020-K12	20	20	125	25	20	25	CC□T1204□□	FTGA03508	-	-	TW15P
	2525-M12	25	25	150	32	25	26	CC□T1204□□	FTGA0411F	SC42S	SHXN0610F	TW15P, HW40L

<sup>◆</sup> Applicable inserts B73~B77, B103

# SDACR/L



 $DC \square T$ 



+	(0)		
		90	)°

•	R	type	insert
		(1	mm)

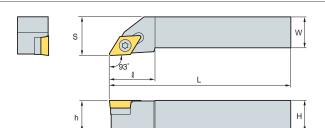
Designation		Н	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SDACR/L	1010-E07	10	10	70	10.5	10	DC□T0702□□	FTKA02565	-	-	TW07P
	1212-F11	12	12	80	12.5	12	DC□T11T3□□	FTKA03508	-	-	TW15P
	1616-H11	16	16	100	16.5	16		FTGA03512	SD32S	SHXN0509F	TW15P, HW35L

<sup>→</sup> Applicable inserts B79~B82, B104

## SDJCR/L



 $DC \square T$ 





93°

• R type insert (mm)

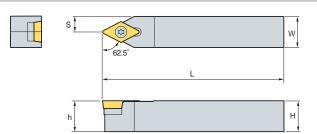
Des	ignation	н	W	L	s	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
SDJCR/L	1010-E07	10	10	70	12	10	15					
	1212-F07	12	12	80	16	12	15	DC□T0702□□	FTKA02565			TW07P
	1616-H07	16	16	100	20	16	18		FTRA02303	-	-	TVVOTE
	2020-K07	20	20	125	25	20	15					
	1212-F11	12	12	80	16	12	15					
	1616-H11	16	16	100	20	16	24		FTGA03512	SD32S	SHXN0509F	TW15P. HW35L
	2020-K11	20	20	125	25	20	24		FIGAUSSIZ	30323	311/11/03/091	TWISE, HWSSL
	2525-M11	25	25	150	32	25	29					

<sup>◆</sup> Applicable inserts B79~B82, B104

#### **SDNCN**



DC□T





62.5°

De	esignation	н	W	L	s	h	Insert	Screw	Shim	Shim Screw	Wrench
SDNCN		10	10	70	5	10	DC□T0702□□	ETIMAGECE			TMOZD
	1212-F07	12	12	80	6	12	DC_10702	FTKA02565	•	-	TW07P
	1212-H11	12	12	100	6	12	DC□T11T3□□	FTGA03508	-	-	TW15P
	1616-H11	16	16	100	8	16	DC□T11T3□□	FTGA03512	SD32S	SHXN0509F	TW15P. HW35L
_	2020-K11	20	20	125	10	20	DOLITING.	F1GA03512	3D323	SHANUSUSE	TWISE, EWSSE
	2025-M11	25	25	150	12.5	25	DC□T11T3□□	FTGA03512	SD32S	SHXN0509F	TW25P, HW35L

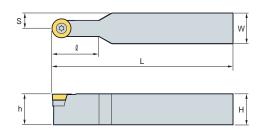
<sup>◆</sup> Applicable inserts B79~B82, B104

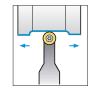
## **SRDCN**



RC□T







(mm)

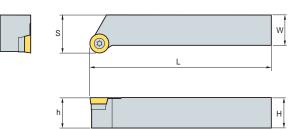
De	esignation	Н	W	L	S	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
SRDCN	1010-E06	10	10	70	5	10	10					
	1212-F06	12	12	80	6	12	12	RC□T0602M0	FTKA02565		_	TW07P
	1616-H06	16	16	100	8	16	12	RC 10002IVIU	FTKA02505	-	-	10077
	2525-M06 1616-H08 2020-K08	25	25	150	12.5	25	20					
		16	16	100	8	16	16					
		20	20	125	10	20	20	RC□T0803M0	FTNA0307	-	-	TW09P
	2525-M08	25	25	150	12.5	25	20					
	1616-H10	16	16	100	8	16	25					TMACD
	2020-K10	20	20	125	10	20	25	RC□T1003M0	FTKA03511A	SR10S	SHXN0509F	TW15P HW35L
2525-M10	2525-M10	25	25	150	12.5	25	25					TIVVOOL
	2020-K12	20	20	125	10	20	28	RC□T1204M0	FTGA03512	SR12S	SHXN0509F	TW15P
	2020-K12 2525-M12	25	25	150	12.5	25	28	NGL11204W0	F10A03312	SK 123	SHANUSUSE	HW35L

<sup>◆</sup> Applicable inserts B83, B105

#### SRGCR/L



 $RC \square T$ 





• R type insert (mm)

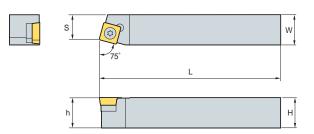
Des	ignation	Н	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SRGCR/L	1010-E06	10	10	70	12	10					
	1212-F06	12	12	80	16	12	RC□T0602M0	FTKA02565	-	-	TW07P
	1616-H06	16	16	100	20	16					
	1616-H08	16	16	100	20	16					
	2020-K08 2525-M08	20	20	125	25	20	RC□T0803M0	FTNA0307	-	-	TW09P
		25	25	150	32	25					
	1616-H10	16	16	100	20	16					
	2020-K10	20	20	125	25	20	RC□T1003M0	FTKA03511A	SR10S	SHXN0509F	TW15P HW35L
	2525-M10 2020-K12	25	25	150	32	25					IIIIOL
		20	20	125	25	20	RC□T1204M0	FTGA03512	SR12S	SHXN0509F	TW15P
	2525-M12	25	25	150	32	25	KC∐11204M0	F1GA03512	SK 125	SUVINOSOBL	HW35L

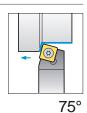
Applicable inserts B83, B105

## SSBCR/L



SC□T





• R type insert (mm)

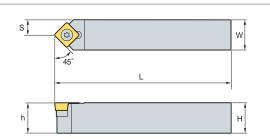
Des	signation	Н	w	L	s	h	Insert	Screw	Shim	Shim Screw	Wrench
SSBCR/L 1212-F09		12	12	80	11	12	SC□T09T3□□	FTGA03508	-	-	TW15P
33DCIVE	1616-H09	16	16	100	13	16	3001091300	FTGA03512	SS32S	SHXN0509F	TW15P, HW35L
	2020-K12	20	20	125	17	20	SC□T1204□□	FTGA0411F	SS42S	SHXN0610F	TW15P, HW40L

Applicable inserts B84, B106

## **SSDCN**



SC□T



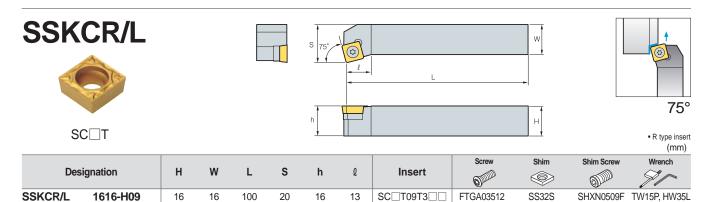


(mm)

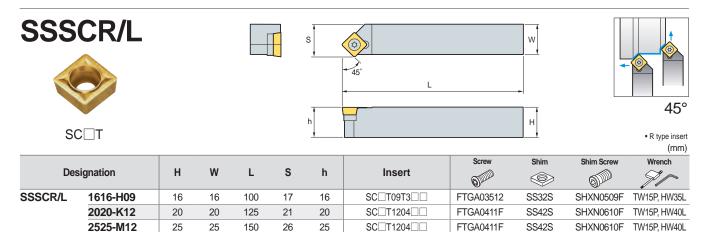
Des	ignation	Н	W	L	S	h	Insert	Screw	Shim	Shim Screw	Wrench
SSDCN	1212-F09	12	12	80	6	12	SC□T09T3□□	FTGA03508	-	-	TW15P
1	1616-H09	16	16	100	8	16	3001091300	FTGA03512	SS32S	SHXN0509F	TW15P, HW35L

Applicable inserts B84, B106

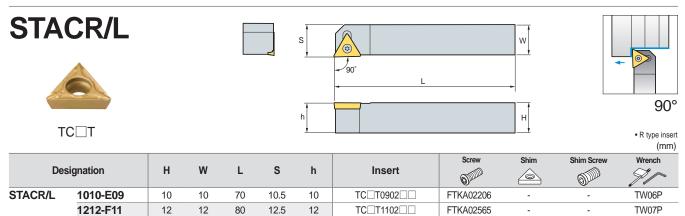




Applicable inserts B84, B106



<sup>→</sup> Applicable inserts B84, B106



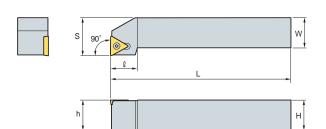
<sup>→</sup> Applicable inserts B88~B89, B107

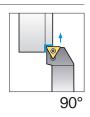
# B Screw on System

#### STFCR/L



 $TC \square T$ 





• R type insert (mm)

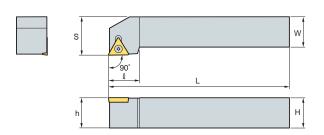
De	signation	н	W	L	S	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
STFCR/L	1010-E09	10	10	70	12	10	10	TC□T0902□□	FTKA02206	-	-	TW06P
	1212-F11	12	12	80	16	12	14	TC□T1102□□	FTKA02565			TW07P
	1616-H11	16	16	100	20	16	14		FTRA02303	-	-	TVVO7F
	1616-H16	16	16	100	20	16	19	TC□T16T3□□	FTGA03512	ST32S	SHXN0509F	TW15P. HW35L
	2020-K16	20	20	125	25	20	19		FIGAUSSIZ	31323	SUVINOSOR	TW ISP, HWSSL
	2525-M16	25	25	150	32	25	25.2	TC□T16T3□□	FTGA03512	ST32S	SHXN0509F	TW15P, HW35L

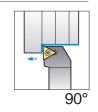
<sup>→</sup> Applicable inserts B88~B89, B107

## STGCR/L



TC□T





• R type insert

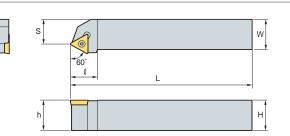
Des	signation	н	W	L	s	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
STGCR/L	0808-D09	08	80	60	10	08	11	TC□T0902□□	FTKA02206			TW06P
	1010-E09	10	10	70	12	10	11	1001090200	F1KA02200	-	•	TVVUOP
	1212-F11	12	12	80	16	12	14	TC□T1102□□	FTKA02565			TW07P
	1616-H11	16	16	100	20	16	16		F1KA02505	-	-	TVVO7F
	1616-H16	16	16	100	20	16	21					
	2020-K16	20	20	125	25	20	21	TC□T16T3□□	FTGA03512	ST32S	SHXN0509F	TW15P, HW35L
	2525-M16	25	25	150	32	25	21					

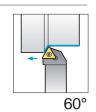
<sup>◆</sup> Applicable inserts B88~B89, B107

## STTCR/L



 $TC \square T$ 

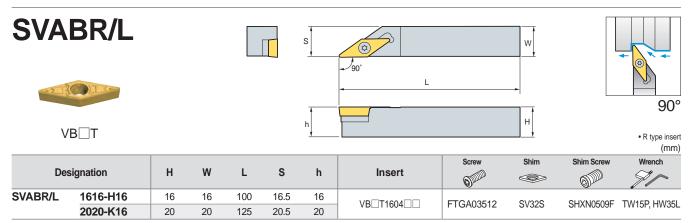




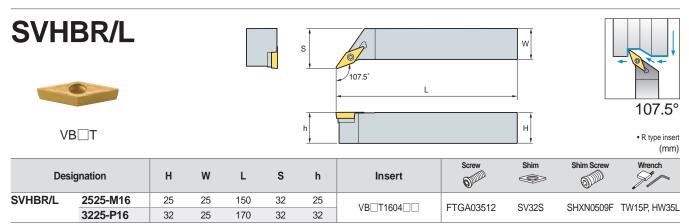
• R type insert (mm)

Des	Designation		w	L	S	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
STTCR/L	1616-H11	16	16	100	13	16	14	TC□T1102□□	FTKA02565	-	-	TW07P
	1616-H16	16	16	100	13	16	19	TC□T16T3□□	FTGA03512	ST32S	SHXN0509F	TW15P. HW35L
	2020-K16	20	20	125	17	20	19		FIGMUSSIZ	31323	SUVINOSOBL	TWIDE, HWOOL

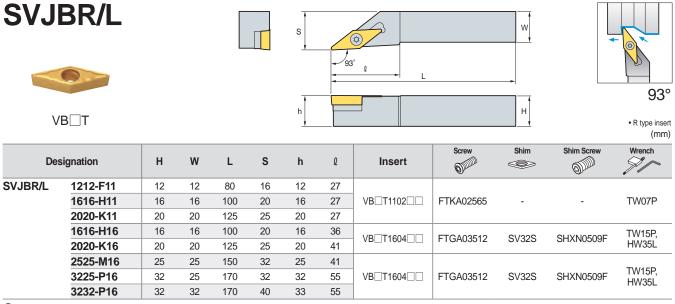
<sup>→</sup> Applicable inserts B88~B89, B107



<sup>→</sup> Applicable inserts B94~B96, B108



<sup>→</sup> Applicable inserts B94~B96, B108

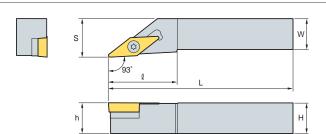


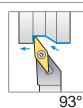
<sup>→</sup> Applicable inserts B94~B96, B108

## SVJCR/L



 $VC \square T$ 





• R type insert (mm)

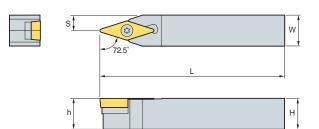
Des	signation	н	W	L	S	h	Q	Insert	Screw	Shim	Shim Screw	Wrench
SVJCR/L	1212-F11	12	12	80	16	12	25		_			•
	1616-H11	16	16	100	20	16	25	VC□T1103□□	FTKA02565	-	-	TW07P
	2020-K11	20	20	125	25	20	25					
	1212-F13 1616-H13	12	12	80	16	12	32					
		16	16	100	20	16	32	VC□T1303□□	FTKA0307	-	-	TW09P
	2020-K13	20	20	125	25	20	32					
	1616-H16	16	16	100	20	16	40					TMACD
	2020-K16	20	20	125	25	20	40	VC□T1604□□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	2525-M16	25	25	150	32	25	40					TIVVOOL

<sup>→</sup> Applicable inserts B97~B99, B109

## **SVVBN**



VB□T





72.5°

											(mm)
De	esignation	н	W	L	s	h	Insert	Screw	Shim	Shim Screw	Wrench
SVVBN	1212-F11	12	12	80	6	12					
	1616-H11	16	16	100	8	16	VB□T1102□□	FTKA02565	-	-	TW07P
	2020-K11	20	20	125	10	20					
	1616-H16	16	16	100	8	16					
	2020-K16	20	20	125	10	20	VB□T1604□□	FTGA03512	SV32S	CHANGEOOE	TW15P. HW35L
	2525-M16	25	25	150	12.5	25	VB_11004	FIGAUSSIZ	37323	SHXN0509F	TWISP, HWSSL
	3225-P16	32	25	170	12.5	32					

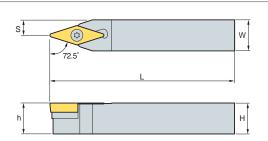
<sup>→</sup> Applicable inserts B94~B96, B108

#### **SVVCN**



 $\mathsf{VC} \square \mathsf{T}$ 







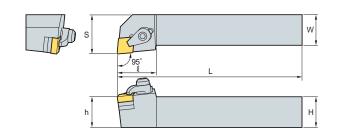
(mm)

De	esignation	н	W	L	s	h	Insert	Screw	Shim	Shim Screw	Wrench
SVVCN	1212-F11	12	12	80	6	12					
2	1616-H11	16	16	100	8	16	VC□T1103□□	FTKA02565	-	-	TW07P
	2020-K11	20	20	125	10	20					
	1212-F13	12	12	80	6	12					
	1616-H13	16	16	100	8	16	VC□T1303□□	FTNA0307	-	-	TW09P
	2020-K13	20	20	125	10	20					
	1616-H16	16	16	100	8	16					
202	2020-K16	20	20	125	10	20	VC□T1604□□	FTGA03512	SV32S	SHXN0509F	TW15P, HW35L
	2525-M16	25	25	150	12.5	25					





 $CN\square N$ 





95°

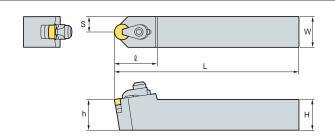
• R type insert

Designation	Н	W	L	S	h	Q	Insert	Clamp	Screw	Shim	Spring	Wrench
CCLNR/L 2525-M12C	25	25	150	32	25	32	CN□N1204□□ CN□N1207□□	CH6R3	MHX0630 SHX0310	SC42CC	SR3	HW40L HW20L

## **CRDNN**



 $RN\square N$ 





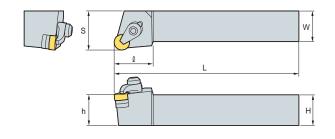
(mm)
Wrench

Designation	н	W	L	s	h	Q	Insert	Clamp	Screw	Shim	Spring	Wrench
CRDNN 2525-M12C	25	25	150	12.5	25	35	RN□N1204□□ RN□N1207□□	CH6R3	MHX0630 SHX0310	SC42CC	SR3	HW40L HW20L

## CRGNR/L



 $RN\square N$ 





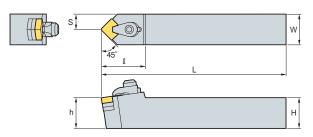
	(mm)
ix typ	e iliseit

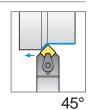
Designation	н	W	L	s	h	Q	Insert	Clamp	Screw	Shim	Spring	Wrench
CRGNR/L 2525-M12C	25	25	150	32	25	32	RN N1204 RN N1207	CH6R3	MHX0630 SHX0310	SC42CC	SR3	HW40L HW20L

## **CSDNN**



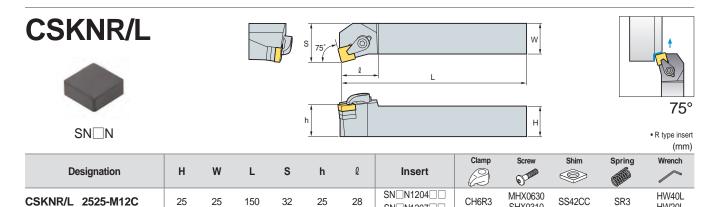
 $SN\square N$ 





												(11111)
Designation	н	W	L	s	h	Q	Insert	Clamp	Screw	Shim	Spring	Wrench
CSDNN 2525-M12C	25	25	125	12.5	25	35	SN□N1204□□ RN□N1207□□	CH6R3	MHX0630 SHX0310	SS42CC	SR3	HW40L HW20L

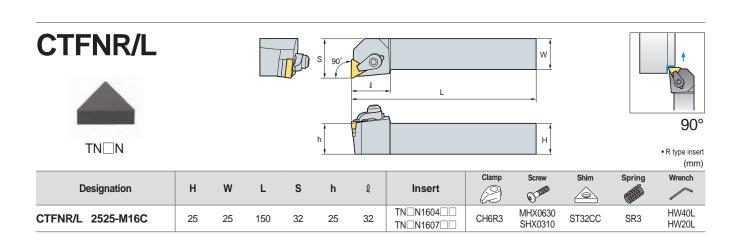
## **Ceramic Holder**

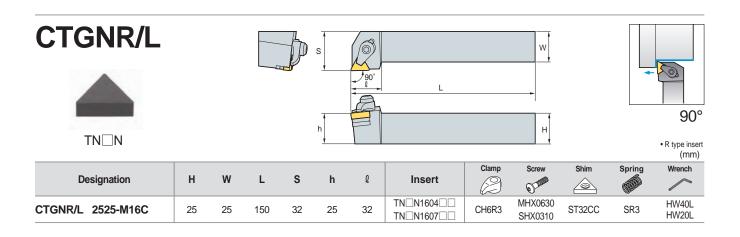


SN□N1207□□

SHX0310

HW20L





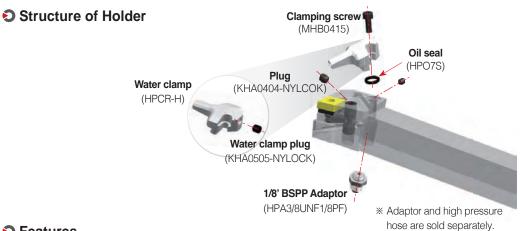


#### KORLOY High Pressure Coolant



#### ISO turning holder

- 300% increased productivity on Inconel machining vs. low pressure coolant system
- · Cooling, tool life, and chip control are improved by the high volume coolant multi-directional injection system



#### Features

- The optimal distance between the insert and the jet orifice and the ideal place of the jet orifice
- Maximized loss pressure of coolant pressure due to streamlined design of internal path
- Easy to clamp an insert for sliding clamp system



The original position of water clamp



The position of placing insert



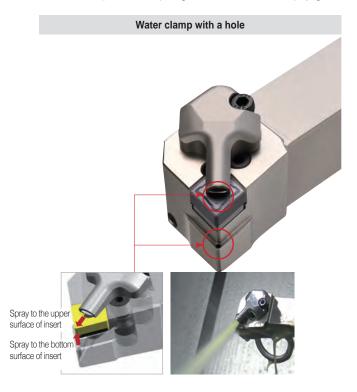
Optimal position and distance of spraying

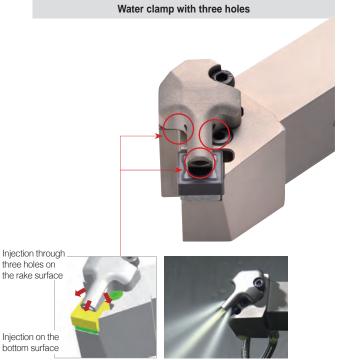


Oval direct spray

#### MAX 300 bar

Workpiece	The minimum pressure	The maximum pressure
Р	50	
M	70	
K	60	300
N	50	
S	70	





\* Clamp is sold seperately

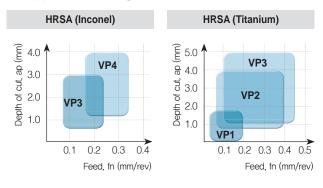
## B

#### **Technical Information for KHP Coolant**

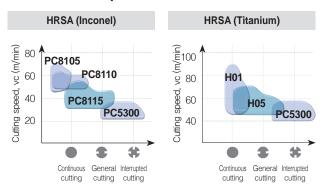
#### How to use the water clamp



#### Application range

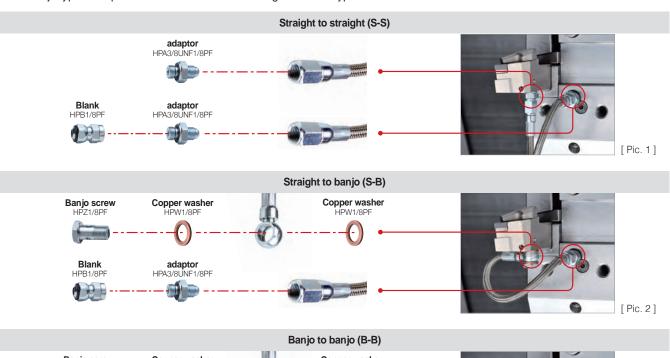


#### Grade Line-up



#### How to clamp the KHP Coolant

- 3 types of installation systems makes clamping easy
- The banjo type hose provides wider area for machining than other types







<sup>\*</sup> Banjo screws provide easy clamping and clamping a holder to the turning machine with various types of blanks



#### Components of KHP Coolant

- The components of high pressure coolant are sold separately
- Various components are available according to different machining sites and uses machining with high pressure coolant

Designation	Shape	Hose length	High pressure hose	Blank	Adaptor	Banjo screw	Copper washer	Pic.
HPH3/8UNF-200-SET	s s	200 mm			2 EA			4
HPH3/8UNF-250-SET		250 mm			2 EA	-	-	ı
HPH3/8UNF1/8PF-200-SET	S B	200 mm	1 EA	1 EA	1 EA	1 EA	3 EA	2
HPH3/8UNF1/8PF-250-SET		250 mm	I EA	1 1 1 1		I LA	3 EA	2
HPH1/8PF-200-SET	В В	200 mm				2 FA	5 EA	3
HPH1/8PF-250-SET	0===0	250 mm			-	2 CA	5 EA	S

#### KHP Coolant Parts

Division	Designation	Shape
adaptor	HPA3/8UNF1/8PF	G1/8 (PF1/8) UNF3/8
Blank	HPB1/8PF	G1/8 (PF1/8)
Banjo screw	HPZ1/8PF	G1/8 (PF1/8)
Copper washer	HPW1/8PF	Interneral Ø10

#### NHP Coolant High pressure hose

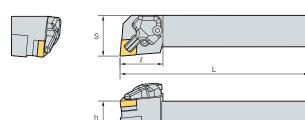
	High pressure hose shape	Length	S	В
Straight to straight	UNF3/8 UNF3/8	200 mm	UNF3/8	_
(HPH3/8UNF)	S <del>(                                   </del>	250 mm	UINF3/6	-
Straight to banjo	UNF3/8 Internal Ø10	200 mm	LINEO/O	l-t   Ø40
(HPH3/8UNF1/8PF)	\$ <b>□</b> B	250 mm	UNF3/8	Internal Ø10
Banjo to banjo	Internal Ø10 Internal Ø10	200 mm		l-4
(HPH1/8PF)	В 😡=	250 mm	<del>-</del>	Internall Ø10

## **B** KHP Coolant

## PCLNR/L









• R type insert

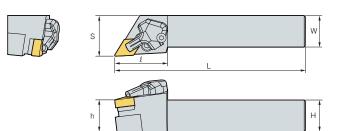
																	(mm)
Designation	н	w	L	s	h	Q	Insert	Lever	Screw	Shim	Ship pin	Shim Pin Punch		Clamping screw		Plug	Wrench
PCLNR/L 2525-M12-KHP	25	25	150	32	25	34	CN□□1204□□	LV4N	VILIVOQQONI	CC40N	CDAN	I CDC4	UDCD/L U	MUDO415	LIDOZE	KHA0404-	HW20L
3232-P12-KHP	32	32	170	40	32	34	CN1204	LV4IN	VIIAU02UIN	3042N	SP4N	LOPO4	nron/L-n	IVINDU413	пгото	NYLOCK	HW30L

<sup>→</sup> Applicable inserts B36~B42

## PDJNR/L



 $\mathsf{DN}\square\square$ 





93°

• R type insert

De	signation	н	w	L	s	h	Q	Insert	Lever	Screw	Shim	Ship pin	Shim Pin Punch	Clamp	Clamping screw	Oil seal	Plug	Wrench
PDJNR/L	2525-M11-KHP	25	25	150	32.25	25	42	DN 1104	LV3AN	VHX0617N	SD32N	SP3	LSPS3	HPCR/L-ŀ	H MHB0415	HPO7S	KHA0404- NYLOCK	HW20L HW25L HW30L
	2525-M1504-KHP	25	25	150	32.25	25	42	DN□□1504□□	LV4BN	VHX0821N	SD43N	SP4N	LSPS4	HPCR/L-H	H MHB0415	HPO7S	KHA0404- NYLOCK	HW20L HW30L
	2525-M1506-KHP	25	25	150	32.25	25	42	DN 1506	LV4BN	VHX0821N	SD42N	SP4N	LSPS4	HPCR/L-H	H MHB0415	HPO7S	KHA0404- NYLOCK	HW20L HW30L

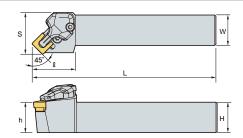
<sup>→</sup> Applicable inserts B43~B48

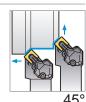
## **PSSNR/L**



SN







• R type insert (mm)

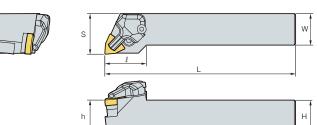
	Designation	Н	W	L	s	h	Q	Insert	Lever	Screw	Shim	Ship pin	Shim Pin Punch	Clamp	Clamping screw	Oil seal	Plug	Wrench
P	SSNR/L 2525-M12-KHP	25	25	150	34.25	25	35.5	SN 1204	LV4N	VHX0821	SS42N	SP4N	LSPS4	HPCR/L-3H	MHB0415	HPO7S	KHA0404- NYLOCK	HW20L HW30L

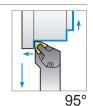
<sup>◆</sup> Applicable inserts B50~B57







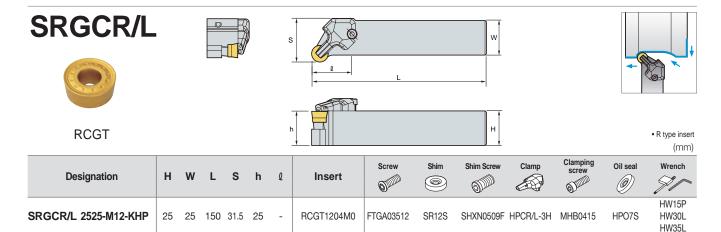




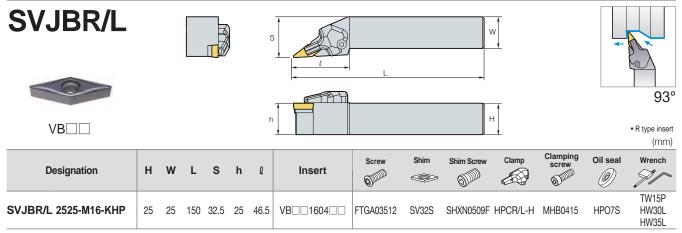
• R type insert (mm)

Designation	н	w	L	s	h	Q	Insert	Lever	Screw	Shim	Ship pin	Shim Pin Punch		screw	Oil seal	Plug	Wrench
PWLNR/L 2525-M08-KH	<b>P</b> 25	25	150	32.25	25	33	WN□□0804□□	11/481	VILLYNOONN	CWAON	CDAN	I CDC4	превл п	MUDOME	UDO70	KHA0404-	HW20L HW30L
3232-P08-KH	<b>P</b> 32	32	170	39.25	32	33		LV4IN	VIIAU02UIN	3W4ZIN	3P4N	LSP34	nrck/L-n	IVINDU413	пРО/З	NYLOCK	HW30L

<sup>◆</sup> Applicable inserts B68~B72

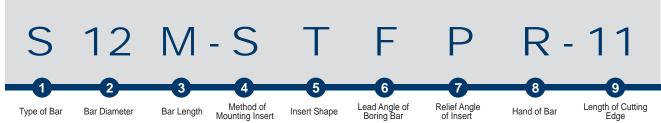


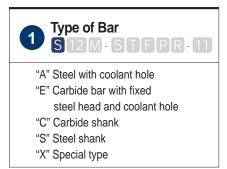
Applicable inserts B83, B105

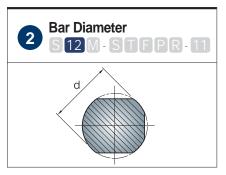


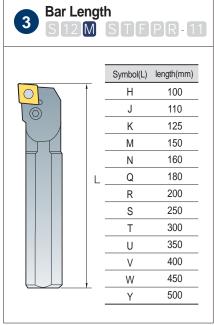
<sup>→</sup> Applicable inserts B94~B96, B108

## Boring Bar Code System(ISO)

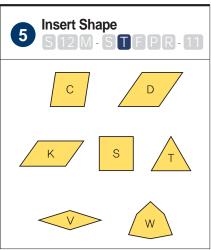


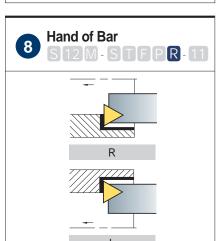


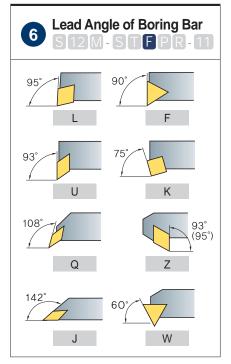


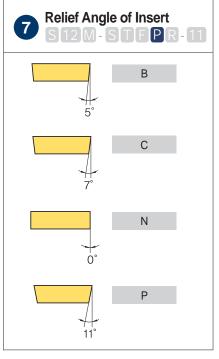


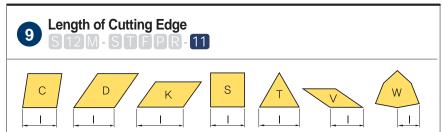












## **Double Clamp System**

Cutting Shape							
Designation	DCLNR/L	DDUNR/L	DSKNR/L	DTFNR/L	DWLNR/L		
Approach angle	95°	93°	75°	90°	95°		
Page	B208	B208	B208	B209	B209		
Copying		•					
Facing	•				•		
Back turning		•					
Turning	•	•	•	•	•		

### Lever Lock System

Cutting Shape			7				
Designation	PCLNR/L	PDSNR/L	PDUNR/L	PSKNR/L	PTFNR/L	PWLNR/L	
Approach angle	95°	62.5°	93°	75°	90°	95°	
Page	B210	B210	B210	B211	B211	B211	
Copying		•	•				
Facing	•					•	
Back turning		•	•			•	
Turning	•	•	•	•	•	•	

### Clamp on System

Cutting Shape						
Designation	CKUNR/L	CSKPR/L	CTFPR/L			
Approach angle	93°	75°	90°			
Page	B212	B212	B212			
Copying						
Facing						
Back turning	•					
Turning	•	•	•			

## Multi Lock System

Cutting Shape		***			7 20		
Designation	MCLNR/L	MDUNR/L	MSKNR/L	MTFNR/L	MVUNR/L	MWLNR/L	
Approach angle	95°	93°	75°	90°	93°	95°	
Page	B213	B213	B213	B214	B214	B214	
Copying		•			•		
Facing	•					•	
Back turning		•			•		
Turning	•	•	•	•	•	•	

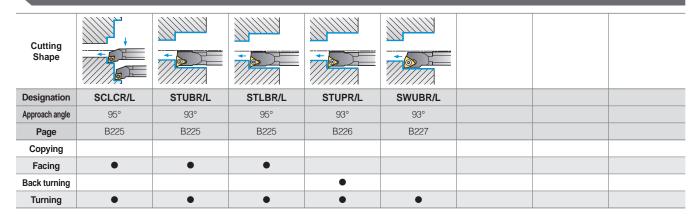
# **B** Index for Boring Bar

#### Screw on System

Cutting								
Shape		0						
Designation	SCLCR/L	SCLPR/L	SDQCR/L	SDUCR/L	SDZCR/L	SSKCR/L	SSKPR/L	STFCR/L
Approach angle	95°	95°	107.5°	93°	93°	75°	75°	90°
Page	B215	B216	B217	B218	B219	B219	B219	B220
Copying			•	•				
Facing	•	•						
Back turning			•	•	•			
Turning	•	•	•	•	•	•	•	•

Cutting Shape								
Designation	STFPR/L	STWPR/L	SVJCR/L	SVQBR/L	SVQCR/L	SVUBR/L	SVUCR/L	SWLCR/L
Approach angle	90°	60°	142°	108°	108°	93°	93°	95°
Page	B221	B221	B222	B222	B223	B223	B223	B224
Copying			•	•	•	•	•	•
Facing								
Back turning				•	•	•	•	•
Turning	•	•	•	•	•	•	•	•

#### **Compact Mini**



#### Carbide Shank Boring Bar

Designation	SCLCR/L	SCLPR/L	SDQCR/L	SDUCR/L	STFCR/L
Approach angle	95°	95°	107.5°	93°	90°
Page	B215	B216	B217	B218	B220

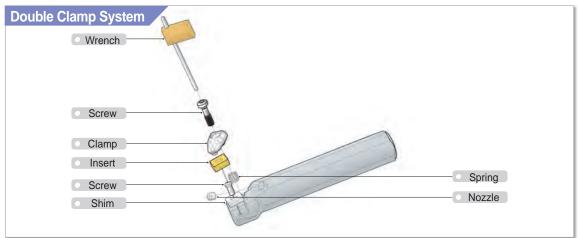
Designation	STFPR/L	STUBR/L	STUPR/L	SWUBR/L	-
Approach angle	90°	93°	93°	93°	-
Page	B221	B225	B226	B227	-

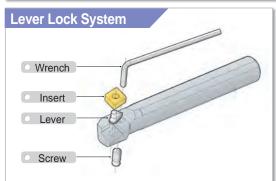
#### Sleeve

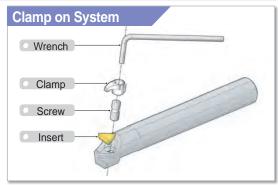
Shape	
Designation	SL
Page	B151

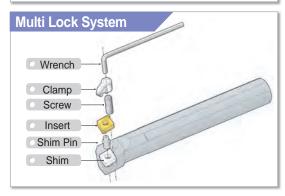


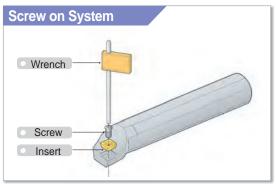
#### **Instructions of Boring Bar assembly**











#### Carbide Shank Boring Bar

- Excellent cutting performance even in internal machining with chattering
- Available for various workpieces such as steel, stainless steel, cast iron, etc.
- Improved tool life and surface roughness

#### Features



Higher strength and durability than steel shank, special surface treatment applied

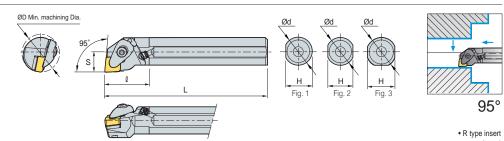
#### Comparison of chipping

		• • •	9			
Specifications	Ste	eel boring b	oar	Carl	bide boring	j bar
<ul> <li>SCM440</li> <li>vc (m/min) = 200</li> <li>ap (mm) = 0.4</li> <li>fn (mm/rev) = 0.15</li> <li>Cutting depth: 5D</li> </ul>	Incr	eased chippin	ng on insert		St	able tool life
	Rmax	Rz	Ra	Rmax	Rz	Ra
	4.67	3.68	0.62	3.07	2.76	0.53

#### DCLNR/L







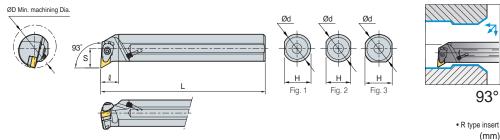
															(mm)
Designation	ØD	Ød	н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A25R-DCLNR/L-09	32	25	24	200	17	40	CN 0903 0	CVH3	CHX0415	SC32V	FTKA0307	SPR0510	CN0605	HW25P	1
A25R-DCLNR/L-12	32	25	24	200	17	40									1
A32S-DCLNR/L-12	40	32	30	250	22	50	CN□□1204□□	CVH4	CHX0518	SC42V	FTKA0410	SPR0714	CN0605	HW30P	2
A40T-DCLNR/L-12	50	40	38	300	27	60									٥
A50U-DCLNR/L-16	63	50	48	350	35	70	CN 1606 1	CVH5	CHX0622	SC54V	FTNA0511	SPR0811	CN0605	HW40L	3

<sup>→</sup> Applicable inserts B36~B42

#### DDUNR/L



 $\mathsf{DN} \square \square$ 



Designation	ØD	Ød	Н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A40T-DDUNR/L-15	50	40	38	300	27	60	DN□□1506□□	CVH4	CHX0518	CD43//	FTKA0410	CDD0714	CN0605	HW30P	2
A50U-DDUNR/L-15	63	50	47	350	35	70		CVH4	CHAUSTO	3D43V	FINAU410	SFR0/14	CINOOOS	HVVSUF	3
A40T-DDUNR/L-15 -3	50	40	37	300	25	60	DN□□1504□□	CVH4	CHX0518	SD44V	FTKA0410	CDD0714	CN0605	HW30P	2
A50U-DDUNR/L-15 -3	63	50	47	350	35	70	בווש ווסטום	UV∏4	CUV0219	3D44V	FINAU410	SFR0/14	CINODOS	HVV30P	3

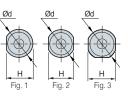
<sup>◆</sup> Applicable inserts B43~B48

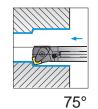
#### **DSKNR/L**



 $SN\square\square$ 

ØD Min. machinir	ng Dia.	
-t-		7
	75°	-
WPX.	S	





• R type insert (mm)

Designation	ØD	Ød	н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A25R-DSKNR/L-09	32	25	24	200	17	40	SN□□0903□□	CVH3	CHX0415	SS32V	FTKA0307	SPR0510	CN0605	HW25P	1
A25R-DSKNR/L-12	32	25	24	200	17	40									1
A32S-DSKNR/L-12	40	32	30	250	22	50	SN□□1204□□	CVH4	CHX0518	SS42V	FTKA0410	SPR0714	CN0605	HW30P	
A40T-DSKNR/L-12	50	40	38	300	27	60									3

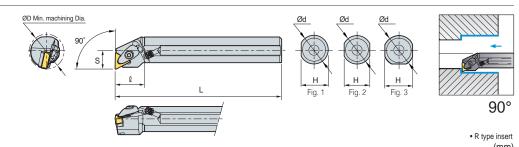
<sup>◆</sup> Applicable inserts B50~B57



### DTFNR/L



 $\mathsf{TN}\square\square$ 



Designation	ØD	Ød	н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A25R-DTFNR/L-16	32	25	24	200	17	40	TN□□1604□□	CVH3	CHX0415	ST32V	FTKA0307	CDD0E10	CN0605	HW25P	1
A32S-DTFNR/L-16	40	32	30	250	22	50		CVIIS	CHX0413	31321	FINAUSUI	3FK0310	CINOOOS	HWZSF	3
A40T-DTFNR/L-22	50	40	38	300	27	60	TN□□2204□□	CVH4	CHX0518	ST44V	FTKA0410	CDD0744	CNIOCOE	HW30P	2
A50U-DTFNR/L-22	63	50	47	350	35	70		CVH4	OUV0218	5144V	F1KA0410	5PK0/14	CINODOS	HW30P	3

<sup>→</sup> Applicable inserts B58~B65





 $WN \square \square$ 

ØD Min. machining Dia.	Ød Ød Ød  H Fig. 1 Fig. 2 Fig. 3	95°
		• R type insert

															(mm)
Designation	ØD	Ød	Н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench	Fig.
A25R-DWLNR/L-06	32	25	24	200	17	40									1
A32S-DWLNR/L-06	40	32	30	250	22	50	WN□□0604□□	CVH3	CHX0415	SW32V	FTKA0307	SPR0510	CN0605	HW25P	3
A40T-DWLNR/L-06	50	40	38	300	27	60									3
A25R-DWLNR/L-08	32	25	24	200	17	40									1
A32S-DWLNR/L-08	40	32	30	250	22	50		CVH4	CHV0E10	C///42//	FTKA0410	CDD0714	CNIOGOE	HW30P	
A40T-DWLNR/L-08	50	40	38	300	27	60	WN 0804	O √ Π4	OLIVOSTO	34424	1 11\A0410	JF NU1 14	CINUOUS	110030F	3
A50U-DWLNR/L-08	63	50	47	350	35	70									

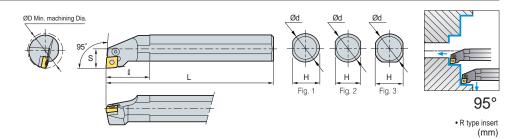
<sup>→</sup> Applicable inserts B68~B72



#### PCLNR/L



CN□□



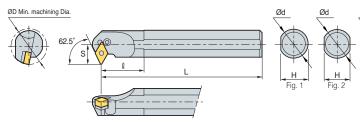
Designation	ØD	Ød	н	L	s	Q	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S16R-PCLNR/L-09	20	16	14	200	11	25								2
S20S-PCLNR/L-09	25	20	18	250	13	32	CN□□0903□□	LV3C	VHX0509B	-	-	-	HW20L	
S25R-PCLNR/L-09	32	25	23	200	17	40								3
S25R-PCLNR/L-12	32	25	23	200	17	40		LV4A	VHX0613A	_		_	HW25L	
S25T-PCLNR/L-12	32	25	23	300	17	40		LV4A	VIIAUUTSA	_	-	-	HWZSL	
S32S-PCLNR/L-12	40	32	30	250	22	50		LV4	VHX0821	SC42B	SP4	LSPS4	HW30L	3
S32U-PCLNR/L-12	40	32	30	350	22	50	CNLL 1204LLL	LV4	VHX0821	SC43B	SP4	-	HW30L	3
S40T-PCLNR/L-12	50	40	38	300	27	60		LV4	VHX0821	SC42B	SP4	LSPS4	HW30L	
S50U-PCLNR/L-12	63	50	47	350	35	70		LV4	V   1   1   1   1   1   1   1   1   1	3C42B	3P4	LSP34	HVV30L	
S50U-PCLNR/L-19	63	50	47	350	35	70	CN□□1906□□	LV6	VHX1027	SC63	SP6	LSPS6	HW40L	3
A25R-PCLNR/L-12	32	25	24	200	17	40		LV4A	VHX0613A	-	-	-	HW25L	1
A32S-PCLNR/L-12	40	32	30	250	22	50	CN1204	LV4	VHX0821	SC42B	SP4	LSPS4	HW30L	3
A40T-PCLNR/L-12	50	40	38	300	27	60		LV4	VΠΛU821	3C42B	3P4	LOP54	⊓VV3UL	3

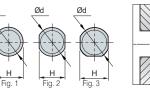
<sup>◆</sup> Applicable inserts B36~B42

#### PDSNR/L











• R type insert (mm)

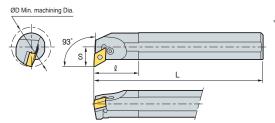
															()
Designation		ØD	Ød	н	L	s	Q	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S32S-PDSNR/L-15		40	32	30	250	22	50	DN 1506	I V4B	VHX0821	SD42	SP4	LSPS4	HW30L	
S40T-PDSNR/L-15		50	40	38	300	27	60	DINLL1300LL	LV4D	V	3D42	3P4	LSP34	HVV30L	
S32S-PDSNR/L-15-3	3	40	32	30	250	22	50	DN 1504	LV4	VHX0821	SD42	SP4	LSPS4	HW30L	2
S40T-PDSNR/L-15-3	3	50	40	38	300	27	60		LV4	V	3D42	3P4	LSP34	HW30L	3
A32S-PDSNR/L-15		40	32	30	250	22	50	DN 1506 0	LV4B	VHX0821	SD42	SP4	LSPS4	HW30L	
A32S-PDSNR/L-15-	3	40	32	30	250	22	50	DN 1504	LV4	VHX0821	SD42	SP4	LSPS4	HW30L	1

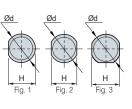
<sup>◆</sup> Applicable inserts B43~B48

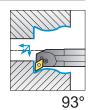
#### PDUNR/L



 $\mathsf{DN}\square\square$ 







• R type insert (mm)

Designation	ØD	Ød	Н	L	s	Q	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S32S-PDUNR/L-11	40	32	30	250	22	50	DN1104	LV3	VHX0617	SD317	SP3	LSPS3	HW25L	3
S32S-PDUNR/L-15	40	32	30	250	22	50								
S40T-PDUNR/L-15	50	40	38	300	27	60	DN□□1506□□	LV4B	VHX0821	SD42	SP4	LSPS4	HW30L	3
S50U-PDUNR/L-15	63	50	47	350	35	70								
S32S-PDUNR/L-15-3	40	32	30	250	22	50	DN□□1504□□	LV4	VHX0821	SD42	SP4	LSPS4	HW30L	3
S40T-PDUNR/L-15-3	50	40	38	300	27	60	DN1504	LV4	V П Л U 0 Z I	3D42	3P4	LSP34	HVV30L	3
A32S-PDUNR/L-15	40	32	30	250	22	50	DN 1506 0	LV4B	VHX0821	SD42	SP4	LSPS4	HW30L	3
A32S-PDUNR/L-15-3	40	32	30	250	22	50	DN 1504 1	LV4	VHX0821	SD42	SP4	LSPS4	HW30L	3



◆ Applicable inserts B43~B48

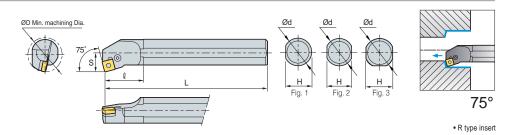
SP4

LSPS4 HW30L





 $SN\square\square$ 



														(111111)
Designation	ØD	Ød	Н	L	s	Q	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S25R-PSKNR/L-12	32	25	23	200	17	40		LV4A	VHX0613A	-	-	-	HW30L	
S32S-PSKNR/L-12	40	32	30	250	22	50	SN□□1204□□	LV4	VHX0821	SS42B	SP4	LSPS4	HW30L	3
S40T-PSKNR/L-12	50	40	38	300	27	60		LV4	V П Л U 0 Z I	3342D	3P4	LSP34	HVV30L	
A25R-PSKNR/L-12	32	25	24	200	17	40	CNDD1204DD	LV4A	VHX0613A	-	-	-	HW25L	1
A22C DCKND/L 12	40	22	20	250	22	50	SN□□1204□□	11/4	\/UV0021	CC12D	SD4	I CDC4	LIVI20I	2

50

40

32

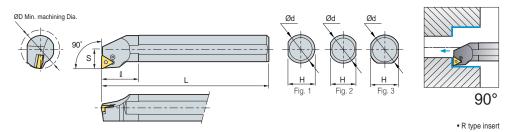
250

A32S-PSKNR/L-12

#### PTFNR/L



 $\mathsf{TN}\square\square$ 



LV4

VHX0821

SS42B

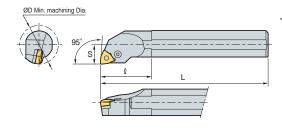
														(mm)
Designation	ØD	Ød	н	L	s	Q	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S16R-PTFNR/L-11	20	16	14	200	11	25								2
S20S-PTFNR/L-11	25	20	18	250	13	32	TN□□1103□□	LV2	VHX0509B	-	-	-	HW25L	2
S25R-PTFNR/L-11	32	25	23	200	17	40								3
S25R-PTFNR/L-16	32	25	23	200	17	40		LV3B	VHX0512B	-	-	-	HW20L	
S32S-PTFNR/L-16	40	32	30	250	22	50		LV3	VHX0617	ST317B	SP3	LSPS3	HW25L	3
S40T-PTFNR/L-16	50	40	38	300	27	60	60 TN□□1604□□	LVJ	VIIAUUII	313176	3F 3	LOFOS	TIVVZJL	
A25R-PTFNR/L-16	32	25	24	200	17	40		LV3	VHX0617	-	-	-	HW25L	1
A32S-PTFNR/L-16	40	32	30	250	22	50		LV3	VHX0617	ST317B	SP3	LSPS3	HW25L	3

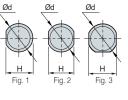
<sup>→</sup> Applicable inserts B58~B65

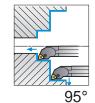
#### PWLNR/L



 $WN \square \square$ 







• R type insert (mm)

														, ,
Designation	ØD	Ød	Н	L	s	Q	Insert	Lever	Screw	Shim	Shim Pin	Shim Pin Punch	Wrench	Fig.
S16R-PWLNR/L-06	20	16	14	200	11	25	WNMG060408	LV3B	VHX0512B	-	-	-	HW20L	2
S20S-PWLNR/L-06	25	20	18	250	13	32		LV3B	VHX0512B				HW20L	2
S25R-PWLNR/L-06	32	25	23	200	17	40	WN□□0604□□	LV3D	VUVOSISD	-	-	-	⊓VVZUL	2
S32S-PWLNR/L-06	40	32	30	250	22	50		LV3	VHX0617	SW317	SP3	LSPS3	HW25L	3
S25R-PWLNR/L-08	32	25	23	200	17	40	WNDD004DD	LV4A	VHX0613A	-	-	-	HW25L	2
S32S-PWLNR/L-08	40	32	30	250	22	50	WN 0804	LV4	VHX0821	SW42	SP4	LSPS3	HW30L	3

<sup>◆</sup> Applicable inserts B68~B72

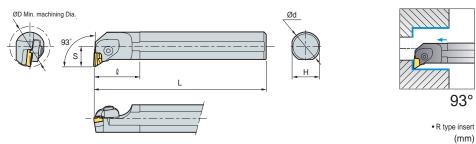
<sup>◆</sup> Applicable inserts B50~B57

# B Clamp on System

## **CKUNR/L**



 $\mathsf{KN} \square \square$ 



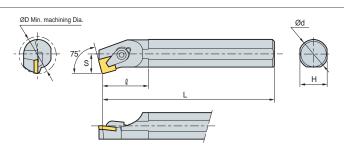
														(mm)
Designation	ØD	Ød	н	L	s	Q	Insert	Clamp	Clamp Screw	Spring	Shim	Pin+Spring	Shim Screw	Wrench
S32S-CKUNR-16	40	32	30	250	22	70						DNI0E1E		1.04/401
S40T-CKUNR-16	50	40	37	300	27	60	KN□□1604□□L	CTH6LI	CHX0625	SR3	SK33CL	PN0515 SR4	SHX0310	HW40L HW20L
S50U-CKUNR-16	63	50	43	350	35	55						31.4		TIWZOL
S32S-CKUNL-16	40	32	30	250	22	70						DNOC45		1.04/401
S40T-CKUNL-16	50	40	37	300	27	60		CTH6RI	CHX0625	SR3	SK33C	PN0515 SR4	SHX0310	HW40L HW20L
S50U-CKUNL-16	63	50	43	350	35	55						SK4		1144Z0L

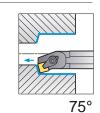
Applicable inserts B49

### CSKPR/L



SP□□





• R type insert (mm)

93°

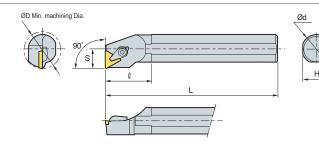
											\ /
Baston etter	«D	~.			_	0	1	Clamp	Clamp Screw	C-ring	Wrench
Designation	ØD	Ød	Н	L	5	Ų	Insert		9	9	
S16R-CSKPR/L-09	20	16	15	200	11	30	SP□□0903□□	CH4R1C	CHX0414C	CR02C	HW25L
S20S-CSKPR/L-09	25	20	18	250	13	36	3P0903	CH5R5C	CHX0519C	CR03C	HW30L
S20S-CSKPR/L-12	25	20	18	250	13	28	SP□□1203□□	CH6R5	CH0616	CR04C	HW30L
S25R-CSKPR/L-12	32	25	23	300	17	40	37 1203 1	CHORS	CHUOIO	CR04C	HVV3UL

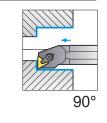
<sup>●</sup> Applicable inserts B85~B86

## CTFPR/L



 $\mathsf{TP} \square \square$ 





• R type insert (mm)

Designation	ØD	Ød	Н	L	s	Q	Insert	Clamp	Clamp Screw	C-ring	Shim	Shim Pin	Wrench
S12M-CTFPR/L-11	16	12	11	150	9	26							
S16R-CTFPR/L-11	20	16	15	200	11	40	TP 1103 0	CH4R1C	CHX0414C	CR02C	-	-	HW25L
S20S-CTFPR/L-11	25	20	18	250	13	40							
S16R-CTFPR/L-16	20	16	15	200	11	40		CHEDEC	CHX0519C	CDOSC			
S20S-CTFPR/L-16	25	20	18	250	13	40		Спокос	CHX0519C	CRUSC	-	-	
S25R-CTFPR/L-16	32	25	23	200	17	40	TP□□1603□□						HW30L
S32S-CTFPR/L-16	40	32	30	250	22	45		CH6R5	CHX0622C	CR04C	ST32C	SP3C	
S40T-CTFPR/L-16	50	40	37	300	27	60					31320	3530	
S40T-CTFPR/L-22	50	40	37	300	27	60	TP□□2204□□	CH83R1	CH0823C	CR05C	ST43C	SP4C	HW40L

<sup>◆</sup> Applicable inserts B90~B93

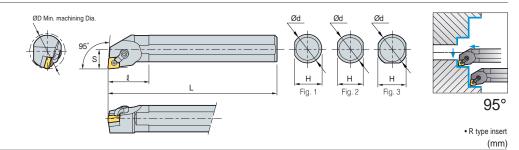


<sup>•</sup> Use left handed insert for right handed holder

## MCLNR/L



CN



Designation	ØD	Ød	Н	L	S	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S20S-MCLNR/L-09	25	20	18	200	13	32	CN□□0903□	CDH7N	DHA10/32-19		SP3D3	HW19.8L	2
S25R-MCLNR/L-09	32	25	23	250	17	40	CIVILLOSOS	CDH/N	DHA10/32-19	-	35303	HW23.8L	3
S25R-MCLNR/L-12	32	25	23	200	17	40			_	-	SP4DS	- 1 11/1/04 01	
S32S-MCLNR/L-12	40	32	30	250	22	50	CN□□1204□	CDH6N	DHA1/4-21	SC43D	SP4D	HW31.8L HW23.8L	3
S40T-MCLNR/L-12	50	40	38	300	27	60				3043D	3F4D	111120.0L	
A25R-MCLNR/L-12	32	25	24	200	17	40	CN 1204	CDH6N	DHA1/4-21 -	-	SP4DS	HW31.8L	1
A32S-MCLNR/L-12	40	32	30	250	22	50		CDHON	DHA 1/4-21	SC43D	SP4D	HW23.8L	3

Applicable inserts B36~B42

## MDUNR/L



 $\mathsf{DN} \square \square$ 

ØD Min. machining Dia.	Ød H Fig. 1	Ød H Fig. 2	Ød H Fig. 3	93°
				• R type insert

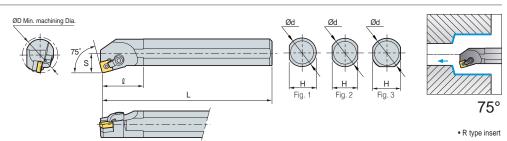
													(mm)
Designation	ØD	Ød	Н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S32S-MDUNR/L-15-3	40	32	30	250	22	50						1 11404 01	
S40T-MDUNR/L-15-3	50	40	38	300	27	60	DN□□1504□	CDH6N	DHA1/4-21	SD43D	SP4D	HW31.8L HW23.8L	3
A32S-MDUNR/L-15-3	40	32	30	250	22	50						111120.0L	

<sup>◆</sup> Applicable inserts B43~B48

# MSKNR/L



 $SN\square\square$ 



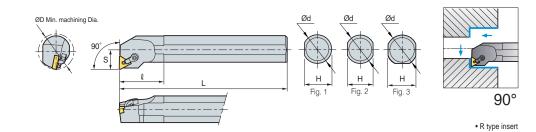
													(mm)
Designation	ØD	Ød	Н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S25R-MSKNR/L-12	32	25	23	200	17	40	SN□□1204□			-	SP4DS		
S32S-MSKNR/L-12	40	32	30	250	22	50		CDH8N1	DHA5/16-28	SS43D	SP4D	HW39.7L HW23.8L	3
S40T-MSKNR/L-12	50	40	38	300	27	60				3343D	3F4D	110025.0L	
A25R-MSKNR/L-12	32	25	23	200	17	40				-	SP4DS	1114/00 71	1
A32S-MSKNR/L-12	40	32	30	250	22	50	SN□□1204□	CDH8N1	DHA5/16-28	CC 42D	SP4D	HW39.7L HW23.8L	2
A40T-MSKNR/L-12	50	40	38	300	27	60				SS43D	3P4D	110025.0L	3

<sup>●</sup> Applicable inserts B50~B57

#### MTFNR/L



 $\mathsf{TN} \square \square$ 



Designation	ØD	Ød	Н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S25R-MTFNR/L-16	32	25	23	200	17	40	_	CDH7N1	DHA10-32-19	-	SP3D3	HW23.8L	
S32S-MTFNR/L-16	40	32	30	250	22	50	TN□□1604□	CDUZNIA	DHA10-32-19	CTOOD	SP3D	HW19.8L	3
S40T-MTFNR/L-16	50	40	38	300	27	60		CDH/NI	DHA 10-32-19	31320	3730	UM 19.0L	
A25R-MTFNR/L-16	32	25	24	200	17	40	TN□□1604□	CDH7N1	DHA10-32-19	-	SP3D3	HW23.8L	1
A32S-MTFNR/L-16	40	32	30	250	22	50	IN□□1604□	CDH7N1	DHA10-32-19	ST32D	SP3D	HW19.8L	3

<sup>→</sup> Applicable inserts B58~B65

## **MVUNR/L**



VN

ØD Min. machining Dia.	Ød Ød Ød  H Fig. 1 Fig. 2 Fig. 3	93°
		• R type insert (mm)

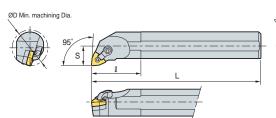
Designation	ØD	Ød	Н	L	S	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S32S-MVUNR/L-16	40	32	30	250	22	50	VN□□1604□	CDH8N2	DHA5/16-28	SV32D	SP3D	HW39.7L	2
S40T-MVUNR/L-16	50	40	38	300	27	60		CDHoinz	DHA3/10-20	37320	3530	HW19.8L	3
A32S-MVUNR/L-16	40	32	30	250	22	50	VNDD1604D	CDH8N2	DHA5/16-28	SV32D	SP3D	HW39.7L	
A40T-MVUNR/L-16	50	40	38	300	27	60	VN□□1604□	CDH6N2	DHA3/10-20	5V3ZD	3P3D	HW19.8L	3

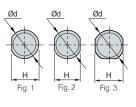
<sup>◆</sup> Applicable inserts B66~B67

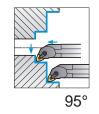
#### MWLNR/L



 $WN \square \square$ 







• R type insert (mm)

(mm)

													(111111)
Designation	ØD	Ød	н	L	s	Q	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench	Fig.
S25R-MWLNR/L-06	32	25	23	200	17	40				-	SP3D3		
S32S-MWLNR/L-06	40	32	30	250	22	50	WN□□0604□	CDH7N	DHA10/32-19	SW32D	SP3D	HW23.8L HW19.8L	3
S40T-MWLNR/L-06	50	40	38	300	27	60				344320	3530	1111110.02	
S25R-MWLNR/L-08	32	25	23	200	17	40				-	SP4DS	- 1 11404 01	
S32S-MWLNR/L-08	40	32	30	250	22	50	WN□□0804□	CDH6N	DHA1/4-21	SW43D	SP4D	HW31.8L HW23.8L	3
S40T-MWLNR/L-08	50	40	38	300	27	60				31143D	3F4D	11W20.0L	
A25R-MWLNR/L-06	32	25	24	200	17	40	WNDD0604D	CDH7N	DHA10/32-19-	-	SP3D3	HW31.8L	1
A32S-MWLNR/L-06	40	32	31	250	22	50	WN 0604 CDH7	CDH/N	יוות וט/32-19	SW32D	SP3D	HW19.8L	3
A25R-MWLNR/L-08	32	25	24	200	17	40	.0 WNDD0804D	CDH6N	DHA1/4-21 -	-	SP4DS	HW31.8L	1
A32S-MWLNR/L-08	40	32	31	250	22	50		CDUQIA	DΠΑ1/4-21 -	SW43D	SP4D	HW23.8L	3

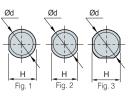
<sup>→</sup> Applicable inserts B68~B72

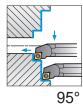
## SCLCR/L





# ØD Min. machining Dia.





• R type insert

(mm)

#### **⊙** Steel shank type

Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S08K-SCLCR/L-06	11	8	7.2	125	6	12		FTKA02555			TW07	
S10K-SCLCR/L-06	13	10	9	125	6	16						
S10M-SCLCR/L-06	13	10	9	150	6	16	CC□T0602□□	FTKA02565	_	_	TW07P	2
S12M-SCLCR/L-06	16	12	11	150	9	20		111111111111111111111111111111111111111	_	_	1 1 1 1 1 1 1	
S16R-SCLCR/L-06	20	16	14	200	11	25						
S12M-SCLCR/L-09	16	12	11	150	9	20						
S16R-SCLCR/L-09	20	16	14	200	11	25	CC□T09T3□□	FTGA03508	-	-	TW15P	2
S20S-SCLCR/L-09	25	20	18	250	13	32	0001031300					
S25R-SCLCR/L-09	32	25	23	200	17	40		FTGA03510			TW15P	3
S25R-SCLCR/L-12	32	25	23	200	17	40		FTGA0411F	-	-	TW15P	
S32S-SCLCR/L-12	40	32	30	250	22	50	CC□T1204□□	FTGA0411F	SC42S	SHXN0610F	HW40L	3
S40T-SCLCR/L-12	50	40	38	300	27	60		1 10/104111	00420	011/11/00101	TW15P	
A08F-SCLCR/L-06	11	8	7.6	80	6	12		FTKA02555	-	-	TW07P	
A10H-SCLCR/L-06	13	10	9.5	100	7	16	CC□T0602□□	FTKA02565	_	_	TW07P	1
A12K-SCLCR/L-06	16	12	11.5	125	9	20		1 11XA02303			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
A12K-SCLCR/L-09	16	12	11.5	125	9	20						
A16M-SCLCR/L-09	20	16	15	150	11	25	ССПТ09Т3ПП	FTGA03508	-	-	TW15P	1
A20Q-SCLCR/L-09	25	20	19	180	13	32	0001091300					∫ '
A25R-SCLCR/L-09	32	25	24	200	17	40		FTGA03510	-	-	TW15P	
A25R-SCLCR/L-12	32	25	24	200	17	40	CC T1204	FTGA0411F	-	-	TW15P	1
A32S-SCLCR/L-12	40	32	31	250	22	50	0001120400	FTGA0411F	SC42S	SHXN0610F	HW40L,TW15P	3

#### Carbide shank type

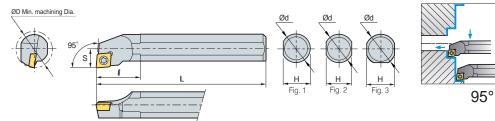
(n	nm)	

Designation	ØD	Ød	н	L	S	Insert	Screw	Wrench	Fig.
C04G-SCLCR/L-03	5	4	3.8	90	2.5	- CC□T0301□□	FTNA01633	TW06P	
C05H-SCLCR/L-03	6	5	4.4	100	3	CC_10301	FINAUIOSS	1 0000	_ 1
C06H-SCLCR/L-04	7	6	5.4	100	3.5	CC□T0401□□	FTNA0238	TW06P	'
C07K-SCLCR/L-04	8	7	6.4	125	4	CC_10401	1 11NA0230	TVVOOF	
C08K-SCLCR/L-06	10	8	7	125	5		FTKA02555	TW07P	
C10K-SCLCR/L-06	12	10	9	125	6				
C10M-SCLCR/L-06	12	10	9	150	6	CC□T0602□□	FTKA02565	TW07P	
C12M-SCLCR/L-06	14	12	11	150	9		1 11A02303	1 4 4 0 7 1	
C12Q-SCLCR/L-06	14	12	11	180	9				
C12M-SCLCR/L-09	15	12	11	150	8				2
C12Q-SCLCR/L-09	15	12	11	180	8				-
C16R-SCLCR/L-09	20	16	15	200	11	CC□T09T3□□	FTGA03508	TW15P	
C16S-SCLCR/L-09	20	16	15	250	11		110403300	100131	
C20R-SCLCR/L-09	25	20	18	200	13				
C20S-SCLCR/L-09	25	20	18	250	13				
C25T-SCLCR/L-12	32	25	23	300	17	CC□T1204□□	FTGA0411F	TW15P	
E06H-SCLCR/L-04	7	6	5.4	100	3.5	CC□T0401□□	FTNA0238	TW06P	1
E07K-SCLCR/L-04	8	7	6.4	125	4	0001040100	1 114/0230	1 44001	
E08K-SCLCR/L-06	10	8	7	125	5		FTKA02555	TW07P	
E10K-SCLCR/L-06	12	10	9	125	6				
E10M-SCLCR/L-06	12	10	9	150	6	CC□T0602□□	FTKA02565	TW07P	
E12M-SCLCR/L-06	14	12	11	150	9		1 110 102000	144071	
E12Q-SCLCR/L-06	14	12	11	180	9				
E12M-SCLCR/L-09	15	12	11	150	8				2
E12Q-SCLCR/L-09	15	12	11	180	8				-
E16R-SCLCR/L-09	20	16	15	200	11	CC□T09T3□□	FTGA03508	TW15P	
E16S-SCLCR/L-09	20	16	15	250	11		110/10000	144101	
E20R-SCLCR/L-09	25	20	18	200	13				
E20S-SCLCR/L-09	25	20	19	250	13				
E25T-SCLCR/L-12	32	25	23	300	17	CC□T1204□□	FTGA0411F	TW15P	

# B Screw on System

## SCLPR/L





#### Steel shank type

• R type insert (mm)

Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench	Fig.
S10M-SCLPR/L-08	13	10	9	150	7	16	CP□T0802□□	FTNA0305	TW09P	2
S12M-SCLPR/L-08	16	12	11	150	9	20	CPL 10002LL	FTNA0307	TW09P	7
S16N-SCLPR/L-09	20	16	14	160	11	25				
S16R-SCLPR/L-09	20	16	14	200	11	25	CP□T0903□□	FTNA0408	TW15P	2
S20N-SCLPR/L-09	25	20	18	160	13	32	CF_10903	FTINAU400	10015F	
S20S-SCLPR/L-09	25	20	18	250	13	32				3
A10H-SCLPR/L-08	12	10	9.65	100	6	-	CP□T0802□□	FTNA0305	TW09P	1
A12K-SCLPR/L-08	16	12	11.5	125	9	20	CP_10002	FTNA0307	TW09P	'
A16M-SCLPR/L-09	20	16	15.5	150	10	25	CP□T0903□□	FTNA0408	TW15P	1
A20Q-SCLPR/L-09	25	20	19	180	13	32	GP□10903□□	FTINAU4U8	1 00 13P	3

#### Carbide shank type

(mm)

										(111111)
Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench	Fig.
C10K-SCLPR/L-08	12	10	9	125	6	14.5		FTNA0305	TW09P	
C10M-SCLPR/L-08	12	10	9	150	6	14.5	CP□T0802□□	FINAU3U3	1009P	
C12M-SCLPR/L-08	15	12	11	150	7.5	14.7	CPL 10002LL	FTNA0306	TW09P	
C12Q-SCLPR/L-08	15	12	11	180	7.5	14.7		FINAUSUO	1009P	
C12M-SCLPR/L-09	15	12	11	150	8	14.4				2
C12Q-SCLPR/L-09	15	12	11	180	8	14.4				2
C16R-SCLPR/L-09	20	16	15	200	10	22.4	CP□T0903□□	ETNIA 0 4 0 0	TWAED	
C16S-SCLPR/L-09	20	16	15	250	10	22.4	CP_10903	FTNA0408	TW15P	
C20R-SCLPR/L-09	25	20	18	200	13	22.5				
C20S-SCLPR/L-09	25	20	18	250	13	22.5				
E10K-SCLPR/L-08	12	10	9	125	6	14.5				
E10M-SCLPR/L-08	12	10	9	150	6	14.5		FTNA0305	TW09P	
E12M-SCLPR/L-08	15	12	11	150	7.5	14.7	CP□T0802□□	FINAU3U3	1009P	
E12Q-SCLPR/L-08	15	12	11	180	7.5	14.7	CPL 10002LL			
E12M-SCLPR/L-09	15	12	11	150	8	14.4		FTNA0407	TW09P	2
E12Q-SCLPR/L-09	15	12	11	180	8	14.4		FTNAU407	1009P	2
E16R-SCLPR/L-09	20	16	15	200	10	22.4				
E16S-SCLPR/L-09	20	16	15	250	10	22.4	CP□T0903□□	FTNA0408	TWAED	
E20R-SCLPR/L-09	25	20	18	200	13	22.5		r i nau4u8	TW15P	
E20S-SCLPR/L-09	25	20	18	250	13	22.5				

<sup>→</sup> Applicable inserts B78

## SDQCR/L





# 

#### Steel shank type

Steel Shank typ	е					1				(mm)
Designation	ØD	Ød	н	L	S	Q	Insert	Screw	Wrench	Fig.
S10M-SDQCR/L-07	13	10	9	150	7	16		FTKA02555	TW07P	
S12M-SDQCR/L-07	16	12	11	150	9	20	DC□T0702□□	FTKA02565	TW07P	2
S16R-SDQCR/L-07	20	16	14	200	11	25		F1KA02505	10077	
S16R-SDQCR/L-11	20	16	14	200	11	25		FTGA03508	TW15P	2
S20S-SDQCR/L-11	25	20	18	250	13	32	DC□T11T3□□	FIGAUSSUO	100156	2
S25R-SDQCR/L-11	32	25	23	200	17	40		FTGA03510	TW15P	3
A10H-SDQCR/L-07	13	10	9.5	100	7	16	DC T0702	FTKA02555	TW07P	1
A12K-SDQCR/L-07	16	12	11.5	125	9	20		FTKA02565	TW07P	1
A16M-SDQCR/L-11	20	16	15	150	11	25		FTCAGSEGG	TMAED	
A20Q-SDQCR/L-11	25	20	19	180	13	32	DC□T11T3□□	FTGA03508	TW15P	1
A25R-SDQCR/L-11	32	25	24	200	17	40		FTGA03510	TW15P	1

#### Carbide shank type

	710									(mm)
Designation	ØD	Ød	н	L	S	Q	Insert	Screw	Wrench	Fig.
C08K-SDQCR/L-07	10	8	7	125	6	-		FTKA02555	TW07P	
C10K-SDQCR/L-07	13	10	9	125	7	14.0	DC□T0702□□	F1KA02555	10077	
C12M-SDQCR/L-07	16	12	11	150	9	14.0		FTKA02565	TW07P	
C16R-SDQCR/L-07	20	16	15	200	11	-		F1KA02303	10076	2
C16R-SDQCR/L-11	20	16	15	200	11	21.3				
C20R-SDQCR/L-11	25	20	18	200	13	24.0	DC□T11T3□□	FTGA03508	TW15P	
C20S-SDQCR/L-11	25	20	18	250	13	24.0				
E08K-SDQCR/L-07	10	8	7	125	6	-		FTKA02555	TW07P	
E10K-SDQCR/L-07	13	10	9	125	7	14.0	DC□T0702□□	F1KA02555	10077	
E12M-SDQCR/L-07	16	12	11	150	9	14.0	DC_10702	FTKA02565	TW07P	
E16R-SDQCR/L-07	20	16	15	200	11	-		F1KA02303	10076	2
E16R-SDQCR/L-11	20	16	15	200	11	21.3				
E20R-SDQCR/L-11	25	20	18	200	13	24.0	DC T11T3	FTGA03508	TW15P	
E20S-SDQCR/L-11	25	20	19	250	13	24.0				

<sup>◆</sup> Applicable inserts B79~B82, B103

# B Screw on System

## SDUCR/L



 $DC \square T$ 

# ØD Min. machining Dia. Ød Ød Ød Ød Fig. 1 Fig. 2 Fig. 3 93° • R type insert (mm)

#### Steel shank type

Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench	Fig.
S10M-SDUCR/L-07	13	10	9	150	7	16		FTKA02555	TW07P	2
S12M-SDUCR/L-07	16	12	11	150	9	20	DC□T0702□□	FTKA02565	TW07P	2
S16R-SDUCR/L-07	20	16	14	200	11	25		F1KA02505	1007P	
S16R-SDUCR/L-11	20	16	14	200	11	25		FTGA03508	TW15P	2
S20S-SDUCR/L-11	25	20	18	250	13	32		FIGAUSSUO	10015P	2
S25R-SDUCR/L-11	32	25	23	200	17	40		FTGA03510	TW15P	3
S32S-SDUCR/L-11	40	32	30	250	22	50		FIGAUSSIU	10015P	3
A10H-SDUCR/L-07	13	10	9.5	100	7	16		FTKA02555	TW07P	1
A12K-SDUCR/L-07	16	12	11.5	125	9	20	DC□T0702□□	ETIMAGECE	TWOZD	4
A16M-SDUCR/L-07	20	16	15	150	11	25		FTKA02565	TW07P	'
A20Q-SDUCR/L-11	25	20	19	180	13	32	DC T11T3	FTGA03508	TW15P	1
A25R-SDUCR/L-11	32	25	24	200	17	40		FTGA03510 TW	TW15P	1

#### Carbide shank type

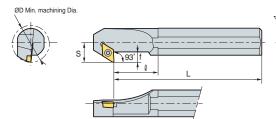
• Oar blac Sharik	type									(mm)
Designation	ØD	Ød	н	L	s	Q	Insert	Screw	Wrench	Fig.
C10K-SDUCR/L-07	13	10	9	125	7	9.8		FTKA02555	TW07P	
C10M-SDUCR/L-07	13	10	9	150	7	9.8		FTKA02555	10077	
C12M-SDUCR/L-07	16	12	11	150	9	11.0	DC T0702			
C12Q-SDUCR/L-07	16	12	11	180	9	11.0	DC_10702	FTKA02565	TW07P	
C16R-SDUCR/L-07	20	16	15	200	11	-		F1KA02505	10076	
C16S-SDUCR/L-07	20	16	15	250	11	-				2
C16R-SDUCR/L-11	20	16	15	200	11	-				
C16S-SDUCR/L-11	20	16	15	250	11	-		FTGA03508	TW15P	
C20R-SDUCR/L-11	25	20	18	200	13	-	DC T11T3	FIGAUSSUO	IWISE	
C20S-SDUCR/L-11	25	20	18	250	13	-				
C25T-SDUCR/L-11	32	25	23	300	17	-		FTGA03510	TW15P	
E10K-SDUCR/L-07	13	10	9	125	7	9.8		FTKA02555	TW07P	
E10M-SDUCR/L-07	13	10	9	150	7	9.8		FTKA02555	10076	
E12M-SDUCR/L-07	16	12	11	150	9	11.0	DC T0702			
E12Q-SDUCR/L-07	16	12	11	180	9	11.0	DC_10702	FTKA02565	TW07P	
E16R-SDUCR/L-07	20	16	15	200	11	-		FTKA02505	1007	
E16S-SDUCR/L-07	20	16	15	250	11	-				2
E16R-SDUCR/L-11	20	16	15	200	11	-				
E16S-SDUCR/L-11	20	16	15	250	11	-		FTGA03508	TW15P	
E20R-SDUCR/L-11	25	20	18	200	13	-	DC□T11T3□□	FIGAUSSUS	IWIDP	
E20S-SDUCR/L-11	25	20	18	250	13	-				
E25T-SDUCR/L-11	32	25	23	300	17	-		FTGA03510	TW15P	

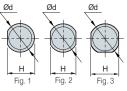
<sup>◆</sup> Applicable inserts B79~B82, B104

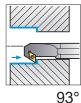
#### SDZCR/L



 $DC \square T$ 







• R type insert (mm)

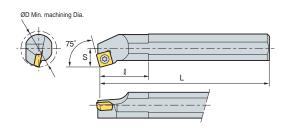
Designation	ØD	Ød	Н	L	s	Q	f	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S16R-SDZCR/L-07	20	16	14	200	11	25	6.5	DC□T0702□□	FTKA02565			TW07P	2
S20S-SDZCR/L-07	25	20	18	250	13	32	7.5		F1KA02303	-	-	10077	
S25R-SDZCR/L-11	32	25	23	200	17	40	9		FTGA03510	-	-	TW15P	
S32S-SDZCR/L-11	40	32	30	250	22	50	11		FTGA03512	SD32S	SHXN0509F	TW15P,	3
S40T-SDZCR/L-11	50	40	38	300	27	60	11	DC T11T3	FIGAUSSIZ	30323	SHAMOSUSE	HW35L	
A25R-SDZCR/L-11	32	25	24	200	17	40	9		FTGA03510	-	-	TW15P	1
A32S-SDZCR/L-11	40	32	30	250	22	50	11		FTGA03512	SD32S	SHXN0509F	TW15P, HW35L	3

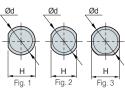
<sup>→</sup> Applicable inserts B79~B82, B104

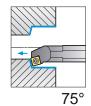
#### SSKCR/L



 $SC \square T$ 







• R type insert (mm)

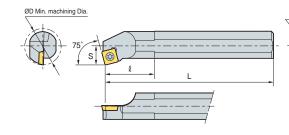
Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S12M-SSKCR/L-09	16	12	11	150	9	20		FTGA03507	-	-	TW15P	
S16R-SSKCR/L-09	20	16	14	200	11	25	SC□T09T3□□	FTGA03508		_	TW15P	2
S20S-SSKCR/L-09	25	20	18	250	13	32		FIGAUSSUO	-	-	TWIDE	
S25R-SSKCR/L-12	32	25	23	200	17	40	SC□T1204□□	FTGA0411F	-	-	TW15P	3
S32S-SSKCR/L-12	40	32	30	250	22	50	30_11204	FTGA0411F	SS42S	SHXN0610F	TW15P, HW40L	
A12K-SSKCR/L-09	16	12	11.5	125	9	20		FTGA03507	-	-	TW15P	
A16M-SSKCR/L-09	20	16	15	150	11	25	SC□T09T3□□	FTGA03508	_	_	TW15P	1
A20Q-SSKCR/L-09	25	20	19	180	13	32		FIGAUSSUO	-	-	100135	'
A25R-SSKCR/L-12	32	25	24	200	17	40	SC□T1204□□	FTGA0411F	-	-	TW15P	
A32S-SSKCR/L-12	40	32	30	250	22	50	30_11204	FTGA0411F	SS42S	SFXN0610F	TW15P, HW40L	3

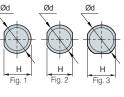
<sup>◆</sup> Applicable inserts B84, B106

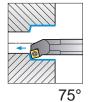
#### SSKPR/L



SP□T







R type insert

.,,	00 1110011
	(mm)
_	

Designation	an.	α-l				Q	lusant	Screw	Wrench	F:
Designation	ØD	Ød	Н	L	S	¥	Insert	<b>9</b>	S	Fig.
S12M-SSKPR/L-09	16	12	11	150	9	20				
S16N-SSKPR/L-09	20	16	14	160	11	25				
S16R-SSKPR/L-09	20	16	14	200	11	25	SP□T09T3□□	FTNA0307	TW09P	2
S20N-SSKPR/L-09	25	20	18	160	13	32				
S20S-SSKPR/L-09	25	20	18	250	13	32				
A12K-SSKPR/L-09	16	12	11.5	125	9	20				
A16M-SSKPR/L-09	20	16	15	150	11	25	SP□T09T3□□	FTNA0307	TW09P	1
A20Q-SSKPR/L-09	25	20	19	180	13	32				

<sup>→</sup> Applicable inserts B85~B86

<sup>•</sup> Use left handed insert for right handed holder

# B Screw on System

## STFCR/L





# 

#### **ᢒ** Steel shank type

Steel Snank typ	e						7				14.47	(mm)
Designation	ØD	Ød	н	L	S	Q	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S10M-STFCR/L-09	13	10	9	150	7	16	TC□T0902□□	FTKA02206			TW06P	2
S12M-STFCR/L-09	16	12	11	150	9	20	10010902	FINAUZZUO	-	-	1 1 1 1 1 1 1 1	
S12M-STFCR/L-11	16	12	11	150	9	20						
S16R-STFCR/L-11	20	16	14	200	11	25	TC□T1102□□	FTKA02565	-	-	TW07P	2
S20S-STFCR/L-11	25	20	18	250	13	32						
S20S-STFCR/L-16	25	20	18	250	13	32	TC□T16T3□□	FTGA03510			TW15P	2
S25R-STFCR/L-16	32	25	23	200	17	40	1001101300	FIGAUSSIU	-	-	TWIDE	3
S32S-STFCR/L-16	40	32	30	250	22	50	TC□T16T3□□	FTGA03512	ST32S	SHXN0509F	TW15P. HW35L	3
S40T-STFCR/L-16	50	40	38	300	27	60	1001101300	FIGAUSSIZ	31323	SUVINOSOAL	TWTOP, HWOOL	3
A10H-STFCR/L-09	13	10	9.5	100	7	16						
A12K-STFCR/L-09	16	12	11.5	125	9	20	TC□T0902□□	FTKA02206	-	-	TW06P	1
A12K-STFCR/L-11	16	12	11.5	125	9	20						
A16M-STFCR/L-11	20	16	15	150	11	25	TC□T1102□□	FTKA02565			TW07P	1
A20Q-STFCR/L-11	25	20	19	180	13	32	1001110200	F1NA02000	-	-	1 0007 P	'
A25R-STFCR/L-16	32	25	24	200	17	40	TC□T16T3□□	FTKA03510	-	-	TW15P	1
A32S-STFCR/L-16	40	32	30	250	22	50	1001101300	FTGA03512	ST32S	SHXN0509F	TW15P, HW35L	3

#### **○** Carbide shank type

	<b>7</b> .									(mm)
Designation	ØD	Ød	н	L	s	Q	Insert	Screw	Wrench	Fig.
C08K-STFCR/L-09	10	8	7	125	5	-	TC□T0902□□	FTKA02206	TW06P	
C10K-STFCR/L-09	12	10	9	125	6	14.0	1001090200	F1KAU2200	1 0000	
C10K-STFCR/L-11	12	10	9	125	6	12.5				
C12M-STFCR/L-11	15	12	11	150	8	-				
C16R-STFCR/L-11	20	16	15	200	10	-	TC□T1102□□	FTKA02565	TW07P	
C20R-STFCR/L-11	25	20	18	200	13	23.0				2
C20S-STFCR/L-11	25	20	18	250	13	23.0				
C20R-STFCR/L-16	25	20	18	200	13	-	TC T4CT2	FTGA03510	TW15P	
C20S-STFCR/L-16	25	20	18	250	13	-	TC□T16T3□□	FIGAUSSIU	1 1 1 1 5 P	
E08K-STFCR/L-09	10	8	7	125	5	-	TC T0902	FTKA02206	TW06P	
E10K-STFCR/L-09	12	10	9	125	6	14.0	1001090200	F1KAU2200	1 0000	
E10K-STFCR/L-11	12	10	9	125	6	12.5				
E12M-STFCR/L-11	15	12	11	150	8	-				
E16R-STFCR/L-11	20	16	15	200	11	-	TC□T1102□□	FTKA02565	TW07P	
E20R-STFCR/L-11	25	20	18	200	13	23.0				2
E20S-STFCR/L-11	25	20	18	250	13	23.0				
E20R-STFCR/L-16	25	20	18	200	13	-	TOUTACTOUU	FTC 4 02 54 0	TMAED	
E20S-STFCR/L-16	25	20	19	250	13	-	TC□T16T3□□	FTGA03510 TW15P	1 1/1/15P	

<sup>◆</sup> Applicable inserts B88~B89, B107

## STFPR/L



TP□T

# ØD Min. machining Dia. 90° • R type insert

#### Steel shank type

Steel Shank typ	E					<del></del>				(mm)
Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench	Fig.
S10M-STFPR/L-11	13	10	9	150	7	16		FTNA0306	TW09P	2
S12M-STFPR/L-11	16	12	11	150	9	20	TP□T1103□□			
S16N-STFPR/L-11	20	16	14	160	11	25	111103	FTNA0307	TW09P	2
S16R-STFPR/L-11	20	16	14	200	11	25				
S20N-STFPR/L-16	25	20	18	160	13	32	TP□T1604□□	FTNA0408	TW15P	2
S20S-STFPR/L-16	25	20	18	250	13	32	1P_11004	FTINAU4U0	TWIDE	
A10H-STFPR/L-11	13	10	9.5	100	7	16		FTNA0306	TW09P	1
A12K-STFPR/L-11	16	12	11	125	9	20	TP□T1103□□	FTNA0307	TW09P	1
A16M-STFPR/L-11	20	16	15	150	11	25		FINAUSUI	1 4409P	'
A20Q-STFPR/L-16	25	20	19	180	13	32	TP□T1604□□	FTNA0408	TW15P	1

#### **○** Carbide shank type

	-760									(mm)
Designation	ØD	Ød	н	L	S	Q	Insert	Screw	Wrench	Fig.
C08K-STFPR/L-08	10	8	7	125	5	13.7	TP□T0802□□	FTNA02205	TW06P	
C10K-STFPR/L-11	12	10	9	125	6	14.0		FTNA0305	TW09P	
C10M-STFPR/L-11	12	10	9	150	6	14.0		FINAUSUS	1 009P	
C12M-STFPR/L-11	15	12	11	150	8	-				
C12Q-STFPR/L-11	15	12	11	180	8	-	TP□T1103□□			
C16R-STFPR/L-11	20	16	15	200	10	-	IF_IIIU3	FTNA0307	TW09P	2
C16S-STFPR/L-11	20	16	15	250	10	-		FINAUSUI	1 1109F	2
C20R-STFPR/L-11	25	20	18	200	13	-				
C20S-STFPR/L-11	25	20	18	250	13	-				
C20R-STFPR/L-16	25	20	18	200	13	-				
C20S-STFPR/L-16	25	20	18	250	13	-	TP□T1604□□	FTNA0408	TW15P	
C25T-STFPR/L-16	32	25	23	300	17	23.5				
E08K-STFPR/L-08	10	8	7	125	5	13.7	TP□T0802□□	FTNA02205	TW06P	
E10K-STFPR/L-11	12	10	9	125	6	14.0		FTNA0305	TW09P	
E10M-STFPR/L-11	12	10	9	150	6	14.0		FINAUSUS	1 1109F	
E12M-STFPR/L-11	15	12	11	150	8	-				
E12Q-STFPR/L-11	15	12	11	180	8	-	TP□T1103□□			
E16R-STFPR/L-11	20	16	15	200	10	-	IF_IIIU3	FTNA0307	TW09P	2
E16S-STFPR/L-11	20	16	15	250	10	-		FINAUSUI	1 1109F	2
E20R-STFPR/L-11	25	20	18	200	13	-				
E20S-STFPR/L-11	25	20	18	250	13	-				
E20R-STFPR/L-16	25	20	18	200	13	-				
E20S-STFPR/L-16	25	20	18	250	13	-	TP□T1604□□	FTNA0408	TW15P	
E25T-STFPR/L-16	32	25	23	300	17	23.5				

<sup>◆</sup> Applicable inserts B90~B93

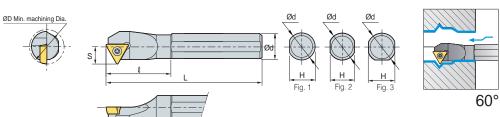
<sup>•</sup> Use left handed insert for right handed holder

# B Screw on System

#### STWPR/L







 R type insert (mm)

Designation	ØD	Ød	н	L	s	Q	Insert	Screw	Wrench	Fig.
S10M-STWPR/L-11	13	10	7	150	7	16	TPGH1102□□	FTNA0305	TW09P	
S12M-STWPR/L-11	16	12	9	150	9	20	<b>TD</b> 0111100000			
S16Q-STWPR/L-11	20	16	14	180	11	25	TPGH1103□□ TPMT1103□□	FTNA0306	TW09P	2
S20R-STWPR/L-11	25	20	18	200	13	32	TFWITTIO5			

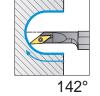
<sup>◆</sup> Applicable inserts B90~B93





 $VC \square \square$ 

ØD Min. machining	g Dia.	Ød H Fig. 1	Ød H Fig. 2	Ød H Fig. 3



• R type insert (mm)

Designation	ØD	Ød	н	L	s	Q	Insert	Screw	Wrench	Fig.
S12M-SVJCR/L-08	16	12	11	150	2	26	VCMT0902	FTNA0204	TW06P	2
S16Q-SVJCR/L-08	20	16	15	180	2	36	VCMT0802□□	FINAU2U4	1 0000	2

Applicable inserts B97~B99, B109

# SVQBR/L 108°

VB□T

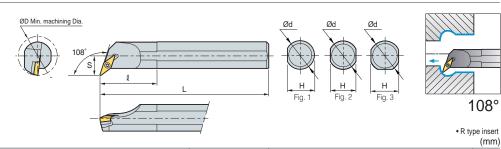
VB∐T											• R ty	pe insert (mm)
Designation	ØD	Ød	н	L	s	Q	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S32S-SVQBR/L-16	40	32	30	250	22	50					TW450	
S40T-SVQBR/L-16	50	40	38	300	27	60	VB□T1604□□	FTGA03512	SV32S	SHXN0509F	TW15P HW35L	3
A32S-SVQBR/L-16	40	32	30	250	22	50					TIVVOOL	

<sup>→</sup> Applicable inserts B94~B96, B108



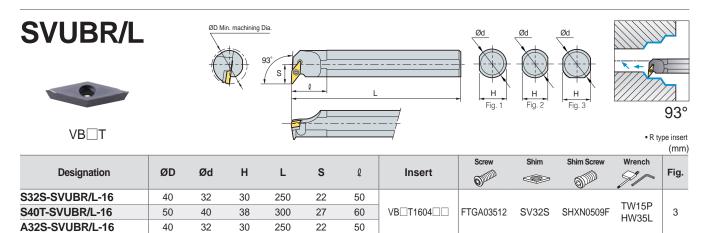


 $VC \square T$ 

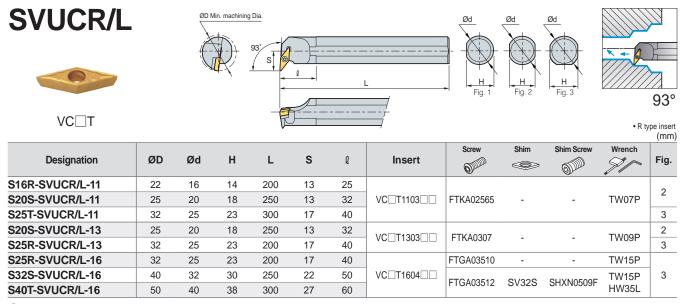


Designation	ØD	Ød	н	L	s	Q	Insert	Screw	Shim	Shim Screw	Wrench	Fig.
S16R-SVQCR/L-11	20	16	14	200	11	25						2
S20S-SVQCR/L-11	25	20	18	250	13	32	VC□T1103□□	FTKA02565	-	-	TW07P	
S25R-SVQCR/L-11	32	25	23	200	17	40						3
S20S-SVQCR/L-13	25	20	18	250	13	32	VC□T1303□□	FTKA0307			TW07P	2
S25R-SVQCR/L-13	32	25	23	200	17	40	VC_11303	FINAUSUI	-	-	10076	3
S25R-SVQCR/L-16	32	25	23	200	17	40		FTGA03510	-	-	TW15P	
S32S-SVQCR/L-16	40	32	30	250	22	50	VC□T1604□□	FTGA03512	SV32S	SHXN0509F	TW15P	3
S40T-SVQCR/L-16	50	40	38	300	27	60		FIGAUSSIZ	37323	SUVINOSOBL	HW35L	

Applicable inserts B97~B99, B109



<sup>→</sup> Applicable inserts B94~B96, B108



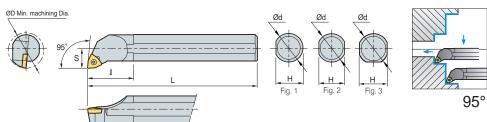
Applicable inserts B97~B99, B109

# B Screw on System

## SWLCR/L







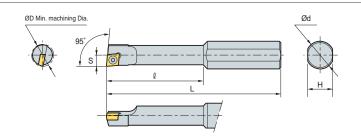
• R type insert (mm)

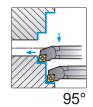
Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench	Fig.
S25R-SWLCR/L-08	32	25	23	200	17	40	WC TOOO4	FTGA0411F	TW15P	
S32S-SWLCR/L-08	40	32	30	250	22	50	WC□T0804□□	FIGAU411F	1 W 15P	3
A25R-SWLCR/L-08	32	25	24	200	17	40	WC□T0804□□	ETC 4 0 4 1 1 E	T\\/45D	1
A32S-SWLCR/L-08	40	32	30	250	22	50	VVC  10804	FTGA0411F	TW15P	3





**CCET** 





• R type insert (mm)

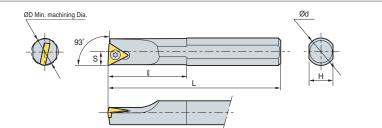
Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench
S10H-SCLCR/L-0305	5	10	9	100	2.5	25	CCET0301□□	FTNA01633	TW06P
S10H-SCLCR/L-0306	6	10	9	100	3.0	25	CCETUSUT	FINAUIOSS	1 0000
S10J-SCLCR/L-0407	7	10	9	110	3.5	30	CCET0401□□	FTNA0238	TW06P
S10J-SCLCR/L-0408	8	10	9	110	4.0	30	CCE10401	FINAUZSO	1 0000

<sup>◆</sup> Applicable inserts B73 ~B77, B103

#### STUBR/L



 $\mathsf{TB} \square \square$ 





93°
• R type insert

(mm)

#### Steel shank type

Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench
S08K-STUBR/L-06	8	8	7	125	4	30		FTNA0204	TW06P
A08F-STUBR/L-06	8	8	7.5	80	4	30	TB□□0601□□R/L	FTNAU204	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

#### Carbide shank type

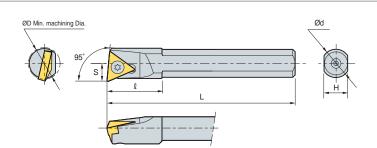
• Garbiao Grianik typo									(mm)
Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench
C08K-STUBR/L-06	10	8	7	125	5		TB□T0601□□	FTNA0204	TW06P
C10K-STUBR/L-06	12	10	9	125	6		IB_10001	FTNAU2U4	TWOOP
E08K-STUBR/L-06	10	8	7	125	5		TP TOGO 1	FTNA0204	TW06P
E10K-STUBR/L-06	12	10	9	125	6		TB□T0601□□		1 VVUOP

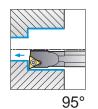
Applicable inserts B87

#### STLBR/L



ТВ□□





• R type insert (mm)

#### Steel shank type

Designation	ØD	Ød	н	L	s	Q	Insert	Screw	Wrench
S06H-STLBR/L-06-SP	8	6	5	100	3.8	12	TB□□0601□□R/L	FTNA0204	TW06P

Applicable inserts B87

<sup>•</sup> Use left handed insert for right handed holder

<sup>•</sup> Use left handed insert for right handed holder

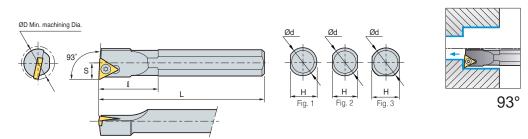
<sup>•</sup> Use left handed insert for right handed holder

# B Compact Mini

#### STUPR/L







#### Steel shank type

• R type insert (mm)

Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench	Fig.
S08K-STUPR/L-08	10	8	7	125	4	18	TP□□0802□□R/L	FTNA02205 TW	TW06P	2
A08F-STUPR/L-08	10	8	7.5	80	5	18			TVVUOP	

#### Carbide shank type

Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench	Fig.
C08K-STUPR/L-08	10	8	7	125	5		TP□T0802□□	FTNA02205	TW06P	
C10K-STUPR/L-11	12	10	9	125	6			FTNA0305	TW09P	
C10M-STUPR/L-11	12	10	9	150	6			1 11VA0303	14409F	
C12M-STUPR/L-11	15	12	11	150	8					
C12Q-STUPR/L-11	15	12	11	180	8		TP□T1103□□			
C16R-STUPR/L-11	20	16	15	200	10			FTNA0307	TW09P	2
C16S-STUPR/L-11	20	16	15	250	10			FTNA0307	144091	
C20R-STUPR/L-11	25	20	18	200	13					
C20S-STUPR/L-11	25	20	18	250	13					
C20R-STUPR/L-16	25	20	18	200	13		TP_T1604	FTNA0408	TW15P	
C20S-STUPR/L-16	25	20	18	250	13					
C25T-STUPR/L-16	32	25	23	300	17					
E08K-STUPR/L-08	10	8	7	125	5			FTNA02205	TW06P	
E10K-STUPR/L-11	12	10	9	125	6			FTNA0305	TW09P	
E10M-STUPR/L-11	12	10	9	150	6					
E12M-STUPR/L-11	15	12	11	150	8					
E12Q-STUPR/L-11	15	12	11	180	8		TP□T1103□□			
E16R-STUPR/L-11	20	16	15	200	10			FTNA0307		
E16S-STUPR/L-11	20	16	15	250	10			1 110/40307	1 11095	2
E20R-STUPR/L-11	25	20	18	200	13					
E20S-STUPR/L-11	25	20	18	250	13					
E20R-STUPR/L-16	25	20	18	200	13					
E20S-STUPR/L-16	25	20	18	250	13		TP□T1604□□	FTNA0408	TW15P	
E25T-STUPR/L-16	32	25	23	300	17					

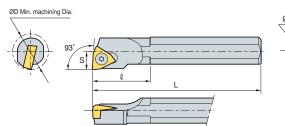
<sup>→</sup> Applicable inserts B90~B93

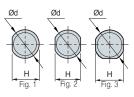
<sup>•</sup> Use left handed insert for right handed holder

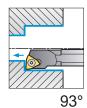
### SWUBR/L



 $WB \square T$ 







• R type insert (mm)

#### Steel shank type

Designation	ØD	Ød	Н	L	S	Q	Insert	Screw	Wrench	Fig.
S05H-SWUBR/L-02	5.5	5	4.5	100	2.75	-	WBGT0201□□R/L	FTNA0203	TW06P	
S08K-SWUBR/L-02	8	8	7	125	4	30	WDG10201LLR/L	FTNA02033	1 0000	
S08K-SWUBR/L-S3	10	8	7	125	5	18	WBGTS302□□R/L	FTNA02205	TW06P	2
A08F-SWUBR/L-02	8	8	7.5	80	4	30	WBGT0201□□R/L	FTNA0203	TW06P	
A08F-SWUBR/L-S3	10	8	7.5	80	5	16	WBGTS302□□R/L	FTNA02205	TW06P	

#### Carbide shank type

(mm) Wrench Designation ØD L S Ød Н Q Insert Fig. 0 C05H-SWUBR/L-02 6 5 4.4 100 3 FTNA0203 TW06P 1 C06H-SWUBR/L-02 7 6 5.4 100 WB□T0201□□ 3.5 C08K-SWUBR/L-02 9 FTNA02033 TW06P 8 125 4.5 7 2 C08K-SWUBR/L-S3 10 7 WB□TS301□□ FTNA02205 TW06P 8 125 4.5 E06H-SWUBR/L-02 TW06P 5.4 100 FTNA0203 7 6 3.5 1 WB□T0201□□ E08K-SWUBR/L-02 9 TW06P 8 4.5 FTNA02033 125 7 2 E08K-SWUBR/L-S3 WB□TS301□□ TW06P FTNA02205 10 8 7 125 5



\* See page B151 for applicable sleeves

<sup>→</sup> Applicable inserts B101

<sup>•</sup> Use left handed insert for right handed holder

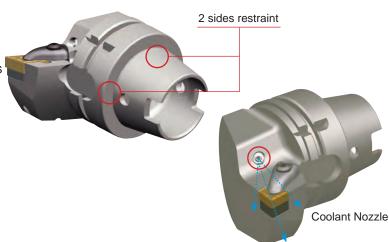


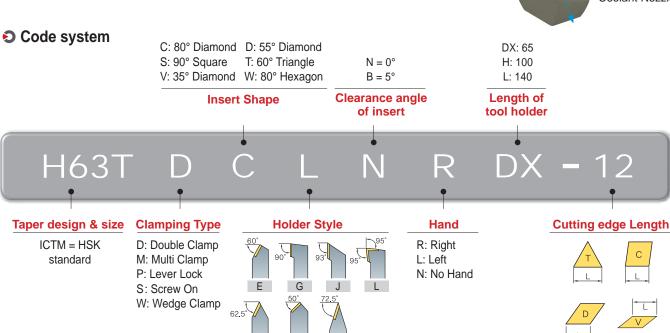
#### **Technical Information for HSK Tooling System**

#### 2 sides restraint - side and taper part

### HSK Tooling System [For Multi-task Machines]

- 2 sides restraint side and taper part
- Toughness guaranteed for static and dynamic movements
- Precision guaranteed on shaft and repeat directions
- Suitable at high speeds
- Suitable for small work pieces
- Coolant Nozzle is easily adjustable

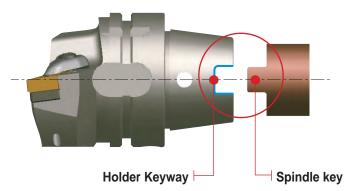




#### ICTM (Interface committee for turning mill)

• Interface for Multi-task machines turning tool, which is tooling system based on ICTM standard from 17 major japanese companies cooperation and is compatible with conventional HSK-A type and common to Multi-task machines and machining centers

#### ◆ Tolerance of keyway has been improved: HSK-T63



#### Tolerance comparison (Example)

		, ,
Remarks	Maximum Tolerance	Minimum Tolerance
ICTM STANDARD HSK-T63	0.075	0.035
ISO STANDARD HSK-A63	0.33	0.08

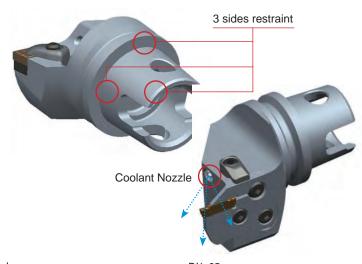
(mm)



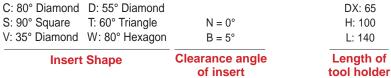
#### 3 Face Binding - Superior precision

### KM Tooling System [For Multi-task Machines]

- 3 Face binding/Superior precision
- Flexible clamping system/Superior rigidity
- Various size & style
- Appropriate for turning & milling
- Adjustable coolant direction with coolant nozzle



#### Code system



# KM50

#### Taper design & size

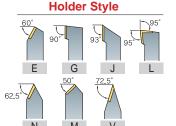
50, 63UT 80ATC, 100

#### **Clamping Type**

D: Double Clamp M: Multi Clamp

P: Lever Lock

S: Screw On W: Wedge Clamp



#### Hand

R: Right L: Left

N: No Hand



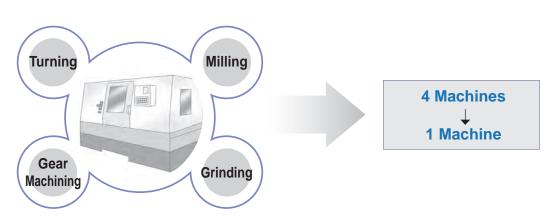
**Cutting edge Length** 







#### Multi-tasking machine



#### KM Tooling system is superior for wide application.

**External Process Internal Process**  **Grooving Process** 

**Drill Process** 

**Parting-off Process** 

KM50, KM63UT, KM80, KM100 Standard and Special type can be produced.



# B Index for HSK/KM Tooling System

### **Index for HSK Tooling System**

Cutting Shape	**************************************							
Designation	H63T-DCLNR/L-DX12	H63T-DCMNN-H/L12	H63T-DDJNR/L-DX15	H63T-DDNNN-H/L15	H63T-PCLNR/L-DX12	H63T-PCMNN-H/L12	H63T-PDJNR/L-DX15	H63T-PDNNN-H/L15
Approach angle	95°	95°	93°	107.5°	95°	95°	93°	107.5°
Page	B231	B231	B231	B231	B232	B232	B232	B232
Turning	•	•	•	•	•	•	•	•
Copying			•	•			•	•
Facing	•	•	•	•	•	•	•	•
Back turning	•	•	•	•	•	•	•	•
Internal turning								
	1				1		1	

Cutting Shape						***		
Designation	H63T-PRGCR-DX12	H63T-PRDCN-H/L12	H63T-SVPBR/L-DX16	H63T-SVVBN-H/L16	H63T-A25K/A32L-DCLNR/L-12	H63T-MCFR/L	H63T-MCHR/L	
Approach angle	-	-	117.5°	117.5°	95°	-	-	
Page	B233	B233	B233	B233	B235	B235	B234	
Turning	•	•	•	•	•	•		
Copying	•	•	•	•		•		
Facing	•	•	•	•	•	•	•	
Back turning	•	•	•	•	•			
Internal turning					•			

### Index for KM Tooling System

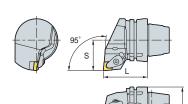
Cutting Shape	1	+			+	
Designation	KM50-DCLNR/L-C12 KM63UT-DCLNR/L-D12	KM50-DCMNN-C12 KM63UT-DCMNN-D12	KM50-DDJNR/L-C15(-3) KM63UT-DCJNR/L-D15(-3)	KM50-DDNNN-C15(-3) KM63UT-DDNNN-D15(-3)	KM50-A25K-DCLNR/L-12 KM50-A32K-DCLNR/L-12 KM63UT-A25K-DCLNR/L-12 KM63UT-A32L-DCLNR/L-12	KM50-PCLNR/L-C12 KM63UT-PCLNR/L-D12
Approach angle	95°	95°	93°	107.5°	95°	95°
Page	B237	B237	B237	B238	B240	B238
Turning	•	•	•	•	•	•
Copying			•	•		
Facing	•	•	•	•	•	•
Back turning	•	•	•	•	•	•
Internal turning					•	
Cutting Shape				1		
Designation	KM50-PCMNN-C12 KM63UT-PCMNN-D12	KM50-PDJNR/L-C15(-3) KM63UT-PDJNR/L-D15(-3)	KM50-PDNNN-C15(-3) KM63UT-PDNNN-D15(-3)	KM50-MCHR/L KM63UT-MCHR/L		
Approach angle	95°	93°	107.5°	-		
Page	B238	B239	B239	B239		
Turning	•	•	•	•		
Copying		•	•	•		
Facing	•	•	•			

Back turning Internal turning

### DCLNR/L



CN





95°

•	R	type	insert
		(	(mm)

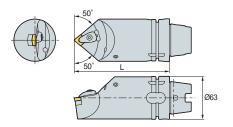
Designation	L	s	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench	Coolant Pipe
H63T-DCLNR/L-DX12	65	45	CN□□1204□□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	CN0605	-	HW30P	CP63T

◆ Applicable inserts B36~B42

### **DCMNN**



CN□□





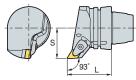
											(mm)
Designation	L	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench	Coolant Pipe
H63T-DCMNN-H12	100	CN□□1204□□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	CN0605	KHA0808	HW30P	CP63T
H63T-DCMNN-L12	140	CINLL 1204LL	CVH4	CHAUSTO	3044V	FINAU410	3PKU/14	CINUOUS	NHAUOUO	HWSUP	CP631

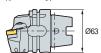
◆ Applicable inserts B36~B42

### DDJNR/L



 $\mathsf{DN}\square\square$ 







93°

• R type insert

Designation	L	S	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench	Coolant Pipe
H63T-DDJNR/L-DX15	65	45	DN□□1506□□	CVH4	CHX0518	SD43V	- FTKA0410	SPR0714	CN0605		HW30P	CP63T
H63T-DDJNR/L-DX15-3	65	45	DN 1504	UV14	CHV0010	SD44V	- F1NA0410	3FKU/ 14	CINODOS	-	HVVJUP	UF 03 1

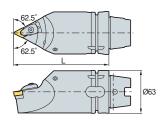
◆ Applicable inserts B43~B48

### **DDNNN**



 $\mathsf{DN} \square \square$ 







107.5°

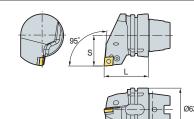
											(mm)
Designation	L	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench	Coolant Pipe
H63T-DDNNN-H15	100	DN 1506	CVH4	CHX0518	SD43V	FTKA0410	SPR0714	CN0605	KHA0808	HW30P	CP63T
H63T-DDNNN-L15	140	DN1500	CVI14	CHAUSTO	3D43V	FINAU410	3FK0/14	CINUOUS	KHAUOUO	ПИУЗОР	CF031
H63T-DDNNN-H15-3	100	DN□□1504□□	CVH4	CHX0518	SD44V	FTKA0410	SPR0714	CN0605	KHA0808	HW30P	CP63T
H63T-DDNNN-L15-3	140		UV114	CHV0210	3D44V	FINAU410	3FR0/14	CINODOS	KHA0000	HVVJUP	CFUSI

◆ Applicable inserts B43~B48

### PCLNR/L



CN





95°

• R type insert

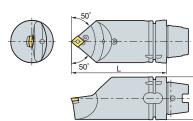
Designation	L	s	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench	Coolant Pipe
H63T-PCLNR/L-DX12	65	45	CN 1204 1	LV4N	VHX0820N	SC42N	SP4N	LSPS4	CN0605	-	HW30L	CP63T

<sup>◆</sup> Applicable inserts B36~B42

### **PCMNN**



CN





95°

	(mm)
:h	Coolant Pipe
<b>∞</b>	

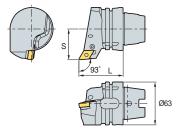
											(111111)
Designation	L	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench	Coolant Pipe
H63T-PCMNN-H12	100	CN 1204	LV4N	VHX0820N	SC42N	SP4N	LSPS4	CN0605	KHA0808	HW30L	CP63T
H63T-PCMNN-I 12	140	CIN1204	LV4IN	VIIAU0ZUIN	3042N	3F4IN	LSP34	CINODOS	NHMU0U0	HVVSUL	OF031

Applicable inserts B36~B42

### PDJNR/L



 $\mathsf{DN} \square \square$ 





95°

• R type insert

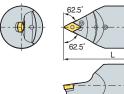
												(111111)
Designation	L	s	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench	Coolant Pipe
H63T-PDJNR/L-DX15	65	45	DN 1506	LV4BN	VHX0821N	SD42N	SP4N	LSPS4	CN0605		HW30L	CP63T
H63T-PDJNR/L-DX15-3	65	45	DN1504	LV4DIN	VIIVOZ IIV	SD43N	SF4IN	LOP34	CINODOS	-	HWOOL	CF031

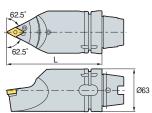
Applicable inserts B43~B48

### **PDNNN**



 $\mathsf{DN} \square \square$ 







107.5°

(mm)	
------	--

Designation	L	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench	Coolant Pipe
H63T-PDNNN-H15	100	DN□□1506□□	LV4BN	VHX0821N	SD42N	SP4N	LSPS4	CN0605	KHA0808	HW30L	CP63T
H63T-PDNNN-L15	140		LV4DIN	V II A U O Z I I N	SD4ZIN	SP4N	L5P54	CINUOUS	KHAU8U8	HVV30L	CPOST
H63T-PDNNN-H15-3	100	DN□□1504□□	LV4BN	VHX0821N	CD43N	004N 10004	CN0605	ONOGOE KUMOOO	LIMON	ODOOT	
H63T-PDNNN-L15-3	140				N SD43N	3F4N	SP4N LSPS4	CINODOS	KHA0808	HW30L	CP63T

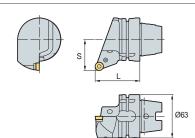
<sup>◆</sup> Applicable inserts B43~B48



### PRGCR/L



RCMX1204M0





• R type insert (mm)

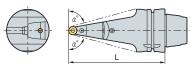
Designation	L	S	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench	Coolant Pipe
H63T-PRGCR/L-DX12	65	45	RCMX1204M0	LR12	VHX0617	SR12	SP3	LSPS3	CN0605	-	HW25L	CP63T

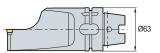
Applicable inserts B83, B105

### **PRDCN**



RCMX1204M0







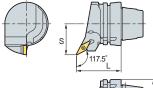
												(mm)
Designation	L	α°	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench	Coolant Pipe
H63T-PRDCN-H12	100	69	RCMX1204M0	LR12	VHX0617	SR12	SP3	LSPS3	CN0605		HW25L	CP63T
H63T-PRDCN-L12	140	75	RCIVIA 1204IVIU	LKIZ	VIIV0011	SKIZ	373	Loros	CINODOS	-	HWZ9L	CPOST

→ Applicable inserts B83, B105

### SVPBR/L



 $VB \square T$ 







117.5°

• R type insert (mm)

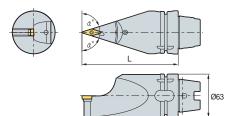
Designation	L	S	Insert	Screw	Shim Screw	Shim	Nozzle	Plug	Wrench	Wrench	Coolant Pipe
H63T-SVPBR/L-DX16	65	45	VB□T1604□□	FTGA03512	SHXN0509F	SV32S	CN0605	-	TW15P	HW32L	CP63T

◆ Applicable inserts B94~B96, B108

### **SVVBN**



 $VB \square T$ 





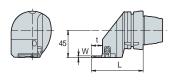
117.5°

											(mm)
Designation	L	α°	Insert	Screw	Shim Screw	Shim	Nozzle	Plug	Wrench	Wrench	Coolant Pipe
H63T-SVVBN-H16	100	66.5	VB□T1604□□	FTGA03512	SHXN0509F	SV32S	CN0605	KHA0808	TW15P	HW32L	CP63T
H63T-SVVBN-L16	140	72.5	VB_11004	FIGAUSSIZ	SHANUSUSE	3 7 3 2 3	CINOOOS	KHAUOUO	IWIDE	HWJZL	CF031

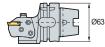
◆ Applicable inserts B94~B96, B108

### MCHR/L









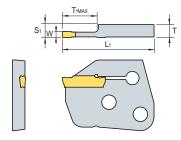
• R type insert (mm)

Designation	L	t	W	T-MAX	Insert	Cartridge	Clamp	Clamp Screw	Hinge Screw	Screw	Nozzle	Plug	Wrench	Coolant Pipe
H63T-MCHR/L	85	18	3	16	MGMN	MCER/L3-T16								
	85	18	4	16	MGMR/L	MCER/L4-T16	CLIVON	DIMODADE	DLIAGOAG	ELIC A OCAO	CNIOCOE		1111/401	CDCCT
	89	22	5	20	MGGN	MCER/L5-T20	CHX8N	DHAU818F	KHAU613	FHGA0618	CN0605	-	HW40L	CP63T
	89	22	6	20	MRMN	MCER/L6-T20								

### MCER/L (Cartridge)



MGMN / MGMR/L MGGN / MRMN



• R type insert (mm)

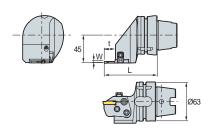
	Decimation		1.	6.	T-MAX		nsert	Tool holders
	Designation		L1	S <sub>1</sub>	I-WAX	W	Designation	1001 noiders
MCER/L	3-T16	6.00	44.5	6.35	16	3	MGMN	
	4-T16	5.97	44.5	6.35	16	4	MGMR/L	H63T-MCHR/L
	5-T20	5.87	48.5	6.35	20	5	MGGN	H031-WCHR/L
	6-T20	5.82	48.5	6.35	20	6	MGMN	

<sup>→</sup> Applicable inserts C28~C30

### MCHR/L



MFMN300 MGMN400



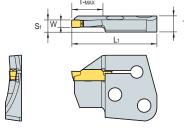


• R type insert (mm)

							(****)
Designation	L	t	w	T-MAX	Insert	Cartridge	Clamp Clamp Screw Hinge Screw Screw Nozzle Plug Wrench Coolant Pi
H63T-MCHR/L	85	18	3	16		MCFR/L3-24/35-T16	
	85	18	3	16		MCFR/L3-29/40-T16	
	85	18	3	16	MFMN300	MCFR/L3-34/50-T16	
	85	18	3	16		MCFR/L3-44/70-T16	- CHX8N DHA0818F RHA0613 FHGA0618 CN0605 - HW40L
	85	18	3	16		MCFR/L3-64/99-T16	CHAON DRAU010F KRAU013 FRIGAU016 CINUOUS - HVV4UL
	85	18	3	16		MCFR/L4-44/60-T16	
	85	18	3	16	MGMN400	MCFR/L4-60/120-T16	
	85	18	3	16		MCFR/L4-112/200-T16	

### MCFR/L (Cartridge)





• R type insert (mm)

	)aaismatian	_	1.	S <sub>1</sub>	T-MAX	ı	nsert	Tool holders
U	Designation	1	L <sub>1</sub>	31	I-WAX	W	Designation	1001 holders
MCFR/L3-	24/35-T16	8.00	44.5	6.35	16	3		
	29/40-T16	8.00	44.5	6.35	16	3		
	34/50-T16	8.00	44.5	6.35	16	3	MFMN300	
	44/70-T16	8.00	44.5	6.35	16	3		LICOT MOUD/I
	64/99-T16	8.00	44.5	6.35	16	3		H63T-MCHR/L
MCFR/L4-	44/60-T16	7.97	44.5	6.35	16	4		
	60/120-T16	7.97	44.5	6.35	16	4	MGMN400	
	112/200-T16	7.97	44.5	6.35	16	4		

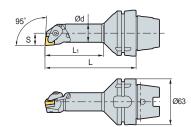
<sup>→</sup> Applicable inserts C28~C30

### DCLNR/L











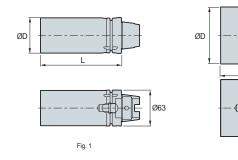
95°

• R type insert (mm)

Designation	ØD	Ød	L	L <sub>1</sub>	s	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench	Coolant Pipe
H63T-A25K-DCLNR/L-12	32	25	125	80	17	CN□□1204□□	CVH4	CHX0518	00401/	FTKA0410	CDD0744	CNIOCOE		HW30P	CP63T
H63T-A32L-DCLNR/L-12	40	32	140	98	22		CVH4	CHX0016	3C42V	FINAU410	5PRU/14	CINODOS	-	HW30P	CP631

<sup>→</sup> Applicable inserts B36~B42

### **Blank Tool**

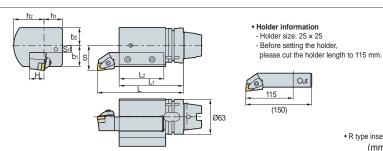


r	Y	١	r	Υ	1

				(11111)
Designation	ØD	L	Fig.	Coolant Pipe
HSK-T63-BL62-102	62	102	1	
HSK-T63-BL62-142	62	142	2	CP63T
HSK-T63-BL100-67	100	67	1	CF031
HSK-T63-BL120-70	120	70	2	

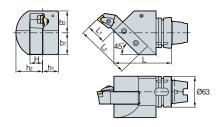


### EV2525R/L-112



															(mm)
Designation	L	L <sub>1</sub>	L <sub>2</sub>	Н	h <sub>1</sub>	h <sub>2</sub>	S	<b>S</b> 1	<b>b</b> 1	<b>b</b> <sub>2</sub>	Screw	Plug	Nozzle	Wrench	Coolant Pipe
EV2525R/L-112	150	112	77	25	32	53	45	12.75	37.75	32	KHA1231	KHA0808	CN0605	HW50L	CP63T

### EV2525R/L-115



#### Holder information

- Holder into mace...
   Holder size: 25 x 25
   Before setting the holder,
  please cut the holder length to 110 mm.

please c	ut tne
60)	Cut
110	
(150)	-

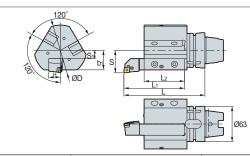
R type insert

(mm)

• R type insert

Designation	L	L <sub>1</sub>	L <sub>2</sub>	Н	h <sub>1</sub>	h <sub>2</sub>	<b>b</b> 1	b <sub>2</sub>	Screw	Plug	Nozzle	Wrench	Coolant Pipe
EV2525R/L-115	115	40	110	25	32	53	45	45	KHA1231	KHA0808	CN0605	HW50L	CP63T

### EV2020R/L-105-3





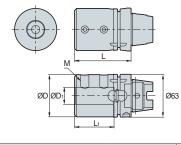
- Before setting the holder, please cut the holder length to 105 mm.

p		
	Cut	
105		
(125)	_	

• R type insert (mm)

	Designation	L	L <sub>1</sub>	L <sub>2</sub>	Н	ØD	S	<b>S</b> 1	<b>B</b> <sub>1</sub>	Screw	Plug	Nozzle	Wrench	Coolant Pipe
E	EV2020R/L-105-3	140	105	70	20	90	40	15	35	KHA1231	KHA0808	CN0605	HW50L	CP63T





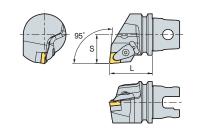
 R type insert (mm)

Designation	ØD	D1	L	L <sub>1</sub>	M	Screw	Wrench	Coolant Pipe
B08-65	28	8	65	40	M8			
B10-70	35	10	70	45	M8			
B12-70	42	12	70	45	M8			
B16-75	48	16	75	50	M10	KHA1218	HW50L	CP63T
B20-75	52	20	75	50	M10	KHAIZIO	HWOOL	CP031
B25-83	62	25	83	58	M12			
B32-87	62	32	87	62	M12			
B40-97	65	40	97	72	M16			

### DCLNR/L









95°

• R type insert

Designation	L	s	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench
KM50-DCLNR/L-C12	50	35	CN□□1204□□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	CN0605		HWAOD
KM63UT-DCLNR/L-D12	60	43	CIN 1204	CVH4	CUV0210	3C44V	FINAU410	3PKU/14	CNUOUS	-	HW30P

<sup>◆</sup> Applicable inserts B36~B42

### **DCMNN**



CN□□







										(mm)
Designation	L	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench
KM50-DCMNN-C12	50	CN□□1204□□	CVH4	CHX0518	SC44V	FTKA0410	SPR0714	CN0605	KHA0808	HW30P
KM63UT-DCMNN-D12	60	CNUL 1204	CVH4	CUVOSTO	3C44V	FINAU410	3PRU/14	CNOOOS	NHAU0U0	HVVSUP

<sup>◆</sup> Applicable inserts B36~B42

### DDJNR/L



 $\mathsf{DN} \square \square$ 









93°

• R type insert

Designation	L	s	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench
KM50-DDJNR/L-C15	50	35	DN□□1506□□	CVH4	CHX0518	SD43V	FTKA0410	SPR0714	CN0605	-	HW30P
KM50-DDJNR/L-C15-3	50	35	DN□□1504□□	CVH4	CHX0518	SD44V	FTKA0410	SPR0714	CN0605	-	HW30P
KM63UT-DDJNR/L-D15	60	43	DN□□1506□□	CVH4	CHX0518	SD43V	FTKA0410	SPR0714	CN0605	-	HW30P
KM63UT-DDJNR/L-D15-3	60	43	DN□□1504□□	CVH4	CHX0518	SD44V	FTKA0410	SPR0714	CN0605	-	HW30P

Applicable inserts B43~B48

### **DDNNN**













117.5°

(mm)

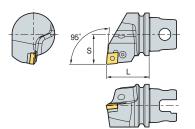
Designation	L	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench
KM50-DDNNN-C15	50	DN□□1506□□	CVH4	CHX0518	SD43V	FTKA0410	SPR0714	CN0605	KHA0808	HW30P
KM50-DDNNN-C15-3	50	DN□□1504□□	CVH4	CHX0518	SD44V	FTKA0410	SPR0714	CN0605	KHA0808	HW30P
KM63UT-DDNNN-D15	60	DN□□1506□□	CVH4	CHX0518	SD43V	FTKA0410	SPR0714	CN0605	KHA0808	HW30P
KM63UT-DDNNN-D15-3	60	DN□□1504□□	CVH4	CHX0518	SD44V	FTKA0410	SPR0714	CN0605	KHA0808	HW30P

<sup>◆</sup> Applicable inserts B43~B48

### PCLNR/L



CN





95°

• R type insert (mm)

Designation	L	S	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench
KM50-PCLNR/L-C12	50	35	CN□□1204□□	LV4N	VHX0820N	SC42N	SP4N	LSPS4	CN0605		HW30L
KM63UT-PCLNR/L-D12	60	43	CIN1204	LV4IN	VIIAU0ZUIN	3C42N	3P4N	LSP34	CINUOUS		HVVSUL

<sup>●</sup> Applicable inserts B36~B42

### **PCMNN**



CN









95°

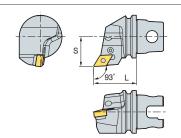
										(111111)
Designation	L	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench
KM50-PCMNN-C12	50	CN□□1204□□	LV4N	VHX0820N	SC42N	SP4N	LSPS4	CN0605	KHA0808	HW30L
KM63UT-PCMNN-D12	60	CN□□1204□□	LV4IN	VIIAU0ZUIN	3042N	SF4IN	LOP 34	CINODOS	NUMU000	HVVSUL

<sup>◆</sup> Applicable inserts B36~B42

### PDJNR/L









93°

• R type insert (mm)

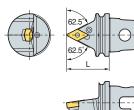
Designation	L	s	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench
KM50-PDJNR/L-C15	50	35	DN□□1506□□	LV4BN	VHX0821N	SD42N	SP4N	LSPS4	CN0605	-	HW30L
KM50-PDJNR/L-C15-3	50	35	DN□□1504□□	LV4BN	VHX0821N	SD43N	SP4N	LSPS4	CN0605	-	HW30L
KM63UT-PDJNR/L-D15	60	43	DN□□1506□□	LV4BN	VHX0821N	SD42N	SP4N	LSPS4	CN0605	-	HW30L
KM63UT-PDJNR/L-D15-3	60	43	DN□□1504□□	LV4BN	VHX0821N	SD43N	SP4N	LSPS4	CN0605	-	HW30L

<sup>◆</sup> Applicable inserts B43~B48

### **PDNNN**



 $\mathsf{DN}\square\square$ 





107.5°

(mm)

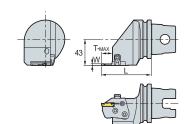
Designation	L	Insert	Lever	Screw	Shim	Shim Pin	Punching	Nozzle	Plug	Wrench
KM50-PDNNN-C15	50	DN□□1506□□	LV4BN	VHX0821N	SD42N	SP4N	LSPS4	CN0605	KHA0808	HW30L
KM50-PDNNN-C15-3	50	DN 1504	LV4BN	VHX0821N	SD43N	SP4N	LSPS4	CN0605	KHA0808	HW30L
KM63UT-PDNNN-D15	60	DN□□1506□□	LV4BN	VHX0821N	SD42N	SP4N	LSPS4	CN0605	KHA0808	HW30L
KM63UT-PDNNN-D15-3	60	DN 1504	LV4BN	VHX0821N	SD43N	SP4N	LSPS4	CN0605	KHA0808	HW30L

<sup>→</sup> Applicable inserts B43~B48

### MCHR/L



MGMN / MGMR/L MGGN / MRMN





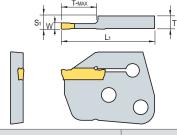
• R type insert (mm)

														()
Designation	s	L	t	w	T-MAX	Insert	Cartridge	Clamp	Clamp Screw	Hinge Screw	Screw	Nozzle	Plug	Wrench
	35	72.5	18	3	16		MCER/L3-T16							
KM50-MCHR/L	35	72.5	18	4	16		MCER/L4-T16	CHX8N	DHA0818F	RHA0613	FHGA0618	CN0605	-	HW40L
KIVIOU-IVICHK/L	35	76.5	22	5	20	MGMN	MCER/L5-T20	CHAON	DHAUGIGE	KHAUU13	FIIGAUUTO	CINUOUS	-	HVV4UL
	35	76.5	22	6	20	MGMR/L	MCER/L6-T20							
	43	81.5	18	3	16	MGGN	MCER/L3-T16							
KM63UT-MCHR/L	43	81.5	18	4	16	MRMN	MCER/L4-T16	CHAOVI	DUMONANE	RHA0613	EUC A0610	CN0605	-	HW40L
	43	85.5	22	5	20		MCER/L5-T20	── CHX8N DHA0818F F	KHAU013	3 FHGA0618	CINUOUS	-	HVV4UL	
	43	85.5	22	6	20		MCER/L6-T20							

<sup>◆</sup> Applicable inserts C28~C30

### MCER/L (Cartridge)





• R type insert (mm)

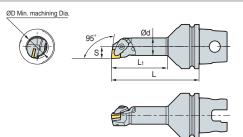
	Decimation	-	1.	<b>S</b> 1	T-MAX	I	nsert	Tool holders
	Designation	<b>'</b>	L1	31	I-WAX	W	Designation	1001 holders
MCER/L	3-T16	6.00	44.5	6.35	16	3	MGMN	
	4-T16	5.97	44.5	6.35	16	4	MGMR/L	H-63T-MCHR/L
	5-T20	5.87	48.5	6.35	20	5	MGGN	H-031-WCHR/L
	6-T20	5.82	48.5	6.35	20	6	MRMN	

<sup>→</sup> Applicable inserts C28~ C30











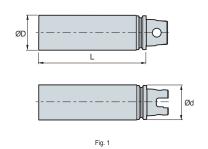
95°

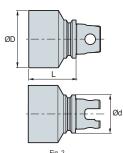
• R type insert (mm)

														(111111)
Designation	ØD	Ød	L	L <sub>1</sub>	s	Insert	Clamp	Screw	Shim	Shim Screw	Spring	Nozzle	Plug	Wrench
KM50-A25K-DCLNR/L-12	32	25	125	80	17									
KM50-A32L-DCLNR/L-12	40	32	140	98	22	CN□□1204□□	CVH4	CLIVOE40	00401/	FTKA0410	CDD074.4	CN0605		HW30P
KM63UT-A25K-DCLNR/L-12	32	25	125	80	17	GIN12U4	UV14	CUV0219	3042V	FINAU410	OFRU/14	CINODOS	-	HW30P
KM63UT-A32L-DCLNR/L-12	40	32	140	98	22									

<sup>◆</sup> Applicable inserts B36~B42

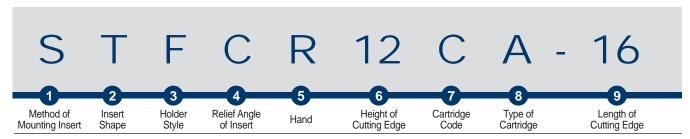
### **Blank Tool**

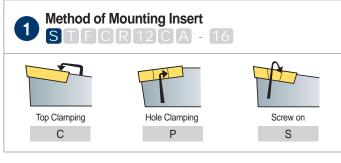


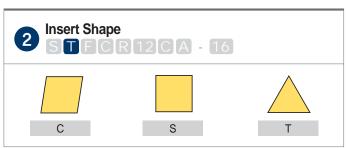


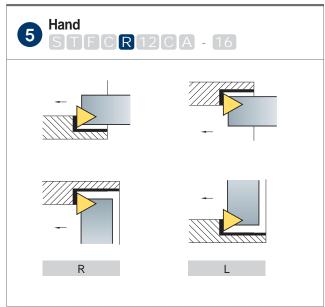
(mm)

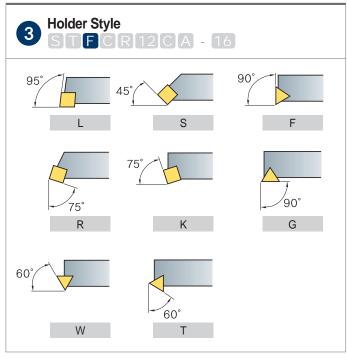
				(''''')
Designation	ØD	L	Ød	Fig.
KM50-BL7562	45	62	50	1
KM50-BL10562	105	62	50	2
KM63UT-BL65200	65	200	50	1
KM63UT-BL115150	115	150	50	2

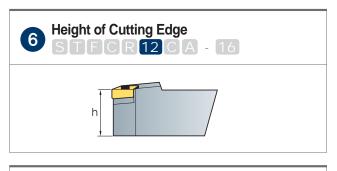


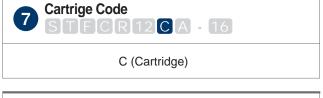




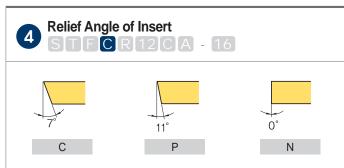


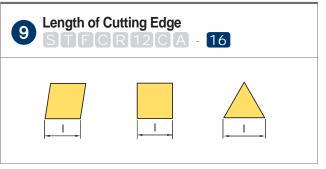












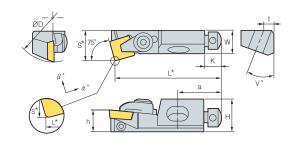
# **B** Index for Cartridge

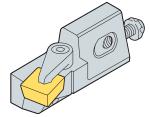
		Cutting Shape		Turning	Copying	Facing	Chamfering	Applicable inserts	Page
	CSKPR/L		10CA-09 12CA-12	•				SP□R0903□□ SP□R1203□□	B243
٤	CTTPR/L		10CA-11 12CA-16	•				TP□R1103□□ TP□R1603□□	B244
Clamp on System	CTWPR/L		10CA-11 12CA-16	•				TP□R1103□□ TP□R1603□□	B245
O	CTFPR/L		10CA-11 12CA-16	•		•		TP□R1103□□ TP□R1603□□	B243
	CTSPR/L		10CA-11 12CA-16	•				TP□R1103□□ TP□R1603□□	B244
	SSKCR/L		10CA-09 12CA-12	•				SC□T09T3□□ SC□T1204□□	B245
ر.	SSSCR/L		10CA-09 12CA-12	•			•	SC□T09T3□□ SC□T1204□□	B246
Screw on System	STFCR/L		10CA-11 12CA-16	•		•		TC   T1102	B246
U)	STTCR/L		10CA-11 12CA-16	•		•		TC T1102 TC T16T3 TC	B247
	STWCR/L		10CA-11 12CA-16	•				TC   T1102	B247

### CSKPR/L



SP□R





• R type insert (mm)

De	signation	ØD	Н	W	L*	S*	h	K	$\alpha^{\circ}$	β°	а	t	v°	Insert
CSKPR/L	10CA-09	40	15	11	50	14	10	8	6	0	20	5	20	SP□R0903□□
	12CA-12	50	20	15	55	20	12	8	6	0	20	6	20	SP□R1203□□

→ Applicable inserts B76~B77

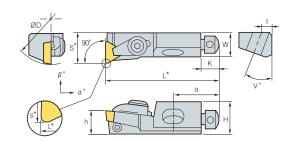
· a base Insert : r = 0.8 D = ØD Min. machining Dia.

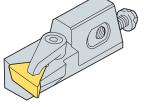
	Parts	Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CSKPR/L	10CA-09	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-12	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

### CTFPR/L



 $\mathsf{TP} \square \mathsf{R}$ 





• R type insert

(mm)

De	signation	ØD	Н	W	L*	S*	h	K	α°	β°	а	t	٧°	Insert
CTFPR/L	10CA-11	40	15	11	50	14	10	8	6	0	20	5	20	TP□R1103□□
	12CA-16	50	20	15	55	20	12	8	6	0	20	6	20	TP□R1603□□

→ Applicable inserts B81~B83

 $\cdot$  a base Insert : r = 0.4 ( I =11) r = 0.8 ( I = 16) D = ØD Min. machining Dia.

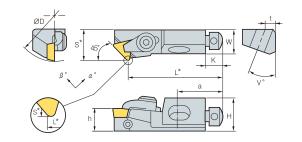
	Parts	Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CTFPR/L	10CA-11	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW25L	HW20L
	12CA-16	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW30L	HW20L

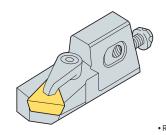
### B Clamp on System

### CTSPR/L



TP□R





• R type insert (mm)

De	esignation	ØD	Н	W	L*	S*	h	K	α°	β°	а	t	٧°	Insert
CTSPR/L	10CA-11	40	15	11	44	14	10	8	4	0	20	5	20	TP□R1103□□
	12CA-16	50	20	15	47	20	12	8	5	0	20	6	20	TP□R1603□□

→ Applicable inserts B81~B83

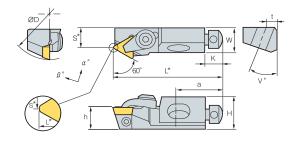
 $\cdot$  a base Insert : r = 0.4 ( I =11) r = 0.8 ( I = 16) D = ØD Min. machining Dia.

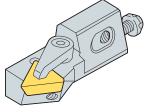
	Parts	Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CTSPR/L	10CA-11	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW25L	HW20L
	12CA-16	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW30L	HW20L

### CTTPR/L



 $\mathsf{TP} \square \mathsf{R}$ 





• R type insert

(mm) Designation ØD Н W L\* S\* h K  $\alpha^{\circ}$ β° ٧° Insert а CTTPR/L 10CA-11 40 9 10 20 15 11 50 8 5 0 20 5 TP□R1103□□ 12CA-16 50 20 55 20 8 5 0 20 6 20 TP□R1603□□ 15 12

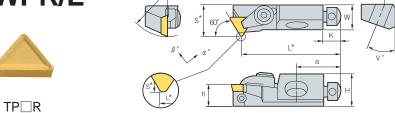
→ Applicable inserts B81~B83

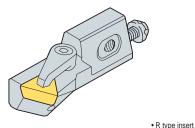
 $\cdot$  a base Insert : r = 0.8 D = ØD Min. machining Dia.

	Parts	Clamp	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CTTPR/L	10CA-11	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW25L	HW20L
	12CA-16	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW30L	HW20L

### CTWPR/L







	(mm)
Insert	

De	signation	ØD	Н	W	L*	S*	h	K	α°	β°	а	t	٧°	Insert
CTWPR/L	10CA-11	40	15	11	44	14	10	8	5	0	20	5	20	TP□R1103□□
	12CA-16	50	20	15	47	20	12	8	5	0	20	6	20	TP□R1603□□

→ Applicable inserts B81~B83

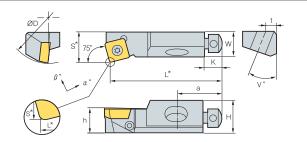
· a base Insert : r = 0.8 D = ØD Min. machining Dia.

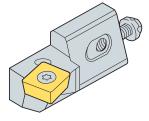
	Parts Clamp		Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
CTWPR/L	10CA-11	CA05R	AZ0508F	KHA0408	RHA0620	WA0602	TW25L	HW20L
	12CA-16	CA06R	AZ0508F	KHA0412	RHA0625	WA0602	TW30L	HW20L

### SSKCR/L









• R type insert (mm)

De	signation	ØD	Н	W	L*	S*	h	K	α°	β°	а	t	٧°	Insert
SSKCR/L	10CA-09	40	15	11	50	14	10	8	0	-4	20	5	20	SC□□09T3□□
	12CA-12	50	20	15	55	20	12	8	0	-4	20	6	20	SC□□1204□□

◆ Applicable inserts B74~B75, B94

D = ØD Min. machining Dia.  $\cdot$  a base Insert : r = 0.8

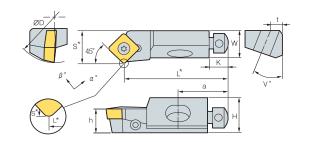
	Parts	Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
SSKCR/L	10CA-09	FTGA03508	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-12	FTGA0411F	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

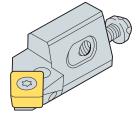
## Screw on System

### SSSCR/L









• R type insert (mm)

	( )
Insert	
00000000	

De	signation	ØD	Н	W	L*	S*	h	K	α°	β°	а	t	٧°	Insert
SSSCR/L	10CA-09	40	15	11	44	14	10	8	-5	0	20	5	20	SC□□09T3□□
	12CA-12	50	20	15	47	20	12	8	-5	0	20	6	20	SC□□1204□□

→ Applicable inserts B74~B75, B94

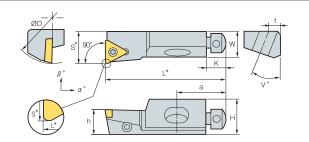
· a base Insert : r = 0.8 D = ØD Min. machining Dia.

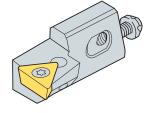
	Parts	Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
SSSCR/L	10CA-09	FTGA03508	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-12	FTGA0411F	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

### STFCR/L



 $TC \square \square$ 





• R type insert (mm)

De	esignation	ØD	Н	W	L*	S*	h	K	α°	β°	а	t	٧°	Insert
STFCR/L	10CA-11	40	15	11	50	14	10	8	0	-3	20	5	20	TC□□1102□□
	12CA-16	50	20	15	55	20	12	8	0	-3	20	6	20	TC□□16T3□□

→ Applicable inserts B79~B80, B95

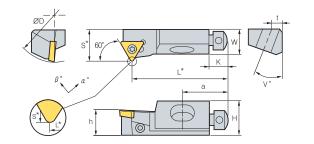
 $\cdot$  a base Insert : r = 0.4 ( I =11) r = 0.8 ( I = 16) D = Min. machining Dia.

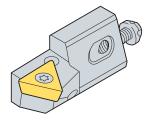
	Parts	Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
STFCR/L	10CA-11	FTKA02565	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-16	FTKA03508	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

### STTCR/L



 $\mathsf{TC} \square \square$ 





R type insert

(m	m)

Designation STTCR/L 10CA-11		ØD	Н	W	L*	S*	h	K	α°	β°	а	t	٧°	Insert
STTCR/L	10CA-11	40	15	11	50	9	10	8	-5	0	20	5	20	TC□□1102□□
	12CA-16	50	20	15	47	20	12	8	-3	0	20	6	20	TC□□16T3□□

→ Applicable inserts B79~B80, B95

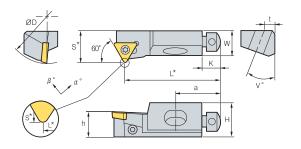
 $\cdot$  a base Insert : r = 0.4 ( I =11) r = 0.8 ( I = 16) D = Min. machining Dia.

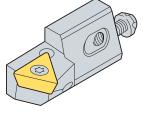
	Parts	Screw	Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
STTCR/L	10CA-11	FTKA02565	AZ0508F	KHA0408	RHA0620	WA0602	TW 07P	HW20L
	12CA-16	FTKA03508	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

### STWCR/L



 $\mathsf{TC} \square \square$ 





R type insert

(mm)

De	signation	ØD	Н	W	L*	S*	h	K	α°	β°	а	t	٧°	Insert
STWCR/L	10CA-11	40	15	11	44	14	10	8	0	-4	20	5	20	TC□□1102□□
	12CA-16	50	20	15	47	20	12	8	-5	0	20	6	20	TC□□16T3□□

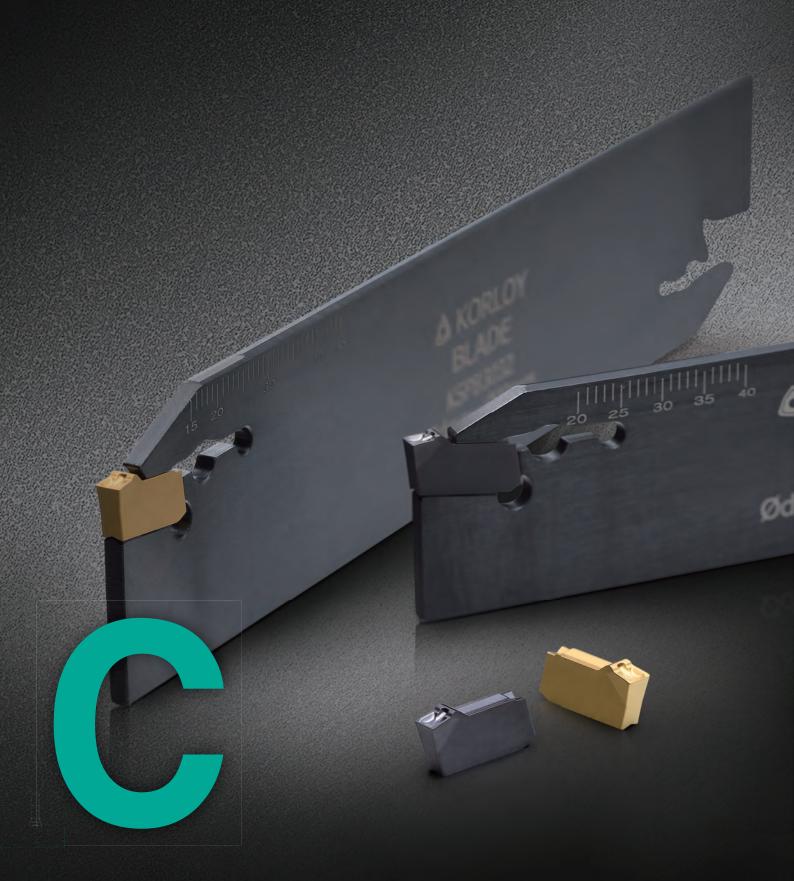
→ Applicable inserts B79~B80, B95

 $\cdot$  a base Insert : r = 0.4 ( I =11) r = 0.8 ( I = 16) D = Min. machining Dia.

			Axial Adjust Screw	Radial Adjust Screw	MountingScrew	Washer	Wrench	Wrench
STWCR/L	10CA-11	FTKA02565	AZ0508F	KHA0408	RHA0620	WA0602	TW 15P	HW20L
	12CA-16	FTKA03508	AZ0508F	KHA0412	RHA0625	WA0602	TW 15P	HW20L

# **MULTI FUNCTIONAL TOOLS**

Korloy Multi-functional tools can be used for machining in grooving, parting-off, facing and forming applications. Its design ensures superior machinability and productivity.



**Application Example** 

C02 Application Example

C04 Technical Information for Multi

Functional tools

**K Notch** 

C55 Technical Information for

K Notch

C57 K Notch

**KGT** 

C07 Technical Information for KGT

C12 KGT

C25 KGT Blade for Parting off

**Saw Man** 

C60 Technical Information for

Saw Man

C61 Saw Man

**MGT** 

C26 Technical Information for MGT

C28 MGT

C36 MGT (Face grooving)

Saw Man-X

C63 Technical Information for

Saw Man-X

C65 Saw Man-X

KGT/MGT Cartridge

C39 Technical Information for KGT/MGT Cartridge

C40 KGT/MGT Cartridge Holder

C41 KGT CartridgeC42 MGT Cartridge

**Fine Tools** 

C67 Technical Information for

Fine Tools

C68 Fine Tools

**MGT Aluminum Wheel Series** 

C43 Technical Information for MGT

Aluminum Wheel

C44 MGT Aluminum Wheel

**Grooving/Parting off** 

C70 IGH

C70 DBH

C71 GFIP

TB/TB-M

C47 Technical Information for

TB/TB-M

C51 TB/TB-M

**Special Order Form** 

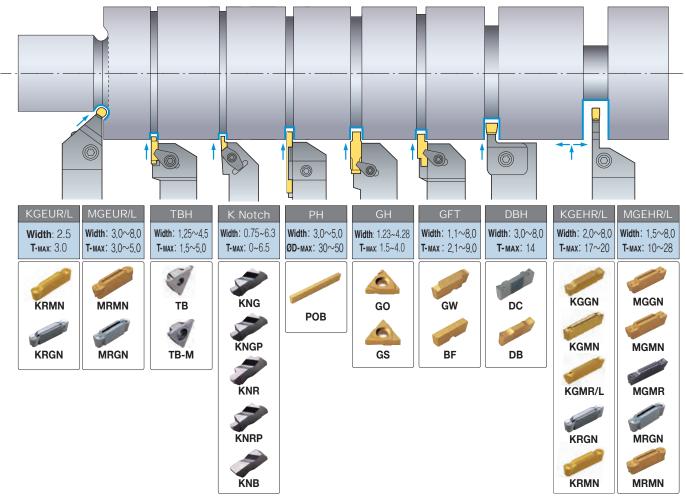
C72 Special Order Form for MGT

C73 Special Order Form for

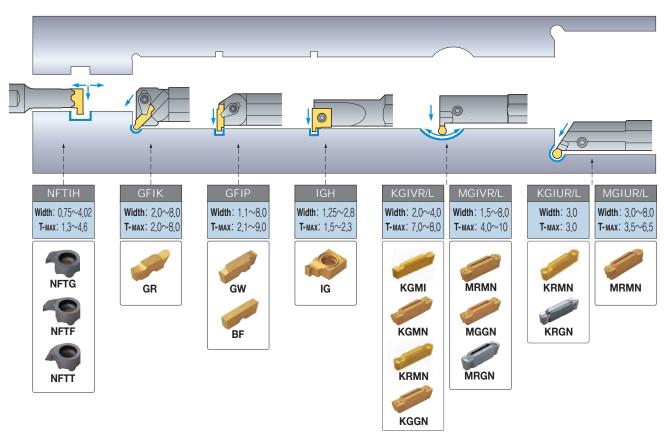
V-Pulley Insert

# C Application Example

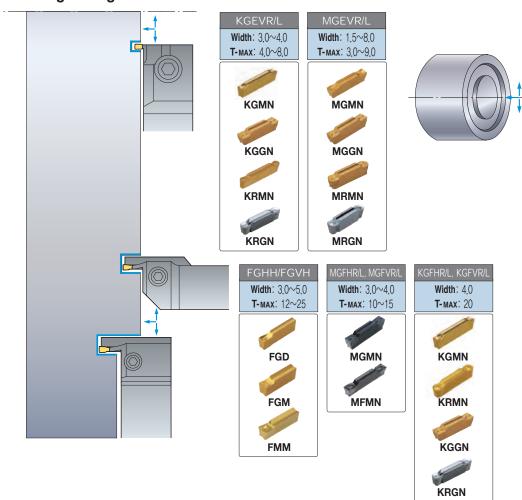
#### For external machining



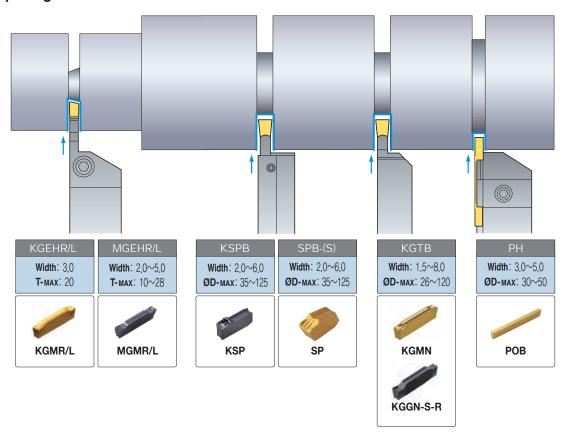
#### For internal machining



#### For face grooving



#### For parting off

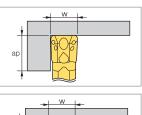


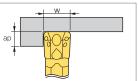
#### **Technical Information for Multi Functinal Tools Series**

#### **Turning and Grooving**

#### Selection of insert

- Feed rate
- Decide maximum feed rate after considering the insert's characteristics and machine capabilities (Fmax = W x 0.075)
- Max feed rate should not be larger than the corner radius of the insert
- In grooving applications, chip evacuation problems can be remedied by using step feed methods at small intervals
- Depth of cut The minimum depth of cut should be bigger than corner radius of insert
  - When deciding on the max depth of cut please consider the machine's cutting load
  - Depending on the shape of the insert, deflection of work piece and clearance angle can be changed





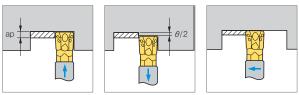
#### Notice for turning

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

#### Notice for finishing (offset need final quality)

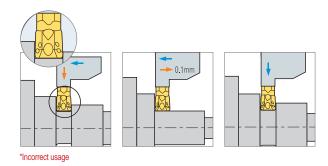
- · After desired diameter is grooved, continuous turning operation might cause some deflection of the workpiece. In these cases follow the given formula, offsetting these factors enables the desired diameter that
- To eliminate the difference in the machined diameter by utilizing the clearance angle (which is commonly generated during the final turning operation) follow the directions above when machining To obtain a good surface roughness without offsetting in an application follows the directions below
  - 1) Groove to the desired diameter
  - 2) Pull the tool backs a total distance of  $\theta/2$
- 3) Continue the external turning operation to desired diameter

#### ØD2 ØD1 . ØD1|ØD2 $\theta/2$ ØD1-ØD \*Incorrect usage

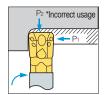


#### Notice for MGT turning applications

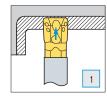
· KGT/MGT tools are available for grooving and turning as a multifunctional tool. When using a M.G.T tool keep in mind that the tool imitates a standard ISO turning application. The application uses a positive clearance angle where a tool's cutting force and depth of cut are all applied in an application. This might create normal wear on the insert, after turning, a grooving process might not meet the desired diameter on the work piece. To off set this, adjust the tool 0.1 mm and return to the original position of the grooving application

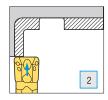


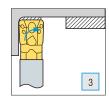
#### Machining workpiece with a radius bigger than the insert's corner radius

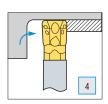


Stabilize your tool pressure. KGT/MGT tools create a cutting load when machining a workpiece with a radius larger than the corner radius of insert (shown in the picture). The unequal cutting force might initially break the insert or holder











### **Parting off & Grooving**

#### Insert

#### J IIISCI L

# Lead angle (°)

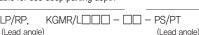
Lead angle applications

- 4°- Pipe (Tubing and hollow bar)
- 6°- Pipe and solid bar
- 8°- Solid bar
- 15°- Small diameter Solid bar



Lead angle 0° (Neutral)

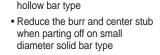
- · Parting off on solid bar type
- Occurring the center stub when parting off
- Prevent to be deflected workpiece by cutting direction during parting off
- Available for use deep parting depth



#### Lead angle 4°~ 8°



- Reduce the center stub when parting off on solid bar type
- Reduce the burr when parting off on tubing or hollow bar type



· Parting off on small diameter and

Lead angle 8°~15°

#### Selection of Insert

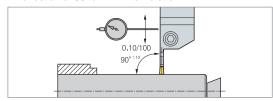
- $\bullet$  To properly match the insert and cutting condition, the following factors should be considered
  - Width of insert Chip breaker Grade and nose R

※ Available Inserts: MGMR/L□□□ - □□ - LP/RP,

- The relationship between the cutting width and cutting depth
  - Neutral type, inserts with a 0-degree lead angle are best when used an applications maximum depth of cut
  - In general alloy steel, the maximum depth of cut = W x 0.8
- · Insert with lead angle
  - To reduce burrs, we recommend using insert with a lead angle.
  - Insert that have larger lead angles reduce burrs but will also decreases tool life
  - In the case where burrs are acceptable, we recommend using a neutral type insert

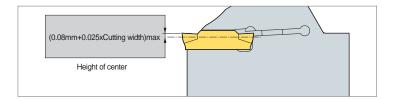
#### Setting of holders

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



#### Setting of parting off

- The edge height of an insert should be set within ±0.1mm based on the center line
  - Parting off should be done as close to the chuck as possible to minimize vibration



#### Notice

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

#### Usage

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

#### Selection of chip breaker

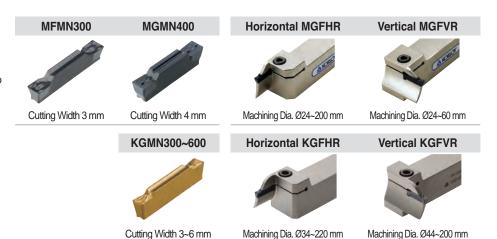
- · Our chip breakers are designed to narrow chips during grooving operations. Narrow chips usually offer the following advantages
- Decreases friction between chips and the workpiece. This usually gives a better surface roughness finish
- With better chip flow, a machinist is able to increase feed rates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

### C Technical Information for Multi-Functinal Tools Series

#### Face grooving tools

#### For shallow grooving

- · Economical tools utilizing a double ended cutting edge system
- · Newly designed chip breakers that help ensure chip control for various face grooving applications
- · KORLOY face grooving tools provide various holder line-ups to give you more options and benefits



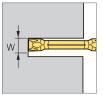
#### For deep grooving

- These tools are suitable for deep grooving with a single cutting edge (Tmax 25 mm)
- · A variety of chip breakers enable a machinist to apply a wide range of functions in machining
- · A variety of holders ensures multiple application ranges



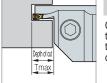
#### Selection system of holder

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



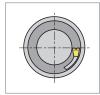
#### Insert and holder

Choose an insert and holder that best applies to your application according to the cutting width and part of workpiece to be machined.



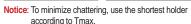
#### **Holder Tmax**

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



#### Machining Dia.

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



#### Optimization of face grooving

Roughing: When face grooving decreases the cutting speed 40% below a normal face turning operation



· Grooving at the initial diameter



 Face turning away from center



Face turning to center

#### Finishing: When face grooving decreases the cutting speed 40% below a normal face turning operation



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



 Radius operation toward final dimension at the



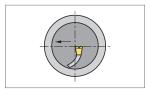
· Face turning to center



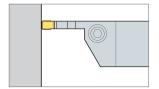
 Grooving for the right dimension you want

#### Notice for face grooving

· Before machining, check and adjust the following holder position



- · Check the cutting edge height at the center of the workpiece
- · Machine towards the center and check for burrs



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

# C

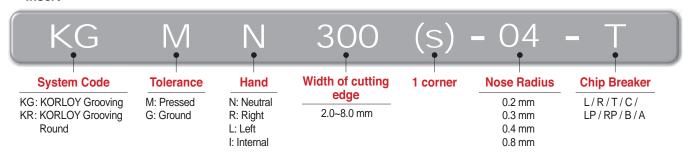
#### Multi-functional machining with strong clamping system and new technology

### **KGT**

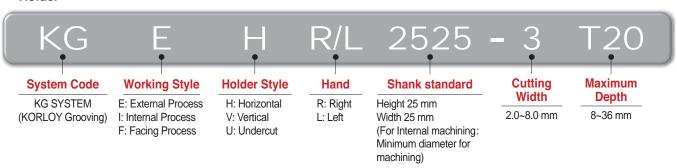
- Double-sided inserts of KGT reduces machining cost
- Strong clamping system ensures stable and accurate machining
- New grade and new technology provide superior tool life
- Various tooling solutions of the KGT improve productivity
- The foreside and clearance face of the KGT insert having cutting edges are optimal for grooving, parting-off, turning and facing with reducing processing time
- Three-dimensional chip breaker ensures excellent chip control in various applications
- The KGT inserts with various chip breakers are available for wide application range
- Special cutting edges are available for quotation

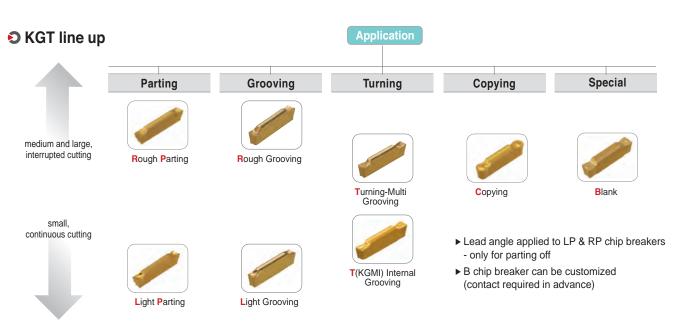
#### Code system

#### Insert



#### Holder





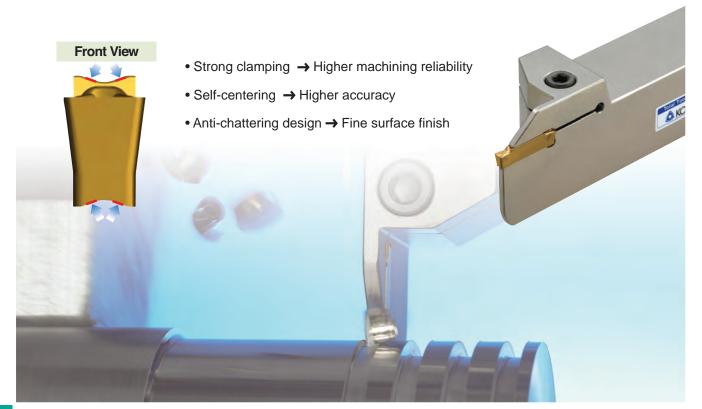


# C Technical Information for KGT Series

#### Recommended insert

							Appli	cation				
			For ex	ternal mac	hining	For t		For In		Copying	For relief	Special machining
Designation	Geometry	Picture	Parting	Grooving	Turning	Grooving	Turning	Grooving	Turning	Copying	Reliefing	Special
				<u> </u>	-1-			+				
	L Light Grooving		0	0		0						
KGMN	<b>R</b> Rough Grooving		0	0		0						
	<b>T</b> Turning-Multi Grooving		0	0	0	0	0					
КСМІ	<b>T</b> Internal Grooving	1						0	0			
KRMN	<b>C</b> Copying	To the same of the								0	0	
KGMR/L	<b>LP</b> Light Parting	1	0									
KGIVIH/L	RP Rough Parting	-	0									
KGGN	<b>B</b> Blank	N. Sanda		0								0
KGGN	A Aluminum Grooving		0	0	0							
KRGN	A Aluminum Profiling	4								0	0	
KRMI	<b>C</b> Copying	-								0	0	

#### Features

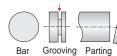


#### C/B guide

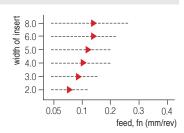
#### For Light Grooving







- · Sharp cutting edge
- · Low feed machining
- Small diameter component
- · Low carbon steel
- Alloy steel
- Stainless



#### For Rough Grooving

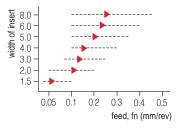








- · Strong cutting edge
- Interrupted cutting
- High feed machining
- Carbon steel
- Alloy steel
- Stainless
- Cast iron



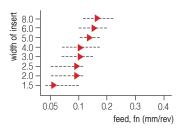
#### For Turning and Multi Grooving







- Sharp cutting edge
- Improved chip control
- Turning & grooving machining
- Carbon steel
- · Alloy steel
- Stainless
- Cast iron



#### For Copying and Relief



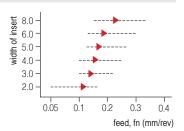






Relief

- Improved chip control
- Copying
- Relief
- Carbon steel
- Alloy steel
- Stainless
- Cast iron



#### For Light Parting



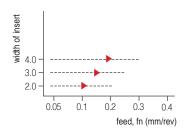


Tube





- Sharp cutting edge
- · Low feed machining
- Small diameter component
- · Right/left handed
- Low carbon steel
- Carbon steel
- Alloy steel
- Stainless



### **Technical Information for KGT Series**

#### RP For Rought Parting

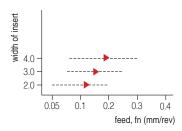








- Strong cutting edge
- High feed machining
- Interrupted cutting
- Right/left handed
- Carbon steel
- Alloy steel
- Cast iron



#### **For Precision Grooving**

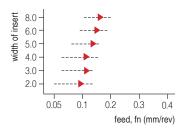








- Ground insert
- Precise tolerance
- Various cutting edge length, Nose R
- Carbon steel
- Alloy steel
- Stainless
- Cast iron



#### For Aluminium Grooving

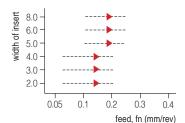








- Sharp cutting edge
  - Aluminum alloy
  - Copper alloy • Precise tolerance



#### Grades for recommended application range

	M/I	0	Order of			Rec	ommende	d cutting speed	(m/min)		
	Workpiece	Grade	recommended grade		50	1	00	150	200		800
		PC5300	1			70	120				
	Otesal	PC3035	2		G	70	13				
	Steel	NC3225	3					130		220	
P		NC5330	4				1	20	200		
P		PC5300	1		60	10	5				
	Alloy	PC3035	2		60		110				
	Steel	NC3225	3					130	200		
		NC5330	4			90			180		
		PC5300	1			70	120				
M	Stainless steel	PC9030	2			70	115				
		NC5330	3			75	125	ı			
14	On at imam	PC5300	1		55	90					
K	Cast iron	NC5330	2				95	160			
N	Non-ferrous metal	H01	1							200 790	
S	HRSA	PC5300	1	20 35							

#### Performance evaluation

#### **Multi-function machining**

#### **Turning + Grooving repetition**

#### Optimized geometry for turning + grooving - High efficiency.

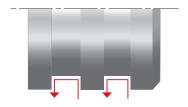
■ Workpiece SM45C

**■** Cutting vc = 170 (m/min)condition fn = 0.15 (mm/rev)

> ap = 2 mmW = 3 mmwet

■ Designation KGMN300-04-T (PC5300)





Grooving **Shoulder Grooving** 

#### Tough geometry for interrupted and deep grooving.

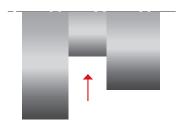
■ Workpiece SUS304

■ Cutting vc = 120 (m/min) condition fn = 0.12 (mm/rev)

ap = 5 mmW = 4 mmwet

■ Designation KGMN400-03-R (PC5300)





#### **Shaft machining**

#### **Grooving (Roughing) & Turning (Finishing)**

#### Excellent chip control for higher efficiency.

■ Workpiece SCM440

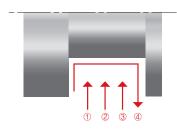
**■** Cutting vc = 150 (m/min) condition fn = 0.15 (mm/rev)

ap = 5 mmW = 3 mm x 3

wet

■ Designation KGMN300-04-T (PC5300)





Parting off **Pipe Parting-off** 

#### Exclusive parting-off chip breaker for longer tool life. / Sharp geometry for less burr.

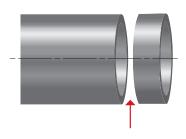
■ Workpiece SUS304

■ Cutting vc = 140 (m/min)condition fn = 0.15 (mm/rev)

ap = 2 mmW = 3 mmwet

■ Designation KGMR300-6D-LP (PC5300)





# C KGT Series

#### Insert

ion							ated				Dimer	nsions	s (mm)	)		
Application	Picture	De	signation	NC3225	NC5330	NC6315	PC3035	PC5300	PC9030	b	r	ı	d	α°	Configuration	Page
		KGMN	200-02-L	•	•	_	•	•	•	2.0	0.2	20	1.7	-		C14~2
			300-02-L	•	•		•	•	•	3.0	0.2	20	2.3	-		C23
			400-02-L	•	•		•	•	•	4.0	0.2	20	3.3	-		020
	KGMN-L		500-03-L	•	•		•	•		5.0	0.3	25	4.1	-	d	
ing	1		600-03-L	•	•			•		6.0	0.3	25	5.1	-	b	
Grooving																
		KGMN	150-015-R	•	•			•		1.5	0.15	16	1.2	-		C14~2
			200-02-R	•	•		•	•	•	2.0	0.2	20	1.7	-		C23
₩			300-02-R	•	•		•	•	•	3.0	0.2	20	2.3	-		
ng	LC MAN D		400-03-R	•	•		•	•	•	4.0	0.3	20	3.3	-	d	
arti	KGMN-R		500-03-R		•			•		5.0	0.3	25	4.1	-	b	
Ġ.			600-03-R		•			•		6.0	0.3	25	5.1			
Grooving · Parting off			800-04-R		•					8.0	0.4	30	6.1	-		
		KGMN	150-015-T	•	•	•		•		1.5	0.15	16	1.2			C14~
			200-02-T	•	•	•	•	•	•	2.0	0.2	20	1.7	-		C23
තු			250-02-T	•	•	_		•	_	2.5	0.2	20	2.0			
Grooving · Turning	_		300-02-T	•	•	•	•	•	•	3.0	0.2	20	2.3	-	d	
֡֝֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֞֡֞֡֞֞֞֡	KGMN-T		04-T	•	•	•	•	•	•	3.0	0.4	20	2.3	-	b	
ნ			400- <u>04-T</u> 08-T	•	•		•		•	4.0	0.4	20	3.3			
ž	e)		500-04-T	•		•		•	•	5.0	0.6	25	4.1	-		
6			08-T	•		•		•	•	5.0	0.4	25	4.1	-		
<u>ය</u>			600-04-T	•	•		•	•	•	6.0	0.4	25	5.1	-	/	
			08-T	•	•	•	•	•	_	6.0	0.8	25	5.1	-		
			800-08-T	•	Ť	•	•	•		8.0	0.8	30	6.1	-		
		KRMN	200-C	•	•	•	•	•		2.0	1.0	20	1.7	-		C14~
			300-C	•	•	•	•	•		3.0	1.5	20	2.2	-		014~
			400-C	•	•	•	•	•		4.0	2.0	20	3.2	-		
ත	KRMN-C		500-C	•	•	•	•	•		5.0	2.5	25	4.0	-	d	
≣	KRIVIIV-C		600-C	•	•	•	•	•		6.0	3.0	25	5.0	-	<b>O</b> b	
Relief Profiling	T. Carlotte		800-C	•	•	•		•		8.0	4.0	30	6.0	-		
		KRMI	200-C							2.0	1.0	20	1.7	-		C23
			300-C 400-C							3.0	2.0	20	3.2	-		
Profiling	KRMI-C		1000							4.0	2.0	20	J.Z	-	D D T	

<sup>•</sup> You can grind the chip breaker, 'B' as any shape you want. If you want any special shape of chip breaker, please contact your distributor.

#### Insert

uo							ated			Unco	oated		Dimer	sions	s (mm)	)		
Application	Picture	Des	signation	NC3215	NC3225	NC5330	NC6315	PC5300	PC9030			b	r	1	d	α°	Configuration	Page
Арр				SS	SS	NC5	NC6	PC5	PC9	H01	H05	D	r	ı	a	α		
_		KGMI	200-02-T					•				2.0	0.2	20	1.7	-		C23
ırna	KCMI T		300-04-T					•				3.0	0.4	20	2.3	-	d	
Inte	KGMI-T		400-04-T					•				4.0	0.4	20	3.3	-	b	
Gu																		
ovir	-																7°	
Grooving · Internal																	14°	
		140110																
ed)		KGMR	200-6D-LP 8D-LP			•		•				2.0	0.2	20	1.7	6 8		C14
and	140145 1 5		15D-LP			•		•				2.0	0.2	20	1.7	15	d	C16
Parting off (Right handed)	KGMR-LP		300-6D-LP			•		•				3.0	0.2	20	2.3	6	a° b	
(Rig			15D-LP			•		•				3.0	0.2	20	2.3	15	<del>-   -   -     -     -                </del>	
#o	day .		400-4D-LP			•		•				4.0	0.3	20	3.3	4		
ting			15D-LP			•		•				4.0	0.3	20	3.3	15	7°	
Par			500-4D-LP									5.0	0.3	25	4.1	4	·	
		KGMR	200-6D-RP			•		•				2.0	0.2	20	1.7	6		C14
Parting off (Right handed)			8D-RP									2.0	0.2	20	1.7	8		C14
han	KGMR-RP		15D-RP			•		•				2.0	0.2	20	1.7	15	d b	-
ght	No.		300-6D-RP			•		•				3.0	0.2	20	2.3	6	<u>a</u> 1	
F.			15D-RP			•		•				3.0	0.2	20	2.3	15		
g of	-		400-4D-RP 15D-RP			•		•				4.0	0.3	20	3.3	4 15		
if			500-4D-RP									5.0	0.3	25	4.1	4	7°	
g.																		
=		KGML	200-6D-LP									2.0	0.2	20	1.7	6		C14
Jdec			15D-LP									2.0	0.2	20	1.7	15		C16
har	KGML-LP		300-6D-LP 15D-LP									3.0	0.2	20	2.3	6 15		
(Leff			400-4D-LP									4.0	0.2	20	3.3	4		
) Ho	1		15D-LP									4.0	0.2	20	3.3	15		
Parting off (Left handed)																	-4-	
Par																		
		KGML	200-6D-RP									2.0	0.2	20	1.7	6		C14
(pa)			15D-RP									2.0	0.2	20	1.7	15		C14
nanc	KGML-RP		300-6D-RP									3.0	0.2	20	2.3	6		5
eft h	NOIVIL-INF		15D-RP									3.0	0.2	20	2.3	15		
ff (L			400-4D-RP									4.0	0.2	20	3.3	4		
ng o			15D-RP									4.0	0.2	20	3.3	15		
Parting off (Left handed)																		
		KGGN	265-015-B										0.15	20	2.3	-		C14
			300-020-B 040-B									3.0	0.20	20	2.3	-		
£			040-В 315-015-В										0.40	20	2.3			
Grooving(Ground insert)			400-040-B									4.0	0.40	20	3.3	-	•	
nd i	KGGN-B		080-B									4.0	0.80	20	3.3	-		
rou	1		415-015-B										0.15	20	3.3	-	a	
g(G	1		478-055-B										0.55	25	4.1	-		
vin	1		500-080-B									5.0	0.80	25	4.1	_		
100			515-015-B 600-080-B									6.0	0.15	25 25	4.1 5.1	-		
G			120-В									6.0	1.20	25	5.1	-		
			800-080-B									8.0	0.80	30	6.1	-		
																	1	

<sup>•</sup> You can grind the chip breaker, 'B' as any shape you want. If you want any special shape of chip breaker, please contact your distributor.

# C KGT Series

#### Insert

흕					Coated						Uncoated		Dimensions (mm)					
Application	Picture	Designation		NC3215	NC3225	NC5330	NC6315	PC5300	PC9030	HOH	H05	b	r	I	d	α°	Configuration	Page
Ê		KGGN	200-02-R									2.0	0.2	20	1.7	-		C14~21
inse			300-02-R									3.0	0.2	20	2.3	-		0
pun	new		400-03-R									4.0	0.3	20	3.3	-	d b	
<u>S</u>	KGGN-R		500-03-R									5.0	0.3	25	4.1	-		
Grooving · Parting off (Ground insert)			600-03-R									6.0	0.3	25	5.1	-		
	T.		800-04-R									8.0	0.4	30	6.1	-	7°	
		KGGN	200S-02-R									2.0	0.2	19.9	1.7	-		C24
ser			300S-02-R					•				3.0	0.2		2.3	-		024
je ⊨	KGGN-R		400S-03-R					•				4.0	0.3	19.9	3.3	-	d b	
Sing			500S-03-R					•				5.0	0.3	24.9	4.1	-		
₩			600S-03-R					•				6.0	0.3	24.9	5.1	-	1	
Grooving · Parting off (Single insert)			800S-04-R					•				8.0	0.4	24.9	6.1	-	7'	
		KGGN	200-02-A							•		2.0	0.2	20	1.7	-		C24
Aluminum Grooving			300-02-A							•		3.0	0.2	20	2.3	-	at	
	KGGN-A		400-04-A							•		4.0	0.4	20	3.3	-	d b	
	KGGN-A		500-04-A							•		5.0	0.4	25	4.1	-		
			600-04-A							•		6.0	0.4	25	5.1	-	7	
æ		KGGN	200S-02-A									2.0	0.2	20	1.7	-		C24
nse			300S-02-A									3.0	0.2	20	2.3	-		024
Grooving (Single insert)	KGGN-A		400S-04-A									4.0	0.4	20	3.3	-	d	
	Kedivit		500S-04-A									5.0	0.4	25	4.1	-	b i	
Aluminum Grooving			600S-04-A									6.0	0.4	25	5.1	-	7	
		KRGN	300-A							•		3.0	1.5	20	2.3	-		C14~21
ng	_		400-A							•		4.0	2.0	20	3.3	-		0.4.21
ovi	K D C N I V		500-A							•		5.0	2.5	25	4.1	-	d  b	
3ro	KRGN-A		600-A							•		6.0	3.0	25	5.1	-		
<b>Aluminum Grooving</b>	4		800-A							•		8.0	4.0	30	6.1	-	7*	

<sup>•</sup> You can grind the chip breaker, 'B' as any shape you want. If you want any special shape of chip breaker, please contact your distributor.

<sup>• :</sup> Stock item

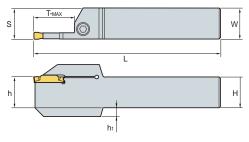
# KGEHR/L

For grooving, turning, parting off, and relief machining











• R type insert (mm)

- KKGN										(mm)
D	esignation	H = (h)	W	L	S	h1	Т-мах	Inserts	Screw	Wrench
KGEHR/L	1616-1.5-T14	16	16	100	16.2	-	14			
	2020-1.5-T14	20	20	125	20.2	-	14	KGMN150-□-□	MHA0512	HW40L
	2525-1.5-T14	25	25	150	25.2	-	14			
	1212-2-T08	12	12	100	12.2	-	8			
	1616-2-T08	16	16	100	16.2	-	8			
	2020-2-T08	20	20	125	20.2	-	8			
	2525-2-T08	25	25	150	25.2	-	8	KGMN200-□-□		
	1616-2-T12	16	16	100	16.2	-	12	KGMR/L200-□-□	MHA0512	HW40L
	2020-2-T12	20	20	125	20.2	-	12	KRMN200-C		
	2525-2-T12	25	25	150	25.2	-	12	KGGN200-□-□		
	1616-2-T17	16	16	100	16.2	-	17			
	2020-2-T17	20	20	125	20.2	-	17	1		
	2525-2-T17	25	25	150	25.2	-	17			
	1616-2.5-T17	16	16	100	16.3	-	17	1		
	2020-2.5-T17	20	20	125	20.3	-	17	KGMN250-□-□	MHA0512	HW40L
	2525-2.5-T17	25	25	150	25.3	-	17			
	1616-3-T10	16	16	100	16.4	-	10			
	2020-3-T10	20	20	125	20.4	-	10	1		
	2525-3-T10	25	25	150	25.4	-	10			
	3232-3-T10	32	32	170	32.4	-	10	KOMMISSO II II		
	1616-3-T13	16	16	100	16.4	-	13	KGMN300-□-□		
	2020-3-T13	20	20	125	20.4	-	13	KGMR/L300- KRMN300-C	MHA0512	HW40L
	2525-3-T13	25	25	150	25.4	-	13	KGGN300-□-□		
	1616-3-T20	16	16	100	16.4	-	20	KRGN300-□		
	2020-3-T20	20	20	125	20.4	-	20			
	2525-3-T20	25	25	150	25.4	-	20	_		
	3232-3-T20	32	32	170	32.4	-	20			
	2525-3-T25	25	25	150	25.4	-	25			
	1616-4-T10	16	16	100	16.4	-	10			
	2020-4-T10	20	20	125	20.4	-	10			
	2525-4-T10	25	25	150	25.4	-	10			
	3232-4-T10	32	32	150	32.4	-	10			
	1616-4-T15	16	16	100	16.4	-	15	KCMN400 🗆 🗆		
	2020-4-T15	20	20	125	20.4	-	15	KGMN400-□-□   KGMR/L400-□-□		
	2525-4-T15	25	25	150	25.4	-	15	KRMN400-C	BHA0616	HW50L
	1616-4-T20	16	16	100	16.4	-	20	KGGN400-□-□		
	2020-4-T20	20	20	125	20.4	-	20	KRGN400-□		
	2525-4-T20	25	25	150	25.4	-	20	-		
	3232-4-T20	32	32	170	32.4	-	20	-		
	1616-4-T25	16	16	100	16.4	-	25			
	2020-4-T25	20	20	125	20.4	-	25	_		
	2525-4-T25	25	25	150	25.4	-	25			

# C KGT Series

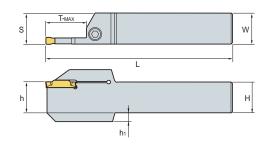
# KGEHR/L

For grooving, turning, parting off, and relief machining











• R type insert (mm)

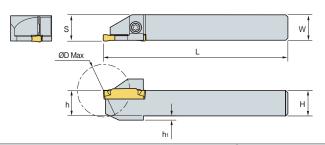
	Designation	H = (h)	W	L	S	h1	Т-мах	Inserts	Screw	Wrench
KGEHR/L	2020-5-T12	20	20	125	20.5	-	12			
	2525-5-T12	25	25	150	25.5	-	12			
	2020-5-T15	20	20	125	20.55	-	15	]		
	2525-5-T15	25	25	150	25.55	-	15	KGMN500-□-□ KRMN500-C	BHA0616	HW50L
	3232-5-T15	32	32	170	32.55	-	15	KRIMIN500-C KGGN500-□-□		
	2020-5-T20	20	20	125	20.5	-	20	KRGN500-□		
	2525-5-T20	25	25	150	25.5	-	20			
	3232-5-T20	32	32	170	32.5	-	20		BHA0620	HW50L
	2525-5-T32	25	25	150	25.5	7	32		DI IA0020	TIVVOUL
	2020-6-T12	20	20	125	20.5	-	12			
	2525-6-T12	25	25	150	25.5	-	12			
	2525-6-T15	25	25	150	25.55	-	15	KGMN600-□-□	BHA0616	HW50L
	3232-6-T15	32	32	170	32.55	-	15	KRMN600-C	DITAGGIO	TIVVJUL
	2020-6-T20	20	20	125	20.5	-	20	KGGN600-□-□		
	2525-6-T20	25	25	150	25.5	-	20	KRGN600-□		
	3232-6-T20	32	32	170	32.5	-	20		BHA0620	HW50L
	2525-6-T32	25	25	150	25.5	7	32		DI IA0020	TIVVJOL
	2525-8-T16	25	25	150	26	-	16			
	3232-8-T16	32	32	170	33.05	-	16	KGMN800-□-□	BHA0616	HW50L
	2525-8-T25	25	25	150	26	-	25	KRMN800-C		
	3232-8-T25	32	32	170	33	-	25	KGGN800-□-□		
	2525-8-T36	25	25	150	26	7	36	KRGN800-□	BHA0620	HW50L
	3232-8-T36	32	32	170	33	-	36			

<sup>→</sup> Applicable inserts C12 ~ C14

# KGEHR/L-D00A (Auto Tool)

For grooving, turning, parting off machining







R type insert

(mm)

D	esignation	H = (h)	w	L	S	h1	ØD Max	Inserts	Screw	Wrench
KGEHR/L	1010-2-D20A	10	10	125	10.2	2	20	KGMN200-□-□		
	1212-2-D25A	12	12	125	12.2	2	25	KGMR/L200-□-□		
	1414-2-D25A	14	14	125	14.2	-	25	KRMN200-C		
	1616-2-D32A	16	16	125	16.2	-	32	KGGN200-□-□	ETNA0412	TW15L
	1212-3-D25A	12	12	125	12.4	2	25	KGMN300-□-□ KGMR/L300-□-□	2110/10/12	111102
	1616-3-D32A	16	16	125	16.4	-	32	KRMN300-C KGGN300-□-□		

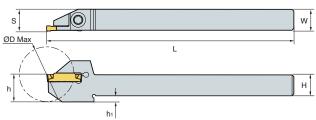
<sup>→</sup> Applicable inserts C12 ~ C14

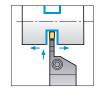
# KGEHR/L-D00B (Auto Tool)

For grooving, turning, parting off machining









• R type insert

										(mm)
D	esignation	H = (h)	W	L	S	h1	ØD Max	Inserts	Screw	Wrench
KGEHR/L	1010-2-D30B	10	10	140	10.2	6.6	30			
	1212-2-D25B	12	12	140	12.5	3.5	25	KGMN200-□-□		
	1212-2-D30B	12	12	140	12.2	3.5	30	KGMR/L200-□-□ KRMN200-C		
	1616-2-D25B	16	16	140	16.2	-	25	KGGN200-□-□		
	1616-2-D32B	16	16	140	16.2	-	32		MHA0512	HW40L
	1212-3-D25B	12	12	140	12.4	3.5	25	KGMN300-□-□		
	1212-3-D32B	12	12	140	12.4	3.5	32	KGMR/L300-□-□		
	1616-3-D25B	16	16	140	16.4	-	25	KRMN300-C		
	1616-3-D32B	16	16	140	16.4	-	32	KGGN300-□-□		

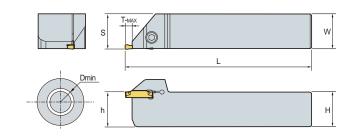
<sup>●</sup> Applicable inserts C12 ~ C14

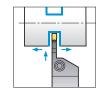


# KGEHR/L-T00

### For grooving, turning, face grooving machining







R type insert

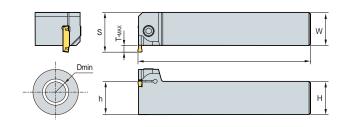
D	esignation	H = (h)	W	L	S	ØD Min	Т-мах	Inserts	Screw	Wrench
KGEHR/L	1616-3-T00	16	16	100	16.4	80	4.8	KGMN300-□-□		
	2020-3-T00	20	20	125	20.4	80	4.8	KRMN300-C KGGN300-□-□	MHA0512	HW40L
	2525-3-T00	25	25	150	25.4	80	4.8	KRGN300-□		
	1616-4-T00	16	16	100	16.4	80	4.8	KGMN400-□-□		
	2020-4-T00	20	20	125	20.4	80	4.8	KRMN400-C KGGN400-□-□	BHA0616	HW50L
	2525-4-T00	25	25	150	25.4	80	4.8	KRGN400-□		
	2020-6-T00	20	20	125	20.5	80	6.0	KGMN600-□-□ KRMN600-C	BHA0616	HW50L
	2525-6-T00	25	25	150	25.5	80	6.0	KGGN600-□-□ KRGN600-□	DПAU010	UAA20F

<sup>→</sup> Applicable inserts C12 ~ C14

# KGEVR/L-T00

For grooving, turning, face grooving machining







• R type insert

(mm)

										(mm
D	esignation	H = (h)	W	L	S	ØD Min	Т-мах	Inserts	Screw	Wrench
KGEVR/L	2020-1.5 -T00	20	20	125	23.5	120	3			
	2525-1.5 -T00	25	25	150	28.5	120	3	KGMN150-□-□	MHA0512	HW40L
	3232-1.5 -T00	32	32	170	35.5	120	3			
	2020-2 -T00	20	20	125	23.5	120	3	KGMN200-□-□		
	2525-2 -T00	25	25	150	28.5	120	3	KRMN200-C	MHA0512	HW40L
	3232-2 -T00	32	32	170	35.5	120	3	KGGN200-  -  -		
	2020-2.5 -T00	20	20	125	24.5	80	4	_		
	2525-2.5 -T00	25	25	150	29.5	80	4	KGMN250-□□	MHA0512	HW40L
	3232-2.5 -T00	32	32	170	36.5	80	4			
	2020-3-T00	20	20	125	25	80	4.8	KGMN300-□-□		
	2525-3-T00	25	25	150	30	80	4.8	KRMN300-C KGGN300-□-□	MHA0512	HW40L
	3232-3 -T00	32	32	170	37	80	4.8	KRGN300-□-□		
	2020-4-T00	20	20	125	25	80	4.8	KGMN400-□-□		
	2525-4-T00	25	25	150	30	80	4.8	KRMN400-C KGGN400-□-□	BHA0616	HW50L
	3232-4 -T00	32	32	170	37	80	4.8	KRGN400-□		
	2020-5 -T00	20	20	125	29.5	60	6	KGMN500-□-□		
	2525-5 -T00	25	25	150	31.5	60	6	KRMN500-C KGGN500-□-□	BHA0616	HW50L
	3232-5 -T00	32	32	170	38.5	60	6	KRGN500-□-□		
	2020-6 -T00	20	20	125	26.5	60	6	KGMN600-□-□		
	2525-6-T00	25	25	150	31.5	80	6	KRMN600-C	BHA0616	HW50L
	3232-6 -T00	32	32	170	38.5	60	6	KGGN600-□-□ KRGN600-□		
	2525-8 -T00	25	25	150	33.5	50	8	KGMN800-□-□ KRMN800-C	BHA0616	HW50L
	3232-8 -T00	32	32	170	38.5	50	8	KGGN800-□-□ KRGN800-□	DUMOOTO	HWOOL

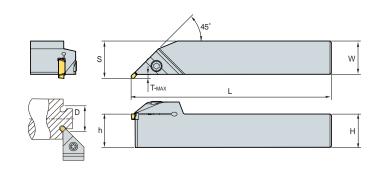
<sup>◆</sup> Applicable inserts C12 ~ C14

# C KGT Series

# KGEUR/L







For relief machining



• R type insert (mm)

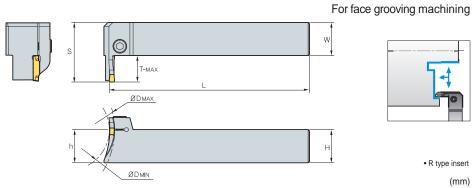
D	esignation	H = (h)	W	L	S	ØD Min	Т-мах	Inserts	Screw	Wrench
KGEUR/L	1616-3	16	16	100	19	40	2.8			
	2020-3	20	20	125	23	40	2.8	KRMN300-C	MHA0512	HW40L
	2525-3	25	25	150	28	40	2.8	KRGN300-□	IVIDAUS12	HW40L
	3232-3	32	32	170	35	40	2.8			
	1616-4	16	16	100	19	40	2.8			
	2020-4	20	20	125	23	40	2.8	KRMN400-C	BHA0616	LIMEOL
	2525-4	25	25	150	28	40	2.8	KRGN400-□	BIIAUUIU	HW50L
	3232-4	32	32	170	35	40	2.8			
	2020-5	20	20	125	23.5	50	3.3	L/DAMIEGO O		
	2525-5	25	25	150	28.5	50	3.3	KRMN500-C KRGN500-□	BHA0616	HW50L
	3232-5	32	32	170	35.5	50	3.3	KKGN500-		
	2020-6	20	20	125	23.5	50	3.3	L/DAMAGO O		
	2525-6 3232-6 2525-8 3232-8	25	25	150	28.5	50	3.3	KRMN600-C KRGN600-□	BHA0616	HW50L
		32	32	170	35.5	50	3.3	KKGN000-		
		25	25	150	28.5	65	3.3	KRMN800-C	BHA0616	LIMEOL
		32	32	170	35.5	65	3.3	KRGN800-□	DHAU010	HW50L

<sup>→</sup> Applicable inserts C12 ~ C14

# KGFVR/L



KGMN KRMN KGGN KRGN



_	t	11 (1-)	147		0	<b></b>	Q	D	lu a auta	Screw	Wrench
L	esignation	H = (h)	W	L	S	Т-мах	MIN	MAX	Inserts	9 Jan	
KGFVR/L	325-34/50-T10	25	25	150	36	10	34	50	KGMN300-□-□		
	44/60-T15	25	25	150	41	15	44	60	KRMN300-C KGGN300-□-□	MHA0512	HW40L
	54/85-T15	25	25	150	41	15	54	85	KRGN300-□-□		
	425-32/50-T15	25	25	150	41	15	32	50			
	42/60-T15	25	25	150	41	15	42	60	KGMN400-□-□		
	44/70-T20	25	25	150	45.5	20	44	70	KRMN400-C	DILAGGAG	LIMEO
	52/85-T15	25	25	150	41	15	52	85	KGGN400-□-□	BHA0616	HW50I
	60/120-T20	25	25	150	45.5	20	60	120	KRGN400-□		
	112/200-T20	25	25	150	45.5	20	112	200			
	525-50/80-T20	25	25	150	46	20	50	80			
	70/110-T20	25	25	150	46	20	70	110	KGMN500-□-□		
	100/150-T20	25	25	150	46	20	100	150	KRMN500-C KGGN500-□-□	BHA0616	HW50I
	140/200-T20	25	25	150	46	20	140	200	KRGN500-□-□		
	200-T20	25	25	150	46	20	200	∞			
	625-48/85-T20	25	25	150	46	20	48	85	KGMN600-□-□		
	73/150-T20	25	25	150	46	20	73	150	KRMN600-C	BHA0616	LIMEO
	138/250-T20	25	25	150	46	20	138	250	KGGN600-□-□	BHAUDID	HW50
	250-T20	25	25	150	46	20	250	00	KRGN600-□		

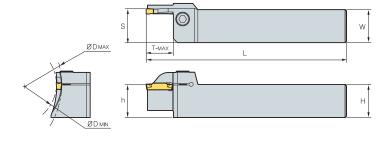
<sup>◆</sup> Applicable inserts C12 ~ C14

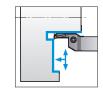


# KGFHR/L

### For face grooving machining







• R type insert

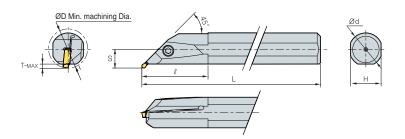
	De elemente de	11 (1-)	147		0	<b>T</b>	Į Ø	D	lu t -	Screw	Wrench
	Designation	H = (h)	W	L	S	Т-мах	MIN	MAX	Inserts	97	
GFHR/L	320-34/50-T10	20	20	150	20.5	10	34	50			
	44/70-T15	20	20	150	20.5	15	44	70	KGMN300-□-□		
	64/100-T15	20	20	150	20.5	15	64	100	KRMN300-C	MHA0512	HW40L
	325-34/50-T10	25	25	150	25.5	10	34	50	KGGN300-□-□	IVITAUS 12	⊓VV4UL
	44/70-T15	25	25	150	25.5	15	44	70	KRGN300-□		
	64/100-T15	25	25	150	25.5	15	64	100			
	420-34/50-T16	20	20	150	20.5	16	34	50			
	42/70-T16	20	20	150	20.5	16	42	70			
	62/120-T16	20	20	150	20.5	16	62	120			
	112/200-T16	20	20	150	20.5	16	112	200			
	425-34/50-T20	25	25	150	25.6	20	34	50	KGMN400-□-□		
	40/60-T10	25	25 150	150	25.6	10	40	60	KRMN400-C KGGN400-□-□	BHA0616	HW50L
	44/70-T20	25	25	150	25.6	20	44	70	KGGN400-∐-∐		
	84/92-T20	25	25	150	25.6	20	84	92			
	60/120-T20	25	25	150	25.6	20	60	120	)		
	112/200-T20	25	25	150	25.6	20	112	200			
	200-T20	25	25	150	25.6	20	200	00			
	525-50/80-T15	25	25	150	25.6	15	50	80			
	50/80-T25	25	25	150	25.6	25	50	80			
	70/110-T15	25	25	150	25.6	15	70	110	  - KGMN500-□-□		
	70/110-T25	25	25	150	25.6	25	70	110	KRMN500-C	DILAGGAG	LIMEO
	100/150-T25	25	25	150	25.6	25	100	150	KGGN500-□-□	BHA0616	HW50I
	140/200-T25	25	25	150	25.6	25	140	200	KRGN500-□		
	190/220-T10	25	25	150	25.6	10	190	200			
	200-T25	25	25	150	25.6	25	200	∞			
	625-170/190-T10	25	25	150	25.6	10	170	190	KGMN600-□-□ KRMN600-C	BHA0616	HWEO
	190/220-T10	25	25	150	25.6	10	190	200	KGGN600-□-□ KRGN600-□	חוועטוט	HW50L

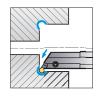
<sup>◆</sup> Applicable inserts C12 ~ C14

# KGIUR/L

### For relief machining







• R type insert

(mm

	Designation	ØD	Ød	L	Q	Т-мах	н	S	Inserts	Screw	Wrench
KGIUR/L	3520-3	35	20	150	45	3.5	18	13			
	4025-3	40	25	200	50	3.5	23	15.5	KRMN300-C KRGN300-□	MHA0512	HW40L
	5032-3	50	32	250	65	3.5	30	19	KKON300-		
	3520-4	35	20	150	45	3.5	18	13			
	4025-4	40	25	200	50	3.5	23	15.5	KRMN400-C KRGN400-□	MHA0512	HW40L
	5032-4	50	32	250	65	3.5	30	19	- KKON400-		
	4025-5	40	25	200	50	3.5	23	15.5	KRMN500-C	MULAOFAO	1111/401
	5032-5	50	32	250	65	3.5	30	19	KRGN500-□	MHA0512	HW40L
	4025-6	40	25	200	50	3.5	23	15.5	KRMN600-C	MILLA 0540	1,11,4,4,0,1
	5032-6	50	32	250	65	3.5	30	19	KRGN600-□	MHA0512	HW40L
	4025-8	40	25	200	50	3.5	23	18.5	KRMN800-C	MU14.054.0	1,11,4,4,0,1
	5032-8	50	32	250	65	3.5	30	22	KRGN800-□	MHA0512	HW40L

<sup>◆</sup> Applicable inserts C12 ~ C14

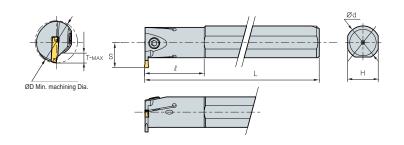
# C KGT Series

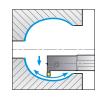
# KGIVR/L

### For grooving, turning and profil machining



KGMI KGMN KGGN KRMI KRMN





R type insert

1 (1 (1) 11 (											(m
ı	Designation	ØD	Ød	L	Q	Т-мах	н	s	Inserts	Screw	Wrench
(GIVR/L	2016-1.5	20	16	125	35	4	15	12		MHB0410	HW30L
	2520-1.5	25	20	150	45	6	18	15.5	KGMN150-□-□	MHB0410	HVVSUL
	3225-1.5	32	25	200	45	7	23	19		MHA0512	HW40L
	2516-2	25	16	125	35	6.5	15	14	KGMI200-□-T	MHB0410	HW30L
	2520-2	25	20	150	45	6.5	18	15.5	KRMI200-LI-T	MINDU410	HWOOL
	3225-2	32	25	200	45	7	23	19	TATAWII200-0	MHB0512	HW40L
	2516-2.5	25	16	125	35	6.5	15	14		MHB0410	HW30L
	2520-2.5	25	20	150	45	6.5	18	15.5	KGMN250-□-□	IVINDU41U	HVVSUL
	3225-2.5	32	25	200	45	7	23	19		MHA0512	HW40L
	2520-3	25	20	150	45	6.5	18	15.5	L/ONNOOD TIT	MHB0410	HW30L
	3225-3	32	25	200	45	7	23	19	KGMI300-□-T KRMI300-C	MHA0512	HW40L
	4032-3	40	32	250	55	7.5	30	22.5	TATAWII300-0	BHA0616	HW50L
	2520-4	25	20	150	45	6.5	18	15.5	KOMI400 TI T	MHB0410	HW30L
	3225-4	32	25	200	45	7	23	19	KGMI400-□-T KRMI400-C	MHA0512	HW40L
	4032-4	40	32	250	55	7.5	30	22.5	Tarawii-100 O	BHA0616	HW50L
	3225-5	32	25	200	45	7.5	23	19.5	KGMN500-□-□ KRMN500-C	MHA0512	HW40L
	4032-5	40	32	250	55	8.5	30	23.5	KGGN500-□-R KGGN500-□-A	BHA0616	HW50L
	3225-6	32	25	200	45	7.5	23	19.5	KGMN600-□-□ KRMN600-C	MHA0512	HW40L
	4032-6	40	32	250	55	8.5	30	23.5	KGGN600-□-R KGGN600-□-A	BHA0616	HW50L
	4032-8	40	32	250	55	8.5	30	23.5	KGMN800-[]-[]	BHA0616	HW50L
	4540-8	45	40	300	70	8.5	37	26.5	KRMN800-C KGGN800-□-R	BHA0616	HW50L

<sup>→</sup> Applicable inserts C12 ~ C14

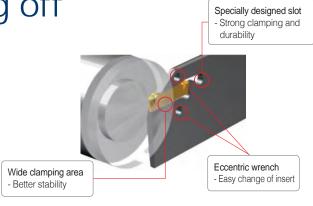
<sup>• 200, 300, 400</sup> inserts : Internal inserts, KGMI or KRMI

# Technical Information for KGT Blade for Parting off ${f C}$

# KGT Blade for Parting off

### Features

- Parting application with the use of existing KGT inserts
- Economical machining with a double sided insert
- Specially designed slot for strong and stable clamping
- Easy change of insert with the use of exclusive wrench



### Code system



### How to clamp insert



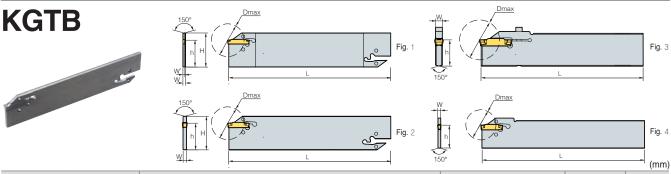
1) Insert the pin of wrench into the hole of blade.



2 Clamp the insert on its seat after turning the handle to  $45^{\circ} \sim 160^{\circ}$  for loosening the seat.



3 Finish clamp by removing the wrench after moving it back to its original state.



	Designation	н	W	W'	L	h	ØD Max <sup>(2)</sup>	ØD Max <sup>(3)</sup>	Inserts	Wrench	Fig
KGTB	1526S	26	2.4	1.0	150	21	-	26	KG□□150-□-□		4
	1532	32	2.4	1	150	25	-	26	KG□□150-□-□		1
	2026S	26	2.4	1.8	150	21	50	39	KG□□200-□-□ KG□□200S-□-R <sup>(4)</sup>		4
	2032	32	2.4	1.8	150	25	50	39	KG□□200-□-□ KG□□200S-□-R <sup>(4)</sup>		1
	3026S	26	2.4	-	150	21	100	39	KG□□300-□-□ KG□□300S-□-R <sup>(4)</sup>	T144000	4
	3032	32	2.4	-	150	25	100	39	KG□□300-□-□ KG□□300S-□-R <sup>(4)</sup>	EW1203 (Separately	2
	4026S	26	3.2	-	150	21	100	39	KG□□400-□-□ KG□□400S-□-R <sup>(4)</sup>	ordered)	4
	4032	32	3.2	-	150	25	100	39	KG□□400-□-□ KG□□400S-□-R <sup>(4)</sup>		2
	5032	32	4	-	150	25	120	49	KG□□500-□-□ KG□□500S-□-R <sup>(4)</sup>		2
	6032	32	5.2	-	150	25	120	49	KG□□600-□-□ KG□□600S-□-R <sup>(4)</sup>		2
	<b>8032S</b> (1)	32	6.2	-	150	25	80	59	KG□□800-□-□ KG□□800S-□-R <sup>(4)</sup>	HW30L	3

<sup>→</sup> Applicable inserts C12 ~ C14

<sup>(1)</sup> Screw clamping

# C Technical Information for MGT Series

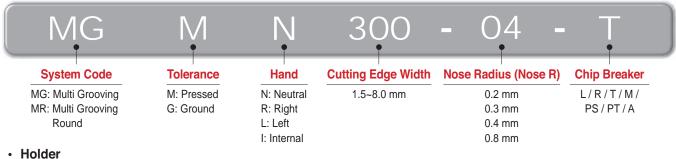
### Inserts are offered with two edges, for better economical machining

# **MGT Series**

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

### Code system

Insert





### Geometry of chip breaker



- Specially designed chip breaker allows a smoother chip flow versus conventional flat-top geometries through the use of a central chip breaker
- Specially placed convex dots assists with chip control in external machining, for a smoother chip flow
- Chip breaker designed for turning & grooving applications
- MGMN-G



- Specially designed chip breaker allows narrower chips to promote better chip flow
- Specifically designed for grooving applications

### MRMN-M



- Full radius geometry for applications that require profiling
- Available for relief machining

### **MFMN300**



- · Specially designed chip breaker allows narrower chips to promote better chip flow
- · Chip breaker specially designed for facegrooving

- Specially designed high positive geometry, ideal for machining aluminum
- The chip breaker's super buffed, high rake angle allows optimal chip flow of aluminum

- Sharply designed cutting edge.
- Recommended in machining low carbon steel and stainless steel
- Specially designed chip breaker allows narrower chips to promote better
- Able to machine Feed rates and small diameter cutting



- Stronger cutting edge with a negative land for tougher applications
- · Able to machine at Feed rates as high and bar stock
- Chip breaker design helps narrows chips for better flow

### MGGN-A



- · Sharp cutting edge
- · Low cutting resistance
- For auto CNC machine
- For small Dia. processing

# MGMN-R

- · Strong cutting edge
- For high feed rate processing

### **MGMN-T**

- $\cdot$  For turning & grooving
- Reduced chip width & smooth chip control by dot designed on the top

### · Smooth chip flow

· Reduced build up on cutting edge

### **ᢒ** Parting off (MGMN/MGMR/L)

			Cut	ting Speed	d (vc = m/r	nin)				Feed	d (fn = mm.	/rev)	
Workpiece		C	/D			PVD		Uncoated		Cut	ting width (ı	nm)	
	NC3120	NC3030	NCM325	NC5330	PC8110	PC5300	PC6510	ST30A	2	3	4	5	6
SM□□C	80~180			80~180		80~180			0.02~0.15	0.03~0.20	0.08~0.30	0.10~0.40	0.12~0.50
SCM	70~150	70~150	70~150	70~150		70~150			0.02~0.15	0.03~0.20	0.08~0.30	0.10~0.40	0.12~0.50
GC/GCD				50~100			50~100	50~100	0.05~0.12	0.10~0.25	0.10~0.30	0.10~0.35	0.10~0.40
STS			50~120	50~120	50~120	60~140			0.02~0.10	0.03~0.15	0.08~0.25	0.10~0.35	0.12~0.40
Non-ferrous metal (Al, Copper)								200~450	0.05~0.10	0.05~0.20	0.05~0.25	0.05~0.30	0.05~0.35

### **○** Facing (FGD/FGM/FMM/MFMN/MGMN)

			Cu	tting Speed	(vc = m/min)			Fe	ed (fn = mm/r	ev)
Workpiece		C	/D			PVD	Uncoated	Cı	utting width (m	m)
	NC6110	NC3030	NC5330	NC3120	PC215K	PC8110 / PC5300	H01	3	4	5
SM□□C			100~160	100~160				0.05~0.10	0.05~0.12	0.05~0.15
SCM		50~130	50~130	50~130			200~800	0.05~0.10	0.05~0.12	0.05~0.15
GC/GCD	120~150		120~150		120~150			0.05~0.10	0.05~0.12	0.05~0.15
STS			60~150			60~150		0.05~0.10	0.05~0.12	0.05~0.15
Non-ferrous metal (Al, Copper)								0.05~0.15	0.08~0.15	0.08~0.15

### **ᢒ** Grooving, Turning (MGMN/MRMN)

			Cutt	ing Speed	d (vc = m/	min)					Feed (fn :	= mm/rev)		
Workpiece		CVD		P\	/D	Cermet	Unco	ated			Cutting w	ridth (mm)		
	NC3120	NC3030	NC5330	PC215K	PC5300	CN20	ST30A	ST20	0.5~1.0	1.0~2.0	2~3	3~4	4~5	6~8
SM□□C	80~200		80~200		80~180	80~120		80~120	0.03~0.08	0.04~0.09	0.05~0.1	0.05~0.12	0.05~0.15	0.05~0.2
SCM	80~180	80~180	80~180		80~160	80~120	80~120	80~120	0.03~0.07	0.04~0.08	0.05~0.08	0.05~0.1	0.05~0.12	0.05~0.15
GC/GCD			60~130		60~130				0.03~0.07	0.04~0.08	0.05~0.08	0.05~0.1	0.05~0.10	0.05~0.12
STS			60~100	60~100			60~100		0.03~0.08	0.04~0.09	0.05~0.10	0.05~0.12	0.05~0.12	0.05~0.15
Non-ferrous metal (Al, Copper)				150~300			150~400		0.05~0.12	0.05~0.15	0.05~0.15	0.08~0.15	0.08~0.15	0.10~0.20

# C MGT Series

ou							Coa		l			Uncoated		Dimer	nsions	(mm	)		
Application	Picture	De	signation	NC3120	NC3225	NC3030	NC5330	NC6315	PC5300	PC8110	PC9030	H01	b	r	ı	d	t	Configuration	Page
		FGD	300R-03		Т	•	Г	_		_	_	_	3.0	0.3	15.0	2.0	4.0		C36
	FGD		400R-04			•							4.0	0.4	15.0	3.0	4.5	d b	C37
			500R-04			•							5.0	0.4	15.0	4.0	5.0		
																		7°	
5		FGM	300R-03										3.0	0.3	15.0	2.0	4.0		C36
Ž	FGM		400R-04			•							4.0	0.4	15.0	3.0	4.5	В	C37
iroc			500R-04										5.0	0.4	15.0	4.0	5.0		
Face Grooving																		7°	
		FMM	300R-03			•				•			3.0	0.3	15.0	2.0	3.91		C36
	FMM		400R-04			•							4.0	0.4	15.0	3.0	3.96	d b	C37
			500R-04							•			5.0	0.4	15.0	4.0	4.42		
	0																	t t	
ō		MFMN	300				•						3.0	0.2	18.0	2.0	3.0		C35
ovin	MFMN																	b d	C41
Sroc	B																		
Face Grooving	5																		
Fа	4																	12°	
			300-02-M										3.0	0.2	21.0		4.83		C30
			04-M										3.0	0.4	21.0		4.83		C32
			08-M 400-02-M										3.0 4.0	0.8	21.0	3.3	4.83 4.83		C34
ng			400- <u>02-W</u> 04-M										4.0	0.2	21.0	3.3	4.83		C41
Grooving · Turning	MGGN-M		08-M										4.0	0.8	21.0	3.3	4.83	832 (68)	
F	1		500-02-M										5.0	0.2	26.0	4.1	5.82		
ing	3		04-M										5.0	0.4	26.0	4.1	5.82		
00			08-M 600-02-M		-	_							5.0 6.0	0.8	26.0	4.1 5.0	5.82 5.81		
σ			04-M		Н						$\dashv$		6.0	0.2	26.0	5.0	5.81	,	
			08-M										6.0	0.8	26.0	5.0	5.81		
		MGMN	150-G		•	•			•		•	•	1.5	0.15	16.0	1.2	3.5		C30
			200-G	•	•	•			_		•	•	2.0	0.2	16.0	1.6	3.5		C32
Grooving	MGMN-G		250-G 300-G		•	•			•		•		3.0	0.2	18.5 21.0	2.0	3.85		C34
00			400-G	•	•				•		•		4.0	0.3	21.0	3.3	4.83		C41
ອັ			500-G										5.0	0.5	26.0	4.1	5.82		
			600-G										6.0	0.8	26.0	5.0	5.81	7°	
		MORES	000 14				-		_				0.0		400	4.0	0.5		-
		MGMN	200-M 250-M		•	•	•		•		•	•	2.0	0.2	16.0 18.5	1.6 2.0	3.5		C30
			300-02-M		•		•						3.0	0.2	21.0	2.35	4.83		C32 C34
ing			300-M	•	•	•	•	•	•	•	•	•	3.0	0.4	21.0		4.83		C41
Grooving · Turning	MGMN-M		350-03-M										3.5	0.3	21.0	2.9	4.83		
F - E	100		400-02-M										4.0	0.2	21.0	3.3	4.83		
ving	3		400-M	•	•	•	•	•	•	•	•	•	4.0	0.4	21.0	3.3	4.83		
roo			500-04-M 500-M		•	•	•	•			•		5.0	0.4	26.0	4.1	5.82 5.82	7°	
G			600-M	•	•	•	•	•					6.0	0.8	26.0	5.0	5.81		
			800-M				•						8.0	0.8	31.0	6.0	6.52		

tion							oat				ncoated		Dim	ensi	ons (	mm)			
Application	Picture	D	esignation	NC3120	NC3225	NC3030	NC5330	NC6315 PC5300	PC8100	PC9030	H05	b	r	ı	d	t	α°	Configuration	Page
		MGMN	200-02-L		_	_	_					2.0	0.2	16	1.6	3.5	-		C30
			04-L									2.0	0.4	20	1.7	3.5	-		C32
			250-02-L									2.5	0.2	18.5	2.0	3.85	-		C34
			300-02-L					•				3.0	0.2	21	2.35	4.83	-		C35
			04-L									3.0	0.4	20		4.83	-	d	
ng	MGMN-L		400- <u>02-</u> L	_				•				4.0	0.2	21		4.83	-		
Grooving	1		04-L									4.0	0.4	20		4.83	-		
25	1		500- <u>03-</u> L									5.0	0.3	26	4.1		-		
			04-L					•				5.0	0.4	26	4.1	5.82	-		
		MGMN	150-015-R									1.5	0.15	16	1.2	3.5			C30
			200-02-R	$\top$		П			П			2.0	0.2	16	1.6	3.5	-		C32
			04-R	1		П			П			2.0	0.4	20	1.7	3.5	-		C34
			250-02-R									2.5	0.2	18.5	2.0	3.85	-		C35
			300-02-R			•		•				3.0	0.2	21		4.83	-		
₩			04-R									3.0	0.4	20		4.83	-		
Grooving · Parting off			400- <u>02-R</u>			•		•				4.0	0.2	21		4.83	-	d Compa	
arti	MGMN-R		04-R									4.0	0.4	20		4.83	-	b	
ă.	14		500-04-R	+		•		•		+		5.0	0.4	26	4.1	5.82 5.82	-		
ing			08-R 600-04-R	+		Н				-		5.0 6.0	0.4	26 26	4.1 5.0				
8			08-R	+		Н				+		6.0	0.4	26		5.81	÷	7°	
		MGMN	150-015-T			ш						1.5	0.15	16	1.2	3.5	-		C30
			200-T									2.0	0.2	16	1.6	3.5	-		C32
			300-T	-		•		•	1	_		3.0	0.4	21		4.83	-		C34
ing			400-T			•		•				4.0	0.4	21		4.83	-	d	C35
L. T.	MGMN-T		500-04-T 500-T	+		Н		•				5.0	0.4	26 26		5.82 5.82	÷	b	
	1		600-08-T									6.0		26		5.81	-	1	
Grooving · Turning	4		000-00-1									0.0	0.0	20	3.0	0.01		7-	
		MGGN	300-02-A 04-A									3.0	0.2	21		4.83 4.83	-		C28 C30
			08-A									3.0	0.8			4.83	-		C32
			400-02-A									4.0	0.2	21	3.3	4.83	-		C41
			04-A									4.0	0.4	21		4.83	-	d	
ng	MGGN-A		A-80	$\perp$		Ш			ш			4.0	0.8	21		4.83	-		
ovii	1100		500- <u>02-A</u>	_		ш			Щ			5.0	0.2	26		5.82	-		
Grooving			04-A	+		Ш			Н			5.0	0.4	26		5.82	-		
			08-A									5.0	0.8	26	4.1	5.82	-		

# C MGT Series

uo							oat				Uncoated		Dim	ensi	ons (	(mm)			
Application	Picture	D	<b>Designation</b>	NC3120	NC3225	NC3030	NC5330	DC5300	PC8100	PC9030	H01 H05	b	r	ı	d	t	α°	Configuration	Page
		MGMR	300-6D-PS									3.0	0.2	21		4.83	6		C30
			8D-PS									3.0	0.2	21		4.83	5		C32
	MGMR-PS		15D-PS									3.0	0.2	21		4.83	15	b	
			400-4D-PS	-		_						4.0	0.3	21	3.3		4		
¥			500-4D-PS									5.0	0.3	26	4.1	5.82	4	7°	
Parting off																			
arti		MGML	300-6D-PS	-		_						3.0				4.83	6		
<u> </u>	MGML-PS		8D-PS	+		_						3.0				4.83	5	a d	
	IVIGIVIL-P3		15D-PS 400-4D-PS	+		-						3.0 4.0	0.2	21.0		4.83 4.83	15 4		
			500-4D-PS	+		_						5.0	0.3	26		5.82	4		
			300-40-10									0.0	0.0	20	7.1	0.02			
		MGMR	200-6D-PT	+				•	)			2.0	0.2	16	1.6	3.5	6		C30
			300-6D-PT									3.0	0.2	21	2.35	4.83	6		C32
	MGMR-PT		8D-PT		•							3.0	0.2	21	2.35	4.83	8	<b>38</b>	002
			15D-PT									3.0	0.2	21		4.83	15		
			400-4D-PT									4.0	0.3	21		4.83	4		
off			500-4D-PT									5.0	0.3	26	4.1	5.82	4	7,	
Parting off		MGML	200-6D-PT									2.0	0.2	16	1.6	3.50	6		
Ра			300-6D-PT				•					3.0	0.2	21	2.35	4.83	6	<u>α</u> °	
	MGML-PT		8D-PT									3.0	0.2	21	2.35	4.83	8	d 	
			15D-PT									3.0	0.2	21		4.83	15	<del>                                   </del>	
			400-4D-PT									4.0	0.3	21		4.83	4		
			500-4D-PT									5.0	0.3	26	4.1	5.82	4		
		MRGN	300-A									3.0	1.5	21.0	2.35	4.83	-		C30
			400-A								•	4.0	2.0	21.0	3.3	4.83	-		C31
			500-A									5.0	2.5	26.0	4.1	5.82	-		C33
E			600-A								•	6.0				5.81	-		C34
ng	MRGN-A		800-A								•	8.0	4.0	31.0	6.0	6.52	-		
Aluminum																		7	
		MRMN	200-M	•	•	•				•		2.0	1.0	16.0	1.5	3.5	_		C30
			300-M	•	•	•	•	•	)	•		3.0				4.83	-		~34
			400-M	•	•	•	•			•		4.0				4.83	-		C41
<u></u>			500-M			•		•	)			5.0				5.82	-		
			600-M		•	•	•					6.0				5.81	-	AS TO ED.	
Pro	MRMN-M		800-M	_		•	•					8.0	4.0	31.0	6.0	6.52	-		
Reliefing Profiling	3																		

# MGEHR/L

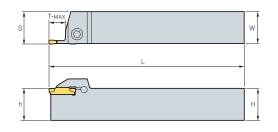
For grooving, turning, parting off, relief, profil machining



MGMR MRMN

MGMN MGGN







R type insert

[	Designation	H = (h)	w	L	s	Т-мах	Inserts	Screw	Wrench
GEHR/L	1616-1.5	16	16	100	16.2	14			
	2020-1.5	20	20	125	20.2	14	MGMN150-G	LTX0514	TW20
	2525-1.5	25	25	150	25.2	14			
	1212-2	12	12	100	14.25	14	MOMPIOSO O		
	1616-2	16	16	100	16.25	14	MGMN200-G MGMN200-M	MHA0512	HW40
	2020-2	20	20	125	20.25	14	MGMR200-□□-□□	IVIDAUS12	HVV40
	2525-2	25	25	150	25.25	14	WIGWR200-		
	1616-2.5	16	16	100	16.30	16	MCMNI250 C		
	2020-2.5	20	20	125	20.30	16	MGMN250-G MGMN250-M	MHA0512	HW40
	2525-2.5	25	25	150	25.30	16	IVIGIVIN230-IVI		
	1616-3	16	16	100	16.35	18			
	2020-3-T10	20	20	125	20.4	10	MGMN300-M/T		
	2020-3	20	20	125	20.4	18	MGGN300-□□-M		
	2525-3-T10	25	25	150	25.4	10	MRMN300-M		
	2525-3	25	25	150	25.4	18	MGMR300-□□-□□		
	3232-3-T10	32	32	170	32.4	10	MGMN300-□□-L/R		
	3232-3	32	32	170	32.4	18			
	2020-4-T10	20	20	125	20.4	10	MCMNI400 M/T		
	2020-4	20	20	125	20.4	18	MGMN400-M/T		
	2525-4-T10	25	25	150	25.4	10	MGGN400-□□-M MRMN400-M		
		25	25	150	25.4	18	MGMR400-□□-□□		
		32	32	170	32.4	10	MGMN400-		
	3232-4	32	32	170	32.4	18	WGWIN400-LL/K		
	2020-5-T15	20	20	150	20.5	15	MOMNIFOO M/T		
	2020-5	20	20	150	20.5	23	MGMN500-M/T		
	2525-5-T15	25	25	150	25.5	15	MGGN500-□□-M		
	2525-5	25	25	150	25.5	23	MRMN500-M MGMR500-□□-□□		
	3232-5-T15	32	32	170	32.5	15	MGMN500-		
	3232-5	32	32	170	32.5	23	WGWW300-	BHA0616	HW50
	2020-6-T15	20	20	125	20.6	15			
	2020-6	20	20	125	20.6	23	MCMNIGOO M		
	2525-6-T15	25	25	150	25.6	15	MGMN600-M MGGN600-□□-M		
	2525-6	25	25	150	25.6	23	MRMN600-M		
	3232-6-T15	32	32	170	32.6	15	IVII XIVII NO OO-IVI		
	3232-6	32	32	170	32.6	23			
	2525-8-T15	25	25	150	26.1	15			
	2525-8	25	25	150	26.1	28	MRMN800-M		
	2525-8 3232-8-T15 3232-8 2525-6A-T15 2525-6A 3232-6A-T15 3232-6A 2525-8A-T15	32	32	170	33.1	16	MGMN800-M		
		32	32	170	33.1	28			
		25	25	150	25.6	15			
		25	25	150	25.6	23	MRGN600-A		
		32	32	170	32.6	15	WINGINOUU-A		
		32	32	170	32.6	23			
		25	25	150	26.1	16			
	2525-8A	25	25	150	26.1	28	MBCN800 A		
	3232-8A-T15	32	32	170	33.1	15	MRGN800-A		
	3232-8A	32	32	170	33.1	28			



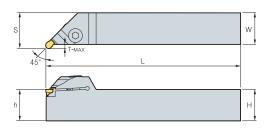
# MGEUR/L

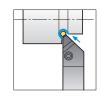
### For relief, profil machining



MRMN MRGN







R type insert

D	esignation	H = (h)	w	L	S	Т-мах	Inserts	Screw	Wrench
MGEUR/L	2020-3	20	20	125	23	3			
	2525-3	25	25	150	28	3	MRMN300-M		
	3232-3	32	32	170	35	3			
	2020-4	20	20	125	23	3			
	2525-4	25	25	150	28	3	MRMN400-M		
	3232-4	32	32	170	35	3			
	2020-5	20	20	125	24	4			
	2525-5	25	25	150	29	4	MRMN500-M		
	3232-5	32	32	170	36	4		BHA0616	HW50L
	2020-6	20	20	125	24	4		DITAGGIO	TIVVJUL
	2525-6	25	25	150	29	4	MRMN600-M		
	3232-6	32	32	170	36	4			
	2525-8	25	25	150	30	5	MRMN800-M		
	3232-8	32	32	170	37	5	IVIRIVINOUU-IVI		
	2525-6A	25	25	150	29	4	MPCN600 A		
	3232-6A	32	32	170	36	4	MRGN600-A		
	2525-8A	25	25	150	30	5	MRGN800-A		
	3232-8A	32	32	170	37	5	IVIRGINOUU-A		

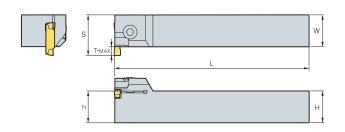
<sup>→</sup> Applicable inserts C28 ~ C30

# MGEVR/L

For grooving, turning, profil machining



MGMN MGGN MRMN MRGN





• R type insert

Des	signation	H = (h)	w	L	s	Т-мах	Min. machining Dia. (ØD)	Inserts	Screw	Wrench
MGEVR/L	2020-1.5	20	20	125	23	3	85			
	2525-1.5	25	25	150	28	3	85	MGMN150-G	LTX0514	TW20L
	3232-1.5	32	32	170	35	3	85			
	2020-2	20	20	125	23.5	3.5	65	MGMN200-M		
	2525-2	25	25	150	28.5	3.5	65	MGMN200-M		
	3232-2	32	32	170	35.5	3.5	65	WGWINZOO G		
	2020-2.5	20	20	125	24	4	65	MOMBIOSOM		
	2525-2.5	25	25	150	29	4	65	MGMN250-M MGMN250-G		
	3232-2.5	32	32	170	36	4	65	WGWI14230-G		
	2020-3 2525-3 3232-3 2020-4 2525-4	20	20	125	25.5	5	75	MGMN300-M/T		
		25	25	150	30.5	5	75	MGGN300-□-M MRMN300-M		
		32	32	170	37.5	5	75	MGMN300-□□-L/R		
		20	20	125	25.5	5	70	MGMN400-M/T		
		25	25	150	30.5	5	70	MGGN400-□□-M MRMN400-M		
	3232-4	32	32	170	37.5	5	70	MGMN400-□□-L/R	BHA0616	HW50L
	2020-5	20	20	125	27	7	75	MGMN500-M/T	DHAU010	HWOOL
	2525-5	25	25	150	32	7	75	MGGN500-□□-M MRMN500-M		
	3232-5	32	32	170	39	7	75	MGMN500-□□-L/R		
	2020-6	20	20	125	27	7	70	MGMN600-M		
	2525-6	25	25	150	32	7	70	MGGN600-□□-M		
	3232-6 2525-8 3232-8 2525-6A	32	32	170	39	7	70	MRMN600-M		
		25	25	150	34	9	50	MRMN800-M		
		32	32	170	41	9	50	MGMN800-M		
		25	25	150	32	7	70	MRGN600-A		
	3232-6A	32	32	170	39	7	70	MRGN600-A		
	2525-8A	25	25	150	34	9	45	MDCN800 A		
	3232-8A	32	32	170	41	9	45	MRGN800-A		

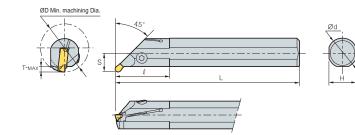
<sup>→</sup> Applicable inserts C28 ~ C30

# C MGT Series

# MGIUR/L

### For relief, profil machining







MRMN MRGN

• R type insert

											(mn
Desi	ignation	ØD	Ød	L	Q	Т-мах	н	S	Inserts	Screw	Wrench
MGIUR/L	3520-3	35	20	150	45	3.5	18	13			
	4025-3	40	25	200	45	3.5	23	15.5	MRMN300-M		
	5032-3	50	32	250	65	3.5	30	19		MHA0512	HW40L
	3520-4 4025-4 5032-4 4025-5 5032-5	35	20	150	45	3.5	18	13		IVITAUSTZ	HVV40L
		40	25	200	45	3.5	23	15.5	MRMN400-M		
		50	32	250	65	3.5	30	19			
		40	25	200	45	3.5	23	15.5	MRMN500-M	BHA0616	
		50	32	250	65	3.5	30	19	IVIIXIVIINOU-IVI	BHA0620	
	4025-6	40	25	200	45	3.5	23	19	MRMN600-M	BHA0616	
	5032-6	50	32	250	65	3.5	30	19	IVIKIVINOUU-IVI	BHA0620	
	4025-8	40	25	200	45	6.5	23	15.5	MRMN800-M	BHA0616	HW50L
	5032-8	50	32	250	65	6.5	30	19	IVIKIVIINOUU-IVI	BHA0620	HWOOL
	4025-6A	40	25	200	45	3.5	23	15.5	MRGN600-A	BHA0616	
	5032-6A	50	32	250	65	3.5	30	19	WIRGINOUU-A	BHA0620	
	4025-8A	40	25	200	45	5.0	23	18.5	MRGN800-A	BHA0616	
	5032-8A	50	32	250	65	6.5	30	22	WIRGN800-A	BHA0620	

<sup>→</sup> Applicable inserts C28 ~ C30

# MGIVR/L

## IGIVNL



ØD Min. machining Dia.

MGMN MRMN MGGN MRGN

### For grooving, turning, profil machining





R type insert

71		

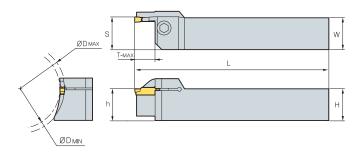
De	esignation	ØD	Ød	L	Q	Т-мах	н	s	Inserts	Screw	Wrench
MGIVR/L	2016-1.5	20	16	125	35	3.5	15	11.3		MHB0310	HW25L
	2520-1.5	25	20	150	45	3.5	18	13.1	MGMN150-G	MHA0512	HW40L
	2925-1.5	29	25	200	45	3.5	23	16.2		MINAUSTZ	HVV40L
	2016-2	20	16	125	35	4.5	15	12.4	MGMN200-G	MHB0310	HW25L
	2520-2	25	20	150	45	4.5	18	14.0	MGMN200-M	MHA0512	HW40L
	2925-2	29	25	200	45	4.5	23	17.2	MRMN200-M	WILLYOUTZ	110040L
	2016-2.5	20	16	125	35	4.5	15	12.5	MCMN250 C	MHB0310	HW25L
	2520-2.5	25	20	150	45	4.5	18	15.1	MGMN250-G MGMN250-M	MHA0512	HW40L
	2925-2.5	29	25	200	45	4.5	23	18.2	WOWINZOO-W	MINAUSTZ	HVV40L
	2520-3	25	20	150	45	5	18	15.6			
	2520-3-T7	25	20	150	49.3	7	18	19.92	MCMN300 M/C/T		
	3125-3	31	25	200	45	6	23	18.9 MGMN300-M/MGGN300-□I MRMN300-M MGMN300-□I 21.5 21.5 15.6	MGGN300-IM/G/1		
	3125-3-T10	31	25	200	45	10	23				
	3732-3	37	32	250	65	6	30				
	3732-3-T12	37	32	250	65	12	30	21.5		MHA0512	HW40L
	2520-4	25	20	150	45	6	18	15.6		MINAUSTZ	HVV40L
	2520-4-T7	25	20	150	45	7	18	15.6	MGMN400-M/G/T		
	3125-4	31	25	200	45	6	23	18.9	MGGN400-□□-M		
	3125-4-T10	31	25	200	45	10	23	19	MRMN400-M MGMN400-∏∏-L/R		
	3732-4	37	32	250	65	6	30	21.5	MOMINT-00   L/IX		
	3732-4-T12	37	32	250	65	12	30	21.5			
	3125-5	31	25	200	45	8	23	19.4	MGMN500-M/G/T MGGN500-□□-M	BHA0616	
	3732-5	37	32	250	65	8	30	21.5	MRMN500-M MGMN500-□□-L/R	BHA0620	
	3125-6	31	25	200	45	8	23	19.4	MGMN600-MG	BHA0616	
	3732-6	37	32	250	65	8	30	21.5	MGGN600-□□-M MRMN600-M		
	3732-8	37	32	250	65	10	30	23.4	MRMN800-M	BHA0620	HW50L
	4540-8	45	40	300	70	10	37	27.2	MGMN800-M		
	3125-6A	31	25	200	45	8	23	19.4	MDONOO :	BHA0616	
	3732-6A	37	32	250	65	8	30	21.5	MRGN600-A		
	3732-8A	37	32	250	65	10	30	23.4	21.5	BHA0620	
	4540-8A	45	40	300	70	10	37	27.2	MRGN800-A		J

<sup>→</sup> Applicable inserts C28 ~ C30

### MGFHR/L









• R type insert

- (	m	m

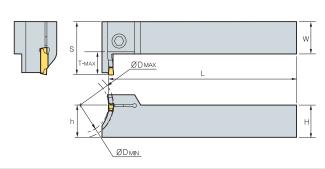
D	logianation	Ц _ /b)	W		s	Tuay	e	D	Inserts	Screw	Wrench
U	esignation	H = (h)	VV		3	Т-мах	Min	Max	inserts	97	
MGFHR/L	325-24/35-T10	25	25	150	25.6	10	24	35			
	29/40-T10	25	25	150	25.6	10	29	40			
	34/50-T10	25	25	150	25.6	10	34	50	MFMN300		
	44/70-T10	25	25	150	25.6	10	44	70	IVIFIVINGUU	DILAGGAG	HW50L
	64/99-T10	25	25	150	25.6	10	64	99		BHA0616	HVVOUL
	425-42/63-T15	25	25	150	25.6	15	42	63			
	62/120-T15	25	25	150	25.6	15	62	120	MGMN400-M/T		
	112/200-T15	25	25	150	25.6	15	112	200	MGMN400-□□-L/R		

<sup>→</sup> Applicable inserts C28 ~ C30

# MGFVR/L

For face grooving machining







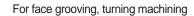
• R type insert

	le ciametia n	U _ /b)	W		s	Tv	Ø	ID D	Inserts	Screw	Wrench
L	esignation	H = (h)	VV	L	3	Т-мах	Min	Max	lliserts	9	
MGFVR/L	325-24/35-T10	25	25	150	36	10	24	35			
	29/40-T10	25	25	150	36	10	29	40			
	34/50-T10	25	25	150	36	10	34	50	MFMN300	MHA0512	HW40L
	44/70-T10	25	25	150	36	10	44	70			
	64/99-T10	25	25	150	36	10	64	99			
	425-44/60-T15	25	25	150	41	15	44	60	MOMPH AND DATE		
	60/120-T15	25	25	150	41	15	60	120	MGMN400-M/T MGMN400-□□-L/R	BHA0616	HW50L
	112/200-T15	25	25	150	41	15	112	200			

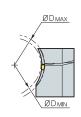
<sup>◆</sup> Applicable inserts C28 ~ C30

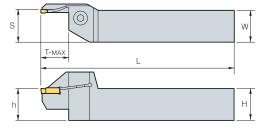
# MGT Series (Face Grooving)

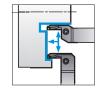
# **FGHH**











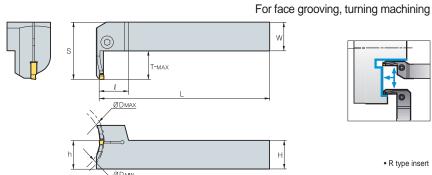
• R type insert

							_	Ø	íD		Screw	Wrench
	Designation	on	H = (h)	W	L	S	Т-мах	Min	Max	Inserts	9	
FGHH	320R	- 25/30	20	20	125	20.6	12	25	30			
		30/35	20	20	125	20.6	12	30	35	FMM300R-03		
		35/48	20	20	125	20.6	12	35	48			
		48/60	20	20	125	20.6	22	48	60			
		60/75	20	20	125	20.6	22	60	75	FGD300R-03		
		75/100	20	20	125	20.6	22	75	100	FGM300R-03		
		100/140	20	20	125	20.6	22	100	140			
	325R	- 25/30	25	25	150	25.6	12	25	30			
		30/35	25	25	150	25.6	12	30	35	FMM300R-03		
		35/48	25	25	150	25.6	12	35	48			
		48/60	25	25	150	25.6	22	48	60			
		60/75	25	25	150	25.6	22	60	75	FGD300R-03		
		75/100	25	25	150	25.6	22	75	100	FGM300R-03		
		100/140	25	25	150	25.6	22	100	140			
	420R	- 25/30	20	20	125	20.6	12	25	30			
		30/35	20	20	125	20.6	12	30	35	FMM400R-04		
		35/48	20	20	125	20.6	12	35	48			
		48/60	20	20	125	20.6	25	48	60			
		60/75	20	20	125	20.6	25	60	75	FGD400R-04		
		75/100	20	20	125	20.6	25	75	100	FGM400R-04		
		100/140	20	20	125	20.6	25	100	140			
	425R	- 25/30	25	25	150	25.6	12	25	30		DHA0616	LIMEOL
		30/35	25	25	150	25.6	12	30	35	FMM400R-04	BHA0616	HW50L
		35/48	25	25	150	25.6	12	35	48			
		48/60	25	25	150	25.6	25	48	60		1	
		60/75	25	25	150	25.6	25	60	75	FGD400R-04		
		75/100	25	25	150	25.6	25	75	100	FGM400R-04		
		100/140	25	25	150	25.6	25	100	140			
	520R	- 25/30	20	20	125	20.6	12	25	30			
		30/35	20	20	125	20.6	12	30	35	FMM500R-04		
		35/40	20	20	125	20.6	20	35	40	FIVIIVISUUR-04		
		40/48	20	20	125	20.6	20	40	48			
		48/60	20	20	125	20.6	25	48	60			
		60/75	20	20	125	20.6	25	60	75	FGD500R-04		
		75/100	20	20	125	20.6	25	75	100	FGM500R-04		
		100/140	20	20	125	20.6	25	100	140			
	525R	- 25/30	25	25	150	25.6	12	25	30			
		30/35	25	25	150	25.6	12	30	35	EMMEOOD 04		
		35/40	25	25	150	25.6	20	35	40	FMM500R-04		
		40/48	25	25	150	25.6	20	40	48			
		48/60	25	25	150	25.6	25	48	60			
		60/75	25	25	150	25.6	25	60	75	FGD500R-04		
		75/100	25	25	150	25.6	25	75	100	FGM500R-04		
		100/140	25	25	150	25.6	25	100	140			

# C MGT Series (Face Grooving)

**FGVH** 







• R type insert

FGVH 320R - 25/30	FGL	) FGM FMM				<del></del> ,	ØDMIN	-		<u> </u>		(mm
FGVH 320R - 25/30							_	Q	ØD		Screw	
30/35		Designation	H = (h)	W	L	S	Т-мах	Min	Max	Inserts	97	
35/48	FGVH	320R - 25/30	20	20	125	20.6	12	25	30			
### ### ### ### ### ### ### ### ### ##		30/35	20	20	125	20.6	12	30	35	FMM300R-03		
60/75		35/48	20	20	125	20.6	12	35	48			
75/100		48/60	20	20	125	20.6	22	48	60			
100/140		60/75	20	20	125	20.6	22	60	75	FGD300R-03		
325R - 25/30		75/100	20	20	125	20.6	22	75	100	FGM300R-03		
30/35		100/14	.0 20	20	125	20.6	22	100	140			
35/48		325R - 25/30	25	25	150	25.6	12	25	30			
48/60		30/35	25	25	150	25.6	12	30	35	FMM300R-03		
60/75		35/48	25	25	150	25.6	12	35	48			
75/100		48/60	25	25	150	25.6	22	48	60			
100/140		60/75	25	25	150	25.6	22	60	75	FGD300R-03		
A2OR - 25/30   20   20   125   20.6   12   25   30   30/35   20   20   125   20.6   12   30   35   5   5   5   5   5   5   5   5		75/100	25	25	150	25.6	22	75	100	FGM300R-03		
30/35		100/14	.0 25	25	150	25.6	22	100	140			
35/48 20 20 125 20.6 12 35 48 60 60/75 20 20 125 20.6 25 48 60 75 FGD500R-04 FGM500R-04		420R - 25/30	20	20	125	20.6	12	25	30			
48/60 20 20 125 20.6 25 48 60 75 FGD400R-04 FMM500R-04		30/35	20	20	125	20.6	12	30	35	FMM400R-04		
60/75		35/48	20	20	125	20.6	12	35	48			
75/100 20 20 125 20.6 25 75 100 FGM400R-04  425R - 25/30 25 25 150 25.6 12 25 30  30/35 25 25 150 25.6 12 35 48  48/60 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 100 140  520R - 25/30 20 20 125 20.6 25 100 140  520R - 25/30 20 20 125 20.6 25 100 140  520R - 25/30 20 20 125 20.6 25 100 140  520R - 25/30 20 20 125 20.6 25 100 140  520R - 25/30 20 20 125 20.6 25 100 140  520R - 25/30 20 20 125 20.6 20 40 48  48/60 20 20 125 20.6 25 60 75 FGD500R-04  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 20 40 48  48/60 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 20 40 48  48/60 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 75 100  FGM500R-04		48/60	20	20	125	20.6	25	48	60			
100/140		60/75	20	20	125	20.6	25	60	75	FGD400R-04		
### April		75/100	20	20	125	20.6	25	75	100	FGM400R-04		
30/35		100/14	<b>.0</b> 20	20	125	20.6	25	100	140			
30/35		425R - 25/30	25	25	150	25.6	12	25	30		DHA0616	LIMEOL
48/60		30/35	25	25	150	25.6	12	30	35	FMM400R-04	DHAU010	HVVOUL
60/75		35/48	25	25	150	25.6	12	35	48			
75/100		48/60	25	25	150	25.6	25	48	60			
100/140		60/75	25	25	150	25.6	25	60	75	FGD400R-04		
520R - 25/30       20       20       125       20.6       12       25       30         30/35       20       20       125       20.6       12       30       35         35/40       20       20       125       20.6       20       35       40         40/48       20       20       125       20.6       20       40       48         48/60       20       20       125       20.6       25       48       60         60/75       20       20       125       20.6       25       60       75       FGD500R-04         75/100       20       20       125       20.6       25       75       100       FGM500R-04         525R - 25/30       25       25       150       25.6       12       25       30         30/35       25       25       150       25.6       12       30       35         35/40       25       25       150       25.6       20       35       40         40/48       25       25       150       25.6       25       48       60         60/75       25       25       150       25.6		75/100	25	25	150	25.6	25	75	100	FGM400R-04		
30/35		100/14	<b>.0</b> 25	25	150	25.6	25	100	140			
35/40 20 20 125 20.6 20 35 40  40/48 20 20 125 20.6 20 40 48  48/60 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 60 75 FGD500R-04  75/100 20 20 125 20.6 25 100 140  525R - 25/30 25 25 150 25.6 12 30 35 40  40/48 25 25 150 25.6 20 40 48  48/60 25 25 150 25.6 20 40 48  48/60 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 20 40 48  48/60 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 60 75 FGD500R-04  FMM500R-04		520R - 25/30	20	20	125	20.6	12	25	30			
35/40 20 20 125 20.6 20 35 40  40/48 20 20 125 20.6 20 40 48  48/60 20 20 125 20.6 25 48 60  60/75 20 20 125 20.6 25 60 75 FGD500R-04  75/100 20 20 125 20.6 25 100 140  525R - 25/30 25 25 150 25.6 12 30 35  30/35 25 25 150 25.6 20 35 40  40/48 25 25 150 25.6 20 40 48  48/60 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 60 75 FGD500R-04  FMM500R-04		30/35	20	20	125	20.6	12	30	35	EMMEOOD 04		
48/60 20 20 125 20.6 25 48 60 60/75 20 20 125 20.6 25 60 75 FGD500R-04 FGM500R-04 100/140 20 20 125 20.6 25 100 140 525R - 25/30 25 25 150 25.6 12 30 35/40 25 25 150 25.6 20 35 40 40/48 25 25 150 25.6 20 40 48 48/60 25 25 150 25.6 25 48 60 60/75 25 25 150 25.6 25 60 75 FGD500R-04 FGM500R-04 75/100 25 25 150 25.6 25 75 100 FGM500R-04		35/40	20	20	125	20.6	20	35	40	FIVIIVISOUR-04		
60/75       20       20       125       20.6       25       60       75       FGD500R-04         75/100       20       20       125       20.6       25       75       100       FGM500R-04         100/140       20       20       125       20.6       25       100       140         525R - 25/30       25       25       150       25.6       12       25       30         30/35       25       25       150       25.6       12       30       35         35/40       25       25       150       25.6       20       35       40         40/48       25       25       150       25.6       20       40       48         48/60       25       25       150       25.6       25       48       60         60/75       25       25       150       25.6       25       60       75       FGD500R-04         75/100       25       25       150       25.6       25       75       100       FGM500R-04		40/48	20	20	125	20.6	20	40	48			
75/100 20 20 125 20.6 25 75 100 FGM500R-04  100/140 20 20 125 20.6 25 100 140  525R - 25/30 25 25 150 25.6 12 25 30  30/35 25 25 150 25.6 12 30 35  35/40 25 25 150 25.6 20 35 40  40/48 25 25 150 25.6 20 40 48  48/60 25 25 150 25.6 25 48 60  60/75 25 25 150 25.6 25 60 75 FGD500R-04  FGM500R-04		48/60	20	20	125	20.6	25	48	60			
100/140       20       20       125       20.6       25       100       140         525R - 25/30       25       25       150       25.6       12       25       30         30/35       25       25       150       25.6       12       30       35         35/40       25       25       150       25.6       20       35       40         40/48       25       25       150       25.6       20       40       48         48/60       25       25       150       25.6       25       48       60         60/75       25       25       150       25.6       25       60       75       FGD500R-04         75/100       25       25       150       25.6       25       75       100       FGM500R-04		60/75	20	20	125	20.6	25	60	75	FGD500R-04		
525R - 25/30       25       25       150       25.6       12       25       30         30/35       25       25       150       25.6       12       30       35         35/40       25       25       150       25.6       20       35       40         40/48       25       25       150       25.6       20       40       48         48/60       25       25       150       25.6       25       48       60         60/75       25       25       150       25.6       25       60       75       FGD500R-04         75/100       25       25       150       25.6       25       75       100       FGM500R-04		75/100	20	20	125	20.6	25	75	100	FGM500R-04		
30/35		100/14	<b>.0</b> 20	20	125	20.6	25	100	140			
35/40		525R - 25/30	25	25	150	25.6	12	25	30			
35/40       25       25       150       25.6       20       35       40         40/48       25       25       150       25.6       20       40       48         48/60       25       25       150       25.6       25       48       60         60/75       25       25       150       25.6       25       60       75       FGD500R-04         75/100       25       25       150       25.6       25       75       100       FGM500R-04		30/35	25	25	150	25.6	12	30	35	EMMEOOD 04		
48/60       25       25       150       25.6       25       48       60         60/75       25       25       150       25.6       25       60       75       FGD500R-04         75/100       25       25       150       25.6       25       75       100       FGM500R-04		35/40	25	25	150	25.6	20	35	40	FIVIIVIOUUK-U4		
60/75         25         25         150         25.6         25         60         75         FGD500R-04           75/100         25         25         150         25.6         25         75         100         FGM500R-04		40/48	25	25	150	25.6	20	40	48			
<b>75/100</b> 25 25 150 25.6 25 75 100 FGM500R-04		48/60	25	25	150	25.6	25	48	60			
		60/75	25	25	150	25.6	25	60	75	FGD500R-04		
<b>100/140</b> 25 25 150 25.6 25 100 140		75/100	25	25	150	25.6	25	75	100	FGM500R-04		
		100/14	.0 25	25	150	25.6	25	100	140			

### KGT/MGT cartridge

### Features

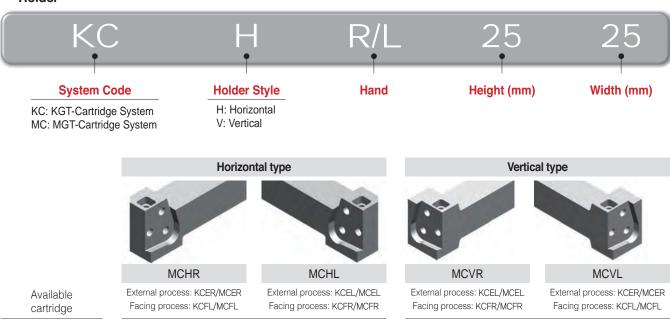
- Compatible and Economical due to divided cartridge & exclusive holder system from existing single body system
- Interchangeable cartridge
  - Various assembly depends on working style
  - Reduce cutting tool costs by over 30%
  - Setting with upper clamp & side screw
- Strong & Stable setting force
  - Simultaneous assembly of insert & cartridge
  - Easy assembly & tool exchange
- Stable assembly system
  - Simple & Superior setting force

# Simple & Strong Setting

Stable Assembly thanks to double screw & clamp

### Code system

### Holder



### Cartridge



# C KGT/MGT Cartridge Holder

# MCHR/L (Holder)

For grooving, turning, parting off, relief, profil machining









MCER/L MCFR/L

R type insert

Wrench

(mm)

Desig	nation	H = (h)	W	L	s	Q	h1	Cartridge	Clamp	Clamp Screw	Hin
MCHR/L	2020	20	20	133	20.7	30	12	KCER/L,			
	2525	25	25	133	25.7	30	7	KCFR/L MCER/L,	CXH8N	DHA0818F	RH
	3232	32	32	153	32.7	-	-	MCFR/L			

CXH8N DHA0818F RHA0613 FHGA0618 HW40L

nge Screw

Clamping Screw

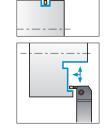
# MCVR/L (Holder)

For face grooving, turning machining









MCER/L MCFR/L

• R type insert

Desig	nation	H = (h)	W	L	s	Q	h1	Cartridge	Clamp	Clamp Screw	Hinge Screw	Clamping Screw	Wrench
MCVR/L	2020	20	20	150	38	30	12	KCER/L,					
	2525	25	25	150	43	30	7	KCFR/L MCER/L,	CXH8N	DHA0818F	RHA0613	FHGA0618	HW40L
	3232	32	32	170	50	-	-	MCFR/L					

<sup>◆</sup> Applicable cartridge C41 ~ C42

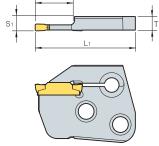
<sup>◆</sup> Applicable cartridge C41 ~ C42

# KCER/L (Cartridge)

For grooving, turning, parting off, relief, profil machining









• R type insert

(mm)

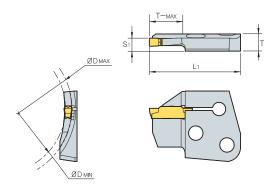
	Designation		La	S <sub>1</sub>	Т-мах		Inserts	Holder
	Designation	'	L1	31	I-MAX	Width	Designation	noidei
KCER/L	3-T16	5.97	44.5	6.35	16	3	KGMN	
	4-T16	5.97	44.5	6.35	16	4	KGMR/L	MCVR/L
	5-T20	5.87	48.5	6.35	20	5	KGGN	MCHR/L
	6-T20	5.82	48.5	6.35	20	6	KRMN	

<sup>→</sup> Applicable inserts C12 ~ C14

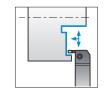
# KCFR/L (Cartridge)



KGMN KGMI



For face grooving, turning machining



• R type insert

	Decimation	_	1.	6.	Tv	e	)D		Inserts	Holder
	Designation	'	L <sub>1</sub>	S <sub>1</sub>	Т-мах	Min	Max	Width	Designation	Holder
KCFR/L	3-34/50-T16	8.35	44.5	6.35	16	34	50	3		
	44/70-T16	8.35	44.5	6.35	16	44	70	3	]	
	64/99-T16	8.35	44.5	6.35	16	64	99	3	KGMN KRMN	MCVR/L
	4-44/60-T16	8.35	44.5	6.35	16	44	60	4	KGGN	MCHR/L
	60/120-T16	8.35	44.5	6.35	16	60	120	4		
	112/200-T16	8.35	44.5	6.35	16	112	200	4		

<sup>→</sup> Applicable inserts C12 ~ C14

# C MGT Cartridge

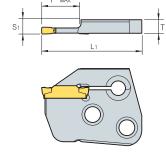
# MCER/L (Cartridge)

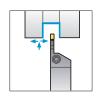
For grooving, turning, parting off, relief, profil machining











R type insert

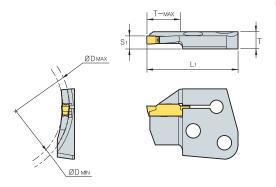
(mm)

	Designation	-	L	S <sub>1</sub>	Т-мах		Inserts	Holder
	Designation		L1	31	I-MAX	Width	Designation	noidei
MCER/L	3-T16	6.00	44.5	6.35	16	3	MGMN	
	4-T16	5.97	44.5	6.35	16	4	MGMR/L	MCVR/L
	5-T20	5.87	48.5	6.35	20	5	MGGN	MCHR/L
	6-T20	5.82	48.5	6.35	20	6	MRMN	

<sup>→</sup> Applicable inserts C28 ~ C30

# MCFR/L (Cartridge)





For face grooving, turning machining



R type insert

	D 1 41	_		•	<b></b>	Į Ø	ID D		Inserts	Halden
	Designation	Т	Lı	S <sub>1</sub>	Т-мах	Min	Max	Width	Designation	Holder
MCFR/L	3-24/35-T16	8.00	44.5	6.35	16	24	35	3		
	29/40-T16	8.00	44.5	6.35	16	29	40	3		
	34/50-T16	8.00	44.5	6.35	16	34	50	3	MFMN300	
	44/70-T16	8.00	44.5	6.35	16	44	70	3		MCVR/L
	64/99-T16	8.00	44.5	6.35	16	64	99	3		MCHR/L
	4-44/60-T16	7.97	44.5	6.35	16	44	60	4		
	60/120-T16	7.97	44.5	6.35	16	60	120	4	MGMN400	
	112/200-T16	7.97	44.5	6.35	16	112	200	4		

<sup>→</sup> Applicable inserts C28 ~ C30

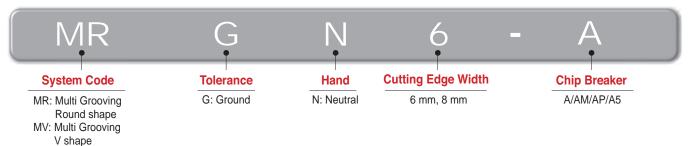
### MGT - Machining aluminum wheels

### Features

- · Optimally designed inserts for aluminum wheel machining
- Longer tool life when matched with the best grade for application
- Unique clamping mechanism places a strong clamp over the insert
- A variety of insert types for multi application functions

### Code system

### Insert



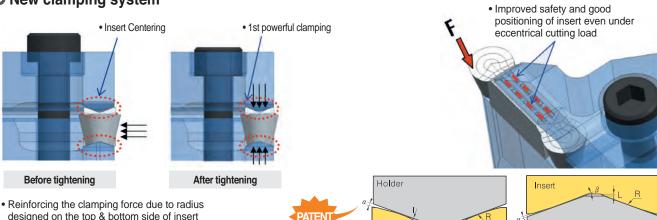
### Holder



### Various insert types

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

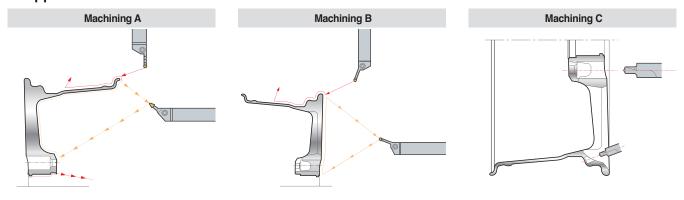




designed on the top & bottom side of insert and convex "DOT" on the top of insert

# C Available Insert for MGT Aluminum Wheel

### Application of aluminum wheels



### Recommended cutting condition

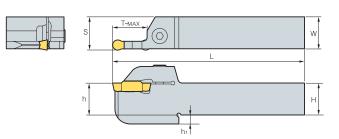
Workpiece		Hardness Brinell (HB)	kc (MPa)	vc (m/min)	fn (mm/rev)
Aluminum alloy (Forgod)	Unhardened	50 ~ 70	500 ~ 600	1,000 ~ 2,500	0.1 ~ 0.6
Aluminum alloy (Forged)	Hardened	90 ~ 110	700 ~ 900	300 ~ 1,000	0.1 ~ 0.5
Aluminum alloy (Cast)	Unhardened	70 ~ 80	700 ~ 800	300 ~ 1,000	0.1 ~ 0.5
Aluminum anoy (Cast)	Hardened	80 ~ 110	800 ~ 950	200 ~ 600	0.1 ~ 0.4
Copper alloy		90 ~ 110	700 ~ 900	300 ~ 800	0.1 ~ 0.5
Magnesium alloy		70 ~ 80	700 ~ 800	300 ~ 1,000	0.1 ~ 0.5

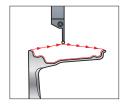
o				Coated	Uncoated		Dime	nsions	(mm)			
Application	Picture	De	esignation	DP150	G10	b	r	ı	d	t	Configuration	Page
		MVGN	8N-A-R1.2			-	1.2	30.0	6.0	6.9		C46
			8N-A-R1.6			-	1.6	30.0	6.0	6.9		
For Aluminum Wheel	MVGN										35'	
ıi.		MRGN	6N-A		•	6.0	3.0	26.0	5.0	5.9		C45
Į į			6N-AM			6.0	3.0	26.0	5.0	5.9		C46
or /	MRGN-A		6N-AP			6.0	3.0	26.0	5.0	5.9	d∳	
Œ.	WRGN-A		6N-A5		•	6.0	3.0	26.0	5.0	5.9		
			8N-A			8.0	4.0	30.0	6.0	6.5		
			8N-AM			8.0	4.0	30.0	6.0	6.5		
			8N-AP			8.0	4.0	30.0	6.0	6.5	t	
			8N-A5		•	8.0	4.0	30.0	6.0	6.5		

# MGEHR/L









 R type insert (mm)

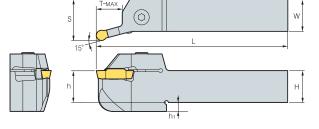
D	esignation	H = (h)	h1	W	L	s	Т-мах	Inserts	Screw	Wrench
MGEHR/L	25N-6A	25	7	25	150	25.55	23.5	MRGN6N-A/AP/AM		
	32N-6A	32	8	32	150	32.55	27	WIRGINON-A/AP/AWI		
	25N-8A	25	7	25	150	25.55	23.5	MRGN8N-A/AP/AM		
	32N-8A	32	8	32	150	32.55	27	WIRGNON-A/AP/AWI		LIMEOL
25N-6A5		25	7	25	150	25.55	23.5	MDONON AS	BHA0620	HW50L
	32N-6A5	32	8	32	150	32.55	27	MRGN6N-A5		
	25N-8A5	25	7	25	150	25.55	23.5	MDCNON AF		
	32N-8A5	32	8	32	150	32.55	27	MRGN8N-A5		

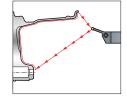
Applicable inserts C44

# MGEHR/L-15



MRGN





• R type insert (mm)

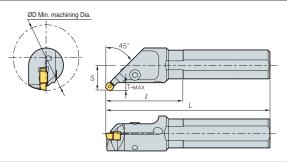
De	esignation	H = (h)	h1	W	L	s	Т-мах	Inserts	Screw	Wrench
MGEHR/L	25N-6A-15	25	7	25	150	32.2	20	MRGN6N-A/AP/AM		
	32N-6A-15	32	8	32	150	39.2	25	WRGNON-A/AP/AW		
	25N-8A-15	25	7	25	150	32.2	20	MRGN8N-A/AP/AM	BHA0620	LIMEOL
	32N-8A-15	32	8	32	150	39.2	25	IVIRGINOIN-A/AP/AIVI		
	25N-6A5-15	25	7	25	150	32.2	20	MDCNCN AF	DHAU020	HW50L
	32N-6A5-15	32	8	32	150	39.2	25	MRGN6N-A5		
	25N-8A5-15	25	7	25	150	32.2	20	MRGN8N-A5		
	32N-8A5-15	32	8	32	150	39.2	25	INIKGINON-A5		

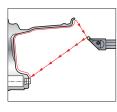
Applicable inserts C44

# MGIUR/L-MR



**MRGN** 





• R type insert (mm)

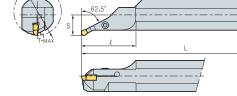
D	esignation	ØD	Ød	L	Q	Т-мах	н	s	Inserts	Screw	Wrench
MGIUR/L	6832-8A-MR	68	32	170	65	7	30	26	MRGN8N-A/AM/AP	BHA0620	HW50L
	6832-8A5-MR	68	32	170	65	7	30	26	MRGN8N-A5	DПAU620	HVVOUL

Applicable inserts C44

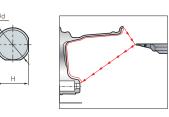
# C MGT Aluminum Wheel

### MGIXR/L-MR





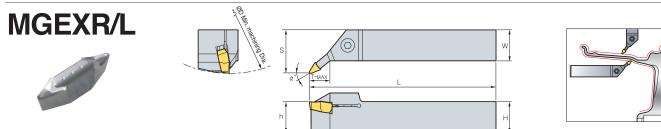
ØD Min. machining Dia.



R type insert

Designation		ØD	Ød	L	Q	Т-мах	н	S	Inserts	Screw	Wrench
MGIXR/L 7	7050-8A-MR	70	50	350	80	5.5	46	30.2	MRGN8N-A/AM/AP	BHA0620	HW50L
7	7050-8A5-MR	70	50	350	80	5.5	46	30.2	MRGN8N-A5	DHAU020	HVVSUL

Applicable inserts C44

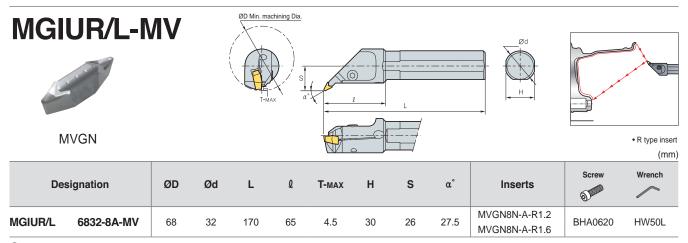


**MVGN** 

	R type insert
	(mm)
Screw	Wrench
9	

D	Designation		W	L	S	Т-мах	α°	Inserts	Screw	Wrench
MGEXR/L	25N-8A-5V	25	25	150	29	23.5	5	MVGN8N-A-R1.2	BHA0620	HW50L
	25N-8A-22.5V	25	25	150	35	27	22.5	MVGN8N-A-R1.6	DHAU020	HWOOL

Applicable inserts C44



Applicable inserts C44

### **Economical 3-corner insert for high precision grooving**

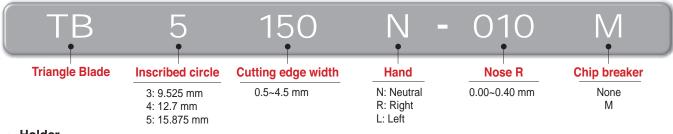
## TB/TB-M

- Economical 3-corner insert for grooving
- Various cutting edge size ranging from 1.25~4.5 mm
- High accuracy ground insert ensures high precision machining
- Stable chip control optimized for automated grooving process

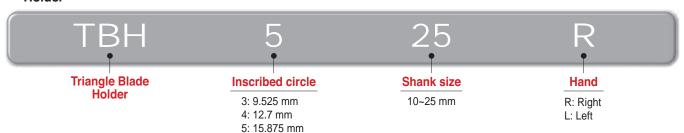


### Code system

Insert



Holder



### TB/TB-M

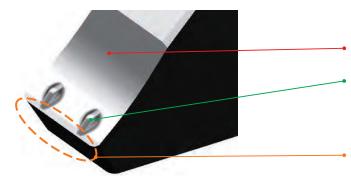
5	Specification	TB3000R/L, TB4000R/L	TB4000R-M	TB5000N-000-M		
ı	Designation	TB3125R/L~TB3430R/L (Inscribed circle of 9.525 mm) TB4125R/L~TB4430R/L (Inscribed circle of 12.7 mm)	TB4150R-M~TB4450R-M (Inscribed circle of 12.7 mm)	TB5050N-000-M~TB5318-020-M (Inscribed circle of 15.875 mm)		
ı	Insert shape	50		10		
	Chip breaker	Ground chip breaker	Pressed chip breaker	Pressed chip breaker		
	Hand	Right/Left-handed	Right-handed	Neutral		
res	Cutting edge width (b)	TB3000: 1.25~4.3 mm TB4000: 1.25~4.5 mm	1.5~4.5 mm	0.5~3.18 mm		
Features	Depth of cut (T-MAX)	TB3000: ~3.5 mm TB4000: ~5.0 mm	~5.0 mm	~6.5 mm		
	Shape	0	Χ	X		
	Cutting edge width	0	0	0		
(	Chip breaker shape	T. Mark		D D		
Apı	plication range	Р	P, M, K	P, M, K		
	Grade	CN2000, PC5300	CN2000, PC5300	PC5300		

# C

### **Technical Information for TB/TB-M**

### TB-M chip breaker

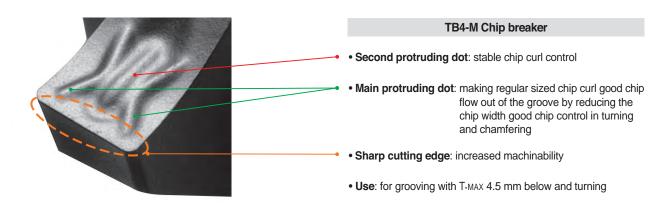
- ullet Minimized cutting force at high speed and high feed ullet Smooth chip evacuation outside each groove
- High precision cutting performance → Exceptional surface finish and accurate dimensions
- ullet Excellent chip flow and cutting results ullet Ideal for automated and unmanned productionw



### TB5-M Chip breaker

- Lowered back area: reduced load of chip evacuation due to minimizing chip friction
- Beveled protruding dot: made regular sized chip curls good chip flow out of the groove by reducing the chip width minimized load for chip evacuation in high depth of cut
- Land: prevented chipping and increased stability in interrupted machining
- Use: for grooving with T-MAX 6.5 mm below, parting and interrupted machining

Designation	TB5050N-M ~TB5120N-M	TB5140N-M ~TB5178N-M	TB5196N-M ~TB5239N-M	TB5247N-M ~TB5287N-M	TB5300N-M ~TB5318N-M
Shape		4		2	20
Cutting edge width (b)	0.5~1.2 mm	1.40~1.78 mm	1.96~2.39 mm	2.47~2.87 mm	3.0~3.18 mm



Designation	TB4150R-M~TB4185R-M	TB4200R-M~TB4228R-M	TB4300R-M~TB4350R-M	TB4400R-M~TB4450R-M
Shape				200 / J
Cutting edge width (b)	1.5~1.85 mm	2.0~2.8 mm	3.0~3.5 mm	4.0~4.5 mm

# Technical Information for TB/TB-M C

### Guide for TB

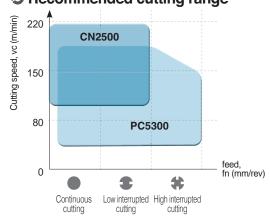
		ТВ			TB3 / TB4	TB4-M	TB5-M			
	Recomm	ended ma	chining m	ethod	+	1 -2-	†			
Cutting edge width W	Dept	h of cut T-	MAX	Recommended feed rate	50		10			
	TB3/TB4	TB4-M	TB5-M	(mm/rev)						
0.50	-	-	2.5		-	-	•			
0.80	-	-	1.6		-	-	•			
1.00	-	-	3.5	0.05 (0.00.04)	-	-	•			
1.04	-	-	2.0	0.05 (0.03~0.1)	-	-	•			
1.20	-	-	2.0	1	-	-	•			
1.25	2.0	-	2.0	1	•	-	-			
1.40	2.0	-	6.5		•	-	•			
1.45	2.0	-	-	0.10 (0.03~0.15)	•	-	-			
1.47	-	-	6.5		-	-	•			
1.50	3.5	3.5	6.5		•	•	•			
1.57	-		6.5		-	_	•			
1.70	-	-	6.5		-	_	•			
1.75	3.5	3.5	-		•	•	-			
1.78	-	-	6.5		-	_	•			
1.85	3.5	3.5	-		•	•	-			
1.96	-	-	6.5			-	•			
2.00	3.5	3.5	6.5		•	•	•			
2.15	3.5	3.5	-		•	•	-			
2.22	6.5	-	6.5	-	-	-	•			
2.30	3.5	3.5	6.5	-	•	•	•			
2.39	-	-	6.5	-		_	•			
2.47	_	_	6.5	-	<u> </u>	_	•			
2.50	4.0	4.0	6.5	0.12 (0.03~0.2)	•	•	•			
2.65	4.0	4.0	6.5		•	•	-			
2.70	-	-	6.5			_	•			
2.80	4.0	4.0	-		•	•	-			
2.87	-	-	6.5		-	-	•			
3.00	4.0	4.0	6.5		•	•	•			
3.15	-	-	6.5	_	<u> </u>	-	•			
3.18	-		6.5		<u>-</u>		•			
3.30	4.0	-	-	-	•	-	-			
3.50	5.0	5.0	-	0.15 (0.05~0.2)	•	•	- -			
4.00	5.0	5.0	-	0.13 (0.03~0.2)	•	•	<u>-</u>			
4.00	5.0	5.0	-	-	•	•	<del>-</del>			
4.50	5.0		-	-	•	•	<u>-</u>			
4.50	0.0	5.0	_				<u>-</u>			

### Recommended cutting conditions

Markeiga	Overde	CN2	2500 (Ceri	met)	PC5300 (Coated)			
Workpiece	Grade	Min	Recommended	Max.	Min	Recommended	Max.	
P	SM□□C type	100	160	220	80	140	200	
P	SCM type	100	150	200	80	130	180	
М	STS type	-	-	-	40	80	150	
K	GC, GCD type	-	-	-	80	130	180	

Recommended cutting speed, vc (m/min)

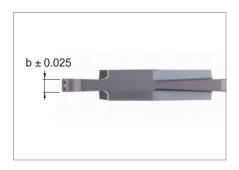
### Recommended cutting range

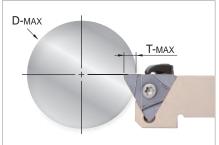


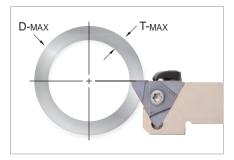
# C Technical Information for TB/TB-M

### **○** TB5-M machining range

- $\bullet$  There is a limit to cutting diameters of TB5-M when depth of cuts are over 5  $\mbox{mm}$ (e.g. When cutting with a TB5200N-020-M insert at the depth of 6.2 mm, Ø60 D-MAX is available)
- N.L = No limit







	Desimation		r	g (T-MAX)	ØD-MAX								
	Designation	b			T ≤ 3.0	T ≤ 3.5	T ≤ 4.0	T ≤ 4.5	T ≤ 5.0	T ≤ 5.5	T ≤ 6.0	T ≤ 6.4	T ≤ 6.5
ТВ	5050N- 000-M	0.50	0.00	1.0	-	-	-	-	-	-	-	-	-
	004-M	0.50	0.04	2.5	-	-	-	-	-	-	-	-	-
	5080N- 000-M	0.80	0.00	1.6	-	-	-	-	-	-	-	-	-
	5100N- 006-M	1.00	0.06	3.5	-	-	-	-	-	-	-	-	-
	5104N- 000-M	1.04	0.00	2.0	-	-	-	-	-	-	-	-	-
	5120N- 000-M	1.20	0.00	2.0	-	-	-	-	-	-	-	-	-
	5140N- 000-M	1.40	0.00	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5147N- 000-M	1.47	0.00	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5150N- 010-M	1.50	0.10	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	015-M	1.50	0.15	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5157N- 015-M	1.57	0.15	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5170N- 010-M	1.70	0.10	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5178N- 018-M	1.78	0.18	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5196N- 015-M	1.96	0.15	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5200N- 020-M	2.00	0.20	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5222N- 015-M	2.22	0.15	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5230N- 020-M	2.30	0.20	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5239N- 015-M	2.39	0.15	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5247N- 020-M	2.47	0.20	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5250N- 020-M	2.50	0.20	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5270N- 010-M	2.70	0.10	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5287N- 020-M	2.87	0.20	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5300N- 000-M	3.00	0.00	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5300N- 020-M	3.00	0.20	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	040-M	3.00	0.40	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5315N- 015-M	3.15	0.15	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40
	5318N- 020-M	3.18	0.20	6.5	N.L	N.L	N.L	N.L	N.L	Ø300	Ø170	Ø60	Ø40

#### Insert

			Cer	met	Coated		Dime	ensions	(mm)		
Picture		Designation	CN2000	CN2500	PC5300	b	g (T-max)	r	w	d	Configuration
	ТВ	3125R				1.25	1.5	0.2	4.76	9.525	
	(Right-	3145R				1.45	1.5	0.2	4.76	9.525	
	handed)	3175R				1.75	2.5	0.2	4.76	9.525	
		3185R				1.85	2.5	0.2	4.76	9.525	
		3200R				2.00	2.5	0.2	4.76	9.525	
		3230R				2.30	3.5	0.3	4.76	9.525	
		3280R				2.80	3.5	0.3	4.76	9.525	
		3330R				3.30	3.5	0.3	4.76	9.525	
		3430R				4.30	3.5	0.4	4.76	9.525	
		4125R	•		•	1.25	2.0	0.2	4.76	12.7	
		4145R	•		•	1.45	2.0	0.2	4.76	12.7	r <del>-   b   -</del> .
-1		4150R	•		•	1.50	3.5	0.2	4.76	12.7	
20		4175R	•		•	1.75	3.5	0.2	4.76	12.7	
10		4185R	•		•	1.85	3.5	0.2	4.76	12.7	
		4200R	•		•	2.00	3.5	0.2	4.76	12.7	
		4215R	•		•	2.15	3.5	0.2	4.76	12.7	
		4230R	•		•	2.30	3.5	0.2	4.76	12.7	
		4250R	•		•	2.50	4.0	0.3	4.76	12.7	
		4265R	•		•	2.65	4.0	0.3	4.76	12.7	
		4280R	•		•	2.80	4.0	0.3	4.76	12.7	
		4300R	•		•	3.00	4.0	0.3	4.76	12.7	
		4330R	•			3.30	4.0	0.3	4.76	12.7	
		4350R	•			3.50	5.0	0.3	4.76	12.7	
		4400R	•		•	4.00	5.0	0.4	4.76	12.7	
		4430R	•		•	4.30	5.0	0.4	4.76	12.7	
		4450R	•		•	4.50	5.0	0.4	4.76	12.7	
	ТВ	3125L				1.25	1.5	0.2	4.76	9.525	
	(Left-	3145L				1.45	1.5	0.2	4.76	9.525	
	handed)	3175L				1.75	2.5	0.2	4.76	9.525	
		3185L				1.85	2.5	0.2	4.76	9.525	
		3200L				2.00	2.5	0.2	4.76	9.525	
		3230L				2.30	3.5	0.3	4.76	9.525	
		3280L				2.80	3.5	0.3	4.76	9.525	
		3330L				3.30	3.5	0.3	4.76	9.525	
		3430L				4.30	3.5	0.4	4.76	9.525	
		4125L				1.25	2.0	0.2	4.76	12.7	
		4145L				1.45	2.0	0.2	4.76	12.7	<u> </u>
-0		4150L				1.50	3.5	0.2	4.76	12.7	
- 1		4175L				1.75	3.5	0.2	4.76	12.7	
6		4185L				1.85	3.5	0.2	4.76	12.7	
-		4200L				2.00	3.5	0.2	4.76	12.7	w
		4215L				2.15	3.5	0.2	4.76	12.7	
		4230L				2.30	3.5	0.2	4.76	12.7	
		4250L				2.50	4.0	0.3	4.76	12.7	
		4265L				2.65	4.0	0.3	4.76	12.7	
		4280L				2.80	4.0	0.3	4.76	12.7	
		4300L				3.00	4.0	0.3	4.76	12.7	
		4330L				3.30	4.0	0.3	4.76	12.7	
		4350L				3.50	5.0	0.3	4.76	12.7	
		4400L				4.00	5.0	0.4	4.76	12.7	
		4430L				4.30	5.0	0.4	4.76	12.7	
		4450L				4.50	5.0	0.4	4.76	12.7	

### С тв/тв-м

#### Insert

			Cer	met	Coated		Dime	nsions (	mm)		
Picture	C	esignation	CN2000	CN2500	PC5300	b	g (T-max)	r	w	d	Configuration
	ТВ	4150R-M	•		•	1.50	3.5	0.20	4.76	12.7	
(   t	(Right- nanded)	4175R-M	•		•	1.75	3.5	0.20	4.76	12.7	
	,	4185R-M	•		•	1.85	3.5	0.20	4.76	12.7	
		4200R-M	•		•	2.00	3.5	0.20	4.76	12.7	
		4215R-M	•		•	2.15	3.5	0.20	4.76	12.7	
		4230R-M	•		•	2.30	3.5	0.20	4.76	12.7	
C.		4250R-M	•		•	2.50	4.0	0.30	4.76	12.7	
37/		4265R-M	•		•	2.65	4.0	0.30	4.76	12.7	
		4280R-M	•		•	2.80	4.0	0.30	4.76	12.7	
		4300R-M	•		•	3.00	4.0	0.30	4.76	12.7	_   W
		4330R-M			•	3.30	4.0	0.30	4.76	12.7	
		4350R-M	•		•	3.50	5.0	0.30	4.76	12.7	
		4400R-M	•		•	4.00	5.0	0.40	4.76	12.7	
		4430R-M	•		•	4.30	5.0	0.40	4.76	12.7	
		4450R-M	•		•	4.50	5.0	0.40	4.76	12.7	
	ТВ	5050N-000-M			•	0.50	1.0	0.00	4.50	15.875	
(	Neutral)	5050N-004-M			•	0.50	2.5	0.04	4.50	15.875	
		5080N-000-M			•	0.80	1.6	0.00	4.50	15.875	
		5100N-006-M			•	1.00	3.5	0.06	4.50	15.875	
		5104N-000-M			•	1.04	2.0	0.00	4.50	15.875	
		5120N-000-M			•	1.20	2.0	0.00	4.50	15.875	
		5140N-000-M			•	1.40	6.5	0.00	4.50	15.875	
		5147N-000-M			•	1.47	6.5	0.00	4.50	15.875	
		5150N-010-M			•	1.50	6.5	0.10	4.50	15.875	
		5150N-015-M			•	1.50	6.5	0.15	4.50	15.875	
		5157N-015-M			•	1.57	6.5	0.15	4.50	15.875	r b
new		5170N-010-M			•	1.70	6.5	0.10	4.50	15.875	
20		5178N-018-M			•	1.78	6.5	0.18	4.50	15.875	***************************************
18		5196N-015-M			•	1.96	6.5	0.15	4.50	15.875	
		5200N-020-M			•	2.00	6.5	0.20	4.50	15.875	
		5222N-015-M			•	2.22	6.5	0.15	4.50	15.875	_ W
		5230N-020-M			•	2.30	6.5	0.20	4.50	15.875	
		5239N-015-M			•	2.39	6.5	0.15	4.50	15.875	
		5247N-020-M			•	2.47	6.5	0.20	4.50	15.875	
		5250N-020-M			•	2.50	6.5	0.20	4.50	15.875	
		5270N-010-M			•	2.70	6.5	0.10	4.50	15.875	
		5287N-020-M			•	2.87	6.5	0.20	4.50	15.875	
		5300N-000-M			•	3.00	6.5	0.00	4.50	15.875	
		5300N-020-M			•	3.00	6.5	0.20	4.50	15.875	
		5300N-040-M			•	3.00	6.5	0.40	4.50	15.875	
		5315N-015-M			•	3.15	6.5	0.15	4.50	15.875	
		5318N-020-M			•	3.18	6.5	0.20	4.50	15.875	

#### Insert

			Cer	met	Coated		Di	mensic	ons (mr	n)		
Picture		Designation	CN2000	CN2500	PC5300	b	g (T-MAX)	r	a°	w	d	Configuration
	ТВ	5050N-004-P				0.50	1.0	0.04	-	4.50	15.875	
	(Neutral)	5100N-010-P				1.00	3.5	0.10	-	4.50	15.875	
		5150N-010-P				1.50	6.5	0.10	-	4.50	15.875	
		020-P				1.50	6.5	0.20	-	4.50	15.875	
		5200N-010-P				2.00	6.5	0.10	-	4.50	15.875	
new		020-P				2.00	6.5	0.20	-	4.50	15.875	
10		5239N-015-P				2.39	6.5	0.15	-	4.50	15.875	
V		5250N-020-P				2.50	6.5	0.20	-	4.50	15.875	
		5300N-020-P				3.00	6.5	0.20	-	4.50	15.875	W
	TB (Neutral,	5100N-6DR-P				1.00	3.5	0.05	6	4.50	15.875	
	Right	15DR-P				1.00	3.5	0.05	15	4.50	15.875	
new	cutting)	5150N-6DR-P				1.50	6.5	0.05	6	4.50	15.875	
1		15DR-P				1.50	6.5	0.05	15	4.50	15.875	9
10		5200N-6DR-P				2.00	6.5	0.10	6	4.50	15.875	
		15DR-P				2.00	6.5	0.10	15	4.50	15.875	- W
	ТВ	5100N-6DL-P				1.00	3.5	0.05	6	4.50	15.875	
	(Neutral, Left	15DL-P				1.00	3.5	0.05	15	4.50	15.875	
	cutting)	5150N-6DL-P				1.50	6.5	0.05	6	4.50	15.875	_r _b
new		15DL-P				1.50	6.5	0.05	15	4.50	15.875	9
10		5200N-6DL-P				2.00	6.5	0.10	6	4.50	15.875	
A		15DL-P				2.00	6.5	0.10	15	4.50	15.875	
												. 12
	ТВ	5157N-079-P				1.57	6.5	0.79	-	4.50	15.875	
	(Neutral, Round	5200N-100-P				2.00	6.5	1.00	-	4.50	15.875	
new	shape)	5239N-120-P				2.39	6.5	1.20	-	4.50	15.875	
V		5300N-150-P				3.00	6.5	1.50	-	4.50	15.875	d w
												<del>  </del>

• : Stock item

### С тв/тв-м

### **TBH**

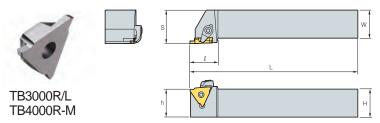
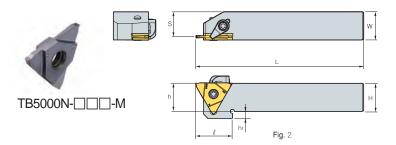
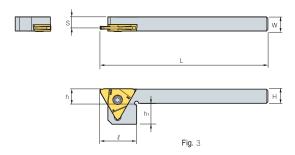


Fig. 1



• R type insert





D				Dimer	nsions			Incorto	Clamp		Fi		
De	esignation	H = (h)	W	L	Q	h <sub>1</sub>	S	Inserts			O)IIIIII		Fig
ТВН	320R/L-23	20	20	125	25.5	-	25	TB3125~3230R/L					
	320R/L-33	20	20	125	25.5	-	25	TB3280~3330R/L					
	320R/L-43	20	20	125	25.5	-	25	TB3430R/L					
	325R/L-23	25	25	150	25.5	-	30	TB3125~3230R/L					
	325R/L-33	25	25	150	25.5	-	30	TB3280~3330R/L					
	325R/L-43	25	25	150	25.5	-	30	TB3430R/L	CS6D4	DHA0617		HWOOL	1
	420R/L-23	20	20	125	25.5	-	25	TB4125~4230R/L	CSOKI	DHAUGI7	-	HWOOL	'
	420R/L-33	20	20	125	25.5	-	25	TB4250~4330R/L					
	420R/L-45	20	20	125	25.5	-	25	TB4350~4450R/L					
	425R/L-23	25	25	150	25.5	-	30	TB4125~4230R/L					
	425R/L-33	25	25	150	25.5	-	30	TB4250~4330R/L					
	425R/L-45	25	25	150	25.5	-	30	TB4350~4450R/L					
ТВН	510R/L	10	10	125	25	15	7.8				ETNIA 0E12	TM20I	3
	512R/L	12	12	125	25	13	9.8		_	-	FINAUSIZ	TVVZUL	3
	516R/L	16	16	125	26	9	13.8	TB5050~5318N				1.04/001	
	520R/L	20	20	125	26	5	17.8		CS6R1	DHA0617	FTNA0516	HW30L, TW20L	2
	525R/L	25	25	150	-	-	22.8					1 VVZUL	

#### **The Solution for High-Precision Grooving**

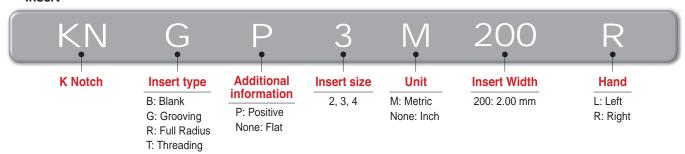
### K Notch

#### **KORLOY Grooving Tool**

- KORLOY clamping system offers high rigidity for high precision machining
- High-quality cutting edge ensuring long tool life and excellent machinability
- Provides various cutting edge widths for a wide range of selection

#### Code system

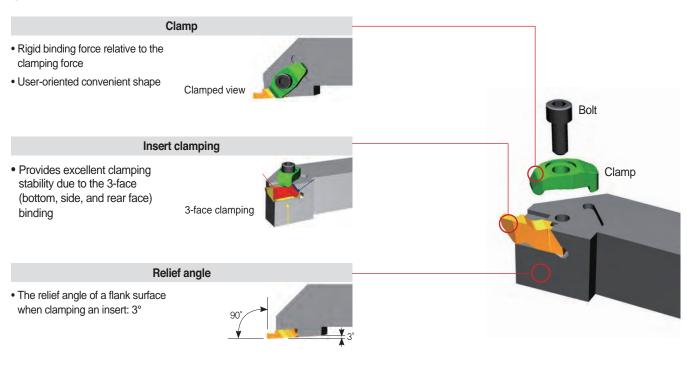
#### Insert



#### Holder



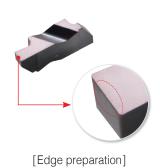
#### Features of holder





### C Technical Information for K Notch

#### Features of insert



• Long tool life



• Cutting edges in uniform quality

[Competitor]

High-quality edge preparation

#### Mirror-like rake surface

- Improved resistance to welding and chipping
- Improved surface finish of workpieces



[K Notch]

#### Recommended feed per insert type

Туре		KNG	KNGP	KNR	KNRP	KNB
Insert shape						
Cutting-ed	dge	10	67	10'	10"	10
Applicati	on	General grooving	General grooving	Turning profiling	Turning profiling	Blank
Recom- mended	1st	P, K	M, N, S	P, K	M, N, S	-
workpiece	2nd	M, N, S	P, K	M, N, S	P, K	-
	Р	0.10 - 0.28	0.08 - 0.25	0.10 - 0.28	0.08 - 0.25	-
Recom- mended	М	0.10 - 0.25	0.08 - 0.25	0.10 - 0.25	0.08 - 0.25	-
feed,	Κ	0.10 - 0.28	0.08 - 0.25	0.10 - 0.28	0.08 - 0.25	-
fn (mm/ rev)	N	0.01 - 0.30	0.01 - 0.30	0.01 - 0.30	0.01 - 0.30	-
	S	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	-

#### Recommended cutting speed per grade

	Modules	Overde		Recon	nmended cutting speed	d, vc (m/min)	
	Workpiece	Grade	50	100	200	300	600
Р	Steel	PC5300		80	200		
Р	Alloy steel	PC5300	60		160	3	
N A	Stainless steel	PC5300		80 130		\$	
M	Stainless steel	PC8110		80	160		
K	Cast iron	PC5300		90	200	3	
N	Non-ferrous metal	PC5300			150		600
S	Heat-resistant alloy	PC8110	35 65				

#### **○** Insert (Metric)

Ę		-			Coa	ited	Uncoated					Dimen	sions					
gati	Picture	Des	igna	tion			0			mm					inch			Configuration
Application	ricture	Des	igiia		PC5300	PC8110	H05	s	W1	r	t	Q	s	W1	r	t	Q	Oomiguration
		KNG	2M	150R				5.56	1.50	0.19	2.79	13.030	0.219	0.059	0.0075	0.11	0.513	
				200R				5.56	2.00	0.19	2.79	13.030	0.219	0.079	0.0075	0.11	0.513	
				250R				5.56	2.50	0.19	2.79	13.030	0.219	0.098	0.0075	0.11	0.513	55°
				300R				5.56	3.00	0.19	2.79	13.030	0.219	0.118	0.0075	0.11	0.513	
<u>a</u>			3M	150R	•	•		8.74	1.50	0.19	2.79	22.709	0.344	0.059	0.0075	0.075	0.894	s
Flat Top				200R	•	•		8.74	2.00	0.19	2.79	22.709	0.344	0.079	0.0075	0.11	0.894	<u>r</u> <u>t</u>
Ë				250R	•	•		8.74	2.50	0.19	3.81	22.709	0.344	0.098	0.0075	0.15	0.894	W1
				300R	•	•		8.74	3.00	0.19	3.81	22.709	0.344	0.118	0.0075	0.15	0.894	
				400R	•	•		8.74	4.00	0.19	3.81	22.709	0.344	0.157	0.0075	0.15	0.894	3° 0
			4M	500R				11.51	5.00	0.20	6.35	28.663	0.453	0.197	0.0079	0.25	1.128	
				600R				11.51	6.00	0.20	6.35	28.663	0.453	0.236	0.0079	0.25	1.128	
		KNGP	2M	150R				5.56	1.50	0.19	2.79	13.030	0.219	0.059	0.0075	0.11	0.513	
				200R				5.56	2.00	0.19	2.79	13.030	0.219	0.079	0.0075	0.11	0.513	
				250R				5.56	2.50	0.19	2.79	13.030	0.219	0.098	0.0075	0.11	0.513	55°
ਰ				300R				5.56	3.00	0.19	2.79	13.030	0.219		0.0075	0.11	0.513	
C/B Ground			3M	150R	•	•		8.74	1.50	0.19	2.79	22.709	0.344		0.0075	0.075	0.894	
چَ				200R	•	•		8.74	2.00	0.19	2.79	22.709	0.344		0.0075	0.11	0.894	<u>r</u> _t
S/B				250R	•	•		8.74	2.50	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	W1
				300R	•	•		8.74	3.00	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	.3° 0
				400R	•	•		8.74	4.00	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	<u> </u>
			4M	500R				11.51	5.00	0.20	6.35	28.663	0.453		0.0079	0.25	1.128	
				600R				11.51	6.00	0.20	6.35	28.663	0.453		0.0079	0.25	1.128	
		KNB	2R					5.56	3.81	-	-	13.030	0.219	0.150	-	-	0.513	
			3R					8.74	4.95	-	-	22.709	0.344	0.195	-	-	0.894	55°
			4R					11.51	6.48	-	-	28.663	0.453	0.255	-	-	1.128	
Blank																		w1 3 0
										-								

• : Stock item

### **○** Insert (Threading)

ioi				Coa	ated				Dim	ensions	6			
Application	Picture	Des	ignation	300	110		mm			inch		Pitch (Ex	ternal)	Configuration
App				PC5300	PC8110	s	W1	r	s	<b>W</b> 1	r	mm	tpi	
		KNT	2R			5.56	3.81	0.10	0.219	0.150	0.004	0.70-3.00	8-36	
			3R			8.74	4.95	0.17	0.344	0.195	0.007	1.25-4.00	6-20	55°
			4R			11.51	6.48	0.17	0.453	0.255	0.007	1.25-6.25	4-20	s
Partial Protiling 60°														Internal 60° External Partial Profiling 60°

# C K Notch

#### Insert (Inch)

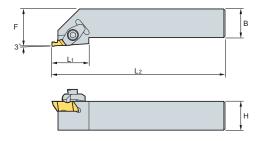
on				Coa	ated					Dimer	nsions					
cati	Picture	Des	ignation					mm					inch			Configuration
Application			J	PC5300	PC8110	s	W1	r	t	Q	s	W1	r	t	Q	Janaan
		KNG	2031R	-	-	5.56	0.79	0.09	1.27	13.030	0.219	0.031	0.0035	0.05	0.513	
			2041R			5.56	1.04	0.09	1.27	13.030	0.219	0.041	0.0035	0.05	0.513	
			2047R			5.56	1.19	0.09	1.27	13.030	0.219	0.047	0.0035	0.05	0.513	
			2058R			5.56	1.47	0.19	1.27	13.030	0.219	0.058	0.0075	0.05	0.513	
			2062R			5.56	1.57	0.19	2.79	13.030	0.219	0.062	0.0075	0.11	0.513	
			2094R			5.56	2.39	0.19	2.79	13.030	0.219	0.094	0.0075	0.11	0.513	
			2125R			5.56	3.18	0.19	2.79	13.030	0.219	0.125	0.0075	0.11	0.513	
			3047R			8.74	1.19	0.19	1.91	22.709	0.344	0.047	0.0075	0.075	0.894	
			3062R	•	•	8.74	1.57	0.19	2.39	22.709	0.344	0.062	0.0075	0.094	0.894	
			3072R			8.74	1.83	0.19	2.39	22.709	0.344	0.072	0.0075	0.094	0.894	
			3078R	•	•	8.74	1.98	0.19	2.39	22.709	0.344	0.078	0.0075	0.094	0.894	55°
			3088R			8.74	2.24	0.19	2.39	22.709	0.344	0.088	0.0075	0.094	0.894	
<u>o</u>			3094R			8.74	2.39	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	s
Flat Top			3097R	•	•	8.74	2.46	0.32	3.81	22.709	0.344		0.0125	0.15	0.894	r
Fla			3105R			8.74	2.67	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	w <sub>1</sub>
			3110R			8.74	2.79	0.32	3.81	22.709	0.344		0.0125	0.15	0.894	
			3122R			8.74	3.10	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	3° 0
			3125R	•	•	8.74	3.18	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	
			3142R	+-		8.74	3.61	0.32	3.81	22.709	0.344		0.0125	0.15	0.894	
			3156R	•	•	8.74	3.96	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	
			3178R			8.74	4.52	0.19	3.81	22.709	0.344		0.0075	0.15	0.894	
			3185R 3189R	+		8.74	4.70	0.57	3.81	22.709	0.344		0.0225	0.15	0.894	
			4125R	•	•	8.74 11.51	4.80 3.18	0.57	3.81	22.709 28.663	0.344		0.0225	0.15	0.894 1.128	
			4189R			11.51	4.80	0.13	6.35	28.663	0.453		0.0073	0.13	1.128	
			4213R			11.51	5.41	0.19	6.35	28.663	0.453		0.0075	0.25	1.128	
			4219R			11.51	5.56	0.13	6.35	28.663	0.453		0.0225	0.25	1.128	
			4250R			11.51	6.35	0.57	6.35	28.663	0.453	0.250	0.0225	0.25	1.128	
		KNGP	2031R			5.56	0.79	0.09	1.27	13.030	0.219	0.031	0.0035	0.05	0.513	
			2062R			5.56	1.57	0.19	2.79	13.030	0.219	0.062	0.0075	0.11	0.513	55°
_			2125R			5.56	3.18	0.19	2.79	13.030	0.219	0.125	0.0075	0.11	0.513	
round			3088R			8.74	2.24	0.19	2.39	22.709	0.344	0.088	0.0075	0.094	0.894	s
Gro			3125R	•	•	8.74	3.18	0.19	3.81	22.709	0.344	0.125	0.0075	0.15	0.894	r t
C/B G			3156R	•	•	8.74	3.96	0.19	3.81	22.709	0.344	0.156	0.0075	0.15	0.894	W1
0			3189R			8.74	4.80	0.57	3.81	22.709	0.344	0.189	0.0225	0.15	0.894	
			4189R			11.51	4.80	0.57	6.35	28.663	0.453	0.189	0.0225	0.25	1.128	3° 0
			4250R			11.51	6.35	0.57	6.35	28.663	0.453	0.250	0.0225	0.25	1.128	
		KNR	2031R			5.56	1.57	0.79	2.79	13.030	0.219	0.062	0.031	0.11	0.513	FF0 X
d			2047R			5.56	2.39	1.19	2.79	13.030	0.219	0.094	0.047	0.11	0.513	55*
it To			3031R	•	•	8.74	1.57	0.79	2.39	22.709	0.344	0.062	0.031	0.094	0.894	s
Fla			3047R	•	•	8.74	2.39	1.19	3.81	22.709	0.344	0.094	0.047	0.15	0.894	r
Round Flat Top			3062R	•	•	8.74	3.18	1.59	3.81	22.709	0.344	0.125	0.0625	0.15	0.894	W.
Rol			3078R	•	•	8.74	3.96	1.98	3.81	22.709	0.344	0.156	0.078	0.15	0.894	""
			3094R	•	•	8.74	4.78	2.39	3.81	22.709	0.344		0.094	0.15	0.894	3° 0
		KNIDD	4125R			11.51	6.35	3.18	6.35	28.663			0.125	0.25	1.128	
ъ		KNRP	2031R	+		5.56	1.57	0.79	2.79	13.030	0.219	0.062	0.031	0.11	0.513	55°
und			2047R 3031R	-	•	5.56	2.39	1.19	2.79	13.030	0.219	0.094	0.047	0.11	0.513	
ច្ច			3031R 3047R	•		8.74	2.39	1.19	3.81	22.709	0.344	0.062	0.031	0.094	0.894	s
C/B			3062R			8.74	3.18	1.19	3.81	22.709	0.344		0.047	0.15	0.894	r t
nd			3078R		•	8.74	3.96	1.98	3.81	22.709	0.344	0.125	0.0023	0.15	0.894	w <sub>1</sub>
Round C/B Ground			3094R	•	•	8.74	4.78	2.39	3.81	22.709	0.344	0.130	0.070	0.15	0.894	3°
"			4125R	+		11.51	6.35	3.18	6.35	28.663		0.250	0.125	0.15	1.128	3° 0
								<b>-</b>	,	2.200		00				



### KNSR For grooving, profil machining









KNG KNGP KNT KNR KNRP KNB

				mm					inch			_	Clamp	Screw	Wrench
Desi	gnation	Н	В	F	L1	L2	Н	В	F	L1	L2	Insert			
KNSR	1010E2	10	10	14	19	70	0.394	0.394	0.551	0.748	2.756				
	1212F2	12	12	16	19	80	0.472	0.472	0.630	0.748	3.150	KNG2□ KNGP2□			
	1616H2	16	16	20	19	100	0.630	0.630	0.787	0.748	3.937	KNR2□	CM74	MHB3010	HW25L
	2020K2	20	20	25	19	125	0.787	0.787	0.984	0.748	4.921	KNB2R KNT2R			
	2525M2	25	25	32	19	150	0.984	0.984	1.260	0.748	5.906				
	2020K3	20	20	25	32	125	0.787	0.787	0.984	1.260	4.921	KNG3			
	2525M3	25	25	32	32	150	0.984	0.984	1.260	1.260	5.906	KNGP3□ KNR3□	CM72LP	MHA0512	HW40L
	3225P3	32	32	32	32	170	1.260	1.260	1.260	1.260	6.693	KNRP3□ KNB3R	GIVITZEF	WIHAUS 12	HVV40L
	3232P3	32	32	40	32	170	1.260	1.260	1.575	1.260	6.693	KNT3R			
	2525M4	25	25	32	35	150	0.984	0.984	1.260	1.378	5.906	KNG4□ KNGP4□			
	3225P4	32	32	32	35	170	1.260	1.260	1.260	1.378	6.693	KNR4□	CM72LP	MHA0512	HW40L
	3232P4	32	32	40	35	170	1.260	1.260	1.575	1.378	6.693	KNB4R KNT4R			



# C Technical Information for Saw Man Saw Man



#### For deep hole grooving/parting off

### Saw Man

#### Features of parting insert

- Possible to machine a wide range of workpieces such as steel, cast iron, stainless steel, etc.
- Extended tool life due to low resistance rake angle
- Minimized burr due to minimal Nose R
- Various lead angle available
- Narrow chip curl due to dots on rake surface of insert

			Cutt	ing Speed	d (vc = m/	/min)				Feed	d (fn = mm	/rev)	
Workpiece		C,	VD			PVD		Uncoated		Cutt	ing width (	mm)	
	NC3120	NC3030	NCM325	NC5330	PC8110	PC5300	PC6510	ST30A	2	3	4	5	6
SM□□C	80~180			80~180		80~180			0.02~0.15	0.03~0.20	0.08~0.30	0.10~0.4	0.12~0.50
SCM	70~150	70~150	70~150	70~150		70~150			0.02~0.15	0.03~0.20	0.08~0.30	0.10~0.4	0.12~0.50
GC/GCD				50~100			50~100	50~100	0.05~0.12	0.10~0.25	0.10~0.30	0.10~0.35	0.10~0.40
STS			50~120	50~120	50~120	60~140			0.02~0.10	0.03~0.15	0.08~0.25	0.10~0.35	0.12~0.40
Non-ferrous metal (Al, Copper)								200~450	0.05~0.10	0.05~0.20	0.05~0.25	0.05~0.30	0.05~0.35

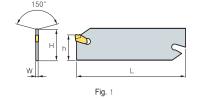
#### Insert

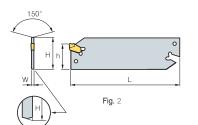
n								Coa	ated	l				Uncoated	Dim	ensions (ı	nm)		
Application	Picture	De	signation	NC3120	NC3225	NC3030	NCM325	NC5330	PC3035	PC8105	PC8110	PC5300	PC9030	ST30A	W	1	r	Configu	ration
		SP	160												1.6	7.8	0.16		
			180												1.8	9.3	0.16		
			200		•	•	•	•			•	•	•		2.2	9.3	0.2	R type	Standard
			200R			•							•		2.2	9.3	0.2		
			200L										•		2.2	9.3	0.2		
			300	•	•	•	•	•			•	•	•	•	3.1	11.3	0.2	l Min t	1000
			300R		•	•	•				•				3.1	11.3	0.2	8"	
<u>s</u>			300L			•									3.1	11.3	0.2	r/-  w  -	W
Parting tools			400	•	•	•	•	•			•	•	•		4.1	11.3	0.25		
ng			400R			•					•				4.1	11.3	0.25	L type	
arti			400L			•									4.1	11.3	0.25		
<u>a</u>			500			•	•	•			•	•			5.1	11.4	0.3	] ][[	
			500R												5.1	11.4	0.3	. 1 4000	'  <b>&gt;</b> \
			500L												5.1	11.4	0.3	8	7.
			600			•		•				•			6.4	11.4	0.35	- W - T	$W = \pm 0.1$
			600R												6.4	11.4	0.35		
			600L												6.4	11.4	0.35		
			800												8.0	14.06	0.4		
			900												9.6	14.06	0.45		

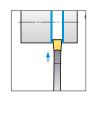
· Stock item

# SPB/SPB-S (Blades)









$\sim$	$\Box$
0	М

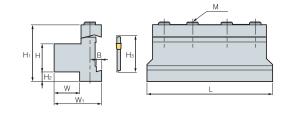
								(mm)	
							Wre	ench	
Des	signation	Н	W	L	h	Inserts			Fig.
SPB	226	26	1.6	110	21	SP200, 200R/L			
	232	32	1.6	150	25	SP200, 200R/L			
	326	26	2.4	110	21	SP300, 300R/L			
	332	32	2.4	150	25	SP300, 300R/L			
	426	26	3.2	110	21	SP400, 400R/L	SW50L	-	4
	432	32	3.2	150	25	SP400, 400R/L	SWOOL		ı
	526	26	4.0	110	21	SP500, 500R/L			
	532	32	4.0	150	25	SP500, 500R/L			
	626	26	5.2	110	21	SP600, 600R/L			
	632	32	5.2	150	25	SP600, 600R/L			
SPB-S	226-S	26	1.6	110	21	SP200, 200R/L			
	232-S	32	1.6	150	25	SP200, 200R/L			
	326-S	26	2.4	110	21	SP300, 300R/L			
	332-S	32	2.4	150	25	SP300, 300R/L			
	426-S	26	3.2	110	21	SP400, 400R/L			
	432-S	32	3.2	150	25	SP400, 400R/L		01445	
	526-S	26	4.0	110	21	SP500, 500R/L		SW15S	0
	532-S	32	4.0	150	25	SP500, 500R/L	-	(Separately ordered)	2
	626-S	26	5.2	110	21	SP600, 600R/L		ordered)	
	632-S	32	5.2	150	25	SP600, 600R/L			
	832-S	32	6.8	150	25	SP800			
	932-S	32	8	150	25	SP900			
	8526-S	52.6	6.8	150	45	SP800			
	9526-S	52.6	8	150	45	SP900			

Applicable inserts C60

### SMBB (Block)





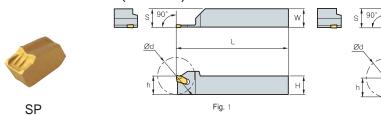


												(mm)
De	signation	н	W	Нз	L	H1	<b>H</b> 2	W1	В	М	Blades	Wrench
SMBB	1626	16	12	26	86	43	13	30	5.3	3-M6	CDD□00( C)	
	2026	20	19	26	86	43	9	38	5.3	3-M6	SPB□26(-S)	
	2032	20	19	32	100	50	13	38	5.3	4-M6	SPB□32(-S) KGTB□□32	HW50L
	2526	25	23	26	86	43	4	42	5.3	4-M6	SPB□26(-S)	
	2532	25	23	32	110	50	8	42	5.3	4-M6	SPB□32(-S)	
	3232	32	30	32	110	54	5	48	5.3	4-M6	KGTB□□32	
	40526	40	41	52.6	130	81.73	22	66	8	4-M8	SPB□526(-S)	HW60L

<sup>→</sup> Applicable inserts C60



### SPH/SPH-S (Holder)



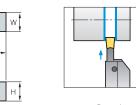


Fig. 2

• R type insert

										(mm)
Des	signation	H = (h)	W	L	Ød	S	Inserts	Wr	ench	Fig.
SPH	316R/L	16	16	100	32	16.3	SP300, 300R/L			
	320R/L	20	20	120	40	20.3	SP300, 300R/L			
	325R/L	25	25	150	50	25.3				
	420R/L	20	20	120	50	20.4	SP400, 400R/L	SW50L	-	1
	425R/L	25	25	150	60	25.4	SP500, 500R/L			
	520R/L	20	20	120	60	20.5	SP300, 300R/L			
	525R/L	25	25	150	70	25.5	SP500, 500R/L			
SPH-S	316R/L-S	16	16	100	32	16.3	SP300, 300R/L			
	320R/L-S	20	20	120	40	20.3	SP300, 300R/L			
	325R/L-S	25	25	150	50	25.3	SP300, 300R/L		SW15S	
	420R/L-S	20	20	120	50	20.4	SP400, 400R/L	-	(Separately	2
	425R/L-S	25	25	150	60	25.4	SP400, 400R/L		ordered)	
	520R/L-S	20	20	120	60	20.5	SP500, 500R/L			
	525R/L-S	25	25	150	70	25.5	SP500, 500R/L			

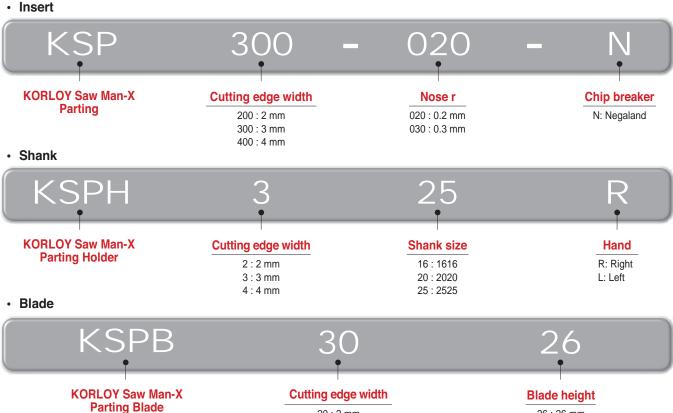
<sup>◆</sup> Applicable inserts C60

#### A solution for parting and deep grooving

### Saw Man-X new

- Stable machining in deep grooving applying clamping system with strong three-way V-Rail
- Improved clamping precision and convenient replacing of inserts with using the exclusive wrench

#### Code system



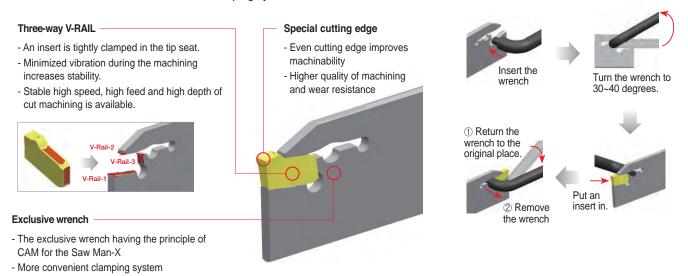
20:2 mm

30:3 mm

40:4 mm

#### Features

- Three-way V-Rail More stable clamping system
- New treatment on cutting edge Better quality of machining and longer tool life
- Superior chip breaker Better chip control
- Exclusive wrench More convenient clamping system



26:26 mm

32:32 mm

## C Technical Information for Saw Man-X Saw Man-X

#### Features of chip breaker

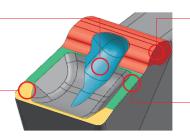
- The design of chip breaker and its bump in the back area realize better chip evacuation
- The chip breaker with negaland is used universally.

#### Coolant path and guide for chip evacuation

- Inner coolant holder is available
- Guide for chip evacuation

#### Negaland

- Applying for various workpieces
- Stable in interrupted cutting and machining with high depth of cut



#### The second chip breaker in the back area

- Better chip control in machining of workpiece with a bigger diameter
- Preventing damage to holder from chip evacuation

#### Strong land on flank

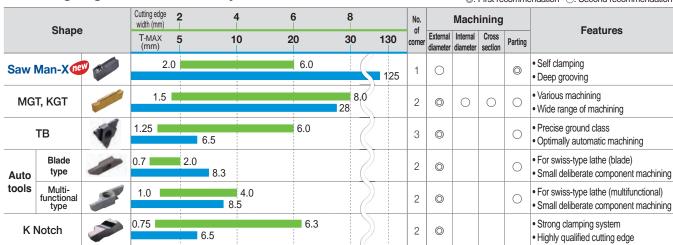
- Smaller diameter of chip curl makes better chip control
- Higher rigidity of insert

#### Recommended cutting conditions

		Workpie	ece			Cutting of	conditions
ISO	Workpiece	KS	AISI	ISO (DIN)	Grade	vc (m/min)	fn (mm/rev)
	Carbon steel	CMAEC	1045	045	PC5300	80-200	0.08-0.28
Р	Carbon Steel	SM45C	1045	C45	PC3035	80-220	0.08-0.28
Р.	Allewateal	CCM440	4140	42CrMo4	PC5300	80-160	0.08-0.25
	Alloy steel	SCM440	4140	(42CrMo4)	PC3035	80-180	0.08-0.25
М	M Stainless steel	STS304	304	X5CrNi18-9 (X2CrNi19-11)	PC5300	80-190	0.06-0.20
		STS316	316	X5CrNiMo17-12-2	PC5300	80-190	0.06-0.20
	O	00050	N-OFD	250	PC8110	100-220	0.10-0.28
	Gray cast iron	GC250	No35B	(GG25)	PC5300	100-200	0.10-0.28
K	Nodular graphite	000500	00 55 00	450.40	PC8110	80-200	0.10-0.25
	cast iron	GCD500	80-55-06	450-10	PC5300	80-180	0.10-0.25
_	LIDCA	l 1 740		45450.0	PC8110	35-65	0.05-0.15
S	HRSA	HRSA Inconel 718 7718	15156-3	PC5300	25-55	0.05-0.15	

#### Cutting edge width and T-MAX by items

⊚: First recommendation ○: Second recommendation

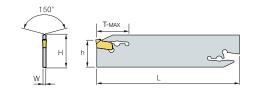


#### Insert

Application	Picture	Designation		Coated			14/			Configuration
Applic	Picture			PC3035	PC5300	PC8110	W	r	L	Configuration
		KSP	200-020-N	•	•	•	2.0	0.20	11.0	
g			300-020-N	•	•	•	3.0	0.20	12.0	
Parting	27		400-025-N	•	•	•	4.0	0.25	12.5	
<u> </u>			500-025-N	•	•		5.0	0.25	13.5	
			600-035-N	•	•		6.0	0.35	14.5	r / =   W   =









(mm)

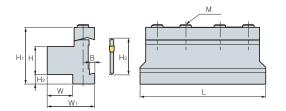
	Designation	Cutting edge width	н	W	L	h	Т-мах	Wrench
KSPB	2026	2	26	1.6	110	21	25	
	2032	2	32	1.6	150	25	26	
	3026	3	26	2.4	110	21	36	CW08
	3032	3	32	2.4	150	25	60	CVVU8
	4026	4	26	3.2	110	21	36	
	4032	4	32	3.2	150	25	60	
	5026	5	26	4.0	110	21	40	
	5032	5	32	4.0	150	25	60	CW10
	6026	6	26	5.2	110	21	60	CW10
	6032	6	32	5.2	150	25	60	

Applicable inserts C64

### SMBB (Block)







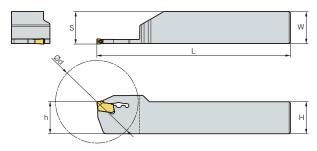
											(11111)
De	signation	н	w	Нз	L	<b>H</b> 1	<b>H</b> 2	<b>W</b> 1	В	М	Wrench
SMBB	1626	16	12	26	86	43	13	30	5.3	3-M6	
	2026	20	19	26	86	43	9	38	5.3	3-M6	
	2032	20	19	32	100	50	13	38	5.3	4-M6	HW50L
	2526	25	23	26	86	43	4	42	5.3	4-M6	
	2532	25	23	32	110	50	8	42	5.3	4-M6	
	3232	32	30	32	110	54	5	48	5.3	4-M6	

Applicable inserts C64



### KSPH (Shank)







D	Designation	Cutting edge width	Н	W	L	Ød	s	Wrench
KSPH	216R/L	2	16	16	100	46	16.2	
	220R/L	2	20	20	120	48	20.2	
	225R/L	2	25	25	150	50	25.2	
	316R/L	3	16	16	100	52	16.2	CW08
	320R/L	3	20	20	120	54	20.2	CVVUO
	325R/L	3	25	25	150	56	25.2	
	420R/L	4	20	20	120	64	20.4	
	425R/L	4	25	25	150	66	25.4	
	520R/L	5	20	20	120	74	20.4	
	525R/L	5	25	25	150	76	25.4	CW10
	625R/L	6	25	25	150	76	25.4	

Applicable inserts C64

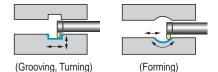
S: Steel, C: Carbide

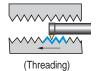
#### Six kinds of inserts can be used in one holder for various operations

### Fine Tools

- Strong clamping system and specially designed insert are suitable for small diameter machining
- Six kinds of inserts can be clamped in one holder for various operations
- Guaranteed long tool life due to good toughness substrate with new TiAIN
- High accuracy ground insert ensures high precision machining
- ◆ Application range Internal grooving, Profiling, Threading and Boring at Ø8 mm~Ø16 mm









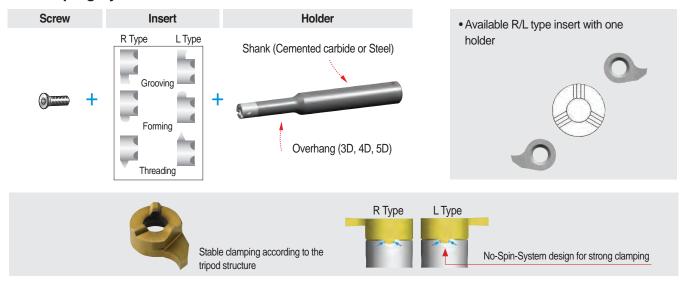


#### Recommended cutting condition

	Grade	Cutting Condition										
Workpiece	(PC130)			Min. machining Dia. (Ø	(Dmin)							
	(FC130)		Ø8	Ø11	Ø14	Ø16						
Oawhan ataal		vc (m/min)	70~120	70~120	70~120	70~120						
Carbon steel	0	fn (mm/rev)	0.01~0.04	0.01~0.05	0.02~0.05	0.02~0.06						
Alley steel	0	vc (m/min)	70~120	70~120	70~120	70~120						
Alloy steel		fn (mm/rev)	0.01~0.02	0.01~0.04	0.02~0.04	0.02~0.05						
Cast iron	0	vc (m/min)	60~100	60~100	60~100	60~100						
Cast Iron		fn (mm/rev)	0.01~0.05	0.01~0.05	0.02~0.05	0.02~0.05						
Non formano allan		vc (m/min)	100~180	100~180	100~180	100~180						
lon-ferrous alloy	0	fn (mm/rev)	0.02~0.06	0.02~0.06	0.02~0.06	0.02~0.06						

- In case of chattering, reduce the cutting speed and feed
   To find the optimal cutting conditions, advise to gradually increase from the lowest cutting condition of the above recommendation
   In case of the unilateral grooving depth over 1 mm, work to the step feed rate

#### Clamping system



# C Fine Tools

#### Insert

ion			Coated				Dimer	sions	(mm)					
Application	Picture	De	signation	PC5300	ØD	b	r	S	g	Ød <sub>2</sub>	t	Pitch	f	Configuration
Ap				R L										
		NFTG	08075R/L	•	8	0.75	-	7.75	1.3	5.9	3.85	-	-	
			08085R/L	•	8	0.85	-	7.75	1.3	5.9	3.85	-	-	_
			08095R/L	•	8	0.95	-	7.75	1.3	5.9	3.85	-	-	_
			08121R/L	•	8	1.21	-	7.75	1.3	5.9	3.85	-	-	_
			08141R/L	•	8	1.41	-	7.75	1.3	5.9	3.85	-	-	_
			08152R/L	•	8	1.52	-	7.75	1.3	5.9	3.85	-	-	_
			08171R/L	•	8	1.71	-	7.75	1.3	5.9	3.85	-	-	_
			08202R/L	•	8	2.02	-	7.75	1.3	5.9	3.85	-	-	
			11075R/L	•	11	0.75	-	10.7	1.8	8.0	4.9	-	-	_
			11085R/L	•	11	0.85	-	10.7	1.8	8.0	4.9	-	-	-
			11095R/L	•	11	0.95	-	10.7	1.8	8.0	4.9	-	-	-
			11121R/L	•	11	1.21	-	10.7	2.6	8.0	4.9	-	-	-
			11141R/L 11152 R/L	•	11	1.41	-	10.7	2.6	8.0	4.9	-	-	_
				•	11 11	1.52	-	10.7	2.6	8.0	4.9	-	-	_
			11171R/L 11202R/L	•	11	2.02	-	10.7	2.6	8.0	4.9	-	-	-
			11202R/L 11202R/L-02	•	11	2.02	0.2	10.7	2.6	8.0	4.9			-
D			11252R/L	•	11	2.52	-	10.7	2.6	8.0	4.9			/_ Ød2
Internal grooving			11302R/L	•	11	3.02		10.7	2.6	8.0	4.9		-	
00			14075R/L	•	14	0.75	-	13.5	1.8	9.0	5.85	-	-	
<u>E</u>			14085R/L	•	14	0.85	-	13.5	1.8	9.0	5.85	-	-	
ir			14095R/L	•	14	0.95	_	13.5	1.8	9.0	5.85	-	_	
<u>l</u>			14121R/L	•	14	1.21	-	13.5	4.3	9.0	5.85	-	-	ØD Min. machining Dia.
			14141R/L	•	14	1.41	-	13.5	4.3	9.0	5.85	-	-	t
			14152R/L	•	14	1.52	-	13.5	4.3	9.0	5.85	-	-	1 11
			14171R/L	•	14	1.71	-	13.5	4.3	9.0	5.85	-	-	-
			14202R/L	•	14	2.02	-	13.5	4.3	9.0	5.85	-	-	
			14252R/L	•	14	2.52	-	13.5	4.3	9.0	5.85	-	-	
			14302R/L	•	14	3.02	-	13.5	4.3	9.0	5.85	-	-	
			16075R/L	•	16	0.75	-	15.7	1.8	11.0	5.8	-	-	
			16085R/L	•	16	0.85		15.7	1.8	11.0	5.8	-	-	
			16095R/L	•	16	0.95	-	15.7	1.8	11.0	5.8	-	-	
			16121R/L	•	16	1.21	-	15.7	4.6	11.0	5.8	-	-	_
			16141R/L	•	16	1.41	-	15.7	4.6	11.0	5.8	-	-	-
			16171R/L	•	16	1.71	-	15.7	4.6	11.0	5.8	-	-	-
			16202R/L	•	16	2.02	-	15.7	4.6	11.0	5.8	-	-	-
			16252R/L	•	16	2.52	-	15.7	4.6	11.0	5.8	-	-	_
			16302R/L	•	16	3.02	-	15.7	4.6	11.0	5.8	-	-	_
			16352R/L 16402R/L	•	16 16	3.52 4.02	-	15.7 15.7	4.6	11.0	5.8	-	-	-
		NFTT	0805MR/L	•	8	4.02		7.75	-	6.0	3.85	0.5	1.0	
			0810MR/L	•	8	-	-	7.75	-	6.0	3.85	1.0	1.0	-
			0815MR/L	•	8	-	-	7.75	-	6.0	3.85	1.5	1.2	-
			1110MR/L	•	11	-	-	10.7	-	8.0	4.9	1.0	1.2	1
			1115MR/L	•	11	-	-	10.7	-	8.0	4.9	1.5	1.2	1
			1120MR/L	•	11	-	-	10.7	-	8.0	4.9	2.0	1.2	/
			1125MR/L	•	11	-	-	10.7	-	8.0	4.9	2.5	1.2	
ЭG			1410MR/L	•	14	-	-	13.5	-	9.0	5.85	1.0	1.2	
Threading	AG		1415MR/L	•	14	-	-	13.5	-	9.0	5.85	1.5	1.2	
ıre			1420MR/L	•	14	-	-	13.5	-	9.0	5.85	2.0	1.2	
E			1425MR/L	•	14	-	-	13.5	-	9.0	5.85	2.5	1.2	ØD Min. machining Dia.
			1610MR/L	•	16	-	-	15.7	-	11.0	5.8	1.0	1.2	- t
			1615MR/L	•	16	-	-	15.7	-	11.0	5.8	1.5	1.2	-
			1620MR/L	•	16	-	-	15.7	-	11.0	5.8	2.0	1.2	_
			1625MR/L	•	16	-	-	15.7	-	11.0	5.8	2.5	1.2	_
			1630MR/L	•	16	-	-	15.7	-	11.0	5.8	3.0	1.5	
			1635MR/L	•	16	-	-	15.7	-	11.0	5.8	3.5	1.6	_
			1640MR/L	•	16	-	-	15.7	-	11.0	5.8	4.0	1.8	

#### Insert

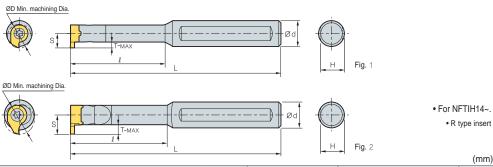
ion				Coa	ated			Dime	ensions	(mm)			
Application	Picture	De	signation	PC5	300	D	b	r	s	g	Ød <sub>2</sub>	t	Configuration
Ap				R	L		b	'	J	9	, Ouz	•	
		NFTF	08082R/L	•		8	0.82	0.41	7.75	1.3	5.9	3.85	
			08122R/L	•		8	1.22	0.61	7.75	1.3	5.9	3.85	
			08182R/L	•		8	1.82	0.91	7.75	1.3	5.9	3.85	
			11082R/L	•		11	0.82	0.41	10.7	2.6	8	4.9	
			11122R/L	•		11	1.22	0.61	10.7	2.6	8	4.9	
		11182R/L	•		11	1.82	0.91	10.7	2.6	8	4.9	Ød2	
			11202R/L	•		11	2.02	1.01	10.7	2.6	8	4.9	
ng			11302R/L	•		11	3.02	1.51	10.7	2.6	8	4.9	
Profiling			14122R/L	•		14	1.22	0.61	13.5	4.3	9	5.85	
౼			14182R/L	•		14	1.82	0.91	13.5	4.3	9	5.85	
			14202R/L	•		14	2.02	1.01	13.5	4.3	9	5.85	ØD Min. machining Dia.
			14222R/L	•		14	2.22	1.11	13.5	4.3	9	5.85	t
			14302R/L	•		14	3.02	1.51	13.5	4.3	9	5.85	
			16182R/L	•		16	1.82	0.91	15.7	4.6	11	5.8	
			16222R/L	•		16	2.22	1.11	15.7	4.6	11	5.8	
	16302R	16302R/L	•		16	3.02	1.51	15.7	4.6	11	5.8		
			16402R/L	•		16	4.02	2.01	15.7	4.6	11	5.8	

• : Stock item





NFTF NFTT NFTG



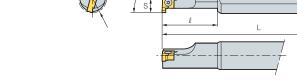
					4		L		-	- 1 19. Z	(mm)		
									Inserts				
Des	signation	ØD	Ød	L	Q	Т-мах	Н	s	NFTG: Grooving NFTT: Threading NFTF: Forming	Screw	Wrench	Fig	
NFTIH	08206C	8	6	65	-	1.0	4	4.8					
	08212C	8	12	70	16	1.0	10	4.8	NFTG08				
	08312C	8	12	80	24	1.0	10	4.8	NFTT08	PTKA02508	TW08P	1	
	08312S	8	12	80	24	1.0	10	4.8	NFTF08	FTRAU2506	TVVUOF	'	
	08412C	8	12	90	32	1.0	10	4.8					
	08512C	8	12	100	40	1.0	10	4.8					
	11208C	11	8	80	-	2.3	7	6.7					
	11212C	11	12	75	22	2.3	11	6.7	NFTG11□□□R/L				
	11312C	11	12	95	33	2.3	11	6.7	NFTT11 R/L	PTKA03510	TW15P	2	
	11312S	11	12	95	33	2.3	11	6.7	7 7 NFTF11□□□R/L	FINAUSSIU	100135		
	11412C	11	12	110	44	2.3	11	6.7		•			
	11512C	11	12	120	55	2.3	11	6.7					
	14012C	14	12	75	20	4.0	11	9.0					
	14016C	14	16	75	20	4.0	15	9.0					
	14112C	14	12	100	34	4.0	11	9.0	NFTG14□□□R/L				
	14116C	14	16	100	34	4.0	15	9.0	NFTT14 \B\R/L	PTKA0412	TW15P	2	
	14212C	14	12	110	45	4.0	11	9.0	NFTF14 \B\R/L	F1KA0412	100135		
	14216C	14	16	110	45	4.0	15	9.0					
	14312C	14	12	130	64	4.0	11	9.0					
	14316C	14	16	130	64	4.0	15	9.0					
	16312C	16	12	130	48	4.3	11	10.2					
	16312S	16	12	130	48	4.3	11	10.2					
	16412C 16512C	16	12	130	64	4.3	11	10.2	NFTG16□□□R/L				
		16	12	150	80	4.3	11	10.2	NFTT16□□□R/L	PTKA0512	TW20P	2	
	16316C	16	16	130	48	4.3	15	10.2	NFTF16□□□R/L		-		
	16416C	16	16	130	64	4.3	15	10.2					
	16516C	16	16	150	80	4.3	15	10.2					

# C Grooving Tools





IG



ØD Min. machining Dia.



• R type insert

(mm)

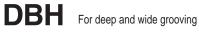
	Designation	ØD	Ød	н	L	Q	S	Inserts	Screw	Wrench
IGH	214R	14	16	15	150	25	6.6			
	216R	16	16	15	150	30	7.6	IG125~280	FTKA02565	TW07P
	220R	20	20	18	200	40	9.6			

Applicable inserts C70

#### Insert

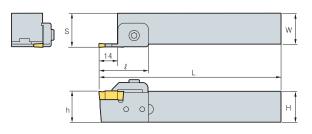
e e			Designation		Coated	l	U	Uncoated			Dime	nsions	(mm)				
Application	Picture	[			NC3120	NC3225	H01	G10	ST30A	b	g	t	d	d <sub>1</sub>	Configuration		
БC		IG	125R						•	1.25	1.5	3.18	6.35	2.8	, b, t		
ovir			145R						•	1.45	1.5	3.18	6.35	2.8			
ğrö				175R						•	1.75	1.5	3.18	6.35	2.8		
ial c			200R						•	2.0	2.3	3.18	6.35	2.8			
Internal grooving					230R						•	2.3	2.3	3.18	6.35	2.8	
<u>=</u>			280R						•	2.8	2.3	3.18	6.35	2.8	d d		

• : Stock item











R type insert

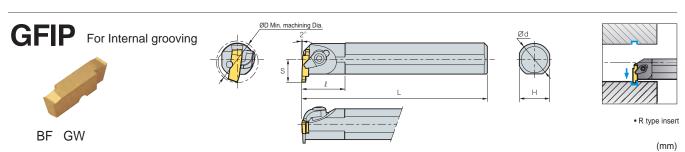
(mm)

s Inserts Clamp Clamp Screw Screw Locator Wrench Designation H = (h)W L O TIME **.** \*\* DBH 320R 20 20 150 40 22.3 22.8 DB300 DB400 CGH5R1 MHA0512 MHB0410 LD34 HW30L HW40L 325R DC300 DC400 25 25 150 40 27.3 27.8 DB500 DC500 520R 20 20 150 40 23.8 24.3 DB600 CGH5R2 MHA0512 MHB0410 LD56 HW30L HW40L 525R 25 25 150 40 28.8 29.3 720R 20 20 150 40 25.8 26.3 DB700 DB800 CGH5R3 MHA0512 MHB0410 LD78 HW30L HW40L 725R 25 25 150 40 30.8 31.3

→ Applicable inserts C70

#### Insert

on				Cermet		Coated	I	Unco	oated		Dimensi	ons (mm	1)	
Application	Picture	С	Designation		NC3215	NC3120	NC3225	H04	G10	b	ı	t	r	Configuration
		DB	300							3.0	20	7.5	0.2	
			400							4.0	20	7.5	0.2	b
			500							5.0	20	7.5	0.2	
			600							6.0	20	7.5	0.2	t
g			700							7.0	20	7.5	0.2	
₹			800							8.0	20	7.5	0.2	5°
Grooving		DC	300							3.0	20	7.5	0.2	
G	and the		400							4.0	20	7.5	0.25	6
			500							5.0	20	7.5	0.3	
														5,



Des	signation	ØD	Ød	н	L	Q	s	Inserts	Clamp	C-ring	Screw	Pin	Wrench
GFIP	316R/L	20	16	15	150	17	11		CH5R2	CR04	CHX0513	PN0310	HW25L
	320R/L	26	20	18	150	22	13	CW/440 200B/L BE2	CHORZ	CK04	CUV0212	PNUSTU	HVV23L
	325R/L	32	25	23	200	22	17	GW110~300R/L,BF3					
	340R/L	50	40	37	300	32	27		CH6R2	CR05	CHX0616	PN0310	HW30L
	525R/L	32	25	23	200	22	17	GW315~500R/L.BF5		CRUS			
	540R/L	50	40	37	300	32	27	GVV313~3UUR/L,DF3					
	840R/L	50	40	37	300	32	27	GW600~800R/L,BF8	CS8R1	-	DHA0820	PN0314	HW40L

Applicable inserts C71

#### Insert

o				Unc	oated			Dimensi	ons (mm	1)		
Application	Picture	De	esignation	ST	<sup>-</sup> 30A	b	g	W	ı	t	r	Configuration
		BF	-3		•			3.1	16.4	5.26	-	
~			-5 -8					5.1	22.4	6.26	-	w
Blank			-8					8.1	27.4	7.26	-	
Δ.												11°
				R	L							
		GW	110R/L	•	•	1.1	2.1	3.1	16	5.0	0.2	
			130R/L	•	•	1.3	2.3	3.1	16	5.0	0.2	
			160R/L	•	•	1.6	2.6	3.1	16	5.0	0.2	
			185R/L	•	•	1.85	2.9	3.1	16	5.0	0.2	
<u>p</u>			215R/L	•	•	2.15	3.2	3.1	16	5.0	0.2	D W
ξ			265R/L	•	•	2.65	3.7	3.1	16	5.0	0.2	9
Grooving			300R/L	•	•	3.0	4.0	3.1	16	5.0	0.2	
ဇ			315R/L	•	•	3.15	4.2	5.1	22	6.0	0.3	
			415R/L		•	4.15	5.2	5.1	22	6.0	0.3	110
			500R/L			5.0	6.0	5.1	22	6.0	0.3	
			600R/L			6.0	7.0	8.1	27	7.0	0.3	
			800R/L			8.0	9.0	8.1	27	7.0	0.3	

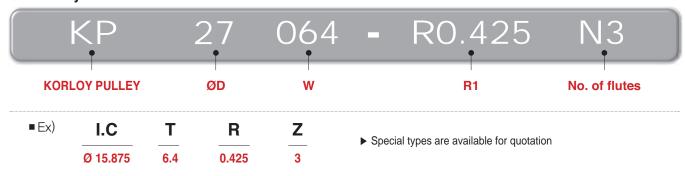
<sup>• :</sup> Stock item

<sup>•</sup> Use right-hand insert for left-hand holder

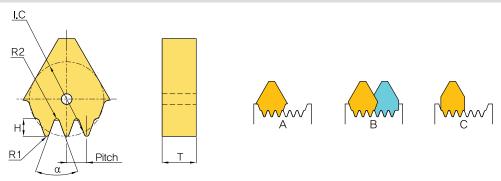
Code system	Configuration
M F G N 4 - 0.5R - 30D  ① ② ③ ④ ⑤ ⑥ ⑦  ① Multi ② Forming ③ Grinding ④ Feed Direction ⑤ Clamp part: 4 mm ⑥ Nose Radius: 0.5 ⑦ Degree: 30°	Ex) MFGN4-0.5R-30D
MFGN4 - 0.5R - L 50 D - R 30D ① Refer to No. 1 ② Nose Radius: 0.5 ③ Left ③ Degree: 50° ⑤ Right	Ex) MFGN4-0.5R-L50D-R30D
MFGN4 - 2.0 - R 020 250 - L 105 335  ① Refer to No. 1 ② Width of cutting edge: 2.0mm ③ Right ④ Nose Radius: 0.20 ⑤ Degree: 25.0° ⑥ Left ⑦ Nose Radius: 1.05 ⑧ Degree: 35.5°	R0.2 25.0° 25.0° 35.5° Ex) MFGN4-2.0-R020250-L105335
MFGN5 - 4.0R F ① ② Refer to No. 1 ② Radius: 4.0 ③ Front(Concave)	Ex) MFGN5-4.0RF
MFGN5 - 4.0R B	R4.0
MFGN5 - 4.0 - R 005 - L 030 ① Refer to No. 1 ② Width of cutting edge: 4.0 mm ③ Right ④ Nose Radius: 0.05 ⑤ Left ⑥ Nose Radius: 0.30	Ex) MFGN5-4.0RB  R0.05  4.0  R0.30  Ex) MFGN5-4.0-R005-L030
MFGN5 - 4.0 - 0.05 R ① ③ ① Refer to No. 1 ② Width of cutting edge: 4.0 mm ③ Nose Radius: 0.05	Ex) MFGN5-4.0-0.05R
MFG R 5 - 4.0 - 5D - R 002 - L 115  ① ② ③ ④ ② ⑤ ⑥ ⑦ ⑧ ⑨  ① Refer to No. 1 ② Width of cutting edge: 4.0mm ③ Lead angle: 5° ⑥ Right ⑥ Nose Radius: 0.02 ③ Clamp part: 5mm ⑥ Right ⑥ Nose Radius: 1.15	4.0 Ex) MFGR5-4.0-5D-R002-L115
MFG L 5 - 4.0 - 15D - 1.5R ① ② ③ ② ④ ④ ⑤ ⑥ ① Refer to No. 1 ② Left ③ Clamp part: 5 mm ④ Width of cutting edge: 4.0 mm ⑤ Lead angle: 15° ⑥ Right Nose Radius: 1.5	4.0 A.0 Ex) MFGL5-4.0-15D-1.5R
MFG R 5 - 4.10 - 25D - R012 - L000  ① Refer to No. 1 ② Right ③ Clamp part: 5mm ④ Width of cutting edge: 4.1mm ⑤ Degree: 25° ⑥ Right Nose Radius: 1.2 ② Left Nose Radius: 0.0	Ex) MFGR5-4.10-25D-R012-L000

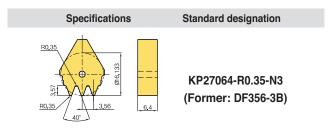
### Special Order Form for V-Pulley Insert C

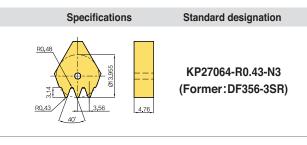
#### Code system

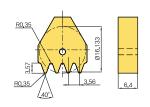


#### Insert for machining of pulley

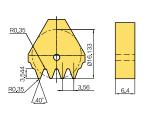




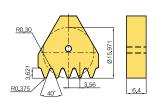




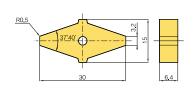
KP27064-R0.35-N4 (Former: DF356-4B)



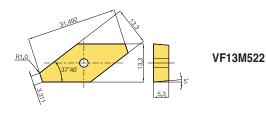
KP27064-R0.35-N4-A (Former: DF356-4X)



KP27064-R0.375-N5 (Former: DF356-5B)



**UF320** 



### **THREADING**

Korloy threading tools are available for machining various shapes of thread at various pitches while ensuring high quality performances



#### D02 Threading Insert Code System **D24** American ACME (ACME) **D25** Stub ACME (STACME) **D26** UNJ (Unified Constant Thread) D28 American Buttress (ABUT) **Technical Information for D28** British Buttress (BBUT) **Threading** D29 Metric Buttress (SAGE)/API D03 Technical Information for Threading **D30** API Buttress Casing (BUT) D09 Threading Insert with Chip Breaker **D30** API Round Casing & Tubing (APIRD) D30 Extreme Line Casing (EL) **Thread Inserts** D10 Partial profile 60° **Thread Holders** D11 Partial profile 55° D31 External Holder D12 ISO Metric D32 Internal Holder D16 American UN **D33** Vertical Type Holder (UN, UNC, UNF, UNEF, UNS) D18 Whitworth (BSW, BSF, BSP, BSB)

**Thread Inserts** 

**Thread Milling** 

Technical Information for Thread Milling

Thread Milling Insert

Thread Milling Holder

**D34** 

D44

D49

Trapez DIN103 (TR)

D24

**Threading Code System** 

Threading Holder Code System

British Standard Pipe Thread

National Pipe Thread (NPT)

Round DIN405 (RD)

National Pipe Threads-Dryseal

D02

D22

**D22** 

D23

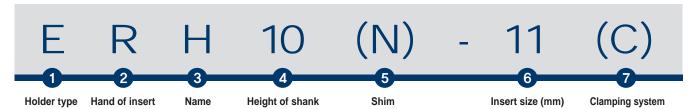
**D23** 

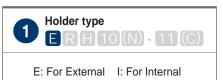
(BSPT)

(NPTF)

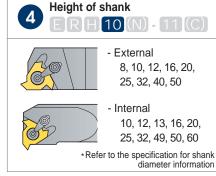
### **Threading Code System**

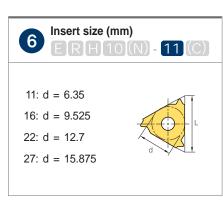
### Threading holder code system



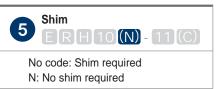


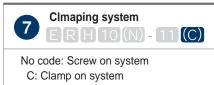








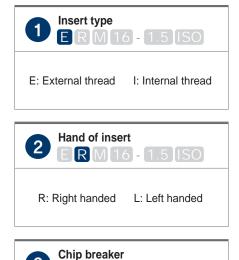




### Threading insert code system

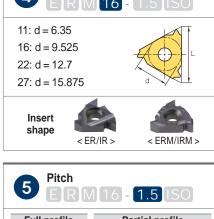


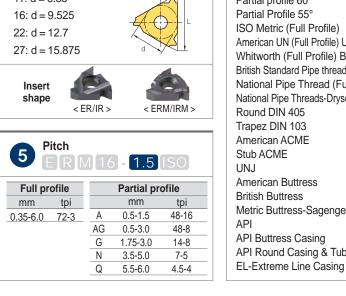
Insert size (mm)

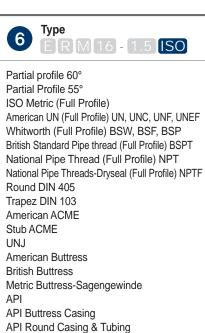


E R M 16 - 1.5 ISO

M: With chip breaker

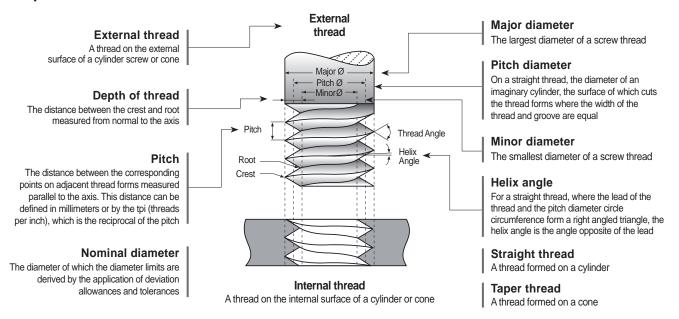






### g D

#### Special features

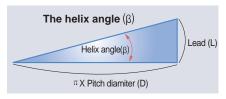




A thread which, when viewed axially, winds in a counter clockwise and receding direction. All left handed threads are designated LH



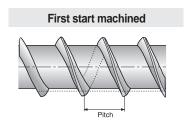
A thread which, when viewed axially, winds in a clockwise and receding direction. Threads are always right handed unless they are specified

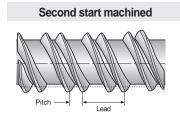


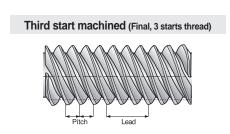
For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite of the lead

#### Machining a multi-start thread

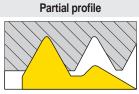
A thread in which the lead is an integral multiple, greater than one, of the pitch. A multi-start thread permits a
more rapid advance without a coarser (larger) thread form



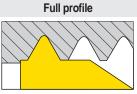




#### Insert profile style



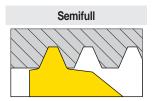
The V partial profile insert cuts without topping the outer diameter of the thread. The same insert can be used for a range of different thread pitches which have a common thread angle



The full profile insert will form a complete thread profile including the crest. For every thread pitch and standard, a separate insert is required

# Full profile for fine pitches

The full profile for Fine Pitches will form a complete thread The topping of the outer diameter is generated by second tooth



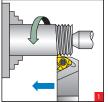
The Semi profile insert will form a complete thread including crest radius but without topping the outer diameter Mainly used for trapezoidal profiles

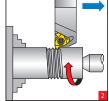
### **Technical Information for Threading**

#### Thread turning method

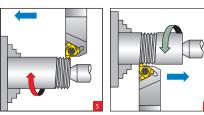
Thread	Inserts & Tool holder	Rotation	Feed direction	Helix method	Drawing no.
Digital land Estage	EX RH	Counter clockwise	Towards chuck	Regular	1
Right Hand Externa	EX LH	Clockwise	From chuck	Reversed	2
Dight Hand Internal	IN RH	Counter clockwise	Towards chuck	Regular	3
Right Hand Internal	IN LH	Clockwise	From chuck	Reversed	4
Laft Hand External	EX LH	Clockwise	Towards chuck	Regular	5
Left Hand External	EX RH	Counter clockwise	From chuck	Reversed	6
Left Hand Internal	IN LH	Clockwise	Towards chuck	Regular	7
Leit Hand Internal	IN RH	Counter clockwise	From chuck	Reversed	8

#### **External RH thread**

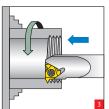


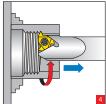


**External LH thread** 

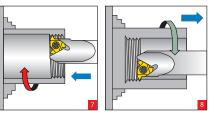


Internal RH thread

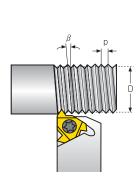


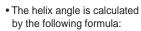


Internal LH thread



#### Calculating the helix angle (β)





$$\beta = tan^{-1} \quad \frac{P \times N}{\pi \times D}$$

β: Helix angle (°)

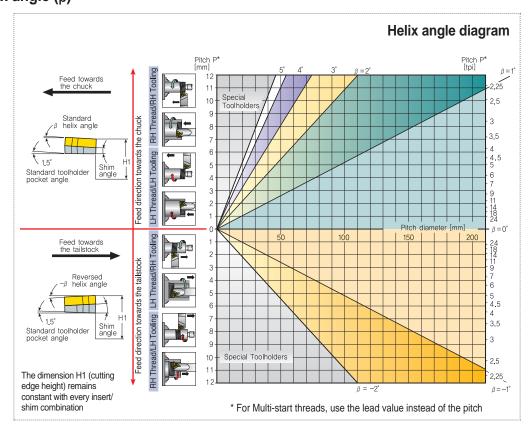
P: Pitch (mm)

N: No. of starts

D: Pitch diameter (mm)

Lead =  $P \times N$ 

• The helix angle can also be found from the diagram below



#### Thread infeed method

In	feed		Application	on
	Radial infeed	When the pitch is smaller than 16 tpi For material with short chips For work with hardened material	<b>→</b>	Radial infeed is the simplest and quickest method The feed is perpendicular to the turning axis, and both flanks of the insert perform the cutting operation Radial infeed is recommended in 3 cases
1-3°	Flank infeed (modified)	When the thread pitch is greater than 16 tpi. Using the radial method, the effective cutting edge length is too large, resulting in chatter. for TRAPEZ and ACME. The radial method results in three cutting edges, making chip flow very difficult	<b>→</b>	Flank infeed is recommended in the following cases
	Alternate flank infeed	This method divides the load equally on both flanks, resulting in equal wear along the cutting edges Alternate flank infeed requires more complicated programming, and is not available on all lathes	<b>→</b>	Use of the alternate flank method is recommended especially in large pitches and for materials with long chips

#### Shim

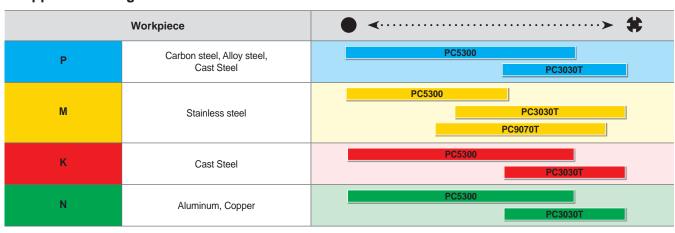
E	ATE (Fortered 1)	ATI (There exists)	.5°	Insert			9.525		2.7	15.875	
rd shim	ATE (External)	ATI (Through)	gle 1	size	L	1	6	2	2	2	7
Standard			Helix an	Hol	der	ER(L)H	IR(L)H	ER(L)H	IR(L)H	ER(L)H	IR(L)H
Ö			¥	Orderin	ng code	ATE16	ATI16	ATE22	ATI22	ATE27	ATI27

 $\,$  % Standard shim has lead angle 1.5°

#### Application grade

Grade		Features	Available insert type
PC5300	Universal grade	<ul> <li>For chip breaker type only</li> <li>Stable machining on a wide application due to fine-grained carbide substrate with balanced heat resistance and toughness</li> <li>Excellent wear resistance and oxidation resistance due to AiTN coating film Outstanding performance on high speed machining</li> </ul>	ERM/IRM (Insert with Chip breaker)
PC3030T	Specialized grade for threading inserts	A tough sub-micron substrate with TiAIN coating provides good fracture toughness and excellent wear resistance  Outstanding performance on STS and hard to cut materials	ER/IR (Ground insert)
PC9070T	Specialized grade for threading inserts	Strong wear resistance in stainless machining thanks to multilayer PVD coatings	E/IR (Ground insert)

#### Application range



### D

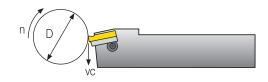
### **Technical Information for Threading**

#### Recommended cutting speed as per workpiece (vc)

		Workpiece	Hardness		vc (m/min)	
		workpiece	brinell (HB)	PC3030T	PC9070T	PC5300
		Low carbon (C=0.1-0.25 %)	125	115~190		110~190
	Carbon steel	Medium carbon (C=0.25-0.55 %)	150	100~175		100~165
		High carbon (C=0.55-0.85 %)	170	90~155		90~155
		Non-hardened	180	100~180		100~180
P	Low alloy steel	Hardened	275	75~140		75~140
-		Hardened	350	70~135		70~135
	High alloy stool	Annealed	200	80~120		80~120
	High alloy steel	Hardened	325	50~100		50~100
	Cast steel	Low alloy	200	70~130		70~130
	Cast steel	High alloy	225	60~120		60~120
	Stainless steel	Non-hardened	200	70~130	70~150	70~130
	ferritic	Hardened	330	50~95	60~125	50~95
	Stainless steel	Austenitic	180	80~120	90~160	80~120
	austenitic	Super austenitic	200	30~100	40~120	30~100
	Stainless steel	Non-hardened	200	90~120	90~150	90~120
	cast ferritic	Hardened	330	65~110	65~120	65~110
M	Stainless steel	Austenitic	200	85~110	85~120	85~110
IVI	cast austenitic	Hardened	330	60~100	60~110	60~100
		Annealed (Iron based)	200	45~60		45~60
	High	Aged (Iron based)	280	30~50		30~50
	temperature alloy	Annealed (Nickel or Cobalt based)	250	20~30		20~30
	,	Aged (Nickel or Cobalt based)	350	15~25		15~25
	Titanium alloy	99.5% pure Titanium	400Rm	140~170		140~170
	Titallium alloy	Titanium alloy	1050Rm	50~70		50~70
	Extra hard steel	Hardened & tempered	55HRC	45~60		45~60
	Malleable	Ferritic (short chips)	130	70~120		70~120
	cast iron	Pearlitic (long chips)	230	70~120		70~120
K	Cray agat iran	Low tensile strength	180	70~130		70~130
	Gray cast iron	High tensile strength	260	60~100		60~100
	Nodular SG iron	Ferritic	160	125~160		125~160
	Nodular 5G Iron	Pearlitic	260	90~120		90~120
	Aluminum alloy	Non-aging	60	100~250		100~250
	wrought	Aged	100	80~180		80~180
		Cast	75	200~400		200~400
N	Aluminum alloy	Cast & aged	90	200~280		200~280
		Cast Si 13-22%	130	60~150		60~180
	Copper and	Brass	90	80~120		80~210
	copper alloy	Bronze and non-leaded copper	100	80~120		80~210

#### Calculation of n [RPM]

$$n = \frac{vc \times 1000}{\pi \times D} \qquad vc = \frac{\pi \times D \times n}{1000}$$



n: Revolution Per Minute [min<sup>-1</sup>] vc: Cutting Speed [m/min] D: Workpiece Diameter [mm]

#### Number of passes

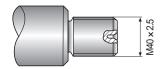
Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
FILCH	tpi	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
No. of passes		4~6	4~7	4~8	5~9	6~10	7~12	7~12	8~14	9~16	10~18	11~18	11~19	12~20	12~20	12~20	15~24

\*\* One cutting depth is calculated by total cutting depth divided into machining times ex) ER16-1.5ISO, hmin 0.92: If 10 times machining, one cutting depth is 0.092 (0.92/10)



### q D

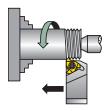
#### Step by step thread turning



#### **Application**

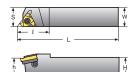
- Thread: External right hand ISO metric M40x2.5
- Material: 4140 (25 HRC)

#### 1 Choose the thread turning method



Feed direction towards the chuck was chosen Therefore an external right hand insert and an external right hand holder will be used

#### 3 Choose the tool holder



Chosen tool holder: ERH 25-16

Insert size	Ordering code	Dimensions (mm)									
d	RH (Right Hand)	H=h	W	S	L	Q					
9.525	ERH25-16	25	25	25	153.6	30					

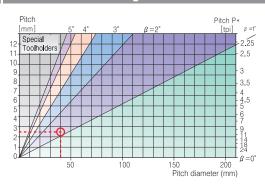
#### 2 Choose the insert size



Chosen insert: ER16-2.5 ISO

Insert size	Pitch	Ordering code	Shim	Tool holder		
d	mm	RH (Right Hand)	RH (Right Hand)	100i fiolder		
9.525	2.5	ER16-2.5ISO	ATE16	ERH□□-16		

#### 4 Determine the helix angle



From the table, using a pitch of 2.5 mm (10 tpi) and a workpiece diameter of 40 mm (1.57"), we find the helix angle to be 1.5°

#### 5 Choose the correct shim

Resultant F	lelix angle	1.5°
Insert size	d	9.525
insert size	L	16
Orderin	ATE16	

#### 7 Determine the number of passes

Pitch	mm	1.50	1.75	2.00	2.50	3.00	3.50	4.00
FILCH	tpi	16	14	12	10	8	7	6
No.of	oasses	6~10	7~12	7~12	8~14	9~16	10~18	11~18

- Carbide grade chosen: PC3030T
- Cutting speed: 140 m/min

#### 6 Choose the carbide grade and cutting speed

		Worl	НВ	vc (m/min) PC3030T	
	Р		Non-hardened	180	85~145
		Low alloy steel (alloying elements ≤ 5%)	Hardened	275	75~140
		(alloying elements \$ 5%)	Hardened	350	70~135

- Carbide grade chosen: PC3030T
- Cutting speed: 140 m/min

#### 8 Summary

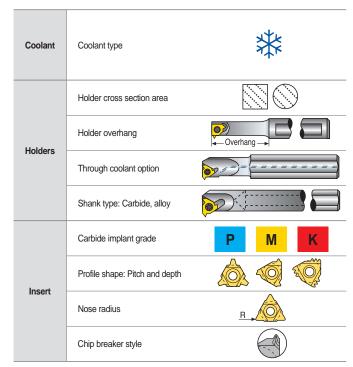
Thread type	ISO M40 x 2.5 External right hand
1. Feed direction	Towards the chuck
2. Insert and grade	ER16-2.5ISO, PC3030T
3. Tool holder	ERH25-16
4. Helix angle	1.5°
5. Shim	ATE16
<ol><li>Cutting speed</li></ol>	140 m/min
7 Number of passes	10



### **Technical Information for Threading**

### **Outting condition depending on**

	Material type							
Workpiece	Material dimension	₽ D						
workpiece	Diameter and length chipflow character	the Con						
	Material hardness	HRC HB						
	External or internal							
Thread application	Profile shape							
	Surface finish	$\sqrt{}$						
	Machine stability	manus, DE						
Machine	Max. RPM	RPM						
	Clamping system stability							



### **○** Trouble shooting

Pr	oblem	Possible cause	Solution
	Increased flank wear	Cutting speed too high  Depth of cut too low/too many passes  Unsuitable carbide grade  Insufficient cooling	Use a coated carbide grade
	Uneven cutting edge wear	Incorrect helix angle Wrong infeed method	Choose the correct shim  Use the alternating flank infeed method
	Extreme plastic deformation	Insufficient cooling Cutting speed too high Unsuitable carbide grade	> Reduce cutting speed
	Cutting edge breakage	Extreme plastic deformation	Increase flow rate and/ or correct flow direction Use a tougher carbide
	Built-up edge	Incorrect cutting speed	
	Thread profile is too shallow	The tool is not at the workpiece axis height  Insert is not machining the thread crest  Worn insert	Measure the workpiece diameter
	Poor surface quality	Too low cutting speed Wrong shim Flank infeed method is not appropriate	> Choose correct shim

### Threading insert with chip breaker

#### **● Features** • Economical insert

- Good toughness and high accuracy as ground type inserts
- Exclusive insert design improves chip control
- New grade for general application of various kinds of workpieces

Туре	Ground	d insert		Insert with a	chip breaker			
C/B Code	No	ne	No	one	(	U		
Designation	ER16-	1.5ISO	ERM16	-1.5ISO	ERM16-1.5ISO-U			
Machining	External	Internal	External	Internal	External	Internal		
Insert Shape				6	B	E.		
Chip Shape		mi		En.	In in			
Class	P, M, k	K, N, S	P, N	Л, K	P, M, K			
Application	G-C	Class	M-C	Class	M-C	Class		
Features	Groove-shaped chip chip evacuation lowe     Enables high precisic     Applicable for machir of threads     Applicable for machir workpieces	ers cutting load on machining of various shapes	machinability with go	e treatment technology	Groove-shaped chip breaker with superior chip evacuation lowers cutting load     Reduces machining pass by 10~30%     Excellent cutting edge treatment achieves high precision sharp cutting edge			

#### Application examples

	KORLOY	ERM16-1.5ISO [PC3030T]	IRM16-2.0ISO [PC3030T]				
Com	petitor tools	ER16-1.5ISO [A-Maker]	IR16-2.0ISO [B-Maker]				
	Material	SCM440	STS304				
Workpiece	Figure						
	Cutting speed (m/min)	63	120				
Cutting	Pass	8	9				
condition	Machining	Radial infeed	Radial infeed				
	Pitch	1.5	2.0				
	Coolant	Wet	Wet				
	Result	Increased tool life with good chip breaking  PC3030T Competitor A	Prevention outbreak damage of insert due to smooth chip control  PC3030T Competitor B				

### Partial profile 60°

-			-	_			_	<b>—</b>	Pito	ch		Dime	nsions	(mm)		
Type		signation (Right)	PC3030T	PC9070T	De	signation (Left)	PC3030T	PC9070T	(mm)	(tpi)	d	L	r	x	f	Picture
	ER	11-A60	•	•	EL	11-A60	•		0.5~1.5	48~16	6.35	11	0.05	8.0	0.9	f
		16-A60	•	•		16-A60			0.5~1.5	48~16	9.525	16	0.05	8.0	0.9	׬ <del>*  -</del>
nal		16-G60	•			16-G60	•		1.75~3.0	14~8	9.525	16	0.27	1.2	1.7	60° Internal
External		16-AG60	•	•		16-AG60	•		0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	
Ä		22-N60	•	•		22-N60	•		3.5~5.0	7~5	12.7	22	0.53	1.7	2.5	
		27-Q60		•		27-Q60	•		5.5~6.0	4.5~4	15.875	27	0.64	2.1	3.1	External
	IR	11-A60	•	•	IL	11-A60	•	•	0.5~1.5	48~16	6.35	11	0.05	0.8	0.9	f
		16-A60	•			16-A60	•		0.5~1.5	48~16	9.525	16	0.05	0.8	0.9	×
Jal		16-G60	•			16-G60	•		1.75~3.0	14~8	9.525	16	0.16	1.2	1.7	60° Internal
Internal		16-AG60	•	•		16-AG60	•		0.5~3.0	48~8	9.525	16	0.05	1.2	1.7	
<u>1</u>		22-N60	•	•		22-N60	•		3.5~5.0	7~5	12.7	22	0.30	1.7	2.5	
		27-Q60	•	•		27-Q60			5.5~6.0	4.5~4	15.875	27	0.30	1.8	2.7	External
																, <b>,</b> — — — —

Applicable holders D31, D32

•: Stock item

### Partial profile 60° (M chip breaker)

-	Designation (Right)		_			T0	Pit	ch		Dime	nsions	(mm)		
Туре			PC3030T	PC5300	Designation (Left)	PC3030T	(mm)	(tpi)	d	L	r	x	f	Picture
	<b>ERM</b>	16-A60	•				0.5~1.5	48~16	9.525	16	0.05	8.0	0.9	+1+
		16-G60					1.75~3.0	14~8	9.525	16	0.27	1.2	1.7	× Internal
nal		16-AG60	•				0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	
External		22-N60					3.5~5.0	7~5	12.7	22	0.53	1.7	2.5	
Ë														External
	IRM	11-A60	•				0.5~1.5	48~16	6.35	11	0.08	0.8	0.9	f
		16-A60	•				0.5~1.5	48~16	9.525	16	0.08	0.8	0.9	60° Internal
Jal		16-G60					1.75~3.0	14~8	9.525	16	0.12	1.2	1.7	
Internal		16-AG60					0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	
<u>1</u>		22-N60	•				3.5~5.0	7~5	12.7	22	0.30	1.7	2.5	
														External

Applicable holders D31, D32

•: Stock item

### Partial profile 60° (U chip breaker)

	Designation (Right)				_	Pite	ch		Dime	nsions	(mm)		
Туре			PC5300	Designation (Left)	PC3030T	(mm)	(tpi)	d	L	r	x	f	Picture
	ERM 16-AG60-U					0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	,, <del>-11-</del> ,
External													60° Internal External
	IRM 16-AG60-U					0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	f,
Internal													60° Internal External

•: Stock item

• : Stock item

### Partial profile 55°

Applicable holders D31, D32

Applicable holders D31, D32

			_	_				_	Pito	ch		Dime	nsions	(mm)			
Туре		signation (Right)	PC3030T	PC9070T	De	signation (Left)	PC3030T	PC9070T	(mm)	(tpi)	d	L	r	х	f	Picture	
		11-A55	•		EL	11-A55			0.5~1.5	48~16	6.35	11	0.05	0.8	0.9	f	
		16-A55				16-A55			0.5~1.5	48~16	9.525	16	0.05	0.8	0.9	x ¬ T	
<u>a</u>		16-G55	•			16-G55			1.75~3.0	14~8	9.525	16	0.21	1.2	1.7	55° Internal	
External		16-AG55				16-AG55			0.5~3.0	48~8	9.525	16	0.07	1.2	1.7		
X		22-N55	•			22-N55			3.5~5.0	7~5	12.7	22	0.43	1.7	2.5		
		27-Q55				27-Q55			5.5~6.0	4.5~4	15.875	27	0.60	2.0	2.9	External	
	IR	11-A55	•		IL	IL	11-A55	•		0.5~1.5	48~16	6.35	11	0.05	0.8	0.9	f.
		16-A55	•			16-A55			0.5~1.5	48~16	9.525	16	0.05	0.8	0.9	Internal	
a		16-G55	•			16-G55			1.75~3.0	14~8	9.525	16	0.21	1.2	1.7	55°	
- Lu		16-AG55	•			16-AG55	•		0.5~3.0	48~8	9.525	16	0.07	1.2	1.7		
Internal		22-N55	•			22-N55			3.5~5.0	7~5	12.7	22	0.43	1.7	2.5		
_		27-Q55				27-Q55			5.5~6.0	4.5~4	15.875	27	0.60	2.0	2.9	External	
																,	

### Partial profile 55° (M chip breaker)

-	Designation (Right)		-			_	Pit	ch		Dime	nsions	(mm)		
Туре			PC3030T	PC5300	Designation (Left)	PC3030T	(mm)	(tpi)	d	L	r	x	f	Picture
	ERM	16-A55	•				0.5~1.5	48~16	9.525	16	0.08	8.0	0.9	<del>-   -</del>
		16-G55					1.75~3.0	14~8	9.525	16	0.21	1.2	1.7	Internal Internal
nal		16-AG55	•				0.5~3.0	48~8	9.525	16	0.07	1.2	1.7	555*
External		22-N55					3.5~5.0	7~5	12.7	22	0.43	1.7	2.5	
ŭ														External
	IRM	11-A55	•				0.5~1.5	48~16	6.35	11	0.08	0.8	0.9	-f
		16-A55	•				0.5~1.5	48~16	9.525	16	0.05	0.8	0.9	Internal
Jal		16-G55					1.75~3.0	14~8	9.525	16	0.08	1.2	1.7	55°
Internal		16-AG55	•				0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	
<u>1</u>		22-N55					3.5~5.0	7~5	12.7	22	0.43	1.7	2.5	
														External

### Partial profile 55° (U chip breaker)

-		_		Designation (Left)	_	Pite	ch		Dime	nsions	(mm)		
Type	Designation (Right)	PC3030T	PC5300		PC3030T	(mm)	(tpi)	d	L	r	x	f	Picture
	ERM 16-AG55-U					0.5~3.0	48~8	9.525	16	0.07	1.2	1.7	* f
External													55° Internal External
	IRM 16-AG55-U					0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	-1 <sup>†</sup> 1-
Internal													55° Internal External

### **D** Thread Insert

### **ISO Metric**

		L	L				PC9070T	Pitch		Dime	ensions	(mm)											
Type	Designation (Right)	PC3030T	PC9070T	D	Designation (Left)			(mm)	d	L	hmin	х	f	Picture									
	ER 11-0.35ISO	•		EL	11-0.35ISO			0.35	6.35	11	0.21	0.8	0.4										
	11-0.4ISO	•			11-0.4ISO			0.4	6.35	11	0.25	0.7	0.4										
	11-0.45ISO	•			11-0.45ISO			0.45	6.35	11	0.28	0.7	0.4										
	11-0.5ISO	•			11-0.5ISO			0.5	6.35	11	0.31	0.6	0.4										
	11-0.6ISO	•			11-0.6ISO			0.6	6.35	11	0.37	0.6	0.6										
	11-0.7ISO	•			11-0.7ISO			0.7	6.35	11	0.43	0.6	0.6										
	11-0.75ISO				11-0.75ISO			0.75	6.35	11	0.46	0.6	0.6										
	11-0.8ISO	•			11-0.8ISO			0.8	6.35	11	0.49	0.6	0.6										
	11-1.0ISO	•			11-1.0ISO			1.0	6.35	11	0.61	0.7	0.7										
	11-1.25ISO	•	•		11-1.25ISO			1.25	6.35	11	0.77	8.0	0.9										
	11-1.5ISO	•			11-1.5ISO	•		1.5	6.35	11	0.92	8.0	1.0										
	11-1.75ISO	•			11-1.75ISO			1.75	6.35	11	1.07	8.0	1.1	4									
	16-0.35ISO				16-0.35ISO			0.35	9.525	16	0.21	8.0	0.4	<del>  -</del>									
	16-0.4ISO				16-0.4ISO 16-0.45ISO			0.4	9.525	16	0.25	0.7	0.4	1/4P Internal									
	16-0.45ISO	•						0.45	9.525	16	0.28	0.7	0.4	60°									
Jal	16-0.5ISO	•			16-0.5ISO	•		0.5	9.525	16	0.31	0.6	0.4										
External	16-0.6ISO	•			16-0.6ISO			0.6	9.525	16	0.37	0.6	0.6										
Ä	16-0.7ISO	•									16-0.7ISO			0.7	9.525	16	0.43	0.6	0.6	d 1/8P External			
	16-0.75ISO	•														16-0.75ISO			0.75	9.525	16	0.46	0.6
	16-0.8ISO	•	•						16-0.8ISO			0.8	9.525	16	0.49	0.6	0.6						
	16-1.0ISO	•	•		16-1.0ISO	•		1.0	9.525	16	0.61	0.7	0.7										
	16-1.25ISO	•	•		16-1.25ISO	•		1.25	9.525	16	0.77	8.0	0.9										
	16-1.5ISO	•	•		16-1.5ISO	•		1.5	9.525	16	0.92	8.0	1.0										
	16-1.75ISO	•	•		16-1.75ISO			1.75	9.525	16	1.07	0.9	1.2										
	16-2.0ISO	•	•		16-2.0ISO	•		2.0	9.525	16	1.23	1.0	1.3										
	16-2.5ISO	•	•		16-2.5ISO			2.5	9.525	16	1.53	1.1	1.5										
	16-3.0ISO	•	•		16-3.0ISO	•		3.0	9.525	16	1.84	1.2	1.6										
	22-3.5ISO	•	•		22-3.5ISO			3.5	12.7	22	2.15	1.6	2.3										
	22-4.0ISO	•	•		22-4.0ISO	•		4.0	12.7	22	2.45	1.6	2.3										
	22-4.5ISO	•	•		22-4.5ISO			4.5	12.7	22	2.78	1.7	2.4										
	22-5.0ISO	•	•	22-5.0ISO 27-5.5ISO	22-5.0ISO	•		5.0	12.7	22	3.07	1.7	2.5										
	27-5.5ISO						5.5	15.875	27	3.37	1.9	2.7											
	27-6.0ISO	•	•		27-6.0ISO			6.0	15.875	27	3.68	2.0	2.9										

● : Stock item

## **ISO Metric (M chip breaker)**

4	_		-			F	Pitch		Dime	nsions	(mm)		
Type	De	esignation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	(mm)	d	L	hmin	X	f	Picture
	ERM	16-1.0ISO	•				1.0	9.525	16	0.61	0.7	0.7	f
		16-1.25ISO					1.25	9.525	16	0.77	8.0	0.9	1/4P Internal
اعا		16-1.5ISO	•				1.5	9.525	16	0.93	8.0	1.0	60°
External		16-1.75ISO	•				1.75	9.525	16	1.09	0.9	1.2	
Ä		16-2.0ISO	•				2.0	9.525	16	1.25	1.0	1.3	
		16-2.5ISO	•				2.5	9.525	16	1.55	1.1	1.5	1/8P External
		16-3.0ISO	•				3.0	9.525	16	1.87	1.2	1.6	· ·

● Applicable holders D31 •: Stock item

## **ISO Metric (U chip breaker)**

4	_		-			H	Pitch		Dime	ensions	(mm)		
Type		esignation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	(mm)	d	L	hmin	X	f	Picture
	ERM	16-1.5ISO-U					1.5	9.525	16	0.93	0.8	1.0	
		16-2.0ISO-U					2.0	9.525	16	1.25	1.0	1.3	1/4P Internal
External													1/8P External

● : Stock item

## **D** Thread Insert

### **ISO Metric**

			_	_			_	_	Pitch		Dime	ensions	(mm)		
Туре	De	esignation (Right)	PC3030T	PC9070T	D	esignation (Left)	PC3030T	PC9070T	(mm)	d	L	hmin	Х	f	Picture
	IR	11-0.35ISO	•		IL	11-0.35ISO			0.35	6.35	11	0.20	8.0	0.3	
		11-0.4ISO	•			11-0.4ISO			0.4	6.35	11	0.23	8.0	0.4	
		11-0.45ISO	•			11-0.45ISO			0.45	6.35	11	0.26	8.0	0.4	
		11-0.5ISO	•			11-0.5ISO	•		0.5	6.35	11	0.29	0.6	0.4	
		11-0.6ISO	•			11-0.6ISO			0.6	6.35	11	0.35	0.6	0.6	
		11-0.7ISO	•			11-0.7ISO			0.7	6.35	11	0.40	0.6	0.6	
		11-0.75ISO	•			11-0.75ISO	•		0.75	6.35	11	0.43	0.6	0.6	
		11-0.8ISO				11-0.8ISO			0.8	6.35	11	0.46	0.6	0.6	
		11-1.0ISO	•	•		11-1.0ISO			1.0	6.35	11	0.58	0.6	0.7	
		11-1.25ISO	•	•		11-1.25ISO	•		1.25	6.35	11	0.72	8.0	0.9	
		11-1.5ISO	•	•		11-1.5ISO	•	•	1.5	6.35	11	0.87	8.0	1.0	
		11-1.75ISO		•		11-1.75ISO			1.75	6.35	11	1.01	0.9	1.1	
		11-2.0ISO	•	•		11-2.0ISO	•		2.0	6.35	11	1.15	0.9	1.1	f
		11-2.5ISO	•			11-2.5ISO	•		2.5	6.35	11	1.44	8.0	1.1	
		16-0.35ISO	•			16-0.35ISO			0.35	9.525	16	0.20	8.0	0.3	1/4PInternal
		16-0.4ISO	•			16-0.4ISO			0.4	9.525	16	0.23	8.0	0.4	60°
Jal		16-0.45ISO	•			16-0.45ISO			0.45	9.525	16	0.26	8.0	0.4	
Internal		16-0.5ISO	•			16-0.5ISO			0.5	9.525	16	0.29	0.6	0.4	1/8P External
므		16-0.6ISO				16-0.6ISO			0.6	9.525	16	0.35	0.6	0.6	d 1/or External
		16-0.7ISO				16-0.7ISO			0.7	9.525	16	0.40	0.6	0.6	
		16-0.75ISO	•			16-0.75ISO			0.75	9.525	16	0.43	0.6	0.6	
		16-0.8ISO	•			16-0.8ISO			0.8	9.525	16	0.46	0.6	0.6	
		16-1.0ISO	•	•		16-1.0ISO			1.0	9.525	16	0.58	0.6	0.7	
		16-1.25ISO	•	•		16-1.25ISO			1.25	9.525	16	0.72	8.0	0.9	
		16-1.5ISO	•	•		16-1.5ISO	•		1.5	9.525	16	0.87	8.0	1.0	
		16-1.75ISO	•	•		16-1.75ISO			1.75	9.525	16	1.01	0.9	1.2	
		16-2.0ISO	•	•		16-2.0ISO	•		2.0	9.525	16	1.15	1.0	1.3	
		16-2.5ISO	•	•		16-2.5ISO	•		2.5	9.525	16	1.44	1.1	1.5	
		16-3.0ISO	•	•		16-3.0ISO	•		3.0	9.525	16	1.73	1.1	1.5	
		22-3.5ISO	•	•		22-3.5ISO			3.5	12.7	22	2.02	1.6	2.3	
		22-4.0ISO	•	•		22-4.0ISO	•		4.0	12.7	22	2.31	1.6	2.3	
		22-4.5ISO	•	•		22-4.5ISO			4.5	12.7	22	2.60	1.6	2.4	
		22-5.0ISO	•	•		22-5.0ISO			5.0	12.7	22	2.89	1.6	2.3	
		27-5.5ISO	•			27-5.5ISO			5.5	15.875	27	3.17	1.6	2.3	
		27-6.0ISO	•			27-6.0ISO			6.0	15.875	27	3.46	1.8	2.5	

→ Applicable holders D32
•: Stock item

## **ISO Metric (M chip breaker)**

_			_			_	Pitch		Dime	nsions	(mm)		
Type	De	esignation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	(mm)	d	L	hmin	Х	f	Picture
	IRM	11-1.5ISO	•				1.5	6.35	11	0.85	8.0	1.0	
		16-1.0ISO	•				1.0	9.525	16	0.58	0.6	0.7	+  +  x
_		16-1.25ISO					1.25	9.525	16	0.72	8.0	0.9	1/4P Internal 60°
Internal		16-1.5ISO	•				1.5	9.525	16	0.85	0.8	1.0	
nte		16-1.75ISO					1.75	9.525	16	1.01	0.9	1.2	
_		16-2.0ISO	•				2.0	9.525	16	1.12	1.0	1.3	1/8P External
		16-2.5ISO	•				2.5	9.525	16	1.44	1.1	1.5	
		16-3.0ISO	•				3.0	9.525	16	1.69	1.1	1.5	

•: Stock item Applicable holders D32

# **ISO Metric (U chip breaker)**

-	_		-			H	Pitch		Dime	nsions	(mm)		
Type	De	esignation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	(mm)	d	L	hmin	X	f	Picture
	IRM	16-1.5ISO-U					1.5	9.525	16	0.85	0.8	1.0	
		16-2.0ISO-U					2.0	9.525	16	1.12	1.0	1.3	<del>-11-</del> ,,
Internal													1/4P Internal 60°

•: Stock item Applicable holders D32

## American UN (UN, UNC, UNF, UNEF, UNS)

			L	_		_	_	Pitch		Dime	nsions	(mm)		
Type	De	esignation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	X	f	Picture
	ER	11-72UN	•		EL 11-72UN			72	6.35	11	0.22	0.8	0.4	
		11-64UN	•		11-64UN			64	6.35	11	0.24	8.0	0.4	
		11-56UN	•		11-56UN			56	6.35	11	0.28	0.7	0.4	
		11-48UN	•		11-48UN			48	6.35	11	0.32	0.6	0.6	
		11-44UN	•		11-44UN			44	6.35	11	0.35	0.6	0.6	
		11-40UN	•		11-40UN			40	6.35	11	0.39	0.6	0.6	
		11-36UN	•		11-36UN			36	6.35	11	0.43	0.6	0.6	
		11-32UN	•		11-32UN			32	6.35	11	0.49	0.6	0.6	
		11-28UN	•		11-28UN			28	6.35	11	0.56	0.6	0.7	
		11-27UN	•		11-27UN			27	6.35	11	0.58	0.7	0.8	
		11-24UN	•		11-24UN			24	6.35	11	0.65	0.7	0.8	
		11-20UN	•		11-20UN			20	6.35	11	0.78	0.8	0.9	
		11-18UN	•		11-18UN			18	6.35	11	0.87	0.8	1.0	
		11-16UN	•		11-16UN			16	6.35	11	0.97	0.9	1.1	
		11-14UN	•		11-14UN			14	6.35	11	1.11	0.9	1.1	
		16-72UN			16-72UN			72	9.525	16	0.22	0.8	0.4	.t.
		16-64UN			16-64UN			64	9.525	16	0.24	0.8	0.4	׬
		16-56UN			16-56UN			56	9.525	16	0.28	0.7	0.4	1/4P Internal
		16-48UN			16-48UN			48	9.525	16	0.32	0.6	0.6	60°
_		16-44UN			16-44UN			44	9.525	16	0.35	0.6	0.6	
Ĭ		16-40UN			16-40UN			40	9.525	16	0.39	0.6	0.6	
External		16-36UN			16-36UN			36	9.525	16	0.43	0.6	0.6	d 1/8P External
_		16-32UN	•		16-32UN			32	9.525	16	0.49	0.6	0.6	
		16-28UN	•		16-28UN			28	9.525	16	0.56	0.6	0.7	
		16-27UN	•		16-27UN			27	9.525	16	0.58	0.7	0.8	
		16-24UN	•	•	16-24UN			24	9.525	16	0.65	0.7	0.8	
		16-20UN	•	•	16-20UN			20	9.525	16	0.78	8.0	0.9	
		16-18UN	•	•	16-18UN	•		18	9.525	16	0.87	0.8	1.0	
		16-16UN	•	•	16-16UN	•		16	9.525	16	0.97	0.9	1.1	
		16-14UN	•	•	16-14UN			14	9.525	16	1.11	1.0	1.2	
		16-13UN			16-13UN			13	9.525	16	1.20	1.0	1.3	
		16-12UN	•	•	16-12UN			12	9.525	16	1.30	1.1	1.4	
		16-11.5UN			16-11.5UN			11.5	9.525	16	1.35	1.1	1.5	
		16-11UN	•	•	16-11UN			11	9.525	16	1.42	1.1	1.5	
		16-10UN	•	•	16-10UN			10	9.525	16	1.56	1.1	1.5	
		16-9UN	•		16-9UN			9	9.525	16	1.73	1.2	1.7	
		16-8UN	•	•	16-8UN			8	9.525	16	1.95	1.2	1.6	
		22-7UN			22-7UN			7	12.7	22	2.22	1.6	2.3	
		22-6UN			22-6UN			6	12.7	22	2.60	1.6	2.3	
		22-5UN	•		22-5UN			5	12.7	22	3.12	1.7	2.5	
		27-4.5UN			27-4.5UN			4.5	15.875	27	3.46	1.9	2.7	
		27-4UN			27-4UN			4	15.875	27	3.89	2.1	3.0	

## American UN (UN, UNC, UNF, UNEF, UNS)

			L	L				Pitch		Dime	ensions	(mm)		
Type	De	esignation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	IR	11-72UN			IL 11-72UN			72	6.35	11	0.20	8.0	0.3	
		11-64UN			11-64UN			64	6.35	11	0.23	0.8	0.4	
		11-56UN			11-56UN			56	6.35	11	0.26	0.7	0.4	
		11-48UN			11-48UN			48	6.35	11	0.31	0.6	0.6	
		11-44UN			11-44UN			44	6.35	11	0.33	0.6	0.6	
		11-40UN			11-40UN			40	6.35	11	0.37	0.6	0.6	
		11-36UN			11-36UN			36	6.35	11	0.41	0.6	0.6	
		11-32UN			11-32UN			32	6.35	11	0.46	0.6	0.6	
		11-28UN			11-28UN			28	6.35	11	0.52	0.6	0.7	
		11-27UN			11-27UN			27	6.35	11	0.54	0.7	8.0	
		11-24UN			11-24UN			24	6.35	11	0.61	0.7	8.0	
		11-20UN		•	11-20UN			20	6.35	11	0.73	0.8	0.9	
		11-18UN	•		11-18UN			18	6.35	11	0.81	0.8	1.0	
		11-16UN		•	11-16UN			16	6.35	11	0.92	0.9	1.1	
		11-14UN	•		11-14UN			14	6.35	11	1.05	0.9	1.1	
		11-12UN		•	11-12UN			12	6.35	11	1.22	0.8	1.1	
		11-11UN	•		11-11UN	•		11	6.35	11	1.33	0.8	1.1	, f,
		16-72UN			16-72UN			72	9.525	16	0.20	0.8	0.3	X
		16-64UN			16-64UN			64	9.525	16	0.23	0.8	0.4	1/4P Internal
		16-56UN			16-56UN			56	9.525	16	0.26	0.7	0.4	60°
		16-48UN			16-48UN			48	9.525	16	0.31	0.6	0.6	
ınal		16-44UN			16-44UN			44	9.525	16	0.33	0.6	0.6	
Internal		16-40UN			16-40UN			40	9.525	16	0.37	0.6	0.6	d 1/8P External
-		16-36UN			16-36UN			36	9.525	16	0.41	0.6	0.6	
		16-32UN			16-32UN			32	9.525	16	0.51	0.6	0.6	
		16-28UN	•		16-28UN			28	9.525	16	0.52	0.6	0.7	
		16-27UN			16-27UN			27	9.525	16	0.54	0.7	0.8	
		16-24UN			16-24UN			24	9.525	16	0.61	0.7	0.8	
		16-20UN	•		16-20UN			20	9.525	16	0.73	0.8	0.9	
		16-18UN	•	•	16-18UN			18	9.525	16	0.81	0.8	1.0	
		16-16UN	•	•	16-16UN			16	9.525	16	0.92	0.9	1.1	
		16-14UN	•		16-14UN			14	9.525	16	1.05	0.9	1.2	
		16-13UN			16-13UN			13	9.525	16	1.13	1.0	1.3	
		16-12UN	•	•	16-12UN			12	9.525	16	1.22	1.1	1.4	
		16-11.5UN	•		16-11.5UN			11.5	9.525	16	1.28	1.1	1.5	
		16-11UN	•	•	16-11UN			11	9.525	16	1.33	1.1	1.5	
		16-10UN	•		16-10UN	•		10	9.525	16	1.47	1.1	1.5	
		16-9UN		•	16-9UN			9	9.525	16	1.63	1.2	1.7	
		16-8UN	•	•	16-8UN	•		8	9.525	16	1.83	1.2	1.5	
		22-7UN			22-7UN			7	12.7	22	2.09	1.6	2.3	
		22-6UN			22-6UN			6	12.7	22	2.44	1.6	2.3	
		22-5UN			22-5UN			5	12.7	22	2.93	1.7	2.3	
		27-4.5UN			27-4.5UN			4.5	15.875	27	3.26	1.9	2.4	
		27-4UN			27-4UN			4	15.875	27	3.67	2.1	2.7	

● Applicable holders D32 • : Stock item

## Whitworth (BSW, BSF, BSP, BSB)

-		L	_			_	_	Pitch		Dime	nsions	(mm)		
Type	Designation (Right)	PC3030T	PC9070T		signation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER 11-72W	•		EL	11-72W			72	6.35	11	0.23	0.7	0.4	
	11-60W	•			11-60W			60	6.35	11	0.27	0.7	0.4	
	11-56W	•			11-56W			56	6.35	11	0.29	0.7	0.4	
	11-48W	•			11-48W			48	6.35	11	0.34	0.6	0.6	
	11-40W	•			11-40W			40	6.35	11	0.41	0.6	0.6	
	11-36W	•			11-36W			36	6.35	11	0.45	0.6	0.6	
	11-32W	•			11-32W			32	6.35	11	0.51	0.6	0.6	
	11-28W	•			11-28W			28	6.35	11	0.58	0.6	0.7	
	11-26W	•			11-26W			26	6.35	11	0.63	0.7	0.8	
	11-24W	•			11-24W			24	6.35	11	0.68	0.7	0.8	
	11-22W	•			11-22W			22	6.35	11	0.74	8.0	0.9	
	11-20W	•			11-20W			20	6.35	11	0.81	8.0	0.9	
	11-19W	•			11-19W			19	6.35	11	0.86	8.0	1.0	
	11-18W	•			11-18W			18	6.35	11	0.90	8.0	1.0	
	11-16W	•			11-16W			16	6.35	11	1.02	0.9	1.1	
	11-14W	•			11-14W	•		14	6.35	11	1.16	1.0	1.2	
	16-72W	•		]	16-72W			72	9.525	16	0.23	0.7	0.4	
	16-60W	•			16-60W			60	9.525	16	0.27	0.7	0.4	
	16-56W	•		]	16-56W			56	9.525	16	0.29	0.7	0.4	f
	16-48W	•			16-48W			48	9.525	16	0.34	0.6	0.6	׬,
<u>la</u>	16-40W	•		]	16-40W			40	9.525	16	0.41	0.6	0.6	R0.137P Internal 55°
External	16-36W	•			16-36W			36	9.525	16	0.45	0.6	0.6	
Ä	16-32W	•		]	16-32W			32	9.525	16	0.51	0.6	0.6	
	16-30W	•			16-30W			30	9.525	16	0.55	0.6	0.7	R0.137P External
	16-28W	•	•	] -	16-28W			28	9.525	16	0.58	0.6	0.7	
	16-26W				16-26W			26	9.525	16	0.63	0.7	0.8	
	16-24W	•		] -	16-24W			24	9.525	16	0.68	0.7	0.8	
	16-22W	•			16-22W			22	9.525	16	0.74	0.8	0.9	
	16-20W	•			16-20W			20	9.525	16	0.81	8.0	0.9	
	16-19W	•	•		16-19W			19	9.525	16	0.86	0.8	1.0	
	16-18W	•			16-18W			18	9.525	16	0.90	8.0	1.0	
	16-16W	•			16-16W			16	9.525	16	1.02	0.9	1.1	
	16-14W	•	•	] -	16-14W			14	9.525	16	1.16	1.0	1.2	
	16-12W	•			16-12W			12	9.525	16	1.36	1.1	1.4	
	16-11W	•	•	] -	16-11W			11	9.525	16	1.48	1.1	1.5	
	16-10W	•			16-10W			10	9.525	16	1.63	1.1	1.5	
	16-9W	•		] -	16-9W			9	9.525	16	1.81	1.2	1.7	
	16-8W	•			16-8W			8	9.525	16	2.03	1.2	1.5	
	22-7W	•			22-7W			7	12.7	22	3.32	1.6	2.3	
	22-6W	•			22-6W	•		6	12.7	22	2.71	1.6	2.3	
	22-5W	•			22-5W			5	12.7	22	3.25	1.7	2.4	
	27-4.5W	•			27-4.5W			4.5	15.875	27	3.61	1.8	2.6	
	27-4W				27-4W			4	15.875	27	4.07	2.0	2.9	

→ Applicable holders D31 •: Stock item

## Whitworth (M chip breaker)

4	_		-			<b>—</b>	Pitch		Dime	nsions	(mm)		
Type	De	esignation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	(tpi)	d	L	hmin	Х	f	Picture
	ERM	16-11W	•				14	9.525	16	1.16	1.0	1.2	f
		16-14W	•				11	9.525	16	1.48	1.1	1.5	R0.137P Internal
nal		16-19W	•				19	9.525	16	0.86	8.0	1.0	555
External													R0.137P External

● Applicable holders D31 •: Stock item

## Whitworth (U chip breaker)

_	_		-			-	Pitch		Dime	nsions	(mm)		
Type	De	esignation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	(tpi)	d	L	hmin	Х	f	Picture
	ERM	16-14W-U					14	9.525	16	1.16	1.0	1.2	,
		16-11W-U					11	9.525	16	1.48	1.1	1.5	R0.137P Internal
External													R0.137PExternal

● : Stock item

# Whitworth (BSW, BSF, BSP, BSB)

-			-	ь		  -	_	Pitch		Dime	ensions (	(mm)		
Туре		esignation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	IR	11-72W	•		IL 11-72W			72	6.35	11	0.23	0.7	0.4	
		11-60W	•		11-60W			60	6.35	11	0.27	0.7	0.4	
		11-56W	•		11-56W			56	6.35	11	0.29	0.7	0.4	
		11-48W	•		11-48W			48	6.35	11	0.34	0.6	0.6	
		11-40W	•		11-40W			40	6.35	11	0.41	0.6	0.6	
		11-36W	•		11-36W			36	6.35	11	0.45	0.6	0.6	
		11-32W	•		11-32W			32	6.35	11	0.51	0.6	0.6	
		11-28W	•		11-28W			28	6.35	11	0.58	0.6	0.7	
		11-26W	•		11-26W			26	6.35	11	0.63	0.7	0.8	
		11-24W	•		11-24W			24	6.35	11	0.68	0.7	0.8	
		11-22W	•		11-22W			22	6.35	11	0.74	8.0	0.9	
		11-20W			11-20W			20	6.35	11	0.81	8.0	0.9	
		11-19W	•	•	11-19W	•		19	6.35	11	0.86	8.0	1.0	
		11-18W	•		11-18W	•		18	6.35	11	0.90	8.0	1.0	
		11-16W	•		11-16W	•		16	6.35	11	1.02	0.9	1.1	
		11-14W	•		11-14W	•		14	6.35	11	1.16	0.9	1.1	
		11-12W	•		11-12W	•		12	6.35	11	1.32	0.9	1.2	
		16-72W	•		16-72W			72	9.525	16	0.23	0.7	0.4	
		16-60W	•		16-60W			60	9.525	16	0.27	0.7	0.4	,
		16-56W	•		16-56W			56	9.525	16	0.29	0.7	0.4	<del>-  -</del>
_		16-48W	•		16-48W			48	9.525	16	0.34	0.6	0.6	R0.137P Internal
Internal		16-40W	•		16-40W			40	9.525	16	0.41	0.6	0.6	R0.137P Internal 555°
nte		16-36W	•		16-36W			36	9.525	16	0.45	0.6	0.6	
_		16-32W	•		16-32W			32	9.525	16	0.51	0.6	0.6	R0.137P
		16-30W	•		16-30W			30	9.525	16	0.55	0.6	0.7	d
		16-28W	•		16-28W			28	9.525	16	0.58	0.6	0.7	
		16-26W	•		16-26W			26	9.525	16	0.63	0.7	0.8	
		16-24W	•		16-24W			24	9.525	16	0.68	0.7	0.8	
		16-22W	•		16-22W			22	9.525	16	0.74	0.8	0.9	
		16-20W	•		16-20W			20	9.525	16	0.81	8.0	0.9	
		16-19W	•		16-19W			19	9.525	16	0.86	0.8	1.0	
		16-18W	•		16-18W			18	9.525	16	0.90	8.0	1.0	
		16-16W	•		16-16W			16	9.525	16	1.02	0.9	1.1	
		16-14W	•	•	16-14W			14	9.525	16	1.16	1.0	1.2	
		16-12W	•		16-12W			12	9.525	16	1.36	1.1	1.4	
		16-11W	•	•	16-11W			11	9.525	16	1.48	1.1	1.5	
		16-10W	•		16-10W			10	9.525	16	1.63	1.1	1.5	
		16-9W	•		16-9W			9	9.525	16	1.81	1.2	1.7	
		16-8W	•		16-8W			8	9.525	16	2.03	1.2	1.5	
		22-7W			22-7W			7	12.7	22	3.32	1.6	2.3	
		22-6W	•		22-6W			6	12.7	22	2.71	1.6	2.3	
		22-5W	•		22-5W			5	12.7	22	3.25	1.7	2.4	
		27-4.5W	•		27-4.5W			4.5	15.875	27	3.61	1.8	2.6	
		27-4W	•		27-4W			4	15.875	27	4.07	2.0	2.9	

● Applicable holders D32 •: Stock item

## Whitworth (M chip breaker)

4			F			<b>—</b>	Pitch		Dime	nsions	(mm)		
Type	De	esignation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	(tpi)	d	L	hmin	х	f	Picture
	IRM	16-14W					14	9.525	16	1.16	1.0	1.2	
		16-11W	•				11	9.525	16	1.48	1.1	1.5	<del>[</del>
Internal													R0.137P Internal 55° R0.137PExternal

Applicable holders D32

•: Stock item

## Whitworth (U chip breaker)

-			-			<b>—</b>	Pitch		Dime	nsions	(mm)		
Туре	De	esignation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	(tpi)	d	L	hmin	Х	f	Picture
	IRM	16-14W-U					14	9.525	16	1.16	1.0	1.2	
		16-11W-U					11	9.525	16	1.48	1.1	1.5	<del>-11-</del>
Internal													R0.137P Internal 55° R0.137P External

● Applicable holders D32 •: Stock item

## Thread Insert

## **British Standard Pipe Thread (BSPT)**

			_	_			_	_	Pitch		Dime	nsions	(mm)		
Type	De	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	11-28BSPT			EL	11-28BSPT			28	6.35	11	0.58	0.6	0.6	
		11-19BSPT				11-19BSPT			19	6.35	11	0.86	8.0	0.9	f
		11-14BSPT				11-14BSPT			14	6.35	11	1.16	0.9	1.0	x ————————————————————————————————————
a		16-28BSPT				16-28BSPT			28	9.525	16	0.58	0.6	0.6	R0.137P Internal 27.5°   27.5°
ern		16-19BSPT	•	•		16-19BSPT			19	9.525	16	0.86	8.0	0.9	
External		16-14BSPT		•		16-14BSPT			14	9.525	16	1.16	1.0	1.2	
_		16-11BSPT	•	•		16-11BSPT			11	9.525	16	1.48	1.1	1.5	90° 1°47 R0.137P External
	IR	11-28BSPT			IL	11-28BSPT			28	6.35	11	0.58	0.6	0.6	
		11-19BSPT		•		11-19BSPT			19	6.35	11	0.86	8.0	0.9	f
		11-14BSPT		•		11-14BSPT			14	6.35	11	1.16	0.9	1.0	x
<del>-</del>		16-28BSPT				16-28BSPT			28	9.525	16	0.58	0.6	0.6	R0.137P Internal 27.5°   27.5°
Internal		16-19BSPT	•	•		16-19BSPT			19	9.525	16	0.86	8.0	0.9	
<u>Infe</u>		16-14BSPT	•	•		16-14BSPT			14	9.525	16	1.16	1.0	1.2	
		16-11BSPT	•	•		16-11BSPT			11	9.525	16	1.48	1.1	1.5	90° 1°47′ R0.137P External
															,

Applicable holders D31, D32

•: Stock item

### **National Pipe Thread (NPT)**

			L	L			L	L	Pitch		Dime	nsions	(mm)		
Туре	De	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	11-27NPT	•		EL	11-27NPT			27	6.35	11	0.66	0.7	0.8	
		11-18NPT	•			11-18NPT			18	6.35	11	1.01	0.8	1.0	
		11-14NPT	•			11-14NPT			14	6.35	11	1.33	0.8	1.0	x ¬ -       -
_		16-27NPT	•			16-27NPT			27	9.525	16	0.66	0.7	0.8	30° 30° Internal
External		16-18NPT	•	•		16-18NPT			18	9.525	16	1.01	0.8	1.0	
X		16-14NPT	•	•		16-14NPT			14	9.525	16	1.33	0.9	1.2	
		16-11.5NPT 16-8NPT	•			16-11.5NPT			11.5	9.525	16	1.64	1.1	1.5	90° 1°47 External
		16-8NPT	•			16-8NPT			8	9.525	16	2.42	1.3	1.8	
	IR	11-27NPT	•		IL	11-27NPT			27	6.35	11	0.66	0.7	0.8	
		11-18NPT	•			11-18NPT			18	6.35	11	1.01	8.0	1.0	
		11-14NPT	•	•		11-14NPT	•		14	6.35	11	1.33	8.0	1.0	
_		16-27NPT	•			16-27NPT			27	9.525	16	0.66	0.7	0.8	30° 30° Internal
nternal		16-27NPT 16-18NPT				16-18NPT			18	9.525	16	1.01	0.8	1.0	
Inte		16-14NPT	•	•		16-14NPT			14	9.525	16	1.33	0.9	1.2	
		16-11.5NPT	•	•		16-11.5NPT	•		11.5	9.525	16	1.64	1.1	1.5	90° 1°47 External
		16-8NPT	•			16-8NPT	•		8	9.525	16	2.42	1.3	1.8	

→ Applicable holders D31, D32 •: Stock item

## **National Pipe Threads-Dryseal (NPTF)**

_			_	_			_	_	Pitch		Dime	nsions	(mm)		
Type	D	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	11-27NPTF			EL	11-27NPTF			27	6.35	11	0.64	0.7	0.8	
		11-18NPTF				11-18NPTF			18	6.35	11	1.00	8.0	1.0	
		11-14NPTF				11-14NPTF			14	6.35	11	1.35	8.0	1.0	x ¬
<u></u>		16-27NPTF				16-27NPTF			27	9.525	16	0.64	0.7	8.0	30° 30° Internal
External		16-18NPTF	•			16-18NPTF			18	9.525	16	1.00	8.0	1.0	
X		16-14NPTF				16-14NPTF			14	9.525	16	1.35	0.9	1.2	
		16-11.5NPTF				16-11.5NPTF			11.5	9.525	16	1.63	1.1	1.5	90° 1°47 External
		16-8NPTF				16-8NPTF	•		8	9.525	16	2.38	1.3	1.8	
	IR	11-27NPTF			IL	11-27NPTF			27	6.35	11	0.64	0.7	0.8	
		11-18NPTF				11-18NPTF			18	6.35	11	1.00	0.8	1.0	-1-
		11-14NPTF				11-14NPTF			14	6.35	11	1.35	8.0	1.0	×
=		16-27NPTF				16-27NPTF			27	9.525	16	0.64	0.7	0.8	30° 30° Internal
Internal		16-18NPTF				16-18NPTF			18	9.525	16	1.00	8.0	1.0	
nte		16-14NPTF				16-14NPTF			14	9.525	16	1.35	0.9	1.2	
_		16-11.5NPTF				16-11.5NPTF			11.5	9.525	16	1.63	1.1	1.5	90° 1°47 External
		16-8NPTF				16-8NPTF			8	9.525	16	2.38	1.3	1.8	d

Applicable holders D31, D32

•: Stock item

### **Round DIN 405**

-	_		-	F	_		l <sub>-</sub>	F	Pitch		Dime	nsions	(mm)		
Туре	De	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	16-10RD			EL	16-10RD			10	9.525	16	1.27	1.1	1.2	
		16-8RD	•			16-8RD			8	9.525	16	1.59	1.4	1.3	
		16-6RD	•			16-6RD			6	9.525	16	2.12	1.5	1.7	x-
ਬ		22-6RD				22-6RD			6	12.7	22	2.12	1.5	1.7	R0.22104P Internal 30°
ern		22-4RD	•			22-4RD			4	12.7	22	3.18	2.2	2.3	
External		27-4RD				27-4RD			4	15.875	27	3.18	2.2	2.3	
															d R0.22104P External
	IR	16-10RD			IL	16-10RD			10	9.525	16	1.27	1.1	1.2	
		16-8RD				16-8RD			8	9.525	16	1.59	1.4	1.4	
		16-6RD	•			16-6RD			6	9.525	16	2.12	1.4	1.5	
<del></del>		22-6RD				22-6RD			6	12.7	22	2.12	1.5	1.7	R0.22104P Internal 30°
Internal		22-4RD	•			22-4RD			4	12.7	22	3.18	2.2	2.3	
Inte		27-4RD				27-4RD			4	15.875	27	3.18	2.2	2.3	
															R0.22104P/External

● Applicable holders D31, D32 •: Stock item

## Trapez DIN 103 (TR)

			_	_			_	_	Pitch		Dime	ensions	(mm)		
Type	De	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(mm)	d	L	hmin	Х	f	Picture
	ER	11-1.5TR	•		EL	11-1.5TR	•		1.5	6.35	11	0.90	0.8	0.9	
		16-1.5TR				16-1.5TR			1.5	9.525	16	0.90	1.0	1.1	.f.
		16-2.0TR	•			16-2.0TR	•		2.0	9.525	16	1.25	1.1	1.3	x
<del>-</del>		16-3.0TR	•	•		16-3.0TR	•		3.0	9.525	16	1.75	1.3	1.5	30° Internal
External		22-4.0TR	•	•		22-4.0TR	•		4.0	12.7	22	2.25	1.7	1.9	
X		22-5.0TR	•	•		22-5.0TR	•		5.0	12.7	22	2.75	2.1	2.5	
		27-6.0TR	•	•		27-6.0TR	•		6.0	15.875	27	3.50	2.3	2.7	External
	IR	11-1.5TR			IL	11-1.5TR	•		1.5	6.35	11	0.90	8.0	0.9	
		16-1.5TR	•			16-1.5TR	•		1.5	9.525	16	0.90	1.0	1.1	,f.
		16-2.0TR	•			16-2.0TR	•		2.0	9.525	16	1.25	1.1	1.3	x
_		16-2.5TR	•			16-2.5TR	•		2.5	9.525	16	1.53	1.2	1.4	30° Internal
ırı		16-3.0TR	•			16-3.0TR	•		3.0	9.525	16	1.75	1.3	1.5	
Internal		22-4.0TR	•	•		22-4.0TR	•		4.0	12.7	22	2.25	1.7	1.9	
_		22-5.0TR	•	•		22-5.0TR			5.0	12.7	22	2.75	2.1	2.5	External
		27-6.0TR	•	•		27-6.0TR	•		6.0	15.875	27	3.50	2.3	2.7	

Applicable holders D31, D32

•: Stock item

## American ACME (ACME)

									Pitch		Dime	nsions	(mm)		
Type	D	esignation (Right)	PC3030T	PC9070T	D	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	11-16ACME			EL	11-16ACME			16	6.35	11	0.92	1.0	1.1	
		16-16ACME				16-16ACME			16	9.525	16	0.92	1.0	1.1	
		16-14ACME				16-14ACME			14	9.525	16	1.03	1.0	1.2	
		16-12ACME				16-12ACME			12	9.525	16	1.19	1.1	1.2	x <del>-       -</del>
=		16-10ACME				16-10ACME			10	9.525	16	1.52	1.3	1.4	29° Internal
r.		16-8ACME				16-8ACME			8	9.525	16	1.84	1.4	1.5	
External		16-6ACME				16-6ACME			6	9.525	16	2.37	1.7	1.9	
ш		22-6ACME	•			22-6ACME	•		6	12.7	22	2.37	1.8	2.1	External
		22-5ACME	•			22-5ACME	•		5	12.7	22	2.79	2.0	2.3	
		27-4ACME				27-4ACME			4	15.875	27	3.43	2.4	2.7	
	IR	11-16ACME			IL	11-16ACME			16	6.35	11	0.92	0.9	0.9	
		16-16ACME				16-16ACME			16	9.525	16	0.92	1.0	1.1	f
		16-14ACME				16-14ACME			14	9.525	16	1.03	1.1	1.2	1 -
_		16-12ACME				16-12ACME			12	9.525	16	1.19	1.2	13	29° Internal
rna		16-10ACME	•			16-10ACME			10	9.525	16	1.52	1.2	1.3	
Internal		16-8ACME	•			16-8ACME			8	9.525	16	1.84	1.4	1.5	
_		16-6ACME				16-6ACME			6	9.525	16	2.37	1.7	1.9	External
		22-6ACME	•			22-6ACME			6	12.7	22	2.37	1.8	2.1	LAMEITAL
		22-5ACME	•			22-5ACME			5	12.7	22	2.79	2.0	2.3	
		27-4ACME	•			27-4ACME			4	15.875	27	3.43	2.3	2.6	

Applicable holders D31, D32



## Stub ACME (STACME)

			_	_			L	_	Pitch		Dime	nsions	(mm)		
Туре	D	esignation (Right)	PC3030T	PC9070T		esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	11-16STACME			EL	11-16STACME			16	6.35	11	0.60	1.0	1.0	
		16-16STACME				16-16STACME			16	9.525	16	0.60	1.0	1.0	
		16-14STACME				16-14STACME			14	9.525	16	0.67	1.1	1.1	
		16-12STACME				16-12STACME			12	9.525	16	0.76	1.2	1.2	<del>-&gt; <sup>†</sup> -</del>
		16-10STACME				16-10STACME			10	9.525	16	1.02	1.2	1.3	×
Ja		16-8STACME				16-8STACME			8	9.525	16	1.21	1.4	1.5	29° Internal
External		16-6STACME				16-6STACME			6	9.525	16	1.52	1.7	1.8	L In
Ш		22-6STACME				22-6STACME			6	12.7	22	1.52	1.7	1.8	
		22-5STACME				22-5STACME			5	12.7	22	1.78	2.1	2.3	d External
		27-4STACME				27-4STACME			4	15.875	27	2.16	2.3	2.4	
		27-3STACME				27-3STACME			3	15.875	27	2.79	2.9	2.9	
	IR	11-16STACME			IL	11-16STACME			16	6.35	11	0.60	1.0	1.0	
		16-16STACME				16-16STACME			16	9.525	16	0.60	1.0	1.0	
		16-14STACME				16-14STACME			14	9.525	16	0.67	1.1	1.1	<del> <sup>†</sup> -</del> -
		16-12STACME				16-12STACME			12	9.525	16	0.76	1.1	1.2	L X
a		16-10STACME				16-10STACME			10	9.525	16	1.02	1.2	1.3	29° Internal
Internal		16-8STACME				16-8STACME			8	9.525	16	1.21	1.4	1.5	
<u>r</u>		16-6STACME				16-6STACME			6	9.525	16	1.52	1.7	1.8	
		22-6STACME				22-6STACME			6	12.7	22	1.52	1.7	1.8	d
		22-5STACME				22-5STACME			5	12.7	22	1.78	2.1	2.3	
		27-4STACME				27-4STACME			4	15.875	27	2.16	2.3	2.4	
		27-3STACME				27-3STACME			3	15.875	27	2.79	2.9	2.9	

Applicable holders D31, D32

# **UNJ (Unified Constant Thread)**

	Designation (Right)					_	_	Pitch		Dime	ensions	(mm)		
Туре	De	esignation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	11-48UNJ			EL 11-48UNJ			48	6.35	11	0.31	0.6	0.5	
		11-44UNJ			11-44UNJ			44	6.35	11	0.33	0.6	0.6	
		11-40UNJ			11-40UNJ			40	6.35	11	0.37	0.6	0.6	
		11-36UNJ			11-36UNJ			36	6.35	11	0.41	0.6	0.6	
		11-32UNJ			11-32UNJ			32	6.35	11	0.46	0.6	0.7	
		11-28UNJ			11-28UNJ			28	6.35	11	0.52	0.7	0.7	
		11-24UNJ	•		11-24UNJ			24	6.35	11	0.61	0.7	8.0	
		11-20UNJ			11-20UNJ			20	6.35	11	0.73	8.0	0.9	
		11-18UNJ			11-18UNJ			18	6.35	11	0.81	8.0	1.0	
		11-16UNJ			11-16UNJ			16	6.35	11	0.92	0.9	1.1	
		11-14UNJ			11-14UNJ			14	6.35	11	1.05	1.0	1.2	
		16-48UNJ			16-48UNJ			48	9.525	16	0.31	0.6	0.5	f
		16-44UNJ			16-44UNJ			44	9.525	16	0.33	0.6	0.6	x
	1	16-40UNJ			16-40UNJ			40	9.525	16	0.37	0.6	0.6	5/16P Internal
		16-36UNJ			16-36UNJ			36	9.525	16	0.41	0.6	0.6	
lal		16-32UNJ	•		16-32UNJ			32	9.525	16	0.46	0.6	0.7	
External		16-28UNJ	•		16-28UNJ			28	9.525	16	0.52	0.7	0.7	Rmax0.18042P
Ж		16-24UNJ	•		16-24UNJ			24	9.525	16	0.61	0.7	0.8	d Rmax0.15011P External
		16-20UNJ	•		16-20UNJ			20	9.525	16	0.73	8.0	0.9	
		16-18UNJ			16-18UNJ			18	9.525	16	0.81	0.8	1.0	
		16-16UNJ	•		16-16UNJ			16	9.525	16	0.92	0.9	1.1	
		16-14UNJ			16-14UNJ			14	9.525	16	1.05	1.0	1.2	
		16-13UNJ			16-13UNJ			13	9.525	16	1.13	1.0	1.3	
		16-12UNJ	•		16-12UNJ			12	9.525	16	1.22	1.1	1.3	
		16-11UNJ			16-11UNJ			11	9.525	16	1.33	1.2	1.5	
		16-10UNJ			16-10UNJ	•		10	9.525	16	1.47	1.2	1.5	
		16-9UNJ			16-9UNJ			9	9.525	16	1.63	1.3	1.7	
		16-8UNJ			16-8UNJ			8	9.525	16	1.83	1.2	1.6	
		22-7UNJ			22-7UNJ			7	12.7	22	2.09	1.7	2.3	
		22-6UNJ			22-6UNJ			6	12.7	22	2.44	1.7	2.3	
		22-5UNJ			22-5UNJ			5	12.7	22	2.93	1.8	2.5	
		27-4.5UNJ			27-4.5UNJ			4.5	15.875	27	3.26	2.0	2.7	
		27-4UNJ			27-4UNJ			4	15.875	27	3.67	2.2	3.0	

→ Applicable holders D31→ : Stock item

# **UNJ (Unified Constant Thread)**

			L			L	L	Pitch		Dime	ensions	(mm)		
Type	Designation (Right)	PC3030T	PC9070T	D	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	IR 11-48UNJ			IL	11-48UNJ			48	6.35	11	0.28	0.6	0.5	
	11-44UNJ				11-44UNJ			44	6.35	11	0.30	0.6	0.6	
	11-40UNJ				11-40UNJ			40	6.35	11	0.33	0.6	0.6	
	11-36UNJ				11-36UNJ			36	6.35	11	0.37	0.6	0.6	
	11-32UNJ				11-32UNJ			32	6.35	11	0.42	0.6	0.7	
	11-28UNJ				11-28UNJ			28	6.35	11	0.47	0.7	0.7	
	11-24UNJ				11-24UNJ			24	6.35	11	0.55	0.7	0.8	
	11-20UNJ				11-20UNJ			20	6.35	11	0.66	0.8	0.9	
	11-18UNJ				11-18UNJ			18	6.35	11	0.74	8.0	1.0	
	11-16UNJ				11-16UNJ			16	6.35	11	0.83	0.9	1.1	
	11-14UNJ				11-14UNJ			14	9.525	11	0.95	1.0	1.2	
	16-48UNJ				16-48UNJ			48	9.525	16	0.28	0.6	0.5	4
	16-44UNJ				16-44UNJ			44	9.525	16	0.30	0.6	0.6	
	16-40UNJ				16-40UNJ			40	9.525	16	0.33	0.6	0.6	5/16P Internal
	16-36UNJ				16-36UNJ			36	9.525	16	0.37	0.6	0.6	1 000
a	16-32UNJ				16-32UNJ			32	9.525	16	0.42	0.6	0.7	
nternal	16-28UNJ				16-28UNJ			28	9.525	16	0.47	0.7	0.7	Rmax0.18042P
<u>=</u>	16-24UNJ				16-24UNJ			24	9.525	16	0.55	0.7	0.8	d Rmax0.15011P External
	16-20UNJ				16-20UNJ			20	9.525	16	0.66	8.0	0.9	
	16-18UNJ				16-18UNJ			18	9.555	16	0.74	8.0	1.0	
	16-16UNJ				16-16UNJ			16	9.525	16	0.83	0.9	1.1	
	16-14UNJ				16-14UNJ			14	9.525	16	0.95	1.0	1.2	
	16-13UNJ				16-13UNJ			13	9.525	16	1.02	1.0	1.3	
	16-12UNJ				16-12UNJ	•		12	9.525	16	1.11	1.1	1.3	
	16-11UNJ				16-11UNJ			11	9.525	16	1.21	1.2	1.5	
	16-10UNJ				16-10UNJ			10	9.525	16	1.33	1.2	1.5	
	16-9UNJ				16-9UNJ			9	9.525	16	1.48	1.3	1.7	
	16-8UNJ				16-8UNJ			8	9.525	16	1.66	1.2	1.6	
	22-7UNJ				22-7UNJ			7	12.7	22	1.90	1.7	2.3	
	22-6UNJ				22-6UNJ			6	12.7	22	2.21	1.7	2.3	
	22-5UNJ				22-5UNJ			5	12.7	22	2.66	1.8	2.5	
	27-4.5UNJ				27-4.5UNJ			4.5	15.875	27	2.95	2.0	2.7	
	27-4UNJ				27-4UNJ			4	15.875	27	3.32	2.2	3.0	

● : Stock item

## **American Buttress (ABUT)**

			_	_			_	_	Pitch		Dime	nsions	(mm)		
Туре	De	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	11-20ABUT			EL	11-20ABUT			20	6.35	11	0.84	1.0	1.4	
		11-16ABUT				11-16ABUT			16	6.35	11	1.05	1.3	1.9	
		16-20ABUT	•			16-20ABUT			20	9.525	16	0.84	1.0	1.4	X <del>*  -</del>
=		16-16ABUT				16-16ABUT			16	9.525	16	1.05	1.3	1.9	0.16316P 7° Internal
External		16-12ABUT				16-12ABUT			12	9.525	16	1.40	1.4	2.0	45°
xte		16-10ABUT				16-10ABUT			10	9.525	16	1.68	1.5	2.3	
ш	_   2	22-8ABUT				22-8ABUT			8	12.7	22	2.10	2.0	3.2	0.16316P External
		22-6ABUT				22-6ABUT			6	12.7	22	2.80	2.2	3.5	- I I - External
	IR	11-20ABUT	•		IL	11-20ABUT			20	6.35	11	0.84	1.0	1.4	
		11-16ABUT				11-16ABUT			16	6.35	11	1.05	1.3	1.9	
_		16-20ABUT	•			16-20ABUT			20	9.525	16	0.84	1.0	1.4	0.16316P 7° Internal
Internal		16-16ABUT				16-16ABUT			16	9.525	16	1.05	1.3	1.9	
nte		16-12ABUT	•			16-12ABUT			12	9.525	16	1.40	1.4	2.0	
_		16-10ABUT	•			16-10ABUT			10	9.525	16	1.68	1.5	2.3	0.16316P External
		22-8ABUT				22-8ABUT			8	12.7	22	2.10	2.0	3.2	- Excorner
		22-6ABUT				22-6ABUT			6	12.7	22	2.80	2.2	3.5	

Applicable holders D31, D32

#### $\bullet: \, \mathsf{Stock} \,\, \mathsf{item}$

## **British Buttress (BBUT)**

			_	_			_	_	Pitch		Dime	nsions	(mm)		
Туре	De	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	16-16BBUT	•		EL	16-16BBUT			16	9.525	16	0.80	1.1	1.6	
		16-12BBUT				16-12BBUT			12	9.525	16	1.07	1.4	2.1	X¬ f
=		16-10BBUT				16-10BBUT			10	9.525	16	1.28	1.4	2.2	0.2754P 7° Internal
rna		16-8BBUT	•			16-8BBUT			8	9.525	16	1.61	1.6	2.5	
External		22-8BBUT				22-8BBUT			8	12.7	22	1.61	1.6	2.5	
															0.2754P External
	IR	16-16BBUT	•		IL	16-16BBUT			16	9.525	16	0.80	1.1	1.6	
		16-12BBUT				16-12BBUT			12	9.525	16	1.07	1.4	2.1	.t. <b>⊑</b> x
_		16-10BBUT				16-10BBUT			10	9.525	16	1.28	1.4	2.2	0.2754P 7° Internal
rna		16-8BBUT				16-8BBUT			8	9.525	16	1.61	1.6	2.5	
Internal		22-8BBUT				22-8BBUT			8	12.7	22	1.61	1.6	2.5	
_															d 0.2754P External

Applicable holders D31, D32



## **Metric Buttress (SAGE)**

			_	_			_	_	Pitch		Dime	nsions	(mm)		
Type	D	esignation (Right)	PC3030T	PC9070T	D	esignation (Left)	PC3030T	PC9070T	(mm)	d	L	hmin	х	f	Picture
	ER	16-2.0SAGE			EL	16-2.0SAGE			2.0	9.525	16	1.74	1.47	2.08	
		22-2.0SAGE				22-2.0SAGE			2.0	12.7	22	1.74	1.47	2.08	0.26384P 3° Internal
Jal		22-3.0SAGE	•			22-3.0SAGE			3.0	12.7	22	2.60	1.79	2.60	300
External		27-4.0SAGE	•			27-4.0SAGE			4.0	15.875	27	3.55	1.93	3.20	
Û															0.26384P External
	IR	16-2.0SAGE	•		IL	16-2.0SAGE			2.0	9.525	16	1.50	1.52	2.2	
		22-3.0SAGE				22-3.0SAGE			3.0	12.7	22	2.25	1.66	2.9	0.26384P 3°nternal
Jal		27-4.0SAGE	•			27-4.0SAGE			4.0	5/8	27	3.09	2.12	3.2	30°
Internal															0.26384P External

● Applicable holders D31, D32 • Stock item

### **API**

							_		Pitch		Dime	ensions	(mm)		
Type	D	esignation (Right)	PC3030T	PC9070T	D	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture
	ER	22-4API382	•		EL	22-4API382			4	12.7	22	3.09	2.1	2.8	
		22-4API383				22-4API383			4	12.7	22	3.08	2.1	2.8	
		22-4API502	•			22-4API502			4	12.7	22	3.75	2.0	2.9	
		22-4API503	•			22-4API503			4	12.7	22	3.74	2.0	2.9	
		22-5API403				22-5API403			5	12.7	22	2.99	1.8	2.6	×
Jal		22-6API551				22-6API551			6	12.7	22	1.41	2.6	2.0	30° 30° Internal
External		27-4API382	•			27-4API382			4	15.875	27	3.09	2.1	2.8	
Ä		27-4API383				27-4API383			4	15.875	27	3.08	2.1	2.8	
		27-4API502				27-4API502			4	15.875	27	3.75	2.1	3.1	d 90° a External
		27-4API503	•			27-4API503			4	15.875	27	3.74	2.1	3.1	
		27-5API403	•			27-5API403			5	15.875	27	2.99	1.9	2.7	
	IR	22-4API382			IL	22-4API382			4	12.7	22	3.09	2.1	2.8	
		22-4API383				22-4API383			4	12.7	22	3.08	2.1	2.8	4
		22-4API502	•			22-4API502			4	12.7	22	3.75	2.1	3.1	
		22-4API503				22-4API503			4	12.7	22	3.74	2.0	2.9	
a		22-5API403	•			22-5API403			5	12.7	22	2.99	1.8	2.6	30° 30° Internal
Internal		22-6API551	•			22-6API551			6	12.7	22	1.41	2.6	2.0	
<u>1</u>		27-4API382				27-4API382			4	15.875	27	3.09	2.1	2.8	90° a
		27-4API383	•			27-4API383			4	15.875	27	3.08	2.1	2.8	d External
		27-4API502	•			27-4API502			4	15.875	27	3.75	2.1	3.1	
		27-4API503	•			27-4API503			4	15.875	27	3.74	2.1	3.1	
		27-5API403	•			27-5API403			5	15.875	27	2.99	1.9	2.7	

● : Stock item

### **API Buttress Casing (BUT)**

	_		_	_	_		-	_	Pitch		Dim	ensi	ons (m	ım)		
Type	D	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(tpi)	IPF	d	L	hmin	Х	f	Picture
	ER	22-5BUT75	•		EL	22-5BUT75			5	0.75	12.7	22	1.55	3.1	1.9	f
		22-5BUT1				22-5BUT1			5	1	12.7	22	1.55	3.1	1.9	X Internal
External																nimeria di
	IR	22-5BUT75	•		IL	22-5BUT75			5	0.75	12.7	22	1.55	2.8	1.9	$\alpha = arctg(IPF/24)$
		22-5BUT1	•			22-5BUT1			5	1	12.7	22	1.55	2.8	1.9	x (1-arcig(ii 1724)
Internal																nnena 10° 90° 3° External

Applicable holders D31, D32

#### •: Stock item

### **API Round Casing & Tubing (APIRD)**

-			-	_			_	_	Pitch		Dime	nsions	(mm)						
Туре	D	esignation (Right)	PC3030T	PC9070T	D	esignation (Left)	PC3030T	PC9070T	(tpi)	d	L	hmin	Х	f	Picture				
	ER	16-10APIRD	•		EL	16-10APIRD			10	9.525	16	1.41	1.2	1.4	,f,				
		16-8APIRD	•			16-8APIRD			8	9.525	16	1.81	1.3	1.5	X Internal				
External															30° 30° 11°47' External				
	IR	16-10APIRD	•		IL	16-10APIRD			10	9.525	16	1.41	1.2	1.4	f				
		16-8APIRD	•			16-8APIRD			8	9.525	16	1.81	1.3	1.5	×				
Internal															30° 30° Internal 30° 10° 1°47′ External				

### Applicable holders D31, D32

## **Extreme Line Casing (EL)**

			_	_			_	_	Pitch		Dim	ensi	ons (m	ım)			
Type	De	esignation (Right)	PC3030T	PC9070T	De	esignation (Left)	PC3030T	PC9070T	(tpi)	IPF	d	L	hmin	х	f	Picture	
	ER	22-6EL15			EL	22-6EL15			6	1.5	12.7	22	1.21	1.9	1.9	f	
		22-5EL125				22-5EL125			5	1.25	12.7	22	1.71	2.3	2.4	x	
External																h 90 a External	
	IR	22-6EL15			IL	22-6EL15			6	1.5	12.7	22	1.39	1.8	1.9	f	
		22-5EL125				22-5EL125			5	1.25	12.7	22	1.91	2.2	2.4	α=arctg (IPF/24)	
Internal																h 6':6 Internal	

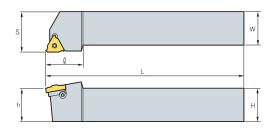
<sup>•:</sup> Stock item

# ER(L)H

### (Screw on system)









Righthand drawing

- (	m	m
١ (		

	Designation	Inscribed circle	н	w	L	s	н	Q	Insert screw	Shim screw	Screw RH	Screw LH	Wrench
ER(L)H	08N-11	6.35	8	8	136.4	11	8	17.5					
	10N-11	6.35	10	10	70.0	11	10	17.5	ST11N	-	-	-	TW08P
	12N-11	6.35	12	12	80.0	12	12	17.5					
	12N-16	9.525	12	12	83.2	16	12	22	ST16N	-	-	-	TW10P
	09-16	9.525	9.52	9.52	63.6	16	9.52	20.5					
	12-16	9.525	12	12	83.2	16	12	22					
	16-16	9.525	16	16	100.0	16	16	20.5	ST16	STA16	ATE16	ATI22	TW10P
	20-16	9.525	20	20	128.6	20	20	30	3110	SIAIO	AILIO	ATIZZ	TVVTOF
	20-16 25-16	9.525	25	25	153.6	25	25	30					
	32-16	9.525	32	32	173.6	32	32	30					
	25-22	12.7	25	25	155.7	25	25	36					
	32-22	12.7	32	32	175.7	32	32	36	ST22	STA22	ATE22	ATI22	TW20P
	40-22	12.7	40	40	205.7	40	40	36					
	25-27	15.875	25	25	151.6	32	25	35					
	32-27	15.875	32	32	176.6	32	32	40	ST27	STA27	ATE27	ATI27	TW25L
	40-27	15.875	40	40	206.6	40	40	40	3127	SIAZI	AIEZI	ATIZI	1 VVZ3L
	50-27	15.875	50	50	256.6	50	50	40					

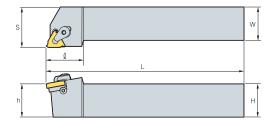
<sup>→</sup> Applicable inserts D10~D13, D16, D18, D19, D22, D23~D26

# ER(L)H-C

### (Clamp on system)









Righthand drawing

													(111111)
	Designation	Inscribed circle	н	W	L	s	н	Q	Shim screw	Clamp	Screw RH	Screw LH	Wrench
ER(L)H	20-16C	9.525	20	20	128.6	20	20	30					TW10P
	25-16C	9.525	25	25	153.6	25	25	30	STA16	CTH16	ATE16	ATI16	TW15P
	32-16C	9.525	32	32	173.6	32	32	30					
	25-22C	12.7	25	25	155.7	25	25	36					
	32-22C	12.7	32	32	175.7	32	32	36	STA22	CTH22	ATE22	ATI22	TW20P
	40-22C	12.7	40	40	205.7	40	40	36					
	25-27C	15.875	25	25	151.6	25	25	35					
	32-27C	15.875	32	32	176.6	32	32	40	STA27	CTH27	ATE27	ATI27	TW25L
40	40-27C	15.875	40	40	206.6	40	40	40	017/27	011121	,	711121	111202
	50-27C	15.875	50	50	256.6	50	50	40					

<sup>→</sup> Applicable inserts D10~D13, D16, D18, D19, D22, D23~D26

<sup>•</sup> Helix angle is 1.5° for all holders

No shim needed for N type holder

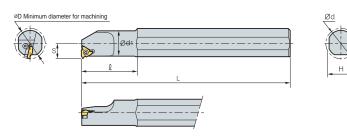
Helix angle is 1.5° for all holders

## **D** Internal Holder

# IR(L)H

### (Screw on system)







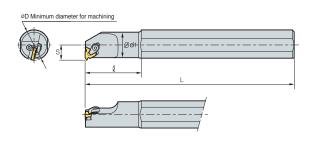
Righthand drawing (mm)

D	esignation	Inscribed circle	ØD	Ød	Ød1	н	L	s	Q	Insert screw	Shim screw	Screw RH	Screw LH	Wrench
R(L)H	10DN-11	6.35	13	10	10.0	9.5	100	7.3	-					
	10N-11	6.35	13	20	10.0	18.0	180	7.3	25	ST11N	-	-	-	TW08F
	13N-11	6.35	16	20	13.0	18.0	180	8.9	32					
	13N-16	9.525	17	20	12.7	18.0	180	10.3	32					
	16N-16	9.525	20	20	16.0	18.0	180	11.5	40	ST16N	-	-	-	TW10F
	16DN-16	9.525	20	16	16.0	15.2	150	11.3	32					
	20-16	9.525	24	20	20.0	18.0	180	13.4	40					
	25-16	9.525	29	32	25.0	29.0	250	16.3	60					
	25D-16	9.525	29	25	24.5	22.6	200	16.1	45	ST16	STA16	ATI16	ATE16	TW10
	32-16	9.525	36	32	32.0	29.0	250	19.6	60					
	40-16	9.525	44	40	40.0	36.0	300	23.8	60					
	20N-22	12.7	27	20	20.0	18.0	180	15.6	50	ST22N	-	-	-	TW201
	25-22	12.7	32	32	25.0	29.0	250	17.4	60					
	25D-22	12.7	32	25	24.6	22.6	200	17.2	45	ST22	STA22	ATI22	ATE22	TW20
	32-22	12.7	39	32	32.0	29.0	250	21.5	60	0122	OTAZZ	ATIZZ	AILZZ	1 4 4 2 0 1
	40-22	12.7	47	40	40.0	36.0	300	25.8	60					
	32-27	15.875	40	32	32.0	29.0	250	22.4	60					
	40-27	15.875	48	40	40.0	36.0	300	26.4	60	ST27	STA27	ATI27	ATE27	TW25I
	50-27	15.875	58	50	50.0	45.0	350	31.4	75	3121	SIALI	ALIZI	MILLI	1 44231
	60-27	15.875	69	60	60.0	54.0	400	36.4	75					

**<sup>→</sup>** Applicable inserts **D10**, **D11**, **D14**, **D15**, **D17**, **D20~D25**, **D27~D30** 

# IR(L)H-C (Clamp on system)









Righthand drawing (mm)

D	esignation	Inscribed circle	ØD	Ød	Ødı	н	L	s	Q	Shim screw	Clamp	Screw RH	Screw LH	Wrench
IR(L)H	20-16C	9.525	24	20	20.0	18.0	180	13.4	50					
	25-16C	9.525	29	32	25.0	28.0	250	16.3	60					TW10P
	25D-16C	9.525	29	25	24.6	22.6	200	16.1	45	STA16	CTH16	ATI16	ATE16	TW15P
	32-16C 40-16C	9.525	36	32	32.0	29.0	250	19.6	60					IWIJE
	40-16C	9.525	44	40	40.0	36.0	300	23.8	60					
	25-22C	12.7	32	32	25.0	29.0	250	17.4	60					
	25D-22C	12.7	32	25	24.6	22.6	200	17.2	45	STA22	CTH22	ATI22	ATE22	TW20P
	32-22C	12.7	39	32	32.0	29.0	250	21.5	60	JIAZZ	011122	ALIZZ	AILZZ	1 44201
	40-22C	12.7	47	40	40.0	36.0	300	25.8	60					
	32-27C	15.875	40	32	32.0	29.0	250	22.4	60					
	40-27C	15.875	48	40	40.0	36.0	300	26.4	60	STA27	CTH27	ATI27	ATE27	TW25L
	50-27C	15.875	58	50	50.0	45.0	350	31.4	75	JIAZI	011121	AHZI	AILZI	IVVZJL
	60-27C	15.875	69	60	60.5	54.0	400	36.4	75					

<sup>→</sup> Applicable inserts D10, D11, D14, D15, D17, D20~D25, D27~D30

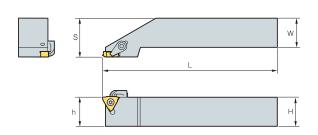
<sup>•</sup> Helix angle is 1.5° for all holders • No shim needed for N type holder

Helix angle is 1.5° for all holders

## **VTH**



**VETR** 





Righthand drawing

	Designation	H = (h)	W	L	S	Insert	Clamp	Clamp screw	Screw	Wrench
VTH	2020R	20	20	125	26.4					TMED
	2525R	25	25	150	33.4	VETR	CS6R1	DHA0617	FTKA03510	TW15P HW30L
	3225R	32	25	170	33.4					HVV3UL

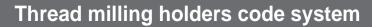
### Vertical type thread insert

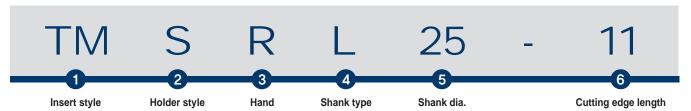
			Uncoated		Insert		
Picture	De	signation	ST10	Pitch (mm)	θ	f	Configuration
	VETR	080		0.8	60°	1.4	
		100	•	1.0	60°	1.4	f
		125		1.25	60°	1.4	d \\
		150	•	1.5	60°	1.2	
		175		1.75	60°	1.2	
		200	•	2.0	60°	1.2	
		250		2.5	60°	1.4	
		300	•	3.0	60°	1.6	d: 9.525 t: 4.76
		150F	•	0.8~1.5	60°	1.4	4. 3.323 1. 4.70
		300F	•	1.5~3.0	60°	1.6	

•: Stock item

## D

### **Technical Information for Thread Milling**

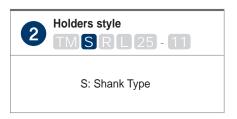




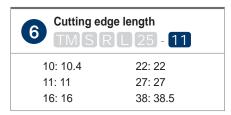




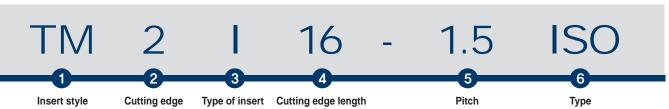






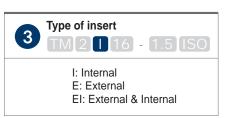


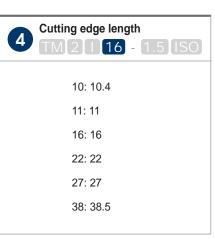
### Thread milling inserts code system

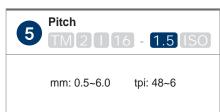


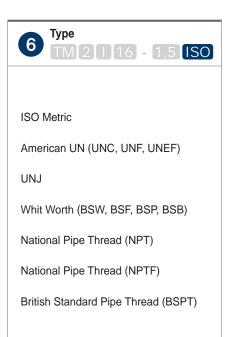












### Thread milling

### The right tool for the job

#### Small diameter type





Tool holder: TMSR Insert: TM L = 10.4 mm For small bore diameters down to 9.5 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**



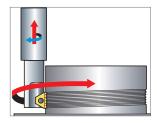




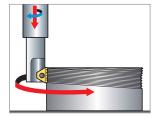
Tool holder: TMSR Insert: TM2 (BSPT, NPT, NPTF) For standard length threads

### Thread milling methods

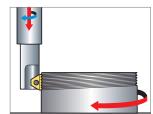
#### **External threading**



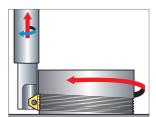
Right handed thread conventional milling



Left handed thread down milling

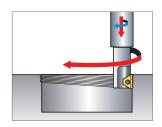


Right handed thread down milling

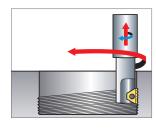


Left handed thread conventional milling

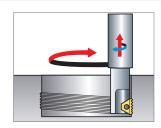
#### Internal threading



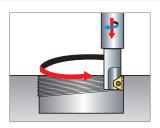
Right handed thread down milling



Left handed thread conventional milling



Right handed thread conventional milling

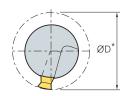


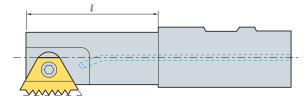
Left handed thread down milling



## **Technical Information for Thread Milling**

### **○** Tooling recommendation for given internal thread specification



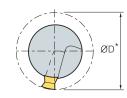


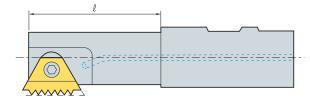
### ISO

Pitch (mm)	Nominal dia. (mm)	Holder	Insert	l-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
0.75	11	TMSR 12-10	TM2I 10-0.75ISO	12.0	9.0	0.43
	12-14	TMSR 12-10	TM2I 10-1.0ISO	12.0	9.0	
	15-18	TMSR 12-11	TM2I 11-1.0ISO	12.0	11.5	
4.0	20	TMSR 16-16	TM2I 16-1.0ISO	22.0	17.0	0.50
1.0	22	TMSR 20-22	TM2I 22-1.0ISO	29.0	19.0	0.58
	24	TMSR 20-16	TM2I 16-1.0ISO	43.0	20.0	
	25-28	TMSRL 25-16	TM2I 16-1.0ISO	25.0	22.0	
1.25	14	TMSR 12-10	TM2I 10-1.25ISO	12.0	9.0	0.72
	14-15	TMSR 12-10	TM2I 10-1.5ISO	12.0	9.0	
	16-20	TMSR 12-11	TM2I 11-1.5ISO	12.0	11.5	
	22	TMSR 16-16	TM2I 16-1.5ISO	22.0	17.0	
4.5	24	TMSR 20-22	TM2I 22-1.5ISO	29.0	19.0	0.07
1.5	25-26	TMSR 20-16	TM2I 16-1.5ISO	43.0	20.0	0.87
	27-30	TMSRL 25-16	TM2I 16-1.5ISO	25.0	22.0	
	35-42	TMSR 25-27	TM2I 27-1.5ISO	52.0	30.0	
	45	TMSR 32-27	TM2I 27-1.5ISO	58.0	37.0	
	22	TMSRT 16-16	TM2I16-2.0ISO	22.0	15.5	
	24	TMSR 16-16	TM2I 16-2.0ISO	22.0	17.0	
	25	TMSR 20-22	TM2I 22-2.0ISO	29.0	19.0	
2.0	27	TMSR 20-16	TM2I 16-2.0ISO	43.0	20.0	1.15
	28-32	TMSRL 25-16	TM2I 16-2.0ISO	25.0	22.0	
	39-42	TMSR 25-27	TM2I 27-2.0ISO	52.0	30.0	
	45-48	TMSR 32-27	TM2I 27-2.0ISO	58.0	37.0	
0.0	42-48	TMSR 25-27	TM2I 27-3.0ISO	52.0	30.0	4.70
3.0	50-52	TMSR 32-27	TM2I 27-3.0ISO	58.0	37.0	1.73
	45-52	TMSR 25-27	TM2I 27-4.0ISO	52.0	30.0	
4.0	55	TMSR 32-38	TM2I 38-4.0ISO	55.0	35.0	2.24
4.0	56-58	TMSR 32-27	TM2I 27-4.0ISO	58.0	37.0	2.31
	60-65	TMSR 40-38	TM2I 38-4.0ISO	65.0	46.0	
5.0	48-52	TMSR 32-38	TM2I 38-5.0ISO	55.0	35.0	2.89
<i>E E</i>	56	TMSR 32-38	TM2I 38-5.5ISO	55.0	35.0	2.17
5.5	60	TMSR 40-38	TM2I 38-5.5ISO	65.0	46.0	3.17
6.0	64-68	TMSR 40-38	TM2I 38-6.0ISO	65.0	46.0	3.46

The recommended holder is the largest for the given thread specification
 Holder with smaller or equal cutting diameters (D2) can also be used

### **○** Tooling recommendation for given internal thread specification





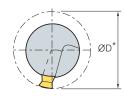
### UN

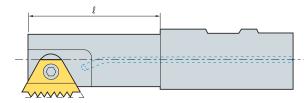
Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	<b>ℓ-Tool holder</b> overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
	7/16-1/2	TMSR 12-10	TMI 10-32UN	12.0	9.0	
	9/16-11/16	TMSR 12-11	TM2I 11-32UN	12.0	11.5	
32	3/4-13/16	TMSR 16-16	TM2I 16-32UN	22.0	17.0	0.46
	7/8-15/16	TMSR 20-16	TM2I 16-32UN	43.0	20.0	
	1	TMSR 25-16	TM2I 16-32UN	25.0	22.0	
	7/16-1/2	TMSR 12-10	TMI 10-28UN	12.0	9.0	
	9/16-3/4	TMSR 12-11	TM2I 11-28UN	12.0	115	
28	13/16-7/8	TMSR 16-16	TM2I 16-28UN	22.0	17.0	0.52
	15/16	TMSR 20-16	TM2I 16-28UN	43.0	20.0	
	1-1 1/8	TMSRL 25-16	TM2I 16-28UN	25.0	22.0	
24	9/16-11/16	TMSR 12-11	TM2I 11-24UN	12.0	11.5	0.61
	1/2-9/16	TMSR 12-10	TMI 10-20UN	12.0	9.0	
	5/8-13/16	TMSR 12-11	TM2I 11-20UN	12.0	11.5	
	7/8	TMSR 16-16	TM2I 16-20UN	22.0	17.0	
20	15/16-1	TMSR 20-16	TM2I 16-20UN	43.0	20.0	0.73
	1 1/16-1 1/8	TMSRL 25-16	TM2I 16-20UN	25.0	22.0	
	1 3/8-1 5/8	TMSR 25-27	TM2I 27-20UN	52.0	30.0	
	1 11/16-1 13/16	TMSR 32-27	TM2I 27-20UN	28.0	37.0	
	5/8	TMSR 12-11	TM2I 11-18UN	12.0	11.5	
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-18UN	25.0	22.0	
18	1 7/16-1 5/8	TMSR 25-27	TM2I 27-18UN	52.0	30.0	0.81
	1 11/16	TMSR 32-27	TM2I 27-18UN	58.0	37.0	
	11/16-13/16	TMSR 12-11	TM2I 11-16UN	12.0	11.5	
	7/8-15/16	TMSR 16-16	TM2I 16-16UN	22.0	17.0	
	1	TMSR 20-16	TM2I 16-16UN	43.0	20.0	
16	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-16UN	25.0	22.0	0.92
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-16UN	52.0	30.0	
	1 11/16-1 7/8	TMSR 32-27	TM2I 27-16UN	58.0	37.0	
14	7/8	TMSR 12-11	TM2I 11-14UN	12.0	11.5	1.05
	7/8	TMSRT 16-16	TM2I 16-12UN	22.0	15.5	
	15/16	TMSR 16-16	TM2I 16-12UN	22.0	17.0	
	1	TMSR 20-22	TM2I 22-12UN	29.0	19.0	
12	1 1/16	TMSR 20-16	TM2I 16-12UN	43.0	20.0	1.22
	1 1/8-1 1/4	TMSRL 25-16	TM2I 16-12UN	25.0	22.0	
	1 1/2-1 11/16	TMSR 25-27	TM2I 27-12UN	52.0	30.0	
	1 3/4-1 15/16	TMSR 32-27	TM2I 27-12UN	58.0	37.0	
	1 11/16-1 15/16	TMSR 25-27	TM2I 27-8UN	52.0	30.0	
8	2-1 1/8	TMSR 32-27	TM2I 27-8UN	58.0	37.0	1.83
	2-2 1/8	TMSR 25-27	TM2I 27-6UN	52.0	30.0	
6	2 1/4	TMSR 32-27	TM2I 27-6UN	58.0	37.0	2.44
	2 3/8-2 1/2	TMSR 40-38	TM2I 38-6UN	65.0	46.0	
4.5	2-2 1/4	TMSR 32-38	TM2I 38-4.5UN	55.0	35.0	3.26
4	2 1/2	TMSR 40-38	TM2I 38-4UN	65.0	46.0	3.67

The recommended holder is the largest for the given thread specification
 Holder with smaller or equal cutting diameters (D2) can also be used

### **Technical Information for Thread Milling**

### **○** Tooling recommendation for given internal thread specification





### **UNJ**

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
24	9/16-11/16	TMSR 12-11	TM2I 11-24UNJ	12.0	11.5	0.55
	1/2	TMSR 12-10	TMI 10-20UNJ	12.0	9.0	
20	3/4-13/16	TMSR 12-11	TM2I 11-20UNJ	12.0	11.5	0.66
20	7/8	TMSR 16-16	TM2I 16-20UNJ	22.0	17.0	0.00
	15/16-1	TMSR 20-16	TM2I 16-20UNJ	43.0	20.0	
18	5/8	TMSR 12-11	TM2I 11-18UNJ	12.0	11.5	0.74
18	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-18UNJ	25.0	22.0	0.74
	11/16-13/16	TMSR 12-11	TM2I 11-16UNJ	12.0	11.5	
	7/8-15/16	TMSR 16-16	TM2I 16-16UNJ	22.0	17.0	
16	1	TMSR 20-16	TM2I 16-16UNJ	43.0	20.0	0.00
16	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-16UNJ	25.0	22.0	0.83
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-16UNJ	52.0	30.0	]
	1 11/16-1 7/8	TMSR 32-27	TM2I 27-16UNJ	58.0	37.0	
14	7/8	TMSR 12-11	TM2I 11-14UNJ	12.0	11.5	0.95
	7/8	TMSRT 16-16	TM2I 16-12UNJ	22.0	15.5	
	15/16-1	TMSR 16-16	TM2I 16-12UNJ	22.0	17.0	]
12	1 1/16	TMSR 20-16	TM2I 16-12UNJ	43.0	20.0	1 11
12	1 1/8-1 1/4	TMSRL 25-16	TM2I 16-12UNJ	25.0	22.0	1.11
	1 1/2-1 11/16	TMSR 25-27	TM2I 27-12UNJ	52.0	52.0 30.0	
	1 3/4-1 15/16	TMSR 32-27	TM2I 27-12UNJ	58.0	37.0	

### W

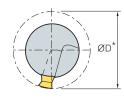
Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
	1/2-9/16	TMSR 12-10	TMEI 10-26W	12.0	9.0	
	5/8-3/4	TMSR 12-11	TM2EI 11-26 W	12.0	11.5	
26	13/16-7/8	TMSR 16-16	TM2EI 16-26W	22.0	17.0	0.63
	15/16-1	TMSR 20-16	TM2EI 16-26W	43.0	20.0	
	1 1/16-1 1/8	TMSRL 25-16	TM2EI 16-26W	25.0	22.0	
	9/16	TMSR 12-10	TM2EI 10-20W	12.0	9.0	
	5/8-13/16	TMSR 12-11	TM2EI 11-20W	12.0	11.5	
20	7/8-15/16	TMSR 16-16	TM2EI 16-20W	22.0	17.0	0.81
	1	TMSR 20-16	TM2EI 16-20W	43.0	20.0	
	1 1/16-1 3/16	TMSRL 25-16	TM2EI 16-20W	25.0	22.0	
	13/16	TMSR 16-16	TM2EI 16-16W	22.0	15.5	
	7/8-15/16	TMSR 16-16	TM2EI 16-16W	22.0	17.0	
40	1-1 1/16	TMSR 20-16	TM2EI 16-16W	43.0	20.0	1.02
16	1 1/8-1 1/4	TMSRL 25-16	TM2EI 16-16W	25.0	22.0	1.02
	1.4-1 5/8	TMSR 25-27	TM2EI 27-16W	52.0	30.0	
	1 3/4-1.9	TMSR 32-27	TM2EI 27-16W	28.0	37.0	
40	1 1/2-1 3/4	TMSR 25-27	TM2EI 27-12W	52.0	30.0	4.20
12	1 7/8	TMSR 32-27	TM2EI 27-12W	58.0	37.0	1.36
0	1 7/8-1.9	TMSR 25-27	TM2EI 27-8W	52.0	30.0	2.02
8	2.1-2 1/8	TMSR 32-27	TM2EI 27-8W	58.0	37.0	2.03
7	2	TMSR 25-27	TM2EI 27-7W	52.0	30.0	2.32
	2.1-2 1/8	TMSR 25-27	TM2EI 27-6W	52.0	30.0	
6	2 1/4	TMSR 32-38	TM2EI 38-6W	55.0	35.0	2.71
6	2 3/8-2.6	TMSR 32-27	TM2EI 27-6W	58.0	37.0	2./1
	2 5/8-2 3/4	TMSR 40-38	TM2EI 38-6W	65.0	46.0	
5	3	TMSR 40-38	TM2EI 38-5W	65.0	46.0	3.25
4.5	3 1/2	TMSR 40-38	TM2EI 38-4.5W	65.0	46.0	3.61

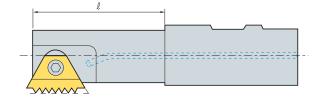


<sup>•</sup> The recommended holder is the largest for the given thread specification

\* Holder with smaller or equal cutting diameters (D2) can also be used

### **O** Tooling recommendation for given internal thread specification





### **BSPT**

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	l-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
19	3/8	TMSR 21-11	TM2EI 11-19 BSPT	20.0	11.5	0.86
14	1/2-3/4	TMSRT 16-11	TM2EI 16-14 BSPT	22.0	15.5	1.16
	1-1 1/4	TMSRT 20-16	TM2EI 16-11 BSPT	23.0	19.0	
11	1 1/2	TMSR 25-27	TM2EI 27-11 BSPT	52.0	30.0	1.48
	2-6	TMSRT 32-27	TM2EI 27-11 BSPT	58.0	37.0	

### **NPT**

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
14	1/2	TMSRT 16-16	TM2EI 16-14 NPT	22.0	15.5	1.33
14	3/4	TMSRT 20-16	TM2EI 16-14 NPT	23.0	19.0	1.55
	1	TMSRT 20-16	TM2EI 16-11.5 NPT	23.0	19.0	
11.5	1 1/4	TMSR 25-27	TM2EI 27-11.5 NPT	52.0	30.0	1.64
	1 1/2-2	TMSRT 32-27	TM2EI 27-11.5 NPT	58.0	37.0	
8	2 1/2	TMSRT 32-27	TM2EI 27-8 NPT	58.0	37.0	2.42
0	3-24	TMSR 40-38	TM2EI 38-8 NPT	65.0	46.0	2.42

### **NPTF**

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	<b>ℓ-Tool holder</b> overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
14	1/2	TMSRT 16-16	TM2EI 16-14 NPTF	22.0	15.5	1.35
14	3/4	TMSRT 20-16	TM2EI 16-14 NPTF	23.0	19.0	1.35
	1	TMSRT 20-16	TM2EI 16-11.5 NPTF	23.0	19.0	
11.5	1 1/2	TMSR 25-27	TM2EI 27-11.5 NPTF	52.0	30.0	1.63
	2	TMSRT 32-27	TM2EI 27-11.5 NPTF	58.0	37.0	
8	2 1/2	TMSRT 32-27	TM2EI 27-8 NPTF	58.0	37.0	2.38
0	3	TMSR 40-38	TM2EI 38-8 NPTF	65.0	46.0	2.30

<sup>•</sup> The recommended holder is the largest for the given thread specification
• Holder with smaller or equal cutting diameters (D2) can also be used

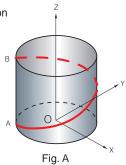


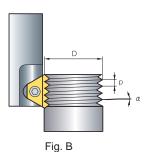
### **Technical Information for Thread Milling**

### Minimum bore diameters for thread milling

P	mm	0.5	0.6	0.7	0.75 0.80	0.9	1.0	1.25	1.5	1.75	2.0	-	2.5	3.0	3.5	4.0	4.5	5.0	5.5	-	6.0	-
Pitch	tpi	48	44	36	32	28	26 24	20 19	18 16	14	13 12	11.5 11	10	9	7	6	-	5	-	4.5	-	4
Holder designation	diameter									Minim	um dia	meter f	or mad	hining								
TMSR 12-10	9.0	9.5	9.7	9.9	10.0	10.4	10.7	11.4	12.0													
TMSR 20-10	9.0	9.5	9.7	9.9	10.0	10.4	10.7	11.4	12.0													
TMSR 12-11	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1												
TMSR 20-11	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1												
TMSRL 25-11	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1												
TMSRT 16-16	15.5	16.0	16.2	16.4	16.5	16.9	17.2	17.9	18.5	19.0	19.5	20.0										
TMSR 16-16	17.0	17.6	17.8	18.0	18.2	18.7	19.0	19.6	20.0	20.5	21.0	21.5										
TMSR 16-22	17.0	17.6	17.8	18.0	18.2	18.7	19.0	19.6	20.0	20.5	21.0	21.5										
TMSR 20-22	19.0	19.7	20.0	20.2	20.4	20.8	21.0	21.6	22.0	22.5	23.0	23.5										
TMSRT 20-16	19.0	19.7	20.0	20.2	20.4	20.8	21.0	21.6	22.0	22.5	23.0	23.5										
TMSR 20-16	20.0	20.7	21.0	21.2	21.4	21.8	22.0	22.6	23.0	23.5	24.0	24.5										
TMSRW 25-22	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5										
TMSRL 25-22	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5										
TMSRL 25-16	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5										
TMSR 25-27	30.0	30.7	31.0	31.2	31.4	31.8	32.0	32.8	33.5	34.1	34.6	35.6	36.6	39.0	42.0	45.0	48.0					
TMSRL 25-27	30.0	30.7	31.0	31.2	31.4	31.8	32.0	32.8	33.5	34.1	34.6	35.6	36.6	39.0	42.0	45.0	48.0					
TMSR 32-38	35.0								38.5	39.1	39.6	40.6	42.0	44.0	47.0	50.0	53.4	42.5	50.0	44.6	57.5	56.6
TMSR 32-27	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.4	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5					
TMSRL 32-27	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.4	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5					
TMSRT 32-27	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.0	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5					
TMSR 40-38	46.0								49.5	50.1	50.6	51.6	53.0	55.0	55.2	55.6	55.0	52.5	54.0	54.5	57.5	56.6
TMSRL 40-38	46.0								49.5	50.1	50.6	51.6	53.0	55.0	55.2	55.6	55.0	52.5	54.0	54.5	57.5	56.6

- In order to perform a thread milling operation, a milling machine with three-axis control capability of helical interpolation is required
- Helical interpolation is a CNC function producing tool movement along a helical path. This helical motion combines circular movement in one plane with a simultaneous linear motion in a plane perpendicular to the first. For example, the path from point A to point B (Fig,A) on the envelope of the cylinder combines a circular movement in the x-y plane with a linear displacement in the z direction
- On most CNC systems this function can be executed in two different ways:
  - GO2: Helical interpolation in a clockwise direction
  - GO3: Helical interpolation in a counter-clockwise direction





- The thread milling operation (Fig. B) consists of circular rotation of fhe tool around its own axis togerther with an orbiting motion along the bore or workpiece circumference. During one such orbit, the tool will shift vertically one pitch length. These movements combined with the insert geometry create the required thread form. There are three acceptable ways of approaching the workpiece with the tool to initiate production of the thread:
  - 1. Tangential Arc Approach
  - 2. Radial Approach
  - 3. Tangential Line Approach

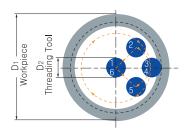
## ling **D**

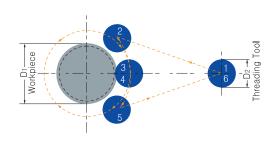
### Tangential arc approach

• With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials. Although it requires slightly more complex programming than the radial approach (see below), this is the method recommended for machining the highest quality threads

Internal thread

**External thread** 





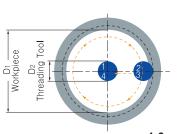
- 1-2: rapid approach
- 2-3: tool entry along tangential arc, with simultaneous feed along z-axis
- 3-4: helical movement during one full orbit (360°)
- 4-5: tool exit along tangential arc, with continuing feed along z-axis
- 5-6: rapid return

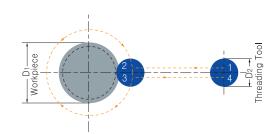
### Radial approach

- This is the simplest method. There are two characteristics worth nothing about the radial approach:
  - A. a small vertical mark may be lift at the entry (and exit) point. This is of no significance to the thread itself
  - B. when using this method with very hard materials, there may be a tendency of the tool to vibrate as it approaches the full cutting depth
- Note: Radial feed during entry to the full profile depth should only be 1/3 of the subsequent circular feed

Internal thread

**External thread** 



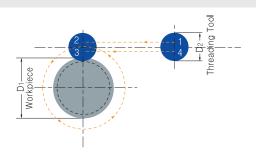


- 1-2: radial entry
- 2-3: helical movement during one full orbit (360°)
- 3-4: radial exit

### Tangential line approach

 This method is very simple, and has all of the advantages of the tangential arc method However, it is applicable only with external threads

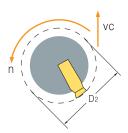
#### **External thread**



- 1-2: radial entry with simultaneous feed along z axis
- 2-3: helical movement during one full orbit (360°)
- 3-4: radial exit

### Preparing for the thread milling operation

### Calculation of rotational velocity and feed at the cutting edge



$$n = \frac{vc \times 1000}{\pi \times D2}$$

$$vc = \frac{n \times \pi \times D2}{1000}$$

$$F1 = n \times z \times fn$$

n: Rotational Velocity (min-1)

vc: Cutting Speed (m/min)

D2: Tool holder Cutting Dia. (mm)

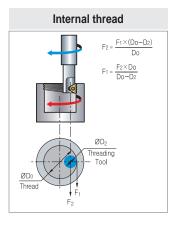
F1: Real Feed rate at the Cutting edges (mm/min)

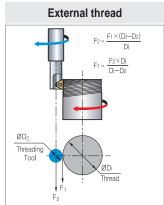
z: No. of Cutting Edges

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: First Choice for steel and cast iron A tough sub-micron substrate with TiCN coating Provides good fracture toughness and excellent wear resistance

### Trouble shooting

Pı	oblem	Possible	Solution
	Increased insert flank wear	Cutting speed too high Chip is too thin Insufficient coolant	
	Chipping of cutting edge	Chip is too thick Vibration	Increase RPM
	Material built-up on the cutting edge	Incorrect cutting speed Unsuitable carbide grade	Change cutting speed  Use a coated carbide grade
	Chatter/ vibration	Feed rate is too high Profile is too deep  Thread length is too long	<ul> <li>Execute two passes, each with increased cutting depth/</li> <li>Execute two passes, each cutting only half the thread length</li> </ul>
GG NOGG	Insufficient thread accuracy	Tool deflection	Reduce feed rate/Execute a "zero" cut

# Technical Information for Thread Milling D

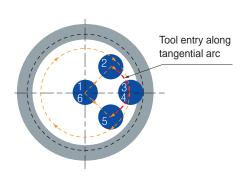
### Recommended cutting condition

				vc (m	n/min)	Feed fz	(mm/t)
		Workpiece	Hardness brinell (HB)	Gr	ade	Indexable	Solid
			brillen (115)	PC9570T	PC9070M	insert	endmill
		Low carbon (C+0.1-0.25%)	125	100~210	80~250	0.05~0.3	0.03~0.15
	Unalloyed steel	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
		Non-hardened	180	90~160	60~180	0.05~0.25	0.03~0.1
P	Low alloy steel	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
	nigii alloy steel	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
	Cast steet	High alloy	225	70~120	60~170	0.05~0.1	0.01 ~ 0.03
	Ctainless steel forritie	Non-hardened	200	100~170	60~150	0.05~0.15	0.04~0.1
	Stainless steel ferritic	Hardened	330	100~170	60~120	0.05~0.1	0.01 ~ 0.05
	Stainless steel	Austenitic	180	70~140	60~140	0.05~0.15	0.04~0.1
	Austenitic	Super austenitic	200	70~140	60~130	0.05~0.1	0.04~0.1
	Stainless steel	Non-hardened	200	70~140	60~160	0.05~0.15	0.04~0.1
	cast ferritic	Hardened	330	70~140	60~110	0.05~0.1	0.03~0.05
М	Stainless steel	Austenitic	200	70~120	60~150	0.05~0.15	0.04~0.1
IVI	cast austenitic	Hardened	330	70~120	60~100	0.05~0.1	0.03~0.05
		Annealed (Iron based)	200	20~45	30~60	0.05~0.1	0.04~0.1
	High temperature	Aged (Iron based)	280	20~30	20~50	0.02~0.05	0.01~0.03
	alloys	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
	Titaliiuili alloys	α+β alloys	1050Rm	20~50	20~50	0.02~0.05	0.03~0.05
	Extra hard steel	Hardened & tempered	55HRC	20~45	15~45	0.01 ~ 0.03	0.005~0.01
	Malleable	Ferritic (short chips)	130	60~130	70~160	0.02~0.08	0.01~0.03
	cast iron	Pearlitic (long chips)	230	60~120	60~150	0.02~0.05	0.03~0.05
K	Grey cast iron	Low tensile strength	180	60~130	70~160	0.05~0.15	0.05~0.1
	Grey cast from	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
	Noutial OC IIOII	Pearlitic	260	50~90	40~100	0.05~0.1	0.03~0.05
	Aluminum alloys	Non-aging	60	100~250	200~300	0.1~0.4	0.1~0.25
	Wrought	Aged	100	100~180	150~250	0.1~0.3	0.1~0.2
		Cast	75	150~400	100~200	0.1~0.3	0.1~0.2
N	Aluminum alloys	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	Brass	90	120~210	200~300	0.1~0.3	0.1~0.25
	copper alloys	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

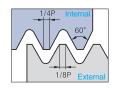
• Threading Feed: 0.3 (mm/t) • Tool entry Feed: 0.09 (mm/t)



### **ISO Metric**







Defined by: R262 (DIN 13) Tolerance class: 6g/6H

Insert	size	Pitch			Desig	nation			1.	Tooth	To all hald
d	L	(mm)		External	PC9570T		Internal	PC9570T	L <sub>1</sub>	Tooth	Tool hold
		0.5		-		TMI	10-0.5ISO	•	10.0	20	
		0.75		-		1	10-0.75ISO		9.75	13	
6.0	10.4	1.0		-			10-1.0ISO	•	9.0	9	TMSR -
		1.25		-			10-1.25ISO		8.75	7	
		1.5		-			10-1.5ISO		9.0	6	
		0.5		-		TM2I	11-0.5ISO		10.0	20	
		0.75	TM2E	11-0.75ISO			11-0.75ISO	•	10.5	14	
		1.0		11-1.0ISO			11-1.0ISO	•	10.0	10	
6.35	11	1.25		11-1.25ISO			-		10.0	8	TMSR -
		1.25		-			11-1.25ISO		8.75	7	
		1.5		11-1.5ISO			-		9.0	6	
		1.5		-			11-1.5ISO	•	10.5	7	
		0.5		-		TM2I	16-0.5ISO		15.0	30	
		0.75	TM2E	16-0.75ISO			16-0.75ISO		15.0	20	]
		0.8		-			16-0.8ISO		14.4	18	
		1.0		16-1.0ISO			-		14.0	14	
9.525	16	1.0		-			16-1.0ISO	•	15.0	15	TMSR -
		1.25		16-1.25ISO		1	16-1.25ISO		15.0	12	
		1.5		16-1.5ISO	•		16-1.5ISO	•	15.0	10	
		1.75		16-1.75ISO			16-1.75ISO		14.0	8	1
		2.0		16-2.0ISO			16-2.0ISO	•	14.0	7	
		1.0	TM2E	22-1.0ISO		TM2I	22-1.0ISO		22.0	22	
		1.25		22-1.25ISO			22-1.25ISO		21.25	17	
).525B	22	1.5		22-1.5ISO			22-1.5ISO	•	21.0	14	TMSR -
		1.75		22-1.75ISO			22-1.75ISO		21.0	12	
		2.0		22-2.0ISO	•		22-2.0ISO	•	22.0	11	]
		1.0	TM2E	27-1.0ISO		TM2I	27-1.0ISO		26.0	26	
		1.25		27-1.25ISO			27-1.25ISO		25.0	20	
		1.5		27-1.5ISO			27-1.5ISO	•	25.5	17	
		1.75		27-1.75ISO			27-1.75ISO		24.5	14	
5.875	27	2.0		27-2.0ISO			27-2.0ISO	•	24.0	12	TMCD
0.075	21	2.5		27-2.5ISO			27-2.5ISO		25.0	10	TMSR -
		3.0		27-3.0ISO			27-3.0ISO	•	24.0	8	
		3.5		27-3.5ISO			27-3.5ISO		24.5	7	
		4.0		27-4.0ISO			27-4.0ISO	•	24.0	6	
		4.5		27-4.5ISO			27-4.5ISO		22.5	5	
		1.5	TM2E	38-1.5ISO		TM2I	38-1.5ISO		36.0	24	
		2.0		38-2.0ISO			38-2.0ISO		36.0	18	
		3.0		38-3.0ISO			38-3.0ISO		36.0	12	
10.0ED	20.5	4.0		38-4.0ISO			38-4.0ISO		32.0	8	TMCD
19.05B	38.5	4.5		38-4.5ISO		1	38-4.5ISO		31.5	7	TMSR -
		5.0		38-5.0ISO		1	38-5.0ISO		30.0	6	1
		5.5		38-5.5ISO		1	38-5.5ISO		33.0	6	1
		6.0		38-6.0ISO		1	38-6.0ISO		30.0	5	1

Applicable holders D49

All inserts except TMI10 code have 2 cutting edges

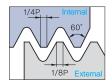


### **American UNC**









Defined by: ANSI B1.1.74 Tolerance class: Class 2A/2B

Inacut	cizo	<b>D.</b> .			Deele	nation					(mm)	
Insert		Pitch (tpi)		Evternel		nation	Internal	DC0570T	L <sub>1</sub>	Tooth	Tool holder	
d	L			External	PC9570T	That	Internal	PC9570T	0.50	40		
		32		-		TMI	10-32UN		9.53	12		
		28		-		-	10-28UN		9.07	10		
6.0	10.4	24	-				10-24UN		9.53	9	TMSR - 10	
		20		-		-	10-20UN	•	8.89	7		
		18		-		-	10-18UN		8.47	6		
		16		-		TNACI	10-16UN		7.94	5		
		48		-		TM2I	11-48UN		10.05	19		
		40		-		-	11-40UN		10.16	16		
		32	TMOE	44 001111		-	11-32UN		10.32	13		
		28	TM2E	11-28UN		-	11-28UN		9.98	11		
6.35	11	27		11-27UN			11-27UN		10.35	11	TMSR - 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		<b>T140</b> 1	11-14UN		9.07	5		
		40		-		TM2I	16-40UN		14.61	40		
		32		40.001111		TM2I	16-32UN		15.08	32	TMSR -16	
		28	TM2E	16-28UN			16-28UN		14.51	28		
		27		16-27UN			16-27UN		14.11	27		
	16	24		16-24UN			16-24UN		14.82	24		
9.525		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	THEF	16-11.5UN			16-11.5UN		13.25	11.5		
	22	24	TM2E	22-24UN		TM2I	22-24UN		21.16	20	TMSR - 22	
		20		22-20UN			22-20UN		21.59	17		
0.5050		18		22-18UN			22-18UN		21.17	15		
9.525B		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	TMOE	22-12UN		Thio	22-12UN		21.17	10		
		24	TM2E	27-24UN		TM2I	27-24UN		25.40	24		
		20		27-20UN			27-20UN		25.40	20		
		18		27-18UN		-	27-18UN		25.40	18		
		16	-	27-16UN		-	27-16UN		25.40	16		
		14		27-14UN		-	27-14UN		25.40	14	-	
		13		27-13UN		-	27-13UN		25.40	13		
		12		27-12UN		-	27-12UN		25.40	12		
1E 07F	27	11.5	-	27-11.5UN		-	27-11.5UN		24.30	11	TMOD 07	
15.875	27	11		27-11UN		-	27-11UN		25.40	11	TMSR - 27	
		10		27-10UN		-	27 40111		22.86	9		
		10		27 0111		-	27-10UN		25.40	10		
		9		27-9UN		-	27-9UN		22.58	7		
		8		27-8UN		-	27-8UN		22.23			
		7		27-7UN		-	- 27 711N		21.77	6		
		7	-	- 07 (11)		-	27-7UN		25.40	7		
		6	-	27-6UN		-	- 27 CUN		21.17	5		
		6	TNICT	-		TAGO	27-6UN		25.40	6		
		6	TM2E	38-6UN		TM2I	38-6UN		38.87	8		
19.05	38.5	5		38-5UN		-	38-5UN		30.48	6	TMSR - 38	
13.00	38.5	38.5	4.5		38-4.5UN			38-4.5UN		33.87	6	1 IVIOK - 38
				4		38-4UN			38-4UN		31.75	5

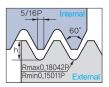
### D

## **UNJ(Unified Constant Thread)**









Defined by: MIL-S-8879C Tolerance class: 3A/3B

(mm)

Insert size		Pitch		Designation						Tabili	T	
d	L	(tpi)	External		PC9570T	PC9570T Internal			L1	Tooth	Tool holder	
		24		-		TMI	10-24UNJ		9.53	9		
6.0	10.4	20	1	-		1	10-20UNJ		8.89	7	TMSR - 10	
6.0	10.4	18		-			10-18UNJ		8.47	6	TIVISK - 10	
		16		-			10-16UNJ		9.53	8		
		24	TM2E	11-24UNJ		TM2I	11-24UNJ		9.53	9		
		20		11-20UNJ			11-20UNJ		10.16	8	TMSR - 11	
6.35	11	18		-			11-18UNJ		9.88	7		
		16	1	11-16UNJ		1	11-16UNJ		9.53	6		
		14		11-14UNJ			11-14UNJ		9.07	5		
		24 <b>TN</b>	TM2E	16-24UNJ		TM2I	16-24UNJ		14.82	14		
		20		16-20UNJ			16-20UNJ		13.97	11		
		18		16-18UNJ			16-18UNJ		14.11	10		
9.525	16	16		16-16UNJ			16-16UNJ		14.29	9	TMSR -16	
		14		16-14UNJ			16-14UNJ		14.51	8		
		13		16-13UNJ			-		13.68	7		
		12		16-12UNJ			16-12UNJ		14.82	7		
		16	TM2E	27-16UNJ		TM2I	27-16UNJ		25.40	16		
15.875	27	12		27-12UNJ			27-12UNJ		25.40	12	TMSR - 27	
		11		27-11UNJ			27-11UNJ		25.40	11		

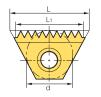
Applicable holders D49

All inserts except TMI10 code have 2 cutting edges

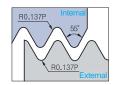
•: Stock item

## Whitworth (BSW, BSF, BSP, BSB)









BSW Defined by: B.S.84:1956, DIN 259, ISO228/1:1982 BSP Defind by: B.S.2779:1956 Tolerance class: BSW-Medium class A, BSP-Medium class

(mm)

Insert size		Pitch		Designation	PC9570T	L <sub>1</sub>	Tooth	Tool holder	
d	L	(tpi)	E	External+Internal		Li	100111	Toor Holder	
		28	TMEI	10-28W		9.07	10		
		26		10-26W		8.79	9		
6.0	10.4	24		10-24W		9.53	9	TMSR - 10	
		20		10-20W		8.89	7		
		19	1	10-19W		9.36	7		
		28	TM2EI	11-28W		9.98	11		
		26		11-26W		9.77	10		
0.05	44	24		11-24W		9.53	9	TMOD 44	
6.35	11	20		11-20W		10.16	8	TMSR - 11	
		19		11-19W		9.36	7		
		14		11-14W		9.07	5		
		26	TM2EI	16-26W		14.65	15		
		24		16-24W		14.82	14		
		20		16-20W		13.97	11	1	
		19		16-19W		14.71	11	1	
9.525 16	16	18		16-18W		14.11	10	TMSR - 16	
		16		16-16W		14.29	9		
		14		16-14W		14.51	8		
	12		16-12W		14.82	7			
	11		16-11W	•	13.85	6			
	24	TM2EI	22-24W		21.17	20			
		20		22-20W		21.59	17		
		19		22-19W		21.39	16		
_		18		22-18W		21.17	15		
9.525B	22	16		22-16W		20.64	13	TMSR - 22	
		14		22-14W		21.77	12		
		12		22-12W		21.17	10		
		11		22-11W		20.78	9		
		16	TM2EI	27-16W		25.4	16		
		14		27-14W		25.4	14		
		12		27-12W		23.28	11		
		11		27-11W		23.09	10		
15.875	27	10		27-10W		25.40	10	TMSR - 27	
		9		27-9W		22.58	8		
		8		27-8W		22.23	7		
		7	-	27-7W		21.77	6		
		6		27-6W		21.17	5		
		11	TM2EI	38-11W		34.64	15		
		6	- 1712-1	38-6W		33.87	8		
19.05B	38.5	5		38-5W		30.48	6	TMSR - 38	
. 5.555	55.5	4.5		38-4.5W		33.87	6	1,111011 00	
		-	-	38-15W		-	-		

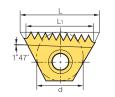
Applicable holders D49

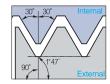
All inserts except TMI10 code have 2 cutting edges

•: Stock item

### **NPT**







Defined by: USAS B2.1:1968 Tolerance class: Standard NPT

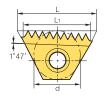
(mm)

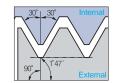
Insert	Insert size		De	esignation	PC9570T	L <sub>1</sub>	Tooth	Tool holder		
d	L	(tpi)	External+Internal		FC93/01	Li	100111	RH	LH	
			TM2E	16-18NPT *		14.11	10			
9.525	16	14	TM2EI	16-14NPT		14.51	8	TMSRT - 16	TMSLT - 16	
		11.5		16-11.5NPT		13.25	6			
9.525B	22	14	TM2EI	22-14NPT		21.77	12	TMSRT - 22	TMSLT - 22	
15 075	27	11.5	TM2EI	27-11.5NPT	•	24.30	11	TMOD 07	TMSL - 27	
15.875	21	8		27-8NPT	•	22.23	7	TMSR - 27		
19.05B	00.5	11.5	TM2EI	38-11.5NPT		35.34	16	TMSR - 38	TMSL - 38	
19.05B	38.5	8		38-8NPT		31.75	10	1 IVIOR - 38		

Applicable holders D49

### **NPTF**







Defined by: ANSI 1.20.3-1976 Tolerance class: Standard NPTF

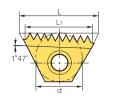
(mm)

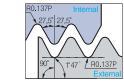
Insert	Insert size		Designation		PC9570T	L	Tooth	Tool holder		
d	L	(tpi)	External+Internal		FC95/01	L <sub>1</sub> Tooth		RH	LH	
0.505 40	16	14	TM2EI	16-14NPTF	•	14.51	8	TMSRT - 16	TMSLT - 16	
9.525	10	11.5		16-11.5NPTF		13.25	6	TIVIORI - 10		
9.525B	22	14	TM2EI	22-14NPTF		21.77	12	TMSRT - 22	TMSLT - 22	
9.5256	22	11.5		22-11.5NPTF		19.88	9	TIVIOR I - 22		
15.875	27	11.5	TM2EI	27-11.5NPTF		24.30	11	TMSR - 27	TMSL - 27	
15.075	21	8		27-8NPTF		22.23	7	TIVISK - 21	TIVIOL - 21	
19.05B	20 5	11.5	TM2EI	38-11.5NPTF		35.34	16	TMSR - 38	TMOL OO	
19.05B	38.5	8		38-8NPTF		31.75	10	1 IVIOR - 38	TMSL - 38	

<sup>● :</sup> Stock item

### **BSPT**







Defined by: B.S 21:1985 Tolerance class: Standard BSPT

(mm)

Insert size		Pitch Design		esignation	PC9570T	L	Tooth	Tool holder		
d	L	(tpi)	External+Internal		PC95/UI	L1	100111	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	
	10	11		16-11BSPT		13.85	6	TIVISKI - TO	TIVIOLI - 10	
15.875	27	11	TM2EI	27-11BSPT		23.09	10	TMSR - 27	TMSL - 27	

Applicable holders D49

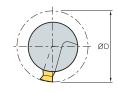
<sup>\*</sup> TM2E16-18NPT is for external threading

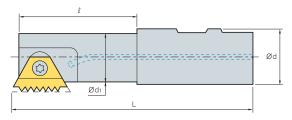
<sup>•:</sup> Stock item

<sup>• :</sup> Stock item

(mm)

#### **Standard Type**

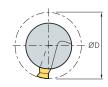


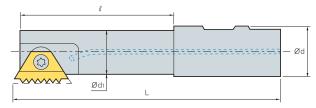


nsert size		\!	an a	<b>~</b> .1	α.I.	0		Screw	Wrench
d	ם	esignation	ØD	Ød	Ød1	Q	L		S
0.0	TMSR	12-10	9.0	12	6.8	12.0	69.0	CTM40	TMOZD
6.0		20-10	9.0	20	6.8	17.0	84.0	STM10	TW07P
0.05	TMSR	12-11	11.5	12	8.9	12.0	70.0	CTM44	TWOOD
6.35		20-11	11.5	20	8.9	20.0	85.0	STM11	TW08P
9.525	TMSR	16-16	17.0	16	13.6	22.0	90.0	STM1622	TW10P
9.323		20-16	20.0	20	16.6	43.0	95.0	311/11022	1 00 10P
	TMSR	16-22	17.0	16	13.5	29.0	79.5		
0 E2ED		20-22	19.0	20	15.5	29.0	81.5	STM1622	TW10P
9.525B		25-22	19.0	25	15.5	30.0	92.3	311/11022	1 00 10P
	TMSRW	25-22	22.0	25	18.5	30.0	90.8		
	TMSR	25-27	30.0	25	24.0	52.0	110.0		
15.875	TMSL	25-27	30.0	25	24.0	52.0	110.0	STM27	TW25L
	TMSR	32-27	37.0	32	31.0	58.0	120.0		
10.05	TMSR	32-38	35.0	32	27.0	53.0	115.0	CTMOO	T/\/20I
19.05		40-38	46.0	40	38.0	63.0	135.0	STM38	TW30L

<sup>◆</sup> Applicable inserts D44~48

#### **Long Type**

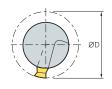


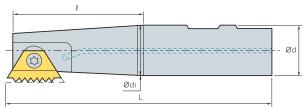


				+					(mm)
Insert size	_	\	<b>60</b>	<b>~</b> .1	α.I.	•		Screw	Wrench
d	L	Designation	ØD	Ød	Ød1	Ų	L	<b>O</b> MAN	S
6.35	TMSRL	25-11	11.5	25	8.9	17.0	125.0	STM11	TW08P
9.525B	TMSRL	25-16	22.0	25	18.6	25.0	125.0	STM1622	TW10P
9.525B	TMSRL	20-22	19.0	20	15.5	44.0	96.5	STM1622	TW10P
9.5256		25-22	22.0	25	18.6	63.5	125.0	311011022	1 10 10 P
15.875	TMSRL	25-27	30.0	25	24.0	92.0	150.0	STM27	TW25L
15.875		32-27	37.0	32	31.0	98.0	160.0	31 IVI27	I VVZOL
19.05B	TMSRL	40-38	46.0	40	38.0	93.0	168.0	STM38	TW30L

<sup>→</sup> Applicable inserts D44~48

#### **Tapered Type**





								'	(mm)
Insert size	_	) a ciamatian	ØD.	۵٦	Œd.	0		Screw	Wrench
d	L	Designation	ØD	Ød	Ød1	Ų	L		×
9.525	TMSRT	16-16	15.5	16	12.5	22.0	90.0	STM1622	TW10P
9.525		20-16	19.0	20	15.0	23.0	85.0	STMT16	1 00 10P
9.525B	TMSRT	16-22	17.0	16	13.5	29.0	79.5	STM1622	TW10P
9.5256		20-22	19.0	20	15.5	29.0	81.5	311111022	TVVTOP
15.875	TMSRT	32-27	37.0	32	31.0	58.0	120.0	STM27	TW25L

#### **MILLING**

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



**Side Milling Cutters** 

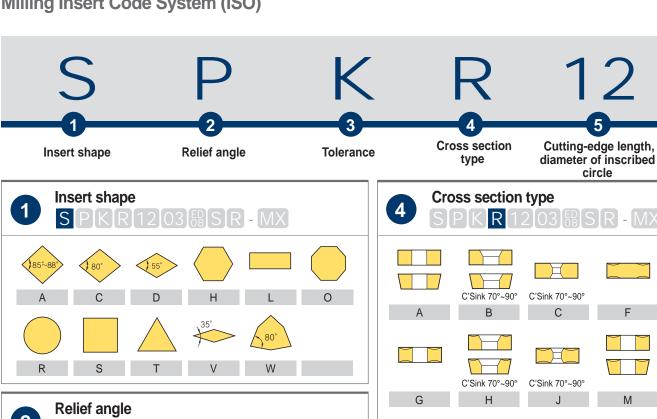
	02 04	Milling Insert Code System (ISO)	E262 E267	Technical Information for HFMD HFMD	E405	Technical Information for
	34	Milling Inserts KORLOY Cutters	E277	Technical Information for HFM	E407	Side Milling Cutters
	42	KORLOY Shanks	E277	HFM	E407	Side Milling Cutters Side Cutter
			_			
	45	KORLOY Modular Adaptors	E284	Technical Information for HRMDouble	E414	Wind Mill
			E289	HRMDouble		
	300	Milling Cutters	E300	HRM	Millin	g Cutter for Cast iron at
	ace		E307	Tank Mill	high	_
	47	Mill-max/Mill-max Plus (E48, E54)	E308	Technical Information for TP2P	iligii	
Е	57	Technical Information for	E311	TP2P	E418	Technical information for
_		Mill-max Heavy	E317	Technical Information for	E 400	High feed Cutter
	58	Mill-max Heavy		Laser Mill/GBE/BRE	E420	Technical information for Cube Mill
	59	Turbo Mill	E326	Laser Mill	E421	Technical information for Couple Mill
	62	Double Mill	E331	BFE	E423	Technical information for Shave Mill
Е	64	Technical Information for	E332	GBE	E425	Technical information for Shave Mill Ultra
		Power Buster	E335	BRE		Shave will Ollia
	68	Power Buster	E337	Technical Information for HAVE		
	71	Technical Information for Rich Mill	E339	HAVE (Multi-edge, Single-edge)		
	99	Rich Mill	E341	Technical Information for		I Information of Milling
Е	147	Technical Information for Aero Mill/		BT/HSK Tooling System	Cutte	er and Arbor
_	151	Aero Mill-Plus/Aero Mill-Mini	E342	BT Tooling System (Alpha Mill)	E426	Actual Designation of
	152	Aero Mill Aero Mill-Plus	E347	BT Tooling System (Mono-Tool)		Milling Cutter and Arbor
	-		E353	HSK Tooling System (Alpha Mill)		
	154	Aero Mill-Mini	E358	HSK Tooling System (Mono-Tool)		
-	156	PCD face cutter	E363	HSK Tooling System (Pro-V Mill)	Gear	Tools
			E364	O-ring Cutter		
			E366	Chamfer Tool (Multi-functional, Solid)	E429	Technical information for Gear Cutter Tools
C	Cutte	rs for Molds	E374	T-Cutter (TFE)	E430	Gear Cutter Table
Е	157	Technical Information for Alpha Mill			E430	Gear Cutter
Е	158	Technical Information for			E431	Gear Cutter Order Form
		Alpha Mill Nick	Millin	g Cutter for Aluminum	E440	Indexable HOB
Е	164	Alpha Mill	E375	Technical Information for	E440	Indexable HOB Cutter Order Form
Е	193	Technical Information for Alpha Mill-X	_0.0	Pro-A Mill/Pro-X Mill/Pro-L Mill/	⊑44 I	maskasis (185 Salis) Stati (Sili)
Е	197	Alpha Mill-X		Pro-XL Mill/Pro-V Mill		
Е	201	Technical Information for Future Mill	E385	Pro-A Mill		
Е	211	Technical Information for	E388	Pro-X Mill		
_		Future Mill P-Positive	E394	Pro-L Mill		
	216	Future Mill	E398	Pro-XL Mill		
	242	Future Mill P-Positive	E399	Pro-V Mill		
	254	Technical Information for Triple Mill	E401	Modular Adaptor (MAT/BT/HSK)		
	250	Triple Mill				

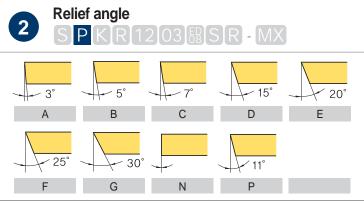
**Cutters for Molds** 

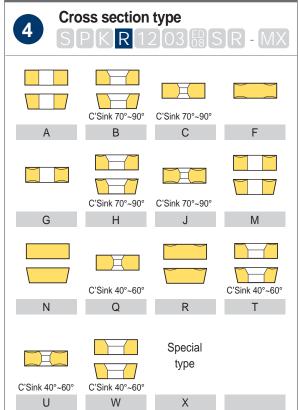
E258 Triple Mill

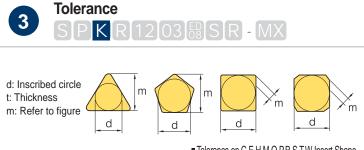
Insert

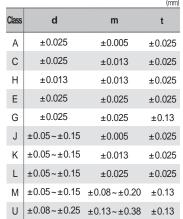
### E Milling Insert Code System (ISO)





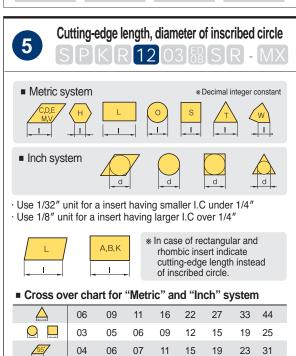






■ Tolerance on C,E,H,M,O,P,R,S,T,W Insert Shape (exceptional case) Tolerance on d Tolerance on m

			J,K,L,M,N		M,N	
005	±0.025	6.35	±0.05	±0.08	±0.08	±0.13
		9.525	±0.05	±0.08	±0.08	±0.13
013	±0.025	12.7	±0.08	±0.13	±0.13	±0.20
013	±0.025	15.875	±0.10	±0.18	±0.15	±0.27
)25	±0.025	19.05	±0.10	±0.18	±0.15	±0.27
)25	±0.025	25.4	±0.13	±0.25	±0.18	±0.38
)25	±0.13					
)25 )05	±0.13 ±0.025	Tolerand	ce on D Ins	ert Shap	e (excepti	onal case
005	±0.025	Tolerand		ert Shape	` '	onal case
			Tolera		Tolerar	
005	±0.025	d	Tolerai ±(	nce on d	Tolerar ±(	nce on m
)05 )13 )25	±0.025 ±0.025 ±0.025	<b>d</b> 6.35	Tolerai ±(5 ±(	nce on d	Tolerar ±(	nce on m 0.11
005	±0.025 ±0.025	6.35 9.525	Tolerai ±(5 ±(	nce on d 0.05 0.05	Tolerar ±( ±(	nce on m 0.11 0.11



03

5

Inscribed circle

Inch system

05

5/32" 7/32"

06 09

1/4" 3/8" 1/2" 5/8"

2 (8) 3 4

12

16

25

19

3/4" 1″





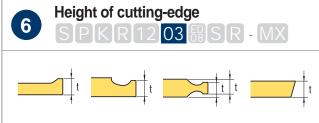
Height of cuttingedge

Nose radius (Nose R)

**Edge preparation** 

Hand

Chip breaker for milling



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



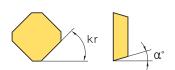




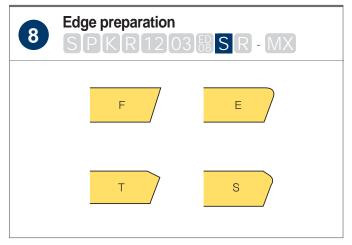


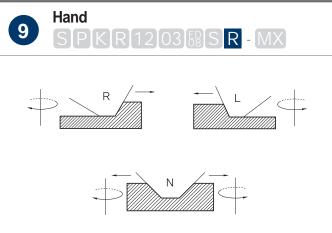


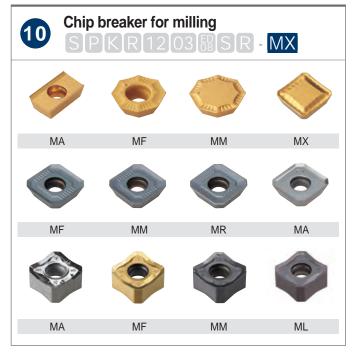
Sym	bol	r		Sym	bol	r	•
Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch
00	0	0.0		12	3	1.2	3/64
02		0.2		15		1.5	
04	1	0.4	1/64	16	4	1.6	4/64
05		0.5		24	6	2.4	6/64
08	2	0.8	2/64	32	8	3.2	8/64
10		1.0		40		4.0	



Parallel Land	Relief	Angle				
kr	α	α°				
A - 45°	A - 3°	F - 25°				
D - 60°	B - 5°	G - 30°				
E - 75°	C - 7°	N - 0°				
F - 85°	D - 15°	P - 11°				
P - 90°	E - 20°					
Z - Special						







	Steel	<b>-</b>	Р	3		\$ #	•	0 1	3	;		4	<b>B</b> 1	¢		Machining types
9	Stainless steel	<	M			\$ #					3	# :	<b>B</b> 1	¢		waciiiiiig types
bje [	Cast iron	4	K		3		•	0 1	ţ.			4	<b>B</b> 1	¢		<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N											-	9 \$	•
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S										<b>8</b> 1	¢		General cutting
	Hardened steel	4	Н					1	ţ.				<b>B</b> 1	¢		# Interrupted cutting

	ned steel H							1					3	#						***	nterrupted cutting	
			met						oate						Uncoated	ı	Dime	nsions	s (mm	)		A !! a
Inserts	Designation	CN2500	CN30	NC5330	NCM325	NCM335 NCM535	NCM545	NCM343	PC2010	PC6510	PC9530	PC9540	PC5300	PC5400	H01 H05	ı	d	t	r	<b>d</b> 1	Geometries	Availa tool
ADKA	150308R															11.7		3.819	0.4	2.8	r	
ADICA	150308SR															14.5		4.824	0.8	3.4		-
9	150308TR		•													19.665	10.843	6.529	0.8	4.5	88° 1 15°	
ADKT-ML	10T304PEER-ML										)	•	•	•		19.650	10.843	6.529	0.8	4.5	00 11-	E197
new	120408PESR-ML					•			•		)	•		•		19.650	10.843	6.529	0.8	4.5		E200
6	170608PESR-ML										)	•	•	•		19.650	10.843	6.529	1.6	4.5	d d t	
	10T304PESR-MM											•	•	•		11.7	6.424	3.819	0.4	2.8		E197
	10T308PESR-MM													•		11.7	6.424	3.819	0.8	2.8		E200
DKT-MM	10T312PESR-MM													•		11.7		3.819	1.2	2.8		
new	120408PESR-MM					•					)	•	-	•		14.5	7.813		0.8	3.4		
h	120412PESR-MM										)		_	•		14.5		4.824	1.2	3.4	d di	
0	120416PESR-MM												•	•		14.5		4.824	1.6	3.4		
W.	170604PESR-MM		$\dashv$									_	•			19.665		6.529	0.4	4.5	<del>'</del>	
-	170608PESR-MM				_	•	•		-	1	,	•		•		_		6.529	0.8	4.5		
	170616PESR-MM												•	-				6.529	1.6	4.5		
	170620PESR-MM				_		-		-		_		•			19.665		6.529	2.0	4.5		F20
ADLT	150308R		$\dashv$		_						_			$\dashv$		15.0	9.525		0.8	4.5		E30
	150308SR 150308TR													$\dashv$		15.0 15.0	9.525 9.525		0.8	4.5 4.5	d Ha	
5	1503001K															15.0	9.020	3.10	0.0	4.3	15°	
APKT	1604PDSR				•											16.4	9.525	4.76	0.8	4.4	r	E16
6																					d di	E180
	1604PDFR-MA														• •	16.4	9.525	4.76	0.2	4.4	r	E168
PKT-MA	160416FR-MA														•	16.4	9.525	4.76	1.6	4.4		E18
9																					d d d 111°	,
PKT-MA2	1604PDFR-MA2														•	16.5	9.56	5.67	0.8	4.5	_	E15
IN I-IVIAZ	160416FR-MA2		Ц											_		16.5	9.56	5.67	1.6	4.5		E17
	160432FR-MA2															16.5	9.56	5.55	3.2	4.5	d     d	
																					85° 111°	
-	1604PDFR-MA3														• •	16.4	9.525	5.0	0.8	4.4		E15
PKT-MA3	160420FR-MA3		$\dashv$											$\exists$		16.0			2.0	4.4		E17
9																					85 d d dd	
DI/T::-	1604PDSR-MF				•								•			16.4	9.525	5.0	0.8	4.4	_	E15
PKT-MF																						E17
9																					85 d d d 110	
	-					_								$\dashv$		16.4	9.525	5.2	0.8	4.4		E16
PKT-MM	1604PDSR-MM	-	$\dashv$		• (									$\dashv$		10.4	0.020	0.2	0.0		_ر	FAC
PKT-MM	1604PDSR-MM															10.4	3.020	0.2	0.0		T Tay	E180

	Steel	1	Р		<b>D</b> 1			•	3	3	3			3	#		Machining types
9	Stainless steel	<	M	$\mathbf{r}$						•		4	B #	: 3	#		waciiiiiig types
bje	Cast iron	4	K			1		3	3	3	- (	•		3	#	3	● Continuous cutting
ž	Non-ferrous metal	•	N														
š	Heat resistant alloy, Titanium alloy	<	S											3	#		<b>S</b> General cutting
	Hardened steel	4	Н					•	3	3				3	*		# Interrupted cutting

Пагие	ened steel H				<b>3 3</b>			3 4	5						***		
		Cermet				ated			Unc	oated	ı	Dimen	sions	(mm	)		
Inserts	Designation	CN2500 CN30	NC5330 NCM535	NCM545 PC2505	PC2510 PC2010	PC3700	PC9530	PC5300	G10	H01	ı	d	t	r	<b>d</b> 1	Geometries	Available tools
APLT	070304R									ī	7.5	6.35	3.18	0.4	2.8	<u>_r</u>	E305
																88° d d d d d d d d d d d d d d d d d d	
	0602PDFR-MA									•	6	4.24	2.6	0.4	2.0		E164
	060208PDFR-MA										6	4.24	2.6	0.8	2.0	78° 111°	E175 E185 E188 E190
	0903PDFR-MA									•	9.4	6.21	3.6	0.4	2.8		E165
	090308PDFR-MA										9.4	6.21	3.6	0.8	2.8	85° 1 15°	E176 E177 E185 E191
4 D. 4 T. 1 4 4	11T3PDFR-MA									•	11.2	6.467	3.6	0.5	2.9		E166
APMT-MA	11T308PDFR-MA										11.2	6.467	3.6	0.8	2.9	d d 10°	E172 E178 E186 E189 E192
-3.	160404PDFR-MA										16.4	9.41	5.76	0.4	4.5	r	E167
·	1604PDFR-MA									•	16.4	9.41	5.76	0.8	4.5	85 d d t 11°	E173 E179
	180604PDFR-MA									•	17.4	10.98	6.35	0.4	4.5		E169
	1806PDFR-MA									•	17.4	10.98	6.35	0.8	4.5		E174
	180612PDFR-MA									•	17.4	10.98	6.35	1.2	4.5		E181
	180616PDFR-MA									•	17.4	10.98	6.35	1.6	4.5	d +	E182
	180620PDFR-MA								-	•	17.4	10.98	6.35	2.0	4.5	15°	E187
	180624PDFR-MA 180630R-MA									•	17.4 17.4	10.98	6.35	3.0	4.5	00 1	
	11T3PDSR-MF		•			• •	,	• •			11.2	6.467	3.6	0.5	2.9	r	E166, 170
												0.101	0.0	0.0		888 dd dd 10°	E172, 178 E183, 186 E189, 192
APMT-MF	1604PDSR-MF		•			• •	)	• •		Ц	16.4	9.41	5.76	0.8	4.5	r	E167 E171
6																85 d d d <sub>1</sub> 11°	E173 E179 E184 E189
	1806PDSR-MF		•			•	)	• •			17.4	10.98	6.35	0.8	4.5	r	E169
	180612PDSR-MF										17.4	10.98	6.35	1.2	4.5	85° d d d 15°	E174 E181 E182 E187
	0903PDER-ML							• •			9.4	6.21	3.6	0.4	2.8	,	E165
APMT-ML	090308PDER-ML							• •			9.4	6.21	3.6	0.8	2.8	85 d d t 115°	E176 E177 E185 E191
	11T3PDER-ML							• •		$\dashv$	11.2	6.467	3.6	0.5	2.9		E166
6	11T308PDER-ML							• •	_		11.2		3.6	0.8	2.9	d d <sub>10°</sub>	E172 E178 E186 E189 E192

	Steel	1	Р	3		3	•	• ;	<b>\$</b> 1	3	;			3	#		Machining types
9	Stainless steel	<b>-</b>	M			\$						3	#	3	#		machining types
bie	Cast iron	4	K		3	-	• :	8 :	<b>3</b> 1	ţ.	•			3	#		● Continuous cutting
ž	Non-ferrous metal	<b>-</b>	N													• •	
≶ [	Heat resistant alloy, Titanium alloy	<b>-</b>	S											3	#		General cutting
	Hardened steel	<b>=</b>	Н				(	•	<b>3</b> 1	ţ.				3	#		# Interrupted cutting

	ned steel H				• :						#							
		Cermet		0			ate					PCD		Dime	nsion	s (mm	1)	
Inserts	Designation	CN2500 CN30	NC5330	NCM535	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5400	DP150 DP200	ı	d	t	r	<b>d</b> 1	Geometries
	160404PDER-ML										•		16.4	9.41	5.76	0.4	4.5	, E
	1604PDER-ML										•		16.4	9.41	5.76	0.8	4.5	
																		d di di
PMT-ML																		110
new																		85°
	180604PDER-ML										•		17.4	10.98	6.35	0.4	4.5	E
	180604PDER-ML									_			17.4	10.98		0.4	4.5	- - -
	180612PDER-ML												17.4	10.98		1.2	4.5	
	180616PDER-ML							_					17.4	10.98		1.6	4.5	
	180620PDER-ML										•		17.4	10.98		2.0	4.5	15°
	180624PDER-ML										•		17.4	10.98		2.4	4.5	85°
	180630R-ML									•	•		17.4	10.98	6.35	3.0	4.5	1
	060202PDSR-MM		•				•	)		•	•		6	4.24	2.6	0.2	2.0	r E
	0602PDSR-MM		•		•	•	•	•	•		•		6	4.24	2.6	0.4	2.0	
	060208PDSR-MM		•				•				•		6	4.24	2.6	0.8	2.0	
	060212R-MM										•		6	4.24	2.6	1.2	2.0	11° E
	060216R-MM *							L					6	4.24	2.6	1.6	2.0	10-71-1 1-t-1'
	0903PDSR-MM		•		•	•	•	•		_	•		9.4	6.21	3.6	0.4	2.8	
	090308PDSR-MM		•								•		9.4	6.21	3.6	0.8	2.8	
	090312R-MM										_		9.4	6.21	3.6	1.2	2.8	
	090316R-MM		•							_	•		9.4	6.21	3.6	1.6	2.8	15° E
	090320R-MM							_		_			9.2	6.21	3.6	2.0	2.8	85° 1     E
	090332R-MM *						_				_		9.2	6.21	3.6	3.2	2.8	
	11T3PDSR-MM 11T308PDSR-MM					•	•	_					11.2	6.467	3.6	0.5	2.85	
	11T3U6PDSR-MM		•										11.2	6.467		1.2	2.85	
MT-MM	11T316R-MM									_			11.0	6.467		1.6	2.85	d
IVI I -IVIIVI	11T318R-MM						Ť			Ť	Ť		11.0	6.467		1.8	2.85	88° t t
	11T324R-MM		•				•	)			•		11.0	6.467		2.4	2.85	
	160404PDSR-MM										•		16.4	9.41	5.76	0.8	4.5	E
	1604PDSR-MM		•	•	•	•	•	•	•	• •	•		16.4	9.41	5.76	0.8	4.5	, E
	160410PDSR-MM						•	)			•		16.4	9.41	5.76	1.0	4.5	
	160416PDSR-MM						•	)			•		16.4	9.41	5.76	1.6	4.5	d 1 d let
	160420R-MM																	11°
	160424R-MM		•				•				_		16	9.41	5.76	2.4	4.5	85°~\
	160430R-MM						•	•			•		16	9.41	5.76	3.0	4.5	_
	160432R-MM		•				•	)		_			16	9.41	5.76	3.2	4.5	
	160450R-MM *						•	•					16	9.41	5.76	5.0	4.5	E
	160464R-MM * 1806PDSR-MM		•		•		•						16	9.41	5.76 6.35	6.4 0.8	4.5 4.5	  -  E
	180612PDSR-MM		•		-			_					17.4 17.4	10.98		1.2	4.5	_ 
	180616PDSR-MM									_			17.4	10.98		1.6	4.5	_ 
	180620PDSR-MM												17.4	10.98		2.0	4.5	
	180624PDSR-MM		•								•		17.4	10.98		2.4	4.5	
	180630R-MM										•		16.7	10.98		3.0	4.5	
	180632R-MM		•							•	•		16.7	10.98	6.35	3.2	4.5	15°
	180640R-MM *									•	•		16.7	10.98	6.35	4.0	4.5	- 00 1 1
	180648R-MM *										•		16.7	10.98	6.35	4.8	4.5	
	180650R-MM *										•		16.7	10.98	6.35	5.0	4.5	
	180660R-MM *												16.7	10.98	6.35	6.0	4.5	
	180664R-MM *												16.7	10.98		6.4	4.5	
	11T3PDSR-MN2												11.2			0.5	2.85	E
MT-MN	11T3PDSR-MN3												11.2	6.467		0.5	2.85	- r   E
new	1604PDSR-MN3												16.4	9.41	5.76	0.8	4.5	
	1604PDSR-MN4												16.4	9.41	5.76	0.8	4.5	
	1806PDSR-MN3 1806PDSR-MN4												17.4	10.98		0.8	4.5	11° E
	THE PLANE DE MININ												17.4	10.98	6.35	0.8	4.5	85° 7   -     - t -   '   E

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

	Steel	Р	3 (	•	•		8		1	# #		Machining types	
9	Stainless steel	M						3	# 1	#		waciiiiiig types	
pie	Cast iron	K	1		• 1			)	1	#		● Continuous cutting	
ž	Non-ferrous metal	N									• •		
š	Heat resistant alloy, Titanium alloy	S							4	# #		General cutting	
	Hardened steel	H				3			1	#		# Interrupted cutting	

	ned steel							F 45	<b>E</b>	202				,		l	
		Cermet	رب در	יט גע	Coat					PCD		Dimer	sions	(mm	i)		Available
Inserts	Designation	CN2500 CN30	NC5330 NCM53	NCM545 PC2505	PC2010	PC6510	PC9540	PC5400	H01	DP150 DP200	I	d	t	r	<b>d</b> 1	Geometries	tools
BAMPR- XAF	BAMPR-XAF										25.5	10.5	7	-	-		E152 E153
29																15.5 t	
BAMPR-	BAMPR-XAW									•	25.5	10	7	-	-		E152
XAW																[5.5]	E153
BAMPR-	BAMPR-XAWR									•	25.5	10	7	-	-		E152 E153
XAWR																15.5 t	L133
CDEW-NAF	1204R-NAF										12.7	9.525	4.76	-	4.4		E151
strengthened Edge	1204L-NAF										12.7	9.525	4.76	-	4.4	d d 15°	
CDEW-NAW	1204R-NAW										12.7	9.525	4.76	-	4.4		E151
Strengthened Edge Wiper Insert	1204L-NAW										12.7	9.525	4.76	-	4.4	d   d1   15°	
CDEW-XAW	1204R-XAW									•	12.7	9.525	4.76	-	4.4		E151
Sharp Edge Wiper Insert	1204L-XAW										12.7	9.525	4.76	-	4.4	d d 15°	
CDEW-XAF	1204R-XAF									•	12.7	9.525	4.76	-	4.4		E151
Sharp Edge	1204L-XAF										12.7	9.525	4.76	-	4.4	d d 15°	
CDEW-XCF	1204R-XCF								•		12.7	9.525	4.76	-	4.4		E136
Sharp Edge	1204L-XCF										12.7	9.525	4.76	-	4.4	d d1 15°	
	1005-C0.5										10	10	5.4	-	4.7		E305
CNHQ	1305-C0.5										12.7	10	5.4	-	4.7	d III	E306
	1606-C0.5										16	12	6.4	•	5.9	80° t C	
	120408-MM				•						12.9	12.7	4.76	0.8	5.5		E372
CPMH  Stock item																80 <sup>5</sup> 11°	

	Steel P less steel M	• •	••	••	0 2 2	3	<b>3</b> # #	t <b>3</b>	-				Ma	chining types	
Ca	ast iron K		• •	<b>\$</b> •	* * *	•							<b>●</b> C	Continuous cutting	
	rrous metal N				• •	)	-	•	-					General cutting	
	alloy, Titanium alloy Sened steel H			• •	* * *	;	3							nterrupted cutting	
		Cermet			Coate			Uncoated		Dimer	nsions	(mn	1)		
Inserts	Designation	000	535 545	305	710 715	9 5	8 9 9	A A						Geometries	Ava
		CN2500 CN30	NCM535 NCM545	PC2505 PC2005	PC2010 PC2015 PC210F	C37	PC9530 PC9540	ST30A H01	I	d	t	r	d <sub>1</sub>		to
	060204-MM	OO	ZZ	<u> </u>				LOI	6.4	6.35	2.38	0.4	2.75		E37
	080308-MM					•			8.1	7.938	3.18	0.4	3.40		LS
CPMT	09T308-MM					•			9.7	9.525	3.97	0.8	4.4		
														110	
														80° 1 t	
	090408FN								9.0	15.875	4.76	0.8			E4
HECN	090408FN								9.0	15.875	4.76	0.8	-		
	090408TN								9.0	15.875	4.76	0.8	-		
	110412FN								11.0	19.05	4.76	1.2	-	1 I I I I I I I I I I I I I I I I I I I	
-	110412TN								11.0	19.05	4.76	1.2	-	1 1 20	
	090408FN								9.0	15.875	4.76	0.8			E4
HPEN	090408FN 090408SN								9.0	15.875	4.76	0.8	-		[54]
	090408EN								9.0	15.875	4.76	0.8	-		
	110412FN								11.0	19.05	4.76	1.2	-		
	000400 WO								0.0	45.075	4.70				
EN-WC	090408-WC 110412-WC								9.0	15.875 19.05	4.76 4.76	1.2	-		E4
	110412-440								11.0	19.00	4.10	1.2	-		
1														11°	
														++   ++	1
EL-MF	150608-MF								15.88		6.35	0.8	-	_	E42
0/	150608-ML								15.88	15.23	6.35	0.8	-	-	
														<u>r(C)</u>	
L-QNN	1506QNN-MF								15.88		6.35	0.8	-		-
	1506QNN-ML								15.88	15.23	6.35	0.8	-	- India,	
1															
														d t	
L-ANN	1506ANN-MF									15.23		0.8	-		-
- /3ININ	1506ANN-ML								15.88	15.23	6.35	8.0	-	_	
	080				•	)			7.0	8	2.4	4.0	-		E32
	100				•				8.5	10	2.6	5.0	-		E32
LBH	120				•				10.0	12	3.0	6.0	-		
6	160 200				•	_			12.0	16	4.0 5.0	8.0	-		
	250 250								15.0	20 25	6.0	10.0	-		
	300				•				22.5	30	7.0	15.0	-		
	320				•				23.5	32	7.0	16.0	-	- <del> </del>	
	330								24.0	33	7.0	16.5	-		
	080-KF								7.0	8	2.4	4.0	-	_	E32
	100-KF				•				8.5	10	2.6	5.0	-	_	E32
	120-KF 130-KF				•				10.0	12	3.0	6.0	-	-	
3H-KF	160-KF				•				12.0	13 16	4.0	6.5 8.0	-	+	
-1110	170-KF				•				12.5	17	4.0	8.5	-		
	200-KF				•				15.0	20	5.0	10.0	-		
	210-KF				•				15.5	21	5.0	10.5	-		
	250-KF				•				18.5	25	6.0	12.5	-		
	300-KF				•				22.5	30	7.0	15.0	-		

22.5 30 7.0 15.0

23.5 32 7.0 16.0

24.0 33 7.0

300-KF 320-KF 330-KF

	Steel	1	Р	3			•	3	#				1	1	<b>‡</b> 1	D.	Machining types
çe	Stainless steel	<b>-</b>	M						3		4	8 1	# 1	1	*		Macining types
bie	Cast iron	4	K		3		3	3	#	(	•		1	\$ 1	*	•	● Continuous cutting
ž	Non-ferrous metal	4	N						•							•	
×	Heat resistant alloy, Titanium alloy	<b>-</b>	S						•				1	<b>B</b> 4	*		General cutting
	Hardened steel		Н				•	3	#				1	1	¢		# Interrupted cutting

Harde	ened steel H		0 2 #	* *						<del></del>	The mapied cutting	
		Cermet	Coate	d	Uncoated	Г	imens	sions	(mm	١		
Inserts	Designation	CN2500 CN30			ST30A H01	ı	d	t	r	d <sub>1</sub>	Geometries	Available tools
	080-KH		•			7.0	8	2.4	4.0	-		E324
	100-KH		• •			8.5	10	2.6	5.0	-		E325
	120-KH		• •			10.0	12	3.0	6.0	-		
	130-KH		• •			20.5	13	3.0	6.5	-	<u> </u>	
LBH-KH	160-KH		• •			12.0	16	4.0	8.0	-		
1	170-KH 200-KH		0.0			12.5 15.0	17 20	5.0	8.5 10.0	-		
	210-KH		• •			15.5	21	5.0	10.5	-		
	250-KH		• •			18.5	25	6.0	12.5	-		
	260-KH		• •			19.0	26	6.0	13.0	-		
	300-KH		• •			22.5	30	7.0	15.0	-		
	320-KH		•			23.5	32	7.0	16.0	-		
	330-KH					24.0	33	7.0	16.5	-		F205
	080 090					7.0 7.5	8 9	2.4	4.0	-		E325~ E328
	100					8.5	10	2.6	5.0	÷		L320
	110					9.0	11	2.6	5.5	-		
	120					10.0	12	3.0	6.0	-		
LBS	130					10.5	13	3.0	6.5	-	r	
LDS	160					12.0	16	4.0	8.0	-		
	170					12.5	17	4.0	8.5	-	d	
	200					15.0	20	5.0	10.0	-		
	210					15.5	21	5.0	10.5	-		
	250 260					18.5 19.0	25 26	6.0	12.5	-	- ' -   - + '   -	
	300					22.5	30	7.0	15.0	_		
	310					23.0	31	7.0	15.5	-		
	320					23.5	32	7.0	16.0	-		
LCF	160-D90		•			13.7	16	4.0	-	-		E325~
	200-D90		•			17.0	20	5.0	-	-		E328
	250-D90					21.5	25	6.0	-	-	d 90°	
	100					8.5	10	2.6	1.0	-	_	E325~
LFH	120		•			10.0	12	3.0	1.0	-		E328
TOD	160		•			12.0	16	4.0	1.5	-		
	200 250					15.0 18.5	20	5.0 6.0	1.5 2.0	-		
	300					22.5	30	7.0	2.0	-	t t	
	320					23.5	32	7.0	2.0	-		
	100-R05		•			8.5	10	2.6	0.5	-		E325~
	100-R10		•			8.5	10	2.6	1.0	-		E328
LRH	100-R20					8.5	10	2.6	2.0	-		
TO !	110-R05					9.0	11	2.6	0.5	-		
	120-R05 120-R10		•			10.0	12	3.0	0.5	-		
	120-R10 120-R20					10.0	12	3.0	2.0	-		
	130-R05		•			10.5	13	3.0	0.5	-	t  -	
	130-R10		•			10.5	13	3.0	1.0	-	LRH type	
	160-R05		•			12.0	16	4.0	0.5	-		
	160-R10		•			12.0	16	4.0	1.0	-		
. –	160-R20					12.0	16	4.0	2.0	-	r	
LR	160-R30		•			12.0	16	4.0	3.0	-		
(0)	170-R05		•			12.5	17	4.0	0.5	-		
	170-R10 200-R05		•			12.5 15.0	17 20	4.0 5.0	1.0 0.5	-		
	200-R05 200-R10		•			15.0	20	5.0	1.0	-		
(Special type)	200-R10 200-R20		•			15.0	20	5.0	2.0	-	<del> -                                  </del>	
	200-R30		•			15.0	20	5.0	3.0	-	LR type	
	210-R05		•			15.5	21	5.0	0.5	-		

	Steel P less steel M	0 3	• • • •	0 2 # 2	3 # 3	# 3	-				Ма	chining types	
Non-fer Heat resistant	ast iron K rrous metal N alloy, Titanium alloy S			•		#					<b>\$</b> G	Continuous cutting General cutting Interrupted cutting	
Harde	ened steel H			*								I I I I I I I I I I I I I I I I I I I	
Inserts	Designation	CN2500 CN30 CN30	NC5330 NCM535 NCM545 PC2505	PC2210F PC3700 PC3700 PC3700 PC6510 PC8700	PC9530 PC9540 PC5300	ST30A Personn Photosocial Parsonn Photosocial Photos		Dimer d	t	(mm r	) d1	Geometries	Available tools
	210-R10	ចច	2220	•		Z N I	15.5	21	5.0	1.0	_		E325~
	250-R05						18.5	25	6.0	0.5	-		E328
	250-R10 250-R20			•			18.5 18.5	25 25	6.0	2.0	-	r	
1.511	250-R20 250-R30						18.5	25	6.0	3.0	-		
LRH	260-R05			•			19.0	26	6.0	0.5	-		
	260-R10			•			19.0	26	6.0	1.0	-		
1	300-R10 300-R20						22.5	30	7.0	2.0	-	t   -	
LR	300-R30						22.5	30	7.0	3.0	-	LRH type	
	310-R05						23.0	31	7.0	0.5	-		
	320-R10 320-R20			•			23.5	32	7.0	2.0	-		
(0: :::::::::::::::::::::::::::::::::::	320-R30			•			23.5	32	7.0	3.0	-		
(Special type)	330-R05						24.0	33	7.0	0.5	-	t	
	330-R10 330-R20						24.0	33	7.0	2.0	-	LR type	
	330-R30						24.0	33	7.0	3.0	-		
	650540PPFR-MA						65	15	5.625	4.0	5.56		E396
LDET-MA							65	15	5.625	5.0	5.56	بـ	2000
5												Ød T	
	1907-C1.5-WC						19.05	14.3	7	-	5.8	2-R124	E423
LNCS												(13.7) d (1.5)	
	1907-R3.0-WC						19.05	14.3	7	-	5.8	2-R124 4-R3 (1.3)	E423
LNCS												(13.7) t	
	324-R0.8						15.9			0.8	4.4	<u>r(C)</u>	E429~
LNE	324-C1.0						15.9	9.525	6.35	1.0	4.4		E433
	080404PNR-MA						8.0	4.2	6.6	0.4	2.8		E309~
	080404PNR-MA						8.0	4.2	6.6	0.4	2.8		E314
	080412PNR-MA						8.0	4.2	6.6	1.2	2.8		
LNKT-MA	080416PNR-MA 140604PNR-MA						8.0 12.7	4.2 6.65	6.6 10.0	1.6 0.4	2.8 4.0		
LIVIX I TVIA	140604PNR-MA						12.7	6.65	10.0	0.4	4.0		
	140612PNR-MA						12.7	6.65	10.0	1.2	4.0		
	140616PNR-MA 170704PNR-MA						12.7 16.5	6.65 7.0	10.0	1.6 0.4	4.0	d <sub>1</sub>	
•	170704PNR-MA						16.5	7.0	11.0	0.4	4.5		
	170712PNR-MA						16.5	7.0	11.0	1.2	4.5		
	170716PNR-MA 170720PNR-MA						16.5 16.5	7.0	11.0	1.6 2.0	4.5 4.5		
	I I U I ZUFINK-IVIA						10.5	1.0	11.0	<b>∠.</b> U	4.0	1	

	Steel	Р	<b>)</b> 1	E			3	#	•			1	<b>1</b>	<b>:</b>	¢	Machining types
e	Stainless steel	M						3			3 (	# 1	#	¢		machining types
pie	Cast iron	K		1	<b>:</b> •	3	3	#		•		1	#	¢		● Continuous cutting
ž	Non-ferrous metal	N						•								_
š	Heat resistant alloy, Titanium alloy	S						•				1	#	¢		General cutting
	Hardened steel	Н					3	#				1	#	¢		★ Interrupted cutting

		Cerme	t	Co	oated		Unco	oated	ı	Dimer	sions	(mm	)		
Inserts	Designation	CN2500	NC5330 NCM535 NCM545	PC2505 PC2010	PC210F PC3700 PC6510	PC9530 PC9540 PC5300	PC5400 ST30A	5	1	d	t	r	d <sub>1</sub>	Geometries	Available tools
	080404PNR-ML	000	ŽŽŽ	7 7 2	7 7 7	7 7 7	<u>R</u> N	Ĭ	8.0	4.2	6.6	0.4	2.8		E309~
	080408PNR-ML								8.0	4.2	6.6	0.8	2.8		E314
	080412PNR-ML								8.0	4.2	6.6	1.2	2.8		
LNKT-ML	080416PNR-ML								8.0	4.2	6.6	1.6	2.8		
LIVE 1-IVIL	140604PNR-ML								12.7	6.65	10.0	0.4	4.0		
	140608PNR-ML 140612PNR-ML								12.7	6.65	10.0	0.8 1.2	4.0		
0	140616PNR-ML								12.7	6.65	10.0	1.6	4.0		
	170704PNR-ML								16.5	7.0	11.0	0.4	4.5		
	170708PNR-ML				•	•	•		16.5	7.0	11.0	0.8	4.5		
	170712PNR-ML								16.5	7.0	11.0	1.2	4.5		
	170716PNR-ML 170720PNR-ML								16.5	7.0	11.0	1.6 2.0	4.5		
	080404PNR-MM								16.5 8.0	7.0	11.0	0.4	4.5 2.8		
	080408PNR-MM								8.0	4.2	6.6	0.8	2.8		
	080412PNR-MM								8.0	4.2	6.6	1.2	2.8		
	080416PNR-MM							П	8.0	4.2	6.6	1.6	2.8		
LNKT-MM	140604PNR-MM								12.7	6.65	10.0	0.8	4.0		
new	140608PNR-MM 140612PNR-MM								12.7	6.65	10.0	0.8 1.2	4.0		
	140612PNR-MM			_					12.7	6.65	10.0	1.6	4.0		
0	170704PNR-MM								16.5	7.0	11.0	0.4	4.5		
	170708PNR-MM					•	•		16.5	7.0	11.0	0.8	4.5		
	170712PNR-MM								16.5	7.0	11.0	1.2	4.5		
	170716PNR-MM								16.5	7.0	11.0	1.6	4.5		
	170720PNR-MM 100605PNR-MA							•	16.5	7.0 6.5	11.0 6.5	2.0 0.5	4.5 3.5		E105
LNEX-MA	151004PNR-MA							•	15.0	10.0	10.0	0.5	4.5	<u>_r</u>	E106
ENEX WIT	151008PNR-MA							•	15.0	10.0	10.0	0.8	4.5		E109
														d t	E110 E113~
	L NIMAY ADDCOUGHIN	MF							40.0	0.5	0.5	0.5	2.5	1	E117
	LNMX 100605PNR- 100608PNR-				•		•		10.0	6.5	6.5	0.5	3.5		E105 E106
	151004PNR-				• •		•		15.0	10.0	10.0	0.4	4.5		E109
	151008PNR-		•		• •	•	•		15.0	10.0	10.0	0.8	4.5		E110
LNM(E)X-MF	151016PNR-	MF			•	•			15.0	10.0	10.0	1.6	4.5		E113~ E117
C/	LNEX 100605PNR-				•	•	•		10.0	6.5	6.5	0.5	3.5	d day	
	100608PNR-				• •	_	•		10.0	6.5	6.5	0.8	3.5		
	151004PNR- 151008PNR-			_	•		•	$\vdash$	15.0 15.0	10.0	10.0	0.4	4.5 4.5		
	151016PNR-				•		•		15.0	10.0	10.0	1.6	4.5		
	LNMX 100605PNR-				• •		•		10.0	6.5	6.5	0.5	3.5		E105~
	100608PNR-				•		•		10.0	6.5	6.5	0.8	3.5		E119
	100605PNL- 151004PNR-				• •	•	•		10.0	6.5	6.5 10.0	0.5	3.5 4.5		
	151004PNR-		•		• •	•	•		15.0	10.0	10.0	0.4	4.5		
	151006FNR-				• •		•	Н	15.0	10.0	10.0	1.6	4.5		
LNM(E)X-MM	151008PNL-					•	•		15.0	10.0	10.0	0.8	4.5		
	I NIEW (COCCURE													d Andrew	
	LNEX 100605PNR-				• •	_	•	$\dashv$	10.0	6.5	6.5	0.5	3.5		
	100608PNR- 100605PNL-				•		•	$\dashv$	10.0	6.5	6.5	0.8	3.5	t	
•	151004PNR-				•			$\forall$	15.0	10.0	10.0	0.5	4.5		
	151004FNR-				• •		•	$\forall$	15.0	10.0	10.0	0.4	4.5		
	151016PNR-				•		•		15.0	10.0	10.0	1.6	4.5		
	151008PNL-				•	•	•		15.0	10.0	10.0	0.8	4.5		

	Steel	1	Р	•	3	• •		3	#	3			1	#	1	•	Machining types
ဗ	Stainless steel	<b>-</b>	M						3			3 1	t 1	#			wacming types
bie	Cast iron	4	K			\$ (	3	3	#		D		1	#			● Continuous cutting
ž	Non-ferrous metal	4	N		П												
ĕ	Heat resistant alloy, Titanium alloy	◂	S		П								1	#			General cutting
	Hardened steel	$ \blacksquare $	Н					3	#				1	#			# Interrupted cutting

Designation	Cermet (130 (130 (130 (130 (130 (130 (130 (130	NC5330 NCM535	505	Coa		30	0 40	00	Uncoated	[	Dimen	sions	s (mm	)	Geometrie	•	Availal
Designation	4250 430	533( M53	505	2 2	5 5	<u>ج</u>	<u>4</u> 9	8	~						Geometries	9	/ 17 WIIW
	ច ច	225		PC2010	PC3700 PC6510	PC95	PC95 PC53	PC54	ST30A H01	1	d	t	r	<b>d</b> 1	Geometrie.	•	tools
60310R-MF					•		•	•	-	10.0	6.8	3.6	1.0	-			E269~
00412R-MF					•		• •	•		12.2	10.0	4.2	1.2	-	d r	+	E273
																	E275 E276
																M	
			_				•	-		6.2	4.2	2.35	0.5	-			E267
			-				• •	-						-	d , r	1 - t	E276
<u> </u>																	
																M	
40205D MM				_						6.2	12	2.25	0.5				E267
					•					10.0	6.8	3.6	1.0	-			E276
00412R-MM					•		•	•		12.2	10.0	4.2	1.2	-	d / r	t	
40210R			• (				•	П		6.4	4.2	2.6	1.0	2.0			E281
																	E283
																	d
															_ r		-
																<del></del>	
40220R							•	Н		6.4	4.2	2.6	2.0	2.0			
																	d
																t	
40210R-MF				•	•		•	•		6.4	4.2	2.6	2.0	2.0			E281-
															1 .		E283
															<b>     </b>		dı ·
																t	
40220R-MF					•		•	•		6.4	4.2	2.6	2.0	2.0			
															Po-		
		l													La la		d
															d		d <sub>1</sub>
	40210R 40220R 40210R-MF	40210R  40210R  40210R  40210R	60310R-ML 00412R-ML 40205R-MM 60310R-MM 00412R-MM 40210R	60310R-ML 00412R-ML 40205R-MM 60310R-MM 00412R-MM 40210R  40220R  40220R	60310R-ML 00412R-MM 60310R-MM 00412R-MM 00412R-MM 40210R  40220R  40210R-MF	60310R-ML 00412R-MM 60310R-MM 00412R-MM 00412R-MM 40210R  40220R  40210R-MF	60310R-ML 00412R-ML 40205R-MM 60310R-MM 00412R-MM 40210R  40220R  40210R-MF	60310R-ML	60310R-ML	60310R-ML 00412R-ML 40205R-MM 60310R-MM 00412R-MM 40210R 40220R 40210R 40210R 40210R 40210R	60310R-ML	60310R-ML 00412R-ML 10.0 6.8 10.0 6.8 11.2 10.0 40205R-MM 60310R-MM 00412R-MM 00412R-	60310R-ML 00412R-ML 10.0 6.8 3.6 11.2 10.0 4.2  40205R-MM 60310R-MM 00412R-MM 0	60310R-ML 00412R-ML 10.0 6.8 3.6 1.0 12.2 10.0 4.2 1.2  40205R-MM 60310R-MM 00412R-MM 10.0 6.8 3.6 1.0 10.0	60310R-ML 00412R-ML	60310R-ML 00412R-ML	60310R-ML 00412R-ML  40205R-MM 60310R-MM 0

	Steel	Р	3 (	•	•	• :	<b>3</b>				<b>*</b>		Machining types
ဗ	Stainless steel	M					•	)	3	#	3 #	;	waciiiiiig types
pie	Cast iron	K	1		•	3	<b>3</b>	;	•		3 #	;	● Continuous cutting
높	Non-ferrous metal	N											NI S
š	Heat resistant alloy, Titanium alloy	S									3 #	;	General cutting
	Hardened steel	H				• :	<b>3</b>	;			3 #	;	# Interrupted cutting

		Cermet			Co	atec	t		Ur	ncoated		Dimen	sions	s (mm	)		
Inserts	Designation	CN2500 CN30	NC5330 NCM535	NCM545 PC2505	PC2510	C2010	PC6510 PC9530	PC9540 PC5300	PC5400	H01	ı	d	t	r	<b>d</b> 1	Geometries	Available tools
	040210R			•				•	ш 0	, _	6.4	4.2	2.6	1.0	2.0		E281~
LPMW																d d,	E283
	040220R			•	•			•			6.4	4.2	2.6	2.0	2.0		
																d t	
	250404PEFR-32-MA										25	10.775	4.76	0.4	4.5		E394~
	2504PEFR-32-MA									•	25	10.775	4.76	0.8	4.5		E397
	250412PEFR-32-MA										25	10.775	4.76	1.2	4.5		
	250416PEFR-32-MA 250404PEFR-40-MA										25 25	10.775	4.76 4.76	1.6 0.4	4.5 4.5	-	
	2504PEFR-40-MA										25	10.618		0.4	4.5		
	250412PEFR-40-MA										25	10.618	4.76	1.2	4.5		
LVETMA	250416PEFR-40-MA										25	10.618	4.76	1.6	4.5		
LXET-MA	340504PEFR-50-MA									•	34	13.765	5.56	0.4	5.56		
new	3405PEFR-50-MA									•	34	13.765	5.56	0.8	5.56		
6	340512PEFR-50-MA										34	13.765	5.56	1.2	5.56	d 7110	
10/	340516PEFR-50-MA 340504PEFR-63-MA										34	13.765	5.56 5.56	1.6 0.4	5.56 5.56		
	3405PEFR-63-MA									•	34	13.803	5.56	0.4	5.56		
	340512PEFR-63-MA										34	13.803	5.56	1.2	5.56		
	340516PEFR-63-MA										34	13.803	5.56	1.6	5.56		
	250404PEER-32-ML										25	10.775	4.76	0.4	4.5		E394~
	2504PEER-32-ML										25	10.775		0.8	4.5		E397
	250412PEER-32-ML										25	10.775		1.2	4.5		
	250416PEER-32-ML										25	10.775		1.6	4.5	_	
	250404PEER-40-ML										25 25	10.618		0.4	4.5	_	
	2504PEER-40-ML 250412PEER-40-ML										25	10.618		0.8	4.5		
	250416PEER-40-ML							_			25	10.618		1.6	4.5		
LXET-ML	340504PEER-50-ML										34	13.765		0.4	5.56	-	
new	3405PEER-50-ML							•			34	13.765	5.56	0.8	5.56		
	340512PEER-50-ML										34	13.765	5.56	1.2	5.56	dı dı	
-	340516PEER-50-ML										34	13.765		1.6	5.56	110	
3	340504PEER-63-ML										34	13.803		0.4	5.56	t   '	
	3405PEER-63-ML										34	13.803		0.8	5.56	-	
	340512PEER-63-ML										34	13.803 13.803		1.2	5.56 5.56	-	
	340516PEER-63-ML										U-1	10.000	0.00	1.0	3.30		

	Steel		Р	0 1	* *	• •	0 1				3	#	<b>3</b>	Machining types
ဗ	Stainless steel		M		3 #				1	#		#		machining types
bie	Cast iron	4	K			• •	3 1	<b>;</b>	•		3	#	•	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	4	N										•	
ĕ	Heat resistant alloy, Titanium alloy	◂	S								3	#		General cutting
	Hardened steel	$ \blacksquare $	Н				0 1	<b>;</b>			3	#		# Interrupted cutting

		Cermet			Co	oated	i			Uncoated	ı	Dimer	nsions	(mm	1)	
Inserts	Designation	CN2500 CN30	NCM325 NCM335	NCM535 NCM545	PC2505	PC2010	PC6510 PC9530	PC9540	PC5400	ST30A H01	ı	d	t	r	d <sub>1</sub>	Geometries Available tools
	090308										9.5	9.525		0.8	4.5	-
MPMT	120408					•					12.7	12.7	4.76	0.8	5.5	d d d d d d d d d d d d d d d d d d d
	0704SN						•				7.4	18	4.86	0.5	-	E63
OFCN	0704FN 070408SN							-			7.4	18	4.86	0.5	-	
	070408FN 070408TN										7.4	18 18	4.86 4.86	0.8	-	d 126°
	05T3SN										5.2	12.7	3.85	0.5	4.4	E62
OFCW	05T3FN 05T308FN										5.2	12.7	3.85	0.5	4.4	d   d <sub>1</sub>   d <sub>2</sub>   26°
	0704FN-MA									•	7.4	18	4.76	0.5	-	E63
OFKR-MA	0704EN-MA										7.4	18	4.76	0.5	-	r d 26°
	0704SN-MF		• •								7.4	18	4.76	0.5	-	E63
OFKR-MF	070408SN-MF										7.4	18	4.76	0.8	-	1 26°
	0704SN-MM		• •			•	• •	)	•		7.4	18	4.76	0.5	-	E63
OFKR-MM	070408SN-MM		•								7.4	18	4.76	0.8	-	r d d 26°
	05T3FN-MA									•	5.2		3.97	0.5	4.4	E62
OFKT-MA	05T3EN-MA 0704FN-MA									•	5.2 7.4	12.7	3.97 4.76	0.5	5.8	E63
	0704EN-MA										7.4	18	4.76	0.5	5.8	d   d <sub>1</sub>   d <sub>2</sub>   d <sub>2</sub>   d <sub>3</sub>   d <sub>4</sub>   d <sub>5</sub>   d <sub>5</sub>
	05T3SN-MF						•				5.2		3.97	0.5	4.4	E62
OFKT-MF	05T308SN-MF										5.2	12.7	3.97	0.8	5.8	d d 26°



	Steel		Р	3	0 1		•	•	3	3			3	#	3	Machining types
çe	Stainless steel		M		1	E .					1	#	3	#		Machining types
bie	Cast iron	4	K	- :	3	•		3	3	(	•		3	#	•	<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	<b>I</b>	N				П								•	· · · · · · · · · · · · · · · · · · ·
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S										3	#		General cutting
	Hardened steel	$ \blacksquare $	Н						3				3	#		* Interrupted cutting

		Cermet				ated			Uncoated		I	Dime	ensi	ons (	(mm)	)			
Inserts	Designation	N2500	NC5330 NCM325	NCM535 NCM545	C2505	PC3700 PC6510	PC9530	PC5300 PC5400	ST30A H01	ı	d	t	r	d <sub>1</sub>	а	w	g	(÷eometries	ailable ools
	05T3SN-MM	00	•	22		•	•		0) T	5.2	12.7	3.97	0.5	4.4	-	-	-	r E6	52
OFKT-MM	05T308SN-MM									5.2	12.7	3.97	0.8	4.4	-	-	-	E6	53
9	0704SN-MM									7.4	18	4.76	0.5	5.5	-	-	-	d   d <sub>1</sub>   d <sub>1</sub>   26°	
ONHX-MF	060608-MF					•		• •		6.6	16.0		0.8	5.6	-	-	-	1 °X a	143
ONT IX-IVII	080608-MF 0606ANN-MF					•		• •		_	20.2		0.8	5.6	- 4.00	-	-	E1	144
	0806ANN-MF					•		• •		8.4	16.0		0.8		1.03	-	-	d t	
ONHX-ML	060608-ML							• •		6.6	16.0	6.0	0.8	5.6	-	-	-		143
ON TX-WE	080608-ML							• •		8.4	20.2	6.0	0.8	5.6	-	-	-	E1	144
	060608-MM					•		• •		6.6	16.0	6.0	0.8	5.6	-	-	-	& Z E1	143
ONHX-MM	080608-MM					•		• •		8.4	20.2	6.0	0.8	5.6	-	-	-	E1	144
	0606ANN-MM					•		• •		6.6	16.0		0.8		1.03	-	-	d III	
	0806ANN-MM					•		• •		8.4	20.2	6.0	0.8	5.6	1.53	-	-	t	
ONHX-MA	060608-MA								•	6.6	16.0		0.8	5.6	-	-	-	l v√a [	143
	080608-MA								•	8.4	20.2	6.0	0.8	5.6	-	-	-	d d	144
	060608-W						•	•		6.5	16.0		0.8	5.6	-	-	-		143
ONHX-W	080608-W					•		•		8.2	20.2	6.0	0.8	5.6	-	-	-	d d	144
	060608-MF			•		•		• •		6.6	16.0		0.8	5.6	-	-	-		143
ONMX-MF	080608-MF			•		•		• •			20.2		0.8	5.6	-	-	-	E1	144
	0606ANN-MF			•		•		• •						5.6		-	-	d d	
																		+'+   +'+	
	060608-MM			•		• •	•	• •			16.0			5.6	-	-	-		143
ONMX-MM	080608-MM			•		• •	•	• •			20.2				1 02	-	-	X   E1	144
	0606ANN-MM 0806ANN-MM			•			•	• •						5.6 5.6		-	÷		
	OGUGAININ-IVIIVI									0.4	20.2	0.0	0.0	J.U	1.00	-	-	d + d	
	265									10	7	3.0	0.3			2.65		ES	365
	325					•				10	7			3.5		3.25			
ORG	405									15	12		0.5			4.05			
3	470					•				15	12	4.5	0.5	4.5	-	4.70	4.5	w g 1	

	Steel	1	Р	0 1			•	•	•	3	#	3			3	#	3	Machining types	
9	Stainless steel		M							•	3		3	#	3	#		wachining types	
pie	Cast iron	4	K		1	<b>B</b> (		•	\$	3	#	;			3	#		<ul> <li>Continuous cutting</li> </ul>	
ž	Non-ferrous metal	<b>-</b>	N								•	,							
š	Heat resistant alloy, Titanium alloy	<b>-</b>	S								•	,			3	#		● General cutting	
	Hardened steel	4	Н						•	3	#				3	#		# interrupted cutting	
š —		1	H						•	3	#	;			_		_	# Interrupted cutting	

Harde	ened steel H			•	3 #	<b>:</b>		<b>*</b> #						49-111	ισπαρι	ed cutting	
		Cermet				ated			Uncoated		Din	nensio	ons (n	nm)			l
Inserts	Designation	CN2500 CN30	NC5330 NCM535	NCM545 PC2505	PC2010	PC3700	PC9530	PC5300 PC5400	ST30A H01	1	d	t	r	d <sub>1</sub>	Cutter width	Geometries	Availa tool
	1223N					•				-	12.7	2.3	-	5.0	4.0		E411
	1225N									-	12.7	2.5	-	5.0	4.5		E412
	1230N									-	12.7	3.0	-	5.0	5.0		
	1235N									-	12.7	3.5	-	5.0	6.0		
PNEJ	1240N					•		•		-	12.7	4.0	-	5.0	7.0		
A STATE OF THE PARTY OF THE PAR	1245N					•		•		-	12.7	4.5	-	5.0	8.0		
	1250N									-	12.7	5.0	-	5.0	9.0		
	1255N					•				-	12.7	5.5	-	5.0	10.0		
	1260N							•		-	12.7	6.0	-	5.0	11.0	108°	
	1265N 1270N									-	12.7	6.5 7.0	-	5.0	12.0		
	1275N							•		-	12.7	7.5		5.0	14.0		
	1285N										12.7	8.5		5.0	16.0		
	1223N-C03										12.7	2.3	-	5.0	4.0		E41
	1230N-C03									-	12.7	3.0	-	5.0	5.0		E41
	1235N-C03										12.7	3.5		5.0	6.0		-
PNEJ-C	1240N-C05										12.7	4.0	-	5.0	7.0		
INLJ-C	1245N-C05									-	12.7	4.5	-	5.0	8.0		
6	1250N-C05									-	12.7	5.0	-	5.0	9.0		
	1255N-C05									-	12.7	5.5	-	5.0	10.0	108°>	
	1260N-C05									-	12.7	6.0	-	5.0	11.0		
	1265N-C05									-	12.7	6.5	-	5.0	12.0	* C03: Chamfer 0.3 mm C05: Chamfer 0.5 mm	
	1270N-C05									-	12.7	7.0	-	5.0	13.0	Cos. Chamler 0.5 min	
	1275N-C05									-	12.7	7.5	-	5.0	14.0		
	16				•					15.8	16	3.5	8	-	-		E3:
	20				•					17.8	20	4	10	-	-	,	
RC	25				•					22.0	25	5	12.5	-	-		
	30 32				•					26.8	30	6	15 16	-	-		
1																t	
	10T3M0-MA 1204M0-MA								•	-	10 12	3.97 4.76	-	3.85 4.5	-		E22
DCT-MA																d d	E23 E23 E24 E24
	0501M0F									-	5	1.59	-	2.3	-		E23
	0501M0E						•			-	5 5	1.59	-	2.3	-		E23
	0501M0S 06T1M0F									-	6	1.59	-	2.5	-		E24
	06T1M0E						•			-	6	1.98		2.5	-		
	06T1M0S										6	1.98		2.5	-		
	0702M0F									-	7	2.38	-	2.8	-		
	0702M0E						•			-	7	2.38	-	2.8	-		
RDHW	0702M0S									-	7	2.38	-	2.8	-		
	0803M0F									-	8	3.18	-	3.4	-		
	0803M0E						•			-	8	3.18	-	3.4	-		
	0803M0S									-	8	3.18	-	3.4	-	15'	
	1605M0F									-	16	5.56	-	5.5	-	<del>  • ` •  </del> `	
	1605M0E									-	16	5.56	-	5.5	-		
	1605M0S									-	16	5.56	-	5.5	-		
	2006M0F									-	20	6.35	-	5.5	-		
	2006M0E									-	20	6.35	-	5.5	-		
	2006M0S									-	20	6.35	-	5.5	-		

#### Milling Inserts **E**

	Steel	Р	3		8 0	•		<b>\$</b> 1	t l		<b>8</b> #	3		Machining types
9	Stainless steel	M		(	•					<b>*</b> *	<b>8</b> #			machining types
pie	Cast iron	K		3			3	3	•		<b>8</b> #		•	<ul><li>Continuous cutting</li></ul>
ž	Non-ferrous metal	N											•	· · · · · · · · · · · · · · · · · · ·
ĕ	Heat resistant alloy, Titanium alloy	S									<b>8</b> #			General cutting
	Hardened steel	Н						\$			<b>8</b> #			* Interrupted cutting

		Cermet				oate	d			Uncoated		Dir	nensio	ons (r	nm)				
Inserts	Designation	CN2500 CN30	NC5330 NCM325	NCM535	NCM545 PC2505	PC2510 PC3700	PC6510 PC9530	PC9540	PC5400	ST30A H01	I	d	t	r	d <sub>1</sub>	а	Geometr	ies	Available tools
	10T3M0-MF						•				-	10	3.97	-	3.85	-			E228~
	1204M0-MF					•	•				-	12	4.76	-	4.5	-			E230
RDKT-MF	1605M0-MF										-	16	5.56	-	5.5	-			E234~
																	d	d <sub>1</sub>	E236 E240 E241
	1605M0-ML											16	5.56	_	5.5				E230
RDKT-ML												-					d	d <sub>1</sub>	E236 E240 E241
	10T3M0-MM		•			•	• •				-	10	3.97	-	3.85	-			E228~
	1204M0-MM		•			•	• •	•			-	12	4.76	-	4.5	-			E231
RDKT-MM	1605M0-MM 2006M0-MM					•		-			-	16 20	5.56 6.35	-	5.5 5.5	-			E234~ E237
	2000INIO-ININI											20	0.33		0.0			d <sub>1</sub>	E240 E241
	0501M0E					•					-	5	1.59	-	2.3	-			E232
	06T1M0E					•					-	6	1.98	-	2.5	-			E233
RDKW	0702M0E					•					-	7	2.38	-	2.8	-			E238
	0803M0E					•					-	8	3.18	-	3.4	-	d	d <sub>1</sub>	E239
	170400-MM										-	17.8	4.76	-	-	-			E63
REKR-MM																	d	200°	
	1204M0E-ML										-	12.0	4.75	6.0	-	2.0			E145
RNMX-ML																	a	t	E146
	10T3M0-MA									•	-	10	3.97	_	4.0	-			E242~
RPCT-MA	1204M0-MA									•	_	12	4.76	-	4.5	-	_		E245
RPC I-IVIA	1606M0-MA									•	-	16	6.35	-	5.5	-		<u> </u>	E247~
	2007M0-MA									•	-	20	7.00	-	7.0	-		11°	E253

e,	Ste Stainles		0 3	0 \$ 6	0 0 0	<b>8 8</b>	2 # 2 #	3					M	achin	ing types	
Workpiece	Cast Non-ferror Heat resistant allo	iron K		3 (	0 3 1	•	**	•					<b>≇</b> Ge	neral o	us cutting cutting	
	Hardene				0 1	8	<b>3</b> #						# Int	errupte	ed cutting	
			Cermet		Co	oated		Uncoated		Din	nensio	ns (n	nm)			
	Inserts	Designation	CN2500 CN30	NC5330 NCM325 NCM535	NCM545 PC2505	PC2510 PC3700 PC6510	PC9530 PC9540 PC5300 PC5400	ST30A H01	ı	d	t	r	d <sub>1</sub>	а	Geometries	Available tools
		0803M0E-MF					• •		-	8	3.18	-	3.4	-		E242~
		10T3M0E-MF					• •		-	10	3.97	-	4.0	-		E253
RI	PMT-MF	1204M0E-MF 1606M0E-MF					• • •		-	12 16	4.76 6.35	-	4.5 5.5	-	00000	
		2007M0E-MF					• •		-	20	7.00	-	7.0	-	d - d - 11°	
		0803M0E-ML					• •		-	8	3.18	-	3.4	-		E242~
		103TM0E-ML					• •		-	10	3.97	-	4.0	-		E253
R	PET-ML	1204M0E-ML					• •		-	12	4.76	-	4.5	-		
	new	1606M0E-ML					• •		-	16	6.35	-	5.5	-	d III	
•		2007M0E-ML					• •		-	20	7.00	-	7.0	-	t 11°	
		0803M0S-MM			• (	•	• •		-	8	3.18	-	3.4	-		E242~
D.		10T3M0S-MM			• (	• •	• •		-	10	3.97	-	4.0	-		E253
RH	PMT-MM	1204M0S-MM			• (	• •	• • •		-	12	4.76	-	4.5	-	S000000	
- 2		1606M0S-MM			• •	• •	• •		-	16	6.35	-	5.5	-		
		2007M0S-MM				• •	••		-	20	7.00	-	7.0	-	110	
		0803M0E1			• (	•	• •		-	8	3.18	-	3.4	-		E242~
		10T3M0E1			• (	•	• •		-	10	3.97	-	4.0	-		E253
I	RPMW	1204M0S1			• •	• •	• •		-	12	4.76	-	4.5	-		
	new	1204M0S2 1606M0S1			•	_	• •		-	12 16	4.76 6.35	-	4.5 5.5	-	d H-\d	
		2007M0S1					• •		-	20	7.00		7.0		1110	
													7.0			F404
		140808ANER-MI	-				• •		-	14	6.58	0.8	-	1.21		E181
S	AGX-ML															
		140808ANER-MI	1				•		-	14	6.58	0.8	-	1.21		E181
SA	AGX-MM														d table	
		140808ANER-MI	1			• •	•		-	14	6.58	0.8	-	1.21		E181
SN	NMX-MM															

	Steel	Р	•	<b>E 3</b> :	# •	• \$		:	\$	Machining types
9	Stainless steel	M		3	#		* # *			waciiiiiig types
pie	Cast iron	K				•	• •		300	■ Continuous cutting
ž	Non-ferrous metal	N						# •	0 3	
ĕ	Heat resistant alloy, Titanium alloy	S								General cutting
	Hardened steel	Н								# Interrupted cutting

	ed steel H															
		Cermet		Coat				oated		Din	nensio	ons (n	nm)			Available
Inserts	Designation	CN2500 CN30	NCM325 NCM335 NCM535	NCM54: PC3700 PC6510	PC9530 PC9540	PD1010	ST30A	H01 H05	ı	d	t	r	<b>d</b> 1	а	Geometries	tools
	220715DDSR-MM		•	•					-	22.0	7.0	1.5	-	2.5		E58
SCKN	280920DDSR-MM								-	28.0	9.0	2.0	-	3.0	a	
															r t	
	42M						•		-	12.7	3.18	-	-	1.5		E47
	42M-G							•	-	12.7	3.18	-	-	1.5		E48
	42MT	• •	•				•		-	12.7	3.18	-	-	1.5		E59
	42MT-RH								-	12.7	3.18	-	-	1.5		E60
	42MT-S20				•				-	12.7	3.18	-	-	1.5		
	53M						•		-	15.875	4.76	-	-	1.5		
	53M-G							•	-	15.875	4.76	-	-	1.5		
	53MT	•	•				•		-	15.875	4.76	-	-	1.5		
SDCN	53MT-RH								-	15.875	4.76	-	-	1.5	1	
3DCIV	53MT-S20 1203AEEN				•				-	15.875 12.7	4.76 3.18	-	-	1.5	d 115°	
	1203AEEN 1203AEEN-RH								-	12.7	3.18			1.43		
	1203AEEN-RH 1203AESN								-	12.7	3.18			1.43	► Cutting-edge geometry	
	1203AESN-RH								-	12.7	3.18	-	-	1.43	- G: Light Side, Sharpe Edge	
	1504AEEN								-	15.875	4.76	-		1.5	- S20: STS	
	1504AEEN-RH			•					-	15.875	4.76	-	-	1.43	- RH: Strengthened edge	
	1504AESN								-	15.875	4.76	-	-	1.5	►Sub-cutting-edge	
	1504AESN-RH			•					-	15.875	4.76	-	-	1.43	geometry	
	09M402R-MA					•		• •	-	9.525	3.923	0.2	4.0	1.2	_	E222~
SDET-MA	09M404R-MA								-	9.525	3.923	0.4	4.0	1.2		E227
	09M405R-MA								-	9.525	3.923	0.5	4.0	1.2		
	130504R-MA 09M405R-MF					•		• •	-	9.525	5.56	0.4	5.56	1.2	d 15°	E222~
	130508R-MF								-	13.5	5.56	0.8	5.56	2.2		E227
SDET-MF											0.00		0.00		a d d d 115°	
	09M405R-MM								-	9.525	4	0.5	4	1.2		E222~
SDET-MM	130508R-MM								-	13.5	5.56	0.8	5.56	2.2		E227
															d <sub>1</sub>	
	42MT-CM	•							-	12.7	3.18	-	-	1.5		-
SDKN-CM															a a 15°	

		teel Pess steel M	0 \$	0 2 1	† • •	3	<b>3</b> #	2 # 2 #	3					Ma	achini	ng types	
Workpiece	Non-fer Heat resistant a	st iron K rous metal N Illoy, Titanium alloy S ned steel H		3	• •	•		* # * #	0 1	_				<b>3</b> G	enera	lous cutting I cutting Ited cutting	
			Cermet		С	oated			Uncoate	d	Din	nensi	ons (n	nm)			
	Inserts	Designation		NC5330 NCM325			PC9530 PC9540	PC5300 PC5400	ST30A H01		d	t	r	d <sub>1</sub>	а	Geometries	Available tools
		1203AESN-MU 1504AESN-MU				•				-	12.7 15.875	3.18 4.76	-	-	2.08		E47 E48
SI	DKN-MU	T304AE3N-MU				•				-	13.073	4.70	-	-	2.10	d t	E53 E54
		1203AESN-SU				•		• •		-	12.7	3.18	-	-	2.08		E47 E48
SI	DKN-SU	1504AESN-SU								-	15.875	4.76		-	2.10	d t	E46 E53 E54
		1203AESN-MX								-	12.7	3.18	-	-	1.46		E47
SI	DKR-MX	1203AETN-MX 1203AEN-MX								-	12.7 12.7	3.18	-	-	1.46	a	E48 E53
ال	DKK-WX	1504AESN-MX			•					-	15.875	4.76	-	-	1.45		E54
		1504AETN-MX								-	15.875	4.76	-	-	1.45		A <sub>15°</sub>
		1504AEN-MX		•						-	15.875	4.76	-	-	1.45	d t	7
		090308-MM				•		•		-	9.525	3.18	0.8	4.4	-		E307
SI	OMT-MM															d t	E336
		09M405R-MA							•		9.525	4.0	0.5	4.0	1.2		E222~
SI	DXT-MA	130508R-MA								-	13.5	5.56	0.8	5.56	2.2	d t	E227
		09M403R-MF								-	9.525		0.3	4.0	1.2		E222~
0	DVT ME	09M403L-MF 09M404R-MF								-	9.525 9.525		0.3	4.0	1.2		E227
S	DXT-MF	09M404L-MF								-	9.525		0.4	4.0	1.2	a	_
		09M405R-MF 09M405L-MF		•		• •	•	• •		-	9.525 9.525	-	0.5	4.0	1.2		-  a1 -  150
		130508R-MF		•		•	•	• •		-	13.5	5.56	0.8	5.56	2.2	d t	7.0
		09M405R-MM 09M405L-MM		•	•	•		• •		-	9.525 9.525	4.0	0.5	4.0	1.2		E222~ E227
SI	DXT-MM	130508R-MM		•		• •	•	• •		-	13.5	5.56	0.8	5.56	2.2	a	
	9	130508L-MM 130538-MM								-	13.5 13.5	5.56 5.56	3.8	5.56 5.56	2.2	d	15°
		1204AFSN		•						-	12.7	4.76	-	5.56	2.66		-
	SECA	1204AFTN 1204AFFN	•			•	•			-	12.7	4.76	-	5.56 5.56	2.66	a L	
		1204AFFN 1204AFEN								-	12.7	4.76	-	5.56	2.66		- d <sub>1</sub>
	5/	1504AFSN								-	15.875		-	5.5	2.8		20°
		1504AFTN 1504AFFN								-	15.875 15.875	4.76	-	5.5 5.5	2.8	d t	
		,								1					-		

Milling

	Steel	1	Р	0 2 2 1	# 3	<b>*</b> *	3		Machining types
9	Stainless steel	<	M	3 1	¢	* * *			wacming types
bje	Cast iron	4	K		•	* *		<b>\$ 0 0</b>	● Continuous cutting
ž	Non-ferrous metal	4	N			#	•	• 3	
ĕ	Heat resistant alloy, Titanium alloy	◂	S			* *			<b>S</b> General cutting
	Hardened steel	4	Н			<b>*</b> *			# Interrupted cutting

		Cermet			oated	ı	Und	oated		Dim	ensic	ns (n	nm)			
Inserts	Designation	CN2500 CN30	NCM325 NCM335	C3700 C6510	PC9530 PC9540	PC5300 PC5400 PD1010	ST30A	H01 H05	ı	d	t	r	<b>d</b> 1	а	Geometries	Available tools
	1203AFFN	00	ŽŽ	2 2	2 2		S C	-		10.7	2.40			2.20		E49
	1203AFTN 1203AFTN	• •							-	12.7	3.18	-	-	2.36		E50
	1203AFEN								-	12.7	3.18			2.36		L30
	1203AFSN		• •						-	12.7	3.18	-	-	2.36		
	1203AFEN-RH			•		•			-	12.7	3.18	-	-	2.36	\.a	
	1203AFSN-RH			Ť					-	12.7	3.18	-	-	2.36		
	1203AFTN-S20				•				-	12.7	3.18	-	-	2.36		
SECN	1504AFFN								-	15.875	4.76	-	-	2.4	20	
	1504AFTN	•							-	15.875	4.76	-	-	2.4		
	1504AFEN								-	15.875	4.76	-	-	2.4		
	1504AFSN								-	15.875	4.76	-	-	2.4	► Shape of Edge	
	1504AFEN-RH								-	15.875	4.76	-	-	2.4	- S20: STS	
	1504AFSN-RH			•					-	15.875	4.76	-	-	2.4	- RH: Strengthened edge, STS	
	1504AFTN-S20								-	15.875	4.76	-	-	2.4		
	0903AGFN-MA							• •		9.525	3.18		3.4	2.11		E216~
	14M4AGFN-MA					• •		•	-	14.0	4.0		4.4	2.64	, ×a	E210~
SEET-MA									-	14.0	4.0		4.4	2.04	d t	CZZ I
	0903AGSN-MF			•	•	• •			-	9.525	3.18	-	3.4	2.11		E216~
SEET-MF	14M4AGSN-MF			•	•	• •			-	14.0	4.0	-	4.4	2.64	d d d	E221
	0903AGSN-MM		•	•		• •			-	9.525	3.18	-	3.4	2.11		E216~
SEET-MM	14M4AGSN-MM			• •	•	• •			-	14.0	4.0	-	4.4	2.64	a d d d	E221
	0903AGTN								-	9.525	3.18	-	3.4	2.11		E216~
SEEW	14M4AGTN	•							-	14.0	4.0	-	4.4	2.64	a	E221
SEEW															d t	
	14M4AGFN-W								-	14.0	4.0	-	4.4	8.5		E217
SEEW-W	14M4AGSN-W					•			-	14.0	4.0	-	4.4	8.5	d 20°	E219
	14M4AGTN-W			•					-	14.0	4.0	-	4.4	8.5	a   1-100	E221
	1203AFSN-SU			•					-	12.7	3.18	-	-	1.98		E49
SEKN-SU	1504AFSN-SU			•		•			-	15.875	4.76	-	-	2.04	a 20	E50
															1	

	Steel P ess steel M	0 3	2 # 2 #	• • •	0	1	*	2 # 2 #	3					Machi	ning types	
Non-fer Heat resistant a	st iron K rous metal N alloy, Titanium alloy S ned steel H					•		* * * * * *	•				1	Gene	nuous cutting ral cutting upted cutting	
		Cermet			Coate				Uncoated		Dimer	sions	(mm)			
Inserts	Designation	CN2500 CN30	NCM325 NCM335	NCM535 NCM545	PC2010 PC3700	PC6510	PC9540	PC5300 PC5400	ST30A H01	I	d	t	<b>d</b> 1	а	Geometries	Available tools
SEKR-MX	1203AFSN-MX 1504AFSN-MX		• •							-	12.7 15.875	3.18 4.76	-	2.3	, <b>\</b> a	E49 E50
															d	
	1204AZ									-	12.7	4.76	-	2.0		-
SEMN															a d	20°
	0903AGSN-MF 14M4AGSN-MF					•		• •		-	9.525	3.18	3.4 4.4	2.11		E216~ E221
SEXT-MF	14M4AGSN-WF									-	14.0	4.0	4.4	2.64	d l	E221
	0903AGSN-MM				•	•		• •		-	9.525	3.18	3.4	2.11		E216~
SEXT-MM	14M4AGSN-MM		•		•	• (		•		-	14.0	4.0	4.4	2.64	a d	E221
	0903AGSN-MR									-	9.525	3.18	3.4	2.11		E216~
SEXT-MR	14M4AGSN-MR							•		-	14.0	4.0	4.4	2.64	d t	E221
	1203EFR								•	-	12.7	3.18	-	2.5	1	E51
SFCN															a	25°
	SNMF 1206ANN-MF 1507ANN-MF					Н				-	12.7 15.875	6.6 7.35	-	2.0		E136 E137
SNC(M)F-MF	SNCF 1206ANN-MF 1507ANN-MF					•				-	12.7	6.6 7.35	-	2.0	a	
SNC(M)F-MF	SNMF 1206ENN-MF 1507ENN-MF				•					-	12.7 15.875	6.6 7.35	-	1.8	_,a .	E138 E139
SINC (IVI)F-IVIF	SNCF 1206ENN-MF 1507ENN-MF					•				-	15.875 12.7 15.875	7.35 6.6 7.35	-	1.8	a t	E139

	Steel	Р		3	0 1	• •	•	<b>3</b> 3	;		<b>3</b> #	3	Machining types
9	Stainless steel	M	$\rightarrow$		1	;		•		<b>3</b> #	3 #		wachining types
pie	Cast iron	K			3	•	3	3			3 #		<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N											,
š	Heat resistant alloy, Titanium alloy	S									3 #		<b>♣</b> General cutting
	Hardened steel	Н					•	3			<b>3</b> #		# Interrupted cutting

		Cermet				Co	atec	d k			Un	ncoated			Dime	nsion	s (mr	n)			
Inserts	Designation	CN2500 CN30	IC5330 CM325	CM535	CM545	C2010	C3700	C6510	C9530	PC5300	C5400	101	1	d	t	r	d <sub>1</sub>	а	b	Geometries	Available tools
	SNMF 1206QNN-MF	88	22	Z	20		•		<u></u>		1 0	) <b>T</b>	-	12.7	6.6	0.8	-	1	-		E140
SNC(M)F-MF	SNCF 1206QNN-MF							•					-	12.7	6.6	0.8	-	1	-	a a a d	
	SNMF 1206ANN-MM												-	12.7	6.6	-	-	2	-		E136
SNC(M)F-MM	1507ANN-MM SNCF 1206ANN-MM												-	15.875 12.7	6.6	-	-	2.1	-	a	E137
•	1507ANN-MM												-	15.875	7.35	-	-	2.1	-	d	
	SNMF 1206ENN-MM						•						_	12.7	6.6		-	1.8	-		E138
SNC(M)F-MM	1507ENN-MM SNCF 1206ENN-MM						•						-	15.875	7.35 6.6	-	-	1.8	-	, a	E139
	1507ENN-MM												-	12.7 15.875		-	-	1.8	-	d	
	SNMF 1206QNN-MM						•						-	12.7	6.6	0.8	-	1	-		E140
SNC(M)F-MM	SNCF 1206QNN-MM							•					-	12.7	6.6	0.8	-	1		r a a a a d d d d d d d d d d d d d d d	
	1204ENN 1504ENN		•								•		-	12.7 15.875	4.76	-	-	1.4	1.0		E52
SNCN	TSUALINI													10.073	4.70			1.4	1.0	a b	
SNEF	435 535							•					-	12.7 15.875	4.76 4.76		-	-	-		-
SINEF																				d	
0.11=::::	120420-MF							•					-	12.7	4.76	2.0	5.7	(2.3)	-	<u></u>	E423
SNEU-MF																				d	
	1204ANN-MF												-	12.7	4.76	-	5.7	(2.0)	-	xa.	E423
SNEU-MF																				d t	

e		teel Pess steel M	0 3	• •	• •	<b>3 3</b>	3 1	* * *							M	lachin	ing types	
Workpiece	Non-ferr	st iron K rous metal N Iloy, Titanium alloy S		20	• •	<b>.</b>		* *	•	• •						Gene	nuous cutting ral cutting	
_		ned steel H	•		•	3		3 #							#	Interru	upted cutting	
			Cermet			Coated			Incoaled	PCD		Dim	nensi	ons (r	nm)			
	Inserts	Designation	CN2500 CN30	NC5330 NCM535	NCM545 PC2505	PC2010 PC3700 PC6510	PC9530	PC5300 PC5400		DP150 DP200		d	t	r	d <sub>1</sub>	а	Geometries	Available tools
		1204-TBW			_ 11				_		-	12.7	4.76	-	5.7	(2.1)		E423
SN	IEU-TBW																d d	
C 1		1204R-WMF									-	12.7	4.76	-	5.7	-		E423
SN	IEU-WMF																d	
	SNEX	101010 1010ZNN				•	•				-	10	10	1.0	4.6	-	<u>r</u> <u>d</u>	-
		TOTOLIN										10	10	(1.0)	1.0			
		101010-CU1				•	_				-	10	10	1.0	4.6	-	r de	-
S۱	IEX-CU1	1010ZNN-CU1 121212-CU1				•	•				-	10 12.7	10 12.7	(1.0)	4.6 5.6	-		
		1212ZNN-CU1									-	12.7	12.7	(1.2)	5.6	-	d l	
		1206ANN-MA				•			•		-	12.7 12.7	6.35	-	4.5 5.2	2.36 1.82	, <b>\</b> a	E126
SI	NEX-MA	1206ENN-MA 1206QNN-MA							•		-	12.7	6.35	-	5.2	1.39		E127 E130
		120612-MA							•		-	12.7	6.35	1.2	5.2		d   t	E131 E134 E135
S	NEX-ML	1206ANN-ML 1206ENN-ML						• •			-	12.7 12.7	6.35	-	4.5 5.2	2.36 1.82		E126~ E135
	new	1206QNN-ML						• •			-	12.7	6.35	-	5.2	1.39		
-		120612-ML 1507ANN-ML						• •			-	12.7 15.875	6.35 7.94	1.2	5.2	3.16		1
		1507ENN-ML						• •			-	15.875		-	5.6	2.66	d	
		09T3ADFR							•		9.525	9.525	3.97	-	4.4	-		E154 E155
	SNEW																d c t	50
~ -		09T3ADTR-NAF 09T3ADTR-NAW									9.525 9.525			-	4.4	-		E154 E155
SN	IEW-NAF	NAW: Wiper insert									3.525	9.525	3.81	-	4.4	-	d c t	E133
		09T3ADTR-XAF									9.525			-	4.4	-		E154
SN	IEW-XAF	09T3ADTR-XAW XAW: Wiper insert								•	9.525	9.525	3.97	-	4.4	-		E155
		1	1														1	Stock item

	Steel		Р	• (	8 (		•	3			3	#		Machining types
ဗ	Stainless steel		M					•	1	<b>B</b> 4	\$ 3	#		Machining types
bje	Cast iron	4	K		1	B (	9 (	3	•		3	#		◆ Continuous cutting
ž	Non-ferrous metal	4	N										•	9
ĕ	Heat resistant alloy, Titanium alloy	<b>-</b>	S								3	#		General cutting
	Hardened steel	$\leq$	Н					3			3	#		# Interrupted cutting

			Cermet			Coated		PCD		D	imer	sion	s (mr	n)				
Inserts	De	esignation	CN2500 CN30	NC5330 NCM535	NCM545 PC2010	PC3700 PC6510	PC9530 PC5300 PC5400	DP150 DP200	ı	d	t	r	d <sub>1</sub>	а	b	Geometr	ies	Available tools
		08R-WX					•		-	11	2.30	-	4	-	-			E416
		8R-WX					•		-	11	3.00	-	4	-	-			E417
		08R-WX 08R-WX					•		-	12.7	3.50 4.00	-	5 5	-	-			
		08R-WX					•		-	12.7	4.00		5					
		8R-WX					•		-	12.7	5.00	-	5	-	-			
		08R-WX					•		-	12.7	5.47	-	5	-	-			
		8R-WX							-	12.7	6.00	-	5	-	-			
		08R-WX 08R-WX							-	12.7	7.00	-	5 5	-	-			
		08R-WX							-	12.7	7.5		5					
SNHT-WX		08L-WX					•		-	11	2.30	-	4	-	-	THE STATE OF THE S		
	11030	8L-WX					•		-	11	3.00	-	4	-	-		dı dı	
		8L-WX							-	12.7	3.25	-	5	-	-			
		08L-WX					•		-	12.7	3.50	-	5	-	-	d		
		8L-WX 608L-WX					•		-	12.7	4.00 4.54	-	5	-	-		<del>-`-</del>	
		BL-WX					•		-	12.7	5.00	-	5 5		-			
		08L-WX					•		-	12.7	5.47	-	5	-	-			
		8L-WX							-	12.7	6.00	-	5	-	-			
		08L-WX							-	12.7	6.50	-	5	-	-			
		8L-WX							-	12.7	7.00	-	5	-	-			
	12075	08L-WX							-	12.7	7.5	-	5	-	-			
	1204E					•			-	12.7	4.76 4.76	-	-	1.4	1.0	, a Vh		E52
SNKN	10042									10070						a	_t_	
	SNMX	1206ANN-MF		•		• •	• • •		-	12.7	6.35	-	4.5	2.36	-			E126~
SNM(E)X-MF	CNEV	1507ANN-MF		•		• •	• •		-	15.875		-	5.6	3.15	-			E129
1 Strain	SNEX	1206ANN-MF 1507ANN-MF				• •	• •		-	12.7 15.875	6.35 7.94	-	4.5 5.6	2.36	-		d1	
	Chinav															d .	t	F420
	SNMX	1206ENN-MF 1507ENN-MF		•		• •	• • •		-	12.7 15.875	6.35	-	5.2	1.82 2.66	-	a, \		E130~ E133
SNM(E)X-MF	SNEX	1206ENN-MF				•	• •		-	12.7	6.35	-	5.2	1.82	-			L 133
		1507ENN-MF				•	• •		-	15.875		-	5.6	2.66	-	d	d <sub>1</sub>	
	SNMX	1206QNN-MF		•		• •	• •		-	12.7	6.35	-	5.2	2.36	-			E135
SNM(E)X-MF	ONEY	120612-MF				•	• •		-	12.7	6.35	1.2	5.2	-	-	a r		
	SNEX	1206QNN-MF 120612-MF				• •	• •		-	12.7 12.7	6.35	1.2	5.2 5.2	2.36	-	a		
		120012-IMIF							-	12.1	0.33	1.2	J.Z			d	d <sub>1</sub>	
	SNMX	1206ANN-MM		• •		• • •			-	12.7	6.35	-	4.5	2.36	-			E126~
SNM(E)X-MM	CNEV	1507ANN-MM		•		• •	• •		-	15.875		-	5.6	3.15	-	a		E129
	SNEX	1206ANN-MM 1507ANN-MM				•			-	12.7 15.875	6.35 7.94	-	4.5 5.6	2.36 3.15	-		1.	
		1307 AININ-ININ							-	10.013	1.54	-	3.0	3.13	-	d	t dı	
																		1

ø		eel ss steel	P	• 3	<b>3</b>	* •	• •	* * *	3							ı	/lachi	ning	types	
Workpiece	Cas	t iron	К			•	• •	3 #			•						Contir	nuous	cutting	
Nork	Non-ferr Heat resistant al	ous metal lov. Titanium	alloy S					3 #			•					3	Gener	al cu	tting	
_		ed steel	H					* *								#	Interru	ıpted	cutting	
				Cormet			Contod		H		مما			\:	olone	lman	٠,			
	Inserts	De	esignation	CN2500 CN30	NCM325	NCM335 NCM535	NCM545 PC3700 PC6510 PC9530	PC9540 PC5300 PC5400		G10		1	d	t	sions r	d <sub>1</sub>	a	b	Geometries	Available tools
		SNMX	1206ENN-MM			•	• •	• • •				-	12.7	6.35	-	5.2	1.82	-	_	E130~
SNI	M(E)X-MM		1507ENN-MM			•	• •	• •				-	15.875	7.94	-	5.6	2.66	-	a la	E133
		SNEX	1206ENN-MM 1507ENN-MM				•	• •		_		-	12.7	6.35	-	5.2	1.82	-		d <sub>1</sub>
			1307 ENIN-IVIIVI									-	15.875	7.94	-	5.6	2.66	-	d t	
CVI		SNMX	1206QNN-MM 120612-MM			•	• •	• • •		_	-	-	12.7	6.35	- 10	5.2	2.36	-	a r	E134 E135
SIV	M(E)X-MM	SNFX	1206   Z-WIWI 1206 QNN-MM				•	• •				-	12.7	6.35	1.2	5.2	2.36	-	a la	E135
		OHLX	120612-MM				•					-	12.7	6.35	1.2	5.2	-	-		d <sub>1</sub>
-																			d	
		1206A	NN-W				• •	•				-	12.7	6.35	-	4.5	7.6	-		E126
S	NEX-W																		a d t	E127
		1203E	DR	•		•			•	•	•	-	12.7	3.18	-	-	1.4	1.0		E53
			DR-RH									-	12.7	3.18	-	-	1.4	1.0		E54
		1203E							•			-	12.7	3.18	-	-	1.4	1.0		
		1203E	DR-G DR-RN							-	•	-	12.7	3.18	-	-	1.4	1.0		
			DER-RH				•	•				-	12.7	3.18	-		1.63	0.8	b ta	
			DSR-RH				•					-	12.7	3.18	-	-	1.63	0.8		
			DTR-RH									-	12.7	3.18	-	-	1.63	0.8		
			DR-S20				•	1				-	12.7	3.18	-	-	1.4	1.0	1	1°
		150412								_		-	15.875	4.76	1.2	-	-	-	<del>-                                  </del>	
4		1504E		•					•	•		-	15.875	4.76	-	-	1.4	1.0		
		1504E 1504E	DR-RH							-		_	15.875 15.875	4.76 4.76	-	-	1.4	1.0		
		1504E					•			Н		-	15.875			-	1.4	1.0	<del>           </del>	
		1504E									•	-	15.875	4.76	-	-	1.4	1.0		1°
		1504E	DR-RN	•								-	15.875	4.76	-	-	1.4	1.0	d   t   '	
			DER-RH				•	•				-	15.875		-	-	1.64	8.0	SPCN150412T	
			DSR-RH				•					-	15.875		-	-	1.64	0.8		
			DTR-RH DR-S20				•			-		-	15.875 15.875		-	-	1.64	1.0		
_		12041								Н		-	12.7	4.76	1.6	-	-	-		1-
SI		150412										-	15.875		1.2	-	-	-		
		150410										-	15.875		1.6	-	-	-		
		150420										-	15.875		2.0	-	-	-		
		19042	4-WC									-	19.05	4.76	2.4	-	-	-	d t	1°
		1203E								Ц		-	12.7		-	-	10.2	-	11°	E53
		1203E								_		-	12.7	3.18	-	-	10.2	-		E54
		1504E 1504E								H		-	15.875 15.875		-	-	10.2	-		
		10042	DE-1										10.070	4.70			10.2		a t	4°
		200-N										8.8	2.2	-	0.2	-	-	-		E413
	.3251	300-N										9.8	3.0	-	0.2	-	-	-	±0.05	
	A Partie	400-N										9.8	4.0	-	0.25	-	-	-	d	
		<u> </u>																		Stock item

	Steel	P	3	•	3	#	•	• ;	<b>B</b>			3	#	3		Machining types
e	Stainless steel	VI			3	#				1	#	3	#			waciiiiiig types
pie	Cast iron	<		3				•	•			3	#		3	● Continuous cutting
ž	Non-ferrous metal	V														ii
×	Heat resistant alloy, Titanium alloy	S										3	#			General cutting
	Hardened steel	4										3	#			<b>★</b> Interrupted cutting

Harde	ned steel H					3 #	:							# III	terrup	oted cutting	
		Cermet		Coat	ed		Unco	oated		Di	men	sions	s (mi	m)			
Inserts	Designation		NC5330 NCM325 NCM335	NCM535 NCM545 PC3700		PC9540 PC5300 PC5400			ı	d	t	r	d <sub>1</sub>	a	b	Geometries	Available tools
SPKN-MU	1203EDSR-MU 1504EDSR-MU			•						12.7 15.875	3.18 4.76	-	-	0.86	1.87 1.92	b a	E53 E54
																d t	
SPKN-SU	1203EDSR-SU 1203EDSL-SU			•		• •				12.7 12.7		-	-	1.66 1.66	0.92	b ta	E53 E54
	1504EDSR-SU			•		• •	,			15.875		-	-	1.62			
	1504EDSL-SU			•					-	15.875	4.76	-	-	1.62	0.93	d t 110	
CDKD MV	1203EDSR-MX		• •						_	12.7		-	-	1.4	-		E53
SPKR-MX	1203EDSL-MX 1504EDR-MX		•							12.7 15.875			-	1.45	-		E54
	1504EDSR-MX								_	15.875		-	-	1.45	-		
La Principal Control of the Control																d t 11°	
SPMN	120308						•		-	12.7	3.18	0.8	-	-	-		E369
SFIVIL																d 11°	
SPMT	060304		•						-	6.35	3.18	0.4	2.8	-	-	r	E307
																d 111°	E334 E335
SPMT-KC	110408-KC			•			• (		-	11.5	4.8	0.8	4.5	-	-		E369
SHITKE																d t	
SPMT-MM	120408-MM 120508-MMN			•		•				12.7	4.76 5.56	0.8	5.6 5.6	-	-		E307 E334
												0.0	0.0			d t 11°	E336 E352
	TECN 22R									6.35		-	-	1.0	0.5	60°	E61
	22TR 32R	•					•		11.0 16.5			0.8	-	0.5 1.0	0.5		
TEC(E)N	32R-G								16.5			-	-	1.0	0.5		
	32TR	•	•				•		16.5	9.525	3.18	0.8	-	0.5	-	20.	
	32TR-S20				•				16.5			8.0	-	0.5	-	d   Xa   t   '	
	43R-G 43TR-Z								22.0 22.0	12.7		- 0.8	-	2.0 1.5	0.5		
	431R-Z 43TR									12.7		0.8	-	1.5	-	60°	
	TEEN 32TR								16.5			0.8	-	0.5	-		
	43R-Z									12.7		-	-	2.0	0.5		
TEEN	43TR-Z						•			12.7		0.8	-	1.5	-	200	
	43TR-ZH 43R				•		4			12.7 12.7		0.8	-	1.5 2.0	0.5		
	43R-G							•		12.7		-	-	2.0	0.5	► Shape of Edge - G: Light side, Sharp edge	
	43TR	• •	• •		•		•			12.7		0.8	-	1.5	-	- S20: STS	
	43TR-S20				•				22.0			0.8	-	1.5	-	- ZH: Hole added	

TNKT-ML 110508PER-ML	M 3 # 0 3	* * *		Machining types	
TOOL	N S	* *		General cutting	
TRKT-ML  110508PER-ML  2003PFR  2003PFR  2003PFR  200 127 316 2.42 071  200 127 316 2.42 071  200708PER-ML  110508PER-ML  200708PER-ML  200708PER-ML  200708PER-MM		Uncoated	Dimensions (	(mm)	
TINKT-ML  110508PER-ML  200708PER-ML  100608PER-ML  200708PER-ML  110508PER-MM  110508PER-MM  200708PER-ML  200708PER-MM  200708	CN2500 CN30 CN30 NCM325 NCM325 NCM335 NCM535 PC3700	PC5300 PC5400 ST30A G10 H01	l d t r		ometries Availatoo
TINKT-ML 110508PEER-ML	R			60°	E55
10508PER-ML		2	22.0 12.7 3.18 -	- 2.42 0.71	b 25°
11030PR					E258
110508PESR-MM					E261
1103PPN	EER-IVIL		- 14.5 7.000 0.6	2.0 -	
200708PESR-MM					E258
TOWN-NM 2710AZNR-NM 2710AZNL-NM 3012PNR-NM 3012PNR-MM 3		-		d'	E261
7103PN	ESR-MINI		- 14.5 7.031 0.8	- 2.0 -	
3012PNR-NM  1103PPN  1110 3.5 3.18 0.7 0.7 0.7 1103PPTN  1603PDR  1603PPR				000	E68-
1103PPN				/ / X	E70
1103PPTN					a t
1603PDR					E56
1603PPR					
1603PPR-RH					
1603PPR-G		• • 1	16.5 9.525 3.18 -	- 1.2 1.0	
1603PPSR					
1603PPTN					
1603PPTR					
TPCN  1603PDER-RH 1603PDSR-RH 1603PDR-S20 1603PDR-RN 16					
TPCN  1603PDSR-RH 1603PDR-S20					
TPCN  1603PDR-S20  1603PDR-RN  1603PDR-RN  2204PDR  2204PDR-RH  2204PDR-RN  2204PDR-RN  2204PDR-G  2204PDR  2204PR  2204PRN  2204					
TPCN  1603PDR-RN  2204PDR  ■ ■ 220 12.7 4.76 1.4 0.7  2204PDR-RH  2204PDR-RN  2204PDR-Q  220 12.7 4.76 1.4 0.7  2204PDR  ■ 220 12.7 4.76 1.2 1.2  2204PPN  ■ 220 12.7 4.76 1.2 1.2  2204PDR-RH  ■ 2204PDR-RH  ■ 220 12.7 4.76 0.8 - 1.8 1.2  2204PDR-RH  ■ 2204PDR-RH  ■ 2204PDR-RH  ■ 2204PDR-RH  ■ 2204PDR-RH  ■ 2204PDR-RH  ■ 220 12.7 4.76 0.8 - 1.8 1.8 1.8 1.8				7 /	
2204PDR					1) 10
2204PDR-RH       22.0 12.7 4.76 1.4 0.7         2204PDR-RN       22.0 12.7 4.76 1.42 0.52         2204PDR-G       22.0 12.7 4.76 1.4 0.7         2204PDR       22.0 12.7 4.76 1.4 0.7         2204PDR       22.0 12.7 4.76 1.4 0.7         2204PDTR       22.0 12.7 4.76 1.4 0.7         2204PPN       22.0 12.7 4.76 1.2 1.2         2204PPTN       22.0 12.7 4.76 1.2 1.2         2204PDR-RH       22.0 12.7 4.76 0.8 - 1.8 -         2204PDR-RH       22.0 12.7 4.76 0.8 - 1.8 -         2204PDSR-RH       22.0 12.7 4.76 0.8 - 1.8 -					t t
2204PDR-G					
2204PDL					
2204PDSR					
2204PDTR					
2204PPN					
2204PPTN       22.0 12.7 4.76 1.2 1.2         2204PDR-RH       22.0 12.7 4.76 0.8 - 1.8 -         2204PDER-RH       ■ 22.0 12.7 4.76 0.8 - 1.8 -         2204PDSR-RH       ■ 22.0 12.7 4.76 0.8 - 1.8 -					a t
2204PDR-RH       22.0 12.7 4.76 0.8 - 1.8 -         2204PDER-RH       ■ 22.0 12.7 4.76 0.8 - 1.8 -         2204PDSR-RH       ■ 22.0 12.7 4.76 0.8 - 1.8 -					
2204PDSR-RH					
2204PDR-S20					
	!-S20	2	22.0 12.7 4.76 -	- 1.4 0.7	

	Steel	4	Р	3	3	#			3	3			3	*	•		Machining types
9	Stainless steel	<b>-</b>	M		3	#						3 1	ŧ 3	*	•		Machining types
bje	Cast iron	4	K	П			•	3	\$		•		3	*		•	● Continuous cutting
ž	Non-ferrous metal	<b>I</b>	N													•	· · · · · · · · · · · · · · · · · · ·
ĕ∣	Heat resistant alloy, Titanium alloy	<b>-</b>	S										3	#	:		General cutting
	Hardened steel	4	Н					•	3				3	#	•	1	Interrupted cutting

Designation   Section	Harde	ned steel H				• •			3 ;							-	111101	Tapte		
1603PDSR-MU							ated			Urcated			Dim	ensi	ons (	(mm	)			
TPKN-MU  1603PDSL-SU 1603PDSR-SU 2204PDSR-SU 2204PDSR-MX 1603PPSR-MX 1603PPSR-	Inserts	Designation	CN2500 CN30	NCM325 NCM335	NCM535 NCM545	PC2505 PC2510	PC3700	PC9530	PC9540 PC5300	H01	1	d	t	r	d <sub>1</sub>	а	b	f	Geometries	Available tools
TPKN-SU  1603PDSL-SU  1603PDSR-SU  1603PDSR-SU  1603PDSR-SU  2204PDSR-SU  2204PDSR-SU  1603PDSR-MX  1603PDSR-		2204PDSR-MU					•					12.7	4.76	0.8	-	1.96	-	-		E56
TPKN-SU  2204PDSL-SU  2204PDSR-SU  1603PDSN-MX 1603PDSR-MX 1603PDSR-MA 1603PDS	TPKN-MU																		60°	
1603PDSN-MX		1603PDSL-SU					•				16.	5 9.525	3.18	1.0	-	1.70	-	-		E56
1603PDSN-MX		1603PDSR-SU									16.	5 9.525	3.18	1.0				-	60°	
1603PDSN-MX	TPKN-SU						•				_				-			-		
1603PPS-MX		2204PDSR-SU					•				22.0	0 12.7	4.76	1.0	-	1.91	-	-	11°	
1603PDSR-MX		1603PDSN-MX									16.	5 9.525	3.18	-	-	1.2	1.2	-	60°	E56
163 PSN-MX   165		1603PDSR-MX						•							-			-		
1603PSR-MX				•											-			-		
2204PDR-MX 2204PPR-MX 2204PPR-MX 2204PPR-MX 220127 476 10 - 1.4 - 220 12.7 476 10 - 220 12.7 476 10 -	TPKR-MX										-								1,10	
2204PDSR-MX 2204PPR-MX  220 127 476 10 - 1.4 220 127 476 10 - 220 127				_							_								d a t	
16R-KC   165 952 337 08 445   E371				-							+								60°	
16R-KC 22R-KC											_									
TWX-KC  220 127 476 0.8 445  220 530N-MA  220530N-MA  0 156 127 556 30 56  11T210N-MA 11T220N-MA 11T220N-MA 0 8.8 635 287 1.0 2.8  67 6.35 287 20 2.8  080316ZDSR-MH 10T320ZDSR-MH 130520ZDSR-MH 130520ZDSR-MH 150625ZDSR-MH 150625ZDS																			d a t	
TWX-KC									•		_					-	-	-		E371
VCKT-MA  11T210N-MA 11T220N-MA  0 8.8 6.35 287 1.0 2.8	TWX-KC	22R-KC									22.0	) 12.7	4./6	0.8	4.45	-		-	60° d d d d d d d d d d d d d d d d d d d	
VCKT-MA  11T210N-MA  11T220N-MA  0 8.8 6.35 2.87 1.0 2.8 6.7 6.35 2.87 2.0 2.8		220530N-MA								•	15.6	3 12.7	5.56	3.0	5.6	-	-	-		E385
11T220N-MA	VCKT-MA																		d da	E386
11T220N-MA		11T210N-MA								•	8.8	6.35	2.87	1.0	2.8	-	-	-		E386
080316ZDSR-MH		11T220N-MA									6.7	6.35	2.87	2.0	2.8	-	-	-		E387
WDKT-MH    10T320ZDSR-MH	VDKT-MA																		d d d d d d d d d d d d d d d d d d d	
WDKT-MH    10T320ZDSR-MH		080316ZDSR-MH				• •	•	•	•		-	8.0	3.18	1.6	3.3	_	_	1.8		E300~
WDKT-MH 150625ZDSR-MH						•	• •	•	•										-	
115°						• •	• •	•	•		-									
150	WDKT-MH	150625ZDSR-MH					• •	•	•		-	15.0	6.35	2.5	5.56	-	-	3.4		
																			115°	

<b>O</b> Ctoi	Steel nless steel	P		8	• •	\$ 0	3	3		_	2 # 2 #	3					N	/lachir	ning types		
Non-f	ast iron errous metal t alloy, Titanium allo	M K N S		-	• •	2 1		•			2 # 2 #	•					• (	Contin	uous cutting al cutting		
	lened steel	H				<b>\$</b> (					<b>8</b> #						#	nterru	pted cutting		
			Cerm	net			Co	oated				Uncoated		Din	nensio	ons (r	nm)				
Inserts	Desig	gnation	CN2500	N30	NCM535 NCM545	PC2010	PC2510	PC3700 PC6510	PC9530	PC9540	PC5300 PC5400	ST30A H01	ı	d	t	r	<b>d</b> 1	f	Geometri	es	Available tools
	040304P	NFR-MA	0	ا ا	<i>z z</i>			4 4		<u> </u>		Ø ±	4.3	7.0	3.46	0.4	-	-			E120~
	040308P												4.3	7.0	3.46	0.8		-			E125
WNGX-MA	040312P 040316P			+			_					•	4.3	7.0	3.46	1.2	-	-	_d_	احلما	
new	080604P			+								•	8.2	13.0	6.4	0.4	-	-			
10	080608P											•	8.2	13.0	6.4	0.8		-			
	080612P 080616P			4								•	8.2	13.0	6.4	1.2	-				
	080620P			+								•	8.2	13.0	6.4	1.6 2.0	-	-	1		
	0000201																				
	040304P	NED-MI		-				•		•			4.3	7.0	3.46	0.4		-			E120~
	040304P			+							• •		4.3	7.0	3.46	0.4	-	-			E120~
WNGX-ML	040312P	NER-ML								(	•		4.3	7.0	3.46	1.2	-	-	d	, + .	
VVINGA-IVIL	040316P			4						•	•		4.3	7.0	3.46	1.6	-	-	<u> </u>		
	080604P 080608P			-	•			•			• •		8.2 8.2	13.0	6.4	0.4	-	-			
	080612P									(	•		8.2	13.0	6.4	1.2	-	-			
	080616P										•		8.2	13.0	6.4	1.6	-	-	r		
	080620P	NER-ML		+						(	•		8.2	13.0	6.4	2.0	-	-			
		NSR-MM						•			• •		4.3	7.0	3.46	0.4	-	-			E120~
		NSR-MM		+						_	• •		4.3	7.0	3.46	0.8	-	-			E125
WNGX-MM		NSR-MM NSR-MM		+							•		4.3	7.0	3.46	1.6	-	-	d	<del>-                                    </del>	
VVIVGA-IVIIV		NSR-MM		1				•		(	• •		8.2	13.0	6.4	0.4	-	-			
		NSR-MM		-	•			• •		•	• •		8.2	13.0	6.4	0.8	-	-			
		NSR-MM NSR-MM		+							•		8.2	13.0	6.4	1.2	-	-			
		NSR-MM		$\dashv$							•		8.2	13.0	6.4	2.0	-	-	<u>\</u>		
	060312Z	NN-MF		1						(	• •		-	6.35	3.18	1.2	2.86	1.2			E289~
	09T316Z							•		(	• •		-	9.525	3.97	1.6	3.6	1.7			E299
WNMX-MF	130520Z			_						(	• •		-	12.7	5.56	2.0	4.7	2.5		1	
new	160720Z	NN-WF		+							• •		-	16.0	7.0	2.0	5.8	3.0			dı l
																			- - - d	t	
	060312Z									(	• •		-	6.35	3.18	1.2	2.86	1.2			E289~
\	09T316Z			1						(	• •		-	9.525	3.97	1.6	3.6	1.7	ı	_	E299
WNMX-ML	130520Z 160720Z			+						9	• •		-	12.7	5.56 7.0	2.0	4.7 5.8	2.5			
at tall	1007202	IAIA-IAIT		+									-	10.0	7.0	2.0	5.0	3.0			d <sub>1</sub>
																			r		
																				t	
	060312Z					•	•	•		(	• •		-	6.35	3.18	1.2	2.86	1.2			E289~
	09T316Z					•		•	•		• •		-	9.525	3.97 5.56	1.6	3.6	1.7	_		E299
WNMX-MV	130520Z 160720Z			+		-	, •	•			• •		-	12.7	7.0	2.0	4.7 5.8	2.5			
4	. 501 202			+				_			_			10.0	7.0	0	5.0	3.0			dı
																			r		
																			'd'	<u>t</u>	
																					Ctook itom

	Steel	Р	3		•	• ;	<b>B</b>		3	#		1	t			Machining types
e	Stainless steel	M						3 #	3	#						Macining types
pie	Cast iron	K	П	3	•				3	#			3	•		<ul> <li>Continuous cutting</li> </ul>
ž	Non-ferrous metal	N	П								# (			• 1	3	· · · · · · · · · · · · · · · · · · ·
×	Heat resistant alloy, Titanium alloy	S							3	#						General cutting
	Hardened steel	H							3	#						* Interrupted cutting

		Cermet			Coa	ated			Un	coa	ited		D	ime	ensi	ons	(mr	1)			
Inserts	Designation	CN2500 CN30	NC5330 NCM535	NCM545 PC3700	PC6510	PC9540	PC5300	PD1010	ST30A	310	H05	I	l <sub>2</sub>	l <sub>1</sub>	d	t	r	d <sub>1</sub>	а	Geometries	Available tools
	310404ER-KC			•						•		30.9	-	-	9.525	4.5	0.4	4.4	-		E370
XCET-KC																					
9 9																				5	70
	190504PEFR-MA									•	•	22	-	-		5.04	0.4	4.5	-		E399
	190508PEFR-MA									9		22	-	-		5.00	0.8	4.5	-		E400
XDET-MA	190512PEFR-MA 190516PEFR-MA										H	22	-	-		5.00 4.99	1.2	4.5	-		
new	190510PEFR-MA											22	÷	-	11.3		2.0	4.5	÷		
	190524PEFR-MA											22	-	-		4.95	2.4	4.5	-	d + d1	
	190530PEFR-MA									•	•	22	-	-	11.3	4.93	3.0	4.5	-		
	190532PEFR-MA									•	•	22	-	-	11.3	4.92	3.2	4.5	-		
•	190540PEFR-MA										•	21	-	-		4.85	4.0	4.5	-		
	190550PEFR-MA									_	4	21	- 40.4	-	11.3		5.0	4.5	-		E388~
	19M504FR-MA 19M508FR-MA										Ħ	18	16.4	1.4	-	5	0.4	4.4	-		E388~
	19M512FR-MA							•				18	16.4	0.6	-	5	1.2	4.4	-		L030
	19M516FR-MA							•		•	•	17.5	16.4	0.5	-	5	1.6	4.4	-		
	19M518FR-MA											17.5	16.4	0.5	-	5	1.8	4.4	-		
	19M520FR-MA							• (			•	17.5	16.4	0.5	-	5	2.0	4.4	-		
XEKT-MA	19M530FR-MA							•				17	16.4	0.7	-	5	3.0	4.4	-		
ALK I-IVIA	19M532FR-MA				_						4	17	16.4	0.5	-	5	3.2	4.4	-		
	19M540FR-MA 19M550FR-MA								1		Ħ	16.5 16	16.4	0.5	-	5	5.0	4.4	-	Ida	
	250604FR-MA												21.9	1.5	_	6.35	0.4	6.0	-	11	0
	250608FR-MA										•			1.2	-	6.35	0.8	6.0	-		
	250612FR-MA									•	•	24.5	21.9	0.8	-	6.35	1.2	6.0	-	7	
	250616FR-MA											24.5		0.4	-	6.35	1.6	6.0	-		
	250620FR-MA													0.5	-	6.35	2.0	6.0	-		
	250630FR-MA 250632FR-MA												21.9	0.6	-	6.35	3.0	6.0	-		
	250632FR-MA												21.9	1.2	-	6.35	4.0	6.0	-		
	250650FR-MA									•	•		21.9	0.4	-	6.35		6.0	-		
	19M504ER-ML											18	16.4	1.4	-	5	0.4	4.4	-		E388~
	19M508ER-ML											18	16.4	1.0	-	5	0.8	4.4	-		E393
	19M512ER-ML												16.4		-	5	1.2	4.4	-		
	19M516ER-ML												16.4		-	5	1.6		-		
	19M518ER-ML 19M520ER-ML					-		-					16.4		-	5	1.8	4.4	÷		
	19M530ER-ML												16.4		-	5		4.4	-		
XEKT-ML	19M532ER-ML												16.4		-	5	3.2		-	l r	
new	19M540ER-ML											16.5	16.4	0.5	-	5	4.0	4.4	-		
	19M550ER-ML												16.4		-	5		4.4	-		
	250604ER-ML							_					21.9		-		0.4		-	11720	٥
100	250608ER-ML 250612ER-ML												21.9		-		1.2		-	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
	250612ER-ML												21.9		÷		1.6		-		
	250620ER-ML												21.9		-		2.0		-		
	250630ER-ML											23.7	21.9	0.6	-		3.0		-		
	250632ER-ML												21.9		-		3.2		-		
	250640ER-ML												21.9		-		4.0		-		
	250650ER-ML							щ					21.9		- 40.0		5.0		-	. d .	F400
XNCT-MA	080504PNFR-MA 080508PNFR-MA							Н				8.2	-	-				4.5			E100 E101
new	080512PNFR-MA							H				8.2	-	-				4.5			E101
	080520PNFR-MA										-	8.2	-	÷				4.5			E104
2000										_											1
	120608PNFR-MA											12.0	-	-	13.0	6.5	8.0	5.5	3.5		

e		teel ess steel		P M		3	• •	•	• :	£ £		3	# 1	* *	_						ı	Machi	ining types
Workpie	Non-ferr	st iron rous metal lloy, Titanium alloy	Z Z	K N S		;	* •	•	3 :	8	•			* *		•						Gene	nuous cutting ral cutting
	Harder	ned steel		Н					• ;	8			1	# #							#	Interru	upted cutting
					Cerr	net			(	Coat	ed				Uncoate	ed		Dim	ensi	ons (r	nm)		
	Inserts	Desigr	nati	on	2	N30	JC5330	<b>ICM545</b>	C2505	C2510	C6510	C9530	C9540	C5400	3T30A	2	ı	d	t	r	<b>d</b> 1	а	Geometries Availat tools

	ned steel H			•			3	#						#	Interru	upted cutting	
		Cermet			Coat	ed		Unco	oated		Dim	ensid	ons (r	nm)			
Inserts	Designation		NC5330 NCM535	C2505			PC9540 PC5300		- 1	ı	d	t	r	d <sub>1</sub>	а	Geometries	Available tools
	060405PNER-ML	00	22	<b>Z</b> IL	• •	•	• •	•	_	5.7	6.5	4.0	0.5	3.4	1.8		E99~
	060408PNER-ML					•	•	•		5.7	6.5	4.0	0.8	3.4	1.8		E104
	080504PNER-ML						•	•		8.2	10.0	5.5	0.4	4.5	2.9		
	080508PNER-ML		•		• •	•	• •	•		8.2	10.0	5.5	0.8	4.5	2.9		
	080512PNER-ML						•	•		8.2	10.0	5.5	1.2	4.5	2.9		
XNKT-ML	080516PNER-ML						•	•		8.2	10.0	5.5	1.6	4.5	2.9		
XIVIX I-IVIL	080520PNER-ML						•	•		8.2	10.0	5.5	2.0	4.5	2.9		
new	120608PNER-ML				•		• •			12.0	13.0	6.5	8.0	5.5	3.5		i <sub>1</sub>
	120612PNER-ML						•	•		12.0	13.0	6.5	1.2	5.5	3.5		
	120616PNER-ML						•	•		12.0	13.0	6.5	1.6	5.5	3.5		
	120620PNER-ML							•		12.0	13.0	6.5	2.0	5.5	3.5	1	
	060405PNSR-MM			•	• •	•	• •	•		5.7	6.5	4.0	0.5	3.4	1.8		E99~
	060408PNSR-MM			•	• •	•	•			5.7	6.5	4.0	0.8	3.4	1.8		E104
	080504PNSR-MM				•					8.2	10.0	5.5	0.4	4.5	2.9		
	080508PNSR-MM 080512PNSR-MM		•	-						8.2	10.0	5.5 5.5	0.8 1.2	4.5	2.9		
	080516PNSR-MM			-						8.2	10.0	5.5	1.6	4.5	2.9		
XNKT-MM	080520PNSR-MM			•	•					8.2	10.0	5.5	2.0	4.5	2.9	d	
new	120604PNSR-MM			_			•	•		12.0	13.0	6.5	0.4	5.5	3.5		
3	120608PNSR-MM			•	• •	•	•	•		12.0	13.0	6.5	0.8	5.5	3.5		i <sub>1</sub>
	120612PNSR-MM			•	•		•	•		12.0	13.0	6.5	1.2	5.5	3.5		
	120616PNSR-MM			•	•		•	•		12.0	13.0	6.5	1.6	5.5	3.5	a	
	120620PNSR-MM			•	•		•	•		12.0	13.0	6.5	2.0	5.5	3.5	<del>+**</del> +    <del>+***+</del>	
	0606XNR-ML		•			•	• •	•		6.7	14.0	6.5	0.8	4.6	1.0		E142
XNMX-ML																d d	1
	060608-ML		•			•	• •	•		6.7	14.0	6.0	0.8	4.6	-		E142
XNMX-ML																14 t	
	0802ER-MM						•			10.5	7.25	3.18	0.8	-	-		E339
	1003ER-MM				•		•			10.5	7.25	3.18	0.8	-	-		E340
	13T3ER-MM 1604ER-MM						•			13.1	9	3.97 4.76	0.8	-	-		
XPMT-MM	1805ER-MM						•			16.5 18	11.5	5.56	0.8	-	-		
	2006ER-MM						•			20.5	14.1	6.35	0.8	-		d 3	1
Land 1	2507ER-MM						•			25.5	17.6		0.8	-	-		
																	. 041



	Steel	◂	Р	3		•	•	3	3		4	8 :	# :	3		Machining types
e	Stainless steel		М							3	# :	8 :	*			Machining types
bje	Cast iron	<b>-</b>	K		3	•	3	3			4	8 :	*		•	● Continuous cutting
ž	Non-ferrous metal	<b>-</b>	N													9
ĕ	Heat resistant alloy, Titanium alloy	⋜	S								4	8	#			General cutting
	Hardened steel		H					1			- 5	2	#			Interrupted cutting

		Cermet		Coat	ed		Uncoated		Dimer	nsions	(mm)			
Inserts	Designation	CN2500 CN30	NC5330 NCM535 NCM545 PC2505	PC2510 PC3700	PC6510 PC9530	PC9540 PC5300 PC5400	ST30A H01	1	d	t	r	d <sub>1</sub>	Geometries	Available tools
	080310R-MM			•		•		8.4	6.73	3.2	10	2.8	*	E339
ZDMT-R-MM						•		10.6	8.5	3.65	12.5	2.8		E340
	130416R-MM			•		•		13.2	10.5	4.76	16	4.4		l <sub>1</sub>
	080M-MM							16	8.0	3.5	8	2.9		E332~
	090M-MM							17.7	7.2	4.3	9	3.4		E334
7DET 1414	100M-MM			• •		•		19	10.4	4.5	10	3.4		
ZPET-MM	110M-MM							22.2	11.4	4.8	11	4.5		
	125M-MM 130M-MM			• •		•		24 25.7	12.9	5.3	12.5	4.5 4.5		
	140M-MM							27.2	14.3	6.3	14	5.6		
Internal	150M-MM			•		•		28	15.4	7	15	5.6		
	160M-MM			• •		•		28.5	16.4	7	16	5.6		
	200M-MM			•				38	20.7	8	20	6.6	_	
	250M-MM							48	25.9	9.5	25	8.6		
	080S-MM							15	6.6	3.1	8	2.9		lı .
	090S-MM							15.5	7.4	3.7	9	3.4		19
	100S-MM			• •		•		15.5	8.4	3.8	10	3.4	la l	
70ET.414	110S-MM 125S-MM			• •		•		18.1	9 10.7	4.4	11 12.5	4.5 4.5		
ZPET-MM	130S-MM					_		22.2	11	4.4	13	4.5		
Carried States	140S-MM							24.1	11.2	5.7	14	5.6		
	150S-MM			•		•		25	12.4	6.5	15	5.6		
External	160S-MM			• •		•		26	13.4	6.5	16	5.6		
LXterrial	200S-MM			•				32	16.7	7	20	6.6		
	250S-MM							40	20.7	8.5	25	8.6		
	1504PPSR-MM 1505PPSR-MMN			•		•		15.9 15.9	12.7 12.7	4.76 5.76	-	5.6 5.6		E307 E352
ZPMT-MM													888	1
	160520R-MM			•		•		16.1	12.7	5.56	20	5.6		E336
	160525R-MM			•		•		16.9	12.7	5.56	25	5.6		
ZPMT-R-MM	160531.5R-MM					•		17.6	12.7	5.56	31.5	5.6	d t	1
ZDMT D MD	160525R-MR							17.6	12.7	5.56	25	5.6		E335 E336
ZPMT-R-MR														1 0

#### **E** KORLOY Cutters

									olicat	ion		
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
		ADN(M) 4000/5000+		45°	Ø80~Ø315	Excellent cutting-edge strength and chip flow	•					E47 E48
		AE(M) 4000/5000		45°	Ø80~Ø315	Low cutting load and good machinability	•					E49 E50
		EF(M) 4000	AI	75°	Ø80~Ø315	High rake angle to prevents welding	•					E51
	Mill-max	EN(M) 4000	1	75°	Ø80~Ø315	Economical because double sided inserts applied	•					E52
		EPN(M) 4000/5000+		75°	Ø80~Ø315	Double posi rake angle and low cutting force	•					E53 E54
Cutters for face milling		PF(M) 4000	AI	90°	Ø80~Ø315	High rake angle and good machinability	•	•	•			E55
Cutters for		PPN(M) 4000		90°	Ø80~Ø315	Double posi rake angle and low cutting force	•	•	•			E56
	Mill-max Heavy	HDDCM 7000/9000 💖		55°	Ø125~Ø315	Deep roughing availability thanks to highly rigid inserts	•					E58
	Turbo Mill	ADS 4000/5000		45°	Ø50~Ø63	Anti-vibration	•					E59 E60
	Turbo	PES 2000/3000/ 4000		90°	Ø20~Ø63	High rake angle, Cutting efficiency	•	•	•			E61
	Double Mill	AFO(M)4000		45°	Ø80~Ø125	High rake angle low cutting force	•					E62
	Doub	AFO(M)5000		70	Ø80~Ø315	Economical (8 corners available)						E63

								App	olicat	ion		
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
		PBAC(M)5000		45°	Ø80~Ø315		•					E68
	Power Buster	PBZC(M)5000		000	Ø80~Ø315	Double-sided Insert High depth High feed roughing	•					E69
		PBPCM6000 @		90°	Ø80~Ø315		•	•				E70
	Aero Mill Aero	APD(M) A type	Al	90°	Ø80~Ø315	Aluminum cutter body suitable for high speed machining, Both cemented carbides and PCD inserts are available, G2.5 balance possible	•					E151
ling	Aero Mill - Plus	APD(M)-PB	AI	90°	Ø80~Ø315	Prevent overload to the spindle bearings through weight reduction of the Al alloy body and enable high-speed processing	•					E152 E153
Cutters for face milling	Aero Mill-Mini	MAPDS	Al	90°	Ø40~Ø63	Available with small Machining center-Carbide, PCD insert	•					E154
Cri	Aero N	MAPD	Al	90°	Ø32~Ø40	Application-Balancing class G2.5	•					E155
		RM8AC(M)4000 RMH8AC(M)4000		45°	Ø50~Ø400	8 corners available  Double-sided insert for steel,	•					E126 E127
	Rich Mill	RM8AC(M)5000 RMH8AC(M)5000		45	Ø80~Ø400	cast iron, stainless steel, aluminum	•					E128 E129
	Rich	RM8EC(M)4000 RMH8EC(M)4000		75°	Ø50~Ø400	8 corners available	•					E130 E131
		RM8EC(M)5000 RM8HEC(M)5000	THE IT S	/5	Ø80~Ø400	Double-sided insert for steel, cast iron	•					E132 E133

## **E** KORLOY Cutters

									olicat	ion		
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
		RM8QC(M)4000 RMH8QC(M)4000	THE STATE OF THE S	88°	Ø63~Ø200	8 corners available Reduced cutting interruption at cast Iron	•					E134 E135
		RMT8A(M) 4000/5000		45°	Ø80~Ø315		•					E136 E137
		RMT8E(M) 4000/5000		75°	Ø80~Ø315	Easy insert change and good machinability due to latch clamping system 8 corners available Excellent surface finish	•					E138 E139
illing		RMT8Q(M) 4000		88°	Ø80~Ø315		•					E140
Cutters for face milling	Rich Mill	RMX8AC(M)- SA14 🚭		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	•					E141
		RM14XCM- XN06		51°	Ø50~Ø160	Double sided insert with 14 corners Suitable for automobile components machining	•					E142
		RM16AC(M) 6000/8000		45°	Ø63~Ø400	16 corners available Wiper inserts can be applied for good surface finish Strong insert and powerful clamping	•					E143 E144
		RMRC(M)-RN12		-	Ø50~Ø125	High cost efficiency due to double sided round typed cutting edge Excellent rotating prevention by strong clamping system Suitable for Inconel cutting	•					E145
		RM3PC(M)3000	ew		Ø40~Ø80							E99
spic		RM3PC(M)4000	ew T.J	90°	Ø40~Ø125	Perfect perpendicularity Strong clamping	•	•	•		•	E100
Cutters for molds	Rich Mill	RM3PC(M)5000	ew		Ø80~Ø125							E101
Cutt		RM4PC(M)3000		90°	Ø40~Ø100	4 corners available High rake angle insert						E105
		RM4PC(M)4000		30	Ø50~Ø160	reduces cutting force. Excellent insert rigidity					•	E106

								ΛU	KL	Οī	Cl	utters
									plicat			
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helica	Page
		RM4ZCM3000		90°	Ø40~Ø52	4 corners available In vertical machining, the						E118
	Rich Mill	RM4ZC(M)4000		90	Ø63~Ø100	maximum cutting depth for RM4Z3000: 9.00 mm, RM4Z4000: 14.0 mm		•	•		•	EIIO
	Rich	RM6PCM-WN04	263	90°	Ø40~Ø63	Improved productivity and high-quality shouldering						E120
		RM6PC(M)-WN08		90	Ø50~Ø125	through high speed and high feed machining		•	•		•	E121
	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	•	•	•	•	•	E197 E198
splou		AMC(M) 1000S/1500S/ 2000S		90°	Ø32~Ø100	3-dimensional shape and high	•	•	•	•	•	E164~ E166
Cutters for molds	Mill	AMC(M) 3000S/3000S-K /4000S	19	90°	Ø40~Ø200	rake angle lowers cutting load and ensures better chip evacuation Inner coolant system for better chip control increases	•	•	•	•	•	E167~ E169
	Alpha	AMC(M) 1000SE 2000SE 3000SE		75°	Ø40~Ø100	tool life Wide size range of inserts enlarges application range. Various types of Alpha Mills available for high depth of cut	•					E170 E171
		AMC(M) 2000M 3000M 4000M		90°	Ø50~Ø125	and high feed machining	•	•	•	•	•	E172~ E174
		FMAC(M)3000		45°	Ø50~Ø125	Accurate inserts and cutter,	•					E226
	Future Mill	FMAC(M)4000		75	Ø50~Ø200	Excellent chip flow						E227
	Futur	FMAC(M)3000-A		45°	Ø63~Ø125	Excellent in high speed cutting and tapping center,	•					E228
		FMAC(M)4000-A		10	Ø63~Ø315	low power machine due to light aluminum body						F229

Ø63~Ø315

FMAC(M)4000-A

E229

## **E** KORLOY Cutters

								App	olicat	ion		
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
		FMPC(M)3000	200	90°	Ø50~Ø100	4 corners available various inserts can be applied to						E222
		FMPC(M)4000		90	Ø63~Ø125	machine for different types of workpiece						E223
		FMPC(M)3000A		90°	Ø63~Ø100	Excellent in high speed cutting and tapping center,						E224
	Future Mill	FMPC(M)4000A		90	Ø63~Ø315	low power machine due to light aluminum body						E225
	Futur	FMRC(M)3000			Ø40~Ø100							E228
		FMRC(M)4000		-	Ø50~Ø125	4~8 corners available Double contact faces between insert & seat part of						E229
		FMRC(M)5000			Ø50~Ø125	cutter for stable clamping Excellent rotating-free machining						E230
		FMRC(M)6000		-	Ø63~Ø160							E231
spic	Future Mill P-positive	FMRC(M) (100) 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.	•	•	•	•	•	E242~ E245
Cutters for molds	Triple Mill	TPMCM-TN16		90°	Ø50~Ø125	3-cornered insert for shouldering						E258
Cutter	Triple	TPMCM-TN20	20	90	Ø63~Ø125	-Reduced cutting resistance due to high rake angled cutting edge and chip breaker						E259
	MD	HFMDCM-LN06		-	Ø32~Ø66	Double sided with 4 corners insert for small diameter machining						E272
	HFMD	HFMDC(M)-LN10		-	Ø40~Ø100	For high feed and multi- functional machining Strong clamping realizes stable machining.	•	•	•			E273
	HRM	HRMC(M)13		15°	Ø50~Ø80	Powerful clamping by double clamping system						E300
	主	HRMC(M)15		10	Ø63~Ø160	3 corners available high feed cutting with low cutting load						E301
		HRMDC(M)09			Ø40~Ø100	Double side in a study 0 access						E289
	HRMD	HRMDC(M)13		14°	Ø50~Ø125	Double side insert with 6 corner High feed cutting with strong simple screw-on clamp	•	•	•		•	E290
		HRMDC(M)16			Ø80~Ø315							E291
	)ro	TP2PC(M)-LN08	ew		Ø40~Ø63	High-quality results available						E311
	Tangen-Pro	TP2PC(M)-LN14	ew	90°	Ø40~Ø125	even under harsh cutting conditions, thanks to the stable clamping force	•	•	•			E312
	Tano	TP2PC(M)-LN17	ew		Ø40~Ø125							E313

								App	plicat	ion		
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
		BT30/40/50										E342~ E346
		HSK63		90°	Ø10~Ø50	BT/HSK one solid type has been accepted to increase the precision Inner coolant system can also	•	•	•		•	E353~ E357
		BT30/40/50		000	Ø40 Ø400	make it possible to evacuate the chip effectively						E347~ E351
splo	System	HSK63/100		90°	Ø16~Ø100	High feed and high depth		•	•			E358~ E362
Cutters for molds	BT/HSK Tooling System	BT30/40/50- MAT		- 90°	Ø12~Ø40	Alpha Mill, Rich Mill, FMR, Laser Mill, HRM(D), Pro-A,						E403
	BT/I	HSK63/100- MAT	The same	90	Ø12~Ø40	Pro-X Modular head M06~M16 applicable	•	•		•		E404
		BT50 HAT4000		90°	Ø50~Ø80	Head only replacement possible and higher efficiency by self assembly head	•	•	•			E352
	Pro-A Mill	PAC(M) 2000/4000	AI	90°	Ø40~Ø100	Buffed insert controls chip flow without built-up edge	•	•	•	•	•	E385
Ę	E E	PAXC(M)5000	Al		Ø40~Ø125	Powerful clamping						E388
alumin	Pro-X Mill	PAXC(M)6000		90°	Ø50~Ø125	Excellent body rigidity for rectangular and curve machining	•	•	•	•	•	E389
Cutters for aluminum	Pro-L Mill	PALC(M)	AI	90°	Ø63	High helix and high depth of cut High perpendicularity Low cutting load	•	•	•	•	•	E394
	Pro-V Mill	PAVCM-XD19	AI	90°	Ø40~Ø125	Exclusive milling tool for high speed aluminum machining with key to key way structure ensures stable clamping.	•	•	•	•	•	E399
	pe Full-side cutter	TAFCP		-	Ø100~Ø315			•	•			E407
Indexable side cutter	Tangential type ter Full-sid	TAFCB		-	Ø100~Ø315	Various cutting depth can be possible because of adjustable length control.	•	•	•			E407
Indexable	Tangen'	TAHCP		-	Ø100~Ø315	Medium to Roughing based on strengthened edge		•	•			E408
	Half-sid	ТАНСВ		-	Ø100~Ø315		•	•	•			E408

## **E** KORLOY Cutters

									App	licat	ion		
Туре	Cu	tter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
		Full-side cutter	RAFCP		-	Ø100~Ø315			•	•			E409
Indexable side cutter	Radial type	Full-sid	RAFCB		-	Ø100~Ø315	Wide range of machining width with only one side cutter due to adjustable cutting-edge height	•	•	•			E409
Indexable	Radia	Half-side cutter	RAHCP		-	Ø100~Ø315	Suitable for medium and finishing in narrow width side cutting due to good chip evacuation by 3-dimensional chip breaker		•	•			E410
		Half-sid	RAHCB		-	Ø100~Ø315		•	•	•			E410
			SPP(M)		-	Ø80~Ø200	Economical by using pentagonal insert Suitable for narrow & deep grooving			•			E411
	**************************************	-uii-side cutte	SPB(M)		-	Ø80~Ø200	Economical by using pentagonal insert Suitable for narrow & deep grooving			•			E412
			SPS	35	-	Ø50~Ø200	For narrow and deep width grooving			•			E413
	cutters Full-side cutter	e currer	RM4PFCB		-	Ø80~Ø160	4 corner usage with double-sided insert can be			•			E107 E108
Side cutters	100	DIS-IID-	RM4PFCP		-	Ø80~Ø160	economical			•			E111 E112
	Side c	e cutter	RM4PHCB		-	Ø80~Ø160	4 corner usage with double-sided insert can be			•			E109 E110
	70 310 11	nali-sio	RM4PHCP		-	Ø80~Ø160	economical			•			E113 E114
	Wissel Mill		WFSB(M)	Q:	-	Ø100~Ø250	The nose R shape of insert ensures long tool life.	•	•	•			E416
	Min	MIN	WFSP(M)		-	Ø100~Ø250	Wide applications with various widths and corner R sizes.		•	•			E417

								App	olicat	ion		
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
Cutters for face milling	Turbo Mill	ADS 4000/5000		45°	Ø50~Ø63	Uneven insert spacing prevents chattering	•					E59 E60
Cutters for	Turbo	PES 2000/3000/4000	and the same of th	90°	Ø20~Ø63	Good machinability due to the high rake angle	•	•	•			E61
		RM3PS3000	1	90°	Ø20~Ø40	Perfect perpendicularity						E102
		RM3PS4000 🕬		90	Ø32~Ø63	Strong clamping						E103
		RM4PS3000		90°	Ø14~Ø50	4 corners available High rake angle insert	•	•	•		•	E115
		RM4PS4000	(F		Ø32~Ø63	reduces cutting force Excellent insert rigidity	•	•	•		•	E116
	Cutters for molds  Mill-X  Rich	RM4ZS3000		90°	Ø25~Ø40	In vertical machining, the maximum cutting width: 9.0 mm	•	•	•		•	E119
		RM6PS-WN04		90°	Ø20~Ø32	Improved productivity and high-quality shouldering		•	•		•	E122
sp		RM6PS-WN08		30	Ø32~Ø50	through high speed and high feed machining			•			E123
		RMRS-RN12 💞		-	Ø32~Ø63	High cost efficiency due to double sided round typed cutting edge Excellent rotating prevention by strong clamping system Suitable for Inconel cutting	•					E146
		AMXS- AD10/12/17		90°	Ø20~Ø40	High rake angle cutting edge and chip breaker reduce cutting resistance and improve chip evacuation. High rigidity due to special design	•	•	•	•	•	E199 E200
		AMS 1000S/1500S 2000S/3000S 3000S-K/4000S	Wise of the last o	90°	Ø10~Ø63	The combination of a 3-dimensional curve design	•	•	•	•	•	E175~ E182
	# # # # # # # # # # # # # # # # # # #	AMS 1000SE/2000SE 3000SE		75°	Ø25~Ø63	& high rake angle helps chip-evacuation effectively with a low cutting force Inner coolant system	•					E183 E184
	Alph	AMS 1000M/1500M 2000M/4000M		90°	Ø16~Ø50	The various range of inserts can provide the widened choice High depth and high feed can be available during	•	•	•	•	•	E185~ E187
	AI 10	AMS 1000MH/1500MH 2000MH/3000MH(-K)	30	90°	Ø14~Ø40	operation	•	•	•	•	•	E188 E189

## E KORLOY Shanks

								App	olicat	ion		
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
		FMAS3000			Ø25~Ø63	For precision machining						E220
		FMAS4000		45°	Ø50~Ø63	Excellent chip evacuation	•					E221
	E W	FMPS3000			Ø25~Ø63	4 corners available						E226
	Future Mill	FMPS4000		90°	Ø40~Ø63	Strong cutting-edge with low cutting load	•					E227
		FMRS 1000/1500/2000 2500/3000/4000 5000/6000		-	Ø8~Ø63	2 touch clamping system, convenient insert change	•	•	•	•	•	E232~ E237
	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	•	•	•	•	•	E246~ E249
	Ξ	TPMS-TN11			Ø25~Ø40	3-cornered insert for shouldering						E260
	Triple Mill	TPMS-TN16		90°	Ø32~Ø40	Reduced cutting resistance due to high rake angled cutting edge and chip breaker	•	•	•			E261
		HFMDS-LN04			Ø8~Ø21	Double sided insert with 4 corners for small diameter machining						E267 E268
splom	HFMD	HFMDS-LN06	Kin .	-	Ø16~Ø40	For high feed and multi- functional machining	•	•	•	•	•	E269 E270
rs for 1		HFMDS-LN10			Ø25~Ø42	Strong clamping system for stable machining						E271
Cutters for molds	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	•	•	•	•	•	E281 E282
	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	•	•	•	•	•	E302~ E304
	HRMD	HRMDS 06/09/13		14°	Ø16~Ø63	6 corners available, High feed, multi-function, only one screw application	•	•	•	•	•	E292~ E296
	)ro	TP2PS-LN08			Ø16~Ø25	High-quality results available						E311
	Tangen-Pro	TP2PS-LN14		90°	Ø25~Ø50	even under harsh cutting conditions, thanks to the	•	•	•			E312
	Tar	TP2PS-LN17			Ø32~Ø50	stable clamping force						E313
	Tank Mill	THE	and the second	90°	Ø25~Ø50	Right-hand helix angle employed for good chip evacuation. Special surface treatment prevents body breaking and improves rigidity. Strong cutting-edge	•	•				E307

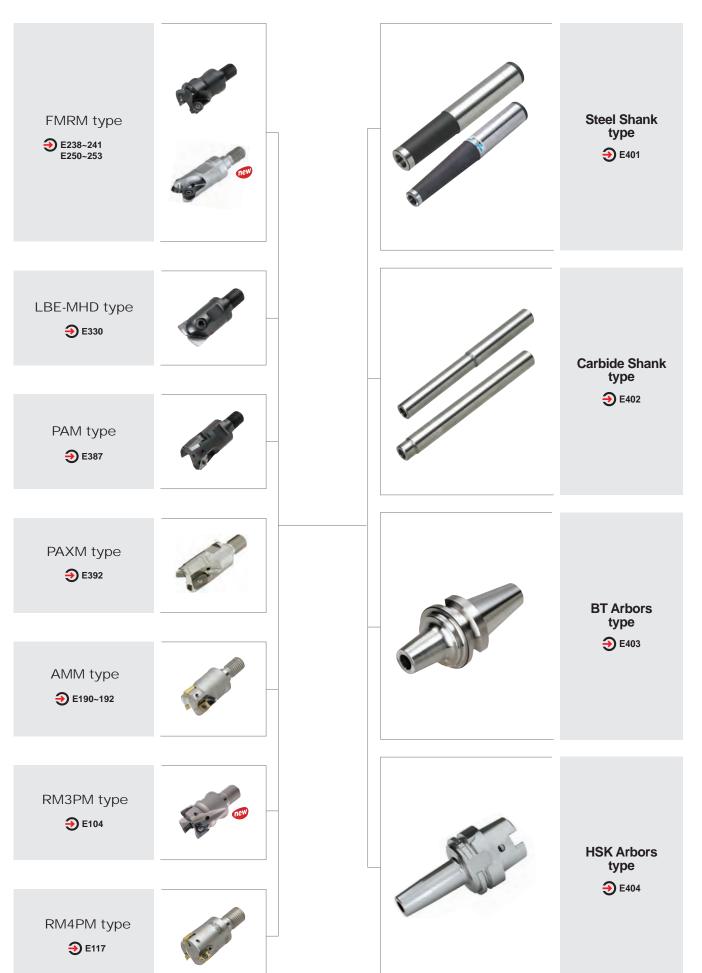
DI OV	Chaples	F
RLOY	<b>Shanks</b>	

	Type Cutter Designation								olicat	ion		
Type	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
	Laser Mill	LBE		-	Ø8~Ø32	Indexable ball endmill for precise mold. Rigid holder with simple design finishing MQL is available	•	•	•	•		E326~ E330
	Lase	LBE□□-C LRE□□-C		-	Ø8~Ø32	Indexable ball endmill for precise mold. Rigid holder with simple design finishing MQL is available Carbide shank	•	•	•			E326~ E330
		BFE		-	Ø16~Ø32	Upgraded cutting performance with S type curve design V clamping application	•	•	•	•		E331
	Mach Mill	GBE		-	Ø16~Ø50	Helical design of edge can reduce the force during operation. Safe application to prevent rotation guarantee the increased tool life	•	•	•	•		E332 E333
		BRE	THE STATE OF THE S	-	Ø20~Ø63	Flute type chip-pocket can make chip-evacuation Customized edge design can prevent the breakage of holder's body	•	•	•	•		E335
splom	HAVE	Multi-edge		- 90°	Ø16~Ø50	Tools for Z-axis feed plunge machining to cut faster and more effectively in vertical machining	•	•	•		•	E339
Cutters for molds	Î	Single-edge	E. Control of the Con			Machining with whole diameter						E340
Cutters f	O-ring Cutter	ORC	13	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 brazed tool	-	-	-	-	-	E365
				75°	Ø25~Ø30							
				60°	Ø25~Ø35	For Back & Front high quality chamfering and various	•					E369
			3	45°	Ø7~Ø39	Chamfering angle machining						2000
	<u> </u> 00			30°	Ø25~Ø42							
	Chamfer Tool	CE		30°	Ø5~Ø35	Various chamfer degrees						
	ర్		No.	45°	Ø5~Ø48	available  Effective long chamfer	•	•	•			E370
				60°	Ø5~Ø57	cutting available						
				45°	~Ø28	Centering, Grooving, Chamfering	•	•	•		•	E371

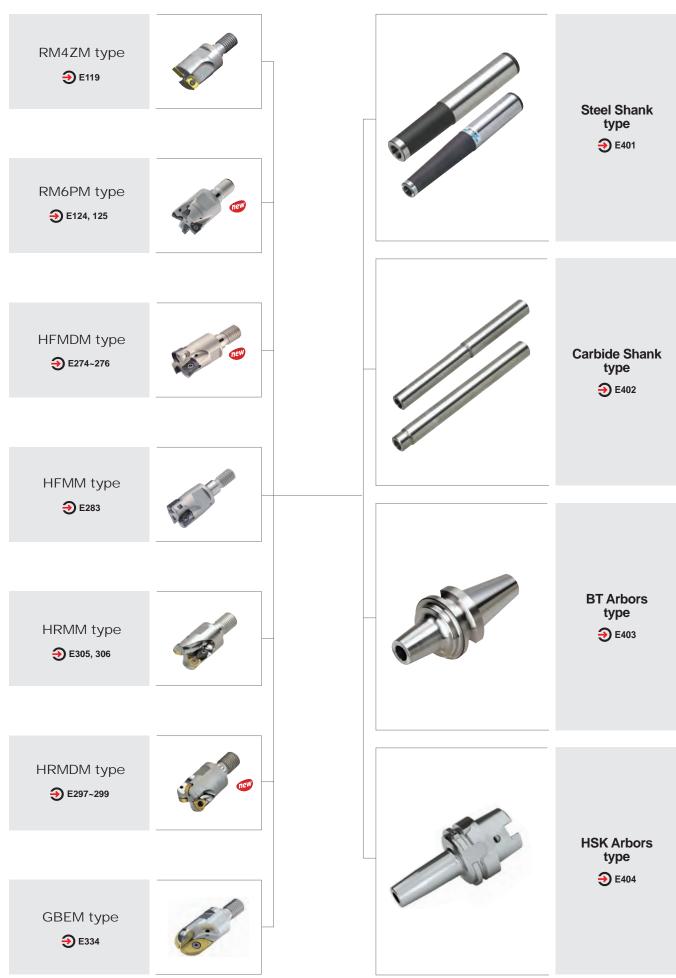
## E KORLOY Shanks

								App	olicat	ion		
Туре	Cutter	Designation	Shape	A.A	Diameter range	Features	Facing	Shouldering	Slotting	Copying	Ramping, Helical	Page
				30°								
		ССТ		45°	Ø3~Ø16	Centering, Countersinking, Chamfering						E373
(0	r Tool			60°								
Cutters for molds	Chamfer Tool			30°								
tters fo		CET		45°	Ø4~Ø16	Countersinking, Chamfering, Shouldering	•	•	•		•	E372
ਹੌ				60°								
	T-Cutter	TFE		90°	Ø21~Ø50	For slotting	•	•	•	•	•	E374
	Pro-A Mill	PAS 2000/4000		90°	Ø12~Ø42 Ø32~Ø40	Polished face increases chip flow and reduces built-up edge	•	•	•	•	•	E386
	Pro-X Mill	PAXS 5000/6000		90°	Ø20~Ø40 Ø25~Ø40	Square shoulder and corner machining	•	•	•	•	•	E390 E391
<b>u</b> n	Pro-L Mill	PALS-HR (Single-edge)		- 90°	Ø32~Ø63	High helix and high depth of cut	•	•	•	•	•	E395 E396
Cutters for aluminum	Pro-I	PALS-HM (Multi-edge)		90	Ø63	High perpendicularity Low cutting load	•	•	•	•	•	E397
Cut	Pro-XL Mill	PXLS 💖	6.00	90°	Ø40~Ø80	Improved surface finish and perpendicularity achieved by a single pass with the deep cutting-edges	•	•				E398
	Pro-V Mill	PAVS-XD19 🚭	ia ia	- 90°	Ø25~Ø40	Exclusive milling tool for high speed aluminum machining with key to key way structure	•	•	•	•	•	E400
	Pro-	HSK-XD19 €			Ø32~Ø50	ensures stable machining.	•	•	•	•	•	E363
Thread milling	ı	TM	To late	-	Ø32~Ø50	For internal and external threading	•					D49

## KORLOY Modular Adaptors

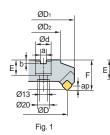


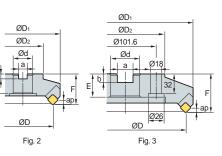
## **E** KORLOY Modular Adaptors

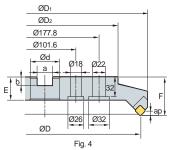


## **ADN(M)4000**















(mm)

Des	signation	0	ØD	ØD1	ØD2	Ød	а	b	Е	F	ар	kg	Fig.
ADN	4080R/L	4	80	57	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	6	1.9	1
(ADNM)	4100R/L	5	100	67	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	6	2.5	2
	4125R/L	6	125	87	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	6	4.3	2
	4160R/L	8	160	107	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	6	6.4	2
	4200R/L	10	200	130	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	8.7	3
	4250R/L	12	250	180	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	14.0	3
	4315R/L	14	315	240	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	21.0	4

( )Metric size

### Available inserts

SDCN	SDKN-MU	SDKN-SU	SDKR-MX
		•	
	Orman	0()	Harristad

															-			
		Cer	met				(	Co	at	ed					Un	coa	ted	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SDCN	42M															•		
	42M-G																•	
	42MT	•	•			•									•			
	42MT-RH																	
	42MT-S20										•							E19
	1203AEEN																	
	1203AEEN-RH																	
	1203AESN																	
	1203AESN-RH																	
SDKN	1203AESN-MU								•									E20
	1203AESN-SU								•				•	•				⊏20
SDKR	1203AESN-MX																	
	1203AETN-MX																	E20
	1203AEN-MX				•													

### Available arbors

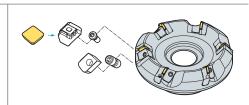
Docie	notion	General arbor	NC arbors	
Desig	nation	General arbor	ADN	ADNM
ADN	4080R/L	NT*□□ (M/U)-FMA25.4-25	BT** - FMA25.4	FMC27
(ADNM)	4100R/L	NT* (M/U)-FMA31.75-	BT**□□-FMA31.75-□□	FMC32
	4125R/L	NT* (M/U)-FMA38.1-	BT** - FMA38.1	FMB40
	4160R/L	NT* (M/U)-FMA50.8-	BT** - FMA50.8	FMB40
	4200R/L	NT* (MU)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60
	4250R/L	NT* (MU)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
	4315R/L	KCP-8*** (Center ring plug)		

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

### Recommended cutting condition

Worknings	Cutting of	ondition	Grades
Workpiece	vc (m/min)	fz (mm/t)	Grades
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A
M	90~150	0.05~0.20	PC9530
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10

Assembling



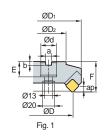
Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench	
	Locator	vveuge	vveuge screw	LUCATOT SCIEW	VVICITOII	
Ø80~Ø315	LADN4R/L	WEPN4R/L	DHA0821F	LTX0514	HW40	

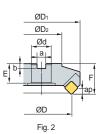


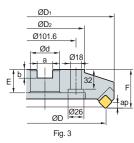
Available arbors and bolt E426∼E428

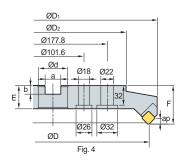
## ADN(M)5000+















(mm)

Des	signation	0	ØD	ØD1	ØD2	Ød	a	b	E	F	ар	kg	Fig.
ADN	5080R/L+	4	80	107	65	25.4(27)	9.5 (12.4)	6 (7)	25 (22)	63	8	2.4	1
(ADNM)	5100R/L+	5	100	126	75	31.75(32)	12.7 (14.4)	8 (8)	32 (28)	63	8	3.0	2
	5125R/L+	6	125	150	100	38.1(40)	15.9 (16.4)	10 (9)	38 (30)	63	8	4.7	2
	5160R/L+	8	160	185	120	50.8(40)	19.0 (16.4)	11 (9)	38 (30)	63	8	6.5	2
	5200R/L+	10	200	225	140	47.625(60)	25.4 (25.7)	14 (14)	38 (38)	63	8	8.7	3
	5250R/L+	12	250	275	220	47.625(60)	25.4 (25.7)	14 (14)	38 (38)	63	8	15.5	3
	5315R/L+	14	315	340	280	47.625(60)	25.4 (25.7)	14 (14)	38 (38)	63	8	23.7	4

( )Metric size

### Available inserts

SDCN	SDKN-MU	SDKN-SU	SDKR-MX	-
		•		

		Cei	met					Co	at	ed					Un	coa	ted	
ı	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	610	H01	page
SDCN	53M															•		
	53M-G																•	
	53MT		•		•										•			
	53MT-RH																	
	53MT-S20										•							E19
	1504AEEN																	
	1504AEEN-RH									•			•					
	1504AESN																	
	1504AESN-RH																	
SDKN	1504AESN-MU								•									E20
	1504AESN-SU								•				•	•				
SDKR	1504AESN-MX					•												
	1504AETN-MX																	E20
	1504AEN-MX				•													

### Available arbors

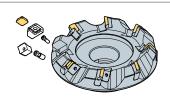
Doois	nation	General arbor	NC arbors	
Desig	Jilauon	General arbor	ADN	ADNM
ADN	5080R/L+	NT*□□ (M/U)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
(ADNM)	5100R/L+	NT*□□ (M/U)-FMA31.75-□□	BT** - FMA31.75	FMC32
	5125R/L+	NT*□□ (M/U)-FMA38.1-□□	BT** - FMA38.1	FMB40
	5160R/L+	NT*□□ (M/U)-FMA50.8-□□	BT** - FMA50.8	FMB40
	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*** (Center ring plug)		

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

### Recommended cutting condition

Markeigaa	Cutting o	Cutting condition							
Workpiece	vc (m/min)	fz (mm/t)	Grades						
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A						
М	90~150	0.05~0.20	PC9530						
K	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10						

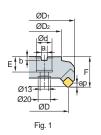
Assembling

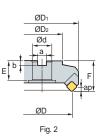


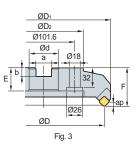
Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench	
Ø80~Ø315	LADN5R/L	WHPS5R/L	WHX0817 WHX0813*	LTX0514	HW40	

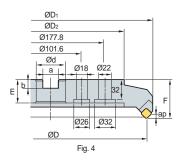
## **AE(M)4000**















• AR: 20° • RR: -3°

(mm)

De	signation	(i)	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
AE	4080R/L	4	80	103	60	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	5.5	1.7	1
(AEM)	4100R/L	5	100	122	80	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	5.5	2.9	2
	4125R/L	6	125	146	100	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	5.5	4.4	2
	4160R/L	8	160	181	120	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	5.5	6.1	2
	4200R/L	10	200	220	130	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	5.5	8.9	3
	4250R/L	12	250	270	180	47.625 (60)	25.4( 25.7)	13.5 (14)	38 (38)	63	5.5	15.7	3
	4315R/L	15	315	335	240	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	5.5	25.1	4

( )Metric size

### Available inserts

SECN	SEKN-SU	SEKR-MX	

		Cer	met				(	Co	at	ed					Un	coa	ed	
I	Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	면	page
SECN	1203AFFN															•	•	
	1203AFTN	•	•												•			
	1203AFEN																	
	1203AFSN				•	•												E21
	1203AFEN-RH									•			•					
	1203AFSN-RH																	
	1203AFTN-S20										•							
SEKN	1203AFSN-SU								•									E21
SEKR	1203AFSN-MX				•	•					•							E22

### Available arbors

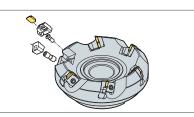
Doci	gnation	General arbor	NC arbors	
Desig	griation	General arbor	ADN	ADNM
AE	4080R/L	NT*□□ (M/U)-FMA25.4-25	BT** - FMA25.4-	FMC27
(AEM)	4100R/L	NT*□□ (M/U)-FMA31.75-□□	BT**□□ -FMA31.75-□□	FMC32
	4125R/L	NT*□□ (M/U)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
	4160R/L	NT*□□ (M/U)-FMA50.8-□□	BT** - FMA50.8-	FMB40
	4200R/L	NT* (MU)-FMA47.625-25, KCP-8***	BT** - FMA47.625-	FMB60
	4250R/L	NT* (MU)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60
	4315R/L	KCP-8*** (Center ring plug)		

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

### Recommended cutting condition

Morkeises	Cutting of	ondition	Grades
Workpiece	vc (m/min)	Grades	
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A
M	90~150	0.05~0.20	PC9530
K	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10

Assembling

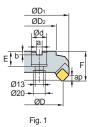


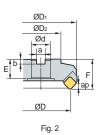
Locator Wedge Wedge sc	Locator screw Wrenc	Locator	Specification
LAE4R/L WAE4R/L DHA082	LTX0512 HW40		Ø80~Ø315

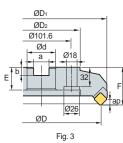
Available inserts E21, E22
Available arbors and bolt E426~E428

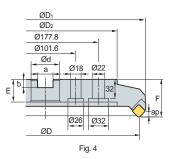
## **AE(M)5000**















(mm)

De	esignation	0	ØD	ØD1	ØD2	Ød	a	b	Е	F	ар	kg	Fig.
AE	5080R/L	4	80	103	60	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	7.5	1.7	1
(AEM)	5100R/L	5	100	122	80	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	7.5	2.9	2
	5125R/L	6	125	146	100	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	7.5	4.4	2
	5160R/L	8	160	181	120	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	7.5	6.1	2
	5200R/L	10	200	220	130	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	7.5	8.9	3
	5250R/L	12	250	270	180	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	7.5	15.7	3
	5315R/L	15	315	335	240	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	7.5	25.1	4

( )Metric size

### Available inserts



		Cer	met					Cc	at	ed					Uncoated			
ı			CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	돧	page
SECN	1504AFFN															•		
	1504AFTN		•															
	1504AFEN																	
	1504AFSN																	E21
	1504AFEN-RH																	
	1504AFSN-RH									•								
	1504AFTN-S20																	
SEKN	1504AFSN-SU								•					•	Г			F04
	1504AFSN-MX				•						•							E21
SEKR	1504AFSN-MX				•						•							E22

### Available arbors

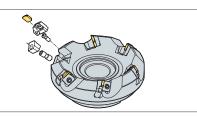
Doci	gnation	General arbor	NC arbors	
Desi	griation	General arbor	AE	AEM
AE	5080R/L	NT*□□ (M/U)-FMA25.4-25	BT**□□ -FMA25.4-□□	FMC27
(AEM)	5100R/L	NT* (M/U)-FMA31.75-	BT** - FMA31.75-	FMC32
	5125R/L	NT*□□ (M/U)-FMA38.1-□□	BT** - FMA38.1	FMB40
	5160R/L	NT*□□ (M/U)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
	5200R/L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

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

### Recommended cutting condition

Markaines	Cutting o	Cutting condition								
Workpiece	vc (m/min)	fz (mm/t)	Grades							
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A							
M	90~150	0.05~0.20	PC9530							
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10							

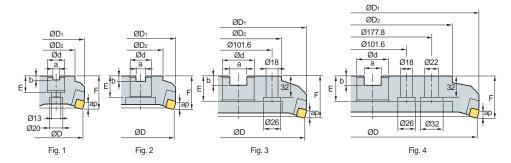
Assembling



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

## **EF(M)4000**









• AR: 18° • RR: 11°

(mm)

De	esignation	<b>(b)</b>	ØD	ØD1	ØD2	Ød	a	b	E	F	ар	kg	Fig.
EF	4080R/L	4	80	89	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	8.0	1.5	1
(EFM)	4100R/L	5	100	108	70	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	8.0	2.1	2
	4125R/L	6	125	133	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	8.0	3.8	2
	4160R/L	8	160	168	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	8.0	5.5	2
	4200R/L	10	200	208	130	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	8.0	8.2	3
	4250R/L	12	250	257	180	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	8.0	13.4	3
	4315R/L	16	315	322	240	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	8.0	21.2	4

( )Metric size

### Available inserts



	Cermet	et Coated									Uncoated				
Designation	CN2500 CN30	NC5330	NCM325 NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SFCN 1203EFR														•	E22

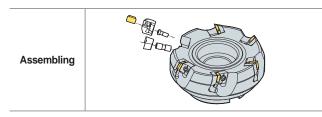
### Available arbors

Doc	ignation	General arbor	NC arbors					
Desi	gnation	General arbor	EF	EFM				
EF	4080R/L	NT*□□ (M/U)-FMA25.4-25-□□	BT** - FMA25.4-	FMC27				
(EFM)	4100R/L	NT* (M/U)-FMA31.75-	BT** - FMA31.75-	FMC32				
	4125R/L	NT* (M/U)-FMA38.1-	BT** - FMA38.1	FMB40				
	4160R/L	NT* (M/U)-FMA50.8-	BT** - FMA50.8-	FMB40				
	4200R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60				
	4250R/L	NT* (M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60				
	4315R/L	KCP-8*** (Center ring plug)						

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

### Recommended cutting condition

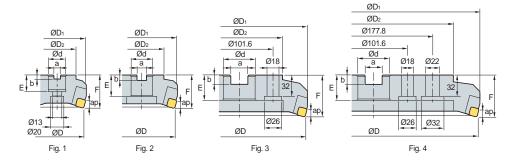
Worknings	Cutting of	Grades	
Workpiece	vc (m/min)	fz (mm/t)	Grades
K	75~125	0.05~0.30	H01



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

## **EN(M)4000**







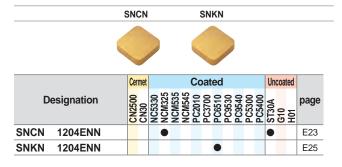


(mm)

De	signation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
EN	4080R/L	5	80	87	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	8.5	1.4	1
(ENM)	4100R/L	6	100	107	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	8.5	2.1	2
	4125R/L	8	125	132	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	8.5	3.8	2
	4160R/L	10	160	167	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	8.5	5.7	2
	4200R/L	12	200	207	130	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	8.5	8.4	3
	4250R/L	16	250	257	180	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	8.5	13.8	3
	4315R/L	20	315	322	240	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	8.5	21.6	4

( )Metric size

### Available inserts



### Available arbors

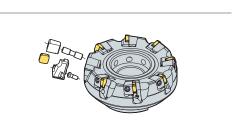
Docid	gnation	General arbor	NC arbors	
Desi	griation	General arbor	EN	ENM
EF	4080R/L	NT* (M/U)-FMA25.4-25-	BT** - FMA25.4-	FMC27
(EFM)	4100R/L	NT* (M/U)-FMA31.75-	BT** - FMA31.75-	FMC32
	4125R/L	NT*□□ (M/U)-FMA38.1-□□	BT**□□ -FMA38.1-□□	FMB40
	4160R/L	NT*□□ (M/U)-FMA50.8-□□	BT**□□ -FMA50.8-□□	FMB40
	4200R/L	NT* (MU)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60
	4250R/L	NT* (M/U)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60
	4315R/L	KCP-8*** (Center ring plug)		

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

### Recommended cutting condition

Merkeinen	Cutting of	Grades	
Workpiece	vc (m/min)	fz (mm/t)	Grades
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A
M	90~150	0.05~0.20	PC9530
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10

Assembling

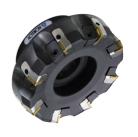


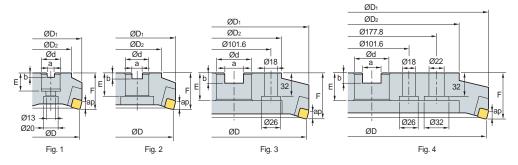
Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LEN4R/L	WENR/L WENR1*/L1*	DHA0830 DHA0825*	LTX0512	HW40





## **EPN(M)4000**









• AR: 7° • RR: 0°

(mm)

Des	signation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
EPN	4080R/L	5	80	86	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	9	1.4	1
(EPNM)	4100R/L	6	100	107	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	9	2.1	2
	4125R/L	8	125	132	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	9	3.8	2
	4160R/L	10	160	166	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	9	5.7	2
	4200R/L	12	200	206	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	9	8.2	3
	4250R/L	16	250	256	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	9	13.5	3
	4315R/L	20	315	321	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	9	21.1	4

( )Metric size

### Available inserts

SPCN	SPKN-SU	SPKN-MU	SPKR-MX	SPEX
	•			

		Cer	met				(	Co	at	ed					Un	coa	ted	
ı	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	910	된	page
SPCN	1203EDR		•		•	•									•	•	•	
	1203EDL														•			
	1203EDR-G																•	
	1203EDER-RH									•			•					E26
	1203EDSR-RH																	
	1203EDTR-RH																	
	1203EDR-S20										•							
SPKN	1203EDSR-MU								•									
	1203EDSR-SU								•				•	•				E27
	1203EDSL-SU								•									
SPKR	1203EDSR-MX				•	•												E27
	1203EDSL-MX																	E27
SPEX	1203EDR/L-1																	E26

### Available arbors

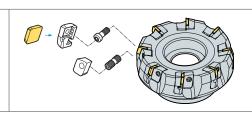
Desig	notion	General arbor	NC arbors						
Desig	iialioii	General arbor	EPN	<b>EPNM</b>					
EPN	4080R/L	NT*□□ (M/U)-FMA25.4-25	BT** - FMA25.4-	FMC27					
(EPNM)	4100R/L	NT* (M/U)-FMA31.75-	BT** - FMA31.75-	FMC32					
	4125R/L	NT* (M/U)-FMA38.1-	BT** - FMA38.1	FMB40					
	4160R/L	NT* (M/U)-FMA50.8-	BT** - FMA50.8-	FMB40					
	4200R/L	NT* (M/U)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60					
	4250R/L	NT* (M/U)-FMA47.625-25, KCP-8***	BT**□□ -FMA47.625-□□	FMB60					
	4315R/L	KCP-8*** (Center ring plug)							

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

### Recommended cutting condition

Workniego	Cutting o	Cutting condition								
Workpiece	vc (m/min)	fz (mm/t)	Grades							
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A							
М	90~150	0.05~0.20	PC9530							
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10							

Assembling



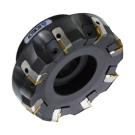
### Parts

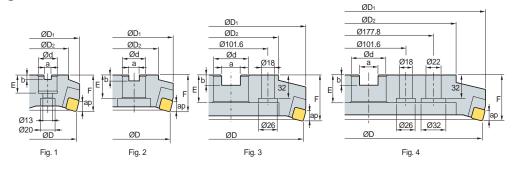


→ Available inserts E26, E27 → Available arbors and bolt E426~E428



## EPN(M)5000+









(mm)

De	signation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
EPN	5080R/L+	5	80	91	60	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	63	12	1.7	1
(EPNM)	5100R/L+	6	100	110	70	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	63	12	2.5	1
	5125R/L+	8	125	134	90	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	12	3.8	2
	5160R/L+	10	160	169	110	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	12	5.5	2
	5200R/L+	12	200	209	150	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	12	8.0	3
	5250R/L+	16	250	259	230	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	12	14.8	3
	5315R/L+	20	315	324	270	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	12	22.4	4

( )Metric size

### Available inserts

SPCN	SPKN-SU	SPKN-MU	SPKR-MX	SPEX
	•			

		Cer	met					Co	at	ed	l				Un	coa	ted	
ı	Designation		CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	910	된	page
SPCN	150412T																	
	1504EDR		•		•										•	•		
	1504EDSR																	
	1504EDL									•								
	1504EDR-G																•	E26
	1504EDER-RH									•			•					
	1504EDSR-RH									•								
	1504EDTR-RH																	
	1504EDR-S20										•							
SPKN	1504EDSR-MU								•									
	1504EDSR-SU								•				•	•				E27
	1504EDSL-SU								•						Г			
SPKR	1504EDR-MX				•													E27
	1504EDSR-MX																	E2/
SPEX	1504EDR/L-1																	E26

### Available arbors

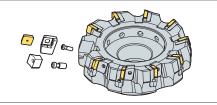
Docid	gnation	General arbor	NC arbors	
Desig	griation	General arbor	EPN	<b>EPNM</b>
EPN	5080R/L+	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
(EPNM)	5100R/L+	NT* (M/U)-FMA31.75-	BT**□□-FMA31.75-□□	FMC32
	5125R/L+	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
	5160R/L+	NT* (M/U)-FMA50.8-	BT** - FMA50.8	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*** (Center ring plug)		

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

### Recommended cutting condition

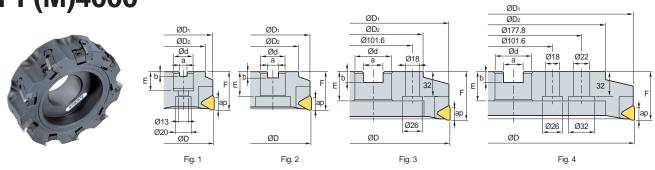
Worknings	Cutting of	condition	Grades
Workpiece	vc (m/min)	fz (mm/t)	Grades
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A
M	90~150	0.05~0.20	PC9530
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10

Assembling



Specification					Sono.
	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LEPN5R/L	WHPS5R/L	WHX0817	LTX0514	HW40
200~2515	LEPN5R1*/L1*	WITH OSTIJE	WHX0813*	L170014	110040

## **PF(M)4000**









• AR: 15° • RR: 14°

(mm)

De	esignation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
PF	4080R/L	4	80	79	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	16	1.2	1
(PFM)	4100R/L	4	100	97	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	16	1.8	2
	4125R/L	7	125	122	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	16	3.1	2
	4160R/L	9	160	158	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	16	5.6	2
	4200R/L	11	200	197	130	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	16	8.8	3
	4250R/L	15	250	247	180	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	16	16	3
	4315R/L	19	315	311	240	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	16	22	4

( )Metric size

### Available inserts



		Cer	Cermet		Coated								Uncoated					
ı	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
TFCN	2203PFR																•	F20
2203PFL																		E28

### Available arbors

Doci	gnation	General arbor	NC arbors	
Desi	griation	General arbor	PF	PFM
PF	4080R/L	NT*□□ (M/U)-FMA25.4-25	BT** - FMA25.4-	FMC27
(PFM)	4100R/L	NT*□□ (M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
	4125R/L	NT*□□ (M/U)-FMA38.1-□□	BT** - FMA38.1-	FMB40
	4160R/L	NT*□□ (M/U)-FMA50.8-□□	BT** - FMA50.8-	FMB40
	4200R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60
	4250R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60
	4315R/L	KCP-8*** (Center ring plug)		

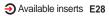
\* - NT number \*\* - BT number \*\*\*Over milling 5

### Recommended cutting condition

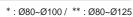
		_								
Workpiece	Cutting of	Cutting condition								
Workpiece	vc (m/min)	fz (mm/t)	Grades							
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A							
M	90~150	0.05~0.20	PC9530							
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10							

Assembling
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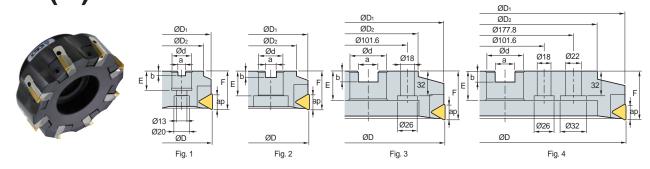
• • • • • • • • • • • • • • • • • • • •						
Specification					NONCO .	
	Locator	Wedge	Wedge screw	Locator screw	Wrench	
Ø80~Ø315	LPF4R/L	WPFR/L	DHA0821F	LTX0512	HW40	
200~2315	LPF4R1**/L1**	VVF1-D/L	DHA0817F*	L170312	110040	







## PPN(M)4000









•A R : 7° • RR: 0°

(mm)

Des	signation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
PPN	4080R/L	5	80	79	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	18	1.3	1
(PPNM)	4100R/L	6	100	99	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	18	1.9	2
	4125R/L	8	125	124	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	18	3.5	2
	4160R/L	10	160	158	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	18	5.6	2
	4200R/L	12	200	198	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	18	8.1	3
	4250R/L	16	250	248	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	18	13.3	3
	4315R/L	20	315	313	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	18	21.4	4

( )Metric size

### Available inserts

TPCN	TPKN-SU	TPKN-MU	TPKR-MX
		-	

		Cer	met					Co	at	ed					Un	coa	ted	
D	esignation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
<b>TPCN</b>	2204PDR		•		•										•	•		
	2204PDR-G																•	
	2204PDL														•			
	2204PDSR					•												
	2204PDTR																	E28
	2204PDR-RH																	
	2204PDER-RH									•			•					
	2204PDSR-RH									•								
	2204PDR-S20										•							
TPKN	2204PDSR-MU								•									
	2204PDSR-SU								•				•	•				E29
	2204PDSL-SU								•									
TPKR	2204PDR-MX				•													
	2204PDSR-MX				•	•												E29
	2204PPR-MX																	

### Available arbors

Docie	nation	General arbor	NC arbors				
Desig	nauon	General arbor	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* (MU)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60			
	4315R/L	KCP-8*** (Center ring plug)					

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

### Recommended cutting condition

Markaiaaa	Cutting o	Cutting condition							
Workpiece	vc (m/min)	fz (mm/t)	Grades						
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A						
M	90~150	0.05~0.20	PC9530						
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10						

Assembling

### Parts

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





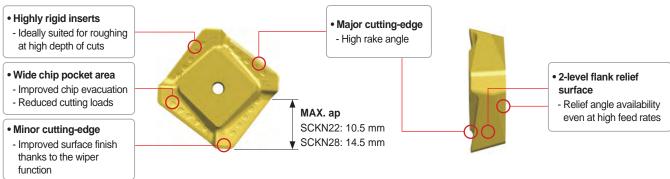
Milling

### Highly rigid inserts for roughing

# Mill-max Heavy ••••

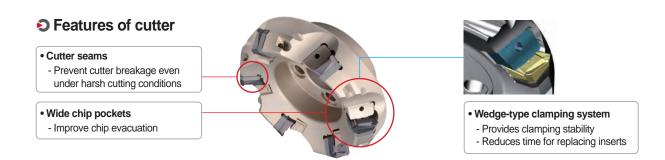
- Productivity Cutting time is reduced by the cutting-edge design specialized for rough facing at high depth of cuts
- High rigidity The highly rigid inserts and cutter seams prevent tool breakage in rough facing
- Clamping stability- The wedge-type clamping system, which is easy-to-use and strong, reduces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

### Features of insert



### Features of chip breakers

	Insert Cutting-edge Uses		Uses	Features
ММ	<b>\oint{\oint}</b>		For roughing	Highly rigid chip breaker ideally suited for roughing at high depth of cuts

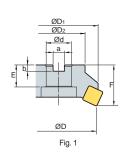


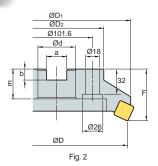
### Recommended cutting condition

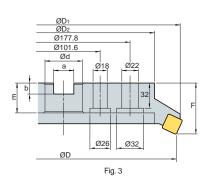
	Workpiece	Grades	Cutting condition					
	workpiece	Grades	vc (m/min)	fz (mm/t)	ap (mm)			
	Low carbon steel/Mild steel	PC5300, NC5340, NCM535	140~270	0.2~0.4	2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28]			
Р	High carbon steel	PC5300, NC5340, NCM535	100~220	0.2~0.4	2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28]			
	Alloy 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]			

## 













(mm)

De	signation	<b>(</b>	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
HDDCM	7125R/L-5	5	125	135.6	90	40	16.4	9	32	63	10.5	3.43	1
	7160R/L-6	6	160	169.8	110	40	16.4	9	32	63	10.5	4.89	2
	7160R/L-8	8	160	169.8	110	40	16.4	9	32	63	10.5	4.62	2
	7200R/L-8	8	200	209.2	130	60	25.7	14	38	80	10.5	8.49	2
	7200R/L-10	10	200	209.2	130	60	25.7	14	38	80	10.5	8.74	2
	7250R/L-10	12	250	258.6	180	60	25.7	14	38	80	10.5	13.44	2
	7250R/L-12	10	250	258.6	180	60	25.7	14	38	80	10.5	13.41	2
	7315R/L-12	12	315	323.2	240	60	25.7	14	38	80	10.5	21.69	3
	7315R/L-14	14	315	323.2	240	60	25.7	14	38	80	10.5	21.41	3
HDDCM	9125R/L-5	5	125	140.4	90	40	16.4	9	32	63	14.5	3.4	1
	9160R/L-6	6	160	177.6	110	40	16.4	9	32	80	14.5	6.39	2
	9200R/L-8	8	200	213.6	130	60	25.7	14	38	80	14.5	8.76	2
	9250R/L-10	10	250	265	180	60	25.7	14	38	80	14.5	13.84	2
	9250R/L-12	12	250	265	180	60	25.7	14	38	80	14.5	13.41	2
	9315R/L-12	12	315	327.4	240	60	25.7	14	38	80	14.5	21.02	3

### Available inserts

### 

### Recommended cutting condition

Markaine	Cutting of	Grades	
Workpiece	vc (m/min)	fz (mm/t)	Grades
Р	140~270 100~220 100~180	0.2~0.4	NC5340 NCM535
M	90~180		140111333
K	100~180		

### Available arbors

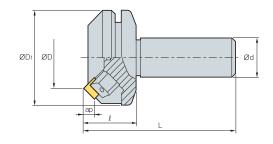
	Designation	General arbor
HDDCM	7125R/L-5	
	7160R/L-6	NT*□□(M/U)-FMC40
	7160R/L-8	
	7200R/L-8	
	7200R/L-10	
	7250R/L-10	NIT* TO (M/LI) EMCGO
	7250R/L-12	NT*□□(M/U)-FMC60
	7315R/L-12	
	7315R/L-14	
	9125R/L-5	NIT* III / NA/LI\ ENACAO
	9160R/L-6	NT*□□(M/U)-FMC40
	9200R/L-8	
	9250R/L-10	NIT* TANK CO
	9250R/L-12	NT*□□(M/U)-FMC60
	9315R/L-12	

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

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

## **ADS4000**









• AR: 15° • RR: -3°

SDKN-MU

(mm)

1	Designation	<b>(</b>	ØD	ØD1	Ød	Q	L	ар	
ADS	4050R/L	3	50	75	32	40	120	6.5	1.8
	4050R/L-S42	3	50	75	42	40	120	6.5	2.2
	4063R/L	4	63	87	32	40	120	6.5	2.3
	4063R/L-S42	4	63	87	42	40	120	6.5	2.7

### Available inserts

SDCN

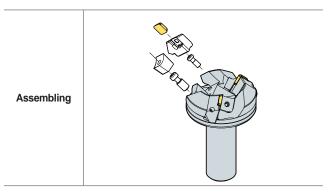
				•				-			)		•			1		)	
			met							ed					-		ted		
ı	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page	
SDCN	42M															•			
	42M-G																•		
	42MT	•	•			•									•				
	42MT-RH																		
	42MT-S20										•							E19	
	1203AEEN																		
	1203AEEN-RH																		
	1203AESN																		
	1203AESN-RH																		
SDKN	1203AESN-MU								•									E20	
	1203AESN-SU								•				•	•				L20	
SDKR	1203AESN-MX																		
	1203AETN-MX																	E20	

SDKN-SU

SDKR-MX

### Recommended cutting condition

Workpiece	Cutting o	Grades	
workpiece	vc (m/min)	fz (mm/t)	Grades
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A
M	90~150	0.05~0.20	PC9530
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10



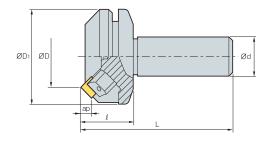
### Parts

Specification				977	San Constitution of the Co	
	Locator	Wedge	Wedge screw	Locator screw	Wrench	
Ø50~Ø63	LASS4R/L	WASR/L	WTX0817	LTX0512	TW25	

1203AEN-MX

## **ADS5000**









(mm)

	Designation	<b>(</b>	ØD	ØD1	Ød	Q	L	ар	$\frac{O}{kg}$
ADS	5050R/L	3	50	75	32	40	120	8.5	1.9
	5050R/L-S42	3	50	75	42	40	120	8.5	2.3
	5063R/L	4	63	87	32	40	120	8.5	2.4
	5063R/L-S42	4	63	87	42	40	120	8.5	2.8

SDKR-MX

### Available inserts

SDKN-MU

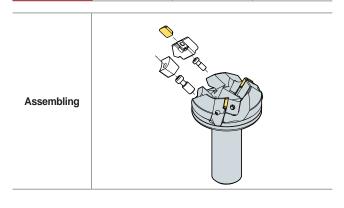
SDCN

	DON ODIN		_				0	••••	•	_								
			•				1			)		•			1		)	
		Cei	met					Cc	at	ed					Un	coa	ted	
ı	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SDCN	53M		П													•		
	53M-G																•	
	53MT		•		•										•			
	53MT-RH																	
	53MT-S20										•				Г			E19
	1504AEEN																	
	1504AEEN-RH									•			•					
	1504AESN																	
	1504AESN-RH									•								
SDKN	1504AESN-MU								•									E20
	1504AESN-SU								•				•	•				E2U
SDKR	1504AESN-MX																	
	1504AETN-MX																	E20
	1504AEN-MX				•													

SDKN-SU

### Recommended cutting condition

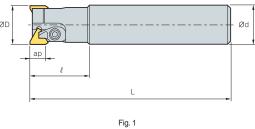
Merkeiges	Cutting of	Grades	
Workpiece	vc (m/min)	fz (mm/t)	Grades
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A
M	90~150	0.05~0.20	PC9530
K	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10

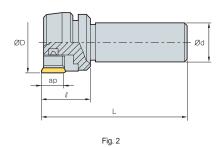


Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench	
Ø50~Ø63	LASS5R/L	WASR/L	WTX0817	LTX0512	TW25	

### PES2000/3000/4000













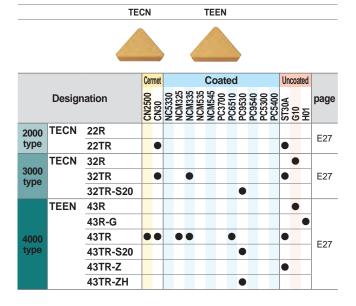




(mm)

С	Designation	©	ØD	Ød	Q	L	ар	(kg	Fig.
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	16.5	1.2	2
	4050R/L-S42	3	50	42	40	120	16.5	1.5	2
	4063R/L	4	63	32	40	120	16.5	1.5	2
	4063R/L-S42	4	63	42	40	120	16.5	1.8	2

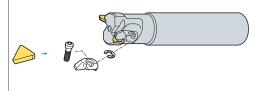
### Available inserts



### Recommended cutting condition

Worknisss	Cutting of	Grades	
Workpiece	vc (m/min)	fz (mm/t)	Graues
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A
M	90~150	0.05~0.20	PC9530
K	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10

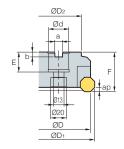




Specification	Locator	Wedge	Wedge screw	Locator screw	Wrench	Wrench	Clamp	Ring
Ø20~Ø25 (2000 type)	-	-	-	CHX0407	HW25L	-	CH4R1	ER03
Ø30~Ø40 (3000 type)	-	-	-	CHX0510	HW30L	-	CH5R1	ER04
Ø50~Ø63 (4000 type)	LPTS4R/L	WPTSR	DHA0815	LTX0512	-	HW40	-	-

## AFO(M)4000









(mm)

Des	signation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg
AFO	4080R/L	5	80	88	60	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	3.3	1.4
(AFOM)	4100R/L	6	100	108	80	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	3.3	2.0
	4125R/L	8	125	133	100	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	3.3	3.1

( )Metric size

### Available inserts

OFKT-MF

OFCW

	9			•		•			100		<b>&gt;</b>			WHITE OF			D. W.	
			rmet				(	Co	at	ed					Un	coa	ted	
[	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	돧	page
OFCW	05T3SN																	
	05T3FN														Г			E14
	05T308FN																	
OFKT	05T3SN-MF									•								
	05T308SN-MF																	
	05T3SN-MM				•				•		•							E14
	05T308SN-MM																	E15
	05T3FN-MA																•	
	05T3EN-MA																	

OFKT-MM

OFKT-MA

### Available arbors

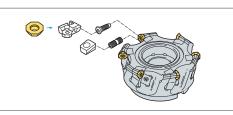
Docie	nation	General arbor	NC arbors						
Desig	nation	General arbor	AFO	AFOM					
AFO	4080R/L	NT* (M/U)-FMA25.4-25	BT**	FMC27					
(AFOM)	4100R/L	NT* (M/U)-FMA31.75-	BT** - FMA31.75-	FMC32					
	4125R/L	NT* (M/U)-FMA38.1-	BT** - FMA38.1	FMB40					

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

### Recommended cutting condition

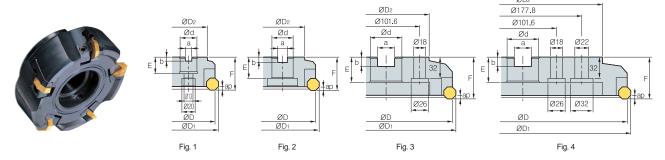
Workpiece	Cutting o	ondition	Grades
workpiece	vc (m/min)	fz (mm/t)	Grades
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A
M	90~150	0.05~0.20	PC9530
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10

Assembling



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

## AFO(M)5000







• AR: 15° • RR: 5°

(mm

De	signation	(i)	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
AFO	5080R/L	5	80	91	60	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	4.8	1.4	1
(AFOM)	5100R/L	6	100	111	80	31.75	12.7 (14.4)	8 (8)	32 (28)	50	4.8	2.0	2
	5125R/L	8	125	136	100	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	4.8	3.1	2
	5160R/L	10	160	171	120	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	4.8	5.2	2
	5200R/L	12	200	211	130	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	4.8	7.5	3
	5250R/L	16	250	261	180	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	4.8	16.1	3
	5315R/L	20	315	326	240	47.625 (60)	25.4 (25.7)	13.5 (14)	38 (38)	63	4.8	22.8	4

( )Metric size

### Available inserts

OFKT-MM	OFKT-MA	OFCN	OFKR-MF
	The state of the s		and sugar
The same	33 mm		un mos
251/2			
OFKR-	MM OFK	R-MA REM	(R-MM
OFKR-	MM OFKI	R-MA REM	(R-MM

		Cer	met				(	Со	at	ed					Un	coa	ted	
I	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H3	page
OFCN	0704SN									•								
	0704FN																	E14
	070408SN																	□14
	070408FN																	
OFKR	0704SN-MF				•	•												
	070408SN-MF																	
	0704SN-MM				•	•			•	•	•			•				E14
	070408SN-MM				•													⊏14
	0704FN-MA																	
	0704EN-MA																	
OFKT	0704SN-MM																	E14
	0704FN-MA																•	E15
	0704EN-MA																	L13
REKR	170400-MM																	E17

### Available arbors

Dooig	nation	General arbor	NC arbors						
Desig	nauon	General arbor	AFO	AFOM					
AFO	5080R/L	NT*□□ (M/U)-FMA25.4-25	BT** - FMA25.4-	FMC27					
(AFOM)	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* (MU)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60					
	5250R/L	NT* (MU)-FMA47.625-25, KCP-8***	BT** - FMA47.625	FMB60					
	5315R/L	KCP-8*** (Center ring plug)							

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

### Recommended cutting condition

Markaine	Cutting of	ondition	Crados			
Workpiece	vc (m/min)	Grades				
Р	190~320 161~270 80~140	0.05~0.20 0.05~0.20 0.05~0.20	NCM325 PC3700 ST30A			
M	90~150	0.05~0.20	PC9530			
К	140~230 50~90	0.05~0.30 0.05~0.30	PC6510 G10			

Assembling

### Parts

Specification					
	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80~Ø315	LAF05R/L	WEFR/L	DHA0821F	LTX0512	HW40
200~2315	LAF05R*/L-1*	WEFR/L	DHAU021F	LIAUSIZ	ПVV40



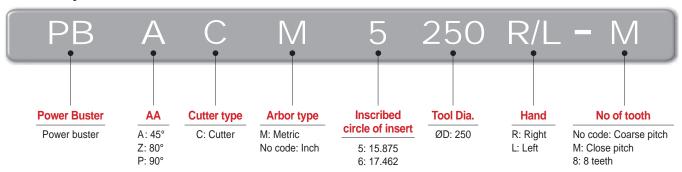


### New serrated edge design increases productivity by reducing insert cutting load

### **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 (AA: 80°), and TNMX30 for PBP (AA: 90°)
- Application: High depth of cut and feed rate (Steel, Cast iron)

### Code system

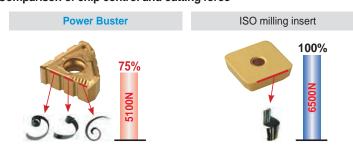


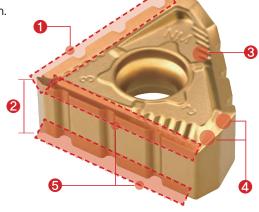
#### Features of insert

### 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





- Workpiece SCM440
- Cutting vc = 200 m/min, ap = 8 mm, condition ae = 90 mm, fz = 0.3 mm/t

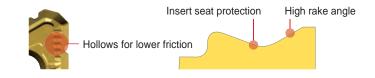
#### 2 Thicker insert

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



### **8 NM Chip breaker**

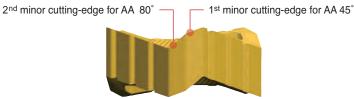
- High rake angle for low cutting force
- Good chip flow at various feed and depth of cut
- Inserts are protected with seats for a precise mounting
- Low friction and good heat evacuation at high depth cut





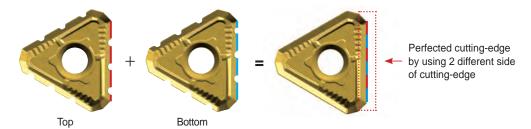
### **Technical Information for Power Buster**

- Insert shape applied to PBA/Z cutters (AA: 45°/80°)
  - High rake angle to avoid interference with chip
  - Calculated minor cutting-edge angel for both AA 45° & 80° cutter



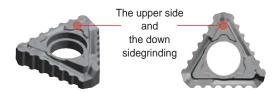
#### **6** Mirror system

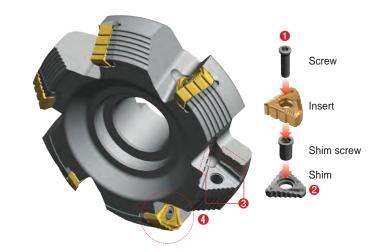
• Cutting-edge on the both side of insert covers all overlapped cutting area



### Features of cutter

- 1 Screw-on clamping system
  - Simple and strong screw on clamping system
- Better rigidity & Stable Assembly system
  - The shim protects the cutter from insert damage
  - High accuracy shim ensures tighter clamping



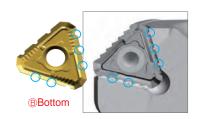


### **8** Foolproof System

• Insert serrations match pocket design to prevent improper seating and alignment







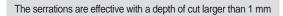
### E

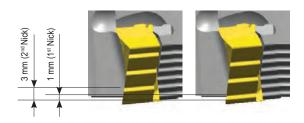
### **Technical Information for Power Buster**

### 4 Multi-application system

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

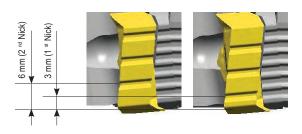


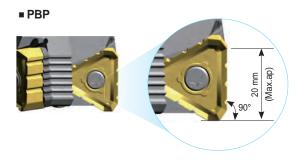




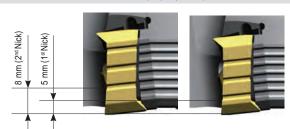


The serrations are effective with a depth of cut larger than 3 mm



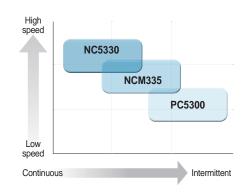


For the AA 90° cutter, nicks function properly at depth of cuts over 5 mm



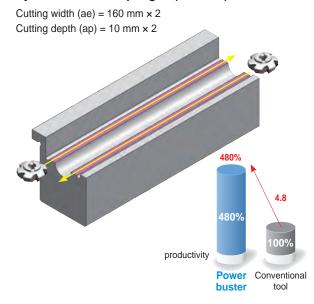
### Recommended cutting condition

				NC5330	NCM335	PC5300			
ISO	Workpi	000	Material	fz (mm/t)					
130	workpi	ece	Waterial	0.1-0.2-0.3	0.1-0.2-0.3	0.1-0.2-0.3			
					vc (m/min)				
		-	SUM22, C = 0.1~25	400	335	280			
	Carbon steel	-	C = 0.30~55	365	305	255			
		-	C = 0.55~80	340	285	240			
Р	Low alloy steel	-	SCM415(H), SCM420, SCM440	280	235	195			
	(Alloy constituent < 5%)	Hardened		165	140	115			
	High alloy steel	Annealed	SKD61	210	180	150			
	(Alloy constituent > 5%)	Hardened	SKH51, SKH55	175	145	120			
		Low tensile	FC200, FC250	125	-	145			
ĸ	Gray cast iron	Hight tensile	FC300, FC350	105	-	120			
	Gray cast from	Ferric	FCD400, FCD500	80	-	95			
		Pearlitic	FCD600, FCD700	75	-	85			



### Power Buster test

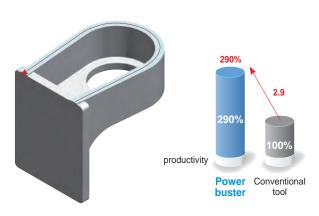
### ■ Cylinder block for ship engine (Cast iron)



Item	Power buster	Conventional tool							
Diameter (ØD)	200 mm	200 mm							
©	12 tooth	12 tooth							
Grades	NC5330	PVD coating for Cast iron							
VC	170 m/min	130 m/min							
fz	0.24 mm/t	0.16 mm/t							
ар	10 mm x 2 passes	4 mm x 5 passes							
min	28.2 min/ea	137.5 min/ea							
4.8 times produ	4.8 times productivity increased								

### ■ Heavy machinery part (Alloy steel)

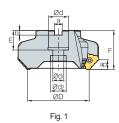
Cutting width (ae) = 35 mm Cutting depth (ap) = 10 mm

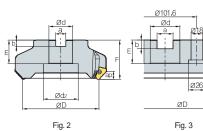


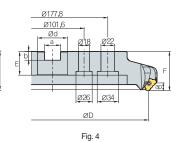
Item	Power Buster	Conventional tool
Diameter (ØD)	125 mm	100 mm
<b>(</b> )	8 tooth	8 tooth
Grades	NCM335	PVD coating for Cast iron
VC	180 m/min	150 m/min
fz	0.15 mm/t	0.10 mm/t
ар	5 mm x 2 passes	2.5 mm x 4 passes
min	5 min/ea	14.7 min/ea
2.9 times produ	ctivity increased	Double-sided 8 corner insert (Without nick)     AA 45° cutter

## PBAC(M)5000













(mm)

Desig	gnation	(i)	ØD	Ød	Ød1	Ød2	а	b	Е	F	ар	Fig.
PBAC	5080R/L	4	80	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (22)	50	12	1
(PBACM)	5100R/L	4	100	31.75 (32)	-	45	12.7 (14.4)	8 (8)	32 (28)	50	12	2
pitch	5125R/L	6	125	38.1 (40)	-	56	15.9 (16.4)	10 (9)	38 (32)	63	12	2
Se	5160R/L	8	160	50.8 (40)	-	100	19 (16.4)	11 (9)	38 (32)	63	12	2
Coarse	5200R/L	10	200	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	12	3
	5250R/L	12	250	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	12	3
	5315R/L	14	315	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	12	4
PBAC	5080R/L-M	6	80	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (22)	50	12	1
(PBACM)	5100R/L-M	6	100	31.75 (32)	-	45	12.7 (14.4)	8 (8)	32 (28)	50	12	2
tch	5125R/L-M	8	125	38.1 (40)	-	56	15.9 (16.4)	10 (9)	38 (32)	63	12	2
Close pitch	5160R/L-M	10	160	50.8 (40)	-	100	19 (16.4)	11 (9)	38 (32)	63	12	2
Š	5200R/L-M	12	200	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	12	3
	5250R/L-M	14	250	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	12	3
	5315R/L-M	16	315	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	12	4

( )Metric size

### Available inserts

#### TNMX-NM

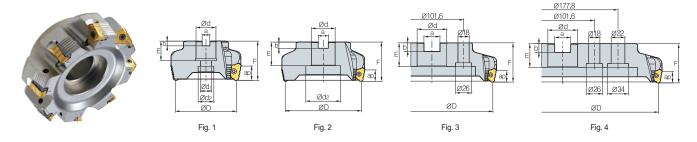


		Cer	met						C	oate	d						Ur	coat	ed	
	Designation  2710AZNR-NM	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
TNMX	2710AZNR-NM			•			•				•		•		•					E28
	2710AZNL-NM																			E20

### Available arbors

	Decimation	Available arbors											
	Designation	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-												

## PBZC(M)5000







• AR: -5° • RR: -12°

(mm)

												(11111)
Desig	gnation	0	ØD	Ød	Ød1	Ød2	а	b	E	F	ар	Fig.
PBZC	5080R/L	4	80	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (22)	50	18	1
(PBZCM)	5100R/L	4	100	31.75 (32)	-	45	12.7 (14.4)	8 (8)	32 (28)	50	18	2
Coarse pitch	5125R/L	6	125	38.1 (40)	-	56	15.9 (16.4)	10 (9)	38 (32)	63	18	2
Se Se	5160R/L	8	160	50.8 (40)	-	100	19 (16.4)	11 (9)	38 (32)	63	18	2
Soar	5200R/L	10	200	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	18	3
	5250R/L	12	250	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	18	3
	5315R/L	14	315	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	18	4
PBZC	5080R/L-M	6	80	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (22)	50	18	1
(PBZCM)	5100R/L-M	6	100	31.75 (32)	-	45	12.7 (14.4)	8 (8)	32 (28)	50	18	2
ltch	5125R/L-M	8	125	38.1 (40)	-	56	15.9 (16.4)	10 (9)	38 (32)	63	18	2
<u>o</u>	5160R/L-M	10	160	50.8 (40)	-	100	19 (16.4)	11 (9)	38 (32)	63	18	2
Close pitch	5200R/L-M	12	200	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	18	3
	5250R/L-M	14	250	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	18	3
	5315R/L-M	16	315	47.625 (60)	-	-	25.4 (25.7)	14 (14)	38 (38)	63	18	4

( )Metric size

### Available inserts

#### TNMX-NM



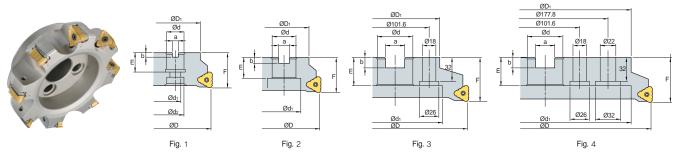
		Cer	rmet						C	oate	d						Ur	icoat	ed	page
	Designation  TNMX 2710AZNR-NM	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	Н <u>о</u>	
TNMX	2710AZNR-NM			•			•				•		•		•					E28
	2710AZNL-NM																			EZO

### Available arbors

	Decimation	Available arbors											
	Designation	PBZC	PBZCM										
PBZC	5080R/L-	BT□□ -FMA25.4-□□	BT□□ -FMC27-□□										
(PBZCM)	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-□												

Specification	Screw	Shim	Shim screw	Wrench
Ø80~Ø315	FTGA0518	ST53AZR	SHXN0712F	TW20-100

## PBPCM6000 rew





														(mm)
De	esignation	<b>(</b>	ØD	ØD1	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
PBPCM	6080R-4	4	80	60	27	14	20	12.4	7	24	50	20	0.85	1
	6100R-6	6	100	70	32	-	54	14.4	8	30	50	20	1.16	2
	6125R-6	6	125	90	40	-	56	16.4	9	32	63	20	2.84	2
	6160R-8	8	160	107	40	-	90	16.4	9	32	63	20	3.58	3
	6200R-10	10	200	130	60	-	132	25.7	14	38	63	20	5.13	3
	6250R-12	12	250	180	60	-	180	25.7	14	38	63	20	9.6	3
	6315R-14	14	315	240	60	-	238	25.7	14	38	63	20	16.85	4

### Available inserts

										eW										
		Cer	met						(	Coate	d						U	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
TNMX	3012PNR-NM																			E28

TNMX-NM

### Available arbors

Designation		General arbor				
PBPCM	6080R-4	BT□□ -FMC27-□□				
	6100R-6	BT□□ -FMC32-□□				
	6125R-6	BT□□-FMC40-□□				
	6160R-8	- B1□□ -FMC40-□□				
	6200R-10					
	6250R-12	BT□□ -FMC60-□□				
	6315R-14					

Specification				To Roy
Cirication	Screw	Shim	Shim Screw	Wrench
Ø80~Ø315	FTGA0518	ST53PNR	SHXN0712F	TW20-100

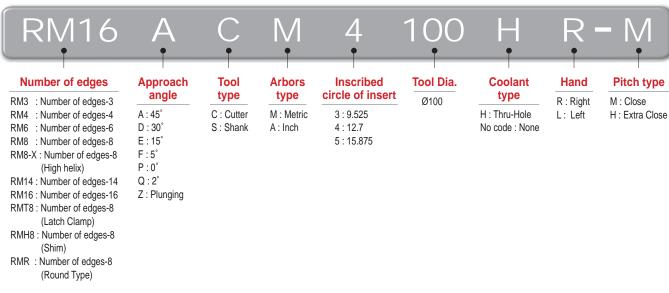


Rich Mill series is one of innovations that provides more available cutting-edges by double-sided insert and longer tool life for our customers

# 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



## **Rich Mill RM3**

#### Features

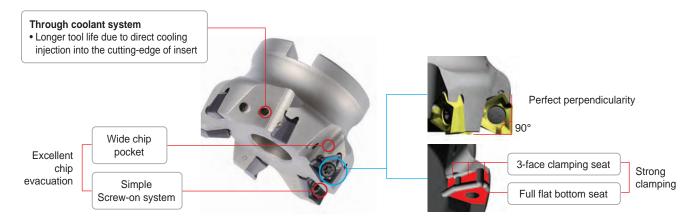
- High Quality True 90° shouldering operation
- High Productivity Strong thick insert and 3-face clamping ensure stable operation even tough condition.
- High Economics Long tool life due to optimized manufacturing process

#### Features of insert





#### Features of cutter



### Through coolant system

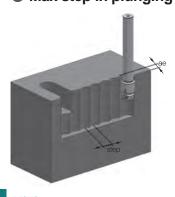
- Exclusive through coolant bolt required
- Effective coolant distribution directly to cutting-edge
- Coolant supporting arbor required



#### Features of chip breakers

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

## Max step in plunging



Туре	max. ae
3000 type	2.5
4000 type	3.0
5000 type	3.5

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

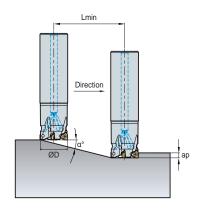


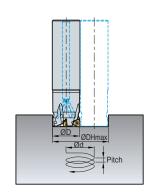
## Ramping and helical cutting

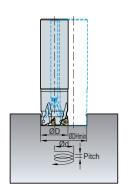
1. Ramping

2. Helical cutting for blind hole

3. Helical cutting for through hole







(mm)

			1. Ram	ping	2. H	elical cutt	ing for blind ho	le	3.Helical cutting fo	or through hole
Туре	Tool Dia. ØD	ар	Max. rake angle q°	Lmin	Min. machining Dia. ØDHmin	Max. pitch	Max. machining Dia. ØDHmax	Max. pitch	Min. machining Dia. ØDHmin	Max. pitch
	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
2000 4	33	5.5	6.0	52.3	62.5	5.5	64.5	5.5	59.0	5.5
3000 type	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
	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
4000 type	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
	125	8	1.5	305.5	244.5	7.7	248.0	7.8	238.5	7.7
	80	12	5.5	124.6	153.5	12.0	158.0	12.0	146.5	12.0
5000 type	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

<sup>\*</sup> Please be sure to use cutting oil or air for ramping and helical machining Lmin = ap/tan ( $\alpha^\circ$ )



## Application guideline for grade

,	Morkmina	F		M	K	N
	Workpiece	Carbon steel Alloy steel		Stainless steel	Cast iron	Aluminum
Chip breaker	First choice	MM	MM	ML	ML	MA
Cnip breaker	Second choice	ML	ML	-	MM	-
	High speed machining	PC3700	PC3700	PC5300	PC6510	
Grades	General machining	PC5400	PC5300	PC5400	PC5300	H01
	Interrupted machining	PC5400	PC5400	PC5400	PC5400	

## Recommended cutting condition

### • RM3 3000 type

				Cutting	conditions		Cutting conditions				
V	Vorkpiece	Grades	vc (m/min)	fz (mm/t)	max ap (mm)	Available inserts	vc (m/min)	fz (mm/t)	max ap (mm)	Available inserts	
		PC3700	160~270	0.25~0.05			160~270	0.2~0.05	5.5		
Р	steel	PC5300	150~240	0.25~0.05	5.5	XNKT0604	150~240	0.25~0.05		XNKT0604□□ PNER-ML	
		PC5400	130~210	0.25~0.05			130~210	0.25~0.05			
М	Stainless	PC5300	90~150	0.2~0.05			90~150	0.1~0.05			
IVI	steel	PC5400	70~120	0.2~0.05			70~120	0.1~0.05			
K	Cast	PC6510	140~230	0.3~0.08			140~230	0.25~0.08			
I.	iron	PC5300	120~200	0.3~0.08			120~200	0.25~0.08			

<sup>\*</sup> Maximum cutting condition: vc = 350 m/min, fz = 0.5 mm/t according to cutting environment

#### • RM3 4000 type

				Cutting	conditions		Cutting conditions				
W	orkpiece	Grades	vc (m/min)	fz (mm/t)	max ap (mm)	Available inserts	vc (m/min)	fz (mm/t)	max ap (mm)	Available inserts	
		PC3700	160~270	0.3~0.05		XNKT0805	160~270	0.25~0.05			
Р	steel	PC5300	150~240	0.3~0.05			150~240	0.25~0.05	8.0	XNKT0805 □ □ PNER-ML	
		PC5400	130~210	0.3~0.05	8.0		130~210	0.25~0.05			
м	Stainless	PC5300	90~150	0.25~0.05			90~150	0.2~0.05			
IVI	steel	PC5400	70~120	0.25~0.05			70~120	0.2~0.05			
K	Cast	PC6510	140~230	0.35~0.08			140~230	0.3~0.08			
, K	iron	PC5300	120~200	0.35~0.08			120~200	0.3~0.08			
N	<b>Aluminum H01</b> 400~1200 0.4~0.1		XNCT0805□□PNFR-MA	-	-	-	-				

<sup>\*</sup> Maximum cutting condition: vc = 350 m/min, fz = 0.5 mm/t according to cutting environment

#### • RM3 5000 type

				Cutting	conditions		Cutting conditions				
W	orkpiece	Grades	vc (m/min)	fz (mm/t)	max ap (mm)	Available inserts	vc (m/min)	fz (mm/t)	max ap (mm)	Available inserts	
		PC3700	160~270	0.3~0.05		XNKT1206 PNSR-MM	160~270	0.25~0.05			
Р	steel	PC5300	150~240	0.3~0.05			150~240	0.25~0.05	12.0	XNKT1206 DPNER-ML	
		PC5400	130~210	0.3~0.05			130~210	0.25~0.05			
М	Stainless	PC5300	90~150	0.25~0.05	40.0		90~150	0.2~0.05			
IVI	steel	PC5400	70~120	0.25~0.05	12.0		70~120	0.2~0.05			
K	Cast	PC6510	140~230	0.35~0.08			140~230	0.3~0.08			
	iron	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

# пE

# **Rich Mill RM4**

#### Features

- · Economical 4 cutting-edges by using double-sided insert
- RM4, as a multi-functional milling tool, offers economical 4 cutting-edges by using an innovative double-sided insert
- Special designed chip breaker consists of high rake angle and strong cutting-edge to decrease the cutting load
- RM4 is multi-functional tool that can cover facing, side cutting, shouldering, slotting, ramping & helical cutting
- Optimal matching of the special cutting-edge geometry with variety of new grades provides consistence & long tool life of insert



#### Features of cutter

- 4 cutting edges can be used by using double-sided insert
- High rake angle chip breaker and cutting-edge can make smooth cutting with low cutting load
- Strong negative insert
- High efficiency, economical, multi-functional tool



#### Through coolant system

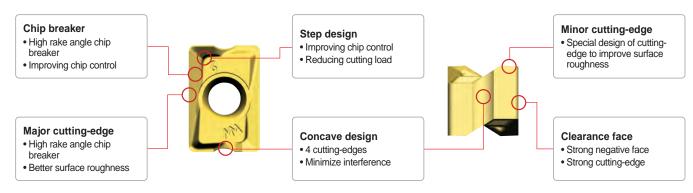
• Longer tool life due to direct cooling injection into the cutting-edge of insert

Wide chip pocket for better chip evacuation Simple screw on system

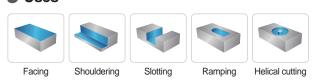
- Improving chip control

#### Features of insert

- Double-sided insert using 4 cutting-edges
- High rake angle chip breaker, cutting-edge
- Flexibility of product
- · High efficiency, economical, multi-functional tool
- Negative insert has strong cutting-edge



#### Uses





#### Features of chip breakers

Ir	sert	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	9		Light cutting	Due to low cutting load, it is good for light cutting and difficult-to-cut material
ММ			General cutting	It is suitable design for general milling

#### Setting configuration

Shape	Setting angle of insert	Features
		High rake chip breaker & positive setting angle for low cutting load  → Improving machinability
	90.	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)

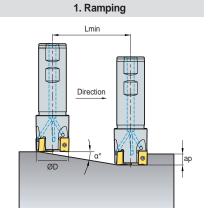


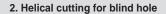
Through coolant system for decreasing cutting heat and good chip evacuation

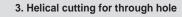


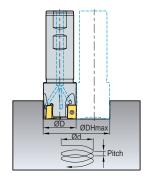
### Ramping and helical cutting

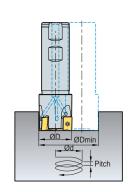
#### ig and neneal cattin











(mm)

			1. Ram	ping	2. He	lical cutt	ing for blind ho	ole	3.Helical cutting fo	or through hole
Designation	Tool Dia. ØD	ар	Max. rake angle o°	Lmin	Min. machining Dia. Ø DHmin	Max. pitch	Max. machining Dia. Ø DHmax	Max. pitch	Min. machining Dia. Ø 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 38		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

<sup>\*</sup> Please be sure to use cutting oil or air for ramping and helical machining Lmin = ap/tan ( $\alpha^{\circ}$ )

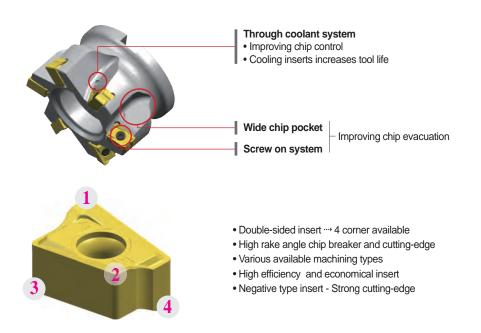
#### Recommended cutting condition

		110001		ica oa	ung o	oriantio	<b>,,,</b>									
	60	Cradas	LNM(E)X100605PNR-MF		LNM(E)X100605PNR-MM		LNEX1006	05PNR-MA	Мах-ар	LNM(E)X151008PNR-MF		LNM(E)X151008PNR-MM		LNEX151008PNR-MA		Мах-ар
•	30	Grades	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	(mm)	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	(mm)
	Б	NCM535	-	-	-	-	-	-		150~300	0.05~0.30	120~300	0.05~0.35	150~300	0.03~0.20	
	_	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	
Ī	M	PC5300	120~180	0.05~0.25	100~180	0.05~0.30	120~200	0.03~0.20	9.0	120~180	0.05~0.30	100~180	0.05~0.3	120~200	0.03~0.20	14.0
Ι	K	PC6510	150~300	0.08~0.30	120~300	0.08~0.35	-	-		150~300	0.08~0.35	120~300	0.08~0.35	-	-	

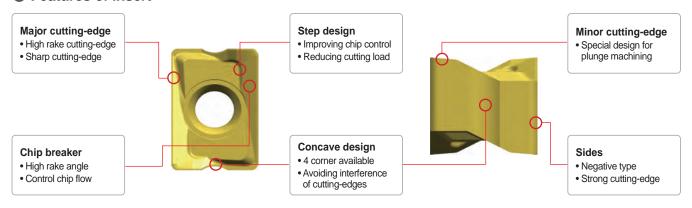


#### Features

- 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



#### Features of insert



#### Uses

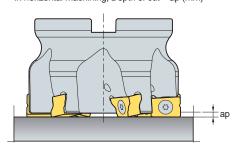






#### The depth of cut by machining type

• In horizontal machining, Depth of cut = ap (mm)

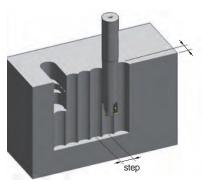


• In plunging, Depth of cut = ae (mm)



RM4Z	Horizontality	Verticality			
RIVI4Z	max ap (mm)	max ae (mm)	step		
RM4Z3000	1.5	9	< 0.7D		
RM4Z4000	2.5	14	< 0.7D		

## Max step in plunging



				Cut	tter Diameter (	mm)			
ae	25	32	40	50	52	63	66	80	100
		'			Max step (mm	)	<u>'</u>		<u>'</u>
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

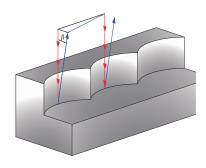
- Exclusive hexagonal coolant socket bolt provides excellent cooling and chip evacuation
- Direct coolant injection to cutting-edge improves cooling effectiveness
- Coolant type arbor should be used
- \*Coolant bolt is not included, it is for sale







#### Programming tip



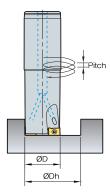
Plunging feed direction

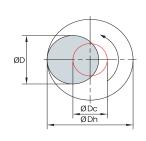
Tool escape

β Escape angle  $(\beta \ge 1^{\circ})$ 

• When your tool steps back after plunging, please get over 1° more escape angle

## Helical machining





 $\emptyset Dc = \emptyset Dh - \emptyset D$ 

ØDc = Tool center path ØDh = Desired hole diameter

ØD = Tool Dia.

(mm)

				Hel	ical data	
D	esignation	Diameter ØD (mm)	Min. machining Dia. ØDHmin	Max. pitch	Max. machining Dia. ØDHmax	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

## Recommended cutting condition

ISO	Cuadaa		LNM(E)X100	605PNL-MM		LNM(E)X151008PNL-MM				
130	Grades	vc (m/min)	fz (mm/t)	* max ae (mm)	** max ap (mm)	vc (m/min)	fz (mm/t)	* max ae (mm)	** max ap (mm)	
Р	PC3700	100~250	0.05~0.25			120~250	0.05~0.25			
M	PC5300	100~250	0.08~0.30	9	1.5	120~250	0.08~0.30	14	2.5	
K	PC6510	80~180	0.05~0.20			100~180	0.05~0.20			



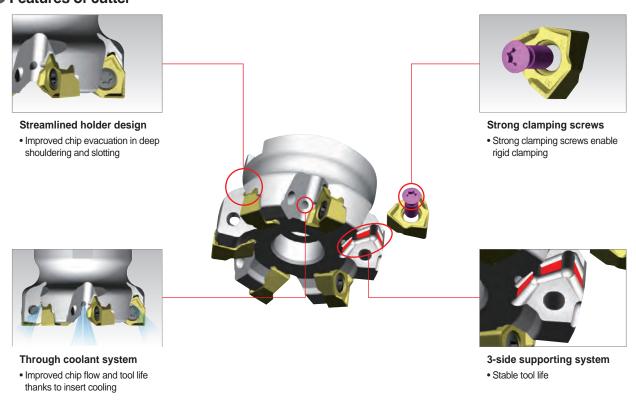
#### Features

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

#### Features of insert



#### Features of cutter





### Features of chip breakers

Ir	nsert	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
ММ			For general cutting	Chip breaker design ideal for general shoulder milling and most applications

### Application guideline for grade

,	A/a wlancia a a	F		M	K	N
•	Workpiece		Alloy steel	Stainless steel	Cast iron	Non-ferrous metal
Chana	1st recommended	MM	MM	ML	ML	MA
Shape	2nd recommended	ML	ML	-	MM	MA
	High speed milling	PC3700	PC3700	PC5300	PC6510	H01
Grades	General milling	PC5400	PC5300	PC5400	PC5300	H01
	Interrupted milling	PC5400	PC5400	PC5400	PC5400	H01

## Recommended cutting condition

#### • WNGX04

			WNG	X040304PNS	R-MM	WNG	X040304PNE	R-ML	WNG	X040304PNF	R-MA
	Workpiece	rkpiece Grades		fz (mm/t)	max. ap(mm)	vc (m/min)	fz (mm/t)	max. ap(mm)	vc (m/min)	fz (mm/t)	max. ap(mm)
		PC3700	160~270	0.25~0.05		160~270	0.20~0.05		-	-	
Р	Steel	PC5300	150~240	0.25~0.05		150~240	0.25~0.05		-	-	4.3
		PC5400	130~210	0.25~0.05		130~210	0.25~0.05	4.3	-	-	
	Stainless	PC5300	90~150	0.20~0.05	4.3	90~150	0.10~0.05		-	-	
M	steel	PC5400	70~120	0.20~0.05		70~120	0.10~0.05		-	-	
	01:	PC6510	140~230	0.30~0.08		140~230	0.25~0.08		-	-	
K	Cast iron	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

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

#### • WNGX08

	Workpiece Grades		WNG	X080608PNS	R-MM	WNG	X080608PNE	R-ML	WNG	X080608PNF	R-MA
			vc (m/min)	fz (mm/t)	max. ap(mm)	vc (m/min)	fz (mm/t)	max. ap(mm)	vc (m/min)	fz (mm/t)	max. ap(mm)
		PC3700	160~270	0.25~0.05		160~270	0.20~0.05	8.2	-	-	
Р	Steel	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		-	-	
	Stainless	PC5300	90~150	0.20~0.05	8.2	90~150	0.10~0.05		-	-	8.2
М	steel	PC5400	70~120	0.20~0.05		70~120	0.10~0.05		-	-	1
W		140~230	0.30~0.08		140~230	0.25~0.08		-	-		
K	Cast iron	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



<sup>\*\*</sup> 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.

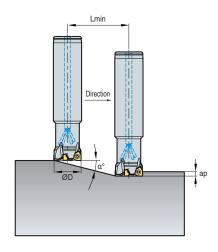


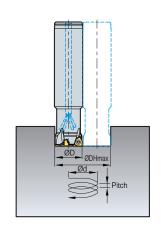
## Ramping

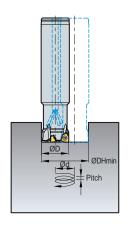
1. Ramping

2. Helical cutting for blind holes

3. Helical cutting for through holes







(mm)

		Tool		1. Ram	ping	2. Hel	ical cutti	ng for blind he	oles	3. Helical cutting fo	3. Helical cutting for through holes	
Designation		Dia. ØD	ар	Max. rake angle α°	Lmin	Min. machining Dia. ØDHmin	Max. pitch	Max. machining Dia. ØDHmax	Max. pitch	Min. machining Dia. ØDHmin	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	

 $Lmin = ap/tan \ (\alpha^\circ)$ 

Lmin: Cutting length at min. rake angle

ap: Axial depth of cut α°: Available rake angle for ramping



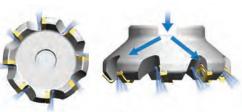
#### Features

- Double-sided insert to use 8 cutting-edges
- Innovative double-sided insert makes it possible to use 8 cutting-edges It is more economical than conventional single sided insert
- The unique geometry and high rake angle of cutting-edge guarantees excellent surface finish Applicable for various workpieces like steel, stainless steel, cast iron, aluminum
- Combined with the innovative geometry and various grades provided the tool offers durability and excellent tool life
- Various pitches and chip breakers can be applicable for diverse machining
- Light Rich Mill cutter can be useful for high speed machining and low power machine

#### Through coolant system

• 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

Ir	nsert	Cutting-edge	Uses	Features		
MA			For aluminum   Due to sharp cutting-edge and buffed surface, it has good chip flow and welding			
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		
ММ			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



#### Features of insert

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



#### Features of cutter

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

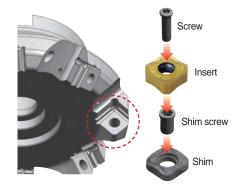
#### Recommended cutting condition

10		Grades	SNM(E)X120	6A(E)NN-MF	SNM(E)X120	6A(E)NN-MM	SNEX1206	A(E)NN-MA	Max-ap	SNM(E)X150	7A(E)NN-MF	SNM(E)X150	7A(E)NN-MM	Max-ap
13			vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	(mm)	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	(mm)
		NC5330	-	-	150~300	0.10~0.35	150~300	0.10~0.35		-	-	150~300	0.10~0.35	
F	•	NCM535	200~300	0.05~0.30	150~300	0.10~0.35	150~300	0.10~0.35	RM8A 6.0	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	RM8A 7.5
N		PC9530	90~150	0.05~0.25	90~150	0.10~0.35	-	-	RM8E 9.0	90~150	0.10~0.30	90~150	0.10~0.35	
IV		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	RM8E 11
		PC6510	150~300	0.08~0.35	150~300	0.10~0.40	150~300	0.10~0.40	RM8Q 11.5	150~300	0.08~0.35	150~300	0.10~0.40	
r		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 (Approach angle 45°, 75°, 88°)
- Stable clamping power with insert











RMH8E





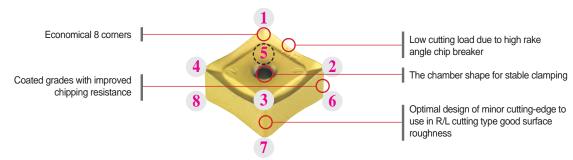


#### Features

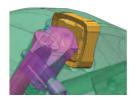
- New latch clamping system provides a powerful cutting force and an easy insert change
- New grades with chipping resistance provides good surface roughness and better tool life
- Due to the specially designed chip breaker, all operations are possible
- RMT with various pitches can replace conventional ISO milling tool

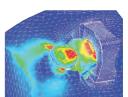


#### Features of insert (Using R/L)



#### Clamping force analysis





### Features of chip breakers

In	sert	Cutting-edge	Uses	Features
MF			For fine finishing	Our specialized insert design creates low cutting forces suitable for light cutting, HRSA
ММ	•		For strengthen	Suitable geometry design for general milling has wider ranges of machining

#### Recommended grades and chip breakers

ISO	Grades	ММ	MF
Р	NCM535	0	0
-	PC5300	0	0
M	PC9530	0	0
K	PC6510	0	0

#### O: Optimum O: Proper

#### Recommended cutting condition

100	Crades	М	M	MF			
ISO	Grades	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)		
	NC5330	190~310	0.10~0.35	190~310	0.05~0.30		
Р	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	<b>PC9530</b> 90~150		0.05~0.30	90~150	0.05~0.30		
K	PC6510	140~230	0.10~0.40	140~230	0.08~0.35		

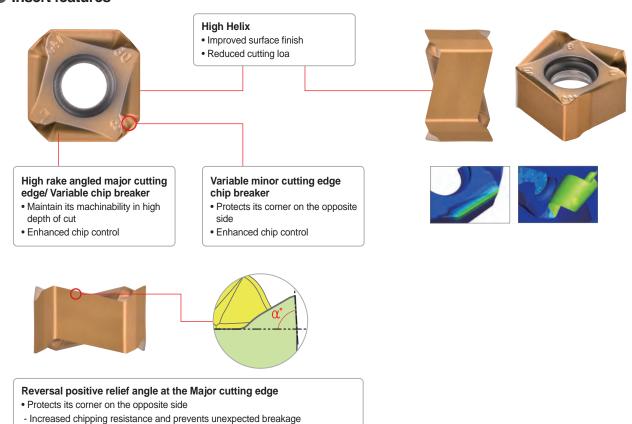


# Rich Mill RM8-X

#### Features

- High helix face milling tool with 8-cornered double-side inserts
- High performance in stainless steel machining due to sharp cutting edge and double reverse positive relief surface structure
- Economic tool by double-sided 8 corners and high helix right-handed shape realizing high depth of cut machining

#### Insert features







# Rich Mill RM8-X

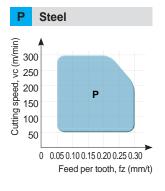
#### Recommended grade and cutting edge

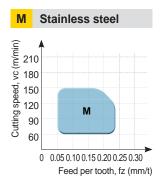
Туре		SAGX		SNM	Х		
Features		Strong relief surface		Relief surface for surface finish			
Workpiece	M	S	Н	Р	K		
Features	SAGX-ML		SAGX-MM	SNMX			
	[Double r	everse positive relief su	rfacel	[Negative reli	of surface)		

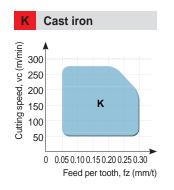
		Recommended insert and grade for different workpieces (•: 1st recommendation)											
Туре	Р		М		K		S		н				
	C/B	Grades	C/B	Grades	C/B	Grades	C/B	Grades	C/B	Grades			
SAGX140808ANER	○ML ○MM	○ PC5300 ○ PC3700	• ML • MM	• PC9540 • PC5300	○ML ○MM	o PC6510 o PC5300	• ML • MM	• PC5300	• MM	• PC2510 • PC2505			
SNMX140808ANER	• MM	• PC3700	-	-	• MM	• PC6510	-	-	-	-			

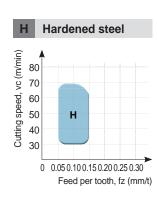
## Recommended cutting condition

	Grades	Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
Р	Steel	Continuous cutting	PC3700 ໜ	235 (180~290)	P30	PC3700 PC5300
	Steel	Interrupted cutting	PC5300	195 (150~240)	P40	PC3700 PC3300
		Continuous sutting	PC5300	120 (100, 160)	M20	PC5300
M	Stainless steel	Continuous cutting	PC5300	130 (100~160)	M30	PC3300
		Interrupted cutting	PC9540	110 (80~140)	M40	PC9540
		Continuous cutting	PC6510	180 (140~230)	K05	PC6510
K	Cast iron	Continuous cutting	PC6510	160 (140~230)	K10	PC6510
, r	Cast Iron	Interrupted outting	PC5300	145 (110, 190)	K20	PC5300
· · · ·		Interrupted cutting	FC9300	145 (110~180)	K30	PC3300
Н	Hardened steel	Continuous cutting	PC2510 @W	55 (40~70)	H10	PC2510 new











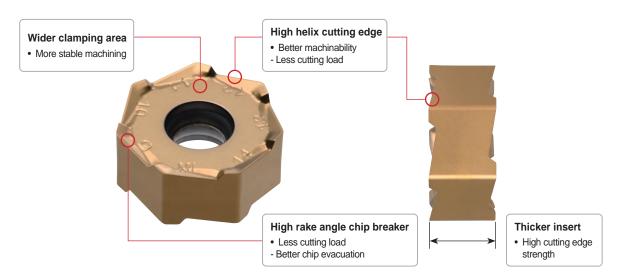
**Milling** 

#### Features

- Economical face mill with 14 double-sided corners
- Minimized chattering of workpiece due to minimum lead angle and sharp cutting edge
- Reduced cutting resistance and improved chip emissions by high helix angle application

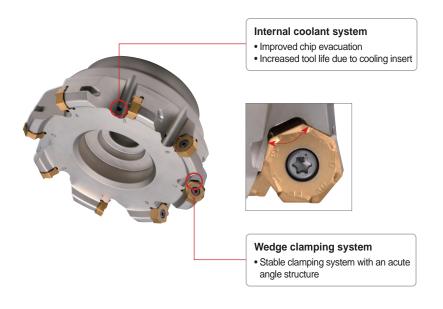
#### Insert features

- Wide supporting area of insert ensures stable clamping system.
- High rake angle cutting edge reduces cutting load and increases chip evacuation.
- Thicker insert realizes stability in machining.



#### Cutter features

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





# The biggest heptagonal lead angle

 Reduced workpiece chattering by reducing axial force



# Preventing interruption of side wall

 Prevented interruption of side wall by using the most number of corners in deep facing (heptagonal 14 double-sided corners)



### Features of chip breakes

	Insert	Cutting-edge	Uses	Features
Flat			Neutral type Flat cutting edge	1st recommended for heat resistant stainless steel machining Generally applied in various machining Applicable for both right handed and left handed
Helix			Right handed type High helix cutting edge	1st recommended for cast iron machining Applicable for stainless steel machining with less than 3 mm depth of cut For high speed and high feed machining

## Recommended grade and cutting edge

( •: 1st recommendation)

			I	Recomme	ended grade and	cutting ed	dge by workpiec	Э			
	Type		Ν	Л		K					
	Туре	Austenitic stainless steel		Heat resistance stainless steel		Gray cast iron		Duct	ile cast iron		
		Туре	Type Grade		Grade	Type Grade		Type Grade			
Flat		-	● PC9540 ○ PC5300 ○ PC5400	•	• PC9540 • PC5300 • PC5400	-	○ PC6510 ○ PC5300 • NCM535	-	● PC6510 ○ PC5300 ○ NCM535		
Helix	0	•	● PC9540 ○ PC5300 ○ PC5400	-	• PC9540 • PC5300 • PC5400	•	○ PC6510 ○ PC5300 • NCM535	•	● PC6510 ○ PC5300 ○ NCM535		

## Recommended cutting condition

					НВ	Grades	Cutting conditions						
ISO	Workpiece	ISO (DIN)*	AISI	KS			Helix			Flat			
		(=,					vc (m/min)	fz (mm/t)	ap (mm)	vc (m/min)	fz (mm/t)	ap (mm)	
M	Austenite	STS304 STS316	X5CrNi18-9 X5CrNiMo17-12-2	304 316	160-180	PC9540 (PC5300)	80-160	0.3-0.05	1-3	90-150	0.25-0.05	1-3	
IVI	Heat resistance stainless steel	-	(1.48□□)	-	160-200	PC9540 (PC5300)	60-100	0.2-0.05	1-2	60-100	0.25-0.05	1-3	
	Gray cast iron	GC250	250 (GG 25)	No 35 B	180-240	NCM535 (PC6510)	200-300	0.3-0.1	2-3	200-300	0.25-0.1	2-3	
K	Ductile cast iron	GCD500	500-7 (GGG 50)	80-55-06	150-230	PC6510 (PC5300)	110-230	0.3-0.1	2-3	150-200	0.3-0.1	2-3	
	Ductile cast from	GCD600	600-3 (GGG 60)	-	170-270	PC6510 (PC5300)	85-200	0.25-0.15	2-3	150-200	0.25-0.15	2-3	

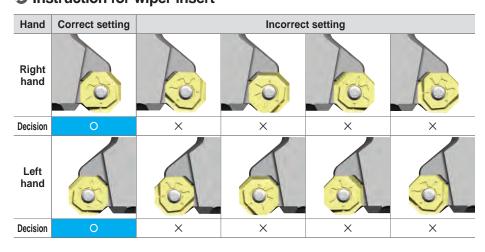
#### Features

- 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

Ir	nsert	Cutting-edge	Uses	Features
MA	•		For aluminum cutting light	With sharp edge application, the better productivity has been accomplished, especially for aluminum cutting
ML	6		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
ММ			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



#### Through coolant system

- Well designed chip pocket for better chip flow
- Through coolant system reduces cutting heat and improves chip evacuation



### Recommended cutting condition

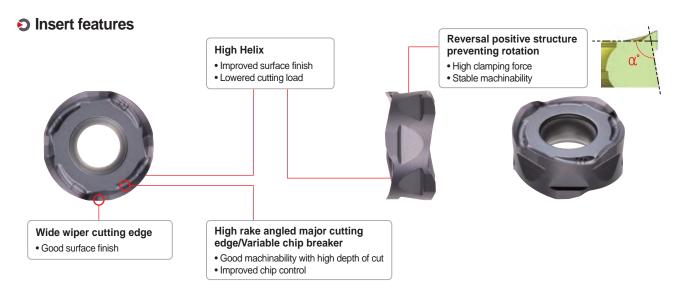
(mm)

100	Ounder	ONM(H)X060608-MM		ONM(H)X060608-MF		ONHX060608-W		ONM(H)X080608-MM		ONM(H)X080608-MF		ONHX080608-W	
150	Grades	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)
В	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	PC6510	150~300	0.10~0.40	150~300	0.08~0.35	150~300	0.05~0.25	150~300	0.10~0.45	150~300	0.08~0.40	150~300	0.05~0.30

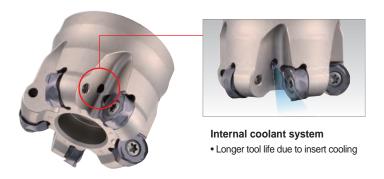


#### Features

- 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.



#### Cutter features

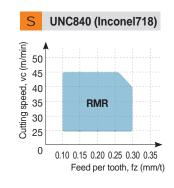


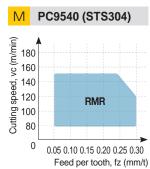
#### Recommended grade and cutting edge

		Recommended grade and cutting edge	by workpiece (•: 1st recommendation)
Chip breaker	Cutting-edge	S	M
		Grade	Grade
ML		● UNC840 ○ UPC845	● PC9540 ○ UPC845

#### Recommended cutting condition

	·		ISO	AISI	KS	Cutting conditions				
VV	orkpiece	Grades	150	AISI		vc (m/min)	fz (mm/t)	ap (mm)		
	High	UNC840	15156-3	7718	Inconel718	30-50	0.4-0.1	1.0-3.0		
S	temperature alloys	UPC845	15156-3	7718	Inconel718	20-40	0.6-0.2	1.5-4.0		
ь л	Stainless	PC9540	X5CrNi18-9	304	STS304	90.160	0.3-0.05	1020		
M	steel	PC9540	X5CrNiMo17-12-2	316	STS316	00-100	0.3-0.05	1.0-3.0		







Туре	A.A	Designation	Shape	Cutter Diameter		Application		Features	Page
		RM3PC(M)3000		Ø40~Ø80	XNKT060405PNER-ML	XNKT060405PNSR-MM			E99
RM3	90°	RM3PC(M)4000		Ø40~Ø125	XNCT080508PNFR-MA XNKT080508PNER-ML XNKT080508PNSR-MM	XNKT080512PNSR-MM XNKT080516PNSR-MM XNKT080520PNSR-MM	6	Economical 3 corners     Perfect     perpendicularity     Longer tool life due to     direct injection into the     cutting-edge of insert	E100
		RM3PC(M)5000 @		Ø80~Ø125	XNCT120608PNER-MA XNKT120608PNER-ML XNKT120612PNER-ML XNKT120616PNER-ML XNKT120620PNER-ML	XNKT120608PNSR-MM XNKT120612PNSR-MM XNKT120616PNSR-MM XNKT120620PNSR-MM			E101
		RM4PC(M)3000		Ø40~Ø100	LNEX100605PNR-MF LNMX100605aPNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF	LNEX100608PNR-MM LNMX100608PNR-MM LNEX100605PNR-MA LNEX100605PNL-MM LNMX100605PNL-MM		• Economical 4 corners	E105
14	222	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		Screw on type for slotting, facing	E106
RM4	90°	RM4ZCM3000		Ø40~Ø52	LNEX100605PNL-MM	LNMX100605PNL-MM		Economical 4 corners     Optimal insert	F440
		RM4ZC(M)4000		Ø63~Ø100	LNEX151008PNL-MM	LNMX151008PNL-MM		application for vertical machining	E118

# E Rich Mill Table

Туре	A.A	Designation	Shape	Cutter Diameter		Application		Features	Page
9		RM6PCM-WN04		Ø40~Ø63	WNGX040304PNER-ML	WNGX040308PNSR-MM		Improved productivity and high-quality	E120
RM6	90°	RM6PC(M)-WN08 4	ev)	Ø50~Ø125	WNGX080604PNFR-MA WNGX080608PNFR-MA WNGX080612PNFR-MA WNGX080616PNFR-MA WNGX080620PNFR-MA WNGX080604PNER-ML WNGX080608PNER-ML WNGX080612PNER-ML	WNGX080620PNER-ML WNGX080604PNSR-MM WNGX080608PNSR-MM WNGX080612PNSR-MM WNGX080616PNSR-MM		shouldering through high speed and high feed machining	E121
	45°	RM8AC(M)4000		Ø50~Ø400	SNEX1206ANN-MA SNEX1206ANN-MF SNMX1206ANN-MF SNEX1206ANN-ML	SNEX1206ANN-MM SNMX1206ANN-MM SNEX1206ANN-W			E126
	45	RM8AC(M)5000	STATE A STATE OF	Ø80~Ø400	SNEX1507ANN-MF SNMX1507ANN-MF SNEX1507ANN-ML	SNEX1507ANN-MM SNMX1507ANN-MM			E128
RM8	750	RM8EC(M)4000		Ø50~Ø400	SNEX1206ENN-MA SNEX1206ENN-MF SNMX1206ENN-MF	SNEX1206ENN-ML SNEX1206ENN-MM SNMX1206ENN-MM		Economical 8 corners     Low cutting load and excellent smooth cutting	E130
	75°	RM8EC(M)5000	W. 11-3	Ø80~Ø400	SNEX1507ENN-MF SNMX1507ENN-MF SNEX1507ENN-ML	SNEX1507ENN-MM SNMX1507ENN-MM			E132
	88°	RM8QC(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	•		E134

Туре	A.A	Designation	Shape	Cutter Diameter		Application		Features	Page
	45°	RMH8AC(M)4000		Ø50~Ø400	SNEX1206ANN-MA SNEX1206ANN-MF SNMX1206ANN-MF	SNEX1206ANN-ML SNEX1206ANN-MM SNMX1206ANN-MM SNEX1206ANN-W			E127
	40	RMH8AC(M)5000		Ø80~Ø400	SNEX1507ANN-MF SNMX1507ANN-MF SNEX1507ANN-ML	SNEX1507ANN-MM SNMX1507ANN-MM			E129
RM8	75°	RMH8EC(M)4000		Ø50~Ø400	SNEX1206ENN-MA SNEX1206ENN-MF SNMX1206ENN-MF	SNEX1206ENN-ML SNEX1206ENN-MM SNMX1206ENN-MM		Economical 8 corners     Low cutting load and excellent smooth cutting	E131
	73	RMH8EC(M)5000		Ø80~Ø400	SNEX1507ENN-MF SNMX1507ENN-MF SNEX1507ENN-ML	SNEX1507ENN-MM SNMX1507ENN-MM			E133
	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			E135
	45°	RMT8A(M) 4000/5000		Ø80~Ø315	SNCF1206ANN-MF SNCF1507ANN-MF SNMF1206ANN-MF SNMF1507ANN-MF	SNCF1206ANN-MM SNCF1507ANN-MM SNMF1206ANN-MM SNMF1507ANN-MM		Economical 8     corners	E136 E137
RMT8	75°	RMT8E(M) 4000/5000		Ø80~Ø315	SNCF1206ENN-MF SNCF1507ENN-MF SNMF1206ENN-MF SNMF1507ENN-MF	SNCF1206ENN-MM SNCF1507ENN-MM SNMF1206ENN-MM SNMF1507ENN-MM		Excellent tool life and surface toughness due to low cutting resistance and high rake edge geometry     Good performance with increased	E138 E139
	88°	RMT8Q(M)4000		Ø80~Ø315	SNCF1206QNN-MF	SNMF1206QNN-MF	•	chipping resistance and grade	E140

# Rich Mill Table

Туре	A.A	Designation	Shape	Cutter Diameter		Application		Features	Page
RM8-X	45°	RMX8AC(M)-SA14		Ø50~Ø125	SAGX140808ANER-ML	SAGX140808ANER-MM SNMX140808ANER-MM		Double sided insert with 8 corners     Stable cutting performance due to double reversal positive relief surface     Good machinability in stainless cutting with High helix cutting edge	E141
RM14	51°	RM14XCM-XN06		Ø50~Ø160	XNMX0606XNR-ML	XNMX060608-ML		Reduced vibration with the application of maximum approach angle on heptangonal shape Stable clamping from wedge type clamping structure Available for multiple-staged cutting without interference of the cutter's side wall	E 142
RM16	45°	RM16AC(M) 6000/8000		Ø63~Ø400	ONHX060608-MF ONMX060608-MF ONHX0606ANN-MF ONMX080608-MF ONMX080608-MF ONHX0806ANN-MF ONMX0806ANN-MF ONMX0806608-ML ONHX080608-ML ONHX080608-MM	ONMX060608-MM ONHX0606ANN-MM ONMX0606ANN-MM ONHX080608-MM ONHX0806ANN-MM ONMX0806ANN-MM ONMX080608-MA ONHX060608-W ONHX080608-MA ONHX080608-W	•	Economical 16 corners     Wiper insert for surface roughness	E143 E144
RMR	-	RMRC(M)-RN12		Ø50~Ø125	RNMX1204M0E-ML		0	High cost efficiency due to double sided round typed cutting edge     Excellent rotating prevention by strong clamping system     Suitable for Inconel cutting	E145

## **ᢒ** Shanks/Modulars

Туре	A.A	Designation	Shape	Cutter Diameter		Application	Features	Page
		RM3PS3000 @		Ø20~Ø40	XNKT060405PNER-ML	XNKT060405PNSR-MM		E102
RM3	90°	RM3PS4000 @		Ø32~Ø63	XNKT080508PNER-ML XNKT080508PNSR-MM XNKT080512PNSR-MM	XNKT080516PNSR-MM XNKT080520PNSR-MM	Economical 3 corners     Perfect perpendicular shouldering operation multi milling tool	E103
		RM3PM © 3000/4000	A Resident	Ø20~Ø50	XNKT060405PNER-ML XNKT060405PNSR-MM XNKT060408PNER-ML XNKT060408PNSR-MM XNCT080504PNFR-MA XNCT080508PNFR-MA XNCT080512PNFR-MA XNCT080512PNFR-MA	XNKT080508PNER-ML XNKT080508PNSR-MM XNKT080512PNER-ML XNKT080512PNSR-MM XNKT080516PNER-ML XNKT080516PNSR-MM XNKT080520PNER-ML XNKT080520PNSR-MM		E104
		RM4PS3000		Ø14~Ø50	LNEX100605PNR-MF LNMX100605PNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF	LNEX100608PNR-MM LNMX100608PNR-MM LNEX100605PNR-MA LNEX100605PNL-MM LNMX100605PNL-MM	• Economical 4 corners	E115
		RM4PS4000	T.	Ø32~Ø63	LNEX151004PNR-MF LNMX151004PNR-MF LNEX151004PNR-MM LNMX151004PNR-MM LNEX151008PNR-MF LNMX151008PNR-MF LNEX151008PNR-MM LNEX151008PNR-MM	LNEX151016PNR-MF LNMX151016PNR-MF LNEX151016PNR-MM LNMX151016PNR-MM LNEX151004PNR-MA LNEX151008PNR-MA LNEX151008PNL-MM LNMX151008PNL-MM	Screw on type for slotting, facing	E116
RM4	90°	RM4ZS3000	100	Ø25~Ø40	LNEX100605PNL-MM	LNMX100605PNL-MM	Economical 4 corners     Optimal insert application for vertical machining	E119
		RM4PM3000		Ø14~Ø50	LNEX100605PNR-MF LNMX100605PNR-MF LNEX100605PNR-MM LNMX100605PNR-MM LNEX100608PNR-MF LNMX100608PNR-MF	LNEX100608PNR-MM LNMX100608PNR-MM LNEX100605PNR-MA LNEX100605PNL-MM LNMX100605PNL-MM	Economical 4 corners     Screw on type for slotting, facing	E117
		RM4ZM3000		Ø25~Ø40	LNEX100605PNL-MM	LNMX100605PNL-MM	Economical 4 corners     Optimal insert application for vertical machining	E119

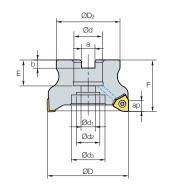
# E Rich Mill Table

#### Shanks/Modulars

Туре	A.A	Designation	Shape	Cutter Diameter	Application		Features	Page
		RM6PS-WN04		Ø20~Ø32	WNGX040304PNFR-MA WNGX040312PNER-ML WNGX040308PNFR-MA WNGX040316PNER-ML WNGX040316PNFR-MA WNGX040316PNFR-MM WNGX040304PNER-ML WNGX040308PNER-ML WNGX040316PNSR-MM WNGX040308PNER-ML WNGX040316PNSR-MM			E122
RM6	90°	RM6PS-WN08		Ø32~Ø50	WNGX080604PNFR-MA WNGX080608PNFR-MA WNGX080612PNFR-MA WNGX080612PNFR-MA WNGX080604PNSR-MM		Improved productivity and high-quality	E123
R	90*	RM6PM-WN04 @		Ø20~Ø32	WNGX040304PNFR-MA WNGX040312PNER-ML WNGX040308PNFR-MA WNGX040316PNER-ML WNGX040316PNFR-MA WNGX040316PNFR-MM WNGX040304PNER-ML WNGX040316PNSR-MM WNGX040308PNER-ML WNGX040316PNSR-MM		shouldering through high speed and high feed machining	E124
		RM6PM-WN08	-3	Ø32~Ø40	WNGX080604PNFR-MA WNGX080608PNFR-MA WNGX080612PNFR-MA WNGX080612PNFR-MA WNGX080612PNFR-MA WNGX080608PNSR-MM WNGX080608PNSR-MM WNGX080608PNER-ML WNGX080608PNER-ML WNGX080612PNSR-MM WNGX080608PNER-ML WNGX080612PNSR-MM			E125
RMR		RMRS-RN12	Sa.	Ø32~Ø63	RNMX1204M0E-ML	0	High cost efficiency due to double sided round typed cutting edge     Excellent rotating prevention by strong clamping system     Suitable for Inconel cutting	E146

# RM3PC(M)3000 @





















														(mm)
Desi	ignation	<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	kg
RM3PCM	3040HR	5	40	35	16	9	14	-	8.4	5.6	16	40	5.5	0.2
	3040HR-M	6	40	35	16	9	14	-	8.4	5.6	16	40	5.5	0.2
	3050HR	6	50	41	22	11	18	-	10.4	6.3	20	40	5.5	0.3
	3050HR-M	7	50	41	22	11	18	-	10.4	6.3	20	40	5.5	0.3
	3063HR	7	63	49	22	11	18	-	10.4	6.3	20	40	5.5	0.49
	3063HR-M	8	63	49	22	11	18	-	10.4	6.3	20	40	5.5	0.49
RM3PC	3080HR	8	80	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	25 (23)	50	5.5	0.87
(RM3PCM)	3080HR-M	10	80	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	25 (23)	50	5.5	0.88

( )Metric size

#### Available inserts



		Cei	met						C	oate	d						Ur	ncoa	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
XNKT	060405PNER-ML									•	•	•		•	•	•				
	060405PNSR-MM								•	•	•	•		•	•	•				F00
	060408PNER-ML											•			•	•				E32
	060408PNSR-MM								•	•	•	•			•	•				1

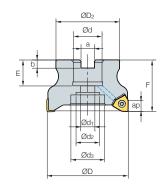
#### Available arbors

	Decimation	Availabl	le arbors		
	Designation	RM3PC	RM3PCM		
RM3PC(M)	3040HR		DTCC FMC46 CC		
	3040HR-M	- -	BT□□ -FMC16-□□		
	3050HR				
	3050HR-M		DTCC FMC22 CC		
	3063HR	-	BT□□ -FMC22-□□		
	3063HR-M				
	3080HR	BT□□ -FMA25.4-□□	BT□□-FMC27-□□		
	3080HR-M	DI FIVIA 2 3.4	DI LL -FMC27-LL		

Specification			
	Screw	Wrench	
Ø40~Ø80	FTNA0306	TW09S	

# RM3PC(M)4000 (W)























- (	(r	n	n	n

( )Metric size

Desi	gnation	0	ØD	ØD2	Ød	Ød1	Ød2	Ødз	а	b	Е	F	ар	kg
RM3PCM	4040HR	3	40	35	16	9	14	-	8.4	5.6	19	40	8.0	0.19
	4040HR-M	4	40	35	16	9	14	-	8.4	5.6	19	40	8.0	0.19
	4050HR	4	50	42	22	11	18	-	10.4	6.3	20	40	8.0	0.28
	4050HR-M	5	50	42	22	11	18	-	10.4	6.3	20	40	8.0	0.29
	4063HR	5	63	49	22	11	18	-	10.4	6.3	20	40	8.0	0.54
	4063HR-M	6	63	49	22	11	18	-	10.4	6.3	20	40	8.0	0.53
RM3PC	4080HR	5	80	57	25.4 (27)	14	20	35	9.5 (12.4)	6 (7)	25 (23)	50	8.0	1.08
(RM3PCM)	4080HR-M	7	80	57	25.4 (27)	14	20	35	9.5 (12.4)	6 (7)	25 (23)	50	8.0	1.06
	4100HR	7	100	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	33 (25)	63 (50)	8.0	1.68
	4100HR-M	8	100	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	33 (25)	63 (50)	8.0	1.67
	4125HR	8	125	90	38.1 (40)	22	32	52	15.9 (16.4)	9 (10)	38 (29)	63	8.0	3.45
	4125HR-M	10	125	90	38.1 (40)	22	32	52	15.9 (16.4)	9 (10)	38 (29)	63	8.0	3.45

#### Available inserts





	XNCT-MA	XNKT-ML	XNKT-MM
	new new	new	ne
Of		Coa	tod

		Cer	met						(	Coate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
XNCT	080504PNFR-MA																		•	
	080508PNFR-MA																			
	080512PNFR-MA																			
	080520PNFR-MA																			
XNKT	080504PNER-ML																			
	080504PNSR-MM																			
	080508PNER-ML						•													E31
	080508PNSR-MM																			E32
	080512PNER-ML														•	•				
	080512PNSR-MM								•											
	080516PNER-ML														•	•				
	080516PNSR-MM								•	•	•				•	•				
	080520PNER-ML														•	•				
	080520PNSR-MM								•	•					•	•				

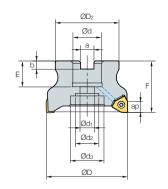
#### Available arbors

	Decimation	Availabl	e arbors
	Designation	RM3PC	RM3PCM
RM3PC(M)	4040HR	-	BT□□-FMC16-□□
,	4050HR	<u>_</u>	BT□□ -FMC22-□□
	4063HR	-	
	4080HR	BT□□ -FMA25.4-□□	BT□□ -FMC27-□□
	4100HR	BT□□ -FMA31.75-□□	BT□□ -FMC32-□□
	4125HR	BT□□ -FMA38.1-□□	BT□□-FMC40-□□

Specification			
	Screw	Wrench	
Ø40~Ø125	FTNA0408	TW15S	

# RM3PC(M)5000 @





















• AR: -5° • RR: -7°

														(11111)
Desi	gnation	(i)	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	kg
RM3PC	5080HR	5	80	57	25.4 (27)	14	20	35	9.5 (12.4)	6 (7)	24 (23)	50	12.0	0.84
(RM3PCM)	5080HR-M	7	80	57	25.4 (27)	14	20	35	9.5 (12.4)	6 (7)	24 (23)	50	12.0	0.84
	5100HR	7	100	67	31.75 (32)	18	28	45	12.7 (14.4)	8 (8)	32 (25)	63	12.0	1.76
	5100HR-M	8	100	67	31.75 (32)	18	28	45	12.7 (14.4)	8 (8)	32 (25)	63	12.0	1.76
	5125HR	8	125	90	38.1 (40)	22	32	52	15.9 (16.4)	9 (10)	38 (30)	63	12.0	2.70
	5125HR-M	10	125	90	38.1 (40)	22	32	52	15.9 (16.4)	9 (10)	38 (30)	63	12.0	2.70

( )Metric size

### Available inserts



			met						C	oate	d						Ur	icoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
XNCT	120608PNFR-MA																		•	
XNKT	120604PNSR-MM														•	•				
	120608PNER-ML										•	•		•	•	•				
	120608PNSR-MM								•	•	•	•		•	•	•				
	120612PNER-ML														•	•				E31
	120612PNSR-MM								•	•					•	•				E32
	120616PNER-ML														•	•				
	120616PNSR-MM								•	•					•	•				
	120620PNER-ML														•	•				
	120620PNSR-MM								•	•					•	•				

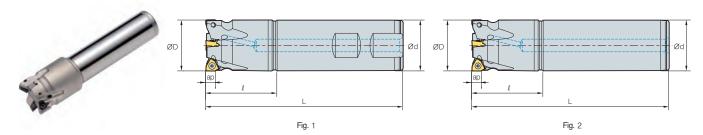
#### Available arbors

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

Specification		Nagar .	
	Screw	Wrench	
Ø80~Ø125	FTNA0511	TW20-100	



# RM3PS3000 (mw)





(mm) Designation (0) ØD Ød Q L Fig. ар kg RM3PS 3020HR-2S20 5.5 0.21 3020HR-2L20 5.5 0.43 3021HR-2S20 5.5 0.21 3021HR-2L20 5.5 0.43 3025HR-3S20 5.5 0.27 3025HR-3L20 5.5 0.46 3025HR-3S25 5.5 0.36 3025HR-3L25 5.5 0.66 3026HR-2S20 5.5 0.29 3026HR-2L20 5.5 0.47 3026HR-3S20 5.5 0.28 3026HR-3L20 5.5 0.47 3026HR-2S25 5.5 0.37 3026HR-2L25 5.5 0.68 3026HR-3S25 5.5 0.37 3026HR-3L25 5.5 0.68 3032HR-3S25 0.48 5.5 3032HR-3L25 5.5 0.74 3032HR-4S25 5.5 0.48 3032HR-4L25 5.5 0.74 3032HR-4S32 5.5 0.68 3032HR-4L32 5.5 1.13 3033HR-3S25 5.5 0.49 3033HR-3L25 5.5 0.75 3033HR-4S25 5.5 0.49 3033HR-4L25 5.5 0.75 3033HR-4S32 5.5 0.70 3033HR-4L32 5.5 1.14 3040HR-4S32 5.5 0.83 3040HR-4L32 5.5 1.24 3040HR-5S32 5.5 0.83 3040HR-5L32 5.5 1.24

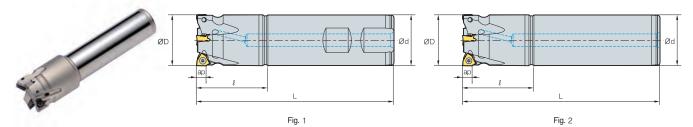
#### Available inserts

XNKT-ML	XNKT-MM
new	new

		Cer	met														Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
XNKT	060405PNER-ML									•	•	•		•	•	•				
	060405PNSR-MM								•	•	•	•		•	•	•				E32
	060408PNER-ML											•			•	•				E32
	060408PNSR-MM								•	•	•	•			•	•				

Specification			
	Screw	Wrench	
Ø20~Ø40	FTNA0306	TW09S	

# RM3PS4000 @



					Inni		90°	• AR: -5° • RR: -11°~-7
							90	• RR: -11°~-1

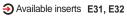
									(mm
D	esignation	©	ØD	Ød	Q	L	ар	kg	Fig.
RM3PS	4032HR-3S32	3	32	32	42	125	8	0.67	2
	4032HR-3L32	3	32	32	42	200	8	1.11	1
	4033HR-3S32	3	33	32	42	125	8	0.68	2
	4033HR-3L32	3	33	32	42	200	8	1.13	1
	4040HR-3S32	3	40	32	42	130	8	0.8	2
	4040HR-3L32	3	40	32	42	200	8	1.21	1
	4040HR-4S32	4	40	32	42	130	8	0.81	2
	4040HR-4L32	4	40	32	42	200	8	1.22	1
	4050HR-4S32	4	50	32	42	135	8	0.99	2
	4050HR-4L32	4	50	32	42	200	8	1.38	1
	4050HR-4S40	4	50	40	42	135	8	1.32	2
	4050HR-4L40	4	50	40	42	200	8	1.94	1
	4050HR-5S32	5	50	32	42	135	8	1.02	2
	4050HR-5L32	5	50	32	42	200	8	1.4	11
	4050HR-5S40	5	50	40	42	135	8	1.35	2
	4050HR-5L40	5	50	40	42	200	8	1.96	1
	4063HR-5S32	5	63	32	42	135	8	1.31	2
	4063HR-5L32	5	63	32	42	200	8	1.7	1
	4063HR-5S40	5	63	40	42	135	8	1.64	2
	4063HR-5L40	5	63	40	42	200	8	2.25	1
	4063HR-6S32	6	63	32	42	135	8	1.31	2
	4063HR-6L32	6	63	32	42	200	8	1.7	1
	4063HR-6S40	6	63	40	42	135	8	1.64	2
	4063HR-6L40	6	63	40	42	200	8	2.26	1

#### Available inserts

XNKT-MM
new new

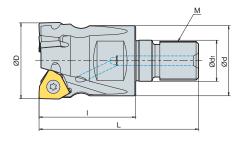
		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
XNCT	080504PNFR-MA																		•	
	080508PNFR-MA																		•	
	080512PNFR-MA																		•	
	080520PNFR-MA																		•	
XNKT	080504PNER-ML														•	•				
	080504PNSR-MM										•				•	•				
	080508PNER-ML						•							•	•					E31
	080508PNSR-MM						•		•		•			•	•	•				E32
	080512PNER-ML														•					
	080512PNSR-MM									•					•					
	080516PNER-ML														•					
	080516PNSR-MM								•	•					•	•				
	080520PNER-ML														•	•				
	080520PNSR-MM								•	•					•					

Specification	Screw	Wrench		
Ø32~Ø63	FTNA0408	TW15S		



# RM3PM3000/4000





















(mm)

De	esignation	©	ØD	Ød	Ød1	1	L	М	ар	kg
RM3PM	3020HR-2-M10	2	20	18	10.5	30	50	M10	5.5	0.06
	3025HR-3-M12	3	25	21	12.5	35	58	M12	5.5	0.1
	3032HR-4-M16	4	32	29	17	40	66	M16	5.5	0.21
	3040HR-5-M16	5	40	29	17	40	66	M16	5.5	0.26
RM3PM	4032HR-3-M16	3	32	29	17	40	66	M16	8	0.21
	4040HR-4-M16	4	40	29	17	50	76	M16	8	0.33
	4050HR-5-M16	5	50	29	17	55	81	M16	8	0.49

#### Available inserts













			Cer	met						C	coate	d						Uı	ncoat	ed	
	Desi	gnation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
	XNKT	060405PNER-ML									•	•	•		•	•	•				
3000		060405PNSR-MM								•	•	•	•		•	•	•				E32
type		060408PNER-ML																			E32
		060408PNSR-MM																			
	XNCT	080504PNFR-MA																		•	
		080508PNFR-MA																		•	
		080512PNFR-MA																			
		080520PNFR-MA																		•	
	XNKT	080504PNER-ML														•					
		080504PNSR-MM																			
4000		080508PNER-ML														•					E31
type		080508PNSR-MM														•					E32
		080512PNER-ML														•					
		080512PNSR-MM								•	•					•	•				
		080516PNER-ML														•	•				
		080516PNSR-MM								•	•					•	•				
		080520PNER-ML														•	•				
		080520PNSR-MM								•	•					•	•				

#### Available adaptor

	•	
	Designation	Available adaptor
RM3PM	3020HR-2-M10	MAT-M10
	3025HR-3-M12	MAT-M12
	3032HR-4-M16	MAT-M16
	3040HR-5-M16	MAT-M16
RM3PM	4032HR-3-M16	MAT-M16
	4040HR-4-M16	MAT-M16
	ADEOLID E MAG	MAT MAG

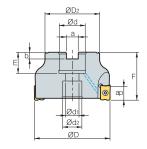
Designation: RM3PM4032HR-M16 Modular head threading measure size (M16)

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

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

# RM4PC(M)3000



















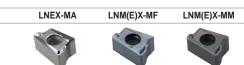
• AR: -6° • RR: -19°~-13°

(mm)

														(111111)
Desi	gnation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Bolt
RM4PCM	3040HR	4	40	35	16	9	14	8.4	5.6	19	40	9.0	0.24	SB0825
	3040HR-M	5	40	35	16	9	14	8.4	5.6	19	40	9.0	0.23	SB0825
	3050HR	5	50	42	22	11	18	10.4	6.3	20	40	9.0	0.36	SB1025
	3050HR-M	7	50	42	22	11	18	10.4	6.3	20	40	9.0	0.35	SB1025
	3063HR	7	63	49	22	11	18	10.4	6.3	20	40	9.0	0.61	SB1025
	3063HR-M	9	63	49	22	11	18	10.4	6.3	20	40	9.0	0.6	SB1025
RM4PC	3080HR	8	80	57	25.4 (27)	14	20	9.5 (12.4)	6.0 (7.0)	25 (23)	50	9.0	1.25 (1.24)	SB1230
(RM4PCM)	3080HR-M	10	80	57	25.4 (27)	14	20	9.5 (12.4)	6.0 (7.0)	25 (23)	50	9.0	1.24 (1.23)	SB1230
` ,	3100HR	9	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0 (8.0)	33 (25)	63 (50)	9.0	2.46 (1.94)	SB1630
	3100HR-M	12	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0 (8.0)	33 (25)	63 (50)	9.0	2.44 (1.93)	SB1630

( )Metric size

#### Available inserts



		Cer	met						C	oate	d						Ur	ncoat	ted	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	<b>1</b>	page
LNEX	100605PNR-MF											•			•	•				
	100605PNR-MM										•	•			•	•				
	100605PNR-MA																		•	
	100608PNR-MF										•	•			•	•				
	100608PNR-MM											•			•	•				E11
LNMX	100605PNR-MF											•			•	•				
	100605PNR-MM										•	•	•		•	•				
	100608PNR-MF											•			•	•				
	100608PNR-MM										•				•	•				

#### Available arbors

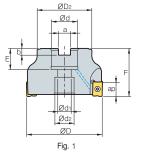
Docio	ınation	Available arbors								
Desig	nation	RM4PC	RM4PCM							
RM4PC(M)	3040HR		BT -FMC16-							
	3040HR-M	-	BILL-FINICIO-LL							
	3050HR									
	3050HR-M		BT -FMC22-							
	3063HR	-	BILL-FIVICZZ-LL							
	3063HR-M									

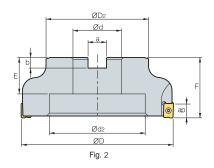
Docie	nation	Available arbors									
Desig	nation	RM4PC	RM4PCM								
RM4PC(M)	3080HR	BT□□ -FMA25.4-□□	BT -FMC27-								
	3080HR-M	DII WAZJ.4									
	3100HR	BT□□-FMA31.75-□□	BT□□-FMC32-□□								
	3100HR-M	DII WASI.75	DII IWC32								

Specification			
	Screw	Wrench	
Ø40~Ø100	FTKA0307	TW09S	

# RM4PC(M)4000





















(mm)

Desi	gnation	(i)	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Bolt	Fig.
RM4PCM	4040HR	3	40	36	16	11	18	8.4	5.6	19	40	14	0.23	SB0825	1
	4050HR	3	50	46	22	11	18	10.4	6.3	20	40	14	0.36	SB1025	1
	4050HR-M	4	50	46	22	11	18	10.4	6.3	20	40	14	0.35	SB1025	1
	4050HR-H	5	50	46	22	11	18	10.4	6.3	20	40	14	0.36	SB1025	1
	4063HR	4	63	49	22	11	18	10.4	6.3	20	40	14	0.56	SB1025	1
	4063HR-M	6	63	49	22	11	18	10.4	6.3	20	40	14	0.57	SB1025	1
RM4PC	4080HR	5	80	57	25.4 (27)	14	20	9.5 (12.4)	6.0 (7.0)	25 (23)	50	14	1.18 (1.16)	SB1230	1
(RM4PCM)	4080HR-M	7	80	57	25.4 (27)	14	20	9.5 (12.4)	6.0 (7.0)	25 (23)	50	14	1.17 (1.14)	SB1230	1
	4080HR-H	8	80	57	25.4 (27)	14	20	9.5 (12.4)	6.0 (7.0)	25 (23)	50	14	1.17 (1.14)	SB1230	1
	4100HR	5	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0 (8.0)	33 (25)	63 (50)	14	2.35 (1.84)	SB1630	1
	4100HR-M	8	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0 (8.0)	33 (25)	63 (50)	14	2.31 (1.82)	SB1630	1
	4100HR-H	9	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0 (8.0)	33 (25)	63 (50)	14	2.31 (1.82)	SB1630	1
	4125HR	7	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9.0)	35 (30)	63	14	3.87 (3.79)	SB2040	1
	4125HR-M	10	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9.0)	35 (30)	63	14	3.82 (3.70)	SB2040	1
	4160R	8	160	107	50.8 (40)	-	100	19 (16.4)	11 (9.0)	38 (32)	63	14	5.0 (4.75)	MBA	2
	4160R-M	12	160	107	50.8 (40)	-	100	19 (16.4)	11 (9.0)	38 (32)	63	14	4.97 (4.71)	MBA	2

( )Metric size

#### Available inserts

LNEX-MA

LNM(E)X-MF

LNM(E)X-MM







		Cermet				C	Coat	ted				Uncoate	d					Cerme	et			(	coa	ted				Uncoated	
D	esignation	CN2500 CN30	ت	NCM325 NCM335	NCM535	NCM545	PC2505	PC3700	PC6510	PC9540	PC5300 PC5400	ST30A HO	pa	ge	D	esig	nation	CN2500	ے اک	NCM325 NCM325	NCM535	NCM545	PC2505	PC3700	PC6510 PC9530	PC9540	PC5300 PC5400	ST30A H01	page
LNEX	151004PNR-MF								•		• •				LNMX	151	004PNR-MF							•	•		• •		
	151004PNR-MM							П	•		• •					151	004PNR-MM								•		•		
	151004PNR-MA															151	008PNR-MF				•			•	•		• •		
	151008PNR-MF										• •		E1	,		151	008PNR-MM				•				• •	)	• •		E11
	151008PNR-MM							•			• •		_ = 1	'		151	016PNR-MF								•		• •		_ E ! !
	151008PNR-MA															151	016PNR-MM							•	•		•		
	151016PNR-MF								•		• •																		
	151016PNR-MM								•																				

#### Available arbors

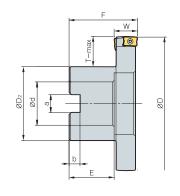
Decis	mation	Available arbors							
Desig	nation	RM4PC	RM4PCM						
RM4PC(M)	4050HR								
` ,	4050HR-M		BT□□-FMC22-□□						
	4063HR	_	BIFIVIC22						
	4063HR-M								
	4080HR	BT□□-FMA25.4-□□	BT -FMC27-						
	4080HR-M	DI     - FIVIA25.4-	DILL-FIVICZ/-LL						

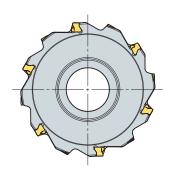
Doois	ınation	Available arbors							
Desig	Juanon	RM4PC	RM4PCM						
RM4PC(M)	4100HR	BT - FMA31.75-	BT -FMC32-						
	4100HR-M	BI - FIVIAST.75-	BIFIVIC32						
	4125HR	BT□□-FMA38.1-□□							
	4125HR-M	BILL-FIVIASO.I-LL	BT□□-FMB40-□□						
	4160R	BT -FMA50.8-	BT□□-FMC40-□□						
	4160R-M								

Specification			
	Screw	Wrench	
Ø50~Ø160	FTKA0412B	TW15S	

## RM4PFCB3000







(mm)

Desi	ignation	0	ØD	ØD2	Ød	а	b	E	F	w	T-max
RM4PFCB	308015R	10	80	40	25.4	9.5	6	25	50	15	19
	308017R	10	80	40	25.4	9.5	6	25	50	17	19
	310015R	12	100	54	31.75	12.7	8	32	50	15	22
	310017R	12	100	54	31.75	12.7	8	32	50	17	22
	312515R	14	125	70	38.1	15.9	10	38	60	15	26
	312517R	14	125	70	38.1	15.9	10	38	60	17	26
	316015R	16	160	70	38.1	15.9	10	38	60	15	44
	316017R	16	160	70	38.1	15.9	10	38	60	17	44

## Available inserts

LNM(E)X-MM



		Cer	met		Coated												Uncoated			
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNEX	100605PNR-MM										•	•			•	•				
	100605PNL-MM											•			•	•				
LNMX	100605PNR-MM										•	•	•		•	•				E11
	100605PNL-MM										•	•			•	•				

## Available arbors

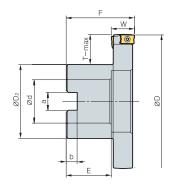
	Designation	Available arbors
RM4PFCB	308015R	BT□□ -FMA25.4-□□
	308017R	BI LL -FIWAZ3.4-LL
	310015R	BT□□-FMA31.75-□□
	310017R	BILL -FIWASI.75-LL
	312515R	
	312517R	BT□□-FMA38.1-□□
	316015R	BI LL -FIVIA30.1-LL
	316017R	

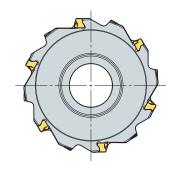
Specification			
	Screw	Wrench	
Ø80~Ø160	FTKA0307	TW09S	



## RM4PFCB4000







(mm)

Desi	gnation	<b>(</b>	ØD	ØD2	Ød	а	b	E	F	W	T-max
RM4PFCB	408022R	6	80	40	25.4	9.5	6	25	50	22	19
	408024R	6	80	40	25.4	9.5	6	25	50	24	19
	408026R	6	80	40	25.4	9.5	6	25	50	26	19
	408028R	6	80	40	25.4	9.5	6	25	50	28	19
	410022R	8	100	54	31.75	12.7	8	32	50	22	22
	410024R	8	100	54	31.75	12.7	8	32	50	24	22
	410026R	8	100	54	31.75	12.7	8	32	50	26	22
	410028R	8	100	54	31.75	12.7	8	32	50	28	22
	412522R	10	125	70	38.1	15.9	10	38	60	22	26
	412524R	10	125	70	38.1	15.9	10	38	60	24	26
	412526R	10	125	70	38.1	15.9	10	38	60	26	26
	412528R	10	125	70	38.1	15.9	10	38	60	28	26
	416022R	12	160	70	38.1	15.9	10	38	60	22	44
	416024R	12	160	70	38.1	15.9	10	38	60	24	44
	416026R	12	160	70	38.1	15.9	10	38	60	26	44
	416028R	12	160	70	38.1	15.9	10	38	60	28	44

## Available inserts

LNM(E)X-MM



		Cer	met		Coated Uncoated									ed						
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNEX	151008PNR-MM										•	•			•	•				
	151008PNL-MM											•			•	•				E11
LNMX	151008PNR-MM						•				•	•	•		•	•				E ! !
	151008PNL-MM														•	•				

## Available arbors

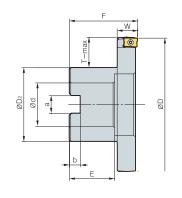
De	signation	Available arbors
RM4PFCB	408022R	
	408024R	BT - FMA25.4-
	408026R	BIFIVIA25.4
	408028R	
	410022R	
	410024R	DT
	410026R	BT□□-FMA31.75-□□
	410028R	

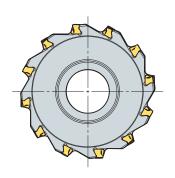
De	signation	Available arbors
RM4PFCB	412522R	
	412524R	
	412526R	
	412528R	] BT□□ -FMA38.1-□□
	416022R	
	416024R	
	416026R	
	416028R	

Specification			
	Screw	Wrench	
Ø80~Ø160	FTKA0412B	TW15S	

## RM4PHCB3000







(mm)

Desi	gnation	<b>(</b>	ØD	ØD2	Ød	а	b	E	F	W	T-max
RM4PHCB	308015R	10	80	40	25.4	9.5	6	25	50	15	19
	310015R	12	100	54	31.75	12.7	8	32	50	15	22
	312515R	14	125	70	38.1	15.9	10	38	60	15	26
	316015R	16	160	70	38.1	15.9	10	38	60	15	44

## Available inserts

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

		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	F03	page
LNEX	100605PNR-MF											•			•	•				
	100605PNR-MM										•	•			•	•				
	100605PNR-MA																		•	
	100608PNR-MF										•	•			•	•				
	100608PNR-MM											•			•	•				E11
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	BIUU-FIVIASS.I-UU

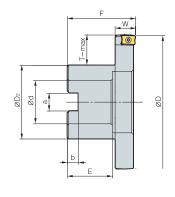
ench	Wrench	Screw	Specification
/09S	TW09S	FTKA0307	Ø80~Ø160

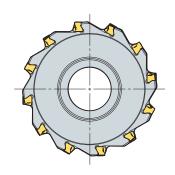




## **RM4PHCB4000**







(mm)

Desi	gnation	<b>(</b>	ØD	ØD2	Ød	а	b	E	F	W	T-max
RM4PHCB	408020R	6	80	40	25.4	9.5	6	25	50	20	19
	410020R	8	100	54	31.75	12.7	8	32	50	20	22
	412520R	10	125	70	38.1	15.9	10	38	60	20	26
	416020R	12	160	70	38.1	15.9	10	38	60	20	44

## Available inserts

LNEX-MA LNM(E)X-MM







					_															
		Cer	met						C	oate	d						Uı	ncoa	ted	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNEX	151004PNR-MF											•			•	•				
	151004PNR-MM											•			•	•				
	151004PNR-MA																		•	
	151008PNR-MF											•			•	•				
	151008PNR-MM										•	•			•	•				
	151008PNR-MA																		•	
	151016PNR-MF											•			•	•				E11
	151016PNR-MM											•			•	•				E11
LNMX	151004PNR-MF										•	•			•	•				
	151004PNR-MM											•				•				
	151008PNR-MF						•				•	•			•	•				
	151008PNR-MM						•				•	•	•		•	•				
	151016PNR-MF											•			•	•				
	151016PNR-MM											•				•				

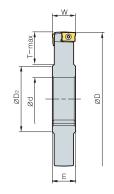
## Available arbors

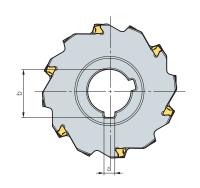
	Designation	Available arbors
RM4PHCB	408020R	BT□□ -FMA25.4-□□
	410020R	BT□□ -FMA31.75-□□
	412520R	BT□□ -FMA38.1-□□
	416020R	- BI FMA36.1

Specification			
	Screw	Wrench	
Ø80~Ø160	FTKA0412B	TW15S	

## RM4PFCP3000







(mm)

Desi	gnation	<b>(</b>	ØD	ØD2	Ød	а	b	E	W	T-max
RM4PFCP	308015R	10	80	41.5	25.4	6.35	28	15	15	17
	308017R	10	80	41.5	25.4	6.35	28	17	17	17
	310015R	12	100	48	31.75	7.94	35.2	15	15	24
	310017R	12	100	48	31.75	7.94	35.2	17	17	24
	312515R	14	125	58	38.1	9.53	42.3	15	15	32
	312517R	14	125	58	38.1	9.53	42.3	17	17	32
	316015R	16	160	58	38.1	9.53	42.3	15	15	49
	316017R	16	160	58	38.1	9.53	42.3	17	17	49

## Available inserts

LNM(E)X-MM



		Cer	met						C	coate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNEX	100605PNR-MM										•	•			•	•				
	100605PNL-MM											•			•	•				
LNMX	100605PNR-MM										•	•	•		•	•				E11
	100605PNL-MM										•	•			•	•				

## Available arbors

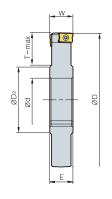
	Designation	Available arbors
RM4PFCP	308015R	BT□□ -SCA25.4-□□
	308017R	B1□□-3CA23.4-□□
	310015R	BT□□ -SCA31.75-□□
	310017R	B1□□-3CA31.73-□□
	312515R	
	312517R	BT□□ -SCA38.1-□□
	316015R	B1□□-3CA36.1-□□
	316017R	

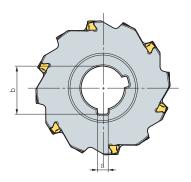
Specification			
	Screw	Wrench	
Ø80~Ø160	FTKA0307	TW09S	



## RM4PFCP4000







(mm)

Desi	gnation	<b>©</b>	ØD	ØD2	Ød	а	b	E	W	T-max
RM4PFCP	408022R	6	80	41.5	25.4	6.35	28	22	22	17
	408024R	6	80	41.5	25.4	6.35	28	24	24	17
	408026R	6	80	41.5	25.4	6.35	28	26	26	17
	408028R	6	80	41.5	25.4	6.35	28	28	28	17
	410022R	8	100	48	31.75	7.94	35.2	22	22	24
	410024R	8	100	48	31.75	7.94	35.2	24	24	24
	410026R	8	100	48	31.75	7.94	35.2	26	26	24
	410028R	8	100	48	31.75	7.94	35.2	28	28	24
	412522R	10	125	58	38.1	9.53	42.3	22	22	32
	412524R	10	125	58	38.1	9.53	42.3	24	24	32
	412526R	10	125	58	38.1	9.53	42.3	26	26	32
	412528R	10	125	58	38.1	9.53	42.3	28	28	32
	416022R	12	160	58	38.1	9.53	42.3	22	22	49
	416024R	12	160	58	38.1	9.53	42.3	24	24	49
	416026R	12	160	58	38.1	9.53	42.3	26	26	49
	416028R	12	160	58	38.1	9.53	42.3	28	28	49

## Available inserts

LNM(E)X-MM



		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
LNEX	151008PNR-MM										•	•			•	•				
	151008PNL-MM											•			•	•				E44
LNMX	151008PNR-MM						•				•	•	•		•	•				E11
	151008PNL-MM														•	•				

## Available arbors

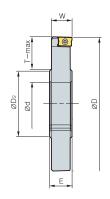
De	signation	Available arbors
RM4PFCP	408022R	
	408024R	BT□□-SCA25.4-□□
	408026R	БТSCA25.4
	408028R	
	410022R	
	410024R	BT□□ -SCA31.75-□□
	410026R	BI3CA31.73
	410028R	

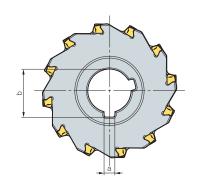
De	esignation	Available arbors
RM4PFCP	412522R	
	412524R	
	412526R	
	412528R	BT□□ -SCA38.1-□□
	416022R	BILL-3CA30.1-LL
	416024R	
	416026R	
	416028R	

Specification			
	Screw	Wrench	
Ø80~Ø160	FTKA0412B	TW15S	

## RM4PHCP3000







(mm)

Desig	gnation	<b>(</b>	ØD	ØD2	Ød	а	b	E	W	T-max
RM4PHCP	308015R	10	80	41.5	25.4	6.35	28	16.5	15.1	17
	310015R	12	100	48	31.75	7.94	35.2	16.5	15.1	24
	312515R	14	125	58	38.1	9.52	42.3	16.5	15.1	32
	316015R	16	160	58	38.1	9.52	42.3	16.5	15.1	49

## Available inserts

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

			١	6	8			V						
					C	oate	d						Ur	nc
NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	:

	Designation		met						C	oate	d						Ur	ncoat	ed	
			CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNEX	100605PNR-MF											•			•	•				
	100605PNR-MM										•	•			•	•				
	100605PNR-MA																		•	
	100608PNR-MF										•	•			•	•				
	100608PNR-MM											•			•	•				E11
LNMX	100605PNR-MF											•			•	•				
	100605PNR-MM										•	•	•		•	•				
	100608PNR-MF											•			•	•				
	100608PNR-MM										•				•	•				

## Available arbors

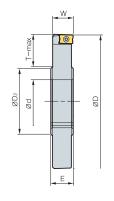
	Designation	Available arbors
RM4PHCP	308015R	BT□□ -SCA25.4-□□
	310015R	BT□□-SCA31.75-□□
	312515R	BT□□-SCA38.1-□□
	316015R	BI5CA30.1

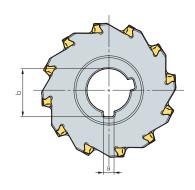
Specification			
	Screw	Wrench	
Ø80~Ø160	FTKA0307	TW09S	



## RM4PHCP4000







(mm)

Designation		©	ØD	ØD2	Ød	а	b	E	W	T-max
RM4PHCP	M4PHCP 408020R		80	41.5	25.4	6.35	28	22	19.8	17
	410020R	8	100	48	31.75	7.94	35.2	22	19.8	24
	412520R	10	125	58	38.1	9.53	42.3	22	19.8	32
	416020R	12	160	58	38.1	9.53	42.3	22	19.8	49

## Available inserts

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

		Cer	met						C	oate	d						Uı	ncoa	ted	
	Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNEX	151004PNR-MF											•			•	•				
	151004PNR-MM											•			•	•				
	151004PNR-MA																			
	151008PNR-MF											•			•	•				
	151008PNR-MM										•	•			•	•				
	151008PNR-MA																			
	151016PNR-MF											•			•	•				E11
	151016PNR-MM											•			•	•				E11
LNMX	151004PNR-MF										•	•			•	•				
	151004PNR-MM											•				•				
	151008PNR-MF						•				•	•			•	•				
	151008PNR-MM						•				•	•			•	•				
	151016PNR-MF											•			•	•				
	151016PNR-MM											•				•				

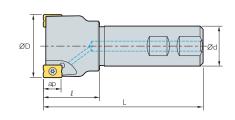
## Available arbors

	Designation	Available arbors
RM4PHCP	408020R	BT□□ -SCA25.4-□□
	410020R	BT□□ -SCA31.75-□□
	412520R	BT□□-SCA38.1-□□
	416020R	- DI 30A30. I

Specification			
	Screw	Wrench	
Ø80~Ø160	FTKA0412B	TW15S	

## RM4PS3000



















(mm)

D	Designation	©	ØD	Ød	Q	L	ар	
RM4PS	3014HR-S16	1	14	16	23	90	9.0	0.11
	3016HR-S16	1	16	16	25	90	9.0	0.11
	3018HR-S16	2	18	16	23	90	9.0	0.12
	3020HR-S20	2	20	20	30	100	9.0	0.21
	3020HR-S20M	3	20	20	30	100	9.0	0.21
	3025HR-S25	2	25	25	35	115	9.0	0.38
	3025HR-S25M	3	25	25	35	115	9.0	0.38
	3032HR-S32	3	32	32	40	125	9.0	0.69
	3032HR-S32M	4	32	32	40	125	9.0	0.7
	3040HR-S32	4	40	32	42	130	9.0	0.86
	3040HR-S32M	5	40	32	42	130	9.0	0.85
	3040HR-S40	4	40	40	42	130	9.0	1.17
	3040HR-S40M	5	40	40	42	130	9.0	1.17
	3040HR-S42	4	40	42	42	130	9.0	1.26
	3040HR-S42M	5	40	42	42	130	9.0	1.25
	3050HR-S32	5	50	32	45	135	9.0	1.06
	3050HR-S32M	7	50	32	45	135	9.0	1.05
	3050HR-S40	5	50	40	45	135	9.0	1.38
	3050HR-S40M	7	50	40	45	135	9.0	1.37
	3050HR-S42	5	50	42	45	135	9.0	1.48
	3050HR-S42M	7	50	42	45	135	9.0	1.48

## Available inserts

LNEX-MA

LNM(E)X-MF

LNM(E)X-MM







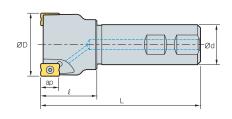
		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNEX	100605PNR-MF											•			•	•				
	100605PNR-MM										•	•			•	•				
	100605PNR-MA																		•	
	100605PNL-MM										•	•			•	•				
	100608PNR-MF											•			•	•				E11
	100608PNR-MM											•			•	•				E11
LNMX	100605PNR-MF										•	•	•		•	•				
	100605PNR-MM											•			•	•				
	100608PNR-MF										•				•	•				
	100608PNR-MM											•	•							

Specification			
	Screw	Wrench	
Ø14~Ø50	FTKA0307	TW09S	



## RM4PS4000



















• AR: -6° • RR: -24°~-14°

/-	~

D	esignation	<b>(</b>	ØD	Ød	Q	L	ар	kg \
RM4PS	4032HR-S32	2	32	32	40	125	14	0.68
	4032HR-S32M	3	32	32	40	125	14	0.69
	4040HR-S32	3	40	32	42	125	14	0.83
	4040HR-S32M	4	40	32	42	125	14	0.83
	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	1.02
	4050HR-S32M	4	50	32	45	125	14	1.02
	4050HR-S40	3	50	40	45	125	14	1.35
	4050HR-S40M	4	50	40	45	125	14	1.34
	4050HR-S42	3	50	42	45	125	14	1.45
	4050HR-S42M	4	50	42	45	125	14	1.45
	4063HR-S32	4	63	32	45	125	14	1.25
	4063HR-S32M	6	63	32	45	125	14	1.24
	4063HR-S40	4	63	40	45	125	14	1.62
	4063HR-S40M	6	63	40	45	125	14	1.61
	4063HR-S42	4	63	42	45	125	14	1.71
	4063HR-S42M	6	63	42	45	125	14	1.7

## Available inserts

LNEX-MA

LNM(E)X-MF

LNM(E)X-MM





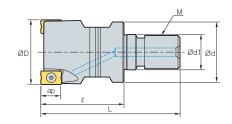


		Cer	met						(	Coate	d						Ur	ncoat	ted	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
LNEX	151004PNR-MF											•			•	•				
	151004PNR-MM											•			•	•				
	151004PNR-MA																		•	
	151008PNR-MF											•			•	•				
	151008PNR-MM										•	•			•	•				
	151008PNR-MA																		•	
	151016PNR-MF											•			•	•				E11
	151016PNR-MM											•			•	•				E ! !
LNMX	151004PNR-MF										•	•			•	•				
	151004PNR-MM											•				•				
	151008PNR-MF						•				•	•			•	•				
	151008PNR-MM						•				•	•	•		•	•				
	151016PNR-MF											•			•	•				
	151016PNR-MM											•				•				1

Specification			
	Screw	Wrench	
Ø32~Ø63	FTKA0412B	TW15S	

## **RM4PM3000**



















(mm)

De	signation	<b>(</b>	ØD	Ød	Ød1	Q	L	М	ар	_ kg \
RM4PM	3014HR-M06	1	14	12	6.5	25	40	M06	9.0	0.02
	3016HR-M08	1	16	14.5	8.5	25	42	M08	9.0	0.02
	3018HR-M08	2	18	14.5	8.5	25	42	M08	9.0	0.03
	3020HR-M10	2	20	18	10.5	30	51	M10	9.0	0.06
	3025HR-M12	2	25	23	12.5	35	59	M12	9.0	0.11
	3032HR-M16	3	32	29	17	40	67	M16	9.0	0.21
	3040HR-M16	4	40	29	17	40	67	M16	9.0	0.26
	3050HR-M16	5	50	30	17	45	72	M16	9.0	0.41

## Available inserts

LNEX-MA

LNM(E)X-MF

LNM(E)X-MM







		Cer	met						C	oate	d						Uı	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNEX	100605PNR-MF											•			•	•				
	100605PNR-MM										•	•			•	•				
	100605PNR-MA																		•	
	100608PNR-MF											•			•	•				
	100608PNR-MM											•			•	•				E11
LNMX	100605PNR-MF											•			•	•				
	100605PNR-MM										•	•	•		•	•				
	100608PNR-MF											•			•	•				
	100608PNR-MM										•				•	•				

## Available adaptor

	Designation	Available adaptor
RM4PM	3014HR-M06	MAT-M06
	3016HR-M08 3018HR-M08 3020HR-M10	MAT MOO
		MAT-M08
		MAT-M10
	3025HR-M12	MAT-M12
	3032HR-M16	
	3040HR-M16	MAT-M16
	3050HR-M16	

Designation: RM4PM3032HR-M16 Modular head threading measure size (M16)

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

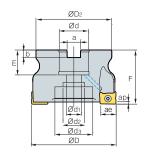
Specification			
	Screw	Wrench	
Ø14~Ø50	FTKA0307	TW09S	





# RM4ZC(M)3000/4000





















• AR: -11° • RR: -12°~-10°

(mm)

Des	ignation	(i)	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	ae	
RM4ZCM	3040HR	4	40	37	16	9	14	-	8.4	5.6	19	40	1.5	9.0	0.21
	3050HR	5	50	47	22	11	18	-	10.4	6.3	20	40	1.5	9.0	0.33
	3052HR	5	52	48	22	11	18	-	10.4	6.3	20	40	1.5	9.0	0.37
	4063HR	5	63	58	22	11	18	-	10.4	6.3	20	40	2.5	14.0	0.56
RM4ZC	4066HR	5	66	61	25.4 (27)	14	20	-	9.5 (12.4)	6 (7)	25	50	2.5	14.0	0.74
(RM4ZCM)	4080HR	6	80	70	25.4 (27)	14	20	35	9.5 (12.4)	6 (7)	25 (23)	50	2.5	14.0	1.09
	4100HR	7	100	80	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	25 (33)	63 (50)	2.5	14.0	1.71

( )Metric size

## Available inserts

LNM(E)X-MM



			Cer	Cermet Coated											Ur	coat	ed				
	Des	signation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	НО	page
3000	LNEX	100605PNL-MM											•			•	•				
type	LNMX	100605PNL-MM										•	•			•	•				E11
4000	LNEX	151008PNL-MM											•			•	•				EII
type	LNMX	151008PNL-MM														•	•				

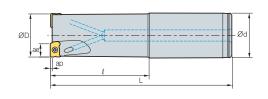
## Available arbors

	Designation	Availabl	le arbors									
	Designation	RM4ZC	RM4ZCM									
RM4ZCM	3040HR		MC16-□□ CA16-□□									
	3050HR											
	3052HR	BT□□ -FMC22-□□										
RM4ZCM	4063HR	BT□□-Fl	MC22-□□									
RM4ZC(M)	4066HR	BT□□ -FMA25.4-□□	BT□□-FMC27-□□									
	4080HR	BIFIMA25.4	BIFMC27									
	4100HR	BT□□ -FMA31.75-□□	BT□□-FMC32-□□									
	4100010	BT□□ -SCA31.75-□□	B1□□-FMC32-□□									

Specification			
	Screw	Wrench	
52 (3000 type)	FTKA0307	TW09S	
Ø100 (4000 type)	FTKA0412B	TW15S	

## RM4ZS3000



















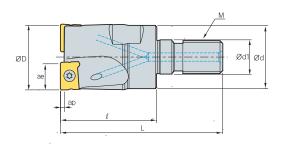


(mm)

De	signation	<b>©</b>	ØD	Ød	Q	L	ар	ae	(kg)
RM4ZS	3025HR-L25	2	25	25	120	200	1.5	9.0	0.62
	3032HR-L32	3	32	32	120	210	1.5	9.0	1.13
	3040HR-L32	4	40	32	120	250	1.5	9.0	1.53

## **RM4ZM3000**





















•AR : -11° •RR : -17°~-14°

(mm)

Des	signation	0	ØD	Ød	Ød1	Q	L	M	ар	ae	
RM4ZM	3025HR-M12	2	25	23	12.5	35	59	M12	1.5	9.0	0.11
	3032HR-M16	3	32	29	17	40	67	M16	1.5	9.0	0.21
	3040HR-M16	4	40	29	17	40	67	M16	1.5	9.0	0.28

## Available inserts

LNM(E)X-MM

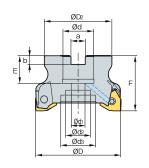


		Cer	met						(	Coate	d						Ur	coat	ed	
	Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
LNEX	100605PNL-MM											•			•	•				E11
LNMX	100605PNL-MM										•	•			•	•				E11

Specification			
	Screw	Wrench	
Ø25~Ø40	FTKA0307	TW09S	

# RM6PCM-WN04





















(mm)

D	Designation	<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	Е	F	ар		Available screw
RM6PCM	040R-16-6-WN04	6	40	35	16	9	14	-	8.4	5.6	19	40	4.3	0.19	ETNA02506
	040R-16-7-WN04	7	40	35	16	9	14	-	8.4	5.6	19	40	4.3	0.19	ETNA02506
	050R-22-8-WN04	8	50	42	22	11	18	-	10.4	6.3	20	40	4.3	0.28	ETNA02506
	050R-22-9-WN04	9	50	42	22	11	18	-	10.4	6.3	20	40	4.3	0.28	ETNA02506
	063R-22-10-WN04	10	63	49	22	11	18	-	10.4	6.3	20	40	4.3	0.47	ETNA02506
	063R-22-11-WN04	11	63	49	22	11	18	-	10.4	6.3	20	40	4.3	0.47	ETNA02506

## Available inserts

WNGX-MA

WNGX-ML

WNGX-MM







		Cer	met						C	oate	d						Uı	ncoat	ted	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
WNGX	040304PNFR-MA																		•	
	040308PNFR-MA																			
	040312PNFR-MA																		•	
	040316PNFR-MA																		•	
	040304PNER-ML											•		•	•	•				
	040308PNER-ML														•	•				E30
	040312PNER-ML														•					
	040316PNER-ML														•					
	040304PNSR-MM											•			•	•				
	040308PNSR-MM														•	•				
	040312PNSR-MM														•					
	040316PNSR-MM														•					

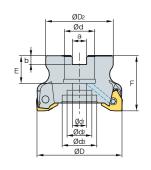
## Available arbors

	Designation	NC arbors
RM6PCM	040R-16-6-WN04	BT□□-FMC16-□□
	040R-16-7-WN04	DI LL-TINC IO-LL
	050R-22-8-WN04	
	050R-22-9-WN04 050R-22-9-WN04 063R-22-10-WN04	BT□□-FMC22-□□
		DI *FINIQZZ*
	063R-22-11-WN04	

Specification			
	Screw	Wrench	
Ø40~Ø63	ETNA02506	TW07S	

# RM6PC(M)-WN08



















• AR: -6° • RR: -14°~-11°

(mm)

															()
	Designation	<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	Е	F	ар	kg	Available screw
RM6PCM	050R-22-4-WN08	4	50	42	22	11	18	-	10.4	6.3	20	40	8.2	0.28	FTNA0513
	050R-22-5-WN08	5	50	42	22	11	18	-	10.4	6.3	20	40	8.2	0.27	FTNA0511
	063R-22-5-WN08	5	63	49	22	11	18	-	10.4	6.3	20	40	8.2	0.45	FTNA0513
	063R-22-6-WN08	6	63	49	22	11	18	-	10.4	6.3	20	40	8.2	0.45	FTNA0513
	080R-27-7-WN08	7	80	57	27	14	20	35	12.4	7	23	50	8.2	0.90	FTNA0513
	080R-27-9-WN08	9	80	57	27	14	20	35	12.4	7	23	50	8.2	0.89	FTNA0511
	100R-32-8-WN08	8	100	67	32	18	26	42	14.4	8	25	50	8.2	1.47	FTNA0513
	100R-32-11-WN08	11	100	67	32	18	26	42	14.4	8	25	50	8.2	1.45	FTNA0511
	125R-40-11-WN08	11	125	90	40	22	32	52	16.4	9	29	63	8.2	2.94	FTNA0513
	125R-40-14-WN08	14	125	90	40	22	32	52	16.4	9	29	63	8.2	2.91	FTNA0511
RM6PC	080R-25.4-7-WN08	7	80	57	25.4	14	20	35	9.5	6	25	50	8.2	0.91	FTNA0513
	080R-25.4-9-WN08	9	80	57	25.4	14	20	35	9.5	6	25	50	8.2	0.91	FTNA0511
	100R-31.75-8-WN08	8	100	67	31.75	18	26	42	12.7	8	32	63	8.2	1.69	FTNA0513
	100R-31.75-11-WN08		100	67	31.75	18	26	42	12.7	8	32	63	8.2	1.73	FTNA0511
	125R-38.1-11-WN08		125	90	38.1	22	32	52	15.9	10	35	63	8.2	1.98	FTNA0513
	125R-38.1-14-WN08	14	125	90	38.1	22	32	52	15.9	10	35	63	8.2	2.90	FTNA0511

## Available inserts

WNGX-MA

WNGX-ML

WNGX-MM







		Cermet			Co	oate	d			Uncoate	ed				Cermet			C	coate	ed			Uncoated	ı
ı	Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545 PC2505	PC2010	PC6510	PC9530	PC5300	ST30A HOT	paç	ge	С	esignation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545	PC2010	PC3700 PC6510	PC9530 PC9540	PC5300 PC5400	ST30A H01	page
WNGX	080604PNFR-MA									•			WNGX	080616PNER-ML								•		
	080608PNFR-MA													080620PNER-ML								•		
	080612PNFR-MA													080604PNSR-MM						•		• •		
	080616PNFR-MA										E3	,		080608PNSR-MM			•	)		• •		• •		E30
	080620PNFR-MA										E3	0		080612PNSR-MM								•		E30
	080604PNER-ML					•			•					080616PNSR-MM								•		
	080608PNER-ML			•		•	•	•	•					080620PNSR-MM								•		
	080612PNER-ML								•															

## Available arbors

	Designation	NC arbors
RM6PC	080R-25.4-7-WN08	BT□□-FMA25.4-□□
	080R-25.4-9-WN08	BIFIVIA25.4
	100R-31.75-8-WN08	BT□□-FMA31.75-□□
	100R-31.75-11-WN08	BIFIVIAS1.75
	125R-38.1-11-WN08	BT - FMA38.1-
	125R-38.1-14-WN08	BIFIVIA30. I
RM6PCM	050R-22-4-WN08	BT -FMC22-
	050R-22-5-WN08	BIFIWICZZ

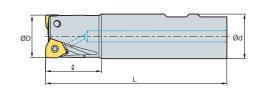
	Designation	NC arbors
RM6PCM	063R-22-5-WN08	BT□□-FMC22-□□
	063R-22-6-WN08	BIFIVICZZ
	080R-27-7-WN08	BT□□-FMC27-□□
	080R-27-9-WN08	BIFIVICZI
	100R-32-8-WN08	BT□□-FMC32-□□
	100R-32-11-WN08	BI LL-FIVIC32-LL
	125R-40-11-WN08	BT - FMC40-
	125R-40-14-WN08	BILL-FIVIC4U-LL

Specification		No Roy
	Screw	Wrench
Ø50~Ø125	FTNA0511/FTNA0513	TW20-100



# RM6PS-WN04



















• AR: -6° • RR: -20°~-14°

(mm)

	Designation	0	ØD	Ød	Q	L	ар		Available screw
RM6PS	020R-2W20-110-WN04	2	20	20	35	110	4.3	0.22	ETNA02506
	020R-3W20-110-WN04	3	20	20	35	110	4.3	0.22	ETNA02506
	025R-3W25-110-WN04	3	25	25	35	110	4.3	0.36	ETNA02506
	025R-4W25-110-WN04	4	25	25	35	110	4.3	0.35	ETNA02506
	032R-5W32-110-WN04	5	32	32	35	110	4.3	0.60	ETNA02506
	032R-6W32-110-WN04	6	32	32	35	110	4.3	0.60	ETNA02506

## Available inserts

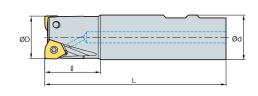
WNGX-MA WNGX-ML WNGX-MM

		Cer	met					C	Coate	d					Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
WNGX	040304PNFR-MA																•	
	040308PNFR-MA																	
	040312PNFR-MA																•	
	040316PNFR-MA																•	
	040304PNER-ML									•		•	•	•				
	040308PNER-ML												•	•				E30
	040312PNER-ML												•					E30
	040316PNER-ML												•					
	040304PNSR-MM									•			•	•				
	040308PNSR-MM												•	•				
	040312PNSR-MM												•					
	040316PNSR-MM												•					

Specification		
	Screw	Wrench
Ø20~Ø32	ETNA02506	TW07S

## RM6PS-WN08









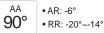












(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	kg	Available screw
RM6PS	032R-2W32-120-WN08	2	32	32	40	120	8.2	0.65	FTNA0513
	040R-3W32-120-WN08	3	40	32	40	120	8.2	0.69	FTNA0513
	040R-4W32-120-WN08	4	40	32	40	120	8.2	0.69	FTNA0513
	050R-4W32-120-WN08	4	50	32	40	120	8.2	0.76	FTNA0513
	050R-5W32-120-WN08	5	50	32	40	120	8.2	0.76	FTNA0513

## Available inserts

WNGX-MA

WNGX-ML

WNGX-MM

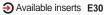






				_																
		Cer	met		Coated									Uncoated						
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
WNGX	080604PNFR-MA																		•	
	080608PNFR-MA																		•	1
	080612PNFR-MA																			1
	080616PNFR-MA																		•	
	080620PNFR-MA																		•	
	080604PNER-ML										•			•	•	•				
	080608PNER-ML						•				•	•		•	•	•				]
	080612PNER-ML														•					E30
	080616PNER-ML														•					
	080620PNER-ML														•					
	080604PNSR-MM										•				•	•				]
	080608PNSR-MM						•				•	•		•	•	•				
	080612PNSR-MM														•					
	080616PNSR-MM														•					
	080620PNSR-MM														•					

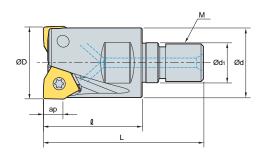
Wrench
TW20-100





# RM6PM-WN04























(mm)

	Designation	©	ØD	Ød	Ød1	Q	L	М	ар	kg
RM6PM	020R-2-M10-WN04	2	20	18	10.5	30	50	10	4.3	0.06
	020R-3-M10-WN04	3	20	18	10.5	30	50	10	4.3	0.06
	025R-4-M12-WN04	4	25	23	12.5	30	53	12	4.3	0.1
	025R-5-M12-WN04	5	25	23	12.5	30	53	12	4.3	0.09
	032R-5-M16-WN04	5	32	29	17	40	66	16	4.3	0.25
	032R-6-M16-WN04	6	32	29	17	40	66	16	4.3	0.24

## Available inserts

WNGX-MA

WNGX-ML

WNGX-MM







	Cermet				oated			l	Incoated				Cermet			С	oat	ed			Uncoated	
Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545	PC2010	PC6510	PC9540	PC5400	ST30A H01	page	ı	Designation	CN2500 CN30	NC5330 NCM325	NCM335	NCM545	PC2010	PC3700 PC6510	PC9530	PC5300	ST30A H01	page
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							•			E30		080612PNER-ML										E30
040304PNSR-MM							•					080616PNER-ML										
040308PNSR-MM							•					080620PNER-ML										
040312PNSR-MM							•					080604PNSR-MM						•		•		
040316PNSR-MM							•					080608PNSR-MM						• •				
												080612PNSR-MM								•		
												080616PNSR-MM								•		
												080620PNSR-MM								•		

## Available adaptor

	•	
	Designation	Available adaptor
RM6PM	020R-2-M10-WN04	MAT-M10
	020R-3-M10-WN04	MAT-M10
	025R-4-M12-WN04	MAT-M12
	025R-5-M12-WN04	MAT-M12
	032R-5-M16-WN04	MAT-M16
	032R-6-M16-WN04	MAT-M16

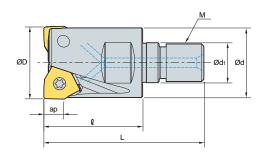
Designation : RM6PM032R-5-M16-WN04 Modular head threading measure size (M16)

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

Specification	<b>O</b> MANA		
	Screw	Wrench	
Ø20~Ø32	ETNA02506	TW07S	

## RM6PM-WN08





















1	ľ	Y	٦	r	Y	1
١	ı	ı	ı	ı	ı	и,

	Designation	(1)	ØD	Ød	Ød1	Q	L	М	ар	
RM6PM	032R-2-M16-WN08	2	32	29	17	43	69	16	8.2	0.22
	040R-3-M16-WN08	3	40	29	17	43	69	16	8.2	0.31
	040R-4-M16-WN08	4	40	29	17	43	69	16	8.2	0.30

## Available inserts







	Cermet			Coate	ed			Uncoate	d			Cermet			C	ated			Uncoate	k
Designation	CN2500 CN30	NC5330 NCM325	NCM535 NCM545	PC2505 PC2010	PC3700 PC6510	PC9530 PC9540	PC5300 PC5400	ST30A H01	page		Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545 PC2505	PC2010 PC3700	PC6510	PC9540 PC5300	ST30A H01	page
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							•		E30		080612PNER-ML							•		E30
040304PNSR-MM					•		• •				080616PNER-ML							•		
040308PNSR-MM							• •				080620PNER-ML							•		
040312PNSR-MM							•				080604PNSR-MM					•		•	•	
040316PNSR-MM							•				080608PNSR-MM			•		•		• •	•	
									]		080612PNSR-MM							•		
											080616PNSR-MM							•		
											080620PNSR-MM							•		

## Available adaptor

	Designation	Available adaptor
RM6PM	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)

Ш

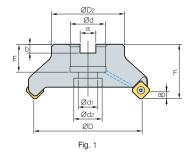
Adaptor spec.: MAT-M16-035-S32S Adaptor threading measure (M16)

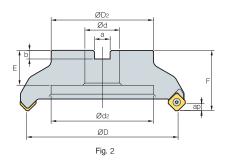
<u> </u>			
Specification			
	Screw	Wrench	
Ø32~Ø40	FTNA0513	TW20-100	



# RM8AC(M)4000















(mm)

Desi	ignation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
RM8ACM	4050HR-M	4	50	49	22	11	18	10.4	6.3	20	40	6.0	0.5	1
	4050HR-H	6	50	49	22	11	18	10.4	6.3	20	40	6.0	0.5	1
	4063HR-M	6	63	49	22	11	18	10.4	6.3	20	40	6.0	0.7	1
	4063HR-H	8	63	49	22	11	18	10.4	6.3	20	40	6.0	0.7	1
M8AC	4080HR	5	80	57	25.4 (27)	14	20	9.5 (12.4)	6(7)	25 (23)	50	6.0	1.2	1
RM8ACM)	4080HR-M	7	80	57	25.4 (27)	14	20	9.5 (12.4)	6(7)	25 (23)	50	6.0	1.2	1
	4080HR-H	10	80	57	25.4 (27)	14	20	9.5 (12.4)	6(7)	25 (23)	50	6.0	1.3	1
	4100HR	6	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25.5)	63 (50)	6.0	1.7	1
	4100HR-M	8	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25.5)	63 (50)	6.0	1.7	1
	4100HR-H	12	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25.5)	63 (50)	6.0	1.7	1
	4125HR	8	125	87	38.1 (40)	22	32	15.9 (16.4)	10(9)	36 (30)	63	6.0	3.6	1
	4125HR-M	10	125	87	38.1 (40)	22	32	15.9 (16.4)	10(9)	36 (30)	63	6.0	3.6	1
	4125HR-H	16	125	87	38.1 (40)	22	32	15.9 (16.4)	10(9)	36 (30)	63	6.0	3.7	1
	4160R	10	160	107	50.8 (40)	-	107	19 (16.4)	11(9)	38 (32)	63	6.0	4.8	2
	4160R-M	12	160	107	50.8 (40)	-	107	19 (16.4)	11(9)	38 (32)	63	6.0	5.3	2
	4160R-H	20	160	107	50.8 (40)	-	107	19 (16.4)	11(9)	38 (32)	63	6.0	5.4	2
	4200R-M	14	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	6.0	7.1	2
	4200R-H	24	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	6.0	7.1	2
	4250R-M	16	250	180	47.625 (60)	-	180	25.4 (25.7)	14	38 (32)	63	6.0	11.9	2
	4250R-H	30	250	180	47.625 (60)	-	180	25.4 (25.7)	14	38 (32)	63	6.0	12.0	2
	4315R	18	315	240	47.625 (60)	-	238	25.4 (25.7)	14	38	63	6.0	18.8 (18.6)	2
	4315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14	38	63	6.0	18.8 (18.6)	2
	4400R-M	28	400	260	47.625 (60)	-	238	25.4 (25.7)	14	38	80	6.0	37.7 (37.4)	2

( )Metric size

## Available inserts

SNM(E)X	NM(E)X-MF SNEX-				S	NM	l(E)	X-	ΜN	1		SI	(E	K-N	ΙA			S	SNEX-W			
•		nev	9		1						-	Ç	7					0				
			Cer	met						Co	at	ed						Unco	oated			
De	Designation			CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	된	page		
SNEX	1206	ANN-MF										•	•			•	•					
	1206	ANN-ML														•	•					
	1206	MM-NNA										•	•	•		•	•			E24		
	1206	ANN-MA																	•	E25		
	1206	W-NNA										•	•			•				E26		
SNMX	1206	ANN-MF						•				•	•		•	•	•					
	1206/	MM-NNA			•			•				•	•	•	•	•	•					

## Available arbors

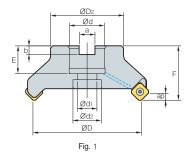
Daois	notion	Available	e arbors
Desig	nation	RM8AC	RM8ACM
RM8ACM	4050HR- 4063HR-	-	BT -FMC22-
RM8AC	4080HR-	BT□□ -FMA25.4-□□	BT -FMC27-
(RM8ACM)	4100HR-	BT□□ -FMA31.75-□□	BT□□-FMC32-□□
	4125HR-	BT□□ -FMA38.1-□□	BT -FMB40-
	4160R-	BT□□ -FMA50.8-□□	BT□□-FMC40-□□
	4200R-		
	4250R-	BT□□ -FMA47.625-□□	BT -FMB60-
	4315R-	DIFIVIA47.020	
	4400R-		

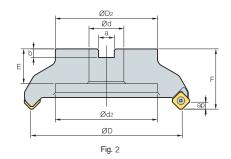
Specification	Screw	Wrench	
Ø50~Ø400	FTKA0410	TW15S	

# RMH8AC(M)4000

## Shim type













• AR: -6° • RR: -9°~-6°

(mm)

Desig	nation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
RMH8AC	4080HR-M	7	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	6.0	1.2	1
(RMH8ACM)	4100HR-M	8	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25.5)	63 (50)	6.0	1.7	1
	4125HR-M	10	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	36 (30)	63	6.0	3.6	1
	4160R-M	12	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	6.0	5.3	2
	4200R-M	14	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	6.0	7.1	2
	4250R-M	16	250	180	47.625 (60)	-	180	25.4 (25.7)	14	38 (32)	63	6.0	11.9	2
	4315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14	38	63	6.0	18.8 (18.6)	2
	4400R-M	26	400	260	47.625 (60)	-	238	25.4 (25.7)	14	38	80	6.0	37.7 (37.4)	2

( )Metric size

## Available inserts





SNEX-MA



					_			_				_								
		Cer	met						C	Coate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNEX	1206ANN-MF										•	•			•	•				
	1206ANN-ML														•	•				
	1206ANN-MM										•	•	•		•	•				E24
	1206ANN-MA																		•	E25
	1206ANN-W										•	•			•					E26
SNMX	1206ANN-MF						•				•	•		•	•	•				
	1206ANN-MM			•			•					•	•		•	•				

## Available arbors

	Decimation	Available	e arbors
	Designation	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-	DT FMA 47 COF	DT
	4315R-□	BT□□ -FMA47.625-□□	BT□□ -FMB60-□□
	4400R-□		

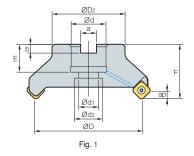
Specification				
	Screw	Shim	Shim Screw	Wrench
Ø80~Ø400	FTKA0412B	SS42RM8	SHXN0609F	TW15S

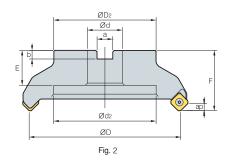




# RM8AC(M)5000













• AR: -6° • RR: -9°~-6°

(mm)

Desi	gnation	(i)	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
RM8AC	5080HR-M	6	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	7.5	1.2	1
(RM8ACM)	5100HR-M	7	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0	33 (25)	63 (50)	7.5	2.5 (1.8)	1
	5125HR-M	8	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (30)	63	7.5	3.6	1
	5160R-M	10	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	7.5	5 (4.56)	2
	5200R-M	12	200	130	47.625 (60)	-	135	25.4 (25.7)	14.0	38	63	7.5	7.1 (6.8)	2
	5250R-M	15	250	180	47.625 (60)	-	180	25.4 (25.7)	14.0	38	63	7.5	11.9 (10.6)	2
	5315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14.0	38	63	7.5	19.1 (18.9)	2
	5400R-M	28	400	260	47.625 (60)	-	238	25.4 (25.7)	14.0	38	80	7.5	37.7 (37.5)	2

( )Metric size

## Available inserts

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

		Cer	met		Coated								Ur	ncoat	ed					
Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNEX	1507ANN-MF											•			•	•				
	1507ANN-ML														•	•				E24
	1507ANN-MM											•			•	•				E25
SNMX	1507ANN-MF						•				•	•			•	•				E26
	1507ANN-MM						•				•	•			•	•				

## Available arbors

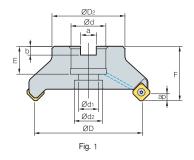
	Designation	Availabl	e arbors
	Designation	RM8AC	RM8ACM
RM8AC	5080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RM8ACM)	5100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	5125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	5160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	5200R-□		
	5250R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□
	5315R-□	DIFIVIA47.025	
	5400R-□		

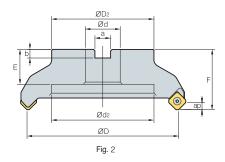
Specification			
	Screw	Wrench	
Ø80~Ø400	FTGA0513	TW20-100	

# RMH8AC(M)5000

## Shim type













• AR: -6° • RR: -9°~-6°

(mm)

Desig	gnation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
RMH8AC	5080HR-M	6	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	7.5	1.2	1
(RMH8ACM)	5100HR-M	7	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0	33 (25)	63 (50)	7.5	2.5 (1.8)	1
	5125HR-M	8	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	36 (30)	63	7.5	3.6	1
	5160R-M	10	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	7.5	5 (4.56)	2
	5200R-M	12	200	130	47.625 (60)	-	135	25.4 (25.7)	14.0	38 (32)	63	7.5	7.1 (6.8)	2
	5250R-M	15	250	180	47.625 (60)	-	180	25.4 (25.7)	14.0	38 (32)	63	7.5	11.9 (10.6)	2
	5315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14.0	38	63	7.5	19.1 (18.9)	2
	5400R-M	22	400	260	47.625 (60)	-	238	25.4 (25.7)	14.0	38	80	7.5	37.7 (37.5)	2

( )Metric size

## Available inserts

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







		Cer	met		Coated											Uncoated				
Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNEX	1507ANN-MF											•			•	•				
	1507ANN-ML														•	•				E24
	1507ANN-MM											•			•	•				E25
SNMX	1507ANN-MF						•				•	•			•	•				E26
	1507ANN-MM						•				•	•			•	•				

## Available arbors

	Decianation	Availabl	le arbors
'	Designation	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-□		
	5250R-	BT□□-FMA47.625-□□	BT□□-FMB60-□□
	5315R-□	1 DIFIVIA47.020	
	5400R-□		

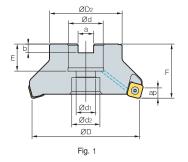
Specification				
Ореспісацоп	Screw	Shim	Shim Screw	Wrench
Ø80~Ø400	FTGA0513	SS53RM8	SHXN0712F	TW20-100

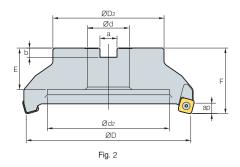




# RM8EC(M)4000













• AR: -6° • RR: -8°~-6°

(mm)

Desi	Designation 4050HP M		ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	√ kg \	Fig.
RM8ECM	4050HR-M	4	50	49	22	11	18	10.4	6.3	20	40	9.0	0.4	1
	4063HR-M	6	63	49	22	11	18	10.4	6.3	20	40	9.0	0.6	1
RM8EC	4080HR	5	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	9.0	1.2	1
(RM8ECM)	4080HR-M	7	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	9.0	1.1	1
	4100HR	6	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25)	63 (50)	9.0	1.6	1
	4100HR-M	8	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25)	63 (50)	9.0	2.5	1
	4125HR	8	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (29)	63	9.0	2.9 (3.3)	1
	4125HR-M	10	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (29)	63	9.0	3.0	1
	4160R	10	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	9.0	4.4	2
	4160R-M	12	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	9.0	4.0	2
	4200R-M	16	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	9.0	5.9	2
	4250R-M	16	250	180	47.625 (60)	-	180	25.4 (25.7)	14	38	63	9.0	10.9 (10.6)	2
	4315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14	38	63	9.0	18.1 (17.9)	2
	4400R-M	28	400	260	47.625 (60)	-	238	25.4 (25.7)	14	38	80	9.0	31.8 (31.5)	2

## Available inserts

( )Metric size





SNEX-ML



SNM(E)X-MM



SNEX-MA

							_			_			_							
		Cei	rmet						C	Coate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H04	page
SNEX	1206ENN-MF											•			•	•				
	1206ENN-ML														•	•				E24
	1206ENN-MM											•			•	•				E25
	1206ENN-MA											•							•	
SNMX	1206ENN-MF						•				•	•		•	•	•				E26
	1206ENN-MM						•				•	•		•	•	•				

## Available arbors

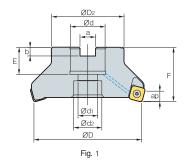
	Decimation	NC a	rbors
	Designation	RM8EC	RM8ECM
RM8ECM	4050HR-□		BT - FMC22-
	4063HR-□	•	BILL-FWC22-LL
RM8EC	4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RM8ECM)	4100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	4125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	4160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	4200R-		
	4250R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□
	4315R-□	B1FIVIA47.023	BIFIVIBOU
	4400R-		

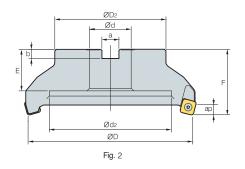
Specification		
	Screw	Wrench
Ø50~Ø400	PTKA0411-R3	TW15S

# RMH8EC(M)4000

## Shim type













• AR: -6° • RR: -8°~-6°

(mm)

Desig	ınation	(i)	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
RMH8EC	4080HR-M	7	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	9.0	1.1	1
(RMH8ECM)	4100HR-M	8	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25.5)	63 (50)	9.0	2.5	1
	4125HR-M	10	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	36 (30)	63	9.0	3.0	1
	4160R-M	12	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	9.0	4.0	2
	4200R-M	16	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	9.0	5.9	2
	4250R-M	16	250	180	47.625 (60)	-	180	25.4 (25.7)	14	38 (32)	63	9.0	10.9 (10.6)	2
	4315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14	38	63	9.0	18.1 (17.9)	2
	4400R-M	24	400	260	47.625 (60)	-	238	25.4 (25.7)	14	38	80	9.0	31.8 (31.5)	2

( )Metric size

## Available inserts

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

SNEX-MA









							_						_							
		Cer	met						C	oate	d						Uı	ncoat	ted	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNEX	1206ENN-MF											•			•	•				
	1206ENN-ML														•	•				F04
	1206ENN-MM											•			•	•				E24
	1206ENN-MA											•							•	E25 E26
SNMX	1206ENN-MF						•				•	•		•	•	•				⊏20
	1206ENN-MM						•				•	•		•	•	•				

## Available arbors

	Decimation	Availabl	e arbors
	Designation	RMH8EC	RMH8ECM
RMH8EC	4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RMH8ECM)	4100HR-	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	4125HR-	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	4160R-	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	4200R-		
	4250R-	BT□□-FMA47.625-□□	BT□□-FMB60-□□
	4315R-□	DIFIVIA47.023	
	4400R-		

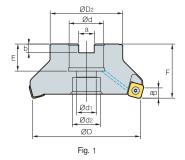
Specification				
	Screw	Shim	Shim Screw	Wrench
Ø80~Ø400	PTKA0411-R3	SS42RM8	SHXN0609F	TW15S

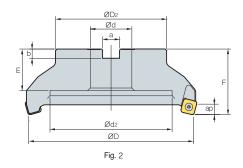
<sup>→</sup> Available inserts E24~E26



# RM8EC(M)5000















(mm)

Desi	gnation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	Е	F	ар	kg	Fig.
RM8EC	5080HR-M	6	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	11.0	1.1	1
(RM8ECM)	5100HR-M	7	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0	33 (25)	63 (50)	11.0	2.1 (1.7)	1
	5125HR-M	8	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (30)	63	11.0	3.4 (3.3)	1
	5160R-M	10	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	11.0	4.4 (4.1)	2
	5200R-M	12	200	130	47.625 (60)	-	135	25.4 (25.7)	14.0	38	63	11.0	6.4 (6.1)	2
	5250R-M	15	250	180	47.625 (60)	-	180	25.4 (25.7)	14.0	38	63	11.0	11.0 (10.7)	2
	5315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14.0	38	63	11.0	18.0 (17.7)	2
	5400R-M	28	400	260	47.625 (60)	-	238	25.4 (25.7)	14.0	38	80	11.0	35.7 (35.4)	2

( )Metric size

## Available inserts

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







		Cer	rmet						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNEX	1507ENN-MF											•			•	•				
	1507ENN-ML														•	•				E24
	1507ENN-MM											•			•	•				E25
SNMX	1507ENN-MF						•				•	•			•	•				E26
	1507ENN-MM						•				•	•			•	•				

## Available arbors

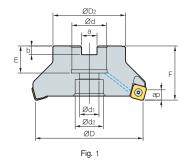
	Designation	Availabl	e arbors
	Designation	RM8EC	RM8ECM
RM8EC	5080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RM8ECM)	5100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	5125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	5160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	5200R-□		
	5250R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□
	5315R-□	DIFWIA47.025	
	5400R-□		

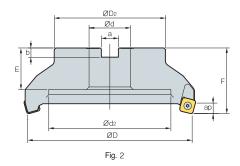
Specification			
	Screw	Wrench	
Ø80~Ø400	FTGA0513	TW20-100	

# RMH8EC(M)5000

## Shim type













• AR: -6° • RR: -8°~-6°

(mm)

Desig	gnation	(i)	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
RMH8EC	5080HR-M	6	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	11.0	1.1	1
(RMH8ECM)	5100HR-M	7	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0	33 (25.5)	63 (50)	11.0	2.1 (1.7)	1
	5125HR-M	8	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	36 (30)	63	11.0	3.4 (3.3)	1
	5160HR-M	10	160	107	50.8 (60)	-	107	19 (16.4)	11 (9)	38 (32)	63	11.0	4.4 (4.1)	2
	5200R-M	12	200	130	47.625 (60)	-	135	25.4 (25.7)	14.0	38 (32)	63	11.0	6.4 (6.1)	2
	5250R-M	15	250	180	47.625 (60)	-	180	25.4 (25.7)	14.0	38 (32)	63	11.0	110 (10.7)	2
	5315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14.0	38	63	11.0	18.0 (17.7)	2
	5400R-H	22	400	260	47.625 (60)	-	238	25.4 (25.7)	14.0	38	80	11.0	35.7 (35.4)	2

( )Metric size

## Available inserts

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







		Cer	met		Coated Uncoated											ed				
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNEX	1507ENN-MF											•			•	•				
	1507ENN-ML														•	•				E24
	1507ENN-MM											•			•	•				E25
SNMX	1507ENN-MF						•				•	•			•	•				E26
	1507ENN-MM						•				•	•			•	•				

## Available arbors

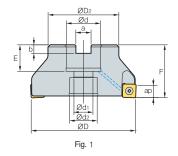
	Designation	Availabl	le arbors
·	Designation	RMH8EC	RMH8ECM
RMH8EC	5080HR-	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RMH8ECM)	5100HR-	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	5125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	5160R-	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	5200R-		
	5250R-	BT□□-FMA47.625-□□	BT□□-FMB60-□□
	5315R-	BIFIVIA47.023	DIPIVIDOU
	5400R-		

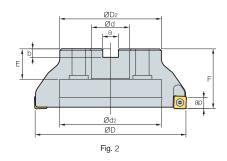
Specification	Screw	Shim	Shim Screw	Wrench
Ø80~Ø400	FTGA0513	SS53RM8	SHXN0712F	TW20-100

**3** Available inserts E24∼E26

# RM8QC(M)4000















(mm)

Desi	gnation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
RM8QCM	4063HR-M	6	63	49	22	11	18	10.4	6.3	20	40	11.5	0.6	1
	4063HR-H	8	63	49	22	11	18	10.4	6.3	20	40	11.5	0.6	1
RM8QC	4080HR-M	7	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	11.5	1.1	1
(RM8QCM)	4080HR-H	10	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	11.5	1.0	1
	4100HR-M	8	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25.5)	63 (50)	11.5	1.7	1
	4100HR-H	12	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25.5)	63 (50)	11.5	1.6	1
	4125HR-M	10	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	36 (30)	63	11.5	3.3	1
	4125HR-H	14	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	36 (30)	63	11.5	3.3	1
	4160R-M	12	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	11.5	3.9	2
	4160R-H	18	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	11.5	3.9	2
	4200R-M	14	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	11.5	6.4	2
	4200R-H	22	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	11.5	6.4	2

## Available inserts

( )Metric size









										•										
		Cer	met						C	oate	d						Ur	ncoat	ed	
Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
SNEX	1206QNN-MF										•	•			•	•				
	1206QNN-ML																			
	1206QNN-MM											•								
	1206QNN-MA																		•	
	120612-MF											•			•	•				E24
	120612-ML														•	•				E25
	120612-MM											•								
	120612-MA																		•	E26
SNMX	1206QNN-MF						•				•	•			•	•				
	1206QNN-MM						•				•	•		•	•	•				
	120612-MF											•			•	•				
	120612-MM											•			•	•				

## Available arbors

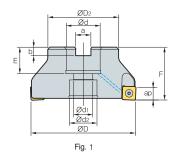
	Decimation	Availabl	e arbors
	Designation	RM8QC	RM8QCM
RM8QCM	4063HR-□	-	BT□□-FMC22-□□
RM8QC	4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
(RM8QCM)	4100HR-	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	4125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	4160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	4200R-	BT□□-FMA47.625-□□	BT□□-FMB60-□□

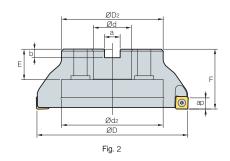
Specification			
	Screw	Wrench	
Ø63~Ø200	PTKA0411-R3	TW15S	

# RMH8QC(M)4000

## Shim type















(mm)

Desig	nation	<b>(b)</b>	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Fig.
RMH8QC	4080HR-M	7	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	11.5	1.1	1
(RMH8QCM)	4100HR-M	8	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25.5)	63 (50)	11.5	2.5	1
	4125HR-M	10	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	36 (30)	63	11.5	3.0	1
	4160R-M	12	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	11.5	4.0	2
	4200R-M	16	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	11.5	5.9	2

( )Metric size

## Available inserts

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

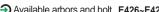
	Ce								C	oate	d						Uı	ncoat	ted	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	亨	page
SNEX	1206QNN-MF										•	•			•	•				
	1206QNN-ML														•	•				
	1206QNN-MM											•			•	•				
	1206QNN-MA																		•	
	120612-MF											•			•	•				F04
	120612-ML														•	•				E24 E25
	120612-MM											•								E25
	120612-MA																		•	E20
SNMX	1206QNN-MF						•				•	•			•	•				
	1206QNN-MM						•				•	•		•	•	•				
	120612-MF											•			•	•				
	120612-MM											•			•	•				

## Available arbors

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

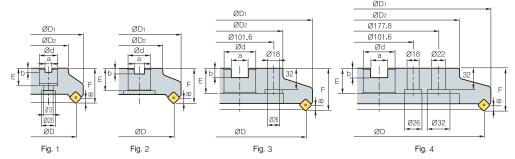
<b>-</b>				
Specification				
	Screw	Shim	Shim Screw	Wrench
Ø80~Ø200	PTKA0411-R3	SS42RM8	SHXN0609F	TW15S





# RMT8A(M)4000









(mm)

Desi	gnation	<b>(b)</b>	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	(kg)	Fig.
RMT8A	4080R	5	80	100	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	4	1.6	1
(RMT8AM)	4080R-M	6	80	100	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	4	1.6	1
	4100R	6	100	120	70	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	4	2.3	2
	4100R-M	8	100	120	70	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	4	2.3	2
	4125R	8	125	144	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	4	4.3	2
	4125R-M	10	125	144	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	4	4.3	2
	4160R	10	160	179	110	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	4	6.5	2
	4160R-M	14	160	179	110	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	4	6.5	2
	4200R	12	200	219	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	4	8.8	3
	4200R-M	18	200	219	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	4	8.8	3
	4250R	16	250	269	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	4	14.1	3
	4250R-M	22	250	269	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	4	14.1	3
	4315R	20	315	334	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	4	22.3	4
	4315R-M	28	315	334	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	4	22.3	4

## Available inserts

( )Metric size





		Cer	met						С	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNCF	1206ANN-MF																			
	1206ANN-MM																			E22
SNMF	1206ANN-MF																			E23
	1206ANN-MM																			

## Available arbors

	Decimation	Canaval arbara	NC arbors						
	Designation	General arbors	RMT8A	RMT8AM					
RMT8A	□080R	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27					
(RMT8AM)	□100R	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32					
	□125R	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	EMD40					
	□160R	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40					
	□200R	NT*□□(M/U)-FMA47.625-25,	DT**	EMPOO					
□250R		KCP-8***	BT**□□-FMA47.625-□□	FMB60					
	315R	KCP-8*** (Center ring plug)	-	-					

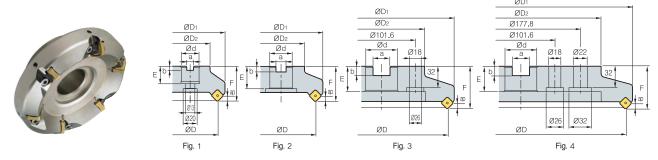
## Parts

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



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

# RMT8A(M)5000









• AR: -6° • RR: -6°

(mm)

( )Metric size

													(
Des	ignation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	(kg)	Fig.
RMT8A	5080R	5	80	104	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	6	1.8	1
(RMT8AM)	5080R-M	6	80	104	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	6	1.8	1
	5100R	6	100	124	70	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	6	2.6	2
	5100R-M	8	100	124	70	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	6	2.6	2
	5125R	8	125	149	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	6	4.3	2
	5125R-M	10	125	149	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	6	4.3	2
	5160R	10	160	184	110	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	6	6.5	2
	5160R-M	14	160	184	110	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	6	6.5	2
	5200R	12	200	224	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	9.0	3
	5200R-M	18	200	224	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	9.0	3
	5250R	16	250	274	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	14.4	3
	5250R-M	22	250	274	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	14.4	3
	5315R	20	315	339	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	22.2	4
	5315R-M	28	315	339	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	6	22.2	4

## Available inserts

SNC(M)F-MF SNC(M)F-MM





		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	년 1	page
SNCF	1507ANN-MF											•								
	1507ANN-MM																			E22
SNMF	1507ANN-MF																			E23
	1507ANN-MM																			

#### Available arbors

	Decimation	Comprel orboro	NC arbors						
	Designation	General arbors	RMT8A	RMT8AM					
RMT8A	□080R	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27					
(RMT8AM)	□100R	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75	FMC32					
	□125R	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1	EMD 40					
	□160R	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8	FMB40					
	□200R	NT*□□(M/U)-FMA47.625-25,	DT**	EMDCO					
	□250R	KCP-8***	BT**□□-FMA47.625-□□	FMB60					
	□315R	KCP-8*** (Center ring plug)	-	-					

## Parts

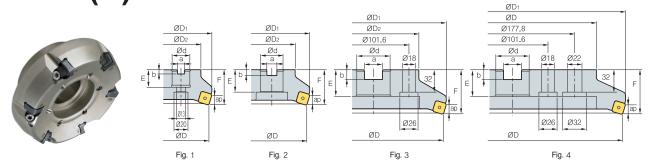
Specification	Screw	Screw	Spring	Latch	Wrench	
Ø80~Ø315	ETKA0625	KHB0417	SPR0415	LTC06SR-RM5	TW20-100	

Available inserts E22, E23

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



# RMT8E(M)4000









A • AR: -6° • RR: -8°~-6°

(mm)

		1											
Des	ignation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
RMT8E	4080R	5	80	100	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	5	1.5	1
(RMT8EM)	4080R-M	6	80	100	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	5	1.5	1
	4100R	6	100	120	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	5	2	2
	4100R-M	8	100	120	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	5	2	2
	4125R	8	125	144	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	5	3.8	2
	4125R-M	10	125	144	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	5	3.8	2
	4160R	10	160	179	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	5	5.8	2
	4160R-M	14	160	179	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	5	5.8	2
	4200R	12	200	219	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	7.9	3
	4200R-M	18	200	219	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	7.9	3
	4250R	16	250	269	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	13.0	3
	4250R-M	22	250	269	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	13.0	3
	4315R	20	315	334	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	20.5	4
	4315R-M	28	315	334	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	20.5	4

## Available inserts

( )Metric size



SNC(M)F-MF



SNC(M)F-MM

		Cer	met						C	coate	d						Uı	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNCF	1206ENN-MF											•								
	1206ENN-MM																			E22
SNMF	1206ENN-MF										•									E23
	1206ENN-MM										•									

## Available arbors

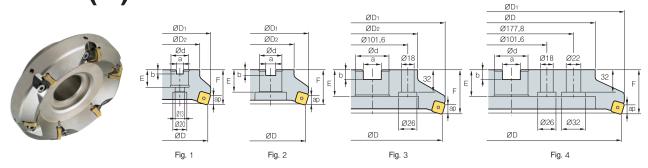
	Designation	General arbors	NC a	arbors			
	Designation	General arbors	RMT8E	RMT8EM			
RMT8E	□080R	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27			
(RMT8EM)	□100R	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32			
	□125R	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	EMP40			
	□160R	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40			
	□200R	NT*□□(M/U)-FMA47.625-25,	BT**□□-FMA47.625-□□	FMP00			
	□250R	KCP-8***	B1 [ ] -FIVIA47.025-	FMB60			
	□315R	KCP-8*** (Center ring plug)	-	-			

#### Parts

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

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

# RMT8E(M)5000







75°

• AR: -6° • RR: -8°~-6°

(mm)

gnation	0	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
5080R	5	80	88	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	8	1.4	1
5080R-M	6	80	88	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	8	1.4	1
5100R	6	100	108	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	8	1.9	2
5100R-M	8	100	108	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	8	1.9	2
5125R	8	125	133	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	8	3.7	2
5125R-M	10	125	133	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	8	3.7	2
5160R	10	160	168	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	8	5.7	2
5160R-M	14	160	168	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	8	5.7	2
5200R	12	200	208	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	8	7.5	3
5200R-M	18	200	208	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	8	7.5	3
5250R	16	250	258	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	8	12.4	3
5250R-M	22	250	258	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	8	12.4	3
5315R	20	315	323	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	8	19.9	4
5315R-M	28	315	323	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	8	19.9	4
	5080R-M 5100R 5100R-M 5125R 5125R-M 5160R 5160R-M 5200R 5200R-M 5250R 5250R-M 5315R	5080R 5 5080R-M 6 5100R 6 5100R-M 8 5125R 8 5125R-M 10 5160R 10 5160R-M 14 5200R 12 5200R-M 18 5250R 16 5250R-M 22 5315R 20	5080R         5         80           5080R-M         6         80           5100R         6         100           5100R-M         8         100           5125R         8         125           5125R-M         10         125           5160R         10         160           5160R-M         14         160           5200R         12         200           5200R-M         18         200           5250R         16         250           5250R-M         22         250           5315R         20         315	5080R         5         80         88           5080R-M         6         80         88           5100R         6         100         108           5100R-M         8         100         108           5125R         8         125         133           5125R-M         10         125         133           5160R         10         160         168           5160R-M         14         160         168           5200R         12         200         208           5200R-M         18         200         208           5250R         16         250         258           5250R-M         22         250         258           5315R         20         315         323	5080R         5         80         88         57           5080R-M         6         80         88         57           5100R         6         100         108         67           5100R-M         8         100         108         67           5125R         8         125         133         87           5125R-M         10         125         133         87           5160R         10         160         168         107           5160R-M         14         160         168         107           5200R         12         200         208         130           5200R-M         18         200         208         130           5250R-M         22         250         258         180           5315R         20         315         323         240	5080R         5         80         88         57         25.4 (27)           5080R-M         6         80         88         57         25.4 (27)           5100R         6         100         108         67         31.75 (32)           5100R-M         8         100         108         67         31.75 (32)           5125R         8         125         133         87         38.1 (40)           5125R-M         10         125         133         87         38.1 (40)           5160R         10         160         168         107         50.8 (40)           5160R-M         14         160         168         107         50.8 (40)           5200R         12         200         208         130         47.625 (60)           5200R-M         18         200         208         130         47.625 (60)           5250R-M         22         250         258         180         47.625 (60)           5315R         20         315         323         240         47.625 (60)	5080R         5         80         88         57         25.4 (27)         9.5 (12.4)           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)           5160R-M         14         160         168         107         50.8 (40)         19.0 (16.4)           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)           5200R-M         18         200         208         130         47.625 (60)         25.4 (25.7)           5250R-M         22         250         258         180         47.625 (60)         25.4 (25.7)           5315R         20 <td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)           5160R-M         14         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)           5250R-M         18         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)     <td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)           5160R-M         14         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)         38 (3</td><td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63           5200R-M         12         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)         38 (38)         63           5250R-M         12<td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63         8           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)</td><td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8         1.4           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8         1.4           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8         1.9           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8         1.9           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8         3.7           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8         3.7           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63         8         5.7           5200R-</td></td></td>	5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)           5160R-M         14         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)           5250R-M         18         200         208         130         47.625 (60)         25.4 (25.7)         14 (14) <td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)           5160R-M         14         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)         38 (3</td> <td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63           5200R-M         12         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)         38 (38)         63           5250R-M         12<td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63         8           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)</td><td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8         1.4           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8         1.4           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8         1.9           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8         1.9           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8         3.7           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8         3.7           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63         8         5.7           5200R-</td></td>	5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)           5160R-M         14         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)         38 (3	5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63           5200R-M         12         200         208         130         47.625 (60)         25.4 (25.7)         14 (14)         38 (38)         63           5250R-M         12 <td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63         8           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)</td> <td>5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8         1.4           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8         1.4           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8         1.9           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8         1.9           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8         3.7           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8         3.7           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63         8         5.7           5200R-</td>	5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63         8           5200R         12         200         208         130         47.625 (60)         25.4 (25.7)	5080R         5         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8         1.4           5080R-M         6         80         88         57         25.4 (27)         9.5 (12.4)         6 (7)         25 (22)         50         8         1.4           5100R         6         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8         1.9           5100R-M         8         100         108         67         31.75 (32)         12.7 (14.4)         8 (8)         32 (28)         50         8         1.9           5125R         8         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8         3.7           5125R-M         10         125         133         87         38.1 (40)         15.9 (16.4)         10 (9)         38 (30)         63         8         3.7           5160R         10         160         168         107         50.8 (40)         19.0 (16.4)         11 (9)         38 (30)         63         8         5.7           5200R-

( )Metric size

## Available inserts

SNC(M)F-MF

SNC(M)F-MM





		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	F F	page
SNCF	1507ENN-MF											•								
	1507ENN-MM																			E22
SNMF	1507ENN-MF																			E23
	1507ENN-MM										•									

## Available arbors

	Designation	General arbors	NC a	rbors
	Designation	General arbors	RMT8E	RMT8EM
RMT8E	□080R	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
(RMT8EM)	□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-□□	FIVIB40
	□200R	NT*□□(M/U)-FMA47.625-25,	BT** - FMA47.625-	EMBCO
	□250R	KCP-8***	B1 ***FIMA47.025	FMB60
	□315R	KCP-8*** (Center ring plug)	-	-

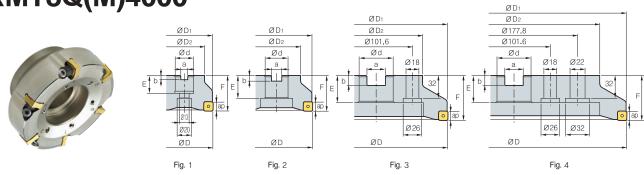
\* -NT number \*\* -BT number \*\*\*Over milling 5

Specification	Screw	Screw	Spring	Latch	Wrench
Ø80~Ø315	ETKA0625	KHB0417	SPR0415	LTC06SR-RM5	TW20-100

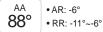
Available inserts E22, E23

Available arbors and bolt E426∼E428

# RMT8Q(M)4000







(mm)

Desi	gnation	(i)	ØD	ØD1	ØD2	Ød	а	b	E	F	ар	kg	Fig.
RMT8Q	4080R	5	80	79	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	5	1.4	1
(RMT8QM)	4080R-M	6	80	79	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	5	1.4	1
	4100R	6	100	99	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	5	1.8	2
	4100R-M	8	100	99	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	5	1.8	2
	4125R	8	125	124	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	5	3.6	2
	4125R-M	10	125	124	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	5	3.6	2
	4160R	10	160	159	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	5	5.7	2
	4160R-M	14	160	159	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	5	5.7	2
	4200R	12	200	199	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	7.5	3
	4200R-M	18	200	199	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	7.5	3
	4250R	16	250	249	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	12.5	3
	4250R-M	22	250	249	180	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	12.5	3
	4315R	20	315	314	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	19.9	4
	4315R-M	28	315	314	240	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	5	19.9	4
Avoilel	hla incarte											1( )	Metric size

#### Available inserts





SNC(M)F-MM

		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SNCF	1206QNN-MF											•								
	1206QNN-MM											•								E22
SNMF	1206QNN-MF										•									E23
	1206QNN-MM										•									

#### Available arbors

	Decimation	General arbors	NC a	rbors
	Designation	General arbors	RMT8Q	RMT8QM
RMT8Q	□080R	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
(RMT8QM)	□100R	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
	□125R	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	EMP 40
	□160R	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
	□200R	NT*□□(M/U)-FMA47.625-25,	BT**□□-FMA47.625-□□	EMPCO
	□250R	KCP-8***	B1 ***FMA47.625	FMB60
	□315R	KCP-8*** (Center ring plug)	-	-

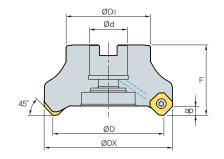
## Parts

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

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

# RMX8AC(M)-SA14













(mm)

ı	Designation	©	ØDX	ØD	ØD2	Ød	F	ар	kg
RMX8ACM	050R-22-4-SA14	4	62.5	50	42	22	40	5.5	0.34
	050R-22-5-SA14	5	62.5	50	42	22	40	5.5	0.38
	063R-22-5-SA14	5	75.5	63	42	22	40	5.5	0.56
	063R-22-6-SA14	6	75.5	63	42	22	40	5.5	0.54
	080R-27-6-SA14	6	92.5	80	60	27	50	5.5	1.00
	080R-27-8-SA14	8	92.5	80	60	27	50	5.5	1.04
	100R-32-8-SA14	8	112.5	100	70	32	50	5.5	2.05
	100R-32-10-SA14	10	112.5	100	70	32	50	5.5	2.06
	125R-40-8-SA14	8	137.5	125	90	40	63	5.5	3.34
	125R-40-12-SA14	12	137.5	125	90	40	63	5.5	3.34
RMX8AC	080R-25.4-6-SA14	6	92.5	80	60	25.4	50	5.5	1.02
	080R-25.4-8-SA14	8	92.5	80	60	25.4	50	5.5	1.06
	100R-31.75-8-SA14	8	112.5	100	70	31.75	63	5.5	2.08
	100R-31.75-10-SA14	10	112.5	100	70	31.75	63	5.5	2.09
	125R-38.1-8-SA14	8	137.5	125	90	38.1	63	5.5	3.43
	125R-38.1-12-SA14	12	137.5	125	90	38.1	63	5.5	3.35

## Available inserts

SAGX-ML SAGX-MM SNMX-MM

		Cer	met						(	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	ST30A	G10	된	page
SAGX	140808ANER-ML														•	•				
	140808ANER-MM															•				E18
SNMX	140808ANER-MM											•	•			•				

## Available arbors

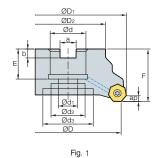
	Designation	Ød	Available arborss
RMX8ACM	050R-22-□-SA14	22	BT□□-FMC22-□□
	063R-22-□-SA14		
	080R-27-□-SA14	27	BT□□-FMC27-□□
	100R-32-□-SA14	32	BT□□-FMC32-□□
	125R-40-□-SA14	40	BT□□-FMC40-□□

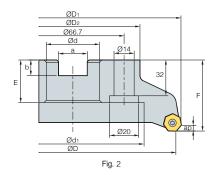
	Designation	Ød	Available arbors
RMX8AC	080R-25.4-□-SA14	25.4	BT□□-FMC25.4-□□
	100R-31.75-□-SA14	31.75	BT□□-FMC31.75-□□
	125R-38.1-□-SA14	38.1	BT□□-FMC38.1-□□

Specification	Screw	Wrench	
Ø50~Ø125	FTNA0513	TW20-100	

# RM14XCM-XN06













(mm)

De	esignation	<b>(</b>	ØD	ØD1	ØD2	Ød	Ød1	Ød2	Ød3	а	b	Е	F	ар		Fig.
RM14XCM	050R-22-5-XN06	5	50	58.6	42	22	11	18	-	10.4	6.3	21	40	3.5	0.34	1
	050R-22-6-XN06	6	50	58.6	42	22	11	18	-	10.4	6.3	21	40	3.5	0.34	1
	063R-22-6-XN06	6	63	71.6	42	22	11	18	-	10.4	6.3	21	40	3.5	0.51	1
	063R-22-8-XN06	8	63	71.6	42	22	11	18	-	10.4	6.3	21	40	3.5	0.58	1
	080R-27-6-XN06	6	80	88.6	57	27	14	20	35	12.4	7.0	23	50	3.5	0.98	1
	080R-27-8-XN06	8	80	88.6	57	27	14	20	35	12.4	7.0	23	50	3.5	1.08	1
	080R-27-10-XN06	10	80	88.6	57	27	14	20	35	12.4	7.0	23	50	3.5	1.07	1
	100R-32-10-XN06	10	100	108.6	67	32	18	26	42	14.4	8.0	25	63	3.5	1.60	1
	100R-32-12-XN06	12	100	108.6	67	32	18	26	42	14.4	8.0	25	63	3.5	1.58	1
	125R-40-12-XN06	12	125	133.6	90	40	22	32	54	16.4	9.0	29	63	3.5	3.43	1
	125R-40-14-XN06	14	125	133.6	90	40	22	32	54	16.4	9.0	29	63	3.5	3.40	1
	160NR-40-16-XN06	16	160	168.6	110	40	90	-	-	16.4	9.0	32	63	3.5	4.86	2
	160NR-40-18-XN06	18	160	168.6	110	40	90	-	-	16.4	9.0	32	63	3.5	4.84	2

 $<sup>\</sup>times$  In applying XNMX060608- $\square$ , Max. ap = 4.8 mm

## Available inserts

						XNN	IX-ML		X١	IMX-N	IL									
		Cer	met						C	coate	d						Uı	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
XNMX	0606XNR-ML						•					•		•	•	•				E32
	060608-ML						•					•		•	•	•				E32

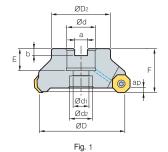
## Available arbors

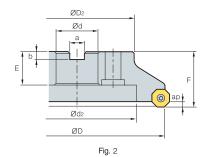
	Designation	Ød	Available arbors
RM14XCM	050R 063R	22	BT□□-FMC22-□□
	080R	27	BT□□-FMC27-□□
	100R	32	BT□□-FMC32-□□
	125R 160R	40	BT□□-FMC40-□□

Specification			
	Screw	Wrench	
Ø50~Ø160	FTKA0412B	TW15S	

# RM16AC(M)6000















(mm)

Desig	nation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар		Fig.
RM16ACM	6063HR-M	5	63	49	22	11	18	10.4	6.3	20	40	4.0	0.7	1
RM16AC	6080HR-M	6	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	4.0	1.2	1
(RM16ACM)	6100HR-M	7	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25)	63 (50)	4.0	1.9	1
	6125HR-M	8	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (29)	63	4.0	3.5	1
	6160R-M	10	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	4.0	4.1	2
	6200R-M	12	200	130	47.625 (60)	-	135	25.4 (25.7)	14	38 (32)	63	4.0	6.1	2
	6250R-M	15	250	180	47.625 (60)	-	180	25.4 (25.7)	14	38	63	4.0	11.5	2
	6315R-M	20	315	240	47.625 (60)	-	238	25.4 (25.7)	14	38	63	4.0	18.9	2
	6400R-M	26	400	260	47.625 (60)	-	238	25.4 (25.7)	14	38	80	4.0	32.7	2

#### Available inserts

( )Metric size



ONHX-MF







ONHX-W



ONHX-MA





		Cer	met						C	Coate	d						U	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
ONHX	060608-MM											•			•	•				
	060608-MF											•			•	•				
	060608-ML														•	•				
	060608-MA																		•	
	060608-W											•	•		•					
	0606ANN-MM											•			•	•				E15
	0606ANN-MF											•			•	•				
ONMX	060608-MM						•				•	•		•	•	•				
	060608-MF						•					•			•	•				
	0606ANN-MM						•				•	•			•	•				
	0606ANN-MF						•					•	•		•	•				

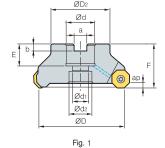
#### Available arbors

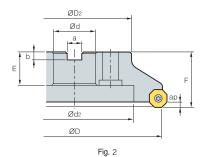
	Decignation	Available	e arbors
'	Designation	RM16AC	RM16ACM
RM16AC	6063HR-M		BT□□-FMC22-□□
(RM16ACM)	6080HR-M	BT□□-FMA25.4-□□	BT□□-FMC27-□□
	6100HR-M	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	6125HR-M	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	6160R-M	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	6200R-M		
	6250R-M	BT□□-FMA47.625-□□	BT□□-FMB60-□□
	6315R-M	B1□□-FIWA47.023-□□	DI [ ] -FIVIDOU- [ ]
	6400R-M		

Specification		Series Series	
	Screw	Wrench	
Ø63~Ø400	FTGA0513	TW20-100	

# RM16AC(M)8000















(mm)

Desig	nation	(i)	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар		Fig.
RM16ACM	8063HR-M	5	63	49	22	11	18	10.4	6.3	20	40	5.5	0.7	1
RM16AC	8080HR-M	6	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	5.5	1.2	1
(RM16ACM)	8100HR-M	7	100	67	31.75 (32)	18	26	12.7 (14.4)	8	33 (25)	63 (50)	5.5	1.8	1
	8125HR-M	8	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (29)	63	5.5	3.5	1
	8160R-M	10	160	107	50.8 (40)	-	107	19 (16.4)	11 (9)	38 (32)	63	5.5	4.5	2
	8200R-M	12	200	130	47.625 (60)	-	135	25.4 (25.7)	14 (14)	38 (32)	63	5.5	5.8	2
	8250R-M	14	250	180	47.625 (60)	-	180	25.4 (25.7)	14	38	63	5.5	11.4	2
	8315R-M	18	315	240	47.625 (60)	-	238	25.4 (25.7)	14	38	63	5.5	18.8	2
	8400R-M	24	400	260	47.625 (60)	-	238	25.4 (25.7)	14	38	80	5.5	32.7	2

( )Metric size

#### Available inserts















		Cer	rmet						C	coate	d						Uı	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
ONHX	080608-MM											•			•	•				
	080608-MF											•			•	•				
	080608-ML														•	•				
	080608-MA																		•	
	080608-W											•			•					
	0806ANN-MM											•			•	•				E15
	0806ANN-MF											•			•	•				
ONMX	080608-MM						•				•	•	•		•	•				
	080608-MF						•					•			•	•				
	0806ANN-MM						•					•	•		•	•				
	0806ANN-MF						•				•	•			•	•				

#### Available arbors

	Designation	Available arbors									
	Designation	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	BT - FMA47.625-	BT□□-FMB60-□□								
	8315R-M	1 DI FIVIA47.020									
	8400R-M										

Specification		No.	
	Screw	Wrench	
Ø63~Ø400	FTGA0513	TW20-100	

# RMRC(M)-RN12

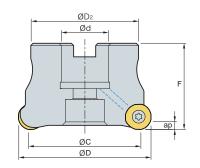












(mm)

	Designation	<b>(</b>	ØD	øС	ØD2	Ød	F	ар	kg
RMRCM	050R-22-5-RN12	5	50	40.4	42	22	40	3.5	0.28
	050R-22-6-RN12	6	50	40.4	42	22	40	3.5	0.29
	063R-22-6-RN12	6	63	53.4	42	22	40	3.5	0.45
	063R-22-7-RN12	7	63	53.4	42	22	40	3.5	0.46
	080R-27-6-RN12	6	80	70.4	60	27	50	3.5	0.83
	080R-27-8-RN12	8	80	70.4	60	27	50	3.5	0.82
	100R-32-7-RN12	7	100	90.4	70	32	63	3.5	1.67
	100R-32-9-RN12	9	100	90.4	70	32	63	3.5	1.67
	125R-40-10-RN12	10	125	115.4	90	40	63	3.5	2.82
	125R-40-12-RN12	12	125	115.4	90	40	63	3.5	2.83
RMRC	080R-25.4-6-RN12	6	80	70.4	60	25.4	50	3.5	0.85
	080R-25.4-8-RN12	8	80	70.4	60	25.4	50	3.5	0.85
	100R-31.75-7-RN12	7	100	90.4	70	31.75	63	3.5	1.71
	100R-31.75-9-RN12	9	100	90.4	70	31.75	63	3.5	1.71
	125R-38.1-10-RN12	10	125	115.4	90	38.1	63	3.5	2.88
	125R-38.1-12-RN12	12	125	115.4	90	38.1	63	3.5	2.88

#### Available inserts

RNMX-ML



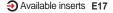
					Coated Uncoated															
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	UNC840	UPC845	ST30A	G10	НОЧ	page
RNMX	1204M0E-ML														•	•				E17

#### Available arbors

	Designation	Ød	Available arbors
RMRCM	050R-22-□-RN12	22	BT□□-FMC22-□□
	063R-22-□-RN12		DI LL-FINICZZ-LL
	080R-27-□-RN12	27	BT□□-FMC27-□□
	100R-32-□-RN12	32	BT□□-FMC32-□□
	125R-40-□-RN12	40	BT -FMC40-

	Designation	Ød	Available arbors
RMRC	080R-25.4-□-RN12	25.4	BT□□-FMC25.4-□□
	100R-31.75-□-RN12	31.75	BT□□-FMC31.75-□□
	125R-38.1-□-RN12	38.1	BT□□-FMC38.1-□□

Specification		
	Screw	Wrench
Ø50~Ø125	FTNA0411-A	TW15S

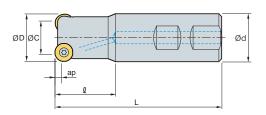






# RMRS-RN12











• AR: -7° • RR: -15°~-13°

(mm)

	Designation	(i)	ØD	ØС	Ød	Q	L	Shank	ар	O kg
RMRS	032R-2W32-110-RN12	2	32	22.4	32	40	110	W	3.5	0.56
	032R-3W32-110-RN12	3	32	22.4	32	40	110	W	3.5	0.55
	032R-2C32-200-RN12	2	32	22.4	32	40	200	С	3.5	1.09
	032R-3C32-200-RN12	3	32	22.4	32	40	200	С	3.5	1.09
	040R-3W32-110-RN12	3	40	30.4	32	40	110	W	3.5	0.62
	040R-4W32-110-RN12	4	40	30.4	32	40	110	W	3.5	0.62
	040R-3C32-200-RN12	3	40	30.4	32	40	200	С	3.5	1.15
	040R-4C32-200-RN12	4	40	30.4	32	40	200	С	3.5	1.15
	050R-5W40-120-RN12	5	50	40.4	40	40	120	W	3.5	1.08
	050R-6W40-120-RN12	6	50	40.4	40	40	120	W	3.5	1.08
	050R-5C42-300-RN12	5	50	40.4	42	40	300	С	3.5	3.05
	050R-6C42-300-RN12	6	50	40.4	42	40	300	С	3.5	3.05
	063R-6W40-130-RN12	6	63	53.4	40	50	130	W	3.5	1.43
	063R-7W40-130-RN12	7	63	53.4	40	50	130	W	3.5	1.43
	063R-6C42-300-RN12	6	63	53.4	42	50	300	С	3.5	3.30
	063R-7C42-300-RN12	7	63	53.4	42	50	300	С	3.5	3.26

#### Available inserts

RNMX-ML



		Cer	met						C	oate	d						Uı	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	UNC840	UPC845	ST30A	G10	H01	page
RNMX	1204M0E-ML														•	•				E17

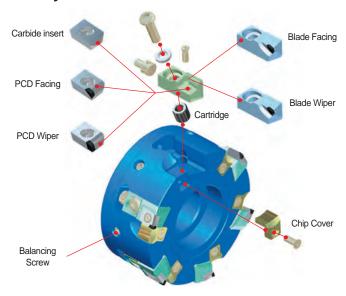
Specification		P	
	Screw	Wrench	
Ø32~Ø63	FTNA0411-A	TW15S	

#### 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

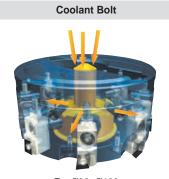


#### Features of cutter

- 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 Ø160, coolant cover is applicable from Ø200 and over.
   Coolant devices are sold separately for through coolant system, through coolant arbor has to be used



For Ø80~Ø160



For Ø200 and over

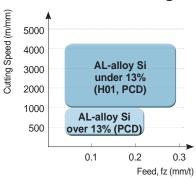


### **Aero Mill**

### Application range



### Recommended cutting condition



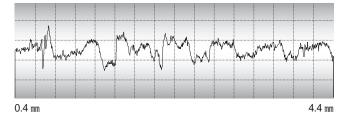
#### Surface finish

■ Workpiece

**■** Cutting vc = 1570 m/min vf = 3000 mm/minS = 5000 rpmfz = 0.1 mm/tcondition Machine = PCV620  $ap = 0.5 \, mm$ 

Designation Cutter APD100R-A6Z (6 Flutes)

Insert CDEW1204R-XCF (H01)



- Rmax: 2.1 μm
- Rz: 1.6 μm
- Ra: 0.3 μm

#### 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)	Туре	Desig	gnation	Shape	Note
Ø80	Coolant Bolt	CBP08	BO-IN/MM	-0-6	
Ø100	Coolant Bolt	CBP100-IN	CBP100-MM-1		
Ø125	Coolant Bolt	CBP125-IN	CBP125-MM-1		Extra charge
Ø160	Coolant Bolt	CBP160-IN	CBP160-MM		
Ø200	Coolant Cover	CC	P200		onargo
Ø250	Coolant Cover	CC	P250	1	
Ø315	Coolant Cover	CC	P315		



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

# E

#### High speed milling tool with PCD blade

### Aero Mill-Plus

- Improve tool life up to 20% with a coolant system that enables direct spray cooling to cutting blades
- Enable high feed milling by increasing the number of cutting blades by 20% through a simply structured coupling method for clamps
- Reduces set up time up to 40% by applying a spanner adjustment method
- Introduce an aluminum cutter body to provide a superior cutting performance during high speed milling

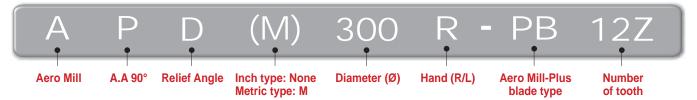
#### Assembly structure of cutter



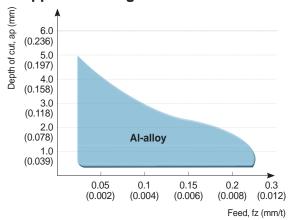
#### Features of cutter

- · Prevent overload to the spindle bearings through weight reduction of the AI 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

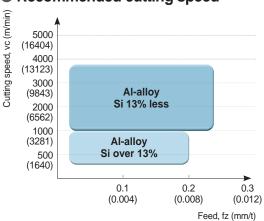
#### Code system



#### 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)	Туре	inch/mm	Designation	Shape	Material	Note
Ø80		inch, mm	CB12-AMaP80			Included
Ø400		inch	CB16-AMP100		Steel	
Ø100		mm	CB16-AMP100M	1 Billion		
Ø425	Coolant bolt	inch	CB20-AMP125			
Ø125		mm	CB20-AMP125M			
Ø450		inch	CB24-AMP160			
Ø160		mm	CB20-AMP125M			
Ø200			CCV-AMP200			Extra charge
Ø250	Coolant cover	inch, mm	CCV-AMP250	6 3	Aluminum	
Ø315	00.0.		CCV-AMP315			



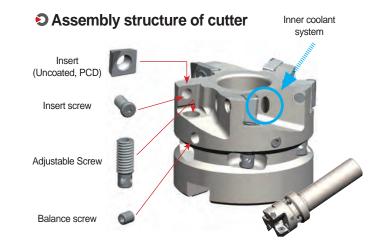
#### Good performance in small-medium size of operations

### Aero Mill-Mini

- · Good performance in small-medium size of operations
- Good duration of the steel body
- · Choice of Uncoated carbide/PCD grades can be applied to various kind of work material
- Balance level: G2.5

#### Features of cutter

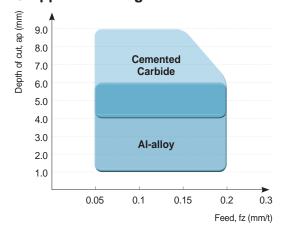
- Simple and strong design of Screw-on clamping.
- Adjustable range: ± 0.1 mm Max
- Adjustable step: Min. 2 micro meter
- · Wide chip pocket area for Roughing and Aluminum machining.
- Inner coolant system



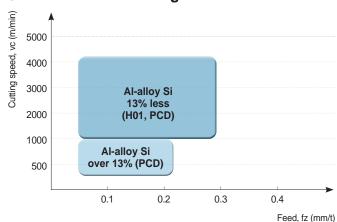
#### Code system



### Application range



### Recommended cutting condition

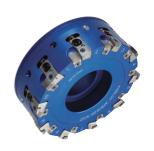


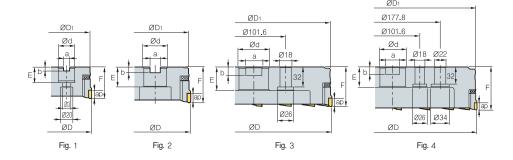
#### Max. RPM

Diameter	Max. RPM (min⁻¹)
Ø32	26,000
Ø40	24,500
Ø50	22,000
Ø63	20,000

## APD(M)-A

### Cartridge + insert









• AR: 6° • RR: 5°~9°

(mm)

De	esignation	<b>(b)</b>	ØD	ØD1	Ød	а	b	E	F	ар	Max rpm		Fig.
APD	080R/L-A6Z	6	80	76	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	10	16000	0.75	1
(APDM)	100R/L-A6Z	6	100	95	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	50	10	15000	0.95	2
	125R/L-A8Z	8	125	120	38.1 (40)	15.9 (16.4)	10 (9)	38 (30)	63	10	12500	1.8	2
	160R/L-A10Z	10	160	155	50.8 (40)	19.0 (16.4)	11 (9)	38 (30)	63	10	10000	2.9	2
	200R/L-A12Z	12	200	195	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	10	8000	4.0	3
	250R/L-A16Z	16	250	245	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	63	10	6500	6.3	3
	315R/L-A18Z	18	315	310	47.625 (60)	25.4 (25.7)	14 (14)	38 (38)	80	10	5000	11.3	4

( )Metric size

### Available inserts

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







Designation			Uncoated		PCD			
		H01	G10	ST30A	DP200	page		
CDEW	1204R-XCF	•						
	1204L-XCF							
	1204R-XAF				•			
	1204L-XAF							
	1204R-NAF				•	F07		
	1204L-NAF					E07		
	1204R-XAW				•			
	1204L-XAW							
	1204R-NAW				•			
	1204L-NAW							

#### Available arbors

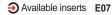
Desig	nation	General arbors	NC arbors
APD	080R/L	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4
(APDM)	100R/L	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75
	125R/L	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1
	160R/L	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8
	200R/L	NT*□□(M/U)-FMA47.625-25,	BT** -FMA47.625-
	250R/L	KCP-8***	DIFIVIA47.020
	315R/L	KCP-8*** (Center ring plug)	-

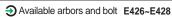
#### \* -NT number \*\* -BT number \*\*\*Over milling 5

### Recommended cutting condition

Worksisse	Cutting c	Grades	
Workpiece	vc (m/min)	fz (mm/t)	Grades
Aluminum	1,000~4,000 500~2,500	0.05~0.30 0.05~0.20	DP200 H01

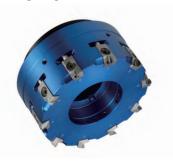
Specification	Cartridge	Chip cover	Chip cover Screw	Insert screw	Adjust screw	Cartridge Screw	Wrench for insert	Wrench for cartridge
Ø80~Ø315	LAPDR/L-AJ	CAPDR/L-AJ	PTMA0411	FTNA0411	AZ0514	BHA0619-NYLOK	TW15S	HW50

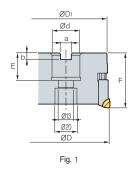


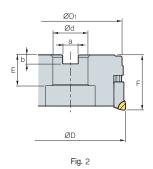


# APD(M)-PB

### **Blade**













• AR: 6° • RR: -4°~1°

(mm)

De	esignation	0	Max ①	ØD	ØD1	Ød	а	b	E	F	ар	(kg)	Fig.
APD	080R/L-PB6Z	6	10	80	77	25.4 (27)	9.5 (12.4)	6 (7)	23.5	50	5	0.55	1
(APDM)	080R/L-PB8Z	8	10	80	77	25.4 (27)	9.5 (12.4)	6 (7)	23.5	50	5	0.55	1
	100R/L-PB6Z	6	12	100	97	31.75 (32)	12.7 (14.4)	8	34 (32)	50	5	0.92	2
	100R/L-PB8Z	8	12	100	97	31.75 (32)	12.7 (14.4)	8	34 (32)	50	5	0.92	2
	125R/L-PB8Z	8	14	125	122	38.1 (40)	15.9 (16.4)	10 (9)	40 (35)	63	5	1.9	2
	125R/L-PB10Z	10	14	125	122	38.1 (40)	15.9 (16.4)	10 (9)	40 (35)	63	5	1.9	2
	160R/L-PB10Z	10	20	160	157	50.8 (40)	19.0 (16.4)	11 (9)	41 (35)	63	5	3.3	2
	160R/L-PB12Z	12	20	160	157	50.8 (40)	19.0 (16.4)	11 (9)	41 (35)	63	5	3.3	2

( )Metric size

#### Available blades

BAMPR-XAF	BAMPR-XAW	BAMPR-XAWR	
29	28	1	

	PCD	
Designation	DP150	page
BAMPR-XAF		
BAMPR-XAW	•	E07
BAMPR-XAWR	•	

#### Available arbors

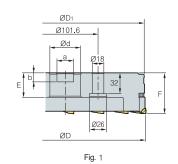
	Designation	NC arbors
APD-PB	080R/L-PB□□Z	BT□□-FMA25.4(FMC27)-□□
(APDM-PB)	100R/L-PB□□Z	BT□□-FMA31.75(FMC32)-□□
	125R/L-PB□□Z	BT□□-FMA38.1(FMB40)-□□
	160R/L-PB□□Z	BT□□-FMA50.8(FMB/FMC40)-□□

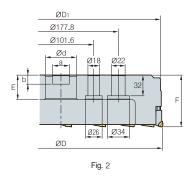
Specification						San
	Blade screw	Blade adjustable screw	Al-body protecting tap	Balancing screw	Wrench for insert	Wrench for cartridge
Ø80~Ø160	ETKA0620	AZ0514-SPN6	UZD1010	KHE0610	SPN-6	TW25-100

# APD(M)-PB

#### **Blade**













A • AR: -6° • RR: -39°~-16°

(mm)

De	esignation	0	Max	ØD	ØD1	Ød	а	b	Е	F	ар	(kg)	Fig.
APD	200R/L-PB12Z	12	26	200	197	47.625 (60)	25.4 (25.7)	14	40	63	5	4.0	1
(APDM)	250R/L-PB16Z	16	32	250	247	47.625 (60)	25.4 (25.7)	14	40	63	5	6.5	1
	315R/L-PB18Z	18	42	315	312	47.625 (60)	25.4 (25.7)	14	40	63	5	11.3	2

( )Metric size

#### Available blades

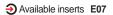
BAMPR-XAF	BAMPR-XAW	BAMPR-XAWF
20	20	-0

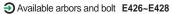
	PCD	
Designation	DP150	page
BAMPR-XAF		
BAMPR-XAW	•	E07
BAMPR-XAWR	•	

### Available arbors

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

_								
	Specification					5	Nonco .	
		Blade screw	Blade adjustable screw	Al-body protecting tap	Balancing screw	Wrench for insert	Wrench for cartridge	
	Ø200~Ø315	ETKA0620	AZ0514-SPN6	UZD1010	KHE0610	SPN-6	TW25-100	

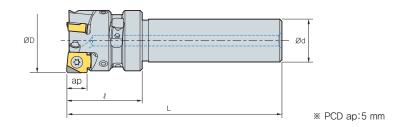






## MAPDS000HR/L-Z0













(mm)

D	esignation	©	ØD	Ød	Q	L	ар	Max rpm	kg
MAPDS	032HR/L-Z3	3	32	20	35	100	9.5	26,000	0.35
	040HR/L-Z4	4	40	20	35	100	9.5	24,500	0.42

#### Available inserts

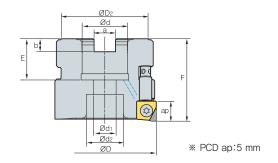
SNEW-XAF SNEW-NAF **SNEW** Strengthened edge

Designation			Uncoated		PCD			
		H01	G10	ST30A	DP200	page		
SNEW	09T3ADFR	•						
	09T3ADTR-XAF				•			
	09T3ADTR-XAW				•	E24		
	09T3ADTR-NAF				•			
	09T3ADTR-NAW				•			

Specification						
	Insert screw	Adjust screw	Balance screw	Wrench for insert	Adjust wrench	
Ø32~Ø63	FTKA0408	AHX0617F-NYLOK	KHD0405	TW15S	HW20L	

### MAPD000HR/L-Z0













(mm)

	Designation	0	ØD	ØD2	Ød	а	b	E	F	Ød1	Ød2	ар	Max rpm	(kg
MAPD	040HR/L-Z4	4	40	34	16	8.4	5.6	18	40	9	14	9.5	24,000	0.24
	050HR/L-Z5	5	50	42	22	10.4	6.3	20	40	11	18	9.5	22,000	0.35
	063HR/L-Z6	6	63	42	22	10.4	6.3	20	40	11	18	9.5	20,000	0.65

#### Available inserts

**SNEW** 

SNEW-XAF

SNEW-NAF







Strengthened edge

			Unco		PCD		
Designation		H01	G10	ST30A	ST20	DP200	page
SNEW	09T3ADFR	•					
	09T3ADTR-XAF					•	
	09T3ADTR-XAW					•	E24
	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 condition

Mouleniage	Cutting of	Grades	
Workpiece	vc (m/min)	fz (mm/t)	Grades
Aluminum	1,000~4,000 500~2,500	0.05~0.30 0.05~0.20	DP200 H01

### Coolant bolt (Not included)

Designation	Applicable cutter	Available cutters
CB0525	MAPD040HR/L-Z4	Ø40
CB1025	MAPD050HR/L-Z5	Ø50
CB1023	MAPD063HR/L-Z6	Ø63

Specification				B	
	Insert screw	Adjust screw	Balance screw	Wrench for insert	Adjust wrench
Ø32~Ø63	FTKA0408	AHX0617F-NYLOK	KHD0405	TW15S	HW20L

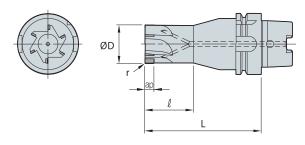
# **E** PCD Face Cutter

### Code system



### **PCD Face cutter**









(mm)

	Designation	©	ØD	r	ар	Q	L
PDF	4032-HSK50A	4	32	0.5	8	50	120
	4040-HSK50A	4	40	0.5	8	50	120
	4032-HSK63A	4	32	0.5	8	50	120
	4040-HSK63A	4	40	0.5	8	50	120
	4050-HSK63A	4	50	0.5	8	50	120
	6063-HSK63A	6	63	0.5	12	-	100
	6063-HSK100A	6	63	0.5	12	-	100

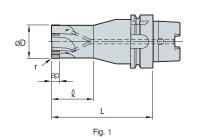
### Recommended cutting condition

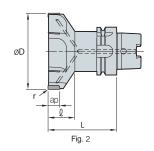
Workpiece	vc (m/min)	fz (mm/t)	ap (mm)		
Al, Brass, Alloy	200~2,000	0.02~0.1	0.05~4.0		

### **Special PCD order sheet**









Decimation	Fig.	tooth	Dimensions (mm)							
Designation		tooth	ØD	r	ар	Q	L	Shank spec.		
PDF										

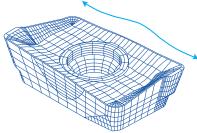
#### Various applications are available with multi-functional cutters

## Alpha Mill

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

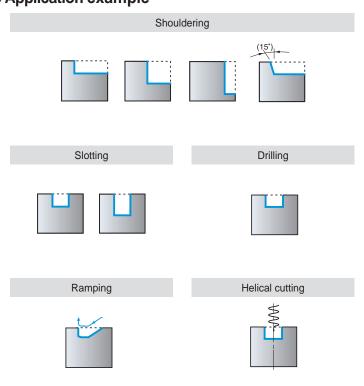
#### Features of insert

- Long tool life at high speed, high feed and deeper cutting by low cutting resistance and strong cutting-edge
- Distinguished features of Alpha-Curve reduce cutting resistance and improve cutting-edge strength and wear resistance



- Low cutting resistance is realized by KORLOY unique design-the alpha curve cutting-edge and optimal convex and concave design
- Highly efficient machining is available by the ideal application of the grade to material

#### Application example





# E Technical Information for Alpha Mill

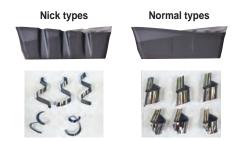
### Alpha Mill Nick new

- New nick cutting edge reduces cutting load
- High productivity
- APMT standard holders are compatible with Alpha Mill nick that is reducing stock management cost.

#### Features

• Lower cutting load due to the overlapping system





- ※ Nick types require both chip breaker types for application.
- \*\* Can be used with the existing Alpha Mill holders. Use multi-edges for maximum results. (cutters with even-numbered teeth)

Туре	Nick	type	General type
Required No. of teeth	2	20	20
For AMCM3080M (4 Flute x 5 teeth)	x 10 APMT16-MN3	x 10 APMT16-MN4	x 20 APMT16- <b>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.

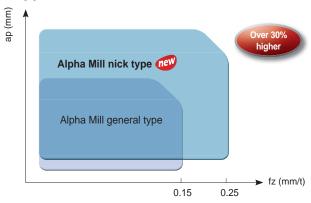


Туре	ap min1	ap min2	
APMT11 (2000 type)	1.6 mm	4.1 mm	
APMT16 (3000 type)	2.2 mm	5 mm	
APMT18 (4000 type)	2.3 mm	5.5 mm	

### Application examples

Deep cutting	Long overhang	Unstable clamping

### Application area



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

### Recommended cutting condition

ISO	Grades	А	PMT 2000 typ	е	А	PMT 3000 typ	е	APMT 4000 type			
150	orudes	vc (m/min)	fz (mm/t)	ap (mm)	vc (m/min)	fz (mm/t)	ap (mm)	vc (m/min)	fz (mm/t)	ap (mm)	
P	PC3700	180~280	0.05~0.15		160~270	0.05~0.18		160~270	0.05~0.18	17	
-	PC5300	150~250	0.05~0.15	11	150~240	0.05~0.18	16	150~240	0.05~0.18		
М	PC5300	90~170	0.05~0.15	11	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		

#### Features of chip breakers

1	Insert	Cutting-edge	Uses	Features
MA	100		Al	Optimal cutting-edge and buffed surface for aluminum workpieces ensure high performance in machining
ML			Hard-to-cut material	Chip breaker with low cutting load is optimal for machining hard-to-cut materials
MF			Light cutting	Chip breaker with low cutting load and harder cutting-edge than ML's are optimal for light cutting
ММ			General cutting	Optimal for milling in general ranges
MN			Roughing (Nick)	Design for easy chip cutting ensures high machinability in toughing



# E Technical Information for Alpha Mill

#### Product constitution

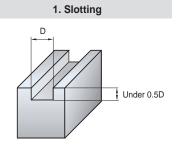
em description	Туре	Nose R	MA	ML		
	4000 (	0.4	APMT0602PDFR-MA	-		
	1000 type	0.8	APMT060208PDFR-MA	-		
	4500 (	0.4	APMT0903PDFR-MA	APMT0903PDER-ML		
	1500 type	0.8	APMT090308PDFR-MA	APMT090308PDER-ML		
	0000 (	0.5	APMT11T3PDFR-MA	APMT11T3PDER-ML		
	2000 type	0.8	APMT11T308PDFR-MA	APMT11T308PDER-ML		
	3000 type	0.4	APMT160404PDFR-MA	APMT160404PDER-ML		
APMT		0.8	APMT1604PDFR-MA	APMT1604PDER-ML		
		0.4	APMT180604PDFR-MA	APMT180604PDER-ML		
		0.8	APMT1806PDFR-MA	APMT1806PDER-ML		
		1.2	APMT180612PDFR-MA	APMT180612PDER-ML		
	4000 type	1.6	APMT180616PDFR-MA	APMT180616PDER-ML		
		2.0	APMT180620PDFR-MA	APMT180620PDER-ML		
		2.4	APMT180624PDFR-MA	APMT180624PDER-ML		
		3.0	APMT180630R-MA	APMT180630R-ML		

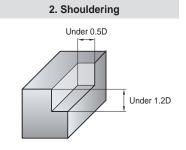
<sup>-</sup> The inserts can switch to the APMT type holders.

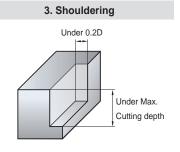
### **⑤** Recommended grades and chip breakers by workpiece

<u> </u>					Recomi	mended C	/R and gra	de as ner	workpiece	( • · 1st)			
Chip breaker	Cutter			•	1 COOIIII		VI	_	K		N		S
ip br	edge	Low carbon s	teel/Mild steel	High carbon steel/Mild steel		Stainless steel		Cast iron		Aluminum alloy		Ti/Inconel	
Chi		C/B	Grades	C/B	Grades	C/B	Grades	C/B	Grades	C/B	Grades	C/B	Grades
MA		-	-	-	-	-	-	-	-	•	• H01	-	-
ML		-	-	-	-	•	• PC5300 • PC5400 • PC9530	-	-	-	-	•	● PC5300 ○ PC5400
MF		•	<ul><li>PC3700</li><li>PC5300</li><li>PC5400</li><li>NCM325</li><li>NCM335</li></ul>	-	○ PC3700 ○ NCM325 ○ NCM335	-	● PC5300 ○ PC5400 ○ PC9530	-	<ul><li>PC6510</li><li>PC5300</li><li>PC5400</li></ul>	-	-	-	• PC5300 • PC5400
ММ		-	<ul><li>PC3700</li><li>PC5300</li><li>PC5400</li><li>NCM325</li><li>NCM335</li></ul>	•	<ul><li>PC3700</li><li>PC5300</li><li>PC5400</li><li>NCM325</li><li>NCM335</li></ul>	-	● PC5300 ○ PC5400 ○ PC9530	•	<ul><li>PC6510</li><li>PC5300</li><li>PC5400</li></ul>	-	-	-	• PC5300 • PC5400
MN		-	• PC3700 • PC5300 • PC5400	-	-	-	● PC5300 ○ PC5400 ○ PC9530	-	<ul><li>PC6510</li><li>PC5300</li><li>PC5400</li></ul>	-	-	-	• PC5300 • PC5400

### Recommended depth of cut







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

							Tool	dia.				
Workpiece	Grades	Fig.	Ø10	, 16	Ø20	, 25	Ø32	, 40	Ø50	, 63	Ø80,	100
			vc (m/min)	fz (mm/t)								
Mild steel,	NCM535	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
Low carbon	NCM325 PC5400	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
steel)	PC5300 PC3700	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	NCM535	1	45~60	0.05	60~80	0.05	80~100	0.05	80~100	0.05	80~100	0.05
steel,	NCM325 PC5300	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
Alloy steel	PC3700	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
Allowtool	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
Alloy tool steel		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
31001		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
Ctainlann	PC5300 PC9530	1	35~50	0.054	50~70	0.054	70~90	0.05	70~90	0.05	70~90	0.05
Stainless steel		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
Steel		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
		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
Cast iron	PC6510 PC5300	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
		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
Aluminum alloy	H01	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
alloy		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
Hardone -	PC5300	1	35~50	0.03	50~70	0.03	60~90	0.03	60~90	0.03	60~90	0.03
Hardened steel	PC2510	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
steel	PC2505	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 condition (for Single-edge type)

							Tool	dia.				
Workpiece	Grades	Fig.	Ø10	, 16	Ø20	, 25	Ø32	, 40	Ø50	, 63	Ø80,	100
			vc (m/min)	fz (mm/t)								
Mild steel,	NCM535 NCM325	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
low carbon	PC5400 PC5300	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
steel	PC3700	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	NCM535	1	40~60	0.05	50~80	0.05	80~110	0.05	100~150	0.05	100~150	0.05
steel,	NCM325 PC5300	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
alloy steel	PC3700	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
Alleuteel	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
Alloy tool steel		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
31001		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
01-1-1	PC5300 PC9530	1	35~50	0.05	50~70	0.05	80~100	0.05	100~130	0.05	100~130	0.05
Stainless steel		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
31661		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
		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
Cast iron	PC6510 PC5300	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
A I		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
Aluminum alloy	H01	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
anoy		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
Handanad	PC5300	1	35~50	0.03	50~70	0.03	60~90	0.03	60~90	0.03	60~90	0.03
Hardened steel	PC2510	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
31661	PC2505	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



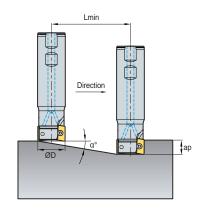
# E Technical Information for Alpha Mill

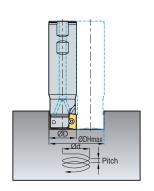
### Cutting condition for ramping and helical operation

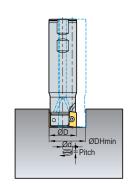
1. Ramping

2. Helical cutting for blind hole

3. Helical cutting for through hole







(mm)

	To all di		1. Ran	nping	2. I	Helical cutti	ng for blind ho	le	3. Helical cutting for through hole		
Designation	Tool dia. ØD (min)	ар	Maximum angle α(°)	Lmin	Min. desirable hole dia. ØDHmin	Max. pitch dmax	Max. desirable hole dia. ØDHmax	Max. pitch dmax	Min. desirable hole dia. ØDHmin	Max. pitch dmax	
AMS1010HS	10		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	5	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		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	9	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	

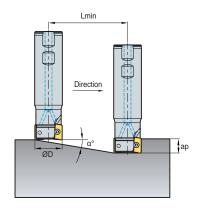


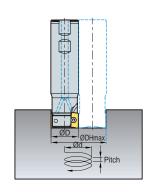
### Cutting condition for ramping and helical operation

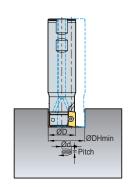
1. Ramping

2. Helical cutting for blind hole

3. Helical cutting for through hole







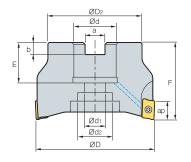
(mm)

	T I . II .		1. Ram	ping	2. I	Helical cutti	ng for blind ho	le	3. Helical cutting	for through hole			
Designation	Tool dia. ØD (min)	ар	Maximum angle $\alpha(\mathring{\ })$	Lmin	Min. desirable hole dia. ØDHmin	Max. pitch dmax	Max. desirable hole dia. ØDHmax	Max. pitch dmax	Min. desirable hole dia. ØDHmin	Max. pitch dmax			
AMS2010HS	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	10	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		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	40	1.22	470	122	2.6	124	2.6	112	2.4			
AMCM3040HS	40	10	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	40	1.50	764	46	1.2	48	1.3	-	-			
AMS2032MH	32	10	1.50	1146	60	1.6	62	1.6	-	-			
AMS3040MH	40	16	1.50	1528	76	2.0	78	2.0	-	-			
AMS4020HS	20		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	10	2.5	376	77.4	3.4	78.8	3.4	71	3.1			
AMS4050HS	50	16	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			



# **AMC(M)1000S**

















• AR: 9°~13° • RR: -14°~5°

(mm)

Designation		<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg
AMCM	1032HS	8	32	30	16	9	14	8.4	5.6	19	40	5.6	0.15
	1040HS-16	10	40	34	16	9	14	8.4	5.6	19	40	5.6	0.24
	1040HS-22	10	40	34	22	11	18	10.4	6.3	21	40	5.6	0.24
	1050HS	12	50	42	22	11	18	10.4	6.3	21	40	5.6	0.36
	1063HS	14	63	49	22	11	18	10.4	6.3	21	40	5.6	0.61

#### Available inserts

APMT-MA

APMT-MM





		Cer	met						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	НОЧ	page
APMT	0602PDFR-MA																	•	
	060208PDFR-MA																		
	060202PDSR-MM			•							•				•	•			
	0602PDSR-MM			•					•	•	•	•	•		•	•			E05
	060208PDSR-MM			•							•				•	•			
	060212R-MM			•											•	•			
	060216R-MM														•	•			

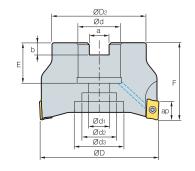
#### Available arbors

	Designation	Ød	NC arbors
AMCM	1032HS	16	BT□□-FMC16-□□
	1040HS-16	10	BILL-FINICIO-LL
	1040HS-22		
	1050HS	22	BT□□-FMC22-□□
	1063HS		

Specification	67		
	Screw	Wrench	
Ø32~Ø63	FTKA01842	TW06S-A	

# **AMC(M)1500S**

















• AR: 9°~13° • RR: -14°~5°

(mm)

Des	signation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	kg
AMCM	15040HS	5	40	34	16	9	14	-	8.4	5.6	19	40	9	0.22
	15050HS	6	50	42	22	11	18	-	10.4	6.3	21	40	9	0.34
	15063HS	8	63	49	22	11	18	-	10.4	6.3	21	40	9	0.57
AMC	15080HS	10	80	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	24 (23)	50	9	1.10
(AMCM)	15100HS	12	100	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	32 (26)	63	9	2.10

( )Metric size

#### Available inserts



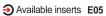
								-			-								
		Cer	met						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	0903PDFR-MA																	•	
	090308PDFR-MA																		
	0903PDER-ML														•	•			
	090308PDER-ML														•	•			
	0903PDSR-MM			•					•	•	•	•			•	•			E05
	090308PDSR-MM			•							•				•	•			
	090312R-MM										•				•	•			
	090316R-MM			•							•				•	•			
	090320R-MM										•				•	•			

#### Available arbors

	Designation	Ød	NC arbors
AMCM	15040HS	16	BT□□-FMC16-□□
	15050HS 15063HS	22	BT□□-FMC22-□□
AMC	4500000	25.4	BT□□-FMA25.4-□□
(AMCM)	15080HS	27	BT□□-FMC27-□□
	15100HS	31.75	BT□□-FMA31.75-□□
	1310003	32	BT□□-FMC32-□□

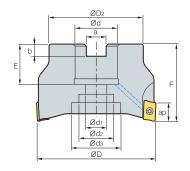
#### Parts

Ou a sification		
Specification	₩/	
	Screw	Wrench
Ø40~Ø100	FTKA02565S	TW08S



# **AMC(M)2000S**

















• AR: 9°~13° • RR: -14°~5°

(mm)

De	esignation	(i)	ØD	ØD2	Ød	Ød1	Ød2	Ødз	а	b	Е	F	ар	O kg
AMCM	2040HS	5	40	34	16	9	14	-	8.4	5.6	18	40	11	0.22
	2050HS	6	50	42	22	11	18	-	10.4	6.3	20	40	11	0.34
	2063HS	8	63	49	22	11	18	-	10.4	6.3	20	40	11	0.57
AMC	2080HS	8	80	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	25 (22)	50	11	1.10
(AMCM)	2100HS	10	100	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	32 (28)	63	11	2.10

( )Metric size

#### Available inserts

Available illocits																		
	APMT	-MA	-	APMT-	-ML		APM	T-MM		AP	МТ-М	F	ı	APMT-	MN			
	3	new		6	ne	N	-			•	9		4		ne	W		
	(	Cermet						(	Coate	d						Unc	oated	
Designation	0	NZ200	IC5330	ICM325	ICM335	ICM535	ICM545	C2505	C2510	C3700	C6510	C9530	C9540	C5300	C5400	10	0	page

		Cer	met						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	11T3PDFR-MA																	•	
	11T308PDFR-MA																		
	11T3PDER-ML														•	•			
	11T308PDER-ML														•	•			
	11T3PDSR-MM			•	•		•		•	•	•	•	•		•	•			
	11T3PDSR-MF			•							•	•			•	•			
	11T308PDSR-MM			•							•		•	•	•	•			E06
	11T312PDSR-MM			•							•		•		•	•			
	11T316R-MM			•							•				•	•			
	11T318R-MM																		
	11T324R-MM			•							•				•	•			
	11T3PDSR-MN2														•				
	11T3PDSR-MN3														•				

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

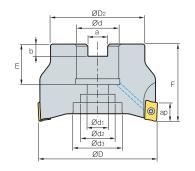
#### Available arbors

	Designation	Ød	NC arbors
AMCM	2040HS	16	BT□□-FMC16-□□
	2050HS 2063HS	22	BT FMC22-
AMC (AMCM)	2080HS	25.4 27	BT□□-FMA25.4-□□ BT□□-FMC27-□□
(AlliOili)	2400US	31.75	BT - FMA31.75-
	2100HS	32	BT□□-FMC32-□□

Specification	Screw	Wrench	
Ø40~Ø100	FTKA02565S	TW08S	

# **AMC(M)3000S**





















(mm)

De	signation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	kg
AMCM	3040HS	4	40	34	16	9	14	-	8.4	5.6	18	40	16	0.18
	3050HS	5	50	42	22	11	18	-	10.4	6.3	20	40	16	0.28
	3063HS	6	63	49	22	11	18	-	10.4	6.3	20	40	16	0.50
AMC	3080HS	7	80	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	25 (22)	50	16	1.02
(AMCM)	3100HS	8	100	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	32 (28)	63	16	2.05

( )Metric size

#### Available inserts

	AFI	MT-M	A	Α	PMT-	ML		APM	T-MM		AP	MT-M	Ε	F	PMT-	MN			
	3		new		6	nev		-				9		4		ne	9		
		Cer	met						C	coate	d						Unco	ated	
Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	면	page
1604PDFR-MA																		•	
160404PDFR-MA																			
1604PDER-ML															•	•			
160404PDER-ML															•	•			
1604PDSR-MM				•	•		•		•	•	•	•	•	•	•	•			
1604PDSR-MF				•							•	•			•	•			
160410PDSR-MM											•				•	•			E06
160416PDSR-MM				•							•				•	•			
	1604PDFR-MA 160404PDFR-MA 1604PDER-ML 160404PDER-ML 1604PDSR-MM 1604PDSR-MF 160410PDSR-MM	1604PDFR-MA 160404PDFR-MA 1604PDER-ML 160404PDER-ML 1604PDSR-MM 1604PDSR-MF 160410PDSR-MM	Designation	1604PDFR-MA 160404PDFR-MA 1604PDER-ML 160404PDER-ML 1604PDSR-MM 1604PDSR-MF 160410PDSR-MM	Designation	Designation	Cermet   00	Designation	Cermet   SE	Cermet   C	Cermet   Coate   Coa	Cermet   Coated	Cermet   Coated   Designation   OS	Cermet   Coated   C	Cermet   Coated     Coated     Coated     Coated   Coated     Coated   Co	Cermet   Coated     Coated     Coated     Coated   Coated     Coated   Co	Cermet   Coated   C	Cermet   Coated   Uncoated   Un	Cermet   Coated   Uncoated   Un

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

#### Available arbors

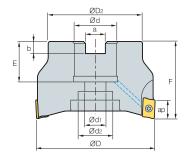
160424R-MM 160430R-MM 160432R-MM 1604PDSR-MN3 1604PDSR-MN4

	Designation	Ød	NC arbors
AMCM	3040HS	16	BT□□-FMC16-□□
	3050HS 3063HS	22	BT□□-FMC22-□□
AMC	3080HS	25.4	BT□□-FMA25.4-□□
(AMCM)	3000113	27	BT□□-FMC27-□□
	3100HS	31.75	BT□□-FMA31.75-□□
	310003	32	BT□□-FMC32-□□

Specification			
	Screw	Wrench	
Ø40~Ø100	FTKA0410	TW15S	

# AMC(M)3000S-K

















• AR: 14° • RR: -12°~8°

(mm)

Des	signation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg
AMCM	3040HS-K	4	40	34	16	9	14	8.4	5.6	18	40	16	0.15
	3050HS-K	5	50	42	22	11	18	10.4	6.3	20	40	16	0.24
	3063HS-K	6	63	49	22	11	18	10.4	6.3	20	40	16	0.24
AMC	3080HS-K	7	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (22)	50	16	0.36
(AMCM)	3100HS-K	8	100	67	31.75 (32)	18	26	12.7 (14.4)	8 (8)	32 (28)	63	16	0.61

( )Metric size

#### Available inserts

	APKT		APKT	-MF		APK	Т-ММ		Al	PKT-M	IA	-	APKT-	MA2		APK	T-MA3	3		
	5		9							9			6			Y	5	7		
		Cei	rmet						(	Coate	d						U	ncoat	ed	
	Designation	CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	G10	H04	H05	page
APKT	1604PDSR			•						•	•									
	1604PDSR-MF			•										•						
	1604PDSR-MM			•	•					•	•	•		•						
	1604PDFR-MA															•		•	•	
	1604PDFR-MA2																	•		E04
	160416FR-MA2																	•		
	160432FR-MA2																			1
	1604PDFR-MA3																•	•	•	1
	160420FR-MA3																			1

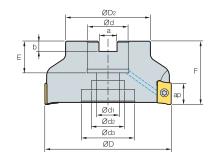
### Available arbors

	Designation	Ød	NC arbors
AMCM	3040HS-K	16	BT□□-FMC16-□□
	3050HS-K	20	BT□□-FMC22-□□
	3063HS-K	22	BI LL-FIMC22-LL
AMC	3080HS-K	25.4	BT□□-FMA25.4-□□
(AMCM)	3000H3-K	27	BT□□-FMC27-□□
	3100HS-K	31.75	BT□□-FMA31.75-□□
	3100113-11	32	BT□□-FMC32-□□

Specification	<b>6</b>		
	Screw	Wrench	
Ø40~Ø100	FTKA0410	TW15S	

# **AMC(M)4000S**

















• AR: 13°~15° • RR: -12°~7°

(mm)

Des	signation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	Е	F	ар	kg
AMCM	4050HS	5	50	42	22	11	18	-	10.4	6.3	21	40	17	0.28
	4063HS	6	63	49	22	11	18	-	10.4	6.3	21	40	17	0.50
AMC	4080HS	7	80	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	24 (23)	50	17	1.00
(AMCM)	4100HS	8	100	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	32 (25)	63 (50)	17	2.10
	4125HS	9	125	87	38.1 (40)	22	32	52	15.9 (16.4)	10 (9)	35 (29)	63	17	3.30
	4160S	10	160	107	50.8 (40)	-	-	100	19 (16.4)	11 (9)	38 (32)	63	17	3.6
	4200S	10	200	108	47.625 (60)	-	-	132	25.4 (25.7)	14 (14)	40 (38)	63	17	6

( )Metric size

### Available inserts

				Α	PMT-N	IΑ		Α	PIVI	T-ML		API	IT-MM	APMT-MF		APM	-MN								
				4			new	-	5		iew	-		•	4			new							
		Cermet				Co	ated				Uncoated				Cermet				Coa	ited				Uncoated	
	Designation	CN2500 CN30	NC5330	NCM325 NCM335	NCM535 NCM545	PC2505	PC2010 PC3700	PC6510	PC9540	PC5300 PC5400	G10 H01	page		Designation	CN2500 CN30	NC5330	NCM335	NCM535 NCM545	PC2505	PC3700	PC6510 PC9530	PC9540	PC5400	510 151	page
APMT	1806PDFR-MA										•		APMT	180624PDER-ML								•			
	180604PDFR-MA										•			180630R-ML								•			
	180612PDFR-MA										•			1806PDSR-MM					• (	•	• •	•			
	180616PDFR-MA										•			1806PDSR-MF		•					•	•			
	180620PDFR-MA										•			180612PDSR-MM		•				•		•	•		
	180624PDFR-MA										•	E06		180616PDSR-MM		•						•	•		E06
	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.

#### Available arbors

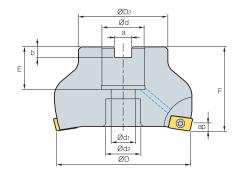
Desi	gnation	Ød	NC arbors
AMCM	4050HS 4063HS	22	BT□□-FMC22-□□
AMC	4080HS	25.4	BT□□-FMA25.4-□□
(AMCM)	400003	27	BT□□-FMC27-□□
	4100HS	31.75	BT□□-FMA31.75-□□
	410003	32	BT□□-FMC32-□□

Desig	gnation	Ød	NC arbors
AMC	4125HS	38.1	BT□□-FMA38.1-□□
(AMCM)	412303	40	BT□□-FMC40-□□
	4160S	50.8	BT□□-FMA50.8-□□
	41003	40	BT□□-FMC40-□□
	4200S	47.625	BT□□-FMA47.625-□□
	42005	60	BT□□-FMB60-□□

Specification	6		
	Screw	Wrench	
Ø50~Ø200	FTKA0410	TW15S	

# AMC(M)1000SE/2000SE











• AR: 45° • RR: 0°

(mm)

De	signation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	O kg
AMCM	1040HSE	4	40	34	16	9	14	8.4	5.6	19	40	2.5	0.26
	1050HSE	5	50	42	22	11	18	10.4	6.3	21	40	2.5	0.39
AMC	2080HSE	5	80	57	25.4 (27)	14	20	9.5 (12.4)	6.0 (7.0)	25 (22)	50	4	1.2
(AMCM)	2100HSE	6	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0 (8.0)	32 (28)	63	4	2.33

( )Metric size

#### Available inserts

APMT-MM APMT-MF



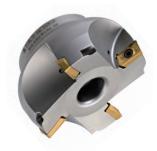
			Cer	met						C	oate	d						Unco	ated	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	Н01	page
	APMT	060202PDSR-MM			•							•				•	•			
1000		0602PDSR-MM			•					•	•	•	•	•		•	•			
type		060208PDSR-MM			•							•				•	•			
		060212R-MM			•											•	•			
	APMT	11T3PDSR-MM			•	•		•		•	•	•	•	•		•	•			
		11T3PDSR-MF			•							•	•			•	•			E06
		11T308PDSR-MM			•							•		•	•	•	•			
2000 type		11T312PDSR-MM			•							•		•		•	•			
type		11T316R-MM			•							•				•	•			
		11T318R-MM																		
		11T324R-MM			•							•				•	•			

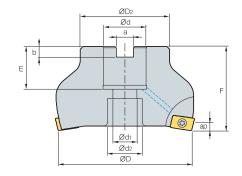
#### Available arbors

Туре	I	Designation	Ød	NC arbors
1000	AMC	1040HSE	16	BT□□-FMC16-□□
type	(AMCM)	1050HSE	22	BT□□-FMC22-□□
	AMC	2080HSE	25.4	BT□□-FMA25.4-□□
2000	(AMCM)	2000ПЗЕ	27	BT□□-FMC27-□□
type		2100HSE	31.75	BT□□-FMA31.75-□□
		210003E	32	BT□□-FMC32-□□

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

# **AMC(M)3000SE**













(mm)

Des	signation	(i)	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	
AMC	3080HSE	4	80	57	25.4 (27)	14	20	9.5 (12.4)	6.0 (7.0)	25 (22)	50	6	1.3
(AMCM)	3100HSE	5	100	67	31.75 (32)	18	26	12.7 (14.4)	8.0 (8.0)	32 (28)	63	6	2.3

( )Metric size

#### Available inserts

APMT-MM APMT-MF

					1			1										
		Cermet						C	coate	d						Unc	oated	
	Designation	CN2500 CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
APMT	1604PDSR-MM		•	•		•		•	•	•	•	•	•	•	•			
	1604PDSR-MF		•							•	•			•	•			
	160410PDSR-MM									•				•	•			
	160416PDSR-MM		•							•				•	•			E06
	160424R-MM		•							•				•	•			
	160430R-MM									•				•	•			
	160432R-MM		•							•				•	•			

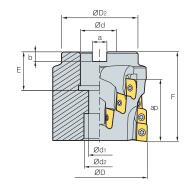
#### Available arbors

	Designation	Ød	NC arbors
AMC	3080HSE	25.4	BT□□-FMA25.4-□□
(AMCM)	300003E	27	BT□□-FMC27-□□
	3100HSE	31.75	BT□□-FMA31.75-□□
	3100HSE	32	BT□□-FMC32-□□

Specification			
	Screw	Wrench	
Ø80~Ø100	FTKA0410	TW08S	

# **AMC(M)2000M**















(mm)

Des	ignation	(i)	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	No. of flute	ар	
AMCM	2050M	16	50	40	22	11	18	10.4	6.3	21	58	4	39	0.7
AMC	2063M	16	63	50	25.4 (27)	13.5	20	9.5 (12.4)	6 (7)	25 (25)	58	4	39	0.8
(AMCM)	2080M	20	80	60	31.75 (32)	-	45	12.7 (14.4)	8 (8)	35 (28)	63	5	39	0.96
	2100M	24	100	80	38.1 (40)	-	56	15.9 (16.4)	10 (9)	38 (30)	63	6	39	1.2

( )Metric size

#### Available inserts

		API	PMT-MA APMT-ML APMT-MM					AP	MT-M	F	A	APMT-	MN							
		3		new		6	net	9				-	9		4		ne	<b>»</b>		
			Cer	met						C	oate	d						Unc	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
APMT	11T3PDFR-MA																		•	
	11T308PDFR-MA																			
	11T3PDER-ML															•	•			
	11T308PDER-ML															•	•			
	11T3PDSR-MM				•	•		•		•	•	•	•	•		•	•			
	11T3PDSR-MF				•							•	•			•	•			
	11T308PDSR-MM				•							•		•	•	•	•			E06
	11T312PDSR-MM				•							•		•		•	•			
	11T316R-MM				•							•				•	•			
	11T318R-MM																			
	11T324R-MM				•							•				•	•			
	11T3PDSR-MN2															•				
	11T3PDSR-MN3															•				

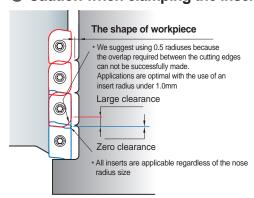
<sup>\*\*</sup> Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. 

\*\* Please use the cutters with even teeth.

#### Available arbors

Design	nation	Ød	NC a	rbors
AMC	2050M	22	BT□□-FMC22-□□	BT□□-SMC22-□□
(AMCM)	2063M	25.4	BT□□-FMA25.4-□□	BT□□-SMA25.4-□□
	2003IVI	27	BT□□-FMC27-□□	BT□□-SMC27-□□
	2080M	31.75	BT□□-FMA31.75-□□	BT□□-SMA31.75-□□
	ZUOUIVI	32	BT□□-FMC32-□□	BT□□-SMC32-□□
	2100M	38.1	BT□□-FMA38.1-□□	BT□□-SMA38.1-□□
	ZIUUWI	40	BT FMC40-	BT SMC40-

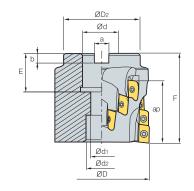
#### Caution when clamping the inserts



Specification	6		
	Screw	Wrench	
Ø50~Ø100	FTKA02565S	TW08S	

# **AMC(M)3000M**















(mm)

Des	signation	<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	No. of flute	ар	kg
AMC	3063M	16	63	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	38 (38)	85	4	57	1.1
(AMCM)	3080M	20	80	67	31.75 (32)	14	26	12.7 (14.4)	8 (8)	40 (40)	100	4	71	2.23
	3100M	30	100	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	40 (40)	100	6	71	3.59

( )Metric size

#### Available inserts

		API	MT-M	Α	A	APMT-	ML		APM	T-MM		AP	MT-M	F	A	PMT-	MN			
		3		new		6	nev	9	-			-	9		4	9	nev	<b>9</b>		
			Cer	met						C	oate	d						Unc	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	FG.	page
APMT	1604PDFR-MA																		•	
	160404PDFR-MA																			
	1604PDER-ML															•	•			
	160404PDER-ML															•	•			
	1604PDSR-MM				•	•		•		•	•	•	•	•	•	•	•			
	1604PDSR-MF				•							•	•			•	•			
	160410PDSR-MM											•				•	•			E06
	160416PDSR-MM				•							•				•	•			
	160424R-MM				•							•				•	•			
	160430R-MM											•				•	•			
	160432R-MM				•							•				•	•			
	1604PDSR-MN3															•				
	1604PDSR-MN4															•				

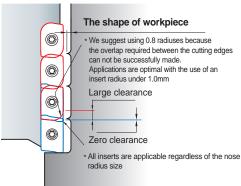
\*\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. 

\*\* Please use the cutters with even teeth.

#### Available arbors

Design	nation	Ød	NC a	rbors
AMC	3063M	25.4	BT□□-FMA25.4-□□	BT□□-SMA25.4-□□
(AMCM)	3003IVI	27	BT□□-FMC27-□□	BT□□-SMC27-□□
	3080M	31.75	BT□□-FMA31.75-□□	BT□□-SMA31.75-□□
	3000IVI	32	BT□□-FMC32-□□	BT□□-SMC32-□□
	3100M	38.1	BT□□-FMA38.1-□□	BT□□-SMA38.1-□□
	3 100101	40	BT -FMC40-	BT□□-SMC40-□□

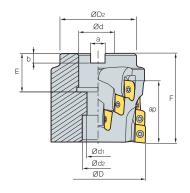
### Caution when clamping the inserts



0 1 0 10			
Specification			
	Screw	Wrench	
Ø63~Ø100	FTKA0410	TW15S	

# **AMC(M)4000M**















(mm)

Des	ignation	<b>(b)</b>	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	No. of flute	ар	kg
AMC	4063M	16	63	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	38 (38)	85	4	61.1	1.1
(AMCM)	4080M	20	80	67	31.75 (32)	14	26	12.7 (14.4)	8 (8)	40 (40)	100	4	76.1	2.23
	4100M	30	100	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	40 (40)	100	6	76.1	3.59
	4125M	18	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	36 (29)	68	6	46.1	4.0

#### Available inserts

( )Metric size

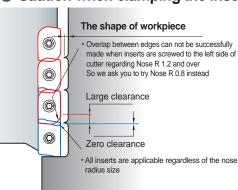
			AF	PMT-MA	١.		APM	T-ML		APN	/IT-MM	APMT-MF		APMT	-MN						
			4		new	*	9		new	-	-	•	•		ne	<b>»</b>					
		Cermet		С	oate	d			Uncoated				Cerme	i i		С	oate	ı		Uncoate	d
	Designation	CN2500 CN30	NC5330 NCM325 NCM335	NCM535 NCM545 PC2505	PC2010	PC6510	PC9530 PC9540	PC5300 PC5400	G10 H21	page		Designation	CN2500	NC5330 NCM325	NCM335 NCM535	NCM545	PC2510	PC6510	PC5300	G10 H01	page
APMT	1806PDFR-MA								•		APMT	180624PDER-ML							•		
	180604PDFR-MA								•			180630R-ML							•		
	180612PDFR-MA								•			1806PDSR-MM					•	•	• •		
	180616PDFR-MA								•			1806PDSR-MF						•	•		
	180620PDFR-MA								•			180612PDSR-MM					•	)	•		
	180624PDFR-MA								•	E06		180616PDSR-MM		•					•		E06
	180630R-MA								•	E00		180620PDSR-MM									E00
	1806PDER-ML							• •				180624PDSR-MM							•		
	180604PDER-ML							• •				180630R-MM							•		
	180612PDER-ML							• •				180632R-MM							•		
	180616PDER-ML							• •				1806PDSR-MN3							•		
	180620PDER-ML							• •				1806PDSR-MN4							•		

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

#### Available arbors

Desig	nation	Ød	NC a	rbors
AMC	400214	25.4	BT□□-FMA25.4-□□	BT□□-SMA25.4-□□
(AMCM)	4063M	27	BT□□-FMC27-□□	BT□□-SMC27-□□
	4080M	31.75	BT FMA31.75-	BT□□-SMA31.75-□□
	4000IVI	32	BT□□-FMC32-□□	BT□□-SMC32-□□
	4100M	38.1	BT□□-FMA38.1-□□	BT□□-SMA38.1-□□
	4 I UUIVI	40	BT FMC40-	BT□□-SMC40-□□
	4125M	38.1	BT□□-FMA38.1-□□	BT□□-SMA38.1-□□
	4123W	40	BT FMC40-	BT -SMC40-

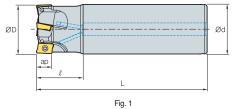
### Caution when clamping the inserts

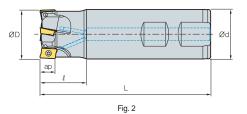


Specification	67		
	Screw	Wrench	
Ø63~Ø125	FTKA0410	TW15S	

## **AMS1000S**





















• AR: 7.5°~13° • RR: -17°~-6°

(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	kg	Fig.
AMS	1010HS	2	10	10	20	80	5.6	0.04	2
	1011HS	2	11	10	20	80	5.6	0.04	2
	1012HS-2	2	12	12	25	80	5.6	0.06	2
	1012HS-2L12	2	12	12	25	120	5.6	0.09	1
	1012HS-3	3	12	12	25	80	5.6	0.06	2
	1014HS-2	2	14	16	25	90	5.6	0.11	2
	1014HS-2L16	2	14	16	25	140	5.6	0.18	1
	1014HS-3	3	14	16	25	90	5.6	0.11	2
	1015HS	3	15	16	25	90	5.6	0.11	2
	1015HS-3L16	3	15	16	25	140	5.6	0.18	1
	1016HS-3	3	16	16	25	90	5.6	0.12	2
	1016HS-3L16	3	16	16	25	160	5.6	0.22	1
	1016HS-4	4	16	16	25	90	5.6	0.12	2
	1017HS	4	17	16	25	90	5.6	0.12	2
	1017HS-3L16	3	17	16	25	160	5.6	0.22	1
	1018HS	4	18	16	25	90	5.6	0.12	2
	1018HS-4L16	4	18	16	25	180	5.6	0.25	1
	1020HS-4	4	20	20	30	110	5.6	0.23	2
	1020HS-4L20	4	20	20	30	200	5.6	0.43	1
	1020HS-5	5	20	20	30	110	5.6	0.23	2
	1021HS	5	21	20	30	110	5.6	0.24	2
	1021HS-4L20	4	21	20	30	200	5.6	0.43	1
	1022HS	5	22	20	30	110	5.6	0.27	2
	1025HS	7	25	25	30	120	5.6	0.39	2
	1026HS	7	26	25	30	120	5.6	0.39	2
	1032HS	8	32	32	35	120	5.6	0.65	2
	1033HS	8	33	32	35	120	5.6	0.65	2

#### Available inserts

APMT-MA

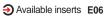
APMT-MM





					-				-									
		Cermet						C	oate	d						Unco	oated	
	Designation	CN2500 CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	0602PDFR-MA																•	
	060208PDFR-MA																	
	060202PDSR-MM		•							•				•	•			
	0602PDSR-MM		•					•	•	•	•	•		•	•			E06
	060208PDSR-MM		•							•				•	•			
	060212R-MM		•											•	•			
	060216R-MM													•	•			

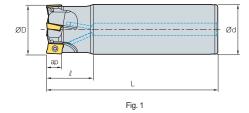
Specification		
	Screw	Wrench
Ø10~Ø33	FTKA01842	TW06S-A

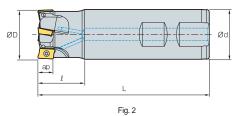


# E Alpha Mill

## **AMS1500S**















(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	(kg	Fig.
AMS	15010HS	1	10	10	25	80	9	0.04	2
	15010HS-1L16	1	10	16	30	160	9	0.21	1
	15012HS	1	12	16	25	80	9	0.10	2
	15012HS-1L16	1	12	16	30	160	9	0.21	1
	15013HS	1	13	16	25	80	9	0.10	2
	15014HS	1	14	16	25	80	9	0.10	2
	15014HS-1L16	1	14	16	30	160	9	0.21	1
	15016HS	2	16	16	30	90	9	0.11	2
	15016HS-2L16	2	16	16	30	160	9	0.21	1
	15017HS	2	17	16	30	90	9	0.12	2
	15017HS-2L16	2	17	16	30	160	9	0.21	1
	15018HS	2	18	16	30	90	9	0.14	2
	15018HS-2L16	2	18	16	30	160	9	0.21	1
	15019HS	2	19	16	30	90	9	0.16	2
	15020HS	2	20	20	30	90	9	0.18	2
	15020HS-2L20	2	20	20	30	160	9	0.34	1
	15020HS-3	3	20	20	30	90	9	0.18	2
	15021HS	2	21	20	30	90	9	0.20	2
	15021HS-2L20	2	21	20	30	160	9	0.34	1
	15021HS-3	3	21	20	30	90	9	0.20	2
	15022HS	3	22	20	30	110	9	0.23	2
	15022HS-3L20	3	22	20	30	180	9	0.38	1
	15024HS	3	24	20	30	110	9	0.30	2
	15024HS-4	4	24	20	30	110	9	0.30	2
	15025HS-3S20	3	25	20	30	110	9	0.35	2
	15025HS	3	25	25	30	110	9	0.35	2
	15025HS-3L25	3	25	25	30	180	9	0.59	1

#### Available inserts

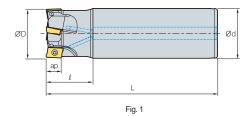


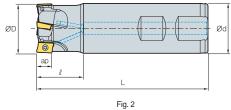
								-											
		Cer	met						C	Coate	d						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	0903PDFR-MA																	•	
	090308PDFR-MA																		
	0903PDER-ML														•	•			
	090308PDER-ML														•	•			
	0903PDSR-MM			•					•	•	•	•			•	•			E06
	090308PDSR-MM			•							•				•	•			
	090312R-MM										•				•	•			
	090316R-MM			•							•				•	•			
	090320R-MM										•				•	•			

Specification	Screw	Wrench
<u>Ø10~Ø14</u> Ø16~Ø25	FTKA02555S FTKA02565S	TW08S

## **AMS1500S**





















(mm)

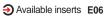
	Designation	©	ØD	Ød	Q	L	ар	(kg)	Fig.
MS	15025HS-4S20	4	25	20	30	110	9	0.25	2
	15025HS-4S25	4	25	25	30	110	9	0.25	2
	15028HS	4	28	25	30	110	9	0.36	2
	15028HS-4L25	4	28	25	30	180	9	0.61	1
	15028HS-5	5	28	25	30	110	9	0.36	2
	15030HS	4	30	25	30	110	9	0.38	2
	15030HS-4L25	4	30	25	30	180	9	0.62	1
	15030HS-5	5	30	25	30	110	9	0.38	2
	15032HS	4	32	32	30	110	9	0.60	2
	15032HS-4L32	4	32	32	30	180	9	1.00	1
	15032HS-5	5	32	32	30	110	9	0.60	2
	15035HS	5	35	32	30	110	9	0.70	2
	15035HS-6	6	35	32	30	110	9	0.70	2
	15040HS-S32	5	40	32	35	130	9	0.80	2
	15040HS-5L32	5	40	32	35	200	9	1.20	1
	15040HS-6S32	6	40	32	35	130	9	0.80	2
	15040HS-S40	5	40	40	35	130	9	1.13	2
	15040HS-6S40	6	40	40	35	130	9	1.13	2
	15040HS-S42	5	40	42	35	130	9	1.23	2
	15040HS-6S42	6	40	42	35	130	9	1.23	2

### Available inserts



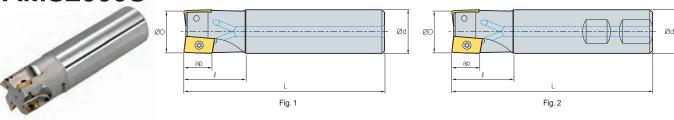
		Cer	met						C	oate	d						Unc	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	<u>Б</u>	page
APMT	0903PDFR-MA																	•	
	090308PDFR-MA																		
	0903PDER-ML														•	•			
	090308PDER-ML														•	•			
	0903PDSR-MM			•					•	•	•	•			•	•			E06
	090308PDSR-MM			•							•				•	•			
	090312R-MM										•				•	•			
	090316R-MM			•							•				•	•			
	090320R-MM										•				•	•			

Specification	67	
	Screw	Wrench
Ø25~Ø40	FTKA02565S	TW08S



# E Alpha Mill

## **AMS2000S**



		90°	• AR: 3°~14° • RR: -25°~-18°
--	--	-----	---------------------------------

(mm)

	Designation	©	ØD	Ød	Q	L	ар	kg	Fig.
AMS	2010HS	1	10	10	20	85	11	0.04	2
	2010HS-1L16	1	10	16	30	160	11	0.21	1
	2012HS	1	12	16	25	85	11	0.10	2
	2012HS-1L16	1	12	16	30	160	11	0.21	1
	2014HS	1	14	16	25	90	11	0.12	2
	2014HS-1L16	1	14	16	30	160	11	0.21	1
	2016HS	2	16	16	25	90	11	0.12	2
	2016HS-2L16	2	16	16	30	180	11	0.21	1
	2018HS	2	18	16	25	90	11	0.12	2
	2018HS-2L16	2	18	16	30	180	11	0.21	1
	2020HS	2	20	20	30	100	11	0.21	2
	2020HS-2L20	2	20	20	30	210	11	0.49	1
	2022HS	3	22	20	35	115	11	0.25	2
	2022HS-3L20	3	22	20	35	180	11	0.38	1
	2025HS	3	25	25	35	115	11	0.40	2
	2025HS-3L25	3	25	25	40	180	11	0.59	1
	2032HS	4	32	32	40	125	11	0.70	2
	2032HS-4L32	4	32	32	50	180	11	1.00	1
	2040HS	5	40	32	42	130	11	0.84	2
	2040HS-5L32	5	40	32	50	200	11	1.20	1
	2040HS-S40	5	40	40	42	130	11	1.15	2
	2040HS-S42	5	40	42	42	130	11	2.00	2
	2050HS	6	50	32	45	135	11	1.06	2
	2050HS-S40	6	50	40	45	135	11	1.38	2
	2050HS-S42	6	50	42	45	135	11	1.50	2
	2063HS	8	63	32	45	135	11	1.31	2
	2063HS-S40	8	63	40	45	135	11	1.62	2
	2063HS-S42	8	63	42	45	135	11	1.70	2

#### Available inserts

		APMT-N	ΛA	A	APMT-	ML		APM	T-MM		AP	MT-M	F	A	PMT-	MN			
		0	new	•	6	nev	9	-			-	9		4		ne	<b>»</b>		
		Ce	rmet						С	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H04	page
APMT	11T3PDFR-MA																	•	
	11T308PDFR-MA																		
	11T3PDER-ML															•			
	11T308PDER-ML														•	•			
	11T3PDSR-MM				•		•		•	•	•	•	•		•	•			
	11T3PDSR-MF			•							•	•							
	11T308PDSR-MM										•			•					E06
	11T312PDSR-MM			•							•				•	•			
	11T316R-MM			•							•				•	•			
	11T318R-MM																		
	11T324R-MM			•							•				•	•			
	11T3PDSR-MN2														•				
	11T3PDSR-MN3																		

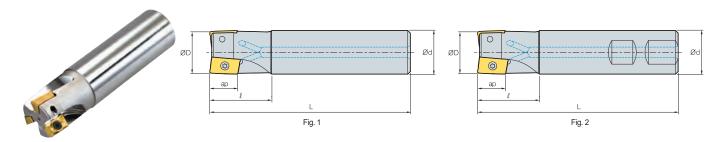
#### Parts

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

Specification	Screw	Wrench
Ø10~Ø14 Ø16~Ø63	FTKA02555S FTKA02565S	TW08S

(mm)

## **AMS3000S**



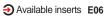


	Designation	<b>(</b>	ØD	Ød	Q	L	ар	kg	Fig.
AMS	3025HS	2	25	25	35	115	16	0.40	2
	3025HS-2M25	2	25	25	35	180	16	0.65	1
	3025HS-2L25	2	25	25	60	220	16	0.75	1
	3032HS	3	32	32	40	125	16	0.69	2
	3032HS-2M32	2	32	32	40	200	16	1.13	1
	3032HS-2L32	2	32	32	65	260	16	1.52	1
	3032HS-3M32	3	32	32	40	200	16	1.12	1
	3032HS-3L32	3	32	32	65	260	16	1.48	1
	3040HS	4	40	32	42	130	16	0.80	2
	3040HS-3M32	3	40	32	42	200	16	1.24	1
	3040HS-3L32	3	40	32	42	260	16	1.61	1
	3040HS-4M32	4	40	32	42	200	16	1.21	1
	3040HS-4L32	4	40	32	42	260	16	1.58	1
	3040HS-S40	4	40	40	42	130	16	1.10	2
	3040HS-S42	4	40	42	42	130	16	1.20	2
	3050HS	5	50	32	45	135	16	1.00	2
	3050HS-S40	5	50	40	45	135	16	1.30	2
	3050HS-S42	5	50	42	45	135	16	1.40	2
	3063HS	6	63	32	45	135	16	1.25	2
	3063HS-S40	6	63	40	45	135	16	1.50	2
	3063HS-S42	6	63	42	45	135	16	1.54	2

#### Available inserts

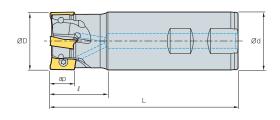
		APM	T-MA		Α	PMT-	ML		APM	T-MM		AP	MT-M	F	-	\PMT	-MN			
		3	31	new	•	6	nev	)	-			-	9		4		net	<b>"</b>		
			Cerm	net						C	oate	d						Unc	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H H	page
APMT	1604PDFR-MA																		•	
	160404PDFR-MA																			
	1604PDER-ML															•	•			
	160404PDER-ML															•	•			
	1604PDSR-MM				•	•		•		•	•	•	•	•	•	•	•			
	1604PDSR-MF				•							•	•			•	•			
	160410PDSR-MM											•				•	•			E06
	160416PDSR-MM				•							•				•	•			
	160424R-MM				•							•				•	•			
	160430R-MM											•				•	•			
	160432R-MM				•							•				•	•			
	1604PDSR-MN3															•				
	1604PDSR-MN4															•				

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



## **AMS3000S-K**

















AA • AR: 14° • RR: -18°~-10°

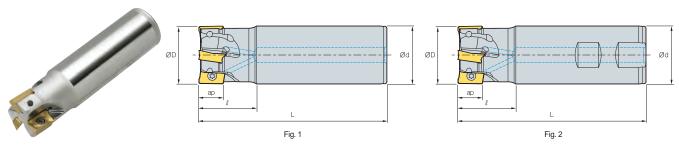
(mm)

	Designation	(i)	ØD	Ød	Q		an	√ kg \
	Designation	9	טש	юu	L	L	ар	<u>/ kg \</u>
AMS	3025HS-K	2	25	25	35	115	16	0.4
	3032HS-K	3	32	32	40	125	16	0.69
	3040HS-K	4	40	32	42	130	16	0.8
	3040HS-K-S40	4	40	40	42	130	16	1.1
	3040HS-K-S42	4	40	42	42	130	16	1.2
	3050HS-K	5	50	32	45	135	16	1.0
	3050HS-K-S40	5	50	40	45	135	16	1.3
	3050HS-K-S42	5	50	42	45	135	16	1.4
	3063HS-K	6	63	32	45	135	16	1.25
	3063HS-K-S40	6	63	40	45	135	16	1.5
	3063HS-K-S42	6	63	42	45	135	16	1.54

#### Available inserts

	APKT		APK	г-МЕ		APK	Т-ММ		AF	KT-M	A	Α	PKT-M	IA2	A	APKT-	MA3			
	5	•	9							9			0		7	•				
		Cer	met						C	coate	d						U	ncoate	ed	
	Designation	CN2500	CN30	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	G10	된	H05	page
APKT	1604PDSR			•						•	•									
	1604PDSR-MF			•										•						
	1604PDSR-MM			•	•					•	•	•		•						
	1604PDFR-MA															•		•	•	E04
	1604PDFR-MA2																	•		EU4
	160416FR-MA2																	•		
	160432FR-MA2																			
	1604PDFR-MA3																•	•	•	

## **AMS4000S**





(mm)

	Designation	0	ØD	Ød	Q	L	ар	(kg	Fig.
AMS	4020HS	1	20	20	30	90	17	0.18	2
	4020HS-M	1	20	20	30	160	17	0.17	1
	4021HS	1	21	20	30	90	17	0.19	2
	4021HS-M	1	21	20	30	160	17	0.34	1
	4025HS	2	25	25	40	110	17	0.35	2
	4025HS-2M25	2	25	25	40	180	17	0.58	1
	4025HS-2L25	2	25	25	40	230	17	0.80	1
	4026HS	2	26	25	40	110	17	0.37	2
	4026HS-2M25	2	26	25	40	180	17	0.60	1
	4026HS-2L25	2	26	25	40	230	17	0.82	1
	4032HS	3	32	32	40	125	17	0.65	2
	4032HS-2M32	2	32	32	50	200	17	1.17	1
	4032HS-2L32	2	32	32	50	260	17	1.50	1
	4032HS-3M32	3	32	32	50	200	17	1.10	1
	4032HS-3L32	3	32	32	50	260	17	1.48	1
	4033HS	3	33	32	40	125	17	0.68	2
	4033HS-2M32	2	33	32	50	200	17	1.12	1
	4033HS-2L32	2	33	32	50	260	17	1.55	1
	4033HS-3M32	3	33	32	50	200	17	1.12	1
	4033HS-3L32	3	33	32	50	260	17	1.55	1

#### Available inserts

				APM1	Г-МА	į	A	PMT-I	ИL		API	MT-MM	APMT-MF	A	NPMT-	MN								
			,	0		new	•	6		iew	4		6	4			ew							
		Cermet			C	oated	ł			Uncoated				Cermet				Coa	ated				Uncoated	
ı	Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545 PC2505	PC2010	PC6510	PC9540	PC5400	G10 H01	page		Designation	CN2500 CN30	NC5330 NCM325	NCM335	NCM545	PC2505		PC6510 PC9530	PC9540	PC5300	G10 H01	page
APMT	1806PDFR-MA									•		APMT	180624PDER-ML									•		
	180604PDFR-MA									•			180630R-ML								•	•		
-	180612PDFR-MA									•			1806PDSR-MM		•			• (	•	• •	• (			
-	180616PDFR-MA									•			1806PDSR-MF		•					•	(	•		
-	180620PDFR-MA									•			180612PDSR-MM						•		•	•		
	180624PDFR-MA									•			180616PDSR-MM								•	•		F00
	180630R-MA									•	E06		180620PDSR-MM											E06
	1806PDER-ML							•	•				180624PDSR-MM		•						(	•		
-	180604PDER-ML							•	•				180630R-MM								(	•		
-	180612PDER-ML							•	•				180632R-MM		•						•			
-	180616PDER-ML							•	)		1		1806PDSR-MN3								(			
	180620PDER-ML							•	•		1		1806PDSR-MN4								(			

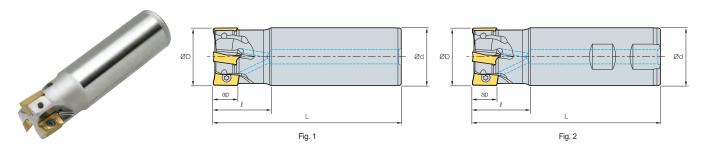
\*\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. 

\*\* Please use the cutters with even teeth.

Specification	Wrench
Ø20~Ø21	08
Ø25~Ø33	10 TW15S

# E Alpha Mill

## **AMS4000S**



















(mm)

ı	Designation	<b>©</b>	ØD	Ød	Q	L	ар	\(\frac{\text{O}}{kg}\)	Fig.
AMS	4040HS-3M32	3	40	32	50	200	17	1.20	1
	4040HS-3L32	3	40	32	50	260	17	1.60	1
	4040HS-4M32	4	40	32	50	200	17	1.20	1
	4040HS-4L32	4	40	32	50	260	17	1.60	1
	4040HS-S32	4	40	32	40	130	17	0.76	2
	4040HS-S40	4	40	40	40	130	17	1.10	2
	4040HS-S42	4	40	42	40	130	17	1.20	2
	4050HS-S32	5	50	32	40	135	17	0.95	2
	4050HS-S40	5	50	40	40	135	17	1.30	2
	4050HS-S42	5	50	42	40	135	17	1.40	2
	4063HS-S32	6	63	32	40	135	17	1.25	2
	4063HS-S40	6	63	40	40	135	17	1.60	2
	4063HS-S42	6	63	42	40	135	17	1.70	2

#### Available inserts

			AP	MT-M	IA		API	/IT-ML		APN	IT-MM	APMT-MF	- 1	APMT	-MN						
				0	nel	0	-		new	-	-	-	•		ne	<b>W</b>					
	Cerme	t		(	Coat	ed			Uncoated				Cermet			C	oate	k		Uncoa	ted
Designation	CN2500	NC5330	NCM325 NCM335	NCM535 NCM545	PC2505 PC2010	PC3700	PC9530	PC5300	G10 H01	page		Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545	PC2510	PC6510	PC9540 PC5300	PC5400 G10	page 된
APMT 1806PDFR-MA	A								•		APMT	180624PDER-ML							•	•	
180604PDFR-	-MA								•			180630R-ML							•		
180612PDFR-	-MA								•			1806PDSR-MM					•	•	• •		
180616PDFR-	-MA								•			1806PDSR-MF							•		
180620PDFR-	-MA								•			180612PDSR-MM					•		•		
180624PDFR-	-MA								•	E06		180616PDSR-MM							•		E06
180630R-MA									•			180620PDSR-MM									
1806PDER-M	L							• •				180624PDSR-MM							•		
180604PDER-	-ML							• •				180630R-MM							•		
180612PDER-	-ML							• •				180632R-MM							•		
180616PDER-	-ML							•				1806PDSR-MN3							•		
180620PDER-	-ML							• •				1806PDSR-MN4							•		

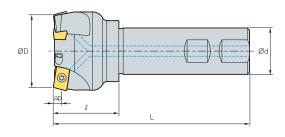
<sup>\*\*</sup> Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. 

\*\* Please use the cutters with even teeth.

Specification	Screw	Wrench	
Ø40~Ø63	FTKA0410	TW15S	

## AMS1000SE/2000SE











• AR: -4.5°~-1° • RR: -3°~0°

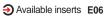
(mm)

ı	Designation	0	ØD	Ød	Q	L	ар	√ kg \
AMS	1025HSE	3	25	25	30	115	2.5	0.41
AMS	2025HSE	2	25	25	30	115	4	0.4
	2032HSE	3	32	32	40	125	4	0.72
	2040HSE	3	40	32	40	130	4	0.86
	2040HSE-S40	3	40	40	40	130	4	1.2
	2040HSE-S42	3	40	42	40	130	4	1.3
	2050HSE	4	50	32	40	135	4	0.98
	2050HSE-S40	4	50	40	40	135	4	1.3
	2050HSE-S42	4	50	42	40	135	4	1.4
	2063HSE	5	63	32	40	135	4	1.24
	2063HSE-S40	5	63	40	40	135	4	1.57
	2063HSE-S42	5	63	42	40	135	4	1.62

#### Available inserts

APMT-MM
9

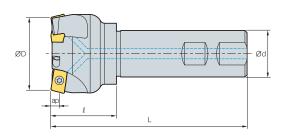
		Designation		met						C	oate	d						Unco	oated	
Туре	Г			CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
	APMT	060202PDSR-MM			•							•				•	•			
		0602PDSR-MM			•					•	•	•	•	•		•	•			
1000 type		060208PDSR-MM			•							•				•	•			
type		060212R-MM			•											•	•			
		060216R-MM															•			
	APMT	11T3PDSR-MM			•	•		•		•	•	•	•	•		•	•			E06
		11T3PDSR-MF			•							•	•			•	•			
		11T308PDSR-MM			•							•		•	•	•	•			
2000 type		11T312PDSR-MM			•							•		•		•	•			
type		11T316R-MM			•							•				•	•			
		11T318R-MM																		
		11T324R-MM			•							•				•	•			



## E Alpha Mill

## **AMS3000SE**











• AR: -4.5°~-1° • RR: -3°~0°

(mm)

	Designation	0	ØD	Ød	Q	L	ар	kg \
AMS	3050HSE	3	50	32	45	135	6	1.0
	3050HSE-S40	3	50	40	45	135	6	1.3
	3050HSE-S42	3	50	42	45	135	6	1.4
	3063HSE	4	63	32	45	135	6	1.3
	3063HSE-S40	4	63	40	45	135	6	1.6
	3063HSE-S42	4	63	42	45	135	6	1.7

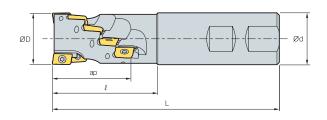
#### Available inserts

APMT-MF APMT-MM Cermet Coated Uncoated Designation page G10 APMT 1604PDSR-MM • • 1604PDSR-MF • • 160410PDSR-MM • 160416PDSR-MM • E06 160424R-MM • • 160430R-MM • 160432R-MM •

Specification	<b>6</b>		
	Screw	Wrench	
Ø50~Ø63	FTKA0410	TW15S	

## AMS1000M/1500M

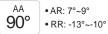












(mm)

	Designation	<b>©</b>	ØD	Ød	Q	L	No. of flute	ар	kg
AMS	1016M	6	16	16	30	80	2	15.5	0.3
	1020M	12	20	20	32	85	3	20.5	0.3
	1025M	20	25	25	39	95	4	25.5	0.3
AMS	15020M	3	20	20	42	105	1	26.5	0.3
	15025M	8	25	25	50	110	2	35	0.3
	15032M	10	32	32	60	120	2	44	0.3

#### Available inserts



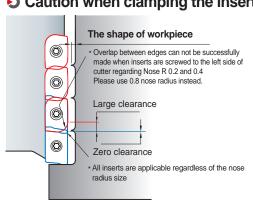
					Coated												Uncoated			
Туре		Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	F04	page
	APMT	0602PDFR-MA																	•	
		060208PDFR-MA																		
4000		060202PDSR-MM			•							•				•	•			
1000 type		0602PDSR-MM			•					•	•	•	•	•		•	•			
type		060208PDSR-MM			•							•				•	•			
		060212R-MM			•											•	•			
		060216R-MM														•	•			
	APMT	0903PDFR-MA																	•	E06
		090308PDFR-MA																		
		0903PDER-ML														•	•			
4500		090308PDER-ML														•	•			
1500 type		0903PDSR-MM			•					•	•	•	•			•	•			
type	Эе	090308PDSR-MM			•							•				•	•			
		090312R-MM										•				•	•			
		090316R-MM			•							•				•	•			
		090320R-MM										•				•	•			

#### Parts

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

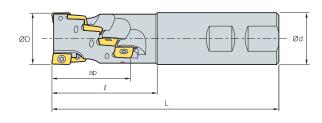
#### → Available inserts E06

#### Caution when clamping the inserts



## **AMS2000M**





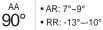












(mm)

D	esignation	©	ØD	Ød	Q	L	No. of flute	ар	O kg \
AMS	2020M	3	20	20	45	120	1	29.4	0.32
	2025M	8	25	25	55	130	2	38.9	0.40
	2032M	10	32	32	65	140	2	48.5	0.65
	2040M	14	40	40	75	150	2	58	0.75

#### Available inserts

		APN	/IT-M	4	A	APMT-	ML		APMT	Г-ММ		AP	МТ-М	F	A	APMT-	MN			
		3		new	•	6	nev	9	4			-	9		4		ne	<b>"</b>		
			Cer	met						C	oate	d						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	11T3PDFR-MA																		•	
	11T308PDFR-MA																			
	11T3PDER-ML															•	•			
	11T308PDER-ML															•	•			
	11T3PDSR-MM				•	•		•			•	•	•	•		•	•			
	11T3PDSR-MF				•							•	•			•	•			
	11T308PDSR-MM				•									•	•	•	•			E06
	11T312PDSR-MM				•							•		•		•	•			
	11T316R-MM				•							•				•	•			
	11T318R-MM																			
	11T324R-MM				•							•				•	•			
	11T3PDSR-MN2															•				
	11T3PDSR-MN3															•				

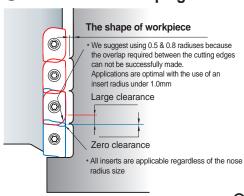
\*\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. 

\*\* Please use the cutters with even teeth.

#### Parts

Specification	Screw	Wrench
Ø20~Ø40	FTKA02565S	TW08S

#### Caution when clamping the inserts

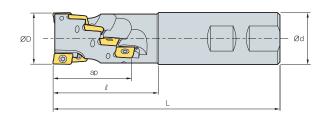




→ Available inserts E06

## **AMS4000M**

















• AR: 7°~9° • RR: -13°~-10°

(mm)

	Designation	0	ØD	Ød	Q	L	No. of flute	ар	(kg
AMS	4032M	4	32	32	60	130	2	31.6	0.65
	4040M	6	40	40	70	140	2	46	1.11
	4050M-S40	6	50	40	55	125	2	46	1.22
	4050M	8	50	40	70	140	2	61	1.37

#### Available inserts

		AP	MT-M	Α	A	PMT-	ML		APM	T-MM		AP	MT-M	F	A	PMT-	MN			
				new	•	6	nev	9	-			•	9		4		net	<b>D</b>		
			Cer	met						C	oate	d						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
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																			E06
	180624PDER-ML																			LUU
	180630R-ML																			
	1806PDSR-MM									•				•			•			
	1806PDSR-MF															•				
	180612PDSR-MM																			
	180616PDSR-MM															•	•			
	180620PDSR-MM																			
	180624PDSR-MM															•	•			
	180630R-MM															•	•			
	180632R-MM															•	•			
	1806PDSR-MN3															•				
	1806PDSR-MN4																			

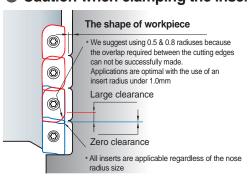
- $\,$   $\,$  Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers.  $\,$   $\,$  Please use the cutters with even teeth.

#### Parts

Specification	Screw	Wrench
Ø32~Ø50	FTKA0410	TW15S

→ Available inserts E06

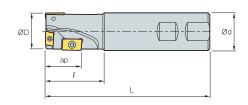
#### Caution when clamping the inserts





## AMS1000MH/1500MH

















• AR: 9°~12° • RR: -12°~-10°

(mm)

	Designation	0	ØD	Ød	Q	L	ар	kg	APMT 0602	APMT 0903	APM(X)T 11T3 -	APMT 1604	APKT 1604 -
AMS	1014MH	3	14	12	30	120	11	0.16	3	-	-	-	-
	1016MH	3	16	14	30	140	11	0.20	3	-	-	-	-
	1018MH	3	18	16	30	140	11	0.21	3	-	-	-	-
AMS	15020MH	3	20	20	35	140	17	0.31	1	2	-	-	-

#### Available inserts

				AF	PMT-M	ΙA		APMT	-ML		APM	IT-MM												
						nev		6		iew	-		)											
			Cer	met						C	oate	d						Unc	oated					
Туре		Designation			NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page				
	APMT	0602PDFR-MA																	•					
		060208PDFR-MA																						
1000 type		060202PDSR-MM			•							•				•	•							
type		0602PDSR-MM			•					•	•	•	•	•		•	•							
		060208PDSR-MM			•							•				•	•							
	APMT	0903PDFR-MA																	•	E06				
		090308PDFR-MA																						
1500						0903PDER-ML														•	•			
type		090308PDER-ML														•	•							
		0903PDSR-MM			•					•	•	•	•			•	•							
		090308PDSR-MM			•							•				•	•							

#### Parts

Specification	Screw	Wrench	Wrench
Ø14~Ø18 (1000 type)	FTKA01842	-	TW06S-A
Ø20 (1500 type)	FTKA02565S	TW08S	-

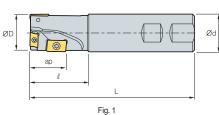
### Recommended cutting condition

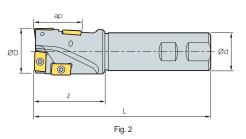
	Drilling	Shouldering	Slotting
vc(m/min)	80~200	80~200	80~200
fz(mm/t)	0.03~0.06	0.05~0.25	0.05~0.20

- Please keep the drill depth under 0.25D when you're drilling
- Please keep the step depth from 0.2 to 0.3mm

## AMS2000MH/3000MH(-K)



















• AR: 9°~12° • RR: -12°~-10°

(mm)

	Designation	0	ØD	Ød	Q	L	ар	kg	APMT 0602	APMT 0903	APM(X)T 11T3 -	APMT 1604	APKT 1604 -	Fig.
AMS	2025MH	3	25	25	40	130	20	0.45	-	-	3	-	-	1
	2032MH	3	32	32	50	140	30	0.75	-	-	1	2	-	1
AMS	3040MH	4	40	32	60	150	40	0.90	-	-	-	4	-	2
	3040MH-K	4	40	32	60	150	40	0.90	-	-	-	-	4	2

#### Available inserts

		APKT-MF	APKT	-MM		APN	IT-MA		AF	PMT-M	F		APMT	-ML		APM	T-MM	l	
			9			3	30	new	•	9			6	0	ew)	-			
			Cei	rmet						С	oate	d						Uncoated	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	page
	APMT	11T3PDFR-MA																•	
		11T308PDFR-MA																	
		11T3PDER-ML														•	•		
		11T308PDER-ML														•	•		
		11T3PDSR-MM			•	•		•		•	•	•	•	•		•	•		
2000 type		11T3PDSR-MF			•							•	•			•	•		
type		11T308PDSR-MM			•							•		•	•	•	•		
		11T312PDSR-MM			•							•		•		•	•		E06
		11T316R-MM			•							•				•	•		
		11T318R-MM			•														
		11T324R-MM			•							•				•	•		
3000	APMT	1604PDSR-MM			•	•				•	•	•	•	•		•	•		
type		1604PDSR-MF			•							•	•			•	•		
3000-K	APKT	1604PDSR-MM				•	•					•	•	•		•			
type		1604PDSR-MF				•										•			

#### Parts

Specification			
	Screw	Wrench	Wrench
Ø25 (2000 type)	FTKA02565S	TW08S	-
Ø32 (2000 type)	FTKA02565S+FTKA0410	TW08S+TW15S	
Ø40 (3000 type)	FTKA0410	TW15S	-

#### → Available inserts E06

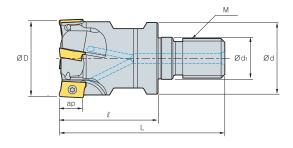
## Recommended cutting condition

	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 0.3mm

## **AMM1000**

















• AR: 7.5°~12.5° • RR: -28°~-6°

(mm)

	Designation	0	ØD	Ød	Ød1	Q	L	М	ар	kg \
AMM	1012HR-M06	3	12	11	6.5	25	40	M06	5.6	0.02
	1016HR-M08	4	16	14.5	8.5	25	42	M08	5.6	0.03
	1020HR-M10	5	20	18	10.5	30	51	M10	5.6	0.07
	1025HR-M12	7	25	23	12.5	35	59	M12	5.6	0.12
	1032HR-M16	8	32	29	17	40	67	M16	5.6	0.23

#### Available inserts

APMT-MA APMT-MM

new	6

		Cer	met						C	oate	d						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	0602PDFR-MA																	•	
	060208PDFR-MA																		
	060202PDSR-MM			•							•				•	•			
	0602PDSR-MM			•					•	•	•	•	•		•	•			E06
	060208PDSR-MM			•							•				•	•			
	060212R-MM			•											•	•			
	060216R-MM														•	•			

#### Available adaptor

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

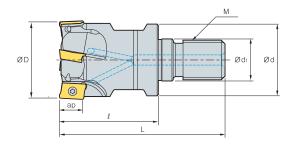
Designation : AMM1032HR-M16 Modular head threading measure size (M16)

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

Specification	<b>6</b>		
	Screw	Wrench	
Ø12~Ø32	FTKA01842	TW06S-A	

## **AMM1500**

















• AR: 7.5°~12.5° • RR: -28°~-6°

(mm)

	Designation	0	ØD	Ød	Ød1	Q	L	М	ар	kg
AMM	15010HR-M06	1	10	9.5	6.5	25	40	M06	9	0.01
	15012HR-M06	1	12	11	6.5	25	40	M06	9	0.02
	15016HR-M08	2	16	14.5	8.5	25	42	M08	9	0.03
	15020HR-M10	2	20	18	10.5	30	51	M10	9	0.06
	15025HR-M12	3	25	23	12.5	35	59	M12	9	0.12
	15032HR-M16	4	32	29	17	40	67	M16	9	0.22

#### Available inserts

APMT-MA	APMT-ML	APMT-MM
uew)	(lew)	6

		Cer	met						С	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545		PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	Но	page
APMT	0903PDFR-MA																	•	
	090308PDFR-MA																		
	0903PDER-ML														•	•			
	090308PDER-ML														•	•			
	0903PDSR-MM			•					•	•	•	•			•	•			E06
	090308PDSR-MM			•							•				•	•			
	090312R-MM										•				•	•			
	090316R-MM			•							•				•	•			
	090320R-MM										•				•	•			

## Available adaptor

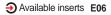
	Designation	Available adaptor
AMM	15010HR-M06	MAT-M06
	15012HR-M06	IVIAT-IVIU6
	15016HR-M08	MAT-M08
	15020HR-M10	MAT-M10
	15025HR-M12	MAT-M12
	15032HR-M16	MAT-M16

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

п

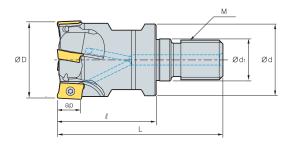
Adaptor spec.: MAT-M16-035-S32S Adaptor threading measure (M16)

<b>O</b> 1 0.10			
Specification			
	Screw	Wrench	
Ø10~Ø14 Ø16~Ø100	FTKA02555S FTKA02565S	TW08S	



## **AMM2000**



















• AR: 7.5°~12.5° • RR: -28°~-6°

(mm)

	Designation	<b>©</b>	ØD	Ød	Ød1	Q	L	М	ар	kg
AMM	2016HR-M08	2	16	14.5	8.5	25	42	M08	11	0.04
	2020HR-M10	2	20	18	10.5	30	51	M10	11	0.07
	2025HR-M12	3	25	23	12.5	35	59	M12	11	0.04
	2032HR-M16	4	32	29	17	40	67	M16	11	0.23
	2040HR-M16	5	40	29	17	40	67	M16	11	0.25

#### Available inserts

		AP	MT-M	A	A	PMT-	ML		APM	Г-ММ		AP	MT-M	F	A	APMT-	MN			
				new	•	6	nev	9	-			-	9		4		nev	<b>9</b>		
			Cer	met						C	oate	d						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
APMT	11T3PDFR-MA																		•	
	11T308PDFR-MA																			
	11T3PDER-ML															•	•			
	11T308PDER-ML															•	•			
	11T3PDSR-MM				•	•		•		•	•	•	•	•		•	•			
	11T3PDSR-MF				•							•	•			•	•			
	11T308PDSR-MM				•							•		•	•	•	•			E06
	11T312PDSR-MM				•							•		•		•	•			
	11T316R-MM				•							•				•	•			
	11T318R-MM																			
	11T324R-MM				•							•				•	•			
	11T3PDSR-MN2																			
	11T3PDSR-MN3															•				

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

\*\* Please use the cutters with even teeth.

### Available adaptor

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

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

П

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

Specification	6		
	Screw	Wrench	
Ø16~Ø40	FTKA02565S	TW08S	

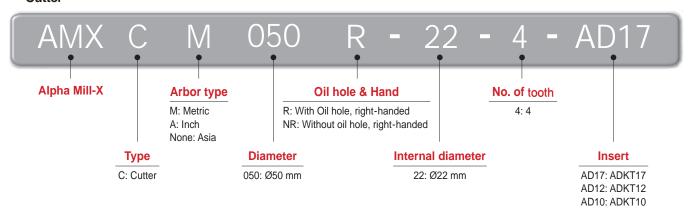
#### Shoulder milling tool for high helix

## Alpha Mill-X rev

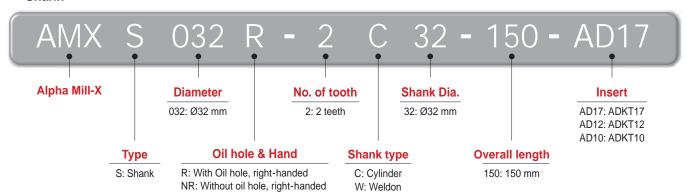
- High helix cutting edge realizes high speed and high feed machining (15% higher speed than conventional tool's machining) and increases 20% higher productivity.
- Highly precise cutting edge ensures high quality surface finish in milling.

#### Code system

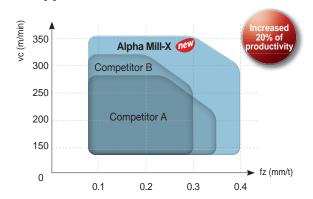
#### Cutter

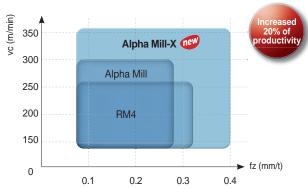


#### Shank



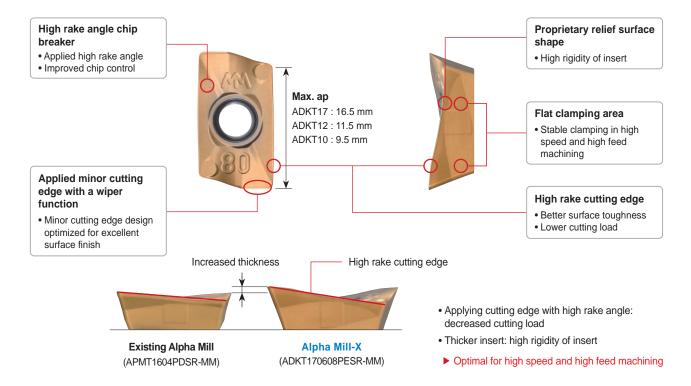
#### Application area



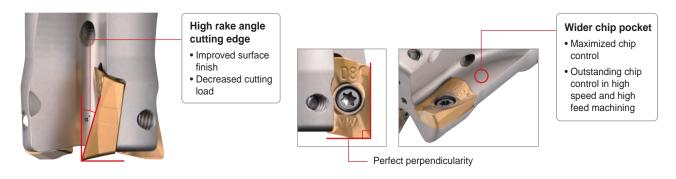


# E Technical Information for Alpha Mill-X

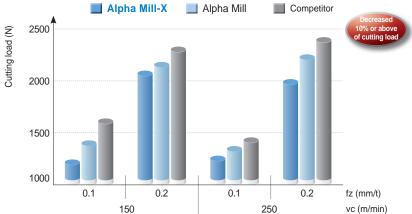
#### Features of insert



#### Cutter features



#### Cutting load



#### Recommended cutting conditions

#### · In face machining and shouldering

14	Varleniana	Grade	Cutting speed		Feed, fz (mm/t)			
V	/orkpiece	Grade	vc (m/min)	ADKT17	ADKT12	ADKT10		
		PC5300	150-240					
Р	Steel	PC5400	130-210	0.3-0.05	0.25-0.05	0.2-0.05		
P	Steel	PC3700	160-270	0.3-0.05	0.25-0.05	0.2-0.05		
		NCM535	250-350					
		PC5300	90-150					
M	Stainless steel	PC5400	70-120	0.25-0.05	0.2-0.05	0.15-0.05		
	31001	PC9540	50-120					
		PC6510	150-200					
K	Cast iron	PC5300	120-200	0.35-0.08	0.3-0.08	0.25-0.08		
		NCM535	200-300					
s	LIDEA	PC5300	40-70	0.2.0.05	0.15.0.05	0.1.0.05		
3	HRSA	PC5400	30-50	0.2-0.05	0.15-0.05	0.1-0.05		

<sup>\*</sup> 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

14	la elemia a a	Crada	Cutting speed		Feed, fz (mm/t)			
V	/orkpiece	Grade	vc (m/min)	ADKT17	ADKT12	ADKT10		
		PC5300	150-240					
_	Ctaal	PC5400	130-210	0.45.0.05	0.45, 0.05	0.45,0.05		
Р	Steel	PC3700	160-270	0.15-0.05	0.15-0.05	0.15-0.05		
		NCM535	250-350					
		PC5300	90-150					
M	Stainless steel	PC5400	70-120	0.15-0.05	0.15-0.05	0.15-0.05		
	31001	PC9540	50-120					
		PC6510	150-250					
K	Cast iron	PC5300	120-200	0.2-0.08	0.2-0.08	0.2-0.08		
		NCM535	200-300					
s	LIDCA	PC5300	40-70	0.45,0.05	0.45, 0.05	0.4.0.05		
3	HRSA	PC5400	30-50	0.15-0.05	0.15-0.05	0.1-0.05		

<sup>\*</sup> In deep grooving, set the ap under 5 mm and use coolant and air.

## Recommended grades and chip breakers

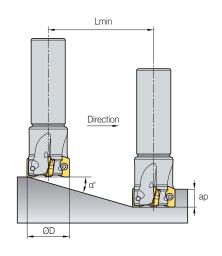
( : 1st Recommendation)

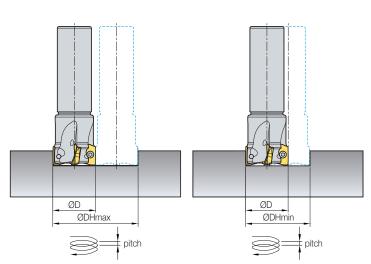
			I	Р			М		K		N		S		
C/B	Cutting edge		carbon steel/ Viild steel	_	gh carbon steel/ Alloy steel		High carbon steel/ Alloy steel		inless steel	Cast iron		Non-	Non-ferrous metal		HRSA
		C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade		
ML	120	-	<ul><li>PC3700</li><li>PC5300</li><li>PC5400</li><li>NCM535</li></ul>	-	<ul><li>PC3700</li><li>PC5300</li><li>PC5400</li><li>NCM535</li></ul>	•	<ul><li>PC5300</li><li>PC5400</li><li>PC9540</li></ul>	-	<ul><li>PC6510</li><li>PC5300</li><li>PC5400</li><li>NCM535</li></ul>	-	-	•	● PC5300 ○ PC5400		
ММ	115	•	<ul><li>PC3700</li><li>PC5300</li><li>PC5400</li><li>NCM535</li></ul>	•	<ul><li>PC3700</li><li>PC5300</li><li>PC5400</li><li>NCM535</li></ul>	-	<ul><li>PC5300</li><li>PC5400</li><li>PC9540</li></ul>	•	<ul><li>PC6510</li><li>PC5300</li><li>PC5400</li><li>NCM535</li></ul>	-	-	-	● PC5300 ○ PC5400		

# E Technical Information for Alpha Mill-X

#### Cutting condition for ramping and helical operation

Ramping **Helical cutting** 





(mm)

			Ramp	ing		Blind hole ho	elical cutting	l	Through hole	helical cutting
Designation  ADKT17  ADKT12	Tool dia. ØD (min)	ар	Max. rake angle α°	Lmin	Min. desirable hole dia. ØDHmin	Max. pitch dmax	Max. desirable hole dia. ØDHmax	Max. pitch dmax	Min. desirable hole dia. ØDHmin	Max. pitch dmax
	20		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
ADVT17	40	16.5	2.6	363	70	3.2	78	3.6	61	2.8
ADKI17	50	10.5	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
	18		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
ADKT12	33	11.5	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
	16		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
ABICTIO	32	0.5	1.5	363	60	1.6	63	1.7	56	1.5
ADKT10	33	9.5	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	1	0.8	680	96	1.3	99	1.4	92	1.3
	63	1	0.6	907	122	1.3	125	1.3	118	1.2
	80	1	0.5	1089	156	1.4	159	1.4	152	1.3

 $<sup>\</sup>ensuremath{\mathbb{X}}$  In ramping and helical machining, use coolant and air.

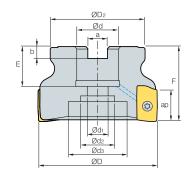
 $\alpha^{\circ}$  : Rake angle for ramping : Depth of cut in axial direction  $Lmin = \frac{\alpha p}{\tan \alpha^{\circ}} (mm)$ 



<sup>\*</sup> Lmin : Cutting length in machining with Min. rake angle

## AMXCM-AD10/12 rew



















• RR: -10°~-3°

(mm)

														(111111)
	Designation	0	ØD	ØD2	Ød	Ød1	Ød2	Ødз	а	b	E	F	ар	kg
AMXCM	040R-16-5-AD10	5	40	35	16	9	14	-	8.4	5.6	19	40	9.5	0.18
	040R-16-6-AD10	6	40	35	16	9	14	-	8.4	5.6	19	40	9.5	0.18
	050R-22-6-AD10	6	50	42	22	11	18	-	10.4	6.3	20	40	9.5	0.23
	050R-22-7-AD10	7	50	42	22	11	18	-	10.4	6.3	20	40	9.5	0.20
	063R-22-7-AD10	7	63	49	22	11	18	-	10.4	6.3	20	40	9.5	0.44
	063R-22-8-AD10	8	63	49	22	11	18	-	10.4	6.3	20	40	9.5	0.49
	080R-27-8-AD10	8	80	57	27	14	25	38	12.4	7	23	50	9.5	0.88
	080R-27-9-AD10	9	80	57	27	14	25	38	12.4	7	23	50	9.5	0.90
AMXCM	040R-16-4-AD12	4	40	35	16	9	14	-	8.4	5.6	19	40	11.5	0.18
	040R-16-5-AD12	5	40	35	16	9	14	-	8.4	5.6	19	40	11.5	0.16
	050R-22-5-AD12	5	50	42	22	11	18	-	10.4	6.3	20	40	11.5	0.23
	050R-22-7-AD12	7	50	42	22	11	18	-	10.4	6.3	20	40	11.5	0.20
	063R-22-6-AD12	6	63	49	22	11	18	-	10.4	6.3	20	40	11.5	0.44
	063R-22-7-AD12	7	63	49	22	11	18	-	10.4	6.3	20	40	11.5	0.49
	080R-27-7-AD12	7	80	57	27	14	25	38	12.4	7	23	50	11.5	0.88
	080R-27-8-AD12	8	80	57	27	14	25	38	12.4	7	23	50	11.5	0.90

#### Available inserts

ADKT-ML

ADKT-MM





			Cer	rmet						C	oate	d						Unco	ated	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	F04	page
	ADKT	10T304PEER-ML						•				•	•		•	•	•			
10		10T304PESR-MM						•				•	•		•	•	•			
type		10T308PESR-MM														•	•			
		10T312PESR-MM															•			F04
	ADKT	120408PESR-ML						•				•	•		•	•	•			E04
12		120408PESR-MM						•				•	•		•	•	•			
type		120412PESR-MM										•	•			•	•			
		120416PESR-MM										•	•			•	•			

#### Available arbors

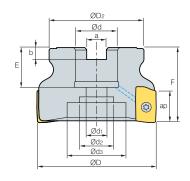
	Designation	Ød	Available arbors
AMXCM	040R-16-□-AD□□	16	BT□□-FMC16-□□
	050R-22AD	22	BT FMC22-

	Designation	Ød	Available arbors
AMXCM	063R-22-□-AD□□	22	BT□□-FMC22-□□
	080R-27 AD	27	BT -FMC27-

Specification		South State of the	
	Screw	Wrench	
Ø40~Ø80 (10 type)	FTKA02555S	TW08S	
Ø40~Ø80 (12 type)	FTNA0306	TW09S	

## AMXCM-AD17



















(mm)

	Designation	<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	Ødз	а	b	E	F	ар	kg
AMXCM	040R-16-3-AD17	3	40	35	16	9	14	-	8.4	5.6	19	40	16.5	0.18
	040R-16-4-AD17	4	40	35	16	9	14	-	8.4	5.6	19	40	16.5	0.18
	050R-22-4-AD17	4	50	42	22	11	18	-	10.4	6.3	20	40	16.5	0.23
	050R-22-5-AD17	5	50	42	22	11	18	-	10.4	6.3	20	40	16.5	0.20
	063R-22-5-AD17	5	63	49	22	11	18	-	10.4	6.3	20	40	16.5	0.44
	063R-22-6-AD17	6	63	49	22	11	18	-	10.4	6.3	20	40	16.5	0.49
	080R-27-6-AD17	6	80	57	27	14	25	38	12.4	7	23	50	16.5	0.88
	080R-27-7-AD17	7	80	57	27	14	25	38	12.4	7	23	50	16.5	0.90
	100R-32-8-AD17	8	100	70	32	18	28	45	14.4	8	28	63	16.5	1.76
	100R-32-10-AD17	10	100	70	32	18	28	45	14.4	8	28	63	16.5	1.68
	125R-40-8-AD17	8	125	90	40	22	32	54	16.4	9	30	63	16.5	2.89
	125R-40-10-AD17	10	125	90	40	22	32	54	16.4	9	30	63	16.5	4.83

#### Available inserts

ADKT-ML

ADKT-MM





		Cer	met						C	oate	d						Unc	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
ADKT	170608PESR-ML						•				•	•		•	•	•			
	170604PESR-MM										•				•				
	170608PESR-MM						•				•	•		•	•	•			E04
	170616PESR-MM														•	•			
	170620PESR-MM														•	•			

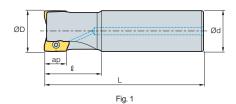
#### Available arbors

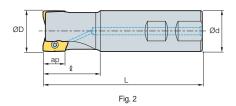
	Designation	Ød	Available arbors
AMXCM	040R-16-□-AD□□	16	BT□□-FMC16-□□
	050R-22-□-AD□□	22	BT□□-FMC22-□□
	063R-22-□-AD□□	22	BILL-FINICZZ-LL

	Designation	Ød	Available arbors
AMXCM	080R-27-□-AD□□	27	BT□□-FMC27-□□
	100R-32-□-AD□□	32	BT□□-FMC32-□□
	125R-40-□-AD□□	40	BT□□-FMC40-□□

## **AMXS-AD10/12** 1200







ар

9.5

9.5

9.5

11.5

1.200



**AMXS** 





016R-2W16-90-AD10

016R-2C16-180-AD10

018R-2W16-100-AD10

Designation





(<u>)</u>

2

2

2

4





ØD

16

16

18



Ød

16

16

16

Q

25

25

35

90

180

100

200

	()
kg	Fig.
0.110	2
0.190	1
0.120	2
0.210	1
0.250	2
0.490	1
0.400	2
0.590	1
0.700	2
1.000	1
1.050	2
1.200	1
0.120	2
0.210	1
0.250	2
0.490	1

(mm)

#### 018R-2C16-200-AD10 2 18 16 35 200 9.5 0.210 020R-3W20-100-AD10 0.250 3 20 20 35 100 9.5 020R-3C20-200-AD10 3 20 35 200 0.490 20 9.5 025R-4W25-115-AD10 4 25 25 40 115 9.5 0.400 025R-4C25-200-AD10 4 25 25 40 200 9.5 0.590 032R-4W32-125-AD10 4 32 32 45 9.5 0.700 032R-4C32-200-AD10 4 32 32 45 200 9.5 1.000 040R-5W32-130-AD10 32 50 9.5 5 40 130 1.050 040R-5C32-200-AD10 40 50 9.5 1.200 5 32 200 018R-2W16-100-AD12 35 0.120 2 18 16 100 11.5 **AMXS** 018R-2C16-200-AD12 2 35 11.5 0.210 18 16 200 020R-2W20-100-AD12 2 20 20 35 100 11.5 0.250 020R-2C20-200-AD12 2 20 20 35 200 11.5 0.490 025R-3W25-115-AD12 3 25 25 40 115 11.5 0.400 2 025R-3C25-200-AD12 25 40 200 3 25 11.5 0.590 032R-4W32-125-AD12 4 32 32 45 125 11.5 0.700 2 4 32 45 032R-4C32-200-AD12 32 200 11.5 1.000 1 040R-4W32-130-AD12 4 40 32 50 130 11.5 1.050

32

#### Available inserts

040R-4C32-200-AD12

ADKT-ML

40



50

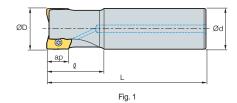
					Cermet Coated								Uncoated							
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
	ADKT	10T304PEER-ML						•				•	•		•	•	•			
10		10T304PESR-MM						•				•	•		•	•	•			
type		10T308PESR-MM														•	•			
		10T312PESR-MM															•			E0.4
	ADKT	120408PESR-ML						•				•	•		•	•	•			E04
12		120408PESR-MM						•				•	•		•	•	•			
type		120412PESR-MM										•	•			•	•			
		120416PESR-MM										•	•			•	•			

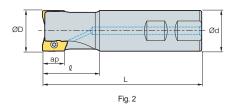
Specification			
	Screw	Wrench	
FTKA02555S		TW08S	
FTNA0306	5	TW09S	

# E Alpha Mill-X

## AMXS-AD17



















(mm)

	Designation	0	ØD	Ød	Q	L	ар	(kg)	Fig.
AMXS	020R-1W20-100-AD17	1	20	20	35	100	16.5	0.170	2
	020R-1C20-200-AD17	1	20	20	35	200	16.5	0.360	1
	025R-2W25-115-AD17	2	25	25	35	115	16.5	0.610	2
	025R-2C25-200-AD17	2	25	25	35	200	16.5	0.450	1
	032R-3W32-125-AD17	3	32	32	45	125	16.5	0.620	2
	032R-3C32-200-AD17	3	32	32	45	200	16.5	1.050	1
	033R-3W32-125-AD17	3	33	32	45	125	16.5	0.620	2
	033R-3C32-200-AD17	3	33	32	45	200	16.5	1.050	1
	040R-3W32-130-AD17	3	40	32	50	130	16.5	0.750	2
	040R-3C32-200-AD17	3	40	32	50	200	16.5	1.170	1
	040R-4W32-130-AD17	4	40	32	50	130	16.5	0.740	2
	040R-4C32-200-AD17	4	40	32	50	200	16.5	1.200	1

#### Available inserts



						_				-									
									C	Coate	d						Unc	oated	
Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
ADKT	170608PESR-ML						•				•	•		•	•	•			
	170604PESR-MM										•				•				
	170608PESR-MM						•				•	•		•	•	•			E04
	170616PESR-MM														•	•			
	170620PESR-MM														•	•			

Specification			
	Screw	Wrench	
Ø20~Ø40	FTKA0408	TW15S	

#### Rigid body employs high tensile aluminum

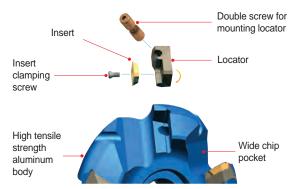
## **Future Mill**

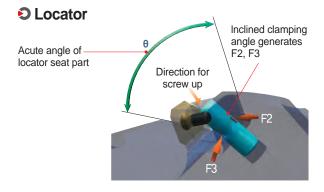
- Light-weight aluminum body (50% of steel body) can be used for high speed cutting, tapping center, and on low power machines
- Easy handling
- It can be used for aluminum alloys, medium cutting of steel, and cast iron
- Rigid body employs high tensile aluminum
- Locators for excellent durability
- A variety of chip breaker are available
- The high rake angle provides low cutting loads and good surface roughness

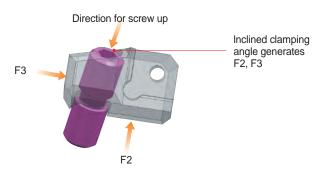
#### Features of cutter

- · Strong clamping between aluminum body and locator with double screw provides high efficiency
- Acute angle of locator seat provides strong clamping
- Wide chip pocket area provides good chip evacuation
- High tensile strength aluminum body

#### Assembly structure of cutter





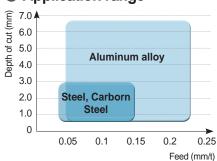


## Through coolant system

- Exclusively designed coolant bolt and cover provide excellent coolant action and chip evacuation for improved tool life
- · Exact coolant direction to cutting area
- Exclusive coolant bolt and cover are sold separately. Through coolant arbor is required

# Bolt: Ø63~Ø160 Cover: Over Ø200

#### Application range



#### Cutting speed





# E 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

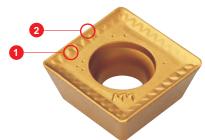
	Insert	Cutting-edge	Uses	Features							
	None C/B		Light cutting	Superior surface roughness at finishing due to ground type cermet insert							
MF			Light cutting	Superior cutting quality for light and difficult-to-cut material machining through the low cutting load of chip breaker							
ММ			General 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	6		For aluminum	Superior cutting quality for aluminum due to sharp cutting-edge and buffed surface - S□ET-MA: Sharp cutting-edge due to high accurate grinding - S□XT-MA: Suitable cutting-edge for roughing							

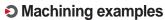
#### Recommended cutting condition

ISO Credes		vo (m/min)	MF	MM	MR	MA								
ISO	Grades	vc (m/min)	fz (mm/t)	fz (mm/t)	fz (mm/t)	fz (mm/t)								
	NC5330	210~350	0.05~0.20	0.10~0.30	0.10~0.30	-								
Р	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	-								
	PC9530	90~150	0.05~0.15	0.10~0.30	-	-								
M	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								

#### 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)
- $\bullet$  Innovative curve cutting-edge lowers cutting load and provides a stronger cutting-edge  $({\bf 2}\!\!\!\! {\bf 0}\!\!\!\! {\bf 0})$











#### 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

						Recomi	mended C/	B and gra	de as per	workpiec	e (•: 1 <sup>st</sup> )		
lı	nsert	Cutting- edge	Uses	Low carbon s	teel/Mild steel	High carbon s	teel/Mild steel	Stainle	ss steel	Cast	iron	Aluminu	um alloy
		cugo		C/B	Grades	C/B	Grades	C/B	Grades	C/B	Grades	C/B	Grades
MF			Low cutting load type	•	○ NCM325 ○ NC5330 • NCM335		• NCM325 • NC5330 • NCM335	•	○ NCM325 ○ NC5330 ● NCM335	•	• PC6510 • PC215K	-	-
ММ		0	Reinforced cutting edge type		○ NCM325 ○ NC5330 • NCM335		• NCM325 • NC5330 • NCM335		○ NCM325 ○ NC5330 ● NCM335		• PC6510 • PC215K	-	-
MA	6		Sharp cutting edge type	-	-	-	-	-	-	-	-	•	○ H01 ○ G10

#### Recommended cutting condition

				Cutting Spec	ed vc (m/min)			
ISO	CVD	Coated			PVD Coated			Carbide
	NCM325	NCM335	PC3700	PC6510	PC5300	PC9530	PC5400	H01
Р	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

#### Features

- Wide coverage for medium to roughing, general steel to high hardness mold materials
- 2 step shape of insert provides strong clamping and can minimize components to replace the shim
- 4-8 cutting-edge available per insert (Inscribed circle 05, 06, 07, 08, 10, 12, 16, 20)
- Uneven flute spacing prevents vibration on high speed applications and provides more stable machining
- Precise design of the insert seat prevents insert from chattering
- Special design of the insert bottom prevents movement and chatter of insert
- Easy to change cutting-edge due to the rotation prevention design of the insert

#### Uses









Slotting & Ramping Side cutting

#### FMR Insert cutting-edge shape

Designation	RDHW M0F	RDHW M0E	RDHW M0S
Cutting edge shape (G calss)			

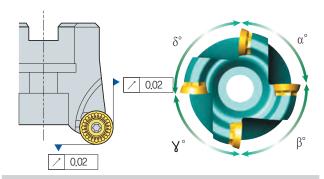
#### Features of chip breaker

	Insert	Cutting-edge	Uses	Features
MF			Light cutting	Low cutting resistance chip breaker design guarantees long tool life good performance at finishing and difficult-to-cut material machining
ММ			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







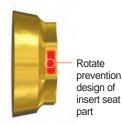
Good surface finish due to the precise design of insert seat part of cutter

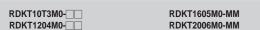
Uneven flute spacing prevents vibration at high speed application and provides stable machining



4-8 cutting-edge

available per insert





#### Special chip breaker for low cutting load

Minimized heat generation due to smooth chip flow

#### Smooth cutting-edge preparation Inclined land angle Low cutting load and better

surface roughness

Facial contact through curved face Prevent rotation at high speed Stable and tight clamping of insert Good positioning of insert repeatedly



Milling



#### Chip removal rate (cm³/min)

	Workpiece	Grades	Ø8	Ø10	Ø12	Ø15	Ø16	Ø20	Ø21	Ø25	Ø26	Ø32	Ø33	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160
	General		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
	structure steel (under 200HB)		vc = 250	, fz = 0.25,	ap = 0.5, a	ae = 0.5D	vc = 300 ap = 1.0,	), fz = 0.4 ae = 0.5D				vc = 2	50, fz = 0	.4, ap =	1.5, ae =	0.5D				vc = 200, fz = 0.5 ap = 4.0, ae = 0.5D
	General		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
	carbon steel (under 30 HRC)		vc = 200	, fz = 0.25,	ap = 0.5,	ae = 0.5D	vc = 250 ap = 1.0,	), fz = 0.4 ae = 0.5D				vc = 20	00, fz = 0	.4, ap =	1.5, ae =	0.5D				vc = 180, fz = 0.5 ap = 4.0, ae = 0.5D
P	High carbon steel,	PC3700	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
P	Alloy steel (30~40 HrC)	PC5300	vc = 180	, fz = 0.20,	ap = 0.5,	ae = 0.5D	vc = 200 ap = 1.0,					vc = 1	30, fz = 0	.4, ap =	1.5, ae =	0.5D				vc = 160, fz = 0.5 ap = 4.0, ae = 0.5D
	High carbon steel,		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
	Alloy steel (40~50 HrC)		vc = 130	, fz = 0.15,	ap = 0.4,	ae = 0.5D	vc = 170 ap = 0.9,	), fz = 0.3 ae = 0.5D				vc = 1	50, fz = 0	.3, ap =	1.0, ae =	0.5D				vc = 140, fz = 0.4 ap = 3.5, ae = 0.5D
	Alloy steel		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
	(over 50 HrC)		vc = 100	, fz = 0.15,	ap = 0.4,	ae = 0.5D	vc = 130 ap = 0.9,	), fz = 0.3 ae = 0.5D				vc = 1	00, fz = 0	.3, ap =	1.0, ae =	0.5D				vc = 100, fz = 0.4 ap = 3.0, ae = 0.5D
В.Л	0.01.1	DCE200	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
M	Stainless steel	PC5300	vc = 130	, fz = 0.20,	ap = 0.5,	ae = 0.5D	vc = 200 ap = 1.0,					vc = 1	00, fz = 0	.3, ap =	1.0, ae =	0.5D				vc = 130, fz = 0.5 ap = 4.0, ae = 0.5D
14	Coat insu	DOESCO	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
K	Cast iron	PC5300	vc = 180	, fz = 0.20,	ap = 0.5,	ae = 0.5D	vc = 180 ap = 1.0,					vc = 1	30, fz = 0	.2, ap =	1.5, ae =	0.5D				vc = 180, fz = 0.4 ap = 4.0, ae = 0.5D

### Required machine power (P<sub>KW</sub> = 0.75 x P<sub>HP</sub>)

#### • RDKT10 □ □

	Workpiece	Grades	Ø21	Ø25	Ø26	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100		Cutting o	condition	1
	workpiece	Graues	WZI	<b>623</b>	Ø20	<b>W32</b>	940	<b>930</b>	<b>203</b>	טסש	ווש	vc	fz	ар	ae
	General structure steel (under 200HB)		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
	General carbon steel (under 30 HRC)		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
P	High carbon steel, Alloy steel (30~40 HrC)	PC3700 PC5300	2.2	2.2	2.2	3.3	4.5	5.6	6.7	7.9	9	180	0.4	1.5	0.5D
	High carbon steel, Alloy steel (40~50 HrC)		1.1	1.1	1.1	1.6	2.1	2.6	3.2	3.7	4.2	150	0.3	1.0	0.5D
	Alloy steel (over 50 HrC)		0.7	0.7	0.7	1.1	1.4	1.7	2.1	2.4	2.8	100	0.3	1.0	0.5D
M	Stainless steel	PC5300	0.6	0.6	0.6	0.8	1.2	1.5	1.7	2	2.3	130	0.2	1.5	0.5D
K	Cast iron	PC5300	0.6	0.6	0.6	0.9	1.2	1.5	1.8	2.1	2.4	180	0.2	1.5	0.5D

#### • RDKT12 □ □

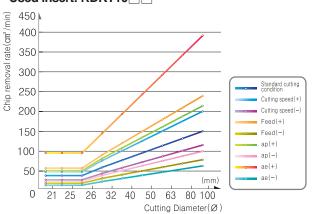
<sup>•</sup> The figures in the above chart means Php value.

	Markeigaa	Cradas	Ø32	Ø33	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125		Cutting o	condition	1
	Workpiece	Grades	<b>Ø</b> 32	<b>D</b> 33	Ø40	טפש	200	900	ווש	Ø125	vc	fz	ар	ae
	General structure steel (under 200HB)		1.7	1.7	2.6	3.5	3.5	4.4	5.3	6.1	200	0.4	1.5	0.5D
	General carbon steel (under 30 HRC)		2	2	3.1	4.1	2.6	5.2	6.2	7.2	180	0.4	1.5	0.5D
P	High carbon steel, Alloy steel (30~40 HRC)	PC3700 PC5300	2.2	2.2	3.3	4.4	2.8	5.6	6.7	7.8	160	0.4	1.5	0.5D
	High carbon steel, Alloy steel (40~50 HrC)		1	1	1.5	1.6	2.1	2.6	3.1	3.6	140	0.3	1.0	0.5D
	Alloy steel (over 50 HrC)		0.7	0.7	1	1.4	0.8	1.7	2.1	2.4	100	0.3	1.0	0.5D
M	Stainless steel	PC5300	0.5	0.5	0.8	1.1	0.7	1.4	1.7	2	130	0.2	1.5	0.5D
K	Cast iron	PC5300	0.6	0.6	0.9	1.2	0.7	1.5	1.8	2.1	180	0.2	1.5	0.5D

<sup>•</sup> The figures in the above chart means Php value.

#### Chip removal rate by cutting condition

#### • Used insert: RDKT10 ...



#### Variation of cutting condition

Standard	ISO
Standard	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



# S Recommended cutting condition

Side milling, slotting, ramping, copying

j	6(J., 6J., 6																			
	Michigan		0	Cutting speed		FMR1000	FMR	FMR1500	FMR2000	2000	FMR2500	2500	FMR	FMR3000	FMR.	FMR4000	FMR5000	2000	FMR6000	0000
	Morkpiece	naldiless	Glades	(m/min)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	ap (mm) fz (mm/t)	ab (mm)	fz (mm/t)	ap (mm)	fz (mm/t)
		000	PC5300	280		0	,		,		, 4					0	0	,		0
	10000	√ allooz	PC5400	245	)  -  -	4.	Z-	\/ 2.	\	\\ 2.	4:0 🗸	\l 2 4		0.5	4.7	0.0 4	ر ا ا	/I	\l 2.	0.
	Caboli steel	\ O-1100	PC5300	250	0 /		C +	0	1		1 4 7		C \	0	0 /	()	0		\ \ \	0
		SUTING	PC5400	210	\. \.	∧ 4.0	ν. - -	∧ 4.	ΛΙ 	4.0 ✓	\.  -  -	^l 	N ∠.O	Ω. Ω.	V. ∠.4	ο. Ο.	ა ე.	/: O.√I	\ 0.4	ν Ο Ο
٥	Alleriation	0	PC5300	195	0	C \	0	C \	7		1	0	1 1	0	C \	, ·	0 /		0 /	0
_	Alloy steel	OND-4-00	PC5400	170	V. O. \	Z.U.∠	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V.V	√. 	N. V.	\	√ V.V.	\. 	∨ ວ.	V. V.	\ 2. 4.	√ Z./	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ .o.\	o.⊙ ✓I
		70000	PC5300	150	0 /	0	0	0	C + \	0	1	0 0	7 + 7	0	0 0	0	707	0	707	0
	High alloy steel	40~00HE	PC5400	130	\. \.	Z.U ≤	N. ○	V.V	√.  -  -	N. V.	\ Ω.	N. ∨.	\. \!	۱۷ ن.	V. Z. U	\ 4. 4.	√ Z./	\ V. O.	\ 	Q.O √I
	(alloy constituent > 5%)	Tensile strength	PC5300	120	0	C C	0	0	C T	0	1	0	1	0	0	\ \ \	7 0 /	\ \ H	0 /	0
		350MPa ≤	PC5400	105	\.O.\	N. O.	N N N	N .	\ \ \	√ N.	\ -	ν Ν.	\.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	N /	\/ 2.	V.7	\/ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\. \.	0.0
2	looke cooleinto	, G11070	PC5300	130	0	C \	0	C \	7		1	0	1 1	0	0	, \	0 /	, ,	0 /	0
Ξ	oralliess steel	✓QL0/2	PC5400	110	V. O. \	Z.U.∠	N .O	V.V	√. 	N. V.	\	√ V.V.	\. 	∨ ວ.	V. V.	\ 2. 4.	√ Z./	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ .o.\	o.⊙ ✓I
>	Cost topo clitorid acri topo	oliococt wo	PC5300	145	0 /	0	7	0	4		7 + 7		C \	0	0 /	0	0 \		\ \ \	0
2	Cast Iron, Ductile cast Iron	Low terisile	PC5400	110	\ \ \ \	\\ 1.	ν - -	\ 2.0 4.		√l 4.	\ <u>'</u>	^l 	V Z.O	o. O.	V. ∠.	o. //	ი. ს	\ \ \ \ \	\ 0.4	0.0

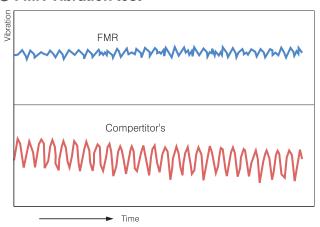
Plunging

		=		Cutting speed	FMR1000	1000	FMR1500	1500	FMR2000	000	FMR2500	200	FMR3000	3000	FMR	FMR4000	FMR5000	2000	FMR6000	0000
	Workpiece	Hardness	Grades	(m/min)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm) f	z (mm/t) a	mm) di	z (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm) fz (mm/t)	fz (mm/t)	ap (mm)	z (mm/t)
		0.000	PC5300	280	, C	0	0	0	C /	0		0	\ L	0	0	,	0	0	0	0
	100	√ QLI007	PC5400	245	V.2	Z.O.∠	\/ O.	Z.O.⊲	\ 0.0	≥ 0.Z	\ \ \ \ \ \	√ V.V	0.0	\/	O.O.	\l 2. 4.	NO.0 NO.2 NO.2 NO.2 NO.2 NO.2 NO.2 NO.3 NO.3 NO.3 NO.3 NO.3 NO.3 NO.3 NO.3	\	N.O.	0.0
	Cabon steel	7	PC5300	250	0 /	, \	0	0				0	,	0	0	,	0	, V	C T	0
		SOTING	PC5400	210	V.2 ≤	Z.O.∠	ا√ ن.	S.U N U.Z		Z.O.⊲	≥ 4.0 ≥ 0.2	N. V.	0.0	\	⊙. ⊘.	\ 2. 4.	N U.3 N U.4 N U.4 N U.0 N U.3	\ 0.0	N.O.	Q. /I
2	1000000114	0.1	PC5300	195	0	,	0	,	C	,			L	0	0	0		,	7	
L	Alloy steel	3U~4UJRC	PC5400	170	V.2 V.3	- ⊙	ا ن ن	N U. I	ا∨ د.ن	- - -	N 4:0	- - - -	0.0	N 0.2	⊙. ∨I	N 0.0 N N N N N N N N N N N N N N N N N	O.0	√ 4.	N.O.	0.0
		01	PC5300	150	0 /	· ·	0	· ·		-		· ·	, I	0	0	0	0		C T	, ,
	High alloy steel	40~00HI	PC5400	130	V.2	- - - -	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	N 0.0 N 0.1		NO.1 NO.0 NO.2 NO.0 NO.3	\ 2. \	- - - /I	0.0	N. ∪	o.o.	\	O. ✓I	0.0 VI	N.O.	
	(alloy constituent > 5%)	Tensile strength	PC5300	120	0 /	,	0	,	C /	,		,	, N		0	0		,	C T	
		350MPa ≤	PC5400	105	V.2 ≤	- - - -	ا√ ن.	0.0 1 0.0 1	\ 0.0	- - - -	N 4.0 N N 0.1	- - - /I	0.0		0.0 ≤ 0.0 ≤	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	4:0 ×1	√l 4.	N.O.	0.0
2	looto coclaioto	\d \020	PC5300	130	0 /	· ·	0	-		-		· ·	, ,	0	0	0	0	0	0	\ C
Ξ	ordiniess steel	√GL0/Z	PC5400	110	N N	- - - - -	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	N 0.0 N 0.0 N		- - - /I	N 4.0	- - //	0.0	N.O.	0.0	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	4.0 V V.O.V V.O.V V.O.V V.O.V	\l 2 4.	0.0	
2	aci tooc cliterid a ci too	01000	PC5300	145	0 /	C \	0	0		C \		0	, I	0	0	, ,	0	0	C T	0
<	Cast Iron, Ductile cast Iron	Plan religie	PC5400	110	N.0	N. V. Z	\ 0.0	S.U ≥ U.S ≥ S.U		V.O.	\	N.O. ✓	N.O.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	O. ⊘.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V V V V V V V V V V V V V V V V V V V	\	0.0 ≤ 0.01 ≤	Ø. ⊘.

Helical cutting

-																				
	Moulaises		- Coper	Cutting speed	FMR1000	000	FMR1500	1500	FMR2000	5000	FMR	FMR2500	FMR	FMR3000	FMR4000	4000	FMR	FMR5000	FMR6000	0000
	AAOLVIOAA	nardiless		(m/min)	(m/min) ap (mm) fz (mm/t)	z (mm/t)	ap (mm) t	z (mm/t)	ap (mm)	'z (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	) ap (mm) fz (mm/t) ab (mm) fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)
		000	PC5300	280	,		,				,	0					,		,	
	10000	√ gLinnz	PC5400	245	N. N. S. U.Z.	N. ∪	).  -  -	N.U ≤ U.Z	N. N		ν - -	N. ∨	N 2.0	∧ ວ.	N. N	^l 4.	N 4.0	∪. ∪.	∧ 0.4	o. ∨l
	Cabon steel	\ C=1100	PC5300	250	,	0	,		,		,	C \	0		C \	, ·	\ \ \	0		0
		SUTING N	PC5400	210	≥ U.7 ≤ U.Z	≥ 0.≥	\. \.	V.V.	V. O. ✓	V.V.	V. V.	≥ 0.Z	N. V.		≥ U.3 ≤	^\ 4.	\ 0.4	v. 0:0	N 4.0	o. O.⊲
0	10090	0.1	PC5300	195	,		,				,		7 + 7	0	1	C .	0 /		0 /	, V
L	Alloy steel	30~40 DHC 040 050 050 050 050 050 050 050 050 050	PC5400	170	\. O.\	- - - - -	\. \.	- - - -	\. \.	- - - - -	\. \.	- - - - -	<u>`</u> .	N. V. Z	<u>`</u> .	∖ ວ.	\ .0.\	√ 4:	\ .0.	√ O:O
		010101	PC5300	150	100	-		-	100	-	0 /		7 4 7	0	7 + 7	0	7 0 /	0	0 /	0 /
	High alloy steel	40~30THO	PC5400	130	\. \/	- - - -	\. O /I	-	O /I	- /I	\ O /	- Э	<u>`</u> .	N.O.	<u>'</u> .	۱۷ ن	\	\l > 4.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ν Ο.Ο
	(alloy constituent > 5%)	Tensile strength	PC5300	120	,	7		· ·	,		7		. 4.7	0		0	0 /		0 /	0
		350MPa ≤	PC5400	105		- - - -	\. O./	- - /I	\. \.	- - - - -	\. O.\	- - - - - - -	<u>`</u> .	N.V.≤	<u>`</u> .	∖ ວ.ວ	\	\ \ 4.	\ 0.	\ 0.0
2	Coto coclaioto	/all070	PC5300	130	7	-	\ \ '	-	- 0	-	\ C \	-	7 + 7	0 0	7 + 7	0	707		707	0 /
Ξ	oralliess steel	ZGLI0/Z	PC5400	110	· ·	- - /I	\. O /I	-	/l	- - - /I	\ \ \ 	- - /I	<u>-</u> /I	N.O.	<u>-</u> /I	ا/ د.	\	\l > 4.	\ 0.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
2	and the Contract of the Contra	oli ocot	PC5300	145	7	0	·	0	7		7	0	0			0		0	\ \ \	0
5	Cast Iron, Ductile cast Iron	Fow terisine	PC5400	110	o. -	N 0.N		≥ 0.Z	ν Ο:	N O.	O. ✓I	N. ∨	≥ 0.2 ≤ .0 ≤		≥ 0.3 ≤	^\ 5.0		≥ 4.0 ≤ U.5	∆ 7.	Ø. ⊘. ∨I

#### FMR Vibration test



#### **Machining example**



■ Workpiece STD11

Cutting

vc (m/min) = 200**condition** fz (mm/t) = 0.40

ap (mm) = 2.0

ae (mm) = 4.0■ Tools

Insert RDKT10T3M0-MM

(PC3500)

Holder FMRS3032RD-S

#### Cutting condition formulas for milling

#### **Cutting speed**

#### RPM

$$vc = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

$$n = \frac{vc \times 1000}{\pi \times D} (min^{-1})$$

#### Feed (per tooth)

#### Feed (per minute)

$$fz = \frac{vf}{Z \times n} (mm/t)$$

$$vf = fz \times n \times z \text{ (mm/min)}$$

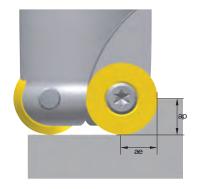
#### Chip removal rate

#### Required machine power

$$Q = \frac{ap \times ae \times vf}{1000} (cm^3/min)$$

$$Pkw = \frac{Q \times kc}{60 \times 102 \times \eta} (kW)$$

$$\mathsf{Php} = \frac{\mathsf{Pc}}{0.75} \, (\mathsf{hp})$$



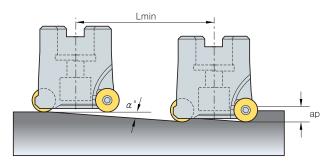
vc = Cutting speed (m/min)	Pkw = Required machine power (kW)
<b>n</b> = Revolution per a minute (min <sup>-1</sup> )	Php = Horsepower requirement (hp)
D = Cutting diameter (mm)	Q = Chip removal amount (cm³/min)
De = Efficient cutting diameter (mm)	ap = Depth of cut (mm)
vf = Feed per a minute (mm/min)	ae = Width of cut (mm)
fz = Feed per tooth (mm/t)	kc = Specific cutting resistance (MPa)
z = Number of tooth	η = Mechanical efficiency (%)
Pc = Power requirement (kW)	

#### Feed as per cutting depth

Decimation	Chin breaker				Dep	oth of cut (r	nm)			
Designation	Chip breaker	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 -	ММ	-	0.60	0.50	0.45	0.35	0.30	0.20	0.10	-
RDKT2006M0 -	ММ	-	-	0.60	0.50	0.40	0.30	0.25	0.15	0.10



#### Ramping technical data



$$Lmin = \frac{ap}{\tan \alpha^{\circ}} (mm)$$

\* Lmin: Min. inclination cutting length

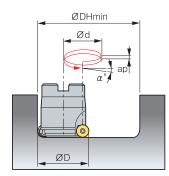
 $\alpha^{\circ} {:}~$  Max. ramping angle

ap: Depth of cut

<u> </u>		Ramping				Cutting le	ength L (mr	n) by ramı	oing angle			(mm)
Section	Tool dia.	angle a° (Max)	ap = 1	ap = 2	ap = 2.5	ap = 3	ap = 3.5	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
	08	18.14	3	6	8	-	-	-	-	-	-	-
EMD4000	10	11.7	5	10	12	-	-	-	-	-	-	-
FMR1000	12	8.43	7	13	17	-	-	-	-	-	-	-
	15	5.93	10	19	24	-	-	-	-	-	-	-
	10	20.67	21	5	7	8	-	-	-	-	-	-
EMD4500	12	10.05	10	11	14	17	-	-	-	-	-	-
FMR1500	16	6.12	6	19	23	28	-	-	-	-	-	-
	20	4.36	4	26	33	39	-	-	-	-	-	-
FMR2000	15	9.42	6	12	15	18	21	-	-	-	-	-
FIVIR 2000	20	5.85	10	20	24	29	34	-	-	-	-	-
	16	13.7	4	8	10	12	14	16	-	-	-	-
FMR2500	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	-	-	-
FMR3000	50	6.52	9	17	22	26	31	35	44	-	-	-
	63	4.76	12	24	30	36	42	48	60	-	-	-
	80	3.52	16	33	41	49	57	65	81	-	-	-
	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	-	-
FMR4000	63	5.08	11	22	28	34	39	45	56	67	-	-
	80	3.69	16	31	39	47	54	62	78	93	-	-
	100	2.79	21	41	51	62	72	82	103	123	-	-
	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	-
FMR5000	63	3.79	15	30	38	45	53	60	75	91	121	-
FININGUU	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
I WIINGOOD	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



#### Helical cutting technical data - ØDHmin

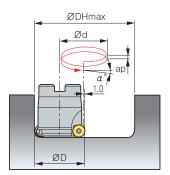


- ØD = Tool dia. (mm), ØDHmin, Max = Min, Max diameter (mm)
- Ød = Tool path (mm)
- ØDHmin (Min diameter) = ØD  $\times$  2 Insert size, ØDHmax (Max diameter) = ØD  $\times$  2 2
- Ød (Tool path) = ØDHmin, Max ØD

0	In a set	T I . II.	ØDHmin	<b>~</b> .1					Ramping	angle (a	°)			
Section	Insert	Tool dia.	ØDHmin	Ød	ap = 1	ap = 2	ap = 2.5	ap = 3	ap = 3.5	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
	5	08	11	3	6.11	12.35	15.57	-	-	-	-	-	-	-
EMD4000	5	10	15	5	3.65	7.34	7.34	-	-	-	-	-	-	-
FMR1000	5	12	19	7	2.61	5.23	5.23	-	-	-	-	-	-	-
	5	15	25	10	1.83	3.65	3.65	-	-	-	-	-	-	-
	6	10	14	4	4.57	9.20	9.20	13.95	-	-	-	-	-	-
EMD4500	6	12	18	6	3.04	6.11	6.11	9.20	-	-	-	-	-	-
FMR1500	6	16	26	10	1.83	3.65	3.65	5.49	-	-	-	-	-	-
	6	20	34	14	1.30	2.61	2.61	3.92	-	-	-	-	-	-
EMP2000	7	15	23	8	2.28	4.57	4.57	6.88	8.04	-	-	-	-	-
FMR2000	7	20	33	13	1.40	2.81	2.81	4.22	4.92	-	-	-	-	-
	8	16	24	8	2.28	4.57	4.57	6.88	8.04	9.20	-	-	-	-
FMR2500	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	-	-	-	-
	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	-	-	-
FMR3000	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	-	-	-
	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	-	-
FMR4000	12	63	114	51	0.36	0.72	0.72	1.07	1.25	1.43	1.79	2.15	-	-
	12	80	148	68	0.27	0.54	0.54	0.81	0.94	1.07	1.34	1.61	-	-
	12	100	188	88	0.21	0.41	0.41	0.62	0.73	0.83	1.04	1.24	-	-
	12	125	238	113	0.16	0.32	0.32	0.48	0.57	0.65	0.81	0.97	-	-
	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	-
<b></b>	16	63	110	47	0.39	0.78	0.78	1.16	1.36	1.55	1.94	2.33	3.11	-
FMR5000	16	80	144	64	0.29	0.57	0.57	0.86	1.00	1.14	1.43	1.71	2.28	-
	16	100	184	84	0.22	0.43	0.43	0.65	0.76	0.87	1.09	1.30	1.74	-
	16	125	234	109	0.17	0.33	0.33	0.50	0.59	0.67	0.84	1.00	1.34	-
	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
EMDOOOC	20	80	140	60	0.30	0.61	0.61	0.91	1.06	1.22	1.52	1.83	2.43	3.04
FMR6000	20	100	180	80	0.23	0.46	0.46	0.68	0.80	0.91	1.14	1.37	1.83	2.28
	20	125	230	105	0.17	0.35	0.35	0.52	0.61	0.70	0.87	1.04	1.39	1.74
	20	160	300	140	0.13	0.26	0.26	0.39	0.46	0.52	0.65	0.78	1.04	1.30



#### Helical cutting technical data - ØDHmax



- ØD = Tool dia. (mm), ØDHmin, Max = Min, Max diameter (mm)
- $\emptyset$ d = Tool path (mm)
- ØDHmin (Min diameter) = ØD  $\times$  2 Insert size, ØDHmax (Max diameter) = ØD  $\times$  2 2
- Ød (Tool path) = ØDHmin, Max ØD

				٠.					Ramping	angle (a	°)			(11111)
Section	Insert	Tool dia.	ØDHmax	Ød	ap = 1	ap = 2	ap = 2.5	ap = 3	ap = 3.5	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
	5	08	14	6	3.04	6.11	7.65	-	-	-	-	-	-	-
FMD4000	5	10	18	8	2.28	4.57	5.72	-	-	-	-	-	-	-
FMR1000	5	12	22	10	1.83	3.65	4.57	-	-	-	-	-	-	-
	5	15	28	13	1.40	2.81	3.51	-	-	-	-	-	-	-
	6	10	18	8	2.28	4.57	5.72	6.88	-	-	-	-	-	-
EMD4500	6	12	22	10	1.83	3.65	4.57	5.49	-	-	-	-	-	-
FMR1500	6	16	30	14	1.30	2.61	3.26	3.92	-	-	-	-	-	-
	6	20	38	18	1.01	2.03	2.54	3.04	-	-	-	-	-	-
EMP2000	7	15	28	13	1.40	2.81	3.51	4.22	4.92	-	-	-	-	-
FMR2000	7	20	38	18	1.01	2.03	2.54	3.04	3.55	-	-	-	-	-
	8	16	30	14	1.30	2.61	3.26	3.92	4.57	5.23	-	-	-	-
FMR2500	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	-	-	-	-
	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	-	-	-
FMR3000	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	-	-	-
	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	-	-
FMR4000	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	-	-
	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	-
FMDF000	16	63	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	2.39	-
FMR5000	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	-
	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
EMDCOCC	20	80	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	1.87	2.34
FMR6000	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

#### **Future Mill series for mold making**

## FMR P-positive

- Stable clamping system enables stable machining and productivity
- Varied product line-up ensures wide application range
- Optimal shape and grade with high hardness for hard-to-cut material machining

#### Features

- P-positive relief angle (11°) ensures high rigidity and high machinability in die steel and high-resistant alloy machining
- Flat clearance face of insert prevents interference and revolution while machining
- Optimal grades and chip breakers for various workpieces
- Chip breaker
- Concave shape ensures wide chip pocket and lowers cutting temperature
- Clearance face for preventing rotation
- Prevents rotation in machining
- Divides corners
- Prevents interference in high-feed machining
- Ensures stable clamping
- Through-coolant system
- Superb chip evacuation
- Low cutting heat ensures long tool life

#### Features of chip breaker

I	nsert	Cutting-edge	Uses	Features
MA			Aluminum machining	Optimal cutting-edge for aluminum machining and buffed surface ensure high machinability
ML			Titanium & Inconel machining	Excellent results in titanium machining thanks to a high hardness cutting-edge and the chip breaker reducing the cutting load
MF			Light machining	Chip breaker for low cutting resistance enables fine finishing.
ММ			General machining	Optimal for general machining
None C/B			Super hard material machining	Optimal for high hardness die steel and heat resistant alloy

#### Recommended cutting condition

\*Recommended chip breaker: • First OSecond

						Cutting c	onditions		Chip b			oreaker		
	Workpi	ece	Hardness	Grades	vc (m/min)	fz (mm/t)	ap (mm)	ae (mm)	MA	ML	MF	ММ	None	e C/B
	Low cark	on steel	HB80~180	PC5400	100~250	0.12~0.70	0.3~6.0	0.7D~0.1D	-	-	•	0	-	-
	High carl	oon steel	HB180~280	PC5400	100~220	0.12~0.70	0.3~6.0	0.7D~0.1D	-	-	•	0	-	-
	Lew elley eteel		Under HrC27	PC3700	180~290	0.20~0.60	0.3~6.0	0.7D~0.1D	-	-	-	•	0	-
	Low allo	by steel	Under HRC27	PC5400/PC5300	100~200	0.20~0.60	0.3~6.0	0.7D~0.1D	-	-	-	•	0	-
P	Low pre-hardened steel  High alloy steel		LI- C20, F0	PC3700	130~250	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	-	•	0
		aenea steei	HrC20~50	PC2510/PC5300	50~150	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	-	•	0
	High alloy steel High pre-hardened steel Stainless steel Gray cast iron, Ductile cast iron Aluminum Heat resistant alloy Ni or Co	H H 007	PC3700	130~250	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	•	0	-	
		oy steel	Under HRC27	PC5300	100~220	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	•	0	-
	High pre-hardened steel		HrC20~48	PC2510/PC5300	50~150	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	-	•	0
M	Stainles	ss steel	Under HB270	PC5300/PC5400	100~150	0.20~0.60	0.3~6.0	0.7D~0.1D	-	-	0	•	-	-
K	Gray cast iron, I	Ductile cast iron	Under 350MPa	PC5300	120~210	0.20~0.60	0.3~6.0	0.7D~0.1D	-	-	0	•	-	-
N	Alum	inum	-	H01	300~800	0.30~0.60	0.3~6.0	0.7D~0.1D	•	-	-	-	-	-
	Heat resistant	Fe	HrC20~30	PC5300/PC5400	35~60	0.30~0.50	~ 0.5	0.7D~0.1D	-	•	0	-	-	-
S	alloy	Ni or Co	HrC40~45	PC5300/PC5400	30~50	0.30~0.50	~ 0.5	0.7D~0.1D	-	•	0	-	-	-
	Titar	nium	HrC35~45	PC5300/PC5400	40~70	0.30~0.50	~ 1.5	0.7D~0.1D	-	•	0	-	-	-
Н			Over HRC50	PC2505/PC2510	30~50	0.30~0.50	~ 0.5	0.7D~0.1D	-	-	-	-	•	0



# E Technical Information for FMR P-positive

#### Feed per tooth according to ap (fz, mm/t)

(mm)

Insert	Insert size		Feed per tooth according to ap												
insert	(d)	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						

#### Performance evaluation

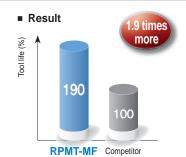
#### Alloy steel (SM490A Heat treatment, HRC 38~40)

Cutting vc (m/min) = 250conditions fz (mm/tooth) = 0.6

> ap (mm) = 1wet

RPMT1204M0E-MF (PC5300) ■ Tools Insert

FMRS4032HRP-3L25 Holder





Low pre-hardened steel (KP4M Heat treatment, HRC 30~45)

Cutting vc (m/min) = 178 **conditions** fz (mm/tooth) = 0.72

ap (mm) = 1.5

dry

■ Tools RPMT1606M0S-MM (PC5300) Insert

Holder FMRCM5063HRP-4





#### Low pre-hardened steel (KP1, HRC 28~33)

Cutting vc (m/min) = 178 conditions fz (mm/tooth) = 0.74

ap (mm) = 0.8

dry

■ Tools Insert RPMT1204M0E-MF (PC5300)

> FMRCM4063HRP-6 Holder

Result more Tool life (%) 120 RPMT-MF Competitor



#### High pre-hardened steel (STD61, HRC 50~52)

Cutting vc (m/min) = 50 conditions fz (mm/tooth) = 0.15

ap (mm) = 4.0

dry

RPMW1204M0S1 (PC5300) ■ Tools Insert

Holder FMRS4032HRP-3L25

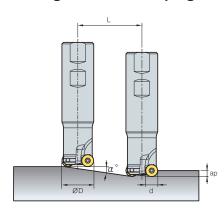






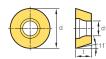
## FMR P-positive

## Maximum angle table for ramping machining



$$Lmin = \frac{ap}{\tan \alpha^{\circ}}(mm)$$

\* L (mm): Cutting length  $\alpha^{\circ}$ : Max. ramping angle ap: Depth of cut



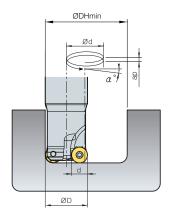
	Insert size	Tool dia.	Ramping angle				Cutti	ing length	L (mm)	by ap			(mm)
Section	(d)	(ØD)	α° (max)	ap = 1	ap = 2	ap = 2.5		ap = 3.5		ap = 5	ap = 6	ap = 8	ap = 10
	8	17	4.7	12	24	30	36	42	48	-	-	-	-
	8	18	4.1	14	28	34	41	48	55	-	-	-	-
FMR2500	8	20	15.4	4	7	9	11	13	14	-	-	-	-
FIVIR 2000	8	21	13.9	4	8	10	12	14	16	-	-	-	-
	8	25	9.8	6	12	14	17	20	23	-	-	-	-
	8	26	9.2	6	12	16	19	22	25	-	-	-	-
	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	-	-	-
FMR3000	10	33	8.0	7	14	18	21	25	29	36	-	-	-
LINIKOUU	10	40	5.8	10	20	25	30	34	39	49	-	-	-
	10	50	4.2	14	27	34	41	48	55	68	-	-	-
	10	63	3.1	19	37	47	56	65	75	93	-	-	-
	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	-	-
FMR4000	12	40	9.6	6	12	15	18	21	24	30	36	-	-
FINK4000	12	50	6.7	9	17	21	26	30	34	43	51	-	-
	12	63	4.8	12	24	30	36	42	48	60	72	-	-
	12	66	4.5	13	26	32	38	45	51	64	77	-	-
	12	80	3.5	17	33	41	50	58	66	83	99	-	-
	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	-
EMPEOOO	16	66	7.1	8	16	20	24	28	32	40	48	64	-
FMR5000	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
EMBCOCO	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

 $<sup>\</sup>ast$  Insert size (d): Please refer page E16 applicable insert drawing.

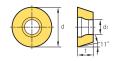


## **FMR P-positive**

#### Minimum hole diameter table for helical machining (ØDHmin)

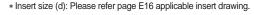


- ØD = Tool dia. (mm)
- Ød (Tool path, mm) = ØDHmin, Max ØD
- ØDHmin (Minimum hole diameter) = ØD x 2 Insert size (d)
- $\varnothing$ DHmax (Maximum hole diameter) =  $\varnothing$ D × 2 2
- Ramping angle by ap  $(\alpha^{\circ}) = \tan^{-1} \left( \frac{ap}{\pi \times \emptyset d} \right)$ Helical angle adjusted by ap cannot exceed maximum angle
- ap = Depth of cut



Section	Insert	Tool dia.	Ramping angle	ØDHmin	Ød				Ram	ping ang	jle (a°) l	ру ар			
Section	size (d)	(ØD)	angle a° (max)	וווווחטש	юu	ap = 1	ap = 2	ap = 2.5	ap = 3	ap = 3.5	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
	8	17	4.7	26	9	2.03	4.06	-	-	-	-	-	-	-	-
	8	18	4.1	28	10	1.83	3.65	-	-	-	-	-	-	-	-
FMR2500	8	20	15.4	32	12	1.52	3.04	3.81	4.57	5.34	6.11	-	-	-	-
1 WIN2500	8	21	13.9	34	13	1.40	2.81	3.51	4.22	4.92	5.63	-	-	-	-
	8	25	9.8	42	17	1.07	2.15	2.69	3.22	3.76	4.30	-	-	-	-
	8	26	9.2	44	18	1.01	2.03	2.54	3.04	3.55	4.06	-	-	-	-
	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	-	-	-	-
FMR3000	10	33	8.0	56	23	0.79	1.59	1.98	2.38	2.78	3.18	-	-	-	-
FINIKSUUU	10	40	5.8	70	30	0.61	1.22	1.52	1.83	2.13	2.43	-	-	-	-
	10	50	4.2	90	40	0.46	0.91	1.14	1.37	1.60	1.83	-	-	-	-
	10	63	3.1	116	53	0.34	0.69	0.86	1.03	1.21	1.38	-	-	-	-
	10	66	2.9	122	56	0.33	0.65	0.81	0.98	1.14	1.30	-	-	-	-
	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	-	-
FMR4000	12	40	9.6	68	28	0.65	1.30	1.63	1.96	2.28	2.61	3.26	3.92	-	-
FINK4000	12	50	6.7	88	38	0.48	0.96	1.20	1.44	1.68	1.92	2.40	2.88	-	-
	12	63	4.8	114	51	0.36	0.72	0.89	1.07	1.25	1.43	1.79	2.15	-	-
	12	66	4.5	120	54	0.34	0.68	0.84	1.01	1.18	1.35	1.69	2.03	-	-
	12	80	3.5	148	68	0.27	0.54	0.67	0.81	0.94	1.07	1.34	1.61	-	-
	12	100	2.6	188	88	0.21	0.41	0.52	0.62	0.73	0.83	1.04	1.24	-	-
	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	-
FMR5000	16	66	7.1	116	50	0.36	0.73	0.91	1.09	1.28	1.46	1.83	2.19	2.92	-
FINIKOUUU	16	80	5.3	144	64	0.29	0.57	0.71	0.86	1.00	1.14	1.43	1.71	2.28	-
	16	100	4.0	184	84	0.22	0.43	0.54	0.65	0.76	0.87	1.09	1.30	1.74	-
	16	125	3.0	234	109	0.17	0.33	0.42	0.50	0.59	0.67	0.84	1.00	1.34	-
	16	160	2.2	304	144	0.13	0.25	0.32	0.38	0.44	0.51	0.63	0.76	1.01	-
	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
EMDCOCC	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
FMR6000	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

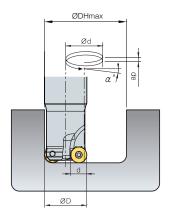




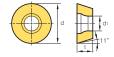


# **FMR P-positive**

## Maximum hole diameter table for helical machining (ØDHmax)



- ØD = Tool dia. (mm)
- Ød (Tool path, mm) = ØDHmin, Max ØD
- ØDHmin (Minimum hole diameter) = ØD x 2 Insert size (d)
   ØDHmax (Maximum hole diameter) = ØD x 2 2
- Ramping angle by ap  $(\alpha^{\circ}) = tan^{-1} \left( \frac{ap}{\pi \times \emptyset d} \right)$ Helical angle adjusted by ap cannot exceed maximum angle
- ap = Depth of cut



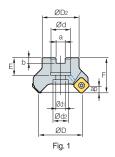
(mm)

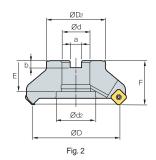
• "	Insert	Tool dia.	Ramping	~~!!	<b>~</b> ·				Ran	nping and	gle (a°) l	by ap			(mm)
Section	size (d)	(ØD)	angle a°(max)	ØDHmax	Ød	ap = 1	ap = 2	ap = 2.5	ap = 3	ap = 3.5	ap = 4	ap = 5	ap = 6	ap = 8	ap = 10
	8	17	4.7	32	15	1.22	2.43	3.04	3.65	-	-	-	-	-	-
	8	18	4.1	34	16	1.14	2.28	2.85	3.43	-	-	-	-	-	-
FMR2500	8	20	15.4	38	18	1.01	2.03	2.54	3.04	3.55	4.06	-	-	-	-
FIVIR 2000	8	21	13.9	40	19	0.96	1.92	2.40	2.88	3.37	3.85	-	-	-	-
	8	25	9.8	48	23	0.79	1.59	1.98	2.38	2.78	3.18	-	-	-	-
	8	26	9.2	50	24	0.76	1.52	1.90	2.28	2.66	3.04	-	-	-	-
	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	-	-	-	-
FMR3000	10	33	8.0	64	31	0.59	1.18	1.47	1.77	2.06	2.36	-	-	-	-
LINIKOUU	10	40	5.8	78	38	0.48	0.96	1.20	1.44	1.68	1.92	-	-	-	-
	10	50	4.2	98	48	0.38	0.76	0.95	1.14	1.33	1.52	-	-	-	-
	10	63	3.1	124	61	0.30	0.60	0.75	0.90	1.05	1.20	-	-	-	-
	10	66	2.9	130	64	0.29	0.57	0.71	0.86	1.00	1.14	-	-	-	-
	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	-	-
FMR4000	12	40	9.6	78	38	0.48	0.96	1.20	1.44	1.68	1.92	2.40	2.88	-	-
FININ4000	12	50	6.7	98	48	0.38	0.76	0.95	1.14	1.33	1.52	1.90	2.28	-	-
	12	63	4.8	124	61	0.30	0.60	0.75	0.90	1.05	1.20	1.50	1.80	-	-
	12	66	4.5	130	64	0.29	0.57	0.71	0.86	1.00	1.14	1.43	1.71	-	-
	12	80	3.5	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	-	-
	12	100	2.6	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	-	-
	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	-
FMR5000	16	66	7.1	130	64	0.29	0.57	0.71	0.86	1.00	1.14	1.43	1.71	2.28	-
LINIKOUU	16	80	5.3	158	78	0.23	0.47	0.58	0.70	0.82	0.94	1.17	1.40	1.87	-
	16	100	4.0	198	98	0.19	0.37	0.47	0.56	0.65	0.74	0.93	1.12	1.49	-
	16	125	3.0	248	123	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	1.19	-
	16	160	2.2	318	158	0.12	0.23	0.29	0.35	0.40	0.46	0.58	0.69	0.92	-
	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
FMR6000	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
I WILLOUGU	20	125	4.0	248	123	0.15	0.30	0.37	0.45	0.52	0.59	0.74	0.89	1.19	1.48
	20	160	2.9	318	158	0.12	0.23	0.29	0.35	0.40	0.46	0.58	0.69	0.92	1.16
	20	200	2.2	398	198	0.09	0.18	0.23	0.28	0.32	0.37	0.46	0.55	0.74	0.92
	20	250	1.7	498	248	0.07	0.15	0.18	0.22	0.26	0.29	0.37	0.44	0.59	0.74



# FMAC(M)3000













• AR: 21° • RR: -17°~-12°

(mm)

De	esignation	0	ØD	ØD <sub>2</sub>	Ød	а	b	E	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	kg	Fig.
FMACM	3050HR	4	50	42	22	10.4	6.3	20	40	11	17.5	4.0	0.4	1
	3050HR-H	6	50	42	22	10.4	6.3	20	40	11	17.5	4.0	0.4	1
	3063HR	5	63	49	22	10.4	6.3	20	40	11	17.5	4.0	0.5	1
	3063HR-H	8	63	49	22	10.4	6.3	20	40	11	17.5	4.0	0.6	1
FMAC	3080HR	6	80	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (23)	50	14	20	4.0	1.1	1
(FMACM)	3080HR-H	10	80	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (23)	50	14	20	4.0	1.2	1
	3100HR	7	100	67	31.75 (32)	12.7 (14.4)	8 (8)	35 (25.5)	50	(18)	45(26)	4.0	1.7	2 (1)
	3100HR-H	12	100	67	31.75 (32)	12.7 (14.4)	8 (8)	35 (25.5)	50	(18)	45 (26)	4.0	1.7	2 (1)
	3125HR	8	125	87	38.1 (40)	15.9 (16.4)	10 (9)	42 (29)	63	(22)	55 (32)	4.0	3.3 (3.5)	2 (1)
	3125HR-H	14	125	87	38.1 (40)	15.9 (16.4)	10 (9)	42 (29)	63	(22)	55 (32)	4.0	3.3 (3.5)	2 (1)

### Available inserts

( )Metric size

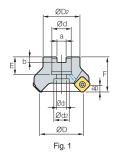
	SEET-MF SEET-MM			SEE	T-MA		S	EXT-I	MF		SEX	T-MN	1	S	EXT-	MR		SI	EEW		
		C					•		6			The state of the s				C		١			
		Ce	ermet						C	Coate	d							Unco	oated		
	Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	HOH	H05	page
SEET	0903AGFN-MA																		•	•	
	0903AGSN-MF											•	•		•	•					
	0903AGSN-MM				•							•			•	•					E21
SEXT	0903AGSN-MF											•			•	•					
<b>0 2</b> <i>X</i> <b>.</b>	0903AGSN-MM										•	•			•	•					E22
	0903AGSN-MR																				
SEEW	0903AGTN																				

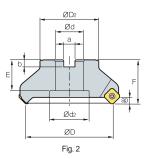
### Available arbors

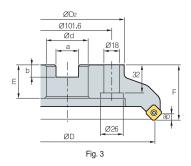
D	Designation	Ød	NC arbors
FMACM	3050HR-□ 3063HR-□	22	BT□□-FMC22-□□
FMAC	3080HR-□	25.4	BT□□-FMA25.4-□□
(FMACM)	3000HK	27	BT□□-FMC27-□□
	3100HR-□	31.75	BT□□-FMA31.75-□□
	3100HK-	32	BT□□-FMC32-□□
	3125HR-□	38.1	BT□□-FMA38.1-□□
•	3123NK-	40	BT□□-FMB/FMC40-□□

# FMAC(M)4000















• AR: 21° • RR: -17°~-12°

														(mm)
De	signation	0	ØD	ØD <sub>2</sub>	Ød	а	b	E	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	kg	Fig.
FMACM	4050HR	3	50	42	22	10.4	6.3	20	40	11	18	6.5	0.4	1
	4063HR	4	63	49	22	10.4	6.3	20	40	11	18	6.5	0.6	1
	4063HR-M	5	63	49	22	10.4	6.3	20	40	11	18	6.5	0.6	1
	4063HR-H	6	63	49	22	10.4	6.3	20	40	11	18	6.5	0.6	1
FMAC	4080HR	5	80	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (23)	50	14	20	6.5	1.1	1
(FMACM)	4080HR-M	6	80	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (23)	50	14	20	6.5	1.1	1
•	4080HR-H	8	80	57	25.4 (27)	9.5 (12.4)	6 (7)	25 (23)	50	14	20	6.5	1.1	1
	4100HR	5	100	67	31.75 (32)	12.7 (14.4)	8 (8)	33 (25)	63 (50)	18	26	6.5	2 (1.6)	1
	4100HR-M	7	100	67	31.75 (32)	12.7 (14.4)	8 (8)	33 (25)	63 (50)	18	26	6.5	2 (1.6)	1
	4100HR-H	10	100	67	31.75 (32)	12.7 (14.4)	8 (8)	33 (25)	63 (50)	18	26	6.5	2 (1.6)	1
	4125HR	6	125	87	38.1 (40)	15.9 (16.4)	10 (9)	35 (29)	63	22	32	6.5	3.1	1
	4125HR-M	8	125	87	38.1 (40)	15.9 (16.4)	10 (9)	35 (29)	63	22	32	6.5	3.1	1
	4125HR-H	12	125	87	38.1 (40)	15.9 (16.4)	10 (9)	35 (29)	63	22	32	6.5	3.1	1
	4160R	7	160	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (35)	63	-	-	6.5	4.8	2
	4160R-M	10	160	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (35)	63	-	-	6.5	4.8	2
	4160R-H	16	160	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (35)	63	-	-	6.5	4.8	2
	4200R	8	200	130	47.625 (60)	25.4 (25.7)	14	38 (32)	63	-	-	6.5	6.1	3
	4200R-M	12	200	130	47.625 (60)	25.4 (25.7)	14	38 (32)	63	-	-	6.5	6.1	3
	4200R-H	18	200	130	47.625 (60)	25.4 (25.7)	14	38 (32)	63	-	-	6.5	6.1	3

## Available inserts SEET-MF

( )Metric size





SEET-MM



SEET-MA



SEXT-MF



SEXT-MM



SEXT-MR



SEEW



SEEW-W

		Cermet			(	Coat	ed				Uncoated				Cermet		Co	ated			Uncoated	
	Designation	CN2500 CN30	10 =	NCM335 NCM335	NCM545 NCM545	PC6510	PC9530	PC9540 PC5300	PC5400	PD2000	H05	page		Designation	CN2500	NCM335 NCM535	NCM545 PC2505	PC2010 PC3700	PC6510 PC9530	PC9540 PC5300	H01	page
SEET	14M4AGFN-MA								(	•	• •		SEXT	14M4AGSN-MR					•	•		
	14M4AGSN-MF			•		•	•	•	•			E21	<b>SEEW</b>	14M4AGTN	•							E21
	14M4AGSN-MM			•	(	•	•	•	•					14M4AGFN-W								
SEXT	14M4AGSN-MF					•		•	•			E22		14M4AGSN-W						•		E22
	14M4AGSN-MM				•	•	•	•	•					14M4AGTN-W					•			

# Available arbors

Desig	nation	Ød	NC arbors
FMACM	4050HR- 4063HR-	22	BT -FMC22-
FMAC	4080HR-	25.4	BT□□-FMA25.4-□□
(FMACM)	4000HK-	27	BT□□-FMC27-□□
	4100HR-	31.75	BT□□-FMA31.75-□□
	4100HK-	32	BT -FMC32-

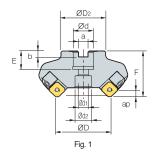
Desig	gnation	Ød	NC arbors
FMAC	4125HR-	38.1	BT□□-FMA38.1-□□
(FMACM)	4123HK-	40	BT□□-FMB40-□□
	4160R-	50.8	BT□□-FMA50.8-□□
	4100K	40	BT□□-FMB/FMC40-□□
	4200R-	47.625	BT□□-FMA47.625-□□
	4200K	60	BT -FMB60-

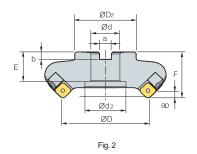
Specification	611				
	Screw	Shim	Shim screw	Insert wrench	Shim wrench
Ø50~Ø200	FTGA03512	SS42SAF	SHXN0509F	TW15S	HW35L

# FMAC(M)3000-A

# **Aluminum body**











(mm)

De	signation	0	ØD	ØD <sub>2</sub>	Ød	а	b	E	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	kg	Fig.
FMACM	3063R-A	3	63	49	22	10.4	6.3	20	40	11	18	4	0.5	1
FMAC	3080R-A	4	80	57	25.4 (27)	9.5 (12.4)	6 (7)	25	50	13.5	20	4	0.6	1
(FMACM)	3100R-A	5	100	67	31.75 (32)	12.7 (14.4)	8 (8)	32	50	-	45	4	0.8	2
	3100R-25.4-A	5	100	67	25.4	9.5	6	25	50	-	38	4	0.9	2
	3125R-A	6	125	87	38.1 (40)	15.9 (16.4)	10 (9)	38	63	-	56	4	1.6	2
	3125R-25.4-A	6	125	70	25.4	9.5	6	25	63	-	38	4	1.7	2

( )Metric size

## Available inserts

	SEET-MF SEET-M		Т-ММ		SE	ET-MA	4	5	SEXT-I	MF		SEXT	Г-ММ		SE	XT-MF	₹		SEEV	٧	
				)		0			6					)		3			6		
		Cer	met						(	Coate	d							Unco	oated		
Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H04	H05	page
SEET	0903AGFN-MA																		•	•	
	0903AGSN-MF											•	•		•	•					
	0903AGSN-MM				•							•			•	•					F04
SEXT	0903AGSN-MF											•			•	•					E21
	0903AGSN-MM										•	•			•	•					E22
	0903AGSN-MR																				
SEEW	0903AGTN																				

## Available arbors

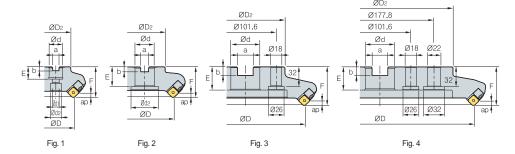
I	Designation	Ød	NC arbors
FMACM	3063R-□	22	BT□□-FMC22-□□
FMAC	3080R-□	25.4	BT□□-FMA25.4-□□
(FMACM)	3000K-	27	BT□□-FMC27-□□
	3100R-	31.75	BT□□-FMA31.75-□□
	3100K	32	BT□□-FMC32-□□
	3125R-	38.1	BT□□-FMA38.1-□□
	3123K*	40	BT□□-FMB40-□□

Specification						
	Screw	Insert wrench	Locator wrench	Locator	Locator screw	
Ø63~Ø125	FTKA0307	TW09S	HW30L	LFMA3R-A	DHA0620	

# FMAC(M)4000-A

# **Aluminum body**









• RR: -16°~-12°

• AR: 21°

														(mm)
De	signation	0	ØD	ØD2	Ød	а	b	E	F	Ød1	Ød2	ар	kg	Fig.
FMACM	4063R-A	3	63	49	22	10.4	6.3	20	50	11	18	6.5	0.6	1
FMAC	4080R-A	4	80	67	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	13.5	20	6.5	0.8	1
(FMACM)	4100R-A	5	100	67	31.75 (32)	12.7 (14.4)	8 (8)	32	50	-	45	6.5	1.1	2
	4100R-25.4-A	5	100	67	25.4	9.5	6	25	50	-	38	6.5	1.2	2
	4125R-A	6	125	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (35)	63	-	56	6.5	1.7	2
	4125R-25.4-A	6	125	70	25.4	9.5	6	25	63	-	38	6.5	1.8	2
	4160R-A	7	160	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (35)	63	-	75	6.5	2.5	2
	4200R-A	8	200	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (32)	63	-	-	6.5	3.2	3
	4250R-A	10	250	180	47.625 (60)	25.4 (25.7)	14 (14)	38	63	-	-	6.5	4.1	3
	4315R-A	12	315	240	47.625 (60)	25.4 (25.7)	14 (14)	38	63	-	-	6.5	6.7	4

Note) Through coolant type between Ø50~Ø125

( )Metric size

### Available inserts

	SEET-MF	SEE	ET-MN	í	;	SEET-	-MA			SEXT	-MI	F	SEX	T-MM		SEXT-	MR		SE	EW			SE	EW-W		
						6		•			City of the Control o					6										
		Cermet			С	oate	d			Uncoa	ated						Cermet			(	Coat	ed			Uncoated	
	Designation	CN2500 CN30	6 6	NCM335 NCM535	NCM545	PC6510	PC9540	PC5300	PC5400 PD2000	F01015	115	page	[	Desig	natio	n	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545	PC2505	PC3700 PC6510	PC9530	PC9540 PC5400	년 192	page
SEET	14M4AGFN-MA							П	•		•		SEXT	14M	4AG	SN-MR							•	•		
	14M4AGSN-MF			•		•		•	•			E21	SEEW	14M	4AG	ΓΝ	•									E21
	14M4AGSN-MM			•	•	•		•	•					14M	4AGI	-N-W										
SEXT	14M4AGSN-MF					•		•	•			E22		14M	4AGS	SN-W								•		E22
	14M4AGSN-MM		•	,	•	•		•	•					14M	4AG	ΓN-W						•	)			1

### Available arbors

Desig	gnation	Ød	NC arbors
FMACM	4063R-	22	BT -FMC22-
FMAC	4080R-	25.4	BT□□-FMA25.4-□□
(FMACM)	4000K-	27	BT□□-FMC27-□□
,	4100HR-	31.75	BT□□-FMA31.75-□□
	4100NK-	32	BT□□-FMC32-□□
	4125R-	38.1	BT□□-FMA38.1-□□

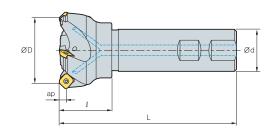
Des	ignation	Ød	NC arbors
FMAC	4125R-	40	BT□□-FMB40-□□
(FMACM)	4160R-	50.8	BT□□-FMA50.8-□□
	4100K	40	BT□□-FMB/FMC40-□□
	4200R-	47.625	BT□□-FMA47.625-□□
	4250R-	60	BT□□-FMB60-□□
	4315R-	60	BT□□-FMB60-□□

Specification	Screw	Insert wrench	Locator wrench	Locator	Locator screw	
Ø63~Ø315	FTGA03510	TW15S	HW40L	LFMA4R-A	DHA0830	

# Future Mill

# **FMAS3000**











• AR: 23° • RR: -17°~-13°

(mm)

1	Designation	©	ØD	Ød	Q	L	ар	kg
FMAS	3025HR	2	25	25	35	115	4	0.4
	3032HR	3	32	25	40	125	4	0.5
	3032HR-S32	3	32	32	40	130	4	0.8
	3040HR	3	40	32	40	130	4	0.9
	3040HR-S40	3	40	40	40	140	4	1.3
	3040HR-S42	3	40	42	40	140	4	1.4
	3050HR	4	50	32	40	135	4	1
	3050HR-S40	4	50	40	40	140	4	1.3
	3050HR-S42	4	50	42	40	140	4	1.5
	3063HR	5	63	32	45	135	4	1.2
	3063HR-S40	5	63	40	45	145	4	1.6
	3063HR-S42	5	63	42	45	145	4	1.7

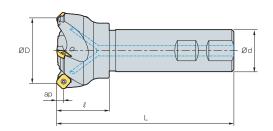
## Available inserts

	SEET-MF	SEE	Т-ММ		SE	ET-MA	١	S	EXT-N	ΛF		SEXT	-MM		SE	XT-MR	1		SEEV	V	
						3			C			C							6		
		Cer	rmet						C	oate	d							Unco	oated		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	H05	page
SEET	0903AGFN-MA																		•	•	
	0903AGSN-MF											•	•		•	•					
	0903AGSN-MM				•							•			•	•					F04
SEXT	0903AGSN-MF											•			•	•					E21 E22
	0903AGSN-MM										•	•			•	•					EZZ
	0903AGSN-MR																				
SEEW	0903AGTN																				

Specification	Screw	Insert wrench	
Ø25~Ø63	FTKA0307	TW09S	

# **FMAS4000**













(mm)

	Designation	©	ØD	Ød	Q	L	ар	O kg
FMAS	4050HR	3	50	32	45	135	6.5	1
	4050HR-S40	3	50	40	45	135	6.5	1.3
	4050HR-S42	3	50	42	45	135	6.5	1.45
	4063HR	4	63	32	45	135	6.5	1.2
	4063HR-S40	4	63	40	45	135	6.5	1.5
	4063HR-S42	4	63	42	45	135	6.5	1.6

# Available inserts

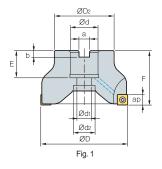
	SEET-MF SEE	T-MM		SEET-	MA		SEXT	-MF		SE	XT-MN	1	S	EXT-N	/IR		SEE	EW		SE	EW-W
		7	•	6		•					5			9		•	-				
		(	Cermet							Coa	ated							1U	ncoat	ed	
	Designation		CN2500 CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	PD1010	ST30A	H01	H05	page
SEET	14M4AGFN-MA															•	•		•	•	
	14M4AGSN-MF					•					•	•		•	•						
	14M4AGSN-MN	ı				•				•	•	•		•	•						
SEXT	14M4AGSN-MF										•			•	•						
	14M4AGSN-MN	1			•					•	•	•		•	•						E21
	14M4AGSN-MR											•		•							E22
SEEW	14M4AGTN		•																		
	14M4AGFN-W																				
	14M4AGSN-W													•							
	14M4AGTN-W										•										

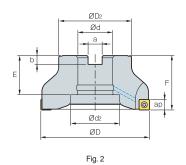
Specification	6)					
	Screw	Shim	Shim screw	Insert wrench	Shim wrench	
Ø50~Ø63	FTGA03512	SS42SAF	SHXN0509F	TW15S	HW35L	



# FMPC(M)3000

















• AR: 10° • RR: -9°~-8°

(mm)

D	Designation	0	ØD	ØD <sub>2</sub>	Ød	а	b	Е	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	O kg	Fig.
FMPCM	3050HS	5	50	40	22	10.4	6.3	20	40	11	18	7	0.3	1
	3063HS	6	63	40	22	10.4	6.3	20	40	11	18	7	0.5	1
FMPC	3080HS	7	80	55	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	14	20	7	1.0	1
(FMPCM)	3100HS	8	100	67	31.75 (32)	12.7 (14.4)	8 (8)	36 (26)	50	18	45 (26)	7	1.5	2 (1)

( )Metric size

### Available inserts

	SDET-MI	=	S	DET-N	ИМ		SDET	Г-МА		SD	XT-MF	:	S	DXT-N	ИM		SDX	T-MA			
						Ť			Y					6							
		Cerr	met						C	Coate	d							Unc	oated		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A	G10	돧	Н05	page
SDET	09M402R-MA															•			•	•	
	09M405R-MF																				
	09M405R-MM																				
SDXT	09M405R-MF				•					•	•	•		•	•						E19
	09M405L-MF																				E20
	09M405R-MM				•	•				•	•	•		•	•						
	09M405L-MM										•										
	09M405R-MA																		•	•	

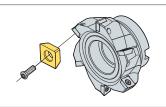
## Available arbors

	Designation	Ød	NC arbors
FMPCM	3050HS 3063HS	22	BT□□-FMC22-□□
FMPC (FMPCM)	3080HS	25.4 27	BT□□-FMA25.4-□□ BT□□-FMC27-□□
,	3100HS	31.75 32	BT□□-FMA31.75-□□ BT□□-FMC32-□□

### Parts

Specification		
	Screw	Wrench
Ø50~Ø100	FTGA03508	TW15S

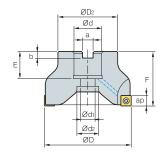
Assembling





# FMPC(M)4000















• AR: 10° • RR: -9°~-8°

(mm)

De	esignation	0	ØD	ØD <sub>2</sub>	Ød	а	b	E	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	kg
FMPCM	4063HS	5	63	49	22	10.4	6.3	20 (20)	50 (50)	11	18	11	0.4
FMPC	4080HS	6	80	57	25.4 (27)	9.5( 12.4)	6 (7)	25 (23)	50 (50)	14	20	11	0.9
(FMPCM)	4100HS	7	100	67	31.75 (32)	12.7 (14.4)	8 (8)	33 (25)	63 (50)	18	26	11	1.9 (1.5)
	4125HS	8	125	87	38.1 (40)	15.9 (16.4)	10 (9)	35 (29)	63	22	32	11	3.1

( )Metric size

### Available inserts

	SDET-N	F	S	DET-N	ИM		SDE	Г-МА		SD	XT-MF		S	DXT-N	lΜ		SDXT	Г-МА			
	6			6		4			,					6		•			•		
		Cer	met						C	oate	d							Unco	oated		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	ST30A	G10	F9	H05	page
SDET	130504R-MA															•			•	•	
	130508R-MF																				
	130508R-MM																				E19
SDXT	130508R-MF				•						•	•		•	•						E20

### Available arbors

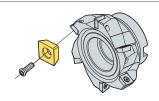
130508R-MM 130508R-MA

	Designation	Ød	NC arbors
FMPCM	4063HS	22	BT□□-FMC22-□□
FMPC	4000UC	25.4	BT□□-FMA25.4-□□
(FMPCM)	4080HS	27	BT□□-FMC27-□□
	4100HS	31.75	BT□□-FMA31.75-□□
	410003	32	BT□□-FMC32-□□
	4405116	38.1	BT□□-FMA38.1-□□
	4125HS	40	BT -FMB/FMC40-

#### Parts

Specification		
	Screw	Wrench
Ø63~Ø125	FTNC04511	TW20S

Assembling



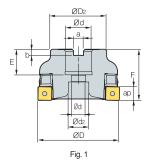


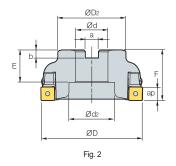
Available inserts E19,E20
Available arbors and bolt E426~E428

# FMPC(M)3000-A

# **Aluminum body**













• AR: 10° • RR: -9°~-7.3°

(mm)

De	esignation	0	ØD	ØD <sub>2</sub>	Ød	а	b	E	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	kg	Fig.
FMPCM	3063S-A	3	63	40	22	10.4	6.3	20	40	11.0	18	7	0.2	1
FMPC	3080S-A	4	80	55	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	13.5	20	7	0.4	1
(FMPCM)	3100S-A	5	100	67	31.75 (32)	12.7 (14.4)	8 (8)	32	50	-	45	7	0.6	2
	3100S-25.4-A	5	100	67	25.4	9.5	6	25	50	-	38	7	0.7	2

( )Metric size

### Available inserts

	SDET-M	F	S	DET-N	/IM		SDET	Г-МА		SD	XT-MF	:	S	DXT-N	ИM		SDX	T-MA			
	6			6		4			Y					6		•					
		Cer	met						C	Coate	d							Unc	oated		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A	G10	H01	H05	page
SDET	09M402R-MA															•			•	•	
	09M405R-MF																				
	09M405R-MM																				
SDXT	09M405R-MF				•					•	•	•		•	•						E19
	09M405L-MF																				E20
	09M405R-MM				•	•				•	•	•		•	•						
	09M405L-MM										•										
	09M405R-MA																		•	•	

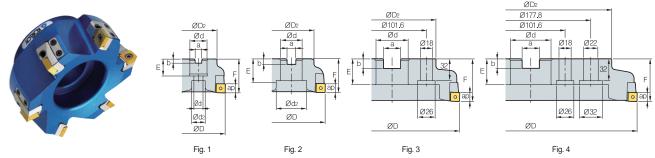
### Available arbors

	Designation	Ød	NC arbors
FMPCM	3063S-□	22	BT□□-FMC22-□□
FMPC	20000 □	25.4	BT□□-FMA25.4-□□
(FMPCM)	3080S-□	27	BT□□-FMC27-□□
	3100S-	31.75	BT□□-FMA31.75-□□
	31005	32	BT□□-FMC32-□□
	3100S-25.4-	25.4	BT□□-FMA25.4-□□

Specification	Screw	Insert wrench	Locator wrench	Locator	Locator screw	Chip cover	Chip cover screw
Ø63	FTGA03508	TW15S	HW30L	LFMP3R-A	DHA0624	CFMP3R14R1-A	PXMA0306
Ø80~Ø100	FTGA03508	TW15S	HW30L	LFMP3R-A	DHA0624	CFMP3R-A	PXMA0306

# FMPC(M)4000-A

# **Aluminum body**









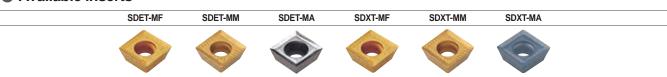
• AR: 10° • RR: -9°~-7.3°

(mm)

De	esignation	0	ØD	ØD2	Ød	а	b	E	F	Ød1	Ød2	ар	kg	Fig.
FMPCM	4063S-A	3	63	49	22	10.4	6.3	20	50	11	18	11	0.6	1
FMPC	4080S-A	4	80	67	25.4 (27)	9.5 (12.4)	6 (7)	25 (22)	50	13.5	20	11	0.8	1
(FMPCM)	4100S-A	5	100	67	31.75 (32)	12.7 (14.4)	8(8)	32	50	-	45	11	1.1	2
	4100S-25.4-A	5	100	67	25.4	9.5	6	25	50	-	38	11	1.2	2
	4125S-A	6	125	87	38.1 (40)	15.9 (16.4)	10 (9)	38 (35)	63	-	56	11	1.7	2
	4125S-25.4-A	6	125	70	25.4	9.5	6	25	63	-	38	11	1.8	2
	4160S-A	8	160	107	50.8 (40)	19.0 (16.4)	11 (9)	38 (35)	63	-	75	11	2.5	2
	4200S-A	10	200	130	47.625 (60)	25.4 (25.7)	14 (14)	38 (32)	63	-	-	11	3.2	3
	4250S-A	12	250	180	47.625 (60)	25.4 (25.7)	14 (14)	38	63	-	-	11	4.1	3
	4315S-A	15	315	240	47.625 (60)	25.4 (25.7)	14 (14)	38	63	-	-	11	6.7	4

( )Metric size

## Available inserts



		Cer	met						(	Coate	d							Unco	ated		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	ST30A	G10	된	H05	page
SDET	130504R-MA															•			•	•	
	130508R-MF																				
	130508R-MM																				E19
SDXT	130508R-MF				•						•	•		•	•						E20
	130508R-MM				•	•				•	•	•		•	•						
	130508R-MA																		•	•	

### Available arbors

De	signation	Ød	NC arbors
<b>FMPCM</b>	4063S-	22	BT□□-FMC22-□□
FMPC	4080S-	25.4	BT□□-FMA25.4-□□
(FMPCM)	40003-	27	BT□□-FMC27-□□
	4100S-	31.75	BT□□-FMA31.75-□□
	41003	32	BT□□-FMC32-□□
	4100S-25.4-	25.4	BT□□-FMA25.4-□□

De	esignation	Ød	NC arbors
FMPC	4125S-	38.1	BT□□-FMA38.1-□□
(FMPCM)	41233-	40	BT□□-FMB40-□□
	4125S-25.4-	25.4	BT□□-FMA25.4-□□
	4160S-	50.8	BT□□-FMA38.1-□□
	41005-	40	BT -FMB/FMC40-
	4200S-	47.625	BT□□-FMA47.625-□□
	4250S-	60	BT□□-FMB60-□□
	/215C	60	RTDD_EMB60_DD

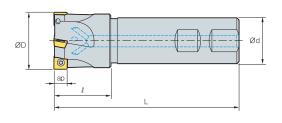
Specification	Screw	Insert wrench	Locator wrench	Locator	Locator screw	Chip cover	Chip cover screw
Ø63~Ø80	FTNC04509	TW20S	HW40L	LFMP4R1-A	DHA0825	CFMP3R14R1-A	PXMA0306
Ø100~Ø315	FTNC04509	TW20S	HW40L	LFMP4R-A	DHA0830	CFMP4R-A	PXMA0306

Available inserts E19, E20

Available arbors and bolt E426∼E428

# **FMPS3000**















• AR: 10° • RR: -9°~-8°

(mm)

ı	Designation	©	ØD	Ød	Q	L	ар	kg
FMPS	3025HS	2	25	25	35	115	7	0.4
	3032HS	3	32	25	40	125	7	0.5
	3040HS	4	40	32	40	130	7	0.8
	3040HS-S40	4	40	40	45	140	7	1.2
	3040HS-S42	4	40	42	45	140	7	1.3
	3050HS	5	50	32	40	135	7	1
	3050HS-S40	5	50	40	40	140	7	1.3
	3050HS-S42	5	50	42	40	140	7	1.4
	3063HS	6	63	32	45	135	7	1.2
	3063HS-S40	6	63	40	45	145	7	1.6
	3063HS-S42	6	63	42	45	145	7	1.7

### Available inserts

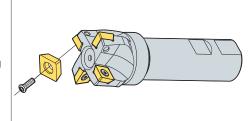
	SDET-MI	F	S	DET-N	/IM		SDE	Г-МА		SD	XT-MF		S	DXT-N	ИM		SDX	T-MA			
						4			Ŷ					6		•			•		
		Cer	met						C	Coate	d							Unce	oated		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD2000	ST30A	G10	F	H05	page
SDET	09M402R-MA															•			•	•	
	09M405R-MF																				
	09M405R-MM																				
SDXT	09M405R-MF				•					•	•	•		•	•						E19
	09M405L-MF																				E20
	09M405R-MM				•	•				•	•	•		•	•						
	09M405L-MM										•										
	09M405R-MA																		•	•	

## Parts

 Specification
 Screw
 Wrench

 Ø25~Ø63
 FTGA03508
 TW15S

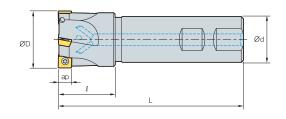
Assembling





# **FMPS4000**















• AR: 10° • RR: -9°~-8°

(mm)

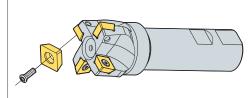
	Designation	©	ØD	Ød	Q	L	ар	kg
FMPS	4040HS	3	40	32	40	130	11	1
	4040HS-S40	3	40	40	40	140	11	1.3
	4040HS-S42	3	40	42	40	140	11	1.4
	4050HS	4	50	32	45	135	11	1.5
	4050HS-S40	4	50	40	45	145	11	1.7
	4050HS-S42	4	50	42	45	145	11	1.6
	4063HS	5	63	32	45	135	11	2.1
	4063HS-S40	5	63	40	45	145	11	2.4
	4063HS-S42	5	63	42	45	145	11	2.6

## Available inserts

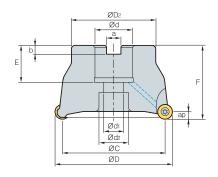
	SDET-MI	=	S	DET-N	/M		SDET	Г-МА		SD	XT-MF	:	S	DXT-N	/IM		SDX	Г-МА			
				6		4			7					6					•		
		Cer	met						(	Coate	d							Unco	ated		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	PD1010	ST30A	G10	된	H05	page
SDET	130504R-MA															•			•	•	
	130508R-MF																				
	130508R-MM																				E19
SDXT	130508R-MF				•						•	•		•	•						E20
	130508R-MM				•	•				•	•	•		•	•						
	130508R-MA																		•	•	

Parts

Specification Wrench Ø40~Ø63 FTNC04511 TW20S Assembling





















(mm)

Des	signation	0	ØD	ØС	ØD <sub>2</sub>	Ød	a	b	E	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	kg
FMRCM	3040HRD	3	40	30	36	16	8.4	5.6	18	40	9	14	5.0	0.2
	3040HRD-H	4	40	30	36	16	8.4	5.6	18	40	9	14	5.0	0.2
	3050HRD	4	50	40	42	22	10.4	6.3	20	40	11	16.5	5.0	0.3
	3050HRD-H	5	50	40	42	22	10.4	6.3	20	40	11	16.5	5.0	0.3
	3063HRD	5	63	53	49	22	10.4	6.3	20	50	11	16.5	5.0	0.64
	3063HRD-H	6	63	53	49	22	10.4	6.3	20	50	11	16.5	5.0	0.64
FMRC	3080HRD	6	80	70	57	25.4 (27)	9.5 (12.4)	6 (7.0)	25 (22)	50 (50)	14	19	5.0	1.1
(FMRCM)	3080HRD-H	7	80	70	57	25.4 (27)	9.5 (12.4)	6 (7.0)	25 (22)	50 (50)	14	19	5.0	1.1
	3100HRD	7	100	90	67	31.75 (32)	12.7 (14.4)	8 (8.0)	32 (28)	63 (63)	18	26	5.0	2.1
	3100HRD-H	8	100	90	67	31.75 (32)	12.7 (14.4)	8 (8.0)	32 (28)	63 (63)	18	26	5.0	2.1

Note) It's general that you measure of inner diameter when the diameter of FMRC/FMRCM is  $\emptyset 40 \sim \emptyset 63$ 

( )Metric size

### Available inserts

RDKT-MF	RDKT-MM	RDCT-MA

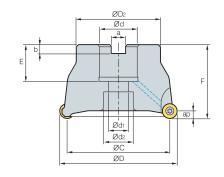
	Cer	met		Coated									Unco	ated				
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
RDCT	10T3M0-MA																•	Г16
RDKT	10T3M0-MF											•		•				E16
	10T3M0-MM				•					•	•	•		•				E17

#### Available arbors

	Designation	Ød	NC arbors
FMRCM	3040HRD	16	BT□□-FMC16-□□
	3040HRD-H	16	BI LILI-FIVIC 10-LILI
	3050HRD		
	3050HRD-H	22	BT - FMC22-
	3063HRD	22	BIFIVICZZ
	3063HRD-H		
FMRC	3080HRD	25.4	BT□□-FMA/FMB25.4-□□
(FMRCM)	3080HRD-H	27	BT□□-FMB/FMC27-□□
	3100HRD	31.75	BT□□-FMA31.75-□□
	3100HRD-H	32	BT□□-FMC32-□□

Specification			
	Screw	Wrench	
Ø40~Ø100	FTGA03508	TW15S	





















						, nn.	-5							(mm)
De	signation	0	ØD	øс	ØD <sub>2</sub>	Ød	а	b	E	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	kg
FMRCM	4050HRD	4	50	38	42	22	10.4	6.3	20	50	11	18	6.0	0.4
	4063HRD	4	63	51	49	22	10.4	6.3	20	50	11	18	6.0	0.6
	4063HRD-M	5	63	51	49	22	10.4	6.3	20	50	11	18	6.0	0.6
FMRC	4080HRD	5	80	68	57	25.4 (27)	9.5 (12.4)	6 (7.0)	25 (23)	50 (50)	14	20	6.0	1.0
(FMRCM)	4080HRD-M	6	80	68	57	25.4 (27)	9.5 (12.4)	6 (7.0)	25 (23)	50 (50)	14	20	6.0	1.0
	4100HRD	6	100	88	67	31.75 (32)	12.7 (14.4)	8 (8.0)	33 (25)	63 (50)	18	26	6.0	1.9 (1.5)
	4100HRD-M	7	100	88	67	31.75 (32)	12.7 (14.4)	8 (8.0)	33 (25)	63 (50)	18	26	6.0	1.9 (1.5)
	4125HRD	7	125	113	87	38.1 (40)	15.9 (16.4)	10 (9.0)	35 (29)	63 (63)	22	32	6.0	3.0
	4125HRD-M	8	125	113	87	38.1 (40)	15.9 (16.4)	10 (9.0)	35 (29)	63 (63)	22	32	6.0	3.0

Note) It's general that you measure of inner diameter when the diameter of FMRC/FMRCM is  $\emptyset 50 \sim \emptyset 63$ 

3.0 ( )Metric size

### Available inserts

Available il isel is				
	RDKT-MF	RDKT-MM	RDCT-MA	

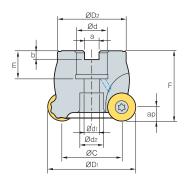
					Coated Uncoated													
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H04	page
RDCT	1204M0-MA																•	F46
RDKT	1204M0-MF									•		•		•				E16
	1204M0-MM				•					•	•	•		•				E17

## Available arbors

	Designation	Ød	NC arbors
FMRCM	4063HRD	22	BT□□-FMC22-□□
	4063HRD-M	22	BIFMC22
FMRC	4080HRD		
(FMRCM)	4080HRD	25.4	BT□□-FMA/FMB25.4-□□
	4080HRD-M	27	BT□□-FMB/FMC27-□□
	4100HRD	31.75	BT□□-FMA31.75-□□
	4100HRD-M	32	BT□□-FMC32-□□
	4125HRD	38.1	BT□□-FMA/FMB38.1-□□
	4125HRD-M	40	BT□□-FMB/FMC40-□□





















(mm)

De	signation	0	ØD	ØС	ØD <sub>2</sub>	Ød	а	b	Е	F	Ød <sub>1</sub>	Ød <sub>2</sub>	ар	kg
FMRCM	5050HRD	3	50	34	42	22	10.4	6.3	20	50	11	16.5	8.0	0.4
	5063HRD	4	63	47	49	22	10.4	6.3	20	50	11	18	8.0	0.6
	5063HRD-H	5	63	47	49	22	10.4	6.3)	20	50	11	18	8.0	0.6
FMRC	5080HRD	5	80	64	57	25.4 (27)	9.5 (12.4)	6 (7.0)	25 (23)	50 (50)	14	20	8.0	0.9
(FMRCM)	5080HRD-H	6	80	64	57	25.4 (27)	9.5 (12.4)	6 (7.0)	25 (23)	50 (50)	14	20	8.0	0.9
	5100HRD	6	100	84	67	31.75 (32)	12.7 (14.4)	8 (8)	33 (25)	63 (50)	18	26	8.0	1.9 (1.4)
	5100HRD-H	7	100	84	67	31.75 (32)	12.7 (14.4)	8 (8)	33 (25)	63 (50)	18	26	8.0	1.9 (1.4)
	5125HRD	7	125	109	87	38.1 (40)	15.9 (16.4)	10 (9)	35 (29)	63 (63)	22	32	8.0	3
	5125HRD-H	8	125	109	87	38.1 (40)	15.9 (16.4)	10 (9)	35 (29)	63 (63)	22	32	8.0	3

Note) It's general that you measure of inner diameter when the diameter of FMRC/FMRCM is  $\emptyset 50 \sim \!\! \emptyset 63$ 

( )Metric size

#### Available inserts

RDHW-E,F,S	RDKT-MF	RDKT-ML	RDKT-MM	

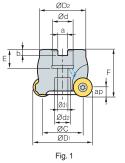
		Cer	met						Coa	ated						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
RDHW	1605M0E																	
	1605M0F																	
	1605M0S																	E16
RDKT	1605M0-MM									•								E17
	1605M0-MF																	
	1605M0-ML																	

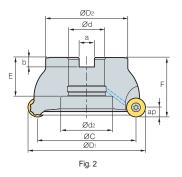
## Available arbors

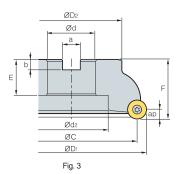
	Designation	Ød	NC arbors
FMRCM	5050HRD		
	5063HRD	22	BT□□-FMC22-□□
	5063HRD-H		
FMRC	5080HRD	25.4	BT□□-FMA/FMB25.4-□□
(FMRCM)	5080HRD-H	27	BT□□-FMB/FMC27-□□
	5100HRD	31.75	BT□□-FMA31.75-□□
	5100HRD-H	32	BT□□-FMC32-□□
	5125HRD	38.1	BT□□-FMA/FMB38.1-□□
	5125HRD-H	40	BT□□-FMB/FMC40-□□

Specification			
	Screw	Wrench	
Ø50~Ø125	FTGA0513-P	TW20-100	























(mm)

De	signation	0	ØD	øс	ØD2	Ød	а	b	E	F	Ød1	Ød2	ар	kg	Fig.
FMRCM	6063HRD	3	63	43	49	22	10.4	6.3	20	50	11	17	10.0	0.5	1
	6063HRD-M	4	63	43	49	22	10.4	6.3	20	50	11	17	10.0	0.5	1
FMRC	6080HRD	4	80	60	57	25.4 (27)	9.5 (12.4)	6 (7.0)	25 (22)	50	14	20	10.0	0.8	1
(FMRCM)	6080HRD-M	5	80	60	57	25.4 (27)	9.5 (12.4)	6 (7.0)	25 (22)	50	14	20	10.0	0.8	1
	6100HRD	5	100	80	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	63	18	26	10.0	1.6	1
	6100HRD-M	6	100	80	67	31.75 (32)	12.7 (14.4)	8 (8)	32 (28)	63	18	26	10.0	1.6	1
	6125HRD	6	125	105	87	38.1 (40)	15.9 (16.4)	10 (9)	41 (29)	63	- (22)	55 (32)	10.0	2.7 (2.9)	2 (1)
	6125HRD-M	7	125	105	87	38.1 (40)	15.9 (16.4)	10 (9)	41 (29)	63	- (22)	55 (32)	10.0	2.7 (2.9)	2 (1)
	6160RD	7	160	140	107	50.8 (40)	19 (16.4)	11 (9)	38 (35)	63	-	78	10.0	4.4	3
	6160RD-M	8	160	140	107	50.8 (40)	19 (16.4)	11 (9)	38 (35)	63	-	78	10.0	4.4	3

( )Metric size

## Available inserts

RDHW-E,F,S

RDKT-MM





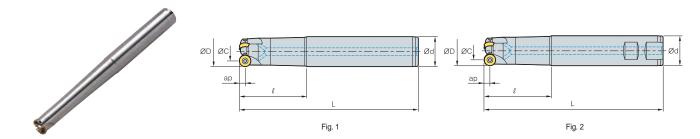
		Cer	met						Coa	ted						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
RDHW	2006M0E																	
	2006M0F																	E16
	2006M0S																	E17
RDKT	2006M0-MM									•								

## Available arbors

	Designation	Ød	NC arbors
FMRCM	6063HRD	00	DT FMOOD TO
	6063HRD-M		BT□□-FMC22-□□
FMRC	6080HRD	25.4	BT□□-FMA/FMB25.4-□□
(FMRCM)	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-□□

Specification	6)		
	Screw	Wrench	
Ø63~Ø160	FTGA0515-P	TW20-100	

# FMRS1000/1500





										(mm
1	Designation	0	ØD	ØС	Ød	Q	L	ар	kg	Fig.
FMRS	1008HRD-M	1	8	5.5	10	30	80	2.5	0.2	1
	1008HRD-L	1	8	5.5	10	50	100	2.5	0.2	1
	1010HRD-M	1	10	5	12	44	100	2.5	0.2	1
	1010HRD-L	1	10	5	12	64	120	2.5	0.2	1
	1012HRD-M	2	12	7	12	44	100	2.5	0.3	1
	1012HRD-L	2	12	7	16	80	160	2.5	0.3	1
	1015HRD-M	3	15	10	16	80	160	2.5	0.3	1
	1015HRD-L	3	15	10	16	100	200	2.5	0.4	1
FMRS	1510HRD-M	1	10	6	12	44	100	3.0	0.2	1
	1510HRD-L	1	10	6	12	64	120	3.0	0.2	1
	1512HRD-M	2	12	6	12	54	110	3.0	0.3	1
	1512HRD-L	2	12	6	16	80	160	3.0	0.3	1
	1516HRD-M	3	16	10	16	60	130	3.0	0.3	1
	1516HRD-L	3	16	10	20	90	180	3.0	0.4	1
	1520HRD-M	3	20	14	20	80	150	3.0	0.4	1
	1520HRD-L	3	20	14	20	90	200	3.0	0.5	1

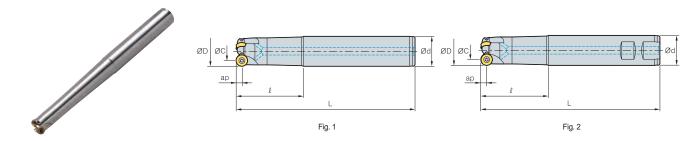
#### Available inserts

O AV	aliable i	nsens																	
						RDH	IW-E,F	,s		RDKV	٧								
						0													
			Cer	met						Coa	ated						Unco	oated	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
	RDHW	0501M0E											•						
1000		0501M0F																	
typo		05041400																	

туре		Designation	CN250	CN30	NC533	NCM3	NCM5	NCM5	PC250	PC201	PC370	PC651	PC953	PC954	PC530	PC540	ST30A	H01	page
	RDHW	0501M0E											•						
1000		0501M0F																	
type		0501M0S																	
	RDKW	0501M0E									•								E16
	RDHW	06T1M0E											•						E17
1500		06T1M0F																	
type		06T1M0S																	
	RDKW	06T1M0E									•								

Specification	Screw	Wrench	
Ø8~Ø15 (1000 type)	FTNA0203	TW06P	
Ø10~Ø20 (1500 type)	FTNA02205	TW06P	

# FMRS2000/2500





(mm) (<u>0</u>) Designation ØD ØС Ød Q L kg Fig. ар **FMRS** 115 0.3 2015HRD-S 2 15 8 16 55 3.5 2 0.4 2015HRD-M 2 15 8 20 80 150 3.5 1 2015HRD-L 90 200 3.5 0.5 2 15 8 20 2020HRD-S 20 0.3 2 3 20 14 65 125 3.5 2020HRD-M 20 14 20 80 150 3.5 0.4 3 1 2020HRD-L 20 14 25 90 200 3.5 0.5 3 1 **FMRS** 2516HRD-S 2 16 8 16 65 125 4.0 0.3 2 4.0 2516HRD-M 2 16 8 16 80 150 0.4 1 2516HRD-L 2 16 8 20 90 200 4.0 0.5 1 2520HRD-S 2 20 12 20 65 125 4.0 0.4 2 2520HRD-M 2 20 12 20 80 150 4.0 0.5 2520HRD-L 2 20 12 25 90 200 4.0 0.6 2525HRD-S 3 25 17 25 55 125 4.0 0.5 2 2525HRD-M 3 25 17 25 90 200 4.0 0.6 1 2525HRD-L 3 25 17 32 110 250 4.0 0.7 1

#### Available inserts

						RDH	W-E,F	,s		RDKV	I								
						6													
			Cer	met						Coa	ted						Unco	ated	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	F04	page
	RDHW	0702M0E											•						
2000		0702M0F																	
type		0702M0S																	
	RDKW	0702M0E									•								E16

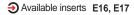
•

•

### Parts

2500

Specification		
	Screw	Wrench
Ø15~Ø20 (2000 type)	FTNA02555	TW07S
Ø16~Ø25 (2500 type)	FTNA0305 FTNA0306 (Ø20 over)	TW09S



**RDHW** 

RDKW

0803M0E

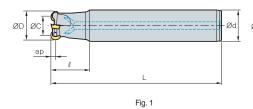
0803M0F

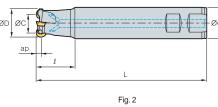
0803M0S

0803M0E

E17





















	Designation	©	ØD	ØC	Ød	Q	L	ар	(kg)	Fig.
MRS	3021HRD-M	1	21	11	20	40	150	5	0.4	1
	3021HRD-M2	2	21	11	20	40	150	5	0.4	1
	3021HRD-L	1	21	11	20	50	200	5	0.6	1
	3021HRD-L2	2	21	11	20	50	200	5	0.6	1
	3025HRD-S	2	25	15	25	35	115	5	0.5	2
	3025HRD-M	2	25	15	25	70	200	5	0.7	1
	3025HRD-L	2	25	15	25	100	250	5	1	1
	3026HRD-M	2	26	16	25	70	200	5	0.65	1
	3026HRD-L	2	26	16	25	100	250	5	0.7	1
	3032HRD-S	3	32	22	32	40	125	5	1	2
	3032HRD-M	3	32	22	32	70	200	5	1.3	1
	3032HRD-L	3	32	22	32	150	300	5	1.6	1
	3040HRD-S	4	40	30	32	40	125	5	1.3	2
	3040HRD-M	4	40	30	32	70	200	5	1.5	1
	3040HRD-L	4	40	30	32	150	300	5	1.8	1

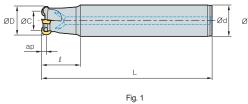
#### Available inserts

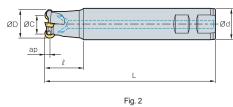
Available illocito				
	RDKT-MF	RDKT-MM	RDCT-MA	

		Cer	met						Coa	ated						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	된	page
RDCT	10T3M0-MA																•	F40
RDKT	10T3M0-MF											•		•				E16 E17
	10T3M0-MM				•					•	•	•		•				L17

Specification	Screw	Wrench
<u>Ø21</u> <u>Ø25~</u> Ø40	FTGA03507 FTGA03508	TW15S























	Designation	<b>(</b>	ØD	ØС	Ød	Q	L	ар	kg	Fig.
MRS	4032HRD-S	2	32	20	32	40	125	6	0.8	2
	4032HRD-M	2	32	20	32	70	200	6	1.1	1
	4032HRD-L	2	32	20	32	150	300	6	1.6	1
	4033HRD-S	2	33	21	32	40	125	6	0.9	2
	4033HRD-M	2	33	21	32	70	200	6	1.1	1
	4033HRD-L	2	33	21	32	150	300	6	1.7	1
	4040HRD-S	3	40	28	32	40	125	6	1	2
	4040HRD-M	3	40	28	32	70	200	6	1.6	1
	4040HRD-L	3	40	28	32	150	300	6	1.8	1
	4040HRD-S40	3	40	28	40	40	125	6	1.3	2
	4040HRD-M40	3	40	28	40	70	200	6	2	1
	4040HRD-L40	3	40	28	40	150	300	6	2.4	1
	4040HRD-S42	3	40	28	42	40	125	6	1.6	2
	4040HRD-M42	3	40	28	42	70	200	6	2.4	1
	4040HRD-L42	3	40	28	42	150	300	6	2.8	1
	4050HRD-S	4	50	38	42	50	125	6	1.5	2
	4050HRD-M	4	50	38	42	50	250	6	2.1	1
	4050HRD-L	4	50	38	42	50	300	6	2.7	1
	4050HRD-S40	4	50	38	40	50	150	6	2	2
	4050HRD-M40	4	50	38	40	50	250	6	2.6	1
	4050HRD-L40	4	50	38	40	50	300	6	3.2	1

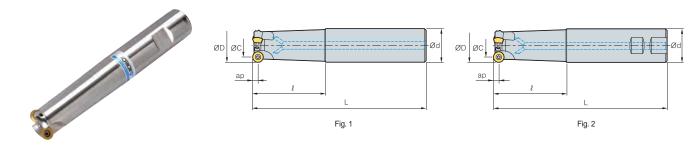
### Available inserts



		Cer	met		Coated Unco								ated					
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
RDCT	1204M0-MA																•	F40
RDKT	1204M0-MF									•		•		•				E16 E17
	1204M0-MM				•					•	•	•		•				

Specification		
	Screw	Wrench
Ø32~Ø50	FTKA0410	TW15S







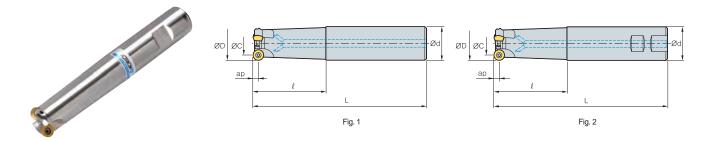
(mm) Fig. Designation ØD ØС Ød Q L ар kg **FMRS** 5040HRD-S 1.4 5040HRD-M 1.8 5040HRD-L 2.0 5040HRD-S40 1.6 5040HRD-M40 2.0 5040HRD-L40 2.4 5040HRD-S42 2.0 5040HRD-M42 2.4 5040HRD-L42 2.8 5050HRD-S40 2.0 5050HRD-M40 2.4 5050HRD-L40 2.6 5050HRD-S 1.5 5050HRD-M 1.8 5050HRD-L 2.0 5063HRD-S40 1.7 5063HRD-M40 2.0 5063HRD-L40 2.3 5063HRD-S 1.6 5063HRD-M 1.8 5063HRD-L 2.0

#### Available inserts

1605M0-ML

		RDHW-E,F,S				RDK	T-MF		RI	OKT-M	L	ı	RDKT-	ММ				
		Cer	met						Coa	ated						Unco	ated	
Designation		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
RDHW	1605M0E																	
	1605M0F																	
	1605M0S																	E16
RDKT	1605M0-MF									•								E17
	1605M0-MM																	

Specification		
	Screw	Wrench
Ø40~Ø63	FTGA0513-P	TW20-100



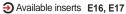


(mm) (i) Designation ØD ØС Ød Q L ар kg Fig. **FMRS** 6050HRD-S40 1.3 6050HRD-S42 1.4 6050HRD-M40 2.2 6050HRD-M42 2.4 6050HRD-L40 2.7 6050HRD-L42 3.0 6063HRD-S40 1.5 6063HRD-S42 1.6 6063HRD-M40 2.5 6063HRD-M42 2.7 6063HRD-L40 3.0 6063HRD-L42 3.2 

#### Δvailable inserts

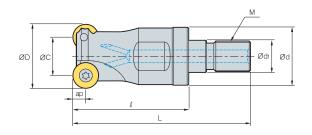
Available inserts			
	RDHW-E,F,S	RDKT-MM	

		Cer	met						Coa	ited						Unco	ated	
	Designation		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	НО	page
RDHW	2006M0E																	
	2006M0F																	E16
	2006M0S																	E17
RDKT	2006M0-MM									•								



# FMRM1000/1500



















(mm)

	Designation	©	ØD	øс	Ød	Ød1	Q	L	М	ар	(kg
<b>FMRM</b>	1008HRD-M06	1	8	5.5	9.5	6.5	25	40	M06	2.5	0.02
	1010HRD-M06	2	10	5	9.5	6.5	25	40	M06	2.5	0.02
	1012HRD-M06	2	12	7	11	6.5	25	40	M06	2.5	0.02
	1015HRD-M08	3	15	10	14.5	8.5	30	47	M08	2.5	0.04
<b>FMRM</b>	1510HRD-M06	1	10	7	9.5	6.5	25	40	M06	3.0	0.02
	1512HRD-M06	2	12	6	11	6.5	25	40	M06	3.0	0.02
	1516HRD-M08	3	16	10	14.5	8.5	30	47	M08	3.0	0.02
	1520HRD-M10	3	20	14	18	10.5	35	56	M10	3.0	0.07

#### Available inserts

RDHW-E,F,S

RDKW





			Cer	met						Coa	ted						Unco	ated	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
	RDHW	0501M0E											•						
1000		0501M0F																	
type		0501M0S																	
	RDKW	0501M0E									•								E16
	RDHW	06T1M0E											•						E17
1500		06T1M0F																	
type		06T1M0S																	
	RDKW	06T1M0E									•								

# Available adaptor

	Designation	Available adaptor
FMRM	1008HRD-M06	
	1010HRD-M06	MAT-M06
	1012HRD-M06	
	1015HRD-M08	MAT-M08
	1510HRD-M06	MAT-M06
	1512HRD-M06	IVIAT-IVIU0
	1515HRD-M08	MAT-M08
	1520HRD-M10	MAT-M10

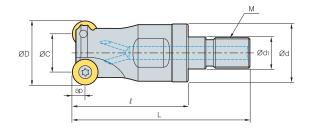
Designation: FMRM1008HRD-M06 Modular head threading measure size (M06)

Adaptor spec.: MAT-M06-020-S10S Adaptor threading measure (M06)

Specification	Screw	Wrench	
Ø8~Ø15 (1000 type)	FTNA0203	TW06P	
Ø10~Ø20 (1500 type)	FTNA02205	TW06P	

# FMRM2000/2500



















(mm)

С	Designation	©	ØD	øс	Ød	Ød1	Q	L	M	ар	
FMRM	2015HRD-M08	2	15	8	14.5	8.5	30	47	M08	3.5	0.04
	2020HRD-M10	3	20	13	18	10.5	35	56	M10	3.5	0.07
FMRM	2516HRD-M08	2	16	8	14.5	8.5	30	47	M08	4.0	0.04
	2520HRD-M10	2	20	12	18	10.5	35	56	M10	4.0	0.07
	2525HRD-M12	3	25	17	22.5	12.5	45	69	M12	4.0	0.13

## Available inserts

RDHW-E,F,S

RDKW





			Cer	met						Coa	ated						Unco	ated	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
	RDHW	0702M0E											•						
2000		0702M0F																	
type		0702M0S																	
	RDKW	0702M0E									•								E16
	RDHW	0803M0E											•						E17
2500		0803M0F																	
type		0803M0S																	
	RDKW	0803M0E									•								

# Available adaptor

	Designation	Available adaptor
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)

Adaptor spec.: MAT-M08-020-S16S Adaptor threading measure (M08)

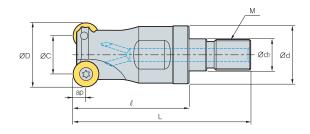
Specification			
	_	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
000 type)	Screw FTNA02555	Wrench TW07S	
oe)	FTNA0305	TW09S	





# **FMRM3000**



















(mm)

	Designation	<b>(</b>	ØD	øс	Ød	Ød <sub>1</sub>	Q	L	M	ар	(kg)
FMRM	3021HRD-M10	2	21	11	18	10.5	35	56	M10	5.0	0.1
	3025HRD-M12	2	25	15	22.5	12.5	45	69	M12	5.0	0.15
	3032HRD-M16	3	32	22	29	17	50	77	M16	5.0	0.2
	3042HRD-M16	4	42	32	29	17	50	77	M16	5.0	0.24

## Available inserts

		RDHV	V-E,F,S	3	RI	OCT-M	Α		RDKT	-MF		RDK	T-ML		RI	OKT-M	M		
		6	10	)	1											9			
			Cer	met						Coa	ited						Unco	ated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	돧	page
RDCT	10T3M0-MA																	•	F40
RDKT	10T3M0-MF												•		•				E16
	10T3M0-MM					•					•	•	•		•				E17

# Available adaptor

	Designation	Available adaptor
FMRM	3021HRD-M10	MAT-M10
	3025HRD-M12	MAT-M12
	3032HRD-M16	NAAT NAAC
	3042HRD-M16	MAT-M16

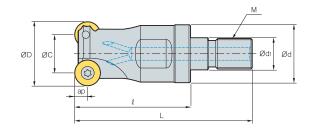
Designation : FMRM3021HRD-M10 Modular head threading measure size (M10)

Adaptor spec.: MAT-M10-030-S20S Adaptor threading measure (M10)

Specification			
	Screw	Wrench	
Ø21	FTGA03507	TW15S	
Ø25~Ø42	FTGA03508	100100	

# FMRM4000/5000



















(111111)
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	Designation	©	ØD	ØC	Ød	Ød <sub>1</sub>	Q	L	М	ар	kg
FMRM	4025HRD-M12	2	25	13	22.5	12.5	45	69	M12	6.0	0.12
	4032HRD-M16	2	32	20	29	17	50	77	M16	6.0	0.22
	4040HRD-M16	3	40	28	29	17	50	77	M16	6.0	0.23
	4042HRD-M16	4	42	28	29	17	50	77	M16	6.0	0.25
FMRM	5040HRD-M16	2	40	24	29	17	50	77	M16	8.0	0.25

## Available inserts

RDHW-E	RDCT-MA	RDKT-MF	RDKT-ML	RDKT-MM

			Cer	met	met Coated														
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
	RDCT	1204M0-MA																•	
4000 type	RDKT	1204M0-MF									•		•		•				
type		1204M0-MM				•					•	•	•		•				E40
	RDHW	1605M0-E																	E16 E17
5000	RDKT	1605M0-MF																	E1/
type		1605M0-ML																	
		1605M0-MM									•								

# Available adaptor

	Designation	Available adaptor
FMRM	4025HRD-M12	MAT-M12
	4032HRD-M16	
	4040HRD-M16	MAT-M16
	4042HRD-M16	
	5040HRD-M16	MAT-M16

Designation : FMRM4025HRD-M12 Modular head threading measure size (M12)

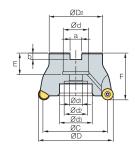
Adaptor spec.: MAT-M12-030-S25S Adaptor threading measure (M12)

Specification	Screw	Wrench	
Ø25~Ø42 (4000 type)	FTKA0410	TW15S	
Ø40 (5000 type)	FTGA0513-P	TW20-100	

# **E** FMR P-positive

# **FMRCM3000 (69)**





















															(111111)
De	esignation	(i)	ØD	ØC	ØD <sub>2</sub>	Ød	Ød <sub>1</sub>	Ød <sub>2</sub>	d <sub>3</sub>	а	b	Е	F	ар	kg
FMRCM	3040HRP-5	5	40	30	38	16	9	14	-	8.4	5.6	19	40	5	0.22
	3050HRP-6	6	50	40	45	22	11	18	-	10.4	6.3	20	40	5	0.35
	3052HRP-6	6	52	42	45	22	11	18	-	10.4	6.3	20	40	5	0.37
	3063HRP-6	6	63	53	50	22	11	18	-	10.4	6.3	20	40	5	0.55
	3063HRP-7	7	63	53	50	22	11	18	-	10.4	6.3	20	40	5	0.56
	3066HRP-7	7	66	56	50	22	11	18	-	10.4	6.3	20	40	5	0.60

### Available inserts

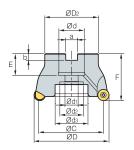
		RPC	CT-MA RI			PET-M	L		RPMT	MF		RPM	IT-MM		F	RPMW			
		3	2	new			new		6		ew	6		new			new	9	
			Cer	met						Coa	ated						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	된	page
RPCT	10T3M0-MA																	•	
RPET	10T3M0E-ML														•	•			-47
RPMT	10T3M0E-MF														•	•			E17
	10T3M0S-MM								•	•	•				•	•			E18
RPMW	10T3M0E1								•	•					•	•			

## Available arbors

	Designation	Ød	Available arbors
FMRCM	3040HRP-5	16	BT□□-FMC16-□□
	3050HRP-6		
	3052HRP-6		
	3063HRP-6	22	BT□□-FMC22-□□
	3063HRP-7		
	3066HRP-7		

# FMRC(M)4000 @



















															(mm)
De	esignation	0	ØD	øс	ØD <sub>2</sub>	Ød	Ød <sub>1</sub>	Ød <sub>2</sub>	Ød3	а	b	E	F	ар	kg
FMRCM	4050HRP-4	4	50	38	45	22	11	18	-	10.4	6.3	20	40	6	0.26
	4050HRP-5	5	50	38	45	22	11	18	-	10.4	6.3	20	40	6	0.28
	4052HRP-5	5	52	40	45	22	11	18	-	10.4	6.3	20	40	6	0.30
	4063HRP-5	5	63	51	50	22	11	18	-	10.4	6.3	20	40	6	0.44
	4063HRP-6	6	63	51	50	22	11	18	-	10.4	6.3	20	40	6	0.48
	4066HRP-6	6	66	54	50	22	11	18	-	10.4	6.3	20	40	6	0.50
FMRC	4080HRP-6	6	80	68	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	24 (23)	50	6	0.92
(FMRCM)	4080HRP-7	7	80	68	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	24 (23)	50	6	0.90
	4100HRP-7	7	100	88	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	32 (25)	63 (53)	6	1.46

( )Metric size

## Available inserts



					Coated Uncoated													
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	된	page
RPCT	1204M0-MA																•	
RPET	1204M0E-ML													•	•			
RPMT	1204M0E-MF												•	•	•			E17
	1204M0S-MM							•	•	•			•	•	•			E18
RPMW	1204M0S1							•	•	•				•	•			
	1204M0S2													•	•			

## Available arbors

	Designation	Ød	Available arbors
FMRCM	4050HRP-4		
	4050HRP-5		
	4052HRP-5	22	BT□□-FMC22-□□
	4063HRP-5	22	DIFIWC22
	4063HRP-6		
	4066HRP-6		
FMRC	4080HRP-6	25.4	BT□□-FMA25.4-□□
(FMRCM)	4000HKF-0	27	BT□□-FMC27-□□
,	4080HRP-7	25.4	BT□□-FMA25.4-□□
	4000HKF-1	27	BT□□-FMC27-□□
	4100HRP-7	31.75	BT□□-FMA31.75-□□
	4100NKP-/	32	BT□□-FMC32-□□

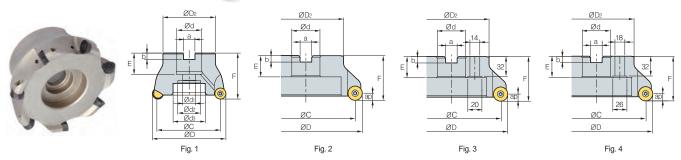
Specification Screw	Wrench	
Ø50~Ø100 FTKA0410	TW15S	





# FMR P-positive

# FMRC(M)5000 @



















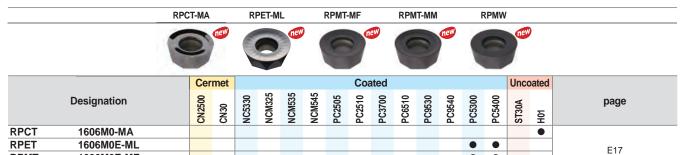
(mm)

De	esignation	0	ØD	øс	ØD <sub>2</sub>	Ød	Ød <sub>1</sub>	Ød <sub>2</sub>	Ød3	а	b	E	F	ар	kg	Fig.
FMRCM	5063HRP-4	4	63	47	50	22	11	18	-	10.4	6.3	20	40	8	0.43	1
	5063HRP-5	5	63	47	50	22	11	18	-	10.4	6.3	20	40	8	0.44	1
	5066HRP-5	5	66	50	50	22	11	18	-	10.4	6.3	20	40	8	0.48	1
FMRC	5080HRP-5	5	80	64	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	24 (23)	50	8	0.77	1
(FMRCM)	5080HRP-6	6	80	64	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	24 (23)	50	8	0.82	1
	5100HRP-6	6	100	84	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	32 (25)	63 (55)	8	1.42	1
	5125HRP-7	7	125	109	87	38.1 (40)	22	32	52	15.9 (16.4)	10 (9)	35 (29)	68 (63)	8	2.78	1
5125HRP-8		8	125	109	87	38.1 (40)	22	32	52	15.9 (16.4)	10 (9)	35 (29)	68 (63)	8	2.79	1
	5160RP-8	8	160	144	107	50.8 (40)	-	-	100	19 (16.4)	11 (9)	38 (32)	63	8	4.01	2(3)

( )Metric size

E18

#### Available inserts



## Available arbors

1606M0E-MF

1606M0S-MM

1606M0S1

**RPMT** 

**RPMW** 

	Designation	Ød	Available arbors
FMRCM	5063HRP-4		
	5063HRP-5	22	BT□□-FMC22-□□
	5066HRP-5		
FMRC	5080HRP-5	25.4	BT□□-FMA25.4-□□
(FMRCM)	3000HKP-3	27	BT□□-FMC27-□□
,	5080HRP-6	25.4	BT□□-FMA25.4-□□
	3000HKP-0	27	BT□□-FMC27-□□
	5100HRP-6	31.75	BT□□-FMA31.75-□□
	5100HKP-6	32	BT□□-FMC32-□□
	5125HRP-7	38.1	BT□□-FMA38.1-□□
	5125HRP-1	40	BT□□-FMC40-□□
	E40EUDD 0	38.1	BT□□-FMA38.1-□□
	5125HRP-8	40	BT□□-FMC40-□□
	E460DD 0	50.8	BT□□-FMA50.8-□□
	5160RP-8	40	BT□□-FMC40-□□

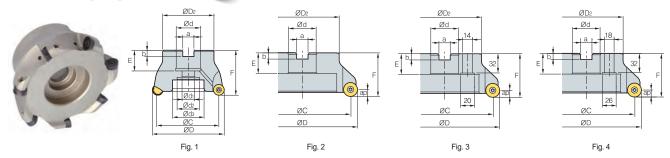
#### Parts

Specification		San	
	Screw	Wrench	
Ø63~Ø160	FTGA0512-P	TW20-100	

•

• •

# FMRC(M)6000 @

















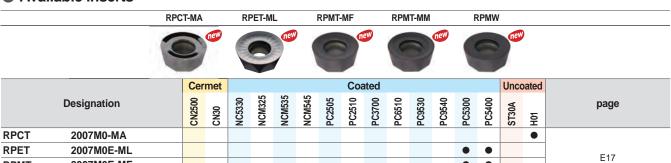
(mm)

De	Designation		ØD	øс	ØD <sub>2</sub>	Ød	Ød <sub>1</sub>	Ød <sub>2</sub>	Ød3	а	b	Е	F	ар	kg	Fig.
FMRCM	6063HRP-4	4	63	43	50	22	11	18	-	10.4	6.3	20	40	10	0.37	1
FMRC	6080HRP-5	5	80	60	57	25.4 (27)	14	25	35	9.5 (12.4)	6 (7)	24 (23)	50	10	0.87	1
(FMRCM)	6100HRP-5	5	100	80	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	32 (25)	63 (55)	10	1.31	1
	6100HRP-6	6	100	80	67	31.75 (32)	18	26	42	12.7 (14.4)	8 (8)	32 (25)	63 (55)	10	1.40	1
	6125HRP-5	5	125	105	87	38.1 (40)	22	32	52	15.9 (16.4)	10 (9)	35 (29)	68 (63)	10	2.77	1
	6125HRP-7	7	125	105	87	38.1 (40)	22	32	52	15.9 (16.4)	10 (9)	35 (29)	68 (63)	10	2.89	1
	6160RP-6	6	160	140	107	50.8 (40)	-	-	100	19 (16.4)	11 (9)	38 (32)	63	10	3.58	2 (3)
	6160RP-8	8	160	140	107	50.8 (40)	-	-	100	19 (16.4)	11 (9)	38 (32)	63	10	3.53	2 (3)
6200RP-8		8	200	180	130	47.625 (60)	-	-	132	25.4 (25.7)	14 (14)	38	63	10	5.15	4
6250RP-9		9	250	230	180	47.625 (60)	-	-	180	25.4 (25.7)	14 (14)	38	63	10	9.72	4

( )Metric size

E18

### Available inserts



## Available arbors

2007M0E-MF

2007M0S-MM

2007M0S1

Des	ignation	Ød	NC arbors
<b>FMRCM</b>	6063HRP-4	22	BT□□-FMC22-□□
FMRC	6080HRP-5	25.4	BT□□-FMA25.4-□□
(FMRCM)	0000HKF-3	27	BT□□-FMC27-□□
	6100HRP-5	31.75	BT□□-FMA31.75-□□
	0100HKF-3	32	BT□□-FMC32-□□
	6100HRP-6	31.75	BT□□-FMA31.75-□□
	0100HKF-0	32	BT□□-FMC32-□□
	6125HRP-5	38.1	BT□□-FMA38.1-□□
	0123HKP-3	40	BT -FMC40-

Desi	ignation	Ød	NC arbors
FMRC	6125HRP-7	38.1	BT□□-FMA38.1-□□
(FMRCM)	0123HKF-1	40	BT□□-FMC40-□□
	6160RP-6	50.8	BT□□-FMA50.8-□□
	0100KF-0	40	BT□□-FMC40-□□
	6160RP-8	50.8	BT□□-FMA50.8-□□
	0100KF-0	40	BT□□-FMC40-□□
	6200RP-8	47.625	BT□□-FMA47.625-□□
	0200KF-0	60	BT□□-FMC60-□□
	6250RP-9	47.625	BT□□-FMA47.625-□□
	0230KF-9	60	BT□□-FMC60-□□

•

•

### Parts

**RPMT** 

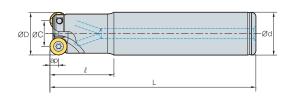
RPMW

Specification		Sonor
C00 C050	Screw	Wrench
Ø63~Ø250	FTKA0615-P	TW25-100

# **E** FMR P-positive

# FMRS2500 @W



















(mm)

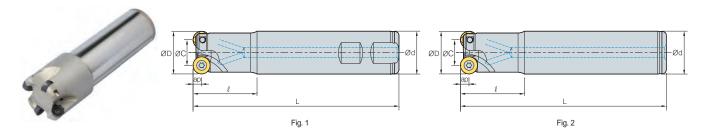
									(11111)
1	Designation	$\odot$	ØD	øс	Ød	Q	L	ар	O 
FMRS	2517HRP-2S16	2	17	9	16	35	90	4	0.11
	2517HRP-2M16	2	17	9	16	35	150	4	0.20
	2517HRP-2L16	2	17	9	16	35	200	4	0.27
	2518HRP-2M16	2	18	10	16	35	150	4	0.20
	2518HRP-2L16	2	18	10	16	35	200	4	0.28
	2520HRP-3S20	3	20	12	20	35	130	4	0.27
	2520HRP-3M20	3	20	12	20	100	180	4	0.36
	2520HRP-3L20	3	20	12	20	130	250	4	0.50
	2521HRP-3S20	3	21	13	20	35	130	4	0.28
	2521HRP-3M20	3	21	13	20	35	180	4	0.40
	2521HRP-3L20	3	21	13	20	35	250	4	0.55
	2525HRP-4S25	4	25	17	25	35	150	4	0.48
	2525HRP-4M25	4	25	17	25	60	180	4	0.60
	2525HRP-4L25	4	25	17	25	130	250	4	0.81
	2526HRP-4S25	4	26	18	25	35	150	4	0.48
	2526HRP-4L25	4	26	18	25	130	250	4	0.85

## Available inserts

			RPET-	-ML		RPN	IT-MF		RF	мт-м	М		RPMW					
				new onew				new										
		Cer	met					Coated								Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
RPET	0803M0E-ML													•	•			
RPMT	0803M0E-MF													•	•			E17
	0803M0S-MM							•	•					•	•			E18
RPMW	0803M0E1							•	•					•	•			

Specification	Screw	Wrench	
<u>Ø17</u> <u>Ø18∼Ø26</u>	FTNA0305 FTNA0306	TW09S	

# FMRS3000 @





										(mm)
	Designation	0	ØD	øс	Ød	Q	L	ар	kg	Fig.
FMRS	3025HRP-2M20	2	25	15	20	40	170	5	0.40	2
	3025HRP-2S25	2	25	15	25	40	120	5	0.39	1
	3025HRP-2M25	2	25	15	25	60	160	5	0.52	2
	3025HRP-2L25	2	25	15	25	130	250	5	0.80	2
	3026HRP-2L25	2	26	16	25	30	200	5	0.69	2
	3032HRP-3S32	3	32	22	32	40	125	5	0.68	1
	3032HRP-3L32	3	32	22	32	60	200	5	1.08	2
	3032HRP-4S32	4	32	22	32	40	125	5	0.66	1
	3032HRP-4L25	4	32	22	25	60	200	5	0.74	2
	3033HRP-4S32	4	33	23	32	40	125	5	0.67	1
	3033HRP-4M32	4	33	23	32	60	180	5	1.00	2
	3033HRP-4L32	4	33	23	32	180	300	5	1.64	2

# Available inserts

			RPCT-MA		RPET-ML				RPMT-MF			RPMT-MM RP				RPMW	<u> </u>		
				new	No.		nev		6		ew	6		new			nev		
			Cer	met						Coa	ated						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
RPCT	10T3M0-MA																	•	
RPET	10T3M0E-ML														•	•			F47
RPMT	10T3M0E-MF														•	•			E17
	10T3M0S-MM								•	•	•				•	•			E18
RPMW	10T3M0E1								•	•					•	•			

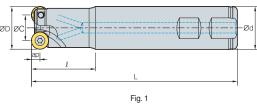
Specification		
	Screw	Wrench
Ø25~Ø26	FTGA03507	TW15S
Ø32~Ø33	FTGA03508	1W155

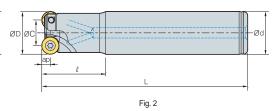


# FMR P-positive

# FMRS4000 @





















• AR: -4° • RR: -2°~ 0°

(mm	ı١

	Designation	<b>(</b>	ØD	øс	Ød	Q	L	ар	kg	Fig.
FMRS	4025HRP-2S25	2	25	13	25	60	160	6	0.46	1
	4026HRP-2L25	2	26	14	25	60	200	6	0.48	2
	4032HRP-2L25	2	32	20	25	40	190	6	0.68	2
	4032HRP-2S32	2	32	20	32	50	125	6	0.64	1
	4032HRP-2L32	2	32	20	32	50	250	6	1.40	2
	4032HRP-3S32	3	32	20	32	50	125	6	0.64	1
	4032HRP-3M32	3	32	20	32	60	160	6	0.85	2
	4033HRP-3M32	3	33	21	32	60	200	6	1.01	2
	4033HRP-3L32	3	33	21	32	60	300	6	1.67	2
	4040HRP-3S32	3	40	28	32	35	105	6	0.60	1
	4040HRP-3M32	3	40	28	32	50	160	6	0.96	2
	4040HRP-4S32	4	40	28	32	35	105	6	0.60	1
	4040HRP-4M32	4	40	28	32	35	150	6	0.87	2
	4040HRP-4L32	4	40	28	32	35	250	6	1.46	2
	4050HRP-4M32	4	50	38	32	50	150	6	1.10	2
	4050HRP-4M40	4	50	38	40	50	150	6	1.44	2
	4050HRP-4M42	4	50	38	42	50	150	6	1.55	2

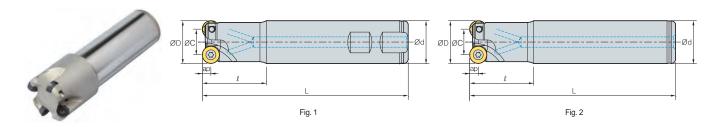
# Available inserts



		Cer	met						Coa	ated						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
RPCT	1204M0-MA																•	
RPET	1204M0E-ML													•	•			
RPMT	1204M0E-MF												•	•	•			E17
	1204M0S-MM							•	•	•			•	•	•			E18
RPMW	1204M0S1							•	•	•				•	•			
	1204M0S2													•	•			

Specification		P	
	Screw	Wrench	
Ø25~Ø26 Ø32~Ø50	FTKA0408 FTKA0410	TW15S	

# FMRS5000/6000 000





					1111.0					(mm)
	Designation	<b>(</b>	ØD	ØС	Ød	Q	L	ар	(kg	Fig.
FMRS	5040HRP-2M32	2	40	24	32	50	160	8	0.92	2
	5040HRP-2L32	2	40	24	32	50	250	8	1.45	2
	5050HRP-3M40	3	50	34	40	50	160	8	1.48	2
	5050HRP-3L40	3	50	34	40	50	300	8	2.86	2
FMRS	6050HRP-3S32	3	50	30	32	50	160	10	1.06	1
	6050HRP-3M32	3	50	30	32	50	200	10	1.30	2
	6050HRP-3S40	3	50	30	40	50	125	10	1.45	1
	6050HRP-3M40	3	50	30	40	50	200	10	1.85	2

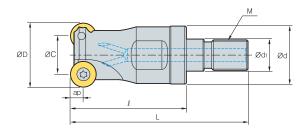
## Available inserts

	RPCT-MA			RPET-	-ML		RPN	/IT-MF		RF	PMT-M	М		RPM	W				
			ew			ew	0		new			new		5		eW			
			Cei	met						Coa	ated						Unco	oated	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
	RPCT	1606M0-MA																•	
	RPET	1606M0E-ML													•	•			
5000 type	RPMT	1606M0E-MF													•	•			
type		1606M0S-MM							•	•	•				•	•			
	RPMW	1606M0S1							•	•					•	•			E17
	RPCT	2007M0-MA																•	E18
	RPET	2007M0E-ML													•	•			
6000 type	RPMT	2007M0E-MF													•	•			
.,,,,,		2007M0S-MM							•	•	•				•	•			
	RPMW	2007M0S1							•	•					•	•			

# **E** FMR P-positive

# FMRM2500 (mw)

















• AR: -4° • RR: -4°~ 0°

(mm)

	Designation	©	ØD	øc	Ød	Ød <sub>1</sub>	Q	L	М	ар	kg
FMRM	2517HRP-M08	2	17	9	14.5	8.5	25	42	M08	4	0.03
	2521HRP-M10	3	21	13	18	10.5	30	51	M10	4	0.06
	2526HRP-M12	4	26	18	23	12.5	35	59	M12	4	0.11
	2533HRP-M16	4	33	25	29	17	40	67	M16	4	0.22
	2540HRP-M16	5	40	32	29	17	40	67	M16	4	0.26

#### Available inserts

		RPCT-MA			RI	RPET-ML rew			RPMT-MF				RPMT-MM			RPMW	1		
									new			new			new				
			Cer	met						Coa	ated						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H04	page
RPET	0803M0E-ML														•	•			
RPMT	0803M0E-MF														•	•			E17
	0803M0S-MM								•	•					•	•			E18
RPMW	0803M0E1								•	•					•	•			

# Available adaptor

	Designation	Available adaptor
FMRM	2517HRP-M08	MAT-M08
	2521HRP-M10	MAT-M10
	2526HRP-M12	MAT-M12
	2533HRP-M16	NAAT NAAC
	2540HRP-M16	MAT-M16

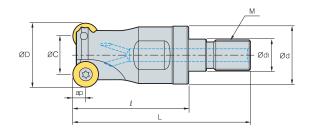
Designation : FMRM2517HRP-M08 Modular head threading measure size (M08)

Adaptor spec.: MAT-M08-020-S16S Adaptor threading measure (M08)

Specification	Screw	Wrench
Ø17 Ø21~Ø40	FTNA0305 FTNA0306	TW09S

### FMRM3000 **@W**

















• AR: -4° • RR: -1°~ 0°

	(mm)
ар	kg
5	0.10
5	0.20
5	0.22

	Designation	0	ØD	ØC	Ød	Ød <sub>1</sub>	Q	L	M	ар	kg
FMRM	3026HRP-M12	2	26	16	23	12.5	35	59	M12	5	0.10
	3033HRP-M16	3	33	23	29	17	40	67	M16	5	0.20
	3035HRP-M16	3	35	25	29	17	40	67	M16	5	0.22
	3040HRP-M16	3	40	30	29	17	40	67	M16	5	0.25
	3042HRP-M16	3	42	32	29	17	40	67	M16	5	0.27

#### Available inserts

		RPC	RPCT-MA			RPET-ML			RPMT	-MF		RPM	T-MM		RPMW				
		3	3	new			nev		6		ew	6		new			new		
			Cer	met						Coa	ated						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H 101	page
RPCT	10T3M0-MA																	•	
RPET	10T3M0E-ML														•	•			
RPMT	10T3M0E-MF														•	•			E17
	10T3M0S-MM								•	•	•				•	•			E18
RPMW	10T3M0E1								•	•					•	•			

#### Available adaptor

	Designation	Available adaptor
FMRM	3026HRP-M12	MAT-M12
	3033HRP-M16	
	3035HRP-M16	NAAT NAAC
	3040HRP-M16	MAT-M16
	3042HRP-M16	

Designation: FMRM3026HRP-M12 Modular head threading measure size (M12)

Adaptor spec.: MAT-M12-030-S25S Adaptor threading measure (M12)

Specification	Screw	Wrench
Ø26 Ø33~Ø42	FTGA03507 FTGA03508	TW15S

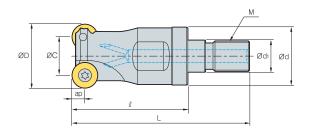




# **E** FMR P-positive

### FMRM4000 @



















	(mm)
ар	
6	0.10
6	0.21

	Designation	©	ØD	ØC	Ød	Ød <sub>1</sub>	Q	L	M	ар	kg
FMRM	4026HRP-M12	2	26	14	23	12.5	35	59	M12	6	0.10
	4033HRP-M16	3	33	21	29	17	40	67	M16	6	0.21
	4035HRP-M16	3	35	23	29	17	40	67	M16	6	0.21
	4040HRP-M16	4	40	28	29	17	40	67	M16	6	0.24
	4042HRP-M16	4	42	30	29	17	40	67	M16	6	0.25

#### Available inserts

		RPC	T-MA		RI	PET-M	L		RPMT	-MF		RPM	IT-MM		F	RPMW	1		
			3	new			new		6		eW	6		new			new		
			Cer	met						Coa	ited						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	된	page
RPCT	1204M0-MA																	•	
RPET	1204M0E-ML														•	•			
RPMT	1204M0E-MF													•	•	•			E17
	1204M0S-MM								•	•	•			•	•	•			E18
RPMW	1204M0S1								•	•	•				•	•			
	1204M0S2														•	•			

#### Available adaptor

	Designation	Available adaptor
FMRM	4026HRP-M12	MAT-M12
	4033HRP-M16	
	4035HRP-M16	NAT MAC
	4040HRP-M16	MAT-M16
	4042HRP-M16	

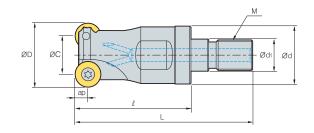
Designation : FMRM4026HRP-M12 Modular head threading measure size (M12)

Adaptor spec.: MAT-M12-030-S25S Adaptor threading measure (M12)

Specification	Screw	Wrench	
<u>Ø26</u> <u>Ø33∼Ø42</u>	FTKA0408 FTKA0410	TW15S	

### FMRM5000 **@W**

















• RR: 0°

												(mm)
	Design	ation	0	ØD	ØС	Ød	Ød <sub>1</sub>	Q	L	M	ар	kg
FMRI	M 5	040HRP-M16	2	40	24	29	17	40	67	M16	8	0.21
	5	042HRP-M16	2	42	26	29	17	40	67	M16	8	0.23

#### Available inserts

		RPCT-MA RPET-ML					RPMT	-MF		RPN	IT-MM		F	RPMW	1				
		Tew Personal Property of the Personal Property			No.	new				new			new				nev	)	
			Cer	met						Coa	ited						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	된	page
RPCT	1606M0-MA																	•	
RPET	1606M0E-ML														•	•			
RPMT	1606M0E-MF														•	•			E17 E18
	1606M0S-MM								•	•	•				•	•			E10
RPMW	1606M0S1								•	•					•	•			

#### Available adaptor

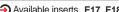
	Designation	Available adaptor
FMRM	5040HRP-M16	MAT MAC
	5042HRP-M16	MAT-M16

Designation : FMRM5040HRP-M16 Modular head threading measure size (M16)

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

#### Parts

	_			
Ø40~Ø42	FTGA0511-P	-	TW20-100	
	Screw	Wrench	Wrench	
Specification			and the second	



→ Available inserts E17, E18 → Available adaptor E401~E402



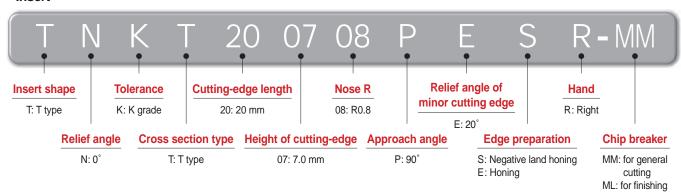
#### High depth of cut milling tool with 3 corners for perpendicularity

### Triple Mill

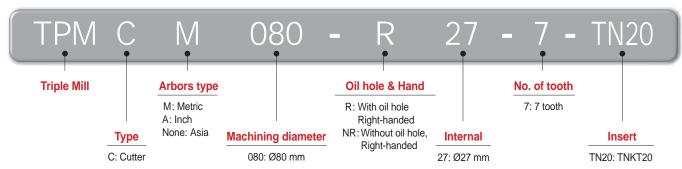
- Economical milling tool with 3 corners with positive cutting edge for high depth of cut machining
- Stable machinability in high feed machining due to enhanced chip evacuation and thicker insert
- High precision machining from less cutting load due to high helix and sharp cutting edge

#### Code system

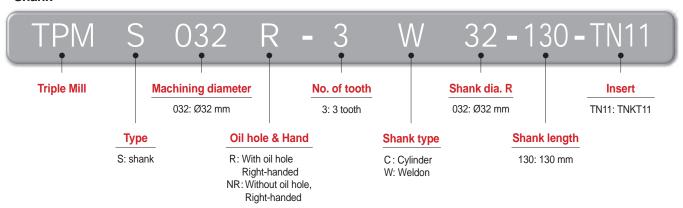
#### Insert



#### Cutter

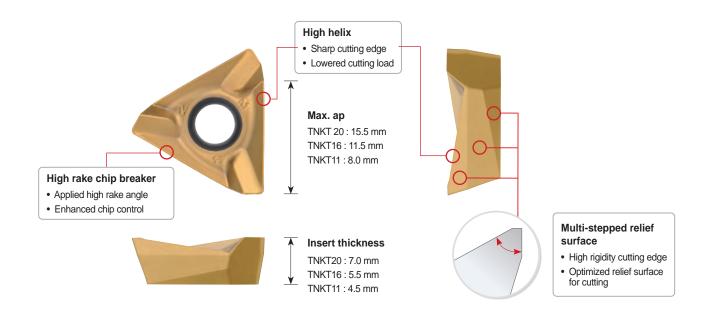


#### • Shank

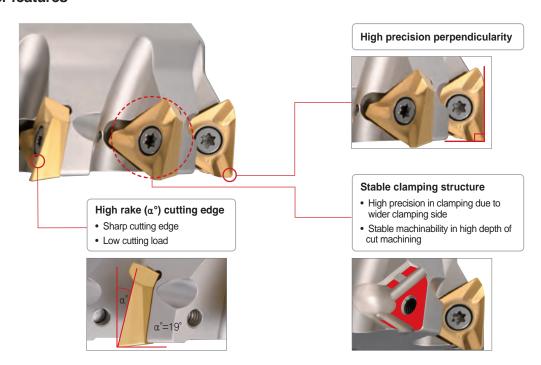


#### Insert features

- Economical insert with 3 corners due to high depth of cut cutting edge
- Lowered cutting load and enhanced chip evacuation by sharp chip breaker and high helix cutting edge
- Stable machinability even in high cutting conditions from high rigidity design



#### Cutter features





### **Technical Information for Triple Mill**

#### Recommended grade and chip breaker

( : 1st Recommendation)

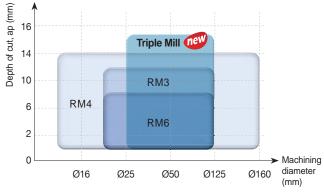
				Þ			M		K		S
C/B	Cutting edge		carbon steel/ Mild steel	_	carbon steel/ Alloy steel	Sta	inless steel		Cast iron		HRSA
		C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
ML	125	-	● PC3700 ○ PC5300 ○ PC5400	-	● PC3700 ○ PC5300 ○ PC5400	•	<ul><li>PC5300</li><li>PC5400</li><li>PC9540</li></ul>	-	● PC6510 ○ PC5300 ○ PC5400	-	○ PC5300 ○ PC5400
ММ	720	•	● PC3700 ○ PC5300 ○ PC5400	•	● PC3700 ○ PC5300 ○ PC5400	-	● PC5300 ○ PC5400 ○ PC9540	•	● PC6510 ○ PC5300 ○ PC5400	-	○ PC5300 ○ PC5400

#### Recommended cutting condition

			Cutting speed	TNK	CT11	TNK	T16	TNK	T20
V	/orkpiece	Grade	vc(m/min)	fz (mm/t)	Max. ap (mm)	fz (mm/t)	Max. ap (mm)	fz (mm/t)	Max. ap (mm)
Р	Steel	PC3700	160-270	0.25-0.1	8.0	0.25-0.1	11.5	0.25-0.1	15.5
P	Steel	PC5300	140-240	0.25-0.1	8.0	0.25-0.1	11.5	0.25-0.1	15.5
		PC5300	90-150	0.2 - 0.05	8.0	0.2-0.05	11.5	0.2-0.05	15.5
M	Stainless steel	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	PC6510	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

<sup>\*</sup> 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





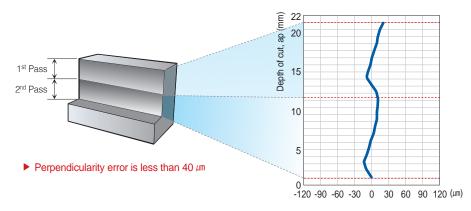
#### Performance evaluation

#### Perpendicularity

■ Workpiece Alloy steel (SCM440, HB200), 300(L) x 200(W) x 100(H)

■ Cutting conditions vc (m/min) = 200, fz (mm/t) = 0.2, ap (mm) = 12 mm x 2Passes (Total 24 mm), ae (mm) = 5, dry

■ Tools Insert TNKT200708PESR-MM (PC5300) Holder TPMCM080R-27-7-TN20



[Graph of measured perpendicularities]



**Triple Mill** 



Competitor

[Comparison picture of flank surface finish]

#### Wear resistance

■ Workpiece Alloy steel (SCM440, HB200), 300(L) x 200(W) x 100(H)

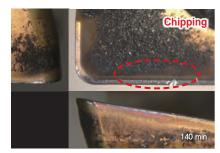
■ Cutting conditions vc (m/min) = 200, fz (mm/t) = 0.2, ap (mm) = 7, ae (mm) = 10, dry

■ Tools Insert TNKT160608PESR-MM (PC5300) Holder TPMCM063R-22-6-TN16



Triple Mill





Competitor

#### Surface finish

■ Workpiece Alloy steel (SCM440, HB200), 300(L) x 200(W) x 100(H)

■ Cutting conditions vc (m/min) = 200, fz (mm/t) = 0.2, ap (mm) = 7, ae (mm) = 10, dry

■ Tools Insert TNKT160608PESR-MM (PC5300) Holder TPMCM063R-22-6-TN16



**Triple Mill** 

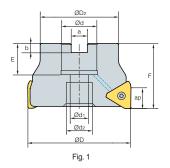


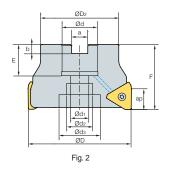
. Ra: 1,751 µm Rmax: 3,825 µm

Competitor

### TPMCM-TN16















• AR: 10° • RR: -11°~-13.5°

(mm)

	Designation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	kg	Fig.	Available insert
<b>TPMCM</b>	050R-22-4-TN16	4	50	42	22	11	18	-	10.4	6.3	21	40	11.5	0.26	1	
	050R-22-5-TN16	5	50	42	22	11	18	-	10.4	6.3	21	40	11.5	0.26	1	
	063R-22-4-TN16	4	63	50	22	11	18	-	10.4	6.3	21	40	11.5	0.50	1	
	063R-22-6-TN16	6	63	50	22	11	18	-	10.4	6.3	21	40	11.5	0.48	1	
	080R-27-6-TN16	6	80	60	27	14	20	-	12.4	7	24	50	11.5	0.99	1	TNKT16
	080R-27-8-TN16	8	80	60	27	14	20	-	12.4	7	24	50	11.5	0.99	1	INKIIO
	100R-32-8-TN16	8	100	70	32	18	28	45	14.4	8	28	63	11.5	1.85	2	
	100R-32-10-TN16	10	100	70	32	18	28	45	14.4	8	28	63	11.5	1.83	2	
	125R-40-12-TN16	12	125	90	40	22	32	54	16.4	9	30	63	11.5	3.12	2	
	125R-40-14-TN16	14	125	90	40	22	32	54	16.4	9	30	63	11.5	3.10	2	

#### Available inserts

TNKT-ML TNKT-MM





		Cer	met						C	oate	d						
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	page
TNKT	160608PEER-ML										•				•		F20
	160608PESR-MM										•	•			•		E28

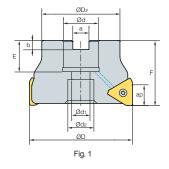
#### Available arbors

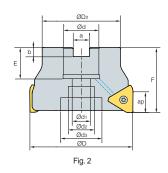
	Designation	Ød	NC arbors
TPMCM	050R-22-□-TN□□	22	BT□□-FMC22-□□
	063R-22-□-TN□□	22	DIFIVICZZ
	080R-27-□-TN□□	27	BT -FMC27-
	100R-32-□-TN□□	32	BT -FMC32-
	125R-40-□-TN□□	40	BT□□-FMC40-□□

Specification			
	Screw	Wrench	
Ø50~Ø125	FTKA0410	TW15S	

### **TPMCM-TN20**















• AR: 10° • RR: -10.5°~-14°

(mm)

I	Designation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	kg	Fig.	Available insert
TPMCM	063R-22-5-TN20	5	63	50	22	11	18	-	10.4	6.3	21	50	15.5	0.57	1	
	063R-22-6-TN20	6	63	50	22	11	18	-	10.4	6.3	21	50	15.5	0.58	1	
	080R-27-5-TN20	5	80	60	27	14	20	-	12.4	7	24	50	15.5	0.92	1	
	080R-27-7-TN20	7	80	60	27	14	20	-	12.4	7	24	50	15.5	0.86	1	TNKT20
	100R-32-7-TN20	7	100	70	32	18	28	45	14.4	8	28	63	15.5	1.79	2	TINKIZU
	100R-32-9-TN20	9	100	70	32	18	28	45	14.4	8	28	63	15.5	1.68	2	
	125R-40-8-TN20	8	125	90	40	22	32	52	16.4	9	30	63	15.5	3.08	2	
	125R-40-11-TN20	11	125	90	40	22	32	52	16.4	9	30	63	15.5	2.99	2	

#### Available inserts

TNKT-ML TNKT-MM





		Cer	met						C	oate	d						
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	page
TNKT	200708PEER-ML										•			•	•		F20
	200708PESR-MM										•	•			•		E28

#### Available arbors

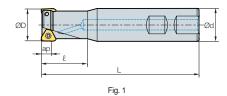
	Designation	Ød	NC arbors
TPMCM	063R-22-□-TN□□	22	BT□□-FMC22-□□
	080R-27-□-TN□□	27	BT□□-FMC27-□□
	100R-32-□-TN□□	32	BT□□-FMC32-□□
	125R-40-□-TN□□	40	BT□□-FMC40-□□

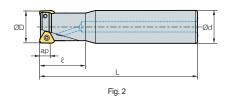
Specification	Screw	Wrench	
Ø63~Ø125	FTGA0511-P	TW20-100	



### TPMS-TN11















• AR: 8°~10° • RR: -14°~-15°

(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	√ kg \	Fig.	Available insert
TPMS	025R-2W25-120-TN11	2	25	25	35	120	8	0.37	1	
	025R-2C25-200-TN11	2	25	25	35	200	8	0.65	2	
	025R-3W25-120-TN11	3	25	25	35	120	8	0.36	1	
	025R-3C25-200-TN11	3	25	25	35	200	8	0.64	2	
	032R-2W32-130-TN11	2	32	32	40	130	8	0.71	1	
	032R-2C32-200-TN11	2	32	32	40	200	8	1.12	2	TNKT11
	032R-3W32-130-TN11	3	32	32	40	130	8	0.70	1	IINKIIII
	032R-3C32-200-TN11	3	32	32	40	200	8	1.14	2	
	032R-4W32-130-TN11	4	32	32	40	130	8	0.70	1	
	032R-4C32-200-TN11	4	32	32	40	200	8	1.11	2	
	040R-4W40-130-TN11	4	40	40	40	130	8	1.12	1	
	040R-5W40-130-TN11	5	40	40	40	130	8	1.11	1	

#### Available inserts

TNKT-ML TNKT-MM



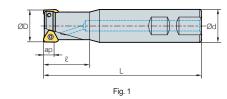


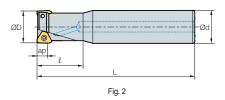
		Cer	met						C	oate	d						
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	page
TNKT	110508PEER-ML										•			•	•		F20
	110508PESR-MM										•	•			•		E28

Specification			
	Screw	Wrench	
Ø25~Ø40	FTKA0307	TW09S	

### TPMS-TN16















(mm)

										, ,
	Designation	0	ØD	Ød	Q	L	ар	kg	Fig.	Available insert
TPMS	032R-2W32-130-TN16	2	32	32	40	130	11.5	0.68	1	
	032R-2C32-200-TN16	2	32	32	40	200	11.5	1.10	2	
	040R-3W40-130-TN16	3	40	40	40	130	11.5	1.09	1	TNKT16
	040R-3C40-200-TN16	3	40	40	40	200	11.5	1.75	2	
	040R-4W40-130-TN16	4	40	40	40	130	11.5	1.08	1	

#### Available inserts

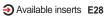
TNKT-ML TNKT-MM





		Cer	met						C	oate	d						
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2010	PC2015	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	page
TNKT	160608PEER-ML										•				•		F20
	160608PESR-MM										•	•			•		E28

Specification	Screw Wrench	
Ø32~Ø40	FTKA0410 TW15S	





### Technical Information for HFMD

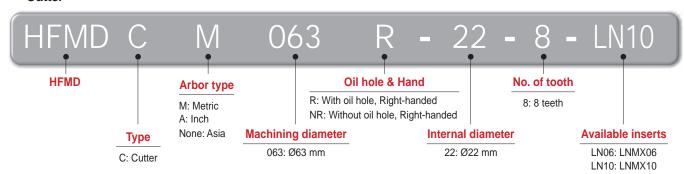
#### High Feed Milling Tool with 4 Corners for Small Diameter



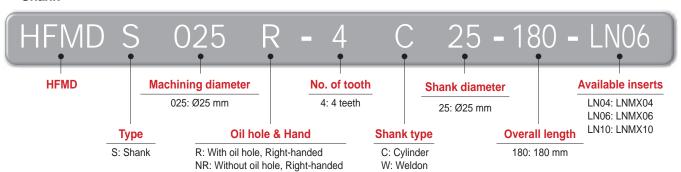
- Economical 4-corner double sided insert
- Increased productivity due to thinner and elongated shape of the insert which makes fine pitch available
- Insert designed for low cutting resistance with high rake angle and helix angle which reduces cutting load
- Inhibiting chipping and breakage due to concave clamping system and stronger screw

#### Code system

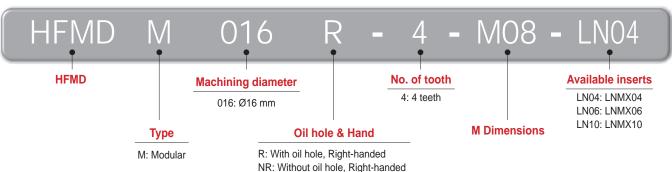
#### Cutter



#### Shank



#### Modular



### E

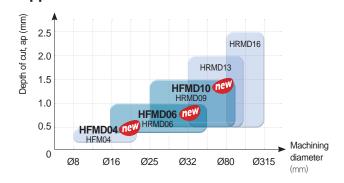
#### Features

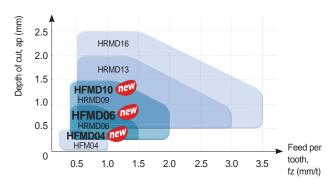


#### Features of chip breaker

I	nsert	Cutting-edge	Uses	Features
ML	6	220	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
ММ		15	For multi-purpose	Available for most cutting area with its exclusive design suitable for general high feed machining

### Application area







### E Technical Information for HFMD

### Recommended cutting condition

※ Recommended chip breaker: ●1st ○2nd











<b>A</b>

	V	orkpiece				LNN	1X04	LNN	1X06	LNN	1X10		Availab	ole chip l	breaker
ISO	Workpiece materials	KS	HB (H <sub>R</sub> C)	Grade	vc (m/min)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	ae	ML	MF	мм
	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	0	•	
	Carbon ste	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	0	•	
	Alloy stee	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		•	0
		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		0	•
Р		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		0	•
	Pre- hardened steel	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		0	•
		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		0	•
		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		0	•
	Alloy tool st	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		0	•
M	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	•	0	
K	Grey cast iro Ductile cas iron		Tensile Strength Over 450Mpa	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		•	0
	Fe serie	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	•	0	
S	Ni or (		- (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	0	•	
	Titanium	Ti-6AL-4V	- (40-45)	PC9540 (PC5300)	30-50	08-0.3	0.2-0.3	1.0-0.3	0.2-0.6	1.2-0.3	0.3-0.9	0.7D-0.1D	•	0	

#### Performance evaluation

#### Carbon steel (SM45C, HB200)

■ Workpiece Steel rectangular tube (300 x 200 x 100)

■ Cutting conditions vc (m/min) = 200, fz (mm/t) = 1.2,

ap (mm) = 0.8, ae (mm) = 20, dry

■ Tools Insert LNMX060310R-MF (PC5300) Holder HFMDS032R-5C32-200-LN06 (cm³) remuval amount 4400 Material **HFMD** Competitor

■ Test result



**HFMD** 



Competitor

- Material removal rate Q (cm<sup>3</sup>/min): 191.0
- Cutting time (min): 75.4

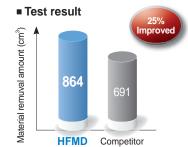
#### Pre-hardened steel (KP4M, HRC30)

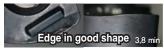
■ Workpiece Steel rectangular tube (300 x 200 x 100)

■ Cutting conditions vc (m/min) = 160, fz (mm/t) = 1.2,ap (mm) = 1.2, ae (mm) = 20, dry

■ Tools Insert LNMX100412R-MF (PC5300)

Holder HFMDS032R-4C32-200-LN10





**HFMD** 



Competitor

- Material removal rate Q (cm³/min): 183.3
- Cutting time (min): 4.7

#### Alloy tool steel (STD11, HRC40-45)

■ Workpiece Steel rectangular tube (300 x 200 x 100)

■ Cutting conditions vc (m/min) = 160, fz (mm/t) = 1.2,

ap (mm) = 0.9, ae (mm) = 20, dry

■ Tools Insert LNMX100412R-MF (PC2510)

Holder HFMDS032R-4C32-200-LN10

### ■ Test result Material remuval amount (cm³) 181 **HFMD** Competitor



- Competitor
- Material removal rate Q (cm3/min): 91.7
- Cutting time (min): 2.0

#### Corner R programming

O <sub>Ver cut</sub>	
Comer R programming	
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San and the san an	

 Corner R	programming

					(mm)
	Corner R	Cutting c	onditions		
Insert	programming	Nose R	Мах. ар	Over Cut	Uncut
	R0.8			0	0.27
LNMX040205R-ML LNMX040205R-MM	R0.9 (Standard)	0.5	0.5	0	0.24
	R1.0			0.01	0.22
LNMX060310R-ML	R1.5			0	0.41
LNMX060310R-MF	R1.6 (Standard)	1.0	1.0	0	0.41
LNMX060310R-MM	R2.0			0.06	0.38
LNMX100412R-ML	R2.0			0	0.84
LNMX100412R-MF	R2.5 (Standard)	1.2	1.5	0	0.60
LNMX100412R-MM	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
- $\bullet$  To prevent overcut, you will need to complete a CNC program considering the above overcut



# E Technical Information for HFMD

#### Ramping and helical cutting

# Ramping Lmin Direction

# ØDHmax ØDHmin

**Helical cutting** 

(mm)

		Depth of	Rampir	ng		Blind hole he	elical cutting		Thru hole hel	ical cutting
Designation	Tool dia. ØD	cut ap	Max ramping angle a (°)	Lmin	Max diameter ØDHmax	Max pitch	Min diameter ØDHmin	Max pitch	Min diameter ØDHmin	Max pitch
	8	0.4	0.5	45	12	0.2	10	0.2	9	0.2
	10	0.4	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
LNMX04	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
	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
LNMX06	30		1.1	51	58	1.0	50	1.0	48	1.0
LINIVIAUU	32	1.0	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
	25		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
LNMX10	40	1.5	1.5	58	72	1.5	65	1.5	62	1.5
LINIVIA IU	42	1.5	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	1	0.8	107	124	1.5	117	1.5	114	1.5
	80	1	0.6	133	152	1.5	145	1.5	142	1.5
		-	0.5	171	192	1.5	185	1.5	182	1.5



<sup>•</sup> When helical milling, Max. pitch, DHmax should be lower than max. depth of cut, ap.

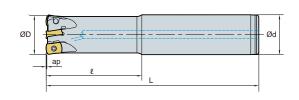
- Lmin = ap/tan ( $\alpha$ °) (mm)
- Lmin: Min. length of ramping
- ap: Depth of cut
- $\bullet$   $\alpha^{\circ} :$  Max. rake angle in ramping



<sup>•</sup> When ramping, the depth of cut should be lower than max. depth of cut, ap.

### HFMDS-LN04 rew

















(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	kg
HFMDS	008NR-1C08-080-LN04	1	8	8	20	80	0.4	0.03
	008NR-1C10-100-LN04	1	8	10	20	100	0.4	0.05
	010NR-2C08-080-LN04	2	10	8	20	80	0.4	0.03
	010NR-2C10-100-LN04	2	10	10	20	100	0.4	0.06
	010NR-2C10-150-LN04	2	10	10	40	150	0.4	0.08
	011NR-2C10-100-LN04	2	11	10	20	100	0.5	0.06
	011NR-2C10-150-LN04	2	11	10	20	150	0.5	0.09
	008R-1C08-080-LN04	1	8	8	20	80	0.5	0.02
	008R-1C10-100-LN04	1	8	10	20	100	0.5	0.05
	010R-2C08-080-LN04	2	10	8	20	80	0.4	0.03
	010R-2C10-080-LN04	2	10	10	35	80	0.4	0.05
	010R-2C10-100-LN04	2	10	10	20	100	0.4	0.05
	010R-2C10-150-LN04	2	10	10	40	150	0.4	0.07
	011R-2C10-100-LN04	2	11	10	20	100	0.5	0.05
	011R-2C10-150-LN04	2	11	10	20	150	0.5	0.08
	012R-3C12-100-LN04	3	12	12	50	100	0.5	0.07
	012R-3C12-105-LN04	3	12	12	20	105	0.5	0.07
	012R-3C12-150-LN04	3	12	12	40	150	0.5	0.11

#### Available inserts

040205R-ML

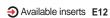
040205R-MM

| Cermet | Coated | Uncoated | Page |

#### Parts

LNMX

Specification		
	Screw	Wrench
Ø8~Ø12	FTKA01844-A	TW06S-A

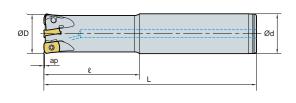


E12



### HFMDS-LN04 W

















• AR: -8° • RR: -14°~-13°

(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	∑ kg \
HFMDS	013R-3C12-100-LN04	3	13	12	20	100	0.5	0.08
	013R-3C12-120-LN04	3	13	12	20	120	0.5	0.09
	013R-3C12-150-LN04	3	13	12	20	150	0.5	0.12
	016R-4C16-100-LN04	4	16	16	50	100	0.5	0.13
	016R-4C16-120-LN04	4	16	16	70	120	0.5	0.20
	016R-4C16-150-LN04	4	16	16	80	150	0.5	0.20
	016R-4C16-200-LN04	4	16	16	120	200	0.5	0.26
	017R-4C16-100-LN04	4	17	16	20	100	0.5	0.14
	017R-4C16-150-LN04	4	17	16	20	150	0.5	0.20
	017R-4C16-200-LN04	4	17	16	20	200	0.5	0.29
	020R-5C20-100-LN04	5	20	20	20	100	0.5	0.22
	020R-5C20-150-LN04	5	20	20	40	150	0.5	0.30
	020R-5C20-200-LN04	5	20	20	80	200	0.5	0.40
	021R-5C20-100-LN04	5	21	20	20	100	0.5	0.22
	021R-5C20-150-LN04	5	21	20	20	150	0.5	0.30
	021R-5C20-200-LN04	5	21	20	20	200	0.5	0.46

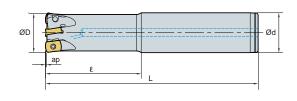
#### Available inserts

						ı	LNMX-	-ML		LN	IMX-M	IM							
							Ş												
		Cer	met						C	Coate	d						Unc	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
LNMX	040205R-ML														•	•			E12
	040205R-MM									•	•				•	•			E12



### HFMDS-LN06

















• AR: -9° • RR: -14°~-13°

(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	kg
HFMDS	016R-2C16-100-LN06	2	16	16	30	100	0.7	0.13
	016R-2C16-150-LN06	2	16	16	50	150	0.7	0.19
	017R-2C16-100-LN06	2	17	16	30	100	1.0	0.13
	017R-2C16-150-LN06	2	17	16	40	150	1.0	0.20
	017R-2C16-200-LN06	2	17	16	40	200	1.0	0.27
	018R-2C16-100-LN06	2	18	16	40	100	1.0	0.14
	018R-2C16-160-LN06	2	18	16	40	160	1.0	0.18
	018R-2C16-200-LN06	2	18	16	40	200	1.0	0.28
	019R-2C16-100-LN06	2	19	16	40	100	1.0	0.15
	019R-2C16-160-LN06	2	19	16	40	160	1.0	0.19
	019R-2C16-200-LN06	2	19	16	40	200	1.0	0.29
	020R-3C20-100-LN06	3	20	20	40	100	1.0	0.20
	020R-3C20-130-LN06	3	20	20	50	130	1.0	0.26
	020R-3C20-160-LN06	3	20	20	80	160	1.0	0.31
	020R-3C20-200-LN06	3	20	20	120	200	1.0	0.40
	021R-3C20-100-LN06	3	21	20	30	100	1.0	0.21
	021R-3C20-130-LN06	3	21	20	40	130	1.0	0.27
	021R-3C20-160-LN06	3	21	20	40	160	1.0	0.34
	021R-3C20-200-LN06	3	21	20	40	200	1.0	0.42

#### Available inserts

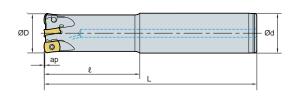
					LNI	MX-ML	-	L	NMX-I	ИF		LNMX	C-MM						
					-	5		*				5							
		Cer	met						C	coate	d						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
LNMX	060310R-ML														•	•			
	060310R-MF									•	•				•	•			E12
	060310R-MM									•	•				•	•			

Wrench		Specification
TW09S	FTNA0306	Ø16~Ø21



### HFMDS-LN06

















• AR: -9° • RR: -12°~-10°

(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	kg
HFMDS	025R-4C25-100-LN06	4	25	25	40	100	1.0	0.33
	025R-4C25-140-LN06	4	25	25	60	140	1.0	0.46
	025R-4C25-180-LN06	4	25	25	100	180	1.0	0.58
	025R-4C25-250-LN06	4	25	25	150	250	1.0	0.67
	026R-4C25-100-LN06	4	26	25	30	100	1.0	0.34
	026R-4C25-140-LN06	4	26	25	40	140	1.0	0.48
	026R-4C25-180-LN06	4	26	25	40	180	1.0	0.63
	026R-4C25-250-LN06	4	26	25	40	250	1.0	0.72
	032R-5C32-150-LN06	5	32	32	70	150	1.0	0.82
	032R-5C32-200-LN06	5	32	32	120	200	1.0	1.08
	032R-5C32-250-LN06	5	32	32	150	250	1.0	1.20
	033R-5C32-150-LN06	5	33	32	40	150	1.0	0.82
	033R-5C32-200-LN06	5	33	32	40	200	1.0	1.08
	033R-5C32-250-LN06	5	33	32	40	250	1.0	1.20
	035R-5C32-150-LN06	5	35	32	40	150	1.0	0.87
	035R-5C32-200-LN06	5	35	32	40	200	1.0	1.13
	035R-5C32-250-LN06	5	35	32	40	250	1.0	1.25
	040R-6C32-150-LN06	6	40	32	40	150	1.0	0.97
	040R-6C32-200-LN06	6	40	32	40	200	1.0	1.28
	040R-6C32-250-LN06	6	40	32	40	250	1.0	1.38

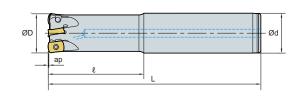
#### Available inserts

					LNI	MX-ML	-	L	NMX-I	ΝF		LNM	(-MM						
					No.	5		*	Š			5							
		Cer	met						C	Coate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
LNMX	060310R-ML														•	•			
	060310R-MF									•	•				•	•			E12
	060310R-MM									•	•				•	•			

Specification			
	Screw	Wrench	
Ø25~Ø40	FTNA0306	TW09S	

### HFMDS-LN10 000













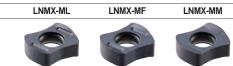




(mm)

	Designation	0	ØD	Ød	Q	L	ар	∑ kg \
HFMDS	025R-2C25-150-LN10	2	25	25	70	150	1.5	0.46
	025R-2C25-200-LN10	2	25	25	100	200	1.5	0.60
	025R-3C25-150-LN10	3	25	25	70	150	1.5	0.45
	025R-3C25-200-LN10	3	25	25	100	200	1.5	0.60
	026R-3C25-150-LN10	3	26	25	40	150	1.5	0.49
	026R-3C25-200-LN10	3	26	25	40	200	1.5	0.68
	030R-3C32-150-LN10	3	30	32	70	150	1.5	0.71
	030R-3C32-200-LN10	3	30	32	100	200	1.5	0.94
	032R-4C32-150-LN10	4	32	32	70	150	1.5	0.75
	032R-4C32-200-LN10	4	32	32	100	200	1.5	1.00
	032R-4C32-250-LN10	4	32	32	150	250	1.5	1.20
	033R-4C32-150-LN10	4	33	32	40	150	1.5	0.80
	033R-4C32-200-LN10	4	33	32	40	200	1.5	1.00
	033R-4C32-250-LN10	4	33	32	40	250	1.5	1.40
	035R-4C32-150-LN10	4	35	32	40	150	1.5	0.85
	035R-4C32-200-LN10	4	35	32	40	200	1.5	1.10
	035R-4C32-250-LN10	4	35	32	40	250	1.5	1.44
	040R-4C32-150-LN10	4	40	32	40	150	1.5	0.89
	040R-4C32-200-LN10	4	40	32	40	200	1.5	1.20
	040R-4C32-250-LN10	4	40	32	40	250	1.5	1.48
	040R-5C32-150-LN10	5	40	32	40	150	1.5	0.89
	040R-5C32-200-LN10	5	40	32	40	200	1.5	1.19
	040R-5C32-250-LN10	5	40	32	40	250	1.5	1.48
	042R-5C32-150-LN10	5	42	32	40	150	1.5	0.92
	042R-5C32-200-LN10	5	42	32	40	200	1.5	1.23
	042R-5C32-250-LN10	5	42	32	40	250	1.5	1.51

#### Available inserts

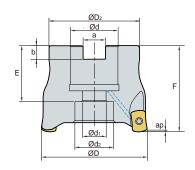


		Cer	met	Coated Uncoated															
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	Н01	page
LNMX	100412R-ML													•	•	•			
	100412R-MF									•	•			•	•	•			E12
	100412R-MM									•	•				•	•			



### HFMDCM-LN06



















(mm)

	Designation	<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	ар	kg
HFMDCM	032R-16-5-LN06	5	32	30	16	9	13.5	8.4	5.6	19	40	1.0	0.12
	040R-16-6-LN06	6	40	34	16	9	14	8.4	5.6	19	40	1.0	0.21
	050R-22-6-LN06	6	50	42	22	11	18	10.4	6.3	21	40	1.0	0.32
	050R-22-7-LN06	7	50	42	22	11	18	10.4	6.3	21	40	1.0	0.32
	050R-22-8-LN06	8	50	42	22	11	18	10.4	6.3	21	40	1.0	0.32
	052R-22-7-LN06	7	52	42	22	11	18	10.4	6.3	21	40	1.0	0.34
	052R-22-8-LN06	8	52	42	22	11	18	10.4	6.3	21	40	1.0	0.34
	063R-22-8-LN06	8	63	49	22	11	18	10.4	6.3	21	40	1.0	0.53
	063R-22-9-LN06	9	63	49	22	11	18	10.4	6.3	21	40	1.0	0.53
	066R-22-8-LN06	8	66	49	22	11	18	10.4	6.3	21	40	1.0	0.57
	066R-22-9-LN06	9	66	49	22	11	18	10.4	6.3	21	40	1.0	0.57

#### Available inserts

LNMX-ML	LNMX-MF	LNMX-MM	

	Cer	met	Coated Uncoated																
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
LNMX	060310R-ML														•	•			
	060310R-MF									•	•				•	•			E12
	060310R-MM									•	•				•	•			

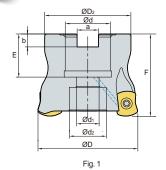
#### Available arbors

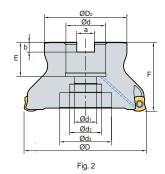
	Designation	Ød	Available arbors
HFMDCM	032R-16-□-LN06	Ø32	BT -FMC16-
	040R-16-□-LN06	Ø40	
	050R-22-□-LN06	Ø50	BT -FMC22-

	Designation	Ød	Available arbors
HFMDCM	052R-22-□-LN06	Ø52	
	063R-22-□-LN06	Ø63	BT□□-FMC22-□□
	066R-22-□-LN06	Ø66	

## HFMDC(M)-LN10





















(mm)

	Designation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	Е	F	ар	\( \text{kg} \)	Fig.
HFMDCM	040R-16-4-LN10	4	40	38	16	9	14		8.4	5.6	19	40	1.5	0.19	1
TH MIDOM	040R-16-5-LN10	5	40	38	16	9	14	-	8.4	5.6	19	40	1.5	0.19	1
	042R-16-4-LN10	4	42	38	16	9	14	-	8.4	5.6	19	40	1.5	0.20	1
	042R-16-5-LN10	5	42	38	16	9	14	-	8.4	5.6	19	40	1.5	0.20	1
	050R-22-6-LN10	6	50	42	22	11	18	-	10.4	6.3	21	40	1.5	0.26	1
	050R-22-7-LN10	7	50	42	22	11	18	-	10.4	6.3	21	40	1.5	0.26	1
	052R-22-6-LN10	6	52	42	22	11	18	-	10.4	6.3	21	40	1.5	0.27	1
	052R-22-7-LN10	7	52	42	22	11	18	-	10.4	6.3	21	40	1.5	0.27	1
	063R-22-7-LN10	7	63	49	22	11	18	-	10.4	6.3	21	40	1.5	0.47	1
	063R-22-8-LN10	8	63	49	22	11	18	-	10.4	6.3	21	40	1.5	0.47	1
	066R-22-7-LN10	7	66	49	22	11	18	-	10.4	6.3	21	40	1.5	0.49	1
	066R-22-8-LN10	8	66	49	22	11	18	-	10.4	6.3	21	40	1.5	0.50	1
	080R-27-9-LN10	9	80	60	27	14	25	35	12.4	7.0	24	50	1.5	0.84	2
	080R-27-10-LN10	10	80	60	27	14	25	35	12.4	7.0	24	50	1.5	0.84	2
	100R-32-10-LN10	10	100	67	32	18	26	42	14.4	8.0	28	56	1.5	1.48	2
	100R-32-11-LN10	11	100	67	32	18	26	42	14.4	8.0	28	56	1.5	1.48	2
	100R-32-12-LN10	12	100	67	32	18	26	42	14.4	8.0	28	56	1.5	1.48	2
HFMDC	080R-25.4-9-LN10	9	80	60	25.4	14	25	35	9.5	6	25	50	1.5	0.84	2
	080R-25.4-10-LN10	10	80	60	25.4	14	25	35	9.5	6	25	50	1.5	0.84	2
	100R-31.75-10-LN10	10	100	67	31.75	18	26	42	12.7	8	32	56	1.5	1.48	2
	100R-31.75-11-LN10	11	100	67	31.75	18	26	42	12.7	8	32	56	1.5	1.48	2
	100R-31.75-12-LN10	12	100	67	31.75	18	26	42	12.7	8	32	56	1.5	1.48	2

#### Available inserts

LNMX-ML

LNMX-MF

LNMX-MM







		Cer	met	Coated Uncoated															
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	된	page
LNMX	100412R-ML													•	•	•			
	100412R-MF									•	•			•	•	•			E12
	100412R-MM									•	•				•	•			

#### Available arbors

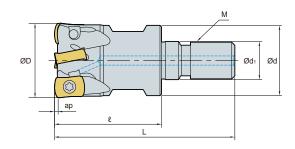
	Designation	Ød	Available arbors
HFMDCM	040R-16-□-LN10	Ø40	BT -FMC16-
	042R-16-□-LN10	Ø42	
	050R-22-□-LN10	Ø50	
	052R-22-□-LN10	Ø52	BT□□-FMC22-□□
	063R-22-□-LN10	Ø63	

	Designation	Ød	Available arbors
HFMDCM	066R-22-□-LN10	Ø66	BT□□-FMC22-□□
	080R-27-□-LN10	Ø80	BT□□-FMC27-□□
	100R-32-□-LN10	Ø100	BT□□-FMC32-□□
HFMDC	080R-25.4-□-LN10	Ø80	BT□□-FMA25.4-□□
	100R-31.75-□-LN10	Ø100	BT□□-FMA31.75-□□



### HFMDM-LN04 W

















• AR: -8° • RR: -16°~-10°

(mm)

	Designation	(i)	ØD	Ød	Ød1	Q	L	M	ар	kg
HFMDM	010R-2-M06-LN04	2	10	9.5	6.5	22	37	M6	0.4	0.01
	011R-2-M06-LN04	2	11	11	6.5	22	37	M6	0.5	0.01
	012R-3-M06-LN04	3	12	11	6.5	22	37	M6	0.5	0.01
	013R-3-M06-LN04	3	13	11	6.5	22	37	M6	0.5	0.02
	016R-4-M08-LN04	4	16	14.5	8.5	22	39	M8	0.5	0.03
	017R-4-M08-LN04	4	17	14.5	8.5	22	39	M8	0.5	0.03
	020R-5-M10-LN04	5	20	18	10.5	30	51	M10	0.5	0.06
	025R-7-M12-LN04	7	25	23	12.5	30	54	M12	0.5	0.1
	032R-8-M16-LN04	8	32	29	17	35	62	M16	0.5	0.2
	033R-8-M16-LN04	8	33	29	17	35	62	M16	0.5	0.2
	035R-9-M16-LN04	9	35	29	17	35	62	M16	0.5	0.21

#### Available inserts

LNMX-ML LNMX-MM



		Cer	met						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
LNMX	040205R-ML														•	•			F40
	040205R-MM									•	•				•	•			E12

#### Available adaptor

	Designation	Available adaptor
HFMDM	010R-2-M06-LN04	
	011R-2-M06-LN04	MAT-M06
	012R-3-M06-LN04	IVIA I -IVIUO
	013R-3-M06-LN04	
	016R-4-M08-LN04	MAT-M08
	017R-4-M08-LN04	IVIA I-IVIUO

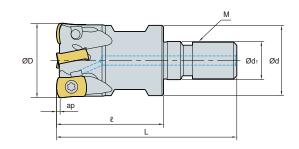
	Designation	Available adaptor
HFMDM	020R-5-M10-LN04	MAT-M10
	025R-7-M12-LN04	MAT-M12
	032R-8-M16-LN04	
	033R-8-M16-LN04	MAT-M16
	035R-8-M16-LN04	

Designation: HFMDM016R-4-M08-LN04 Modular head threading measure size (M08)

Adaptor spec.: MAT-M08-040-S16T Adaptor threading measure (M08)

### HFMDM-LN06

















- AR: -9°
- RR: -15°~-10°

(mm)

	Designation	0	ØD	Ød	Ød1	Q	L	M	ар	kg
HFMDM	016R-2-M08-LN06	2	16	14.5	8.5	25	42	M08	0.7	0.03
	017R-2-M08-LN06	2	17	14.5	8.5	25	42	M08	1.0	0.03
	018R-2-M08-LN06	2	18	14.5	8.5	25	42	M08	1.0	0.04
	019R-2-M08-LN06	2	19	14.5	8.5	25	42	M08	1.0	0.05
	020R-3-M10-LN06	3	20	18	10.5	30	51	M10	1.0	0.06
	021R-3-M10-LN06	3	21	18	10.5	30	51	M10	1.0	0.07
	025R-4-M12-LN06	4	25	23	12.5	35	59	M12	1.0	0.10
	026R-4-M12-LN06	4	26	23	12.5	35	59	M12	1.0	0.10
	032R-5-M16-LN06	5	32	29	17	40	67	M16	1.0	0.20
	033R-5-M16-LN06	5	33	29	17	40	67	M16	1.0	0.20
	035R-5-M16-LN06	5	35	29	17	40	67	M16	1.0	0.21
	040R-6-M16-LN06	6	40	29	17	40	67	M16	1.0	0.24
	042R-6-M16-LN06	6	42	29	17	40	67	M16	1.0	0.25

#### Available inserts

LNMX-MF

					-														
		Cer	met						C	oate	d						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
LNMX	060310R-ML														•	•			
	060310R-MF									•	•				•	•			E12
	060310R-MM									•	•				•	•			

#### Available adaptor

	Designation	Available adaptor
HFMDM	016R-□-M08-LN06	
	017R-□-M08-LN06	MAT-M08
	018RM08-LN06	IVIAT-IVIUO
	019R-□-M08-LN06	
	020RM10-LN06	MAT-M10
	021R-□-M10-LN06	IVIAT-IVITO
	025P- M12-LN06	MAT-M12

	Designation	Available adaptor
HFMDM	026R-□-M12-LN06	MAT-M12
	030R-□-M16-LN06	
	032R-□-M16-LN06	
	033R-□-M16-LN06	MAT-M16
	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 (M06)

Specification	Screw	Wrench	
Ø16~Ø42	FTNA0306	TW09S	

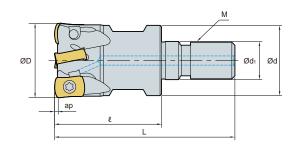






### HFMDM-LN10 W

















• AR: -9° • RR: -16°~-13°

(mm)

	Designation	(i)	ØD	Ød	Ød1	Q	L	M	ар	kg
HFMDM	025R-2-M12-LN10	2	25	23	12.5	35	59	M12	1.5	0.10
	025R-3-M12-LN10	3	25	23	12.5	35	59	M12	1.5	0.10
	026R-3-M12-LN10	3	26	23	12.5	35	59	M12	1.5	0.10
	030R-4-M16-LN10	4	30	29	17.0	40	67	M16	1.5	0.17
	032R-3-M16-LN10	3	32	29	17.0	40	67	M16	1.5	0.19
	032R-4-M16-LN10	4	32	29	17.0	40	67	M16	1.5	0.19
	033R-4-M16-LN10	4	33	29	17.0	40	67	M16	1.5	0.19
	035R-3-M16-LN10	3	35	29	17.0	40	67	M16	1.5	0.20
	035R-4-M16-LN10	4	35	29	17.0	40	67	M16	1.5	0.20
	040R-4-M16-LN10	4	40	29	17.0	40	67	M16	1.5	0.22
	040R-5-M16-LN10	5	40	29	17.0	40	67	M16	1.5	0.22
	042R-4-M16-LN10	4	42	29	17.0	40	67	M16	1.5	0.25
	042R-5-M16-LN10	5	42	29	17.0	40	67	M16	1.5	0.25

#### Available inserts

LNMX-ML LNMX-MF LNMX-MM



					_	_			_			_							
		Cer	met						C	oate	d						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	H01	page
LNMX	100412R-ML													•	•	•			
	100412R-MF									•	•			•	•	•			E12
	100412R-MM									•	•				•	•			

#### Available adaptor

	Designation	Available adaptor
HFMDM	025R-□-M12-LN10	MAT-M12
	026R-□-M12-LN10	IVIAT-IVITZ
	030R-□-M16-LN10	MAT-M16
	032R M16-LN10	IVIA I -IVI I O

	Designation	Available adaptor
HFMDM	033R-□-M16-LN10	
	035R-□-M16-LN10	MAT-M16
	040R-□-M16-LN10	IVIAT-IVITO
	042RM16-I N10	1

Designation : HFMDM035R- - M16-LN10 Modular head threading measure size (M16)

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

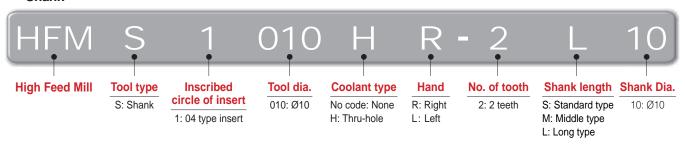
#### Stable machining, high efficiency milling tools for small diameter machining



- 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)



#### Relief angle

- 11, 13 double relief angle increase rigidity and prevent interference
- Major cutting-edge
- Improved sharpness of principle edge
- Improved toughness of corner edge

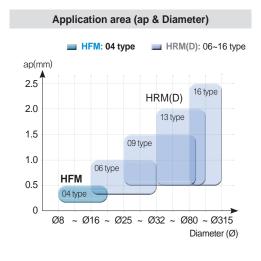


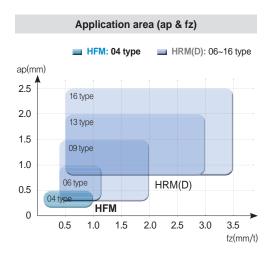
### **Technical Information for HFM**

#### Features of chip breaker

In	sert	Cutting-edge	Uses	Features
MF	MF		Light cutting Titanium & Inconel machining	Low cutting resistance C/B, suitable for light cutting
None C/B			Super hard material machining	High toughness shape, suitable for hard die steel cutting

#### Application area





#### Recommended cutting condition

※ Recommended chip breaker: ●1st ○2nd

|--|--|

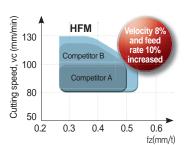
			Workpi	ece		НВ			Cutting c	onditions		Chip breaker		
,	Workpie	ece	KOR (KS)	USA (AISI)	GER (DIN)	(HRC)	Grades	vc (m/min)	fz (mm/t)	ap (mm)	ae	MF	None C/B	
	Mild	steel	SM20C	1020	C22	120~180	PC5400 (PC5300)	100~220	0.5~1.0	~0.5	0.7D~0.1D	•	-	
	Carbo	n steel	SM45C	1045	C45	200	PC5400 (PC5300)	100~200	0.5~1.0	~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	•	-	
			KP4M	P20 (Improved)	1.2738 (Improved)	300(32)	PC5300 (PC2510)	<b>100~180</b>	0.5~0.9	~0.4	0.7D~0.1D	•	0	
			NIMAX	P21 (Improved)	-	370(40)	PC5300 (PC2510)		0.5~0.9	~0.4	0.7D~0.1D	•	0	
Р	Pre-ha		CENA1	P21 (Improved)	-	370(40)	PC5300 (PC2510)	<b>100~180</b>	0.5~0.9	~0.4	0.7D~0.1D	•	0	
			NAK80	P21	_	400(43)	PC5300	100~160	0.5~0.7	~0.4	0.7D~0.1D	0	-	
			IVAILOO	(Improved)		400(43)		100~180	0.5~0.9	~0.4	0.7D~0.1D	-	•	
			STAVAX	420	X30Cr13	510(52)	PC2510 (PC5300)		0.3~0.6	~0.4	0.7D~0.1D	•	-	
	Alloy	tool	STD11 STD61	D2 H13	X155CrVMo12-1 X40CrMoV5-1	- (40~50)	PC2510 (PC2505)	80~130	0.3~0.55	~0.3	0.7D~0.1D	-	•	
	ste	eel	STD11 (Cold forging)	D2	X155CrVMo12-1	630(60)	PC2505	30~75	0.3~0.5	~0.2	0.7D~0.1D	-	•	
M	Stainles	ss steel	STS316	316	X5CrNiMo17-12-2	Under 270	PC5400 (PC5300)	70~150	0.5~0.7	~0.5	0.7D~0.1D	•	-	
K	Gray ca Ductile o		GCD450	65-45-12	GGG40.3	Tensile Strength Over 450Mpa	PC5300	130~220	0.6~0.8	~0.5	0.7D~0.1D	•	-	
	LIBO 4	Fe series	Incoloy901	N09901	- (WS 2.4662)	- (25~35)	PC5300 (PC5400)	30~100	0.3~0.5	~0.3	0.4D~0.7D	•	0	
S	HRSA	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	•	0	
	Titar	nium	Ti-6Al-4V	R56400	TiAl6V4	- (40~45)	PC5300	30~50	0.4~1.0	~0.3	0.7D~0.1D	•	-	

### ΙE

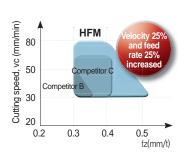
#### Performance evaluation

#### High speed machining

- Workpiece STD11 (HRC40~45)
- Insert LPM(E)W0402□□R
- Recommended grade PC2505 (1st), PC2510 (2nd)



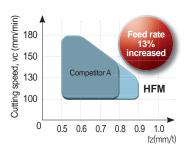
- Workpiece
  - STD11(Over HRC60)
- Insert LPM(E)W0402□□R
- Recommended grade PC2505 (1st), PC2510 (2nd)



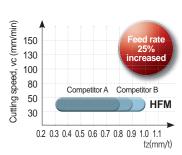
#### High feed machining

- Workpiece KP4M (HRC32), NAK80 (HRC43)
- Insert

  LPMT0402□□R-MF
- Recommended grade PC5300 (1st), PC2510 (2nd)



- Workpiece Ti-6AL-4V (HRC40~45)
- Insert LPMT0402 □ R-MF
- Recommended grade
  PC5300 (1<sup>st</sup>), PC5400 (2<sup>nd</sup>)



#### Machining example

#### Alloy tool steel [X155CrVMo12-1 (DIN)/D2 (AISI)/STD11 (KS), HRC40~45]

■ Workpiece Mold

■ Cutting vc (m/min) = 80, fz (mm/t) = 0.5 conditions ap (mm) = 0.3, ae (mm) = 10

dry

■ Tools Insert LPMW040210R (PC2510)

Holder HFMS1016HR-4S16





Competitor

- Chip removal rate Q (cm³/min): 4.8
- Cutting time (min): 25

#### Alloy tool steel [X155CrVMo12-1 (DIN)/D2 (AISI)/STD11 (KS), HRC60]

■ Workpiece Mold

■ Cutting vc (m/min) = 75, fz (mm/t) = 0.4 conditions ap (mm) = 0.15, ae (mm) = 5

dry

■ Tools Insert LPMW040210R (PC2505)

Holder HFMS1010HR-2S10





Competitor

- Chip removal rate Q (cm<sup>3</sup>/min): 1.4
- Cutting time (min): 7.85

#### HRSA [TiAl6V4 (DIN)/R56400 (AISI)/Ti-6AI-4V (KS), HRC48]

■ Workpiece Aviation parts

■ Cutting vc (m/min) = 50, fz (mm/t) = 1.2 conditions ap (mm) = 0.3, ae (mm) = 10

wet

■ Tools Insert LPMT040210R-MF (PC5300)

Holder HFMS1016HR-4S16





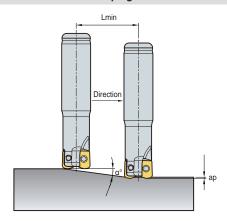
HFM

Competitor

- Chip removal rate Q (cm<sup>3</sup>/min): 7.2
- Cutting time (min): 10.05

### Ramping and helical cutting

#### Ramping



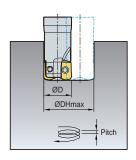
\* Lmin: Min. inclination cutting length

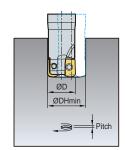
 $\alpha^{\circ} \colon$  Max. ramping angle

tan α°

ap: Depth of cut

#### Helical cutting





- ØD = Tool dia. (mm)
- $\varnothing$ d = Tool path (mm) =  $\varnothing$ DHmin, Max  $\varnothing$ D
- ØDHmin (Min diameter, mm) = ØD  $\times$  2 5.4
- ØDHmax (Max diameter, mm) = ØDx2 2

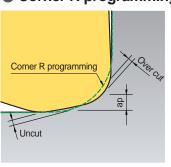
(mm)

	Tool dia.	Donth of out	Rampi	ing		Helical cutting	
Designation	ØD	Depth of cut ap	Max ramping angle α (°)	Lmin	Max diameter ØDHMax	Min diameter ØDHMin	Max pitch dmax
HFMS1010HR	10	0.4~0.5	3.5	7	18	15	0.4
HFMS1011HR	11	0.4~0.5	3.1	1 8		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 condition when ramping & helical cutting
- In helical ramping, max. cutting depth per 1 helical revolution of cutter should not exceed max. cutting depth as per insert size
- In ramping, max. cutting depth per 1 ramping process of cutter should not exceed max. depth of cut as per used insert size

#### Corner R programming

(mm)

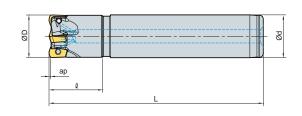


Insert	Corner R	Cutting c	onditions	Over Cut	Uncut
msert	programming	Nose R	Мах. ар	Over Cut	Officut
LPMT040210R-MF	R1.0 (Standard)			0	0.17
LPMW040210R	R1.5	1.0	0.4	0.10	0.08
LPEW040210R	R2.0			0.31	0
LPMT040220R-MF	R1.0			0	0.41
LPMW040220R	R1.5	2.0	0.5	0	0.2
LPEW040220R	R2.0 (Standard)			0	0

- 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 @





















(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	kg
HFMS	1008HR-1S10	1	8	10	20	80	0.4~0.5	0.03
	1008HR-1M10	1	8	10	25	100	0.4~0.5	0.03
	1008HR-1L10	1	8	10	35	120	0.4~0.5	0.03
	1010HR-2S08	2	10	8	20	80	0.4~0.5	0.03
	1010HR-2M08	2	10	8	25	100	0.4~0.5	0.04
	1010HR-2L08	2	10	8	35	120	0.4~0.5	0.04
	1010HR-2S10	2	10	10	20	80	0.4~0.5	0.04
	1010HR-2M10	2	10	10	25	105	0.4~0.5	0.05
	1010HR-2L10	2	10	10	35	120	0.4~0.5	0.06
	1011HR-2S10	2	11	10	20	80	0.4~0.5	0.04
	1011HR-2M10	2	11	10	25	105	0.4~0.5	0.06
	1011HR-2L10	2	11	10	35	120	0.4~0.5	0.07
	1012HR-3S10	3	12	10	20	80	0.4~0.5	0.05
	1012HR-3M10	3	12	10	25	105	0.4~0.5	0.06
	1012HR-3L10	3	12	10	35	120	0.4~0.5	0.07
	1012HR-3S12	3	12	12	20	80	0.4~0.5	0.06
	1012HR-3M12	3	12	12	25	105	0.4~0.5	0.08
	1012HR-3L12	3	12	12	35	120	0.4~0.5	0.09
	1013HR-3S12	3	13	12	20	80	0.4~0.5	0.06
	1013HR-3M12	3	13	12	25	105	0.4~0.5	0.09
	1013HR-3L12	3	13	12	40	120	0.4~0.5	0.10
	1014HR-3S12	3	14	12	20	80	0.4~0.5	0.07
	1014HR-3M12	3	14	12	25	105	0.4~0.5	0.09
	1014HR-3L12	3	14	12	40	120	0.4~0.5	0.10

#### Available inserts



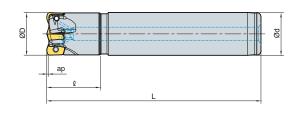
		Cer	met	Coated												Uncoated				
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H04	page
LPMT	040210R-MF									•	•				•	•				
	040220R-MF									•	•				•	•				
LPMW	040210R								•	•					•					E12
	040220R								•	•					•					E13
LPEW	040210R								•	•					•					
	040220R								•	•					•					





### HFMS1000 @

















AA . AR: -4° . RR: -6°~-3°

(mm)

	Designation	©	ØD	Ød	Q	L	ар	kg
HFMS	1015HR-4S12	4	15	12	20	80	0.4~0.5	0.07
	1015HR-4M12	4	15	12	25	105	0.4~0.5	0.09
	1015HR-4L12	4	15	12	40	120	0.4~0.5	0.11
	1016HR-4S16	4	16	16	20	80	0.4~0.5	0.11
	1016HR-4M16	4	16	16	25	105	0.4~0.5	0.14
	1016HR-4L16	4	16	16	40	120	0.4~0.5	0.16
	1017HR-4S16	4	17	16	20	80	0.4~0.5	0.11
	1017HR-4M16	4	17	16	25	105	0.4~0.5	0.15
	1017HR-4L16	4	17	16	40	120	0.4~0.5	0.17
	1018HR-4S16	4	18	16	20	80	0.4~0.5	0.11
	1018HR-4M16	4	18	16	25	105	0.4~0.5	0.15
	1018HR-4L16	4	18	16	40	120	0.4~0.5	0.17
	1019HR-4S16	4	19	16	20	80	0.4~0.5	0.12
	1019HR-4M16	4	19	16	25	105	0.4~0.5	0.16
	1019HR-4L16	4	19	16	40	120	0.4~0.5	0.18
	1020HR-4S20	4	20	20	20	80	0.4~0.5	0.17
	1020HR-4M20	4	20	20	25	105	0.4~0.5	0.22
	1020HR-4L20	4	20	20	40	120	0.4~0.5	0.26
	1020HR-5S20	5	20	20	20	80	0.4~0.5	0.17
	1020HR-5M20	5	20	20	25	105	0.4~0.5	0.23
	1020HR-5L20	5	20	20	40	120	0.4~0.5	0.27
	1021HR-5S20	5	21	20	20	80	0.4~0.5	0.17
	1021HR-5M20	5	21	20	25	105	0.4~0.5	0.23
	1021HR-5L20	5	21	20	40	120	0.4~0.5	0.27

#### Available inserts



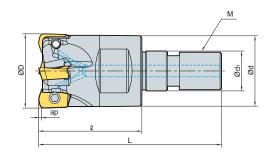
		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LPMT	040210R-MF									•	•				•	•				
	040220R-MF									•	•				•	•				
LPMW	040210R								•	•					•					E12
	040220R								•	•					•					E13
LPEW	040210R								•	•					•					
	040220R								•	•					•					

Specification			
	Screw	Wrench	
Ø15~Ø21	FTKA01842	TW06S-A	



### HFMM new



















(mm)

D	esignation	0	ØD	Ød	Ød <sub>1</sub>	Q	L	М	ар	kg
HFMM	1008HR-M06	1	8	9.5	6.5	17	32	M06	0.4~0.5	0.01
	1010HR-M06	2	10	9.5	6.5	17	32	M06	0.4~0.5	0.01
	1011HR-M06	2	11	9.5	6.5	17	32	M06	0.4~0.5	0.01
	1012HR-M06	3	12	11	6.5	19	34	M6B	0.4~0.5	0.01
	1013HR-M06	3	13	11	6.5	19	34	M6B	0.4~0.5	0.01
	1016HR-M08	4	16	14.5	8.5	22	39	M08	0.4~0.5	0.03
	1017HR-M08	4	17	14.5	8.5	22	39	M08	0.4~0.5	0.03
	1020HR-M10	5	20	18	10.5	25	46	M10	0.4~0.5	0.06
	1021HR-M10	5	21	18	10.5	25	46	M10	0.4~0.5	0.06
	1025HR-M12	6	25	23	12.5	27	51	M12	0.4~0.5	0.11
	1026HR-M12	6	26	23	12.5	27	51	M12	0.4~0.5	0.11
	1030HR-M16	7	30	29	17	30	60	M16	0.4~0.5	0.17
	1032HR-M16	8	32	29	17	30	60	M16	0.4~0.5	0.18
	1033HR-M16	8	33	29	17	30	60	M16	0.4~0.5	0.18

#### Available inserts



					_							_								
		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LPMT	040210R-MF									•	•				•	•				
	040220R-MF									•	•				•	•				
LPMW	040210R								•	•					•					E12
	040220R								•	•					•					E13
LPEW	040210R								•	•					•					
	040220R								•	•					•					

#### Available adaptor

	Designation	Available adaptor
HFMM	1008HR-M06	
	1010HR-M06	MAT-M06
	1011HR-M06	IVIAT-IVIUO
	1012HR-M06	
	1013HR-M06	
	1016HR-M08	MAT-M08
	1017HR-M08	IVIA I -IVIU8

	Designation	Available adaptor
HFMM	1020HR-M10	MAT-M10
	1021HR-M10	IVIAT-IVITO
	1025HR-M12	MAT-M12
	1026HR-M12	IVIAT-IVITZ
	1030HR-M16	
	1032HR-M16	MAT-M16
	1033HR-M16	

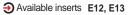
Designation : HFMM1008HR-M06 Modular head threading measure size (M06)

П

Adaptor spec.: MAT-M06-020-S10S Adaptor threading measure (M06)

#### Parts

Specification	Screw	Wrench	
Ø8~Ø10 Ø11~Ø33	FTKA01840 FTKA01842	TW06S-A	



→ Available adaptor E401~E402

#### **Technical Information for HRMDouble**

#### HRMD is more economical due to the use of 6 cutting-edges compared to HRM tool with a 3-edge positive insert

### **HRMDouble**

- HRMD is more economical due to the use of 6 cutting-edges compared to HRM tool with a 3-edge positive insert
- High-rake angle cutting-edge and chip breaker reduces cutting load
- Negative geometry has been designed for rigidity of cutting-edge and double-sided function
- Screw on system and stable support achieves strong clamping force
- Unique insert design for high feed and multifunctional machining
- HRMD insert with symmetrical cutting-edge is applicable for both R and L type machining

#### Features of insert



#### 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

#### 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

#### Clamping surface

- Design for stable clamping
- · Prevention of friction by chip

#### Ohip 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

#### 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
- Longer tool life due to reduced cutting temperature

#### Simple screw on system

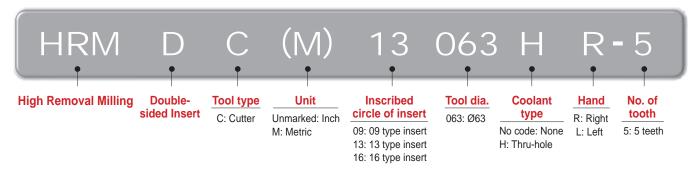
- Strong clamping of screw on system
- Convenient clamping system
- Wide chip pocket for better chip evacuation

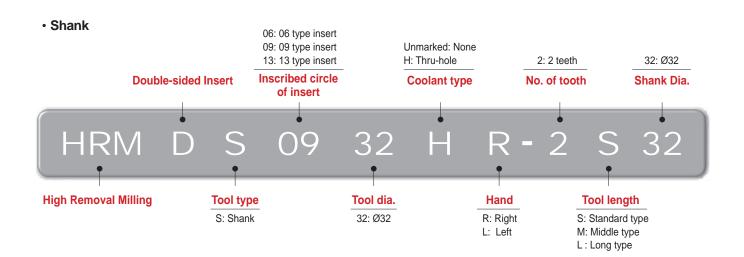
#### 3-surface constrained system

- Strong clamping system
- · Stable clamping system against different cutting resistances in various machining applications

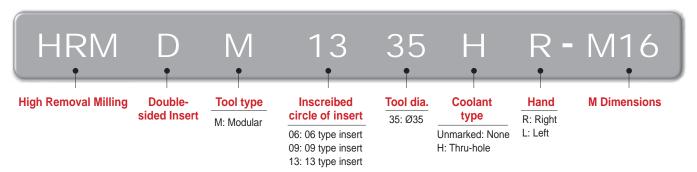
#### Code system

Cutter

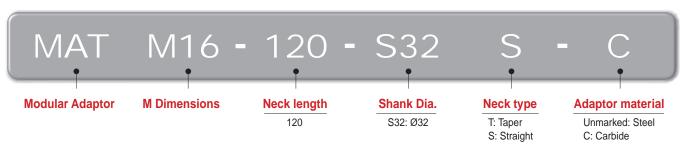




#### Modular head



#### Modular adaptor



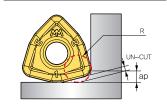


### Technical Information for HRMDouble

#### Corner R programming

Decignation	Cutting of	condition	Approx.	. R (mm)
Designation	Max.ap (mm)	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

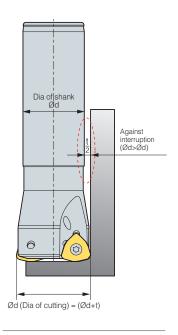




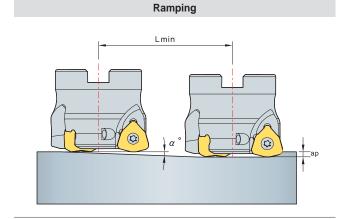
· Uncut part can be changed by poor machine condition or weak clamp of workpiece, etc

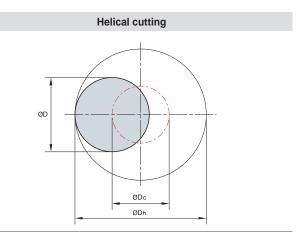
#### Interference prevent system

Designation	ØD (mm)	Ød (mm)	t (mm)
HRMDS0617HR-2□16	17	16	1
HRMDS0618HR-2□16	18	16	2
HRMDS0621HR-2□20	21	20	1
HRMDS0626HR-3□25	26	25	1
HRMDS0633HR-4□32	33	32	1
HRMDS0926HR-2□25	26	25	1
HRMDS0933HR-3□32	33	32	1
HRMDS0935HR-4□32	35	32	3
HRMDS0940HR-4□32	40	32	8
HRMDS0950HR-5□32	50	32	18
HRMDS0950HR-5□40	50	40	10
HRMDS0950HR-5□42	50	42	8
HRMDS1333HR-3□32	33	32	1
HRMDS1335HR-4□32	35	32	3
HRMDS1340HR-4□30	40	30	8
HRMDS1350HR-4□32	50	32	18
HRMDS1350HR-4□40	50	40	10
HRMDS1350HR-4□42	50	42	8
HRMDS1363HR-5□32	63	32	31
HRMDS1363HR-5□40	63	40	23
HRMDS1363HR-5□42	63	42	21



#### Ramping & helical cutting technical data





 $<sup>\</sup>bullet \ \, \text{The side clearance prevents to interference between tool and workpiece even in deep hole machining}$ 

$$Lmin = \frac{ap}{tan \, a^{\circ}} \, (mm)$$

 $\emptyset Dc = \emptyset Dh - \emptyset D$ 

ØDc = Tool pass of tool center

ØDh = Desirable hole diameter on workpiece

ØD = Tool dia.

• Adjust feed to under 70% of Recommended cutting condition when ramping & helical cutting

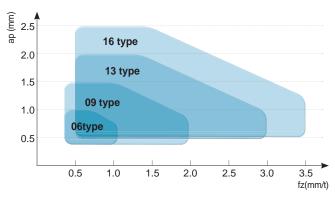
• In helical ramping, max. cutting depth per 1 helical revolution of cutter should not exceed max. cutting depth as per insert size

• in ramping, max. cutting depth for 1 ramping process should not exceed max. depth of cut as per used insert size

	To all dia CO	Efficient cutting		Ramping		Helical r	amping
Designation	Tool dia. ØD (mm)	diameter ØDe (mm)	Max. ap (mm)	Max. angle α°	Cutting Length Lmin (mm)	Dh Min. Cutting diameter (mm)	Dh Max. Cutting diameter (mm)
HRMDS0616HR	16	9.5	1	4.8	11	23.8	29.6
HRMDS0617HR	17	10.5	1	4.1	13	25.8	31.6
HRMDS0618HR	18	11.5	1	3.5	16	27.8	33.6
HRMDS0620HR	20	13.5	1	2.5	22	31.8	37.6
HRMDS0621HR	21	14.5	1	2.2	26	33.8	39.6
HRMDS0625HR	25	18.5	1	1.3	44	41.8	47.6
HRMDS0626HR	26	19.5	1	1.2	47	43.8	49.6
HRMDS0632HR	32	25.5	1	0.6	95	55.8	61.6
HRMDS0633HR	33	26.5	1	0.5	114	57.8	63.6
HRMDS0925HR	25	15.4	1.5	5.4	15.8	37.6	46.8
HRMDS0926HR	26	16.4	1.5	5.0	17.0	39.6	48.8
HRMDS0930HR	30	20.4	1.5	3.9	22.0	47.6	56.8
HRMDS0932HR	32	22.3	1.5	3.5	24.5	51.6	60.8
HRMDS0933HR	33	23.3	1.5	3.3	25.8	53.6	62.8
HRMDS0935HR	35	25.4	1.5	3.0	28.3	57.6	66.8
HRMDS0940HR	40	30.2	1.5	2.5	34.5	67.6	76.8
HRMDS0950HR	50	40.2	1.5	1.8	47.0	87.6	96.8
HRMDS1332HR	32	19.3	2	5.7	20.0	47	60
HRMDS1333HR	33	20.3	2	5.4	21.3	49	62
HRMDS1335HR	35	22.3	2	4.8	24.0	53	66
HRMDS1340HR	40	27.2	2	3.7	30.7	63	76
HRMDS1350HR	50	37	2	2.6	44.0	83	96
HRMDS1363HR	63	50	2	1.9	61.3	109	122
HRMDCM09040HR	40	30.2	1.5	2.5	34.5	67.6	76.8
HRMDCM09050HR	50	40.2	1.5	1.8	47.0	87.6	96.8
HRMDCM09063HR	63	53.1	1.5	1.4	63.3	113.6	122.8
HRMDC(M)09080HR	80	70.1	1.5	1.0	84.5	147.6	156.8
HRMDC(M)09100HR	100	90	1.5	0.8	109.5	187.6	196.8
HRMDCM13050HR	50	37	2	2.6	44.0	83	96
HRMDCM13063HR	63	50	2	1.9	61.3	109	122
HRMDC(M)13080HR	80	66.9	2	1.4	84.0	143	156
HRMDC(M)13100HR	100	86.9	2	1.0	110.7	183	196
HRMDC(M)13125HR	125	111.9	2	0.8	144.0	233	246
HRMDC(M)16080HR	80	63.3	2.5	1.4	102	138	156
HRMDC(M)16100HR	100	83.3	2.5	1	143	178	196
HRMDC(M)16125HR	125	108.3	2.5	0.7	204	228	246
HRMDC(M)16160R	160	143.3	2.5	0.5	286	298	316
HRMDC(M)16200R	200	183.3	2.5	0.3	477	378	396
HRMDC(M)16250R	250	233.3	2.5	0.2	716	478	496
HRMDC(M)16315R	315	298.3	2.5	0.1	1432	608	626

### Uses





## **Technical Information for HRMDouble**

### Recommended cutting condition

ISO	Work	piece	Material	Grades	Cutting speed, vc (m/min)		
		Low carbon steel	SUM22, C = 0.1~25	PC5300	280		
		Low carbon steer	001V122, 0 = 0.1~20	PC5400	245		
	Carbon steel	General carbon steel	C = 0.30~55	PC5300	255		
	Carbon Steel	General carbon steel	0 = 0.00 *00	PC5400	220		
		High carbon steel	C = 0.55~80	PC5300	240		
		r light carbon steer	0 = 0.00 *00	PC5400	205 195		
Р		_	- SCM415(H), SCM420, SCM440 PC5300				
	Low alloy steel		00M410(11), 00M420, 00M440	PC5400	170		
	(Alloy constituent < 5%)	Hardened		PC5300	115		
		riardoriod		PC5400	100		
		Annealed	SKD61	PC5300	150		
	High alloy steel	Aimedica	ONDOT	PC5400	130		
	(Alloy constituent > 5%)	Hardened	SKH51, SKH55	PC5300	120		
		riarderied	GRAIDT, GRAIDS	PC5400	105		
		Ferritic / Martensitic	SUS410, SUS420, SUS430	PC5300	160		
		1 emile / Martenside	000410, 000420, 000430	PC5400	135		
М	Stainless steel	Austenitic	SUS303, SUS304, SUS316	PC5300	130		
141	Stainless steel	Addientic	000000, 000004, 000010	PC5400	110		
		Duplex (Austenitic / Ferrictic)	F51	PC5300	100		
		Buplex (Austernation Fernatio)	101	PC5400	85		
		Low tensile GC		PC5300	170		
	Gray cast iron	Low terisile	GC200, GC250	PC5400	150		
	Gray cast iron	Hight tensile	GC300, GC350	PC5300	150		
K		r light tensile	G0300, G0330	PC5400	130		
, x		Ferric	GCD400, GCD500	PC5300	170		
	Ductile cast iron	1 eme	GCD400, GCD300	PC5400	150		
	Ductile cast from	Pearlitic	GCD600, GCD700	PC5300	150		
		1 earnite	GCD000, GCD700	PC5400	130		
	Fe Base	_	Incoloy	PC5300	60		
	i e base		incoloy	PC5400	50		
	Ni Base	_	Inconel, Nimonic, Hastelloy	PC5300	55		
	NI Dase	_	mediei, Minoriic, Hastelloy	PC5400	45		
S	Co Base	_	Stelite	PC5300	25		
- 3		_	Otente	PC5400	20		
			Pure Ti	PC5300	130		
	Titanium allovs	Titanium alloys -		PC5400	105		
	Titalliulli alloys	<u>-</u>	Alloy(TiAl6V4)	PC5300	65		
			Alloy(TIAIOVT)	PC5400	55		

### Machining example



### SM45C (HRC22)

■ Cutting conditions  $vc = 283 \text{ m/min } (1,803^{-1})$ 

fz = 1.4 mm/toothvf = 10,097 mm/min  $ap = 0.8 \, mm$ ae = 35 mm

Coolant: Dry, Machining: Copying Machine: Horizontal MCT Overhang of tool: 250 mm

■ Tools

Insert WNMX130520ZNN-MM (PC3500) Holder HRMDCM13050HR-4

40% Increased productivity 80% Reduced tool cost

→ In comparing HRMD with our competitor using the same cutting conditions, the cutting speed of HRMD was higher with the same depth of cut (ap×ae), the cycle time was reduced by 40% and the tool life was increased to over 60%. HRMD is economically more efficient due to the use of 6 cutting-edges compared to EDNW type with positive insert



### STS304

■ Cutting conditions  $vc = 130 \text{ m/min } (414^{-1})$ fz = 1.2 mm/toothvf = 2,981 mm/min ap = 1.0 mm, ae = 80 mm Coolant: Wet, Machining:

Facing and Slotting Machine: Vertical MCT Overhang of tool: 250 mm ■ Tools Insert WNMX130520ZNN-MM (PC3545) Holder HRMDCM13100HR-6

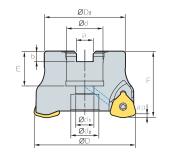
> 80% Increased productivity 25% Reduced tool cost

→ In comparing HRMD with our competitor using the same cutting conditions, the cutting speed of HRMD was higher with the same depth of cut (apxae), the cycle time was reduced by 80% and the tool life was same, but HRMD is economically more efficient due to the use of 6 cutting-edges compared to SDKN type with positive insert



# HRMDC(M)09

















(mm)

D	esignation	<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	а	b	Е	F	ар	kg	Bolt
HRMDCM	09040HR-3	3	40	34	16	9	14	8.4	5.6	19	40	1.5	0.2	SB0825
	09040HR-4	4	40	34	16	9	14	8.4	5.6	19	40	1.5	0.2	SB0825
	09050HR-4	4	50	42	22	11	18	10.4	6.3	21	40	1.5	0.3	SB1025
	09050HR-5	5	50	42	22	11	18	10.4	6.3	21	40	1.5	0.3	361023
	09063HR-5	5	63	49	22	11	18	10.4	6.3	21	40	1.5	0.5	SB1025
	09063HR-6	6	63	49	22	11	18	10.4	6.3	21	40	1.5	0.5	361023
	09080HR-6	6	80	57	27	14	20	12.4	7	23	50	1.5	1.1	SB1230
	09080HR-7	7	80	57	27	14	20	12.4	7	23	50	1.5	1.1	361230
	09100HR-7	7	100	67	32	18	26	14.4	8	25	50	1.5	1.7	SB1630
	09100HR-8	8	100	67	32	18	26	14.4	8	25	50	1.5	1.7	361030
HRMDC	09080HR-6	6	80	57	25.4	14	20	9.5	6	24	50	1.5	1.1	SB1230
	09080HR-7	7	80	57	25.4	14	20	9.5	6	24	50	1.5	1.1	361230
	09080HR-31.75-6	6	80	67	31.75	18	26	12.7	8	32	63	1.5	1.5	SB1630
	09080HR-31.75-7	7	80	67	31.75	18	26	12.7	8	32	63	1.5	1.5	361630
	09100HR-7	7	100	67	31.75	18	26	12.7	8	32	63	1.5	2.1	SB1630
	09100HR-8	8	100	67	31.75	18	26	12.7	8	32	63	1.5	2.1	361630

### Available inserts







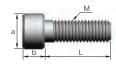
WNMX-MM

		Cer	met						Coa	ated						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
WNMX	09T316ZNN-MF									•				•	•				
	09T316ZNN-ML													•	•				E30
	09T316ZNN-MM							•	•	•				•	•				

### Available arbors

1	Designation	NC arbors
HRMDCM	09040HR-	BT -FMC16-
	09040⊓K-∐	SK□□-FMC16-□□
	09050HR-	BT□□-FMC22-□□
	09063HR-	SK□□-FMC22-□□
	09080HR-	BT□□-FMC27-□□
	09000HK-	SK□□-FMC27-□□
	09100HR-	BT□□-FMC32-□□
	09100HK-	SK□□-FMC32-□□
HRMDC	09080HR-	BT□□-FMA25.4-□□
	09000HK-	SK□□-FMA25.4-□□
	09080HR-31.75-	BT□□-FMA31.75-□□
	09100HR-□	SK□□-FMA31.75-□□

### Bolt



Decignation	Dimensions (mm)										
Designation	M	а	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						

Specification		
Ø40~Ø100	Screw FTKA0307	Wrench TW09S
Ø40~Ø100	FTKAU3U7	10095

# **E** HRMDouble

# HRMDC(M)13









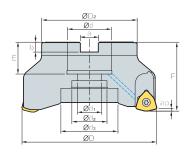












(mm)

															(/
D	esignation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	kg	Bolt
HRMDCM	13050HR-3	3	50	42	22	11	17	-	10.4	6.3	21	40	2	0.3	CD4005
	13050HR-4	4	50	42	22	11	17	-	10.4	6.3	21	40	2	0.3	SB1025
	13063HR-4	4	63	49	22	11	18	-	10.4	6.3	21	40	2	0.5	SB1025
	13063HR-5	5	63	49	22	11	18	-	10.4	6.3	21	40	2	0.5	361023
	13080HR-5	5	80	57	27	14	20	-	12.4	7	23	50	2	1	SB1230
	13080HR-6	6	80	57	27	14	20	-	12.4	7	23	50	2	1	361230
	13100HR-6	6	100	67	32	18	26	-	14.4	8	25	50	2	1.6	SB1630
	13100HR-7	7	100	67	32	18	26	-	14.4	8	25	50	2	1.6	361030
	13125HR-7	7	125	87	40	22	32	52	16.4	9	29	63	2	3.2	SB2040
	13125HR-8	8	125	87	40	22	32	52	16.4	9	29	63	2	3.2	MBA-M20
HRMDC	13080HR-5	5	80	57	25.4	14	20	-	9.5	6	24	50	2	1	SB1230
	13080HR-6	6	80	57	25.4	14	20	-	9.5	6	24	50	2	1	361230
	13080HR-31.75-5	5	80	67	31.75	18	26	-	12.7	8	32	63	2	1.4	SB1630
	13080HR-31.75-6	6	80	67	31.75	18	26	-	12.7	8	32	63	2	1.4	361030
	13100HR-6	6	100	67	31.75	18	26	-	12.7	8	32	63	2	2.1	SB1630
	13100HR-7	7	100	67	31.75	18	26	-	12.7	8	32	63	2	2.1	301030
	13125HR-7	7	125	87	38.1	22	32	52	15.9	10	35	63	2	3.3	SB2040
	13125HR-8	8	125	87	38.1	22	32	52	15.9	10	35	63	2	3.3	MBA-M20

### Available inserts

WNMX-MF

WNMX-ML

WNMX-MM





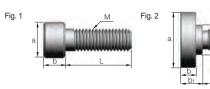


		Cer	met						Coa	ated						Ur	coat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
WNMX	130520ZNN-MF													•					
	130520ZNN-ML													•	•				E30
	130520ZNN-MM							•	•	•		•	•	•	•				

### Available arbors

	Designation	NC arbors
HRMDCM	13050HR-	BT□□-FMC22-□□
	13030UK-	SK□□-FMC22-□□
	13063HR-	BT□□-FMC22-□□
	13080HR-□	SK□□-FMC27-□□
	13100HR-	BT□□-FMC32-□□
	13100HK-	SK□□-FMC32-□□
	13125HR-□	BT□□-FMC40-□□
	13123NK-	SK□□-FMC40-□□
HRMDC	13080HR-	BT□□-FMA25.4-□□
	13080HR-31.75-	SK□□-FMA25.4-□□
	13100HR-□	BT□□-FMA31.75-□□
	13100HK-	SK□□-FMA31.75-□□
	13125HR-□	BT□□-FMA38.1-□□
	13123NK-	SK□□-FMA38.1-□□

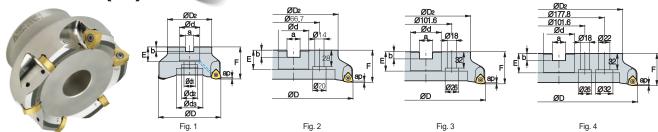
### Bolt



Designation			Dime	nsions	(mm)			F:
Designation	М	а	b	b1	С	L	pitch	Fig.
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

Screw         Wrench           Ø50~Ø125         FTKA0412B         TW15S	Specification			
Ø50~Ø125 FTKA0412B TW15S		Screw	Wrench	
	Ø50~Ø125	FTKA0412B	TW15S	

















																(mm)
Desig	gnation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	Е	F	ар	O kg	Bolt	Fig.
HRMDC	16080HR-4	4	80	65	25.4 (27)	14	20	-	9.5 (12.4)	6 (7)	25 (23)	50	2.5	0.99	SB1230	1
(HRMDCM)	MDCM) 16080HR-5		80	65	25.4 (27)	14	20	-	9.5 (12.4)	6 (7)	25 (23)	50	2.5	0.91	SD1230	'
	16100HR-5	5	100	85	31.75 (32)	18	26	-	12.7 (14.4)	8	33 (25)	63 (50)	2.5	1.68	SB1630	1
	16100HR-6	6	100	85	31.75 (32)	18	26	-	12.7 (14.4)	8	33 (25)	63 (50)	2.5	1.64	301030	'_
	16125HR-6	6	125	100	38.1 (40)	22	32	52	15.9 (16.4)	10 (9)	36 (29)	63	2.5	3.23	SB2040	1
	16125HR-7	7	125	100	38.1 (40)	22	32	52	15.9 (16.4)	10 (9)	36 (29)	63	2.5	3.24	MBA-M20	'_
	16160R-7	7	160	107	50.8 (40)	-	90	-	19 (16.4)	11 (9)	38 (32)	63	2.5	3.73	MBA-M24	2
	16160R-8	8	160	107	50.8 (40)	-	90	-	19 (16.4)	11 (9)	38 (32)	63	2.5	3.77	IVIDA-IVIZ4	
	16200R-8	8	200	145	47.625 (60)	-	132	-	25.4 (25.7)	14	38	63	2.5	6.48	_	3
	16200R-10	10	200	145	47.625 (60)	-	132	-	25.4 (25.7)	14	38	63	2.5	6.61	_	
	16250R-10	10	250	190	47.625 (60)	-	190	-	25.4 (25.7)	14	38	63	2.5	11.01		3
	16250R-12	12	250	190	47.625 (60)	-	190	-	25.4 (25.7)	14	38	63	2.5	11.04	-	3
	16315R-12	12	315	250	47.625 (60)	-	238	-	25.4 (25.7)	14	38	63	2.5	18.34		4
	16315R-14	14	315	250	47.625 (60)	-	238	-	25.4 (25.7)	14	38	63	2.5	18.35	_	4

### Available inserts

( )Metric size



WNMX-MF



WNMX-ML



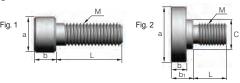
WNMX-MM

				Coated												Uı	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H04	page
WNMX	160720ZNN-MF													•	•				
	160720ZNN-ML													•					E30
	160720ZNN-MM																		

### Available arbors

Desig	nation	HRMDC	HRMDCM				
HRMDC (HRMDCM)	16080HR-4 16080HR-5	BT -FMA25.4-	BT -FMC27-				
()	16100HR-5 16100HR-6	BT FMA31.75-	BT -FMC32-				
	16125HR-6 16125HR-7	BT -FMA38.1-	BT -FMB40-				
	16160R-7 16160R-8	BT -FMA50.8-	BT□□-FMC40-□□				
	16200R-8 16200R-10 16250R-10 16250R-12 16315R-12 16315R-14	BT - FMA47.625-	BT -FMB60-				

### Bolt



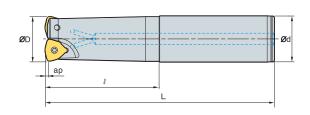
Designation	Dimensions (mm)														
Designation	М	а	b	b1	С	L	pitch	Fig.							
SB1025	M10	16	10	-	-	25	1.5	1							
SB1230	M12	18	12	-	-	30	1.75	1							
SB1630	M16	24	16	-	-	30	2.0	1							
SB2040	M20	30	20	-	-	40	2.5	1							
MBA-M20	M20	50	14	20	27	30	2.5	2							
MBA-M24	M24	65	14	24	37	36	3.0	2							

Specification	Scrou	Wronch	
Ø80~Ø315	Screw FTGA0513-P	Wrench TW20-100	

# **E** HRMDouble

# HRMDS06 rew

















(mm)

D	Designation		ØD	Ød	Q	L	ар	O kg
HRMDS	0616HR-2S16	2	16	16	30	110	1.0	0.15
	0616HR-2M16	2	16	16	70	150	1.0	0.20
	0616HR-2L16	2	16	16	100	200	1.0	0.26
	0617HR-2S16	2	17	16	20	110	1.0	0.15
	0617HR-2M16	2	17	16	20	150	1.0	0.21
	0617HR-2L16	2	17	16	20	200	1.0	0.28
	0618HR-2S16	2	18	16	20	110	1.0	0.15
	0618HR-2M16	2	18	16	20	150	1.0	0.21
	0618HR-2L16	2	18	16	20	200	1.0	0.28
	0620HR-2S20	2	20	20	50	130	1.0	0.28
	0620HR-2M20	2	20	20	100	180	1.0	0.38
	0620HR-2L20	2	20	20	130	250	1.0	0.53
	0621HR-2S20	2	21	20	20	130	1.0	0.29
	0621HR-2M20	2	21	20	20	180	1.0	0.40
	0621HR-2L20	2	21	20	20	250	1.0	0.57
	0625HR-3S25	3	25	25	60	140	1.0	0.44
	0625HR-3M25	3	25	25	80	180	1.0	0.57
	0625HR-3L25	3	25	25	120	250	1.0	0.80
	0626HR-3S25	3	26	25	30	140	1.0	0.46
	0626HR-3M25	3	26	25	30	180	1.0	0.60
	0626HR-3L25	3	26	25	30	250	1.0	0.84
	0632HR-4S32	4	32	32	70	150	1.0	0.82
	0632HR-4M32	4	32	32	100	200	1.0	1.10
	0632HR-4L32	4	32	32	180	300	1.0	1.66
	0633HR-4S32	4	33	32	40	200	1.0	1.14
	0633HR-4M32	4	33	32	40	250	1.0	1.43
	0633HR-4L32	4	33	32	40	300	1.0	1.73

### Available inserts

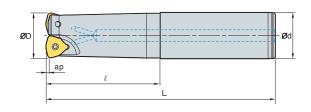
WNMX-ML WNMX-MM WNMX-MF



			met						Coa	ted						Ur	ncoat	ed		
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	F04	page	
WNMX	060312ZNN-MF													•	•					
	060312ZNN-ML													•	•				E30	
	060312ZNN-MM							•		•				•	•					

Screw Wrench	Specification	67	
		Screw	Wrench
Ø16~Ø33 E1NA02506 TW07S	Ø16~Ø33	ETNA02506	TW07S

















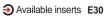
• AR: -7° • RR: -17°~-25°

De	esignation	©	ØD	Ød	Q	L	ар	√ kg \
HRMDS	0925HR-2S25	2	25	25	60	140	1.5	0.5
	0925HR-2M25	2	25	25	120	200	1.5	0.6
	0925HR-2L25	2	25	25	180	300	1.5	1
	0926HR-2S25	2	26	25	60	140	1.5	0.5
	0926HR-2M25	2	26	25	60	200	1.5	0.7
	0926HR-2L25	2	26	25	60	300	1.5	1
	0930HR-3S32	3	30	32	70	150	1.5	0.8
	0930HR-3M32	3	30	32	120	200	1.5	1
	0930HR-3L32	3	30	32	180	300	1.5	1.5
	0932HR-3S32 3 0932HR-3M32 3		32	32	70	150	1.5	0.8
			32	32	120	200	1.5	1.1
	0932HR-3L32	3	32	32	180	300	1.5	1.7
	0933HR-3S32	3	33	32	70	150	1.5	0.8
	0933HR-3M32	3	33	32	70	200	1.5	1.1
	0933HR-3L32	3	33	32	70	300	1.5	1.7
	0935HR-4S32	4	35	32	50	150	1.5	0.9
	0935HR-4M32	4	35	32	50	200	1.5	1.1
	0935HR-4L32	4	35	32	50	300	1.5	1.7
	0940HR-4S32	4	40	32	50	150	1.5	0.9
	<b>0940HR-4M32</b> 4		40	32	50	250	1.5	1.5
	0940HR-4L32	4	40	32	50	300	1.5	1.8
	0940HR-4S40	4	40	40	60	150	1.5	1.3

### Available inserts

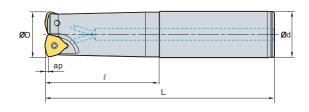


			met						Coa	ited						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
WNMX	09T316ZNN-MF									•				•	•				
	09T316ZNN-ML													•	•				E30
	09T316ZNN-MM							•	•	•		•		•	•				





















• AR: -7° • RR: -17°~-25°

(mm)

De	esignation	©	ØD	Ød	Q	L	ар	kg
HRMDS	0940HR-4M40	4	40	40	130	250	1.5	2.2
	0940HR-4L40	4	40	40	180	300	1.5	2.7
	0940HR-4S42	4	40	42	60	150	1.5	1.4
	0940HR-4M42	4	40	42	130	250	1.5	2.3
	0940HR-4L42	4	40	42	180	300	1.5	2.8
	0950HR-4S32	4	50	32	40	150	1.5	1.1
	0950HR-4M32	4	50	32	40	250	1.5	1.6
	0950HR-4L32	4	50	32	40	300	1.5	2
	0950HR-4S40	4	50	40	40	150	1.5	1.4
	0950HR-4M40	4	50	40	40	250	1.5	2.4
	0950HR-4L40	4	50	40	40	300	1.5	2.9
	0950HR-4S42	4	50	42	40	150	1.5	1.6
	0950HR-4M42	4	50	42	40	250	1.5	2.6
	0950HR-4L42	4	50	42	40	300	1.5	3.1
	0950HR-5S32	5	50	32	40	150	1.5	1.1
	0950HR-5M32	5	50	32	40	250	1.5	1.6
	0950HR-5L32	5	50	32	40	300	1.5	2
	0950HR-5S40	5	50	40	40	150	1.5	1.4
	0950HR-5M40	5	50	40	40	250	1.5	2.4
	0950HR-5L40	5	50	40	40	300	1.5	2.9
	0950HR-5S42	5	50	42	40	150	1.5	1.6
	0950HR-5M42	5	50	42	40	250	1.5	2.6
	0950HR-5L42	5	50	42	40	300	1.5	3.1

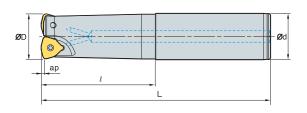
### Available inserts

WNMX-ML WNMX-MM WNMX-MF

Cermet			met	Coated									Uncoated						
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	F04	page
WNMX	09T316ZNN-MF									•				•	•				
	09T316ZNN-ML													•	•				E30
	09T316ZNN-MM							•	•	•		•		•	•				

Specification			
	Screw	Wrench	
Ø40~Ø50	FTKA0307	TW09S	

















• AR: -7° • RR: -14°~-16°

(mm)

De	esignation	<b>©</b>	ØD	Ød	Q	L	ар	kg
HRMDS	1332HR-2S32	2	32	32	70	150	2	0.8
	1332HR-2M32	2	32	32	120	200	2	1
	1332HR-2L32	2	32	32	180	300	2	1.6
	1333HR-2S32	2	33	32	70	150	2	0.8
	1333HR-2M32	2	33	32	70	200	2	1.1
	1333HR-2L32	2	33	32	70	300	2	1.7
	1335HR-2S32	2	35	32	50	150	2	0.8
	1335HR-2M32	2	35	32	50	200	2	1.1
	1335HR-2L32	2	35	32	50	300	2	1.7
	1340HR-3S32	3	40	32	50	150	2	0.8
	1340HR-3M32	3	40	32	50	250	2	1.4
	1340HR-3L32	3	40	32	50	300	2	1.7
	1340HR-3S40	3	40	40	60	150	2	1.2
	1340HR-3M40	3	40	40	130	250	2	2.1
	1340HR-3L40	3	40	40	180	300	2	2.6
	1340HR-3S42	3	40	42	60	150	2	1.4
	1340HR-3M42	3	40	42	130	250	2	2.3
	1340HR-3L42	3	40	42	180	300	2	2.7
	1350HR-3S32	3	50	32	50	150	2	1.1
	1350HR-3M32	3	50	32	50	250	2	1.7
	1350HR-3L32	3	50	32	50	300	2	2
	1350HR-3S40	3	50	40	50	150	2	1.5
	1350HR-3M40	3	50	40	50	250	2	2.4
	1350HR-3L40	3	50	40	50	300	2	2.9
	1350HR-3S42	3	50	42	50	150	2	1.6
	1350HR-3M42	3	50	42	50	250	2	2.6
	1350HR-3L42	3	50	42	50	300	2	3.1

### Available inserts

WNMX-MF

WNMX-ML

WNMX-MM

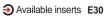






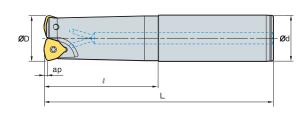
		Cer	met						Coa	ated						Ur	ncoat	ed	
De	esignation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
WNMX	130520ZNN-MF													•	•				
	130520ZNN-ML													•	•				E30
	130520ZNN-MM							•	•	•		•	•	•	•				

Wrench
TW15S









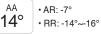












(mm)

De	esignation	©	ØD	Ød	Q	L	ар	kg
HRMDS	1350HR-4S32	4	50	32	50	150	2	1.1
	1350HR-4M32	4	50	32	50	250	2	1.7
	1350HR-4L32	4	50	32	50	300	2	2
	1350HR-4S40	4	50	40	50	150	2	1.5
	1350HR-4M40	4	50	40	50	250	2	2.4
	1350HR-4L40	4	50	40	50	300	2	2.9
	1350HR-4S42	4	50	42	50	150	2	1.6
	1350HR-4M42	4	50	42	50	250	2	2.6
	1350HR-4L42	4	50	42	50	300	2	3.1
	1363HR-4S32	4	63	32	50	150	2	1.4
	1363HR-4M32	4	63	32	50	250	2	2.1
	1363HR-4L32	4	63	32	50	300	2	2.4
	1363HR-4S40	4	63	40	50	150	2	1.8
	1363HR-4M40	4	63	40	50	250	2	2.8
	1363HR-4L40	4	63	40	50	300	2	3.2
	1363HR-4S42	4	63	42	50	150	2	1.9
	1363HR-4M42	4	63	42	50	250	2	3
	1363HR-4L42	4	63	42	50	300	2	3.5
	1363HR-5S32	5	63	32	50	150	2	1.5
	1363HR-5M32	5	63	32	50	250	2	2
	1363HR-5L32	5	63	32	50	300	2	2.3
	1363HR-5S40	5	63	40	50	150	2	1.8
	1363HR-5M40	5	63	40	50	250	2	2.8
	1363HR-5L40	5	63	40	50	300	2	3.2
	1363HR-5S42	5	63	42	50	150	2	1.9
	1363HR-5M42	5	63	42	50	250	2	3
	1363HR-5L42	5	63	42	50	300	2	3.5

### Available inserts

WNMX-MF WNMX-ML WNMX-MM

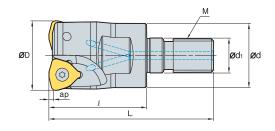


Cermet			met	Coated									Uncoated						
1	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H04	page
WNMX	130520ZNN-MF													•	•				
	130520ZNN-ML													•	•				E30
	130520ZNN-MM							•	•	•		•	•	•	•				

Specification	6		
	Screw	Wrench	
Ø50~Ø63	FTKA0412B	TW15S	

# HRMDM06 @W

















• AR: -7°

• RR: -18°~-25°

,					'n
1	n	n	n	n	ď

Des	signation	©	ØD	Ød	Ød <sub>1</sub>	Q	L	M	ар	kg \
HRMDM	0616HR-M08	2	16	14.5	8.5	25	42	M08	1.0	0.03
	0617HR-M08	2	17	14.5	8.5	25	42	M08	1.0	0.03
	0618HR-M08	2	18	14.5	8.5	25	42	M08	1.0	0.03
	0620HR-M10	2	20	18	10.5	30	51	M10	1.0	0.06
	0621HR-M10	2	21	18	10.5	30	51	M10	1.0	0.07
	0625HR-M12	3	25	23	12.5	35	59	M12	1.0	0.10
	0626HR-M12	3	26	23	12.5	35	59	M12	1.0	0.11
	0632HR-M16	4	32	29	17	40	67	M16	1.0	0.21
	0633HR-M16	4	33	29	17	40	67	M16	1.0	0.22

### Available inserts

WNMX-MF	WNMX-ML	WNMX-MM
new	new	

		Cer	met						Coa	ated						Ur	coat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
WNMX	060312ZNN-MF													•	•				
	060312ZNN-ML													•	•				E30
	060312ZNN-MM							•	•	•		•	•	•	•				

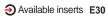
### Available adaptor

Des	signation	Available adaptor
HRMDM	0616HR-M08	
	0617HR-M08	MAT- M08
	0618HR-M08	
	0620HR-M10	MAT- M10
	0621HR-M10	IVIAT-IVITO

Des	signation	Available adaptor
HRMDM	0625HR-M12	MAT- M12
	0626HR-M12	IVIAT-IVITZ
	0632HR-M16	MAT- M16
	0633HR-M16	IVIAT- IVITO

Designation : HRMDM0625HR-M12 Modular head threading measure size (M12)

> Adaptor spec.: MAT-M12-030-S25S Adaptor threading measure (M12)

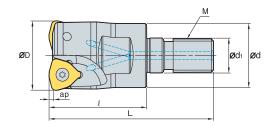




# **E** HRMDouble

# HRMDM09

















(mm)

Des	signation	<b>(a)</b>	ØD	Ød	ød1	Q	L	M	ар	(kg)
HRMDM	0925HR-M12	2	25	23	12.5	35	59	M12	1.5	0.10
	0926HR-M12	2	26	23	12.5	35	59	M12	1.5	0.11
	0930HR-M16	3	30	29	17	40	67	M16	1.5	0.19
	0932HR-M16	3	32	29	17	40	67	M16	1.5	0.20
	0933HR-M16	3	33	29	17	40	67	M16	1.5	0.21
	0935HR-M16	4	35	29	17	40	67	M16	1.5	0.22
	0940HR-M16	4	40	29	17	40	67	M16	1.5	0.25

### Available inserts

Avai	iable iliseris																		
				WNMX-MF				WNMX	(-ML		WNMX-MM								
						new		É		eW		9							
		Cei	met						Coa	ated						Uı	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
WNMX	09T316ZNN-MF									•				•	•				
	09T316ZNN-ML													•	•				E30

### Available adaptor

09T316ZNN-MM

	Designation	Available adaptor
HRMDM	0925HR-M12	MAT- M12
	0926HR-M12	- WAT- WIZ
	0930HR-M16	
	0932HR-M16	
	0933HR-M16	MAT- M16
	0935HR-M16	
	0940HR-M16	

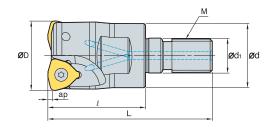
Designation : HRMDM0932HR-M16 Modular head threading measure size (M16)

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

tion
Screw Wrenc
40 FTKA0307 TW099

# HRMDM13















• AR: -7° • RR: -18°~-25°

(mm)

Des	signation	©	ØD	Ød	ød1	Q	L	M	ар	kg
HRMDM	1332HR-M16	2	32	29	17	40	67	M16	2	0.20
	1333HR-M16	2	33	29	17	40	67	M16	2	0.20
	1335HR-M16	2	35	29	17	40	67	M16	2	0.22
	1340HR-M16	3	40	29	17	45	72	M16	2	0.26

### Available inserts



					Coated Uncoated										ed				
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
WNMX	130520ZNN-MF													•	•				
	130520ZNN-ML													•	•				E30
	130520ZNN-MM							•	•	•		•	•	•	•				

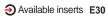
### Available adaptor

	Designation	Available adaptor
HRMDM	1332HR-M16	
	1333HR-M16	MATINAC
	1335HR-M16	MAT-M16
	1340HR-M16	

Designation : HRMDM1332HR-M16 Modular head threading measure size (M16)

- 11

Adaptor spec.: MAT-M16-120-S32T Adaptor threading measure (M16)

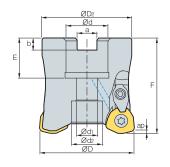






# HRMC(M)13















AA 15° • AR: 7° • RR: -15°~-5°

(mm)

Desiç	gnation	<b>(</b> )	ØD	ØD <sub>2</sub>	Ød	Ød <sub>1</sub>	Ød <sub>2</sub>	а	b	E	F	ар	kg	Bolt
HRMC	13050HR-3	3	50	47	22.225 (22)	11	16.4	8.0 (10.4)	5 (6.3)	20 (21)	50	2.0	0.4	SB1035
(HRMCM)	13050HR-4	4	50	47	22.225 (22)	11	16.4	8.0 (10.4)	5 (6.3)	20 (21)	50	2.0	0.4	SB1035
	13063HR-4	4	63	60	22.225 (22)	11	17	8.0 (10.4)	5 (6.3)	20 (21)	50	2.0	0.7	SB1035
	13080HR-5	5	80	76	31.75 (27)	18 (13)	26 (20)	12.7 (12.4)	8 (7)	32 (23)	70	2.0	1.6	SB16(12)45

( )Metric size

### Available inserts

WDKT-MH

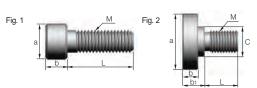


	Cerm	et						Coa	ited						Ur	ncoat	ed	
Designation	Ž	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
WDKT 130520ZDSR-MH							•	•	•	•	•		•	•				E29

### Available arbors

Desig	nation	HRMDC	HRMDCM
HRMC	13050HR-3		DTCC FM000 CC
(HRMCM)	13050HR-4	BT□□-FMA22.225-□□	BT□□-FMC22-□□ SK□□-FMC22-□□
	13063HR-4		OKEE T MOZZ EE
	13080HR-5	BTFMA31.75 SKFMA31.75	BT -FMC27- SK -FMC27-

### Bolt

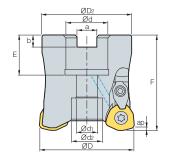


Designation			Dime	nsions	(mm)			F:
Designation	M	а	b	b <sub>1</sub>	С	L	pitch	Fig.
SB1035	M10	16	10	-	-	35	1.5	1
SB1245	M12	18	12	-	-	45	1.75	1
SB1645	M16	24	16	-	-	45	2.0	1
SB2040	M20	30	20	-	-	40	2.5	1
MBA-M20	M20	50	14	20	27	30	2.5	2
MBA-M24	M24	65	14	24	37	36	3.0	2

Specification		2			San Cr	
	Screw	Clamp	Clamp screw	C-ring	Wrench	
Ø50~Ø80	FTGA0513-P	CHH4.5R1	CTX04513H	CR03	TW20-100	

# **HRMC(M)15**















• AR: 7° • RR: -15°~-5°

(mm)

Desig	jnation	0	ØD	ØD	Ød	Ød1	Ød2	а	b	E	F	ар	kg	Bolt
HRMC	15063HR-3	3	63	60	22.225 (22)	11	17	8.0 (10.4)	5 (6.3)	20 (21)	50	2.5	0.7	SB1035
(HRMCM)	15080HR-4	4	80	76	31.75 (27)	18 (13)	26 (20)	12.7 (12.4)	8 (7)	32 (23)	70	2.5	1.7	SB16(12)45
	15100HR-5	5	100	96	31.75 (32)	18	26	12.7 (14.4)	8 (8)	32 (26)	70	2.5	2.8	SB1645
	15100HR-6	6	100	96	31.75 (32)	18	26	12.7 (14.4)	8 (8)	32 (26)	70	2.5	3.2	SB1645
	15125HR-6	6	125	98	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (29)	63	2.5	3.3	SB2040
	15160R-7	7	160	100	50.8 (40)	-	72	19.0 (16.4)	11 (9)	38 (35)	63	2.5	4.3	MBA-M24(M20)

( )Metric size

### Available inserts



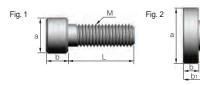


		Cer	met						Coa	ated						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	F04	page
WDKT	150625ZDSR-MH									•	•	•		•	•				E29

### Available arbors

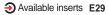
Desig	gnation	HRMDC	HRMDCM
HRMC (HRMCM)	15080HR-4 15100HR-5 15100HR-6 15125HR-6	BT□□-FMA22.225-□□	BT -FMC22- SK -FMC22-
	15080HR-4 15100HR-5 15100HR-6	BT□□-FMA31.75-□□	BT -FMC27- SK -FMC27-
	15100HR-5 15100HR-6	SK FMA31.75-	BT - FMC32- SK - FMC32-
	15125HR-6	BTFMA38.1 SKFMA38.1	BT -FMB40- BT -FMC40-
	15160R-7	BT□□-FMA50.8-□□	SK□□-FMC40-□□

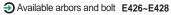
### Bolt



Designation			Dime	nsions	(mm)			F:
Designation	M	а	b	<b>b</b> 1	С	L	pitch	Fig.
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

Specification		2		9	Series .	
	Screw	Clamp	Clamp screw	C-ring	Wrench	
Ø63~Ø160	FTGA0513-P	CHH5.5R1	CTX0515	CR04	TW20-100	

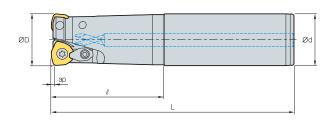






# HRMS08/10















• AR: 7° • RR: -11°~-5°

(mm)

	Designation	©	ØD	Ød	Q	L	ар	O kg
HRMS	0820HR-2S20	2	20	20	50	130	1.0	0.3
	0820HR-2M20	2	20	20	100	180	1.0	0.4
	0820HR-2L20	2	20	20	130	250	1.0	0.5
	0821HR-2S20	2	21	20	50	130	1.0	0.3
	0821HR-2M20	2	21	20	50	180	1.0	0.4
	0821HR-2L20	2	21	20	50	250	1.0	0.5
HRMS	1025HR-2S25	2	25	25	60	140	1.5	0.4
	1025HR-2M25	2	25	25	120	200	1.5	0.6
	1025HR-2L25	2	25	25	180	300	1.5	0.9
	1026HR-2S25	2	26	25	60	140	1.5	0.4
	1026HR-2M25	2	26	25	60	200	1.5	0.6
	1026HR-2L25	2	26	25	60	300	1.5	1.0
	1030HR-2S32	2	30	32	70	150	1.5	0.8
	1030HR-2M32	2	30	32	120	200	1.5	1.0
	1030HR-2L32	2	30	32	180	300	1.5	1.5

### Available inserts

WDKT-MH

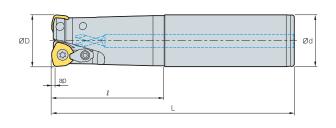


			Cer	met						Coa	ated						Ur	icoat	ed	
Туре		Designation		CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	F04	page
08 type	WDKT	080316ZDSR-MH							•	•	•	•	•		•	•				F20
10 type	WDKT	10T320ZDSR-MH								•	•	•	•		•	•				E29

Specification	Screw	Clamp	Clamp screw	C-ring	Wrench	
Ø20~Ø21 (08 type)	FTNA0306	-	-	-	TW09P	
Ø25~Ø30 (10 type)	FTKA0408	CHH3.5R1	CTX03510	CR03	TW15S	

# HRMS13















AA 15° • RR:

• AR: 7° • RR: -11°~-5°

(mm)

	Designation	$\odot$	ØD	Ød	Q	L	ар	kg
HRMS	1332HR-2S32	2	32	32	70	150	2.0	0.8
	1332HR-2M32	2	32	32	120	200	2.0	1.0
	1332HR-2L32	2	32	32	180	300	2.0	1.6
	1333HR-2S32	2	33	32	70	150	2.0	0.8
	1333HR-2M32	2	33	32	70	200	2.0	1.1
	1333HR-2L32	2	33	32	70	300	2.0	1.7
	1335HR-2S32	2	35	32	50	150	2.0	0.8
	1335HR-2M32	2	35	32	50	200	2.0	1.1
	1335HR-2L32	2	35	32	50	300	2.0	1.7
	1340HR-3S32	3	40	32	50	150	2.0	0.8
	1340HR-3M32	3	40	32	50	250	2.0	1.4
	1340HR-3L32	3	40	32	50	300	2.0	1.7
	1340HR-3S40	3	40	40	60	150	2.0	1.2
	1340HR-3M40	3	40	40	130	250	2.0	2.1
	1340HR-3L40	3	40	40	180	300	2.0	2.6
	1340HR-3S42	3	40	42	60	150	2.0	1.4
	1340HR-3M42	3	40	42	130	250	2.0	2.3
	1340HR-3L42	3	40	42	180	300	2.0	2.7

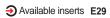
### Available inserts

WDKT-MH



		Cer	met						Coa	ited						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
WDKT	130520ZDSR-MH							•	•		•	•		•	•				E29

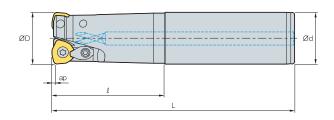
Specification						
	Screw	Clamp	Clamp screw	C-ring	Wrench	
Ø32,33,35	FTGA0510-P	CHH4.5R1	CTX04513H	CR03	TW20	
Ø40	FTGA0512-P	CHH4.5R1	CTX04513H	CR03	TW20	





# HRMS15

















(mm)

	Designation	©	ØD	Ød	Q	L	ар	kg
HRMS	1550HR-3S32	3	50	32	50	150	2.5	1.0
	1550HR-3M32	3	50	32	50	250	2.5	1.6
	1550HR-3L32	3	50	32	50	300	2.5	1.9
	1550HR-3S40	3	50	40	50	150	2.5	1.4
	1550HR-3M40	3	50	40	50	250	2.5	2.3
	1550HR-3L40	3	50	40	50	300	2.5	2.8
	1550HR-3S42	3	50	42	50	150	2.5	1.5
	1550HR-3M42	3	50	42	50	250	2.5	2.5
	1550HR-3L42	3	50	42	50	300	2.5	3.0
	1563HR-4S32	4	63	32	50	150	2.5	1.3
	1563HR-4M32	4	63	32	50	250	2.5	1.9
	1563HR-4L32	4	63	32	50	300	2.5	2.2
	1563HR-4S40	4	63	40	50	150	2.5	1.7
	1563HR-4M40	4	63	40	50	250	2.5	2.6
	1563HR-4L40	4	63	40	50	300	2.5	3.1
	1563HR-4S42	4	63	42	50	150	2.5	1.8
	1563HR-4M42	4	63	42	50	250	2.5	2.8
	1563HR-4L42	4	63	42	50	300	2.5	3.3

### Available inserts

WDKT-MH

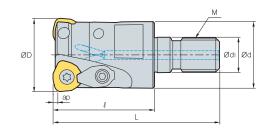


		Cer	met						Coa	ated						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	F04	page
WDKT	150625ZDSR-MH									•	•	•		•	•				E29

Specification					Sent Sent Sent Sent Sent Sent Sent Sent	
	Screw	Clamp	Clamp screw	C-ring	Wrench	
Ø50~Ø63	FTGA0513-P	CHH5.5R1	CTX0515	CR04	TW20	

# HRMM08

















(mm)

	Designation	0	ØD	Ød	ød1	Q	L	M	ар	kg \
HRMM	0820HR-M10	2	20	18	10.5	30	51	M10	1	0.06
	0821HR-M10	2	21	18	10.5	30	51	M10	1	0.06
	0825HR-M12	3	25	23	12.5	35	59	M12	1	0.11
	0826HR-M12	3	26	23	12.5	35	59	M12	1	0.11
	0828HR-M12	3	28	23	12.5	35	59	M12	1	0.12
	0832HR-M16	4	32	29	17	40	67	M16	1	0.21
	0833HR-M16	4	33	29	17	40	67	M16	1	0.21
	0835HR-M16	4	35	29	17	40	67	M16	1	0.23
	0840HR-M16	5	40	29	17	40	67	M16	1	0.25

### Available inserts

WDKT-MH



		Cer	met						Coa	ted						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
WDKT	080316ZDSR-MH							•	•	•	•	•		•	•				E29

### Available adaptor

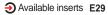
	Designation	Available adaptor
HRMM	0820HR-M10	MAT MAO
	0821HR-M10	MAT-M10
	0825HR-M12	
	0826HR-M12	MAT-M12
	0828HR-M12	
	0832HR-M16	
	0833HR-M16	MAT MAC
	0835HR-M16	MAT-M16
	0840HR-M16	

Designation : HRMM0820HR-M10 Modular head threading measure size (M10)

Ш

Adaptor spec.: MAT-M10-030-S20S Adaptor threading measure (M10)

Specification						Canon	
	Screw	Clamp	Clamp screw	C-ring	Wrench	Wrench	
Ø20~Ø40	FTNA0306	-	-	-	-	-	

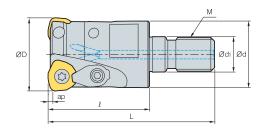






# HRMM10/13















• AR: 7° • RR: -11°~-5°

(mm)

	Designation	©	ØD	Ød	ød1	Q	L	М	ар	kg
HRMM	1025HR-M12	2	25	23	12.5	35	59	M12	1.5	0.1
	1026HR-M12	2	26	23	12.5	35	59	M12	1.5	0.1
	1030HR-M16	2	30	29	17	40	67	M16	1.5	0.2
	1032HR-M16	3	32	29	17	45	72	M16	1.5	0.26
	1035HR-M16	3	35	29	17	45	72	M16	1.5	0.23
	1040HR-M16	4	40	29	17	45	72	M16	1.5	0.27
HRMM	1332HR-M16	2	32	29	17	40	67	M16	2	0.17
	1333HR-M16	2	33	29	17	40	67	M16	2	0.17
	1335HR-M16	2	35	29	17	40	67	M16	2	0.19
	1340HR-M16	3	40	29	17	45	72	M16	2	0.24

### Available inserts





		Cer	met						Coa	ted						Uncoated			
Туре	Designation	CN2500	CN30	NC5330	NCM325	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
10 type	WDKT 10T320ZDSR-MH								•	•	•	•		•	•				E29
13 type	WDKT 130520ZDSR-MH							•	•	•	•	•		•	•				E29

### Available adaptor

	Designation	Available adaptor
HRMM	1025HR-M12	MAT-M12
	1026HR-M12	IVIAT-IVITZ
	1030HR-M16	
	1032HR-M16	NAAT NAAC
	1035HR-M16	MAT-M16
	1040HR-M16	
	1332HR-M16	
	1333HR-M16	MATIMAC
	1335HR-M16	MAT-M16
	1340HR-M16	

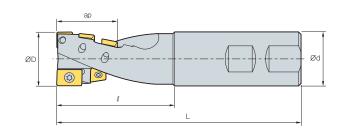
Designation: HRMM1030HR-M16 Modular head threading measure size (M16)

Adaptor spec.: MAT-M16-035-S32S Adaptor threading measure (M10)

Specification		2				Sono.	
	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	

# THE















(mm)

	Decimation	ØD	Ød	0			No. of	4	Available inserts			
	Designation		юu	Ł		ар	flute	/kg	Lower cutting-edge	External cutting-edge		
THE	25R	25	25	55	120	25	2	0.4	APLT070304R 1z	SPMT060304 4z		
	32R	32	32	70	145	40	2	0.5	ADLT150308R 1z	SDMT090308-MM 5z		
	40R	40	42	88	175	54	2	1.3	ZPMT1504PPSR-MM 1z	SPMT120408-MM 5z		
	50R	50	42	85	175	54	4	1.4	ZPMT1504PPSR-MM 2z	SPMT120408-MM 10z		

### Available inserts

	ADLT			APLT			SPMT	-ММ		S	PMT		S	DMT-N	lΜ		ZPMT	-ММ		
	5																P			
		Cer	met						(	Coate	d					_	Ur	ncoat	ed	
	Designation	CN2500	CN30	NCM325	NCM335	NC5330	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SPMT	060304			•																
SDMT	090308-MM										•				•					E04
SPMT	120408-MM										•				•					E05
APLT	070304R														•					E20 E27
ADLT	150308R			•											•					E33
ZPMT	1504PPSR-MM										•				•					

### Recommended cutting condition

### • Grooving

Mortonione	Cutting C	Grades	
Workpiece	vc (m/min)	fz (mm/t)	Grades
Р	90~140	0.05~0.2	PC5300
M	50~90	0.05~0.2	PC5300
	70~120	0.05~0.25	PC5300

### • Side cutting

Workniego	Cutting C	Condition	Grades
Workpiece	vc (m/min)	fz (mm/t)	Grades
Р	150 ~240	0.05~0.2	PC5300
M	90~150	0.05~0.2	PC5300
K	120~200	0.10~0.25	PC5300

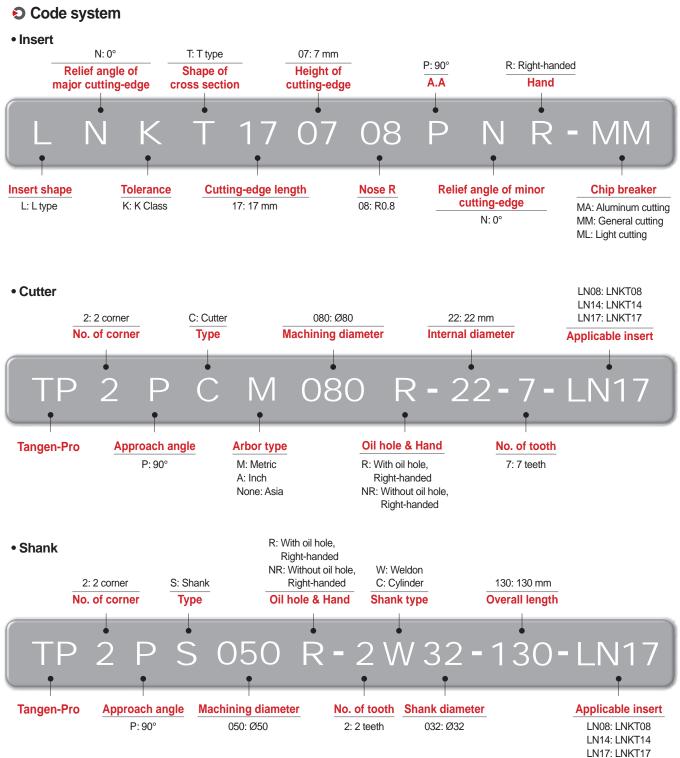
Specification	Screw	Wrench	Wrench	
Ø25	ETNA02506	TW07P	-	
Ø32	ETNA0408	-	TW15S	
Ø40	ETNA0511	-	TW20S	
Ø50	ETNA0511	-	TW20S	

## **Technical Information for TP2P**

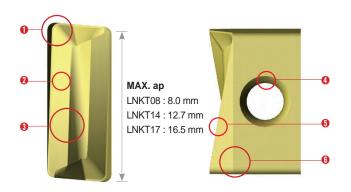
This milling tool series with its tangential clamping system increases stable machining and productivity, while improving perpendicularity

# 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



### Features of insert



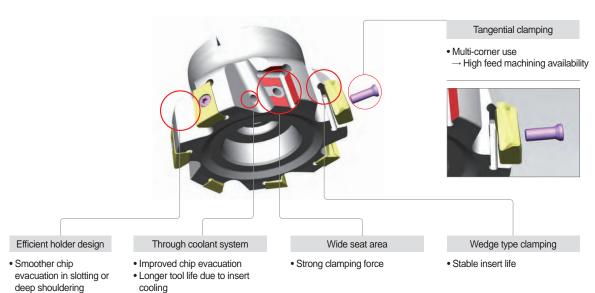
- Wedge type clamping area
- Clamping in wedge form on seats

  → Creates strong clamping force
- 4 High-rake angle chip breaker
- High-rake angle applied
- Produces smooth chip flow
   → Extended insert life
- Convex projection
- Improved chip evacuation
- Enhances rigidity

- Side hole (tangential type)
- Higher clamping stability
- 1 High-rake angle cutting-edges
- Improves cutting performance while reducing cutting load
- 6 2-level flank relief surface
- 1st reverse positive relief surface enhances rigidity
- 2nd negative relief surface enables stable clamping
- → Improved chipping resistance and surface finish

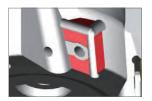
### Features of cutter

- Tangential clamping system, wedge-shaped inserts and wide seat area
- → Higher clamping stability
- → Lower vibrations and cutting resistance during machining











### Application guideline for grade

14	Maukmiaaa	ı	•	К	N
Workpiece		Carbon steel	Alloy steel	Cast iron	Aluminum
	High speed cutting	PC5300	PC5300	PC6510	H01
Grades	General cutting	PC5400	PC5300	PC6510	H01
	Interrupted cutting	PC5400	PC5400	PC5300	H01



### Features of chip breaker

In	sert	Cutting-edge	Uses	Features
MA			Aluminum	Exclusive sharp cutting edge for aluminum machining ensures good chip flow due to surface buffing treatment and high welding resistance.
ML			Light cutting	Chip breaker design for low cutting resistance that provides excellent tool life and quality surface finishes in light cutting and hard-to-cut materials
ММ			General cutting	Universal design for general shoulder milling operations, highly suitable in most applications

### Recommended cutting condition

### • LNKT08

	Workpiece	Grades	vc (m/min)	fz (mm/t)	Max. ap (mm)	Applicable insert	
P	Steel	PC5300	150~240	0.25~0.05	8.0	LNKT0804□□PNR-MM	
	Steel	PC5400	130~210	0.25~0.05	8.0		
K	Cast iron	PC6510	100~250	0.25~0.05	8.0	LNKT0804∏PNR-ML	
I.	Cast Iron	PC5300	100~200	0.25~0.05	8.0	LINK I 0804	
N	Aluminum	H01	500~1000	0.25~0.05	8.0	LNKT0804□□PNR-MA	

<sup>\*</sup> The above data refer to general cutting conditions and can be adjustable to the speed of 300m/min and the feed per tooth of 0.5 mm/t depending on user environment.

### • LNKT14

	Workpiece	Grades	vc (m/min)	fz (mm/t)	Max. ap (mm)	Applicable insert		
В	Stool	PC5300 Steel		0.25~0.05	12.7	LNKT1406□□PNR-MM		
	Steel	PC5400	130~210	0.25~0.05	12.7	LINKT 1400 PINK-WW		
K	Cast iron	PC6510	100~250	0.25~0.05	12.7	LNKT1406∏∏PNR-ML		
, K	Cast Iron	PC5300	100~200	0.25~0.05	12.7	LINKT 1400 PINK-IVIL		
N	Aluminum	H01	500~1000	0.25~0.05	12.7	LNKT1406□□PNR-MA		

<sup>\*</sup> The above data refer to general cutting conditions and can be adjustable to the speed of 300m/min and the feed per tooth of 0.5 mm/t depending on user environment.

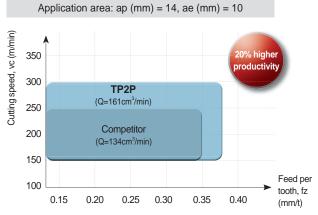
### • LNKT17

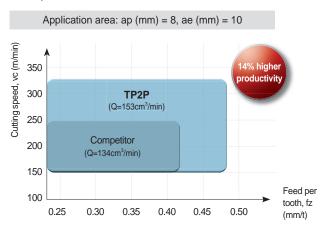
	Workpiece	Grades	vc (m/min)	fz (mm/t)	Max. ap (mm)	Applicable insert
В	Steel	PC5300	150~240	0.25~0.05	16.5	LNKT1707□□PNR-MM
	Steel	PC5400	130~210	0.25~0.05	16.5	LINKT 1707 PINK-IVIIVI
14	Cast iron	PC6510	100~250	0.25~0.05	16.5	LNIVT4707 PDND MI
K	Cast Iron	PC5300	100~200	0.25~0.05	8.0	- LNKT1707□□PNR-ML
N	Aluminum	H01	500~1000	0.25~0.05	16.5	LNKT1707□□PNR-MA

<sup>\*</sup> The above data refer to general cutting conditions and can be adjustable to the speed of 300m/min and the feed per tooth of 0.5 mm/t depending on user environment.

### Application area

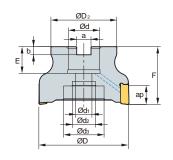
▶ Higher speed and feed machining than competitor's increases machinability.





# **TP2PC(M)-LN08**





















														(111111)
	Designation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	Е	F	ар	kg
TP2PCM	040R-16-6-LN08	6	40	35	16	9	14	-	8.4	5.6	16	40	8.0	0.19
	040R-16-7-LN08	7	40	35	16	9	14	-	8.4	5.6	16	40	8.0	0.19
	050R-22-7-LN08	7	50	41	22	11	18	-	10.4	6.3	20	40	8.0	0.31
	050R-22-10-LN08	10	50	41	22	11	18	-	10.4	6.3	20	40	8.0	0.31
	063R-22-10-LN08	10	63	49	22	11	18	-	10.4	6.3	20	40	8.0	0.49
	063R-22-11-LN08	11	63	49	22	11	18	-	10.4	6.3	20	40	8.0	0.49

### Available inserts







					_				W			·								
		Cer	rmet						C	coate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNKT	080404PNR-MA																			
	080408PNR-MA																			
	080412PNR-MA																			
	080416PNR-MA																			
	080404PNR-ML																			
	080408PNR-ML																			E11
	080412PNR-ML																			E11
	080416PNR-ML																			
	080404PNR-MM																			
	080408PNR-MM																			
	080412PNR-MM																			
	080416PNR-MM																			

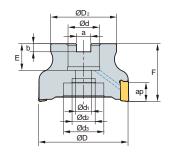
### Available arbors

	Designation	Available arbors
TP2PCM	040R-16-6-LN08	
	040R-16-7-LN08 050R-22-7-LN08	BT□□-FMC16-□□
	050R-22-7-LN08	
	040R-16-7-LN08	
		BT□□-FMC22-□□

Specification	<b>O</b> MMM		
	Screw	Wrench	
Ø40~Ø63	FTKA02565S	TW07S	

# **TP2PC(M)-LN14**

















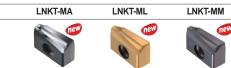




• RR: -22°~-12°

														(mm)
	Designation	(i)	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	Ε	F	ар	kg
TP2PCM	040R-16-4-LN14	4	40	35	16	9	14	-	8.4	5.6	19	40	12.7	0.19
	040R-16-5-LN14	5	40	35	16	9	14	-	8.4	5.6	19	40	12.7	0.19
	050R-22-5-LN14	5	50	42	22	11	18	-	10.4	6.3	20	40	12.7	0.29
	050R-22-6-LN14	6	50	42	22	11	18	-	10.4	6.3	20	40	12.7	0.29
	063R-22-6-LN14	6	63	49	22	11	18	-	10.4	6.3	20	40	12.7	0.49
	063R-22-8-LN14	8	63	49	22	11	18	-	10.4	6.3	20	40	12.7	0.49
	080R-27-7-LN14	7	80	57	27	14	20	35	12.4	7	23	50	12.7	0.94
	080R-27-10-LN14	10	80	57	27	14	20	35	12.4	7	23	50	12.7	0.94
	100R-32-8-LN14	8	100	70	32	18	28	45	14.4	8	28	63	12.7	1.73
	100R-32-13-LN14	13	100	70	32	18	28	45	14.4	8	28	63	12.7	1.73
	125R-40-9-LN14	9	125	90	40	22	32	54	16.4	9	30	63	12.7	2.98
	125R-40-17-LN14	17	125	90	40	22	32	54	16.4	9	30	63	12.7	3.04
TP2PC	080R-25.4-7-LN14	7	80	57	25.4	14	25	38	9.5	6	25	50	12.7	0.95
	080R-25.4-10-LN14	10	80	57	25.4	14	25	38	9.5	6	25	50	12.7	0.96
	100R-31.75-8-LN14	8	100	70	31.75	18	28	45	12.7	8	32	63	12.7	1.76
	100R-31.75-13-LN14	13	100	70	31.75	18	28	45	12.7	8	32	63	12.7	1.81
	125R-38.1-9-LN14	9	125	90	38.1	22	32	54	15.9	10	35	63	12.7	2.99
	125R-38.1-17-LN14	17	125	90	38.1	22	32	54	15.9	10	35	63	12.7	3.07

### Available inserts



												4	4									
		Cermet			Co	atec	ŀ			Uncoated				Cermet		(	Coat	ed			Uncoated	
	Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	PC2505	PC2510	PC6510	PC9540	PC5400	ST30A H01	page		Designation	CN2500 CN30	NC5330 NCM325 NCM335	NCM535 NCM545	PC2505 PC2510	PC3700 PC6510	PC9530	PC5300	ST30A H01	page
LNKT	140604PNR-MA											LNKT	140612PNR-ML									
	140608PNR-MA												140616PNR-ML									1
	140612PNR-MA										F44		140604PNR-MM									
	140616PNR-MA										E11		140608PNR-MM									E11
	140604PNR-ML												140612PNR-MM									
	140608PNR-ML												140616PNR-MM									]

### Available arbors

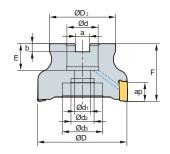
	Designation	Available arbors
TP2PCM	040R-16-4-LN14	BT -FMC16-
	040R-16-5-LN14	BILL-FINCTO-LL
	050R-22-5-LN14	
	050R-22-6-LN14	BT -FMC22-
	063R-22-6-LN14	BILL-FIVICZZ-LL
	063R-22-8-LN14	
	080R-27-7-LN14	BT -FMC27-
	080R-27-10-I N14	DILL-FIVICZI-LL

	Designation	Available arbors
TP2PCM	100R-32-8-LN14	BT□□-FMC32-□□
	100R-32-13-LN14	BIFIVIC32
	125R-40-9-LN14	BT -FMC40-
	125R-40-17-LN14	BIFIVIC4U
TP2PC	080R-25.4-7-LN14	BT -FMA25.4-
	080R-25.4-10-LN14	BIFIVIA25.4
	100R-31.75-8-LN14	BT -FMA31.75-
	100R-31.75-13-LN14	BILL-FIVIAS1./5-LL
	125R-38.1-9-LN14	BT -FMA38.1-
	125R-38.1-17-LN14	DILL-FIVIA38.I-LL

Specification			
	Screw	Wrench	
Ø40 ~ Ø125	FTKA03510	TW15S	

# **TP2PC(M)-LN17**





















• AR: -6° • RR: -21°~-15°

														(mm)
	Designation	0	ØD	ØD2	Ød	Ød1	Ød2	Ød3	а	b	E	F	ар	O kg
TP2PCM	040R-16-3-LN17	3	40	35	16	9	14	-	8.4	5.6	16	40	16.5	0.17
	040R-16-4-LN17	4	40	35	16	9	14	-	8.4	5.6	16	40	16.5	0.17
	050R-22-4-LN17	4	50	41	22	11	18	-	10.4	6.3	20	40	16.5	0.27
	050R-22-5-LN17	5	50	41	22	11	18	-	10.4	6.3	20	40	16.5	0.26
	063R-22-6-LN17	6	63	49	22	11	18	-	10.4	6.3	20	40	16.5	0.46
	063R-22-7-LN17	7	63	49	22	11	18	-	10.4	6.3	20	40	16.5	0.47
	080R-27-7-LN17	7	80	57	27	14	20	35	12.4	7	23	50	16.5	0.89
	080R-27-8-LN17	8	80	57	27	14	20	35	12.4	7	23	50	16.5	0.91
	100R-32-8-LN17	8	100	67	32	18	28	45	14.4	8	25	63	16.5	1.68
	100R-32-9-LN17	9	100	67	32	18	28	45	14.4	8	25	63	16.5	1.75
	125R-40-10-LN17	10	125	90	40	22	32	52	16.4	10	30	63	16.5	2.88
	125R-40-11-LN17	11	125	90	40	22	32	52	16.4	10	30	63	16.5	2.88
TP2PC	080R-25.4-7-LN17	7	80	57	25.4	14	20	35	9.5	6	25	50	16.5	0.92
	080R-25.4-8-LN17	8	80	57	25.4	14	20	35	9.5	6	25	50	16.5	0.93
	100R-31.75-8-LN17	8	100	67	31.75	18	28	45	12.7	8	32	63	16.5	1.73
	100R-31.75-9-LN17	9	100	67	31.75	18	28	45	12.7	8	32	63	16.5	1.73
	125R-38.1-10-LN17	10	125	90	38.1	22	32	52	15.9	9	35	63	16.5	3.06
	125R-38.1-11-LN17	11	125	90	38.1	22	32	52	15.9	9	35	63	16.5	2.91

### Available inserts

LNKT-MA

LNKT-ML

LNKT-MM







							•												
		Cermet		Co	ated			Uncoated				Cermet		C	oated	I		Uncoated	
	Designation	CN2500 CN30	NC5330 NCM325 NCM335	M250	PC2510 PC3700	PC9530	PC5300 PC5400	ST30A H01	page		Designation	CN2500 CN30	NC5330 NCM325 NCM335	NCM535 NCM545	PC2510 PC3700	PC6510 PC9530	PC9540 PC5300	ST30A H01	page
LNKT	170704PNR-MA									LNKT	170716PNR-ML								
	170708PNR-MA										170720PNR-ML								1
	170712PNR-MA										170704PNR-MM								1
	170716PNR-MA								E11		170708PNR-MM						• (	1	E11
	170720PNR-MA								L 11										
	170704PNR-ML										170712PNR-MM								
	170708PNR-ML				-		• •		1		170716PNR-MM								
	170712PNR-ML										170720PNR-MM								

### Available arbors

	Designation	Available arbors
TP2PCM	040R-16-3-LN17	BT□□-FMC16-□□
	040R-16-4-LN17	
	050R-22-4-LN17	
	050R-22-5-LN17	BT□□-FMC22-□□
	063R-22-6-LN17	BILL-FIVICZZ-LL
	063R-22-7-LN17	
	080R-27-7-LN17	BT□□-FMC27-□□
	080R-27-8-LN17	

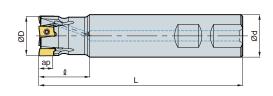
	Designation	Available arbors
TP2PCM	100R-32-8-LN17	BT□□-FMC32-□□
	100R-32-9-LN17	BILL-FINIC32-LL
	125R-40-10-LN17	BT□□-FMC40-□□
	125R-40-11-LN17	BILL-HWC40-LL
TP2PC	080R-25.4-7-LN17	BT□□-FMA25.4-□□
	080R-25.4-8-LN17	BIFIVIA23.4
	100R-31.75-8-LN17	BT□□-FMA31.75-□□
	100R-31.75-9-LN17	BILL-FIVIAST.75-LL
	125R-38.1-10-LN17	BT - FMA38.1-
	125R-38.1-11-LN17	

<b>.</b>			
Specification			
	Screw	Wrench	
Ø40~Ø125	FTKA0412B	TW15S	



# TP2PS-LN08



















• AR: -6° • RR: -35°~-26°

(mm)

	Designation	<b>©</b>	ØD	Ød	Q	L	ар	(kg)
TP2PS	020R-2W20-120-LN08	2	20	20	30	120	8.0	0.25
	020R-3W20-120-LN08	3	20	20	30	120	8.0	0.25
	025R-3W25-120-LN08	3	25	25	30	120	8.0	0.39
	025R-4W25-120-LN08	4	25	25	30	120	8.0	0.39

### Available inserts

LNKT-MA LNKT-ML LNKT-MM

TOTAL TOTAL

		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
LNKT	080404PNR-MA																			
	080408PNR-MA																			
	080404PNR-ML																			E11
	080408PNR-ML																			EII
	080404PNR-MM																			
	080408PNR-MM																			

### Parts

 Specification
 Wrench

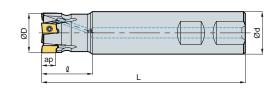
 Screw
 Wrench

 Ø16~Ø25
 FTKA02565S
 TW07S



# TP2PS-LN14





















(mm)

						_		0
	Designation		ØD	Ød	Ų	L	ар	kg
TP2PS	025R-2W25-130-LN14	2	25	25	40	130	12.7	0.41
	032R-3W32-130-LN14	3	32	32	40	130	12.7	0.69
	040R-3W32-130-LN14	3	40	32	40	130	12.7	0.75
	040R-4W32-130-LN14	4	40	32	40	130	12.7	0.76
	050R-4W32-130-LN14	4	50	32	40	130	12.7	0.85
	050R-5W32-130-LN14	5	50	32	40	130	12.7	0.84

### Available inserts

LNKT-MA LNKT-ML LNKT-MM

TOTAL TOTAL

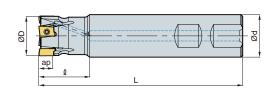
		Cer	met						C	coate	d						Ur	Uncoated		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNKT	140608PNR-MA																			
	140608PNR-ML																			E11
	140608PNR-MM																			

Specification			
	Screw	Wrench	
Ø25 ~ Ø50	FTKA03510	TW15S	



# TP2PS-LN17



















• AR: -6° • RR: -26°~-18°

(mm)

	Designation	<b>(</b>	ØD	Ød	Q	L	ар	
TP2PS	032R-2W32-130-LN17	2	32	32	40	130	16.5	0.68
	032R-3W32-130-LN17	3	32	32	40	130	16.5	0.67
	040R-3W32-130-LN17	3	40	32	40	130	16.5	0.73
	040R-4W32-130-LN17	4	40	32	40	130	16.5	0.73
	050R-4W32-130-LN17	4	50	32	40	130	16.5	0.83
	050R-5W32-130-LN17	5	50	32	40	130	16.5	0.83

### Available inserts

LNKT-MA LNKT-ML LNKT-MM

					-						`									
		Cer	met		Coated												Uncoated			
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
LNKT	170704PNR-MA																			
	170708PNR-MA																			
	170712PNR-MA																			
	170716PNR-MA																			
	170720PNR-MA																			
	170704PNR-ML																			
	170708PNR-ML											•			•	•				
	170712PNR-ML																			E11
	170716PNR-ML																			
	170720PNR-ML																			
	170704PNR-MM																			
	170708PNR-MM														•	•				
	170712PNR-MM																			
	170716PNR-MM																			
	170720PNR-MM																			

Specification		
	Screw	Wrench
Ø32~Ø50	FTKA0412B	TW15S



### Longer tool life guaranteed thanks to the excellent cutting performance of our grades

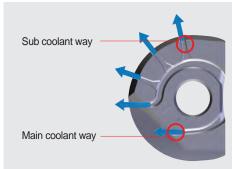
## \_aser Mill

- 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

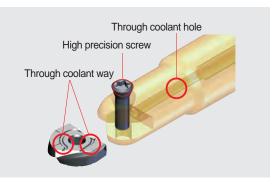
# **MQL System**

- 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



- · Six types of inserts are available with one holder
- · Single screw for clamping of insert: Easy clamping system
- Various types of holders (Steel shank, Carbide shank, Modular type)
- MQL applicable- environmentally responsible with longer tool life & improved surface quality.

### LBS, LR Order-made items

# LBH-Ball

- · Helical cutting-edge
- Suitable for harder material with high feed

### **LRH-Corner radius**



- Helical cutting-edge
- Variety of nose-R

### LFH-High feed



- Helical cutting-edge
- · Suitable for high feed

# LCF-Chamfer



- Straight cutting-edge
- · Center drilling and chamfering

### LBS-Ball type



- Straight cutting-edge
- Suitable for precise



- Straight cutting-edge
- Variety of nose-R

### Features of Laser Mill grades

### PC2005

- Extremely high hardness grade
- The harmony between improved blade design and strong chip breaker
- Optimized for machining heat-treated steel and high hardness steel

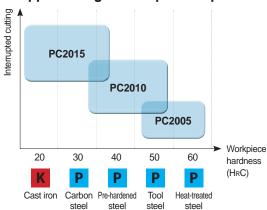
### PC2010

- High wear resistance and excellent toughness
- The harmony between excellent thermal shock resistance and strong cutting-edges.
- Optimized for machining tool steel and pre-hardened steel

### PC2015

- · High welding resistance and excellent toughness
- The harmony between tough grade and excellent cutting-edge design
- · Optimized for machining carbon steel

### Application guideline per workpiece

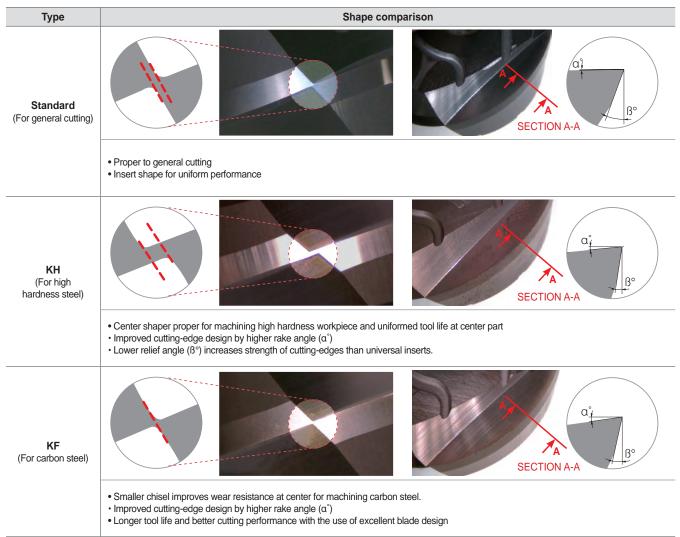




### **Technical Information for Laser Mill**

### 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



### Recommended cutting condition

	Woi	kpiece		Crades	Chip	Recommended cutting conditions						
	ISO	Material	HB (HRC)	Grades	breaker	vc (m/min)	fz (mm/t)	ap (mm)	ae (mm)			
K	Gray cast iron	GC250	180 (8)	PC2015		130~210	0.2~0.5	0.07D	0.07D			
r.	Ductile cast iron	GCD600	250 (24)	PC2010	KF	130~210	0.2~0.5	0.07D	0.07D			
	Carbon steel Alloy steel	S20C~S50C	150	PC2005		170~250	0.2~0.5	0.07D	0.07D			
		SCM21~SCM5H	270 (28)			130~210	0.1~0.3	0.7D	0.7D			
	Pre-	KP4M	300 (32)	DC2010								
		NIMAX	370 (40)	PC2010	KH	100~160	0.1~0.3	0.5D				
P	hardened	CENA1	370 (40)	PC2015 PC210F					0.5D			
Р	steel	NAK80	400 (43)	PCZTUF								
		STAVAX	510 (52)									
	High speed tool steel	SKH51~SKH59	550 (55)	DOGGGE		80~130	0.1~0.2	0.3D	0.3D			
	Allowtoolotool	STD61 (Hot forging)	000 (00)	PC2005	KH	70.400	0.4.00	0.00	0.00			
	Alloy tool steel	STD11 (Cold forging)	← 630 (60) □	PC2010		70~120	0.1~0.2	0.3D	0.3D			

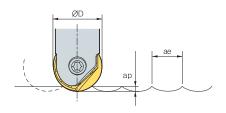
Overhang	vc (m/min)	fz (mm/t)
Under 3D	100%	100%
3D~5D	70%	70%
5D~8D	60%	60%
8D~10D	50%	50%



# ιΕ

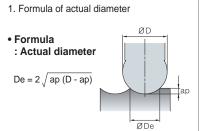
### Cutting speed calculation formulas

Practical cutting speed	RPM
$VCe = \frac{\pi \times De \times n}{1000} (m/min)$	$n = \frac{\text{vce} \times 1000}{\pi \times \text{De}} \text{ (min}^{-1}\text{)}$
Feed per tooth	Feed per minute
$fz = \frac{vf}{z \times n} (mm/t)$	$Vf = fz \times z \times n \text{ (mm/min)}$
Chip removal amount	Power requirement
$Q = \frac{ap \times ae \times vf}{1000} (cm^3/min)$	$Pkw = \frac{Q \times kc}{60 \times 102 \times \eta} (kW)$ $Php = \frac{Pc}{0.75} (hp)$



vc = Cutting speed (m/min)	Pkw = Power requirement (kW)		
vce = Practical cutting speed (m/min)	Php = Horsepower requirement (hp)		
n = Revolution per minute (min <sup>-1</sup> )	Q = Chip removal amount (cm³/min)		
D = Cutting diameter (mm)	ap = Depth of cut (mm)		
De = Actual diameter (mm)	ae = Width of cut (mm)		
vf = Feed per minute (mm/min)	kc = Specific cutting resistance (kg/mm²)		
fz = Feed per tooth (mm/t)	η = Mechanical efficiency (%)		
z = Number of tooth			

### Practical cutting speed calculation formulas

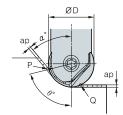


- 2.  $\theta^\circ$ Using: Calculating cutting speed at P point (Cutting speed according to depth of cut when ramping)
- : Practical cutting speed  $vce = \frac{\pi \text{ Dsin } \theta \times n}{1000} \text{ (m/min)}$   $\theta = cos^{-1} \left( \frac{D 2ap}{1000} \right) + (90 9)^{-1}$

• Formula

- 3. In case of using ap: Calculating cutting speed at Q point
- : Pratical cutting speed  $vce = \frac{2\pi n \sqrt{ap (D - ap)}}{1000}$

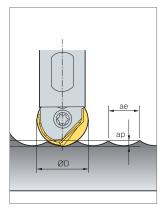
• Formula



### Theoretical surface roughness

h (surface roughness) (μm)										
ae (mm) R (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	8.0	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) =  $\frac{(ae)^2}{8R} \times 1000 \; (\mu m)$ 



### Actual diameter data

ap	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

### **Technical Information for Laser Mill**

### Performance evaluation

# PC2005 tool life test

### ■ Cutting conditions vc = 140 m/min fz = 0.15 mm/tap = 1.2 mm ae = 1.2 mm

Coolant (Air)

■ Tools Insert LBH120-KH (PC2005)

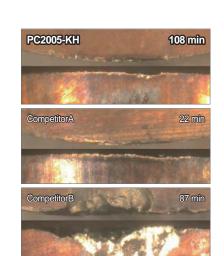
### Chip removal rate (Q) = 1.6 cm<sup>3</sup>/min 2400 Chip removal volume (cm<sup>3</sup>) 2100 108 min machining Otot = 1736 cm³ 1800 1500 87 min machining 1200 $Q_{tot} = 1389 \text{ cm}^3$ 900 600 22 min machining 300 $Q_{tot} = 347 \text{ cm}^3$ 80 100 120 140 Cutting time (min)

Competitor A

High hardness heat-treated steel (X100CrMoV5 1, heat-treated HRC60)

Competitor B

Pre-hardened steel (X40CrMnNiMo8-6-4)



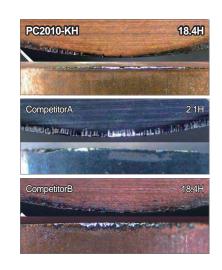
# PC2010 tool life test

### ■ Cutting conditions vc = 276 m/min fz = 0.15 mm/tap = 0.3 mm ae = 1.2 mm

Wet

**■** Tools Insert LBH120-KH (PC2010)

### Chip removal rate (Q) = 0.86 cm<sup>3</sup>/min 600 Chip removal volume (cm3) 500 18.4h machining 400 $Qtot = 486 \text{ cm}^3$ 300 2.1h machining 60 $Q_{tot} = 54 \text{ cm}^3$ 50 40 2 3 18 Cutting time (hour) PC2010 Competitor A Competitor B



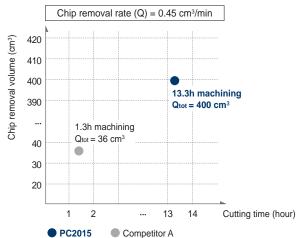
# PC2015 tool life test Carbon steel (C45)

PC2005



### ■ Cutting conditions vc = 250 m/min fz = 0.35 mm/tap = 0.3 mm ae = 0.3 mm Coolant (MQL)

■ Tools Insert LBH120 (PC2015)





13.3H

PC2015





### Available inserts

	LBH (Ball type)	LRH (Corner radius type)	LFH (High feed type)	LCF (Chamfer type)	LBS (Ball type)	LR (Corner radius type)
Holders			, d	d 907	d d	d d
	R accuracy ±0.005	Corner R ±0.015			R accuracy ±0.005	Corner R ±0.015
LBE080	LBH080 LBH090 LBH080-KF LBH090-KF LBH080-KH LBH090-KH				LBS080 LBS090	
LBE100 LRE100	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
LBE120 LRE120	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
LBE160 LRE160	LBH160 LBH170 LBH160-KF LBH170-KF LBH160-KH LBH170-KH	LRH160-R05 LRH160-R10 LRH160-R20 LRH160-R30	LFH160	LCF160-D90	LBS160 LBS170	LR160-R05 LR160-R30 LR160-R10 LR170-R05 LR160-R20
LBE200 LRE200	LBH200 LBH210 LBH200-KF LBH210-KF LBH200-KH LBH210-KH	LRH200-R05 LRH200-R10 LRH200-R20 LRH200-R30	LFH200	LCF200-D90	LBS200 LBS210	LR200-R05 LR200-R30 LR200-R10 LR210-R05 LR200-R20
LBE250 LRE250	LBH250 LBH260 LBH250-KF LBH260-KF LBH250-KH LBH260-KH	LRH250-R05 LRH250-R10 LRH250-R20 LRH250-R30	LFH250	LCF250-D90	LBS250 LBS260	LR250-R05 LR250-R30 LR250-R10 LR260-R05 LR250-R20
LBE300 LRE300	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
LBE320 LRE320	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

<sup>→</sup> Available inserts E08~E10

 $<sup>^{\</sup>star}$  LBH for general cutting, LBH-KF for carbon steel, and LBH-KH for high hardened steel.

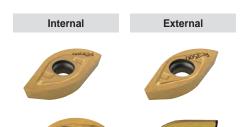
### **Technical Information for GBE**

### Long tool life due to high hardness grade

- 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





- · High accuracy machining & large depth of cut applications
- Run-out: within 0.05 mm
- R accuracy: within 0.05 mm
- Various diameters (Ø16, Ø18, Ø20, Ø22, Ø25, Ø26, Ø28, Ø30, Ø32, Ø40, Ø50)
- Minimal cutting resistance due to Helical cutting-edge
- Anti-rotation of insert due to concave bottom & stable setting by flank support
- Long tool life & better processing due to 2 cutting inserts
- Better tool life with new grade



Concave bottom

Long tool life & better processing

Ø28, Ø30, Ø32, Ø40, Ø50)

(cutting-edge portion)

· Easy insert setting with projection part to prevent vibration during processing

· Improved chip treatment with internal coolant

• Various diameters (Ø16, Ø18, Ø20, Ø22, Ø25, Ø26,

Multi-edge type

Flank support

- Single-edge type





Projection

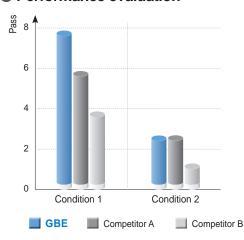


#### How to set insert



- 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 condition

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)	Dest
Condition 2	100 m/min	0.1 mm/t	8 mm	8 mm	SCM440 (HRC20)	Dry

### Inserts/parts

Type

Ø50

ZPET250M-MM

Dia. Internal I/S External I/S External main I/S Ø16 ZPET080M-MM ZPET080S-MM Ø18 ZPET090M-MM ZPET090S-MM Ø20 ZPET100M-MM ZPET100S-MM SPMT060304 Ø22 ZPET110M-MM ZPET110S-MM SPMT060304 Ø25 ZPET125M-MM ZPET125S-MM SPMT060304 Ø26 ZPET130M-MM ZPET130S-MM SDMT090308-MM ZPET140M-MM ZPET140S-MM SDMT090308-MM Ø28 Ø30 ZPET150M-MM ZPET150S-MM SDMT090308-MM SDMT090308-MM Ø32 ZPET160M-MM ZPET160S-MM ZPET200M-MM SPMT120408-MM Ø40 ZPET200S-MM

ZPET250S-MM

SPMT120408-MM

Insert





Sci	rew	Wre	ench	
Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type	
FTKA02555S	-	TW08S	-	
FTKA0307	-	TW09S	-	
FTKA0307	ETNA02506	TW09S	TW07P	
FTKA0408	ETNA02506	TW15S	TW07P	
FTKA0409	ETNA02506	TW15S	TW07P	
FTKA0409	ETNA0408	TW15S	TW15S	
FTGA0511-P	ETNA0408	TW20	TW15S	
FTGA0511-P	ETNA0408	TW20-100	TW15S	
FTGA0511-P	ETNA0408	TW20-100	TW15S	
FTGA0614	ETNA0511	TW20-100	TW20S	
FTGA0818	ETNA0511	TW25S	TW20S	

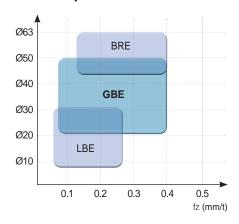


# E Technical Information for GBE

### Recommended cutting condition

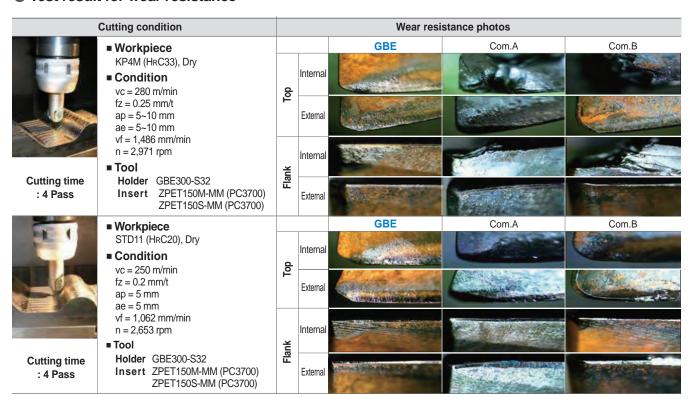
Workpiece	Machining type	Hardness (HRC)	vc (m/min)	fz (mm/t)	ap (mm)	ae (mm)
Carbon, Alloy steel	Flank Groove Deep flank	Under 25	160~250 120~200 160~250	0.1~0.5 0.1~0.5 0.1~0.5	0.3~0.5D 0.3~0.5D 1.0~1.5D	0.2~0.3D - 0.1~0.2D
Carbon, Alloy steel	Flank Groove Deep flank	Under 45	120~200 120~160 120~200	0.1~0.5 0.1~0.5 0.1~0.5	0.3~0.5D 0.3~0.5D 1.0~1.5D	0.2~0.3D - 0.1~0.2D
Mold Alloy steel	Flank Groove Deep flank	30~40	120~200 120~160 120~200	0.1~0.3 0.1~0.3 0.1~0.3	0.3~0.5D 0.3~0.5D 1.0~1.5D	0.2~0.3D - 0.1~0.2D
Cast iron (GC, GCD)	Flank Groove Deep flank	20~30	150~300 150~300 150~300	0.2~0.7 0.2~0.7 0.2~0.7	0.3~0.5D 0.3~0.5D 1.0~1.5D	0.2~0.3D - 0.1~0.2D
Heat-treated steel	Flank Groove Deep flank	50~60	40~100 40~100 40~100	0.1~0.3 0.1~0.3 0.1~0.3	0.3~0.5D 0.3~0.5D 1.0~1.5D	0.2~0.3D - 0.1~0.2D

### Line-up for indexable ball endmill



	Application									
Туре	Quality	Machining Efficiency	Machining Dia. Equivalence	Economical	Flank Machining with Long Edge					
Laser Mill	•	0	•	0	0					
GBE	•	•	•	•	•					
BRE	0	•	•	•	•					

#### Test result for wear resistance

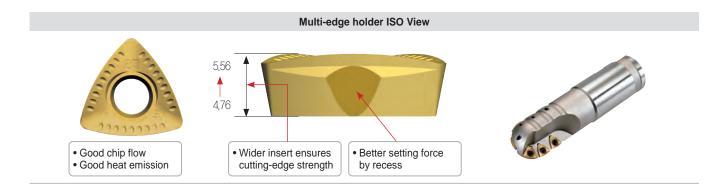


# ΕE

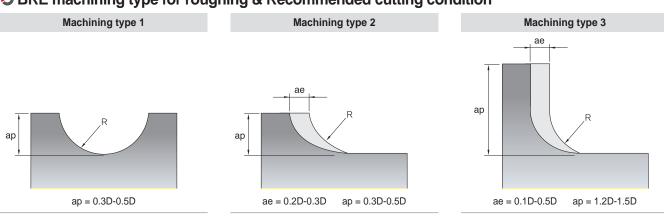
#### Better tool life with its anti-breakage special surface treatment

### **BRE**

- Cutting performance: Good chip control & Superior cutting performance with optimal cutting-edge line
- High rigidity body: Better tool life and special surface treatment to strengthen the holder
   Easy to set and good durability with TCRX screw
   Good chip control with our 3D flute design & improved external quality
- Insert: Grade available for high speed & feed applications due to it's high wear and breakage resistance providing a stable cutting performance with high cutting-edge toughness and a chip breaker featuring a high rake angle



### **⑤** BRE machining type for roughing & Recommended cutting condition



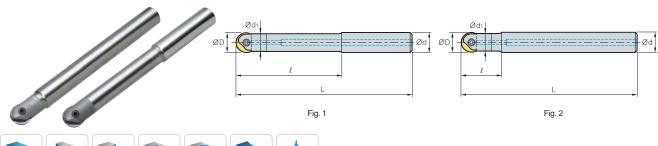
Workpiece	Machining type	Cutting speed (m/min)	Feed (mm/t)	Grades
	1	120~220	0.1~0.4	NCM325
Carbon/alloy steel	2	120~220	0.2~0.4	NCM325
•	3	100~180	0.1~0.3	NCM325
	1	100~200	0.1~0.4	NCM325
Alloy steel	2	100~200	0.2~0.4	NCM325
	3	80~160	0.1~0.3	NCM325
	1	80~150	0.1~0.3	NCM325
Tool steel	2	80~150	0.15~0.35	NCM325
	3	60~120	0.1~0.3	NCM325
link kandaasa matanial	1	60~120	0.1~0.3	NCM325
High hardness material	2	60~120	0.1~0.3	NCM325
(HRC35~45)	3	50~80	0.1~0.2	NCM325
	1	100~180	0.2~0.5	NCM325
Cast iron	2	100~180	0.2~0.5	NCM325
	3	80~160	0.15~0.4	NCM325



# LBE08/10/12/16/20/25/30/32

Straight type

### Carbide Shank (Ball type)



|--|--|

(mm)

	<b>.</b>			Dimensions	 S		Part	s	Available	(11111)
	Designation	ØD	Ød	Ød1	Q	L	Clamp screw	Wrench	inserts (Ø)	Fig.
LBE	080080S-S08C	8, 9	8	7.5	80	136	FTNDOOFOOF	TM/D070	0.0	4
	080100S-S08C	8, 9	8	7.5	100	156	ETND02506F	TWP07S	8, 9	1
	080020S-S08C-130	8, 9	8	7.5	20	130	ETNDOSECCE	TMDOZO	0.0	0
	080020S-S08C-150	8, 9	8	7.5	20	150	ETND02506F	TWP07S	8, 9	2
	100080S-S10C	10, 11	10	9.5	80	136	ETND0307F	TWP08S	40.44	1
	100120S-S10C	10, 11	10	9.5	120	176	ETND0307F	100000	10, 11	'
	100023S-S10C-130	10, 11	10	9.5	23	130	ETND0307F	TWP08S	40.44	0
	100023S-S10C-170	10, 11	10	9.5	23	170	ETND0307F	100000	10, 11	2
	120100S-S12C	12, 13	12	11.5	100	156	ETND03509	TWP10S	12, 13	4
	120150S-S12C	12, 13	12	11.5	150	206	E IND03509		12, 13	1
	120025S-S12C-150	12, 13	12	11.5	25	150	ETND03509	TWP10S	12, 13	2
120025S-S1	120025S-S12C-200	12, 13	12	11.5	25	200	E 110000009	1005	12, 13	
	160100S-S16C	16, 17	16	15.5	100	160	ETND0413	TWP15S	16, 17	1
	160150S-S16C	16, 17	16	15.5	150	210	ETND0413	100 100	10, 17	1
	160030S-S16C-160	16, 17	16	15.5	30	160	ETND0413	TWP15S 16, 17	16 17	2
	160030S-S16C-210	16, 17	16	15.5	30	210	ETND0413		10, 17	2
	200120S-S20C	20, 21	20	19.5	120	190	ETKD0516	TWP20	20, 21	1
	200170S-S20C	20, 21	20	19.5	170	240	EIKDUSIO			<u>'</u>
	200035S-S20C-190	20, 21	20	19.5	35	190	ETKD0516	TWP20	20, 21	2
	200035S-S20C-240	20, 21	20	19.5	35	240	ETKD0510	TVVFZU	20, 21	2
	250140S-S25C	25, 26	25	24.5	140	220	ETKD0620	TWP25	25, 26	1
	250170S-S25C	25, 26	25	24.5	170	250	ETRD0020	TVVF25	25, 20	'
	250040S-S25C-220	25, 26	25	24.5	40	220	ETKD0620	TWP25	25, 26	2
	250040S-S25C-250	25, 26	25	24.5	40	250	LTRD0020	1 4 4 7 2 3	23, 20	
	300140S-S32C	30, 31	32	29.5	140	230	ETGD0825	TWP40	30, 31	1
	300170S-S32C	30, 31	32	29.5	170	260	E1GD0625	100740	30, 31	'
	300050S-S32C-230	30, 31	32	29.5	50	230	ETGD0825	TWP40	30, 31	2
	300050S-S32C-260	30, 31	32	29.5	50	260	E1GD0025	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	30, 31	
	320140S-S32C	32	32	31.5	140	230	ETGD0825	TWP40	32 33	1
	320170S-S32C	32	32	31.5	170	260	E1GD0023	TWP40	32, 33	1
	320050S-S32C-230	32	32	31.5	50	230	ETGD0825	TWP40 32, 33	2	
	320050S-S32C-260	32	32	31.5	50	260	L 1 G D 0023	1 40	32, 33	4

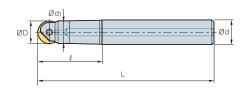
→ Available inserts E08~E10

### LBE08/10/12/16/20/25/30/32

**Taper type** 

### Steel Shank (Ball type)

















(mm)

	Desimotion			Dimensions			Par	ts	Available
	Designation	ØD	Ød	Ød1	Q	L	Clamp screw	Wrench	inserts (Ø)
LBE	080035T-S12	8, 9	12	7.5	35	91			8, 9
	080055T-S12	8, 9	12	7.5	55	111	ETND02506F	TWP07S	
	080075T-S12	8, 9	12	7.5	75	131			
	100035T-S12	10, 11	12	9.5	35	91			10, 11
	100055T-S12	10, 11	12	9.5	55	111	ETND0307F	TWP08S	
	100075T-S12	10, 11	12	9.5	75	131			
	120055T-S12	12, 13	12	10.4	55	111	ETND03509	TWP10S	12, 13 16, 17
	120085T-S16	12, 13	16	11.5	85	145	ETND03509		
	160065T-S16	16, 17	16	14	65	125	ETND0413		
	160100T-S20	16, 17	20	15.5	100	170	ETND0413		
	200075T-S20	20, 21	20	17.5	75	145	ETI/Dos10	TWP20	20. 21
	200115T-S25	20, 21	25	19.5	115	195	ETKD0516	100P20	20, 21
	250090T-S25	25, 26	25	22	90	170	ETKD0000	TMDOE	25. 20
	250135T-S32	25, 26	32	24.5	135	225	ETKD0620	TWP25	25, 26
	300105T-S32	30, 31	32	29.5	105	195	ETGD0825	TWP40	20.24
	300160T-S32	30, 31	32	29.5	160	250	E1GD0825	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	30, 31
	320105T-S32	32	32	29	105	195	FTODOOG	TWD40	22.22
	320160T-S32	32	32	29	160	250	ETGD0825	TWP40	32, 33

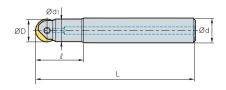
<sup>→</sup> Available inserts E08~E10

### LBE12/16/20/25/30/32

Straight type

### Steel Shank (Ball type)





















(mm)

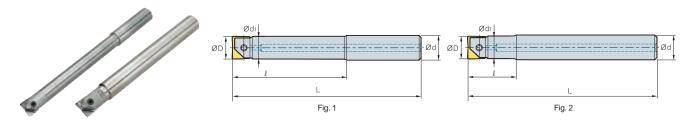
									(11111)
	Designation			Dimensions	Parts		Available		
	Designation	ØD	Ød	Ød <sub>1</sub>	Q	L	Clamp screw	Wrench	inserts (Ø)
LBE	120035S-S12	12, 13	12	11.5	35	91	ETND03509	TWP10S	12, 13
	160035S-S16	16, 17	16	15.5	35	95	ETND0413	TWP15S	16, 17
	200040S-S20	20, 21	20	19.5	40	110	ETKD0516	TWP20	20, 21
	250045S-S25	25, 26	25	24.5	40	125	ETKD0620	TWP25	25, 26
	300055S-S32	30, 31	32	29.5	55	145	ETGD0825	TWP40	30, 31
	320055S-S32	32	32	31.5	55	145	ETGD0825	TWP40	32, 33



### LRE10/12/16/20/25/30/32

Straight type

# **Carbide Shank (Corner R type)**





(mm)

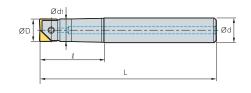
	Decimation			Dimensions	5		Par	ts	Available	F:
	Designation	ØD	Ød	Ød1	Q	L	Clamp screw	Wrench	inserts (Ø)	Fig.
LRE	100080S-S10C	10, 11	10	9.5	80	136	ETND0207E	TWDOOC	40.44	4
	100120S-S10C	10, 11	10	9.5	120	176	ETND0307F	TWP08S	10, 11	1
	100023S-S10C-130	10, 11	10	9.5	23	130	ETND0307F	TWP08S	10, 11	2
	100023S-S10C-170	10, 11	10	9.5	23	170	ETNDUSUTE	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10, 11	2
	120100S-S12C	12, 13	12	11.5	100	156	ETNIDOSEGO	TWP10S	10 10	
	120150S-S12C	12, 13	12	11.5	150	206	ETND03509	1007103	12, 13	1
	120025S-S12C-150	12, 13	12	11.5	25	150	ETND03509	TWP10S	12, 13	2
12	120025S-S12C-200	12, 13	12	11.5	25	200	ETND03309	100100	12, 13	
	160100S-S16C	16, 17	16	15.5	100	160	ETND0413	TWP15S	16, 17	1
	160150S-S16C	16, 17	16	15.5	150	210	ETND0413	100-100	10, 17	
	160030S-S16C-160	16, 17	16	15.5	30	160	ETND0413	TWP15S	16, 17	2
	160030S-S16C-210	16, 17	16	15.5	30	210	ETND0413	100-100	10, 17	
	200120S-S20C	20, 21	20	19.5	120	190	ETKD0516	TWP20 20, 21	20. 24	1
	200170S-S20C	20, 21	20	19.5	170	240	EINDOSTO		'	
	200035S-S20C-190	20, 21	20	19.5	35	190	ETKD0516	TWP20	20, 21	2
	200035S-S20C-240	20, 21	20	19.5	35	240	EINDOSTO			
	250140S-S25C	25, 26	25	24.5	140	220	ETKD0620	TWP25	25, 26	1
	250170S-S25C	25, 26	25	24.5	170	250	ETKD0020	TVVFZ5	25, 26	
	250040S-S25C-220	25, 26	25	24.5	40	220	ETKD0620	TWP25	25, 26	2
	250040S-S25C-250	25, 26	25	24.5	40	250	ETKD0020	TVVFZ5	25, 26	
	300140S-S32C	30, 31	32	29.5	140	230	ETGD0825	TWP40	30, 31	1
	300170S-S32C	30, 31	32	29.5	170	260	E1GD0625	100740	30, 31	ı
	300050S-S32C-230	30, 31	32	29.5	50	230	ETGD0825	TWP40	30, 31	2
	300050S-S32C-260	30, 31	32	29.5	50	260	E10D0025	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	30, 31	2
	320140S-S32C	32	32	31.5	140	230	ETGD0825	TWP40	32, 33	1
	320170S-S32C	32	32	31.5	170	260	E1GD0625	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	32, 33	ı
	320050S-S32C-230	32	32	31.5	50	230	ETGD0825	TWP40	32 33	2
	320050S-S32C-260	32	32	31.5	50	260	E1GD0023	1 11740	32, 33	2

→ Available inserts E08~E10

LRE10/12 **Taper type** 

### Steel Shank (Corner R type)

















Straight type

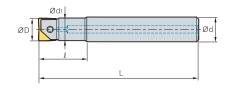
Designation				<b>Dimensions</b>		Parts	Available		
		ØD	Ød	Ød1	Q	L	Clamp screw	Wrench	inserts (Ø)
LRE	100025T-S12	10, 11	12	9.5	25	111	ETND0307F	TWP08S	10,11
	100050T-S12	10, 11	12	9.5	50	150	ETND0307F		
	120060T-S16	12, 13	16	11.5	60	160	ETND03509	TWP10S	12,13

Available inserts E08∼E10

### LRE12/16/25/30/32

Steel Shank (Corner R type)

















<b>A</b>	

(mm)

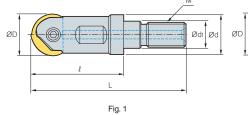
	Decimation			Dimensions			Par	ts	Available
	Designation	ØD	Ød	Ød1	Q	L	Clamp screw	Wrench	inserts (Ø)
LRE	120030S-S12	12, 13	12	11.5	30	111	ETND03509	TWP10S	12, 13
	160050S-S16	16, 17	16	15.5	50	131	ETND0413	TWP15S	16 17
	160060S-S16	16, 17	16	15.5	60	160	ETND0413	1007155	16, 17
	200060S-S20	20, 21	20	19.5	60	145	ETKD0516	TWP20	20, 21
	200080S-S20	20, 21	20	19.5	80	180	EINDOSTO	100F20	20, 21
	250070S-S25	25, 26	25	24.5	70	145	ETKD0620	TWP25	25, 26
	250100S-S25	25, 26	25	24.5	100	225	E1KD0620	100P25	25, 26
	300070S-S32	30, 31	32	29.5	70	160	ETGD0825	TWP40	30. 31
	300100S-S32	30, 31	32	29.5	100	225	E1GD0625	100740	30, 31
	320080S-S32	32	32	31.5	80	160	ETGD0825	TWP40	32, 33
	320100S-S32	32	32	31.5	100	225	E1GD0025	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	32, 33

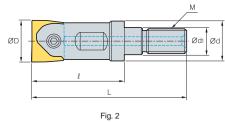
<sup>→</sup> Available inserts E08~E10



### LBE-MHD





















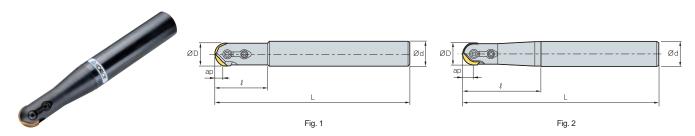
(mm)

	Decimation			Dimer	nsions			Part	Available	
	Designation	М	ØD	L	Q	Ød	Ød <sub>1</sub>	Clamp screw	Wrench	inserts (Ø)
LBE	100-MHD-M06	M06	10, 11	40	25	9.5	6.5	ETND0307F	TWP08S	10, 11
	120-MHD-M06	M06	12, 13	40	25	11	6.5	ETND03509	TWP10S	12, 13
	160-MHD-M08	M08	16, 17	47	30	14.5	8.5	ETND0413	TWP15S	16, 17
	200-MHD-M10	M10	20, 21	56	35	18	10.5	ETKD0516	TWP20	20, 21
	250-MHD-M12	M12	25, 26	69	45	22.5	12.5	ETKD0620	TWP25	25, 26
	300-MHD-M16	M16	30, 31	77	50	28	17	ETGD0825	TWP40	30, 31
	320-MHD-M16	M16	32	77	50	29	17	ETGD0825	TWP40	32, 33

→ Available inserts E08~E10 → Available adaptors E401~E402

Designation: LBE320-MHD-M16 Modular head threading measure size (M16) Adaptor spec.: MAT-M16-035-S32S Adaptor threading measure (M16)

# **BFE**





(mm)

	Designation	ØD	Ød	Q	L	ар	kg	Fig.	Available inserts
BFE	16-S	16	16	36	140	8.0	0.2	1	
	16-M	16	20	65	170	8.0	0.3	2	RC16
	16-L	16	25	65	200	8.0	0.5	2	
	20-S	20	20	45	160	10.0	0.4	1	
	20-M	20	25	80	200	10.0	0.6	2	RC20
	20-L	20	25	80	250	10.0	0.8	2	
	25-S	25	25	45	160	12.5	0.7	1	
	25-M	25	32	90	210	12.5	1.1	2	RC25
	25-L	25	32	90	300	12.5	1.7	2	
	30-S	30	32	65	175	15.0	0.9	2	
	30-M	30	32	100	250	15.0	1.4	2	RC30
	30-L	30	32	100	350	15.0	2.0	2	1
	32-S	32	32	56	175	16.0	0.9	1	
	32-M	32	32	100	250	16.0	1.4	1	RC32
	32-L	32	32	100	350	16.0	2.0	1	1

### Available inserts



		Coated	
1	Designation	PC210F	page
RC	16	•	
	20	•	
	25	•	E16
	30		
	32	•	

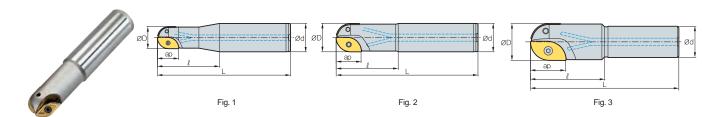
### Recommended cutting condition

	Workniego	Cutting of	ondition
	Workpiece	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
К	Cast iron Under HB300	100 ~ 200	0.10 ~ 0.30

Specification				5	No.
	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

# **E** GBE (Single-edge)

# **GBE** (Single-edge)



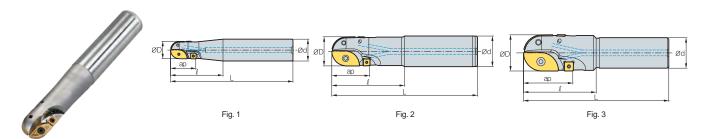


(mm)

160-L20 180-S20 180-L20 200-S25 200-L25 220-S25 220-L25 250-S32 250-L32 260-S32 280-L32 300-S32 300-L32			Di	imensio	ns		Available	e inserts	Pa	ırts	
Des	signation	an.	α.I	0			Intonnal	Fretamoni	Screw	Wrench	Fig.
		ØD	Ød	Q	L	ар	Internal	External	Int./Ext. type	Ext. main type	
GBE	160-S20	16	20	50	130	15	ZPET080M-MM	ZPET080S-MM	FTKA02555S	TW08S	
	160-L20	16	20	90	200	15	ZPET080M-MM	ZPET080S-MM	FTKA02555S	TW08S	
	180-S20	18	20	60	130	17	ZPET090M-MM	ZPET090S-MM	FTKA0307	TW09S	
	180-L20	18	20	80	200	17	ZPET090M-MM	ZPET090S-MM	FTKA0307	TW09S	
	200-S25	20	25	60	140	18	ZPET100M-MM	ZPET100S-MM	FTKA0307	TW09S	
	200-L25	20	25	80	250	18	ZPET100M-MM	ZPET100S-MM	FTKA0307	TW09S	
	220-S25	22	25	70	140	21	ZPET110M-MM	ZPET110S-MM	FTKA0408	TW15S	4
	220-L25	22	25	100	250	21	ZPET110M-MM	ZPET110S-MM	FTKA0408	TW15S	
	250-S32	25	32	70	150	23	ZPET125M-MM	ZPET125S-MM	FTKA0409	TW15S	
	250-L32	25	32	100	300	23	ZPET125M-MM	ZPET125S-MM	FTKA0409	TW15S	
	260-S32	26	32	70	150	24.5	ZPET130M-MM	ZPET130S-MM	FTKA0409	TW15S	
	260-L32	26	32	100	300	24.5	ZPET130M-MM	ZPET130S-MM	FTKA0409	TW15S	
	280-S32	28	32	70	150	26	ZPET140M-MM	ZPET140S-MM	FTGA0511-P	TW20	
	280-L32	28	32	120	300	26	ZPET140M-MM	ZPET140S-MM	FTGA0511-P	TW20	
	300-S32	30	32	70	160	27	ZPET150M-MM	ZPET150S-MM	FTGA0511-P	TW20-100	
	300-L32	30	32	120	350	27	ZPET150M-MM	ZPET150S-MM	FTGA0511-P	TW20-100	
	320-S32	32	32	70	160	28	ZPET160M-MM	ZPET160S-MM	FTGA0511-P	TW20-100	2
	320-L32	32	32	120	350	28	ZPET160M-MM	ZPET160S-MM	FTGA0511-P	TW20-100	
	400-S42	40	42	100	200	37	ZPET200M-MM	ZPET200S-MM	FTGA0614	TW20-100	
	400-L42	40	42	150	350	37	ZPET200M-MM	ZPET200S-MM	FTGA0614	TW20-100	
	500-S42	50	42	100	200	47	ZPET250M-MM	ZPET250S-MM	FTGA0818	TW25-100	3
	500-L42	50	42	100	350	47	ZPET250M-MM	ZPET250S-MM	FTGA0818	TW25-100	] 3

→ Available inserts E33

# GBE-M (Multi-edge)





(mm)

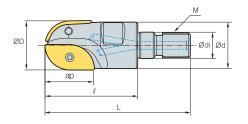
			Dim	nensi	ons			Available inse	rts		Parts	3		
Des	signation	αD	α.I	0			Intonnal	Futamal	Fut main	Sci	ew	Wre	nch	Fig.
		ØD	Ød	Q	L	ар	Internal	External	Ext. main	Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type	
GBE	200M-S25	20	25	70	150	28	ZPET100M-MM	ZPET100S-MM	SPMT060304	FTKA0307	ETNA02506	TW09S	TW07P	
	200M-L25	20	25	70	250	28	ZPET100M-MM	ZPET100S-MM	SPMT060304	FTKA0307	ETNA02506	TW09S	TW07P	
	220M-S25	22	25	80	150	31	ZPET110M-MM	ZPET110S-MM	SPMT060304	FTKA0408	ETNA02506	TW15S	TW07P	
	220M-L25	22	25	80	250	31	ZPET110M-MM	ZPET110S-MM	SPMT060304	FTKA0408	ETNA02506	TW15S	TW07P	
	250M-S32	25	32	80	180	33	ZPET125M-MM	ZPET125S-MM	SPMT060304	FTKA0409	ETNA02506	TW15S	TW07P	
	250M-L32	25	32	80	300	33	ZPET125M-MM	ZPET125S-MM	SPMT060304	FTKA0409	ETNA02506	TW15S	TW07P	1
	260M-S32	26	32	80	180	39	ZPET130M-MM	ZPET130S-MM	SDMT090308-MM	FTKA0409	ETNA0408	TW15S	TW15S	'
	260M-L32	26	32	80	300	39	ZPET130M-MM	ZPET130S-MM	SDMT090308-MM	FTKA0409	ETNA0408	TW15S	TW15S	
	280M-S32	28	32	80	180	41	ZPET140M-MM	ZPET140S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20	TW15S	
	280M-L32	28	32	80	300	41	ZPET140M-MM	ZPET140S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20	TW15S	
	300M-S32	30	32	100	200	41	ZPET150M-MM	ZPET150S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
	300M-L32	30	32	100	350	41	ZPET150M-MM	ZPET150S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
	320M-S32	32	32	100	200	42	ZPET160M-MM	ZPET160S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	
	320M-L32	32	32	100	350	42	ZPET160M-MM	ZPET160S-MM	SDMT090308-MM	FTGA0511-P	ETNA0408	TW20-100	TW15S	2
	400M-S42	40	42	100	200	56	ZPET200M-MM	ZPET200S-MM	SPMT120408-MM	FTGA0614	ETNA0511	TW20-100	TW20S	2
	400M-L42	40	42	100	350	56	ZPET200M-MM	ZPET200S-MM	SPMT120408-MM	FTGA0614	ETNA0511	TW20-100	TW20S	
	500M-S42	50	42	100	200	67	ZPET250M-MM	ZPET250S-MM	SPMT120408-MM	FTGA0818	ETNA0511	TW25-100	TW20S	3
	500M-L42	50	42	100	350	67	ZPET250M-MM	ZPET250S-MM	SPMT120408-MM	FTGA0818	ETNA0511	TW25-100	TW20S	3

Available inserts E20, E27, E33

E GBE

### **GBEM**



















(mm)

					Available inserts					
D	Designation		Ød	Ød <sub>1</sub>	Q	L	M	ар	Internal	External
GBEM	160-M08	16	15	8.5	30	47	M08	15	ZPET080M-MM	ZPET080S-MM
	200-M10	20	18.6	10.5	35	56	M10	18	ZPET100M-MM	ZPET100S-MM
	250-M12	25	23.2	12.5	45	69	M12	23	ZPET125M-MM	ZPET125S-MM
	300-M16	30	27.8	17	50	77	M16	27	ZPET150M-MM	ZPET150S-MM
	320-M16	32	29.8	17	50	77	M16	28	ZPET160M-MM	ZPET160S-MM

### Available inserts



			Coa	ated					Coa	ated			
D	esignation	NCM325	PC2510	PC3700	PC5300	page		Designation		PC2510	PC3700	PC5300	page
SPMT	060304	•				F07	ZPET	080S-MM					
	120408-MM			•	•	E27		090S-MM					
SDMT	090308-MM			•	•	E20		100S-MM		•	•	•	
ZPET	080M-MM						1	110S-MM					
	090M-MM							125S-MM		•	•	•	
	100M-MM		•	•	•			130S-MM					E33
	110M-MM							140S-MM					
	125M-MM		•	•	•			150S-MM			•	•	1
	130M-MM					E33		160S-MM		•	•	•	
	140M-MM							200S-MM			•		
	150M-MM			•	•			250S-MM					
	160M-MM		•	•	•								
	200M-MM			•									
-	250M-MM												

### Parts

Specification	© Sc	rew	Wrench			
	Int./Ext. type	Ext. main type	Int./Ext. type	Ext. main type		
Ø16	FTKA02555S	-	TW08S	-		
Ø18, Ø20	FTKA0307	ETNA02506	TW09S	TW07P		
Ø22						
Ø25	FTKA0409	ETNA02506	TW15S	TW07P		
Ø30	FTGA0511-P	ETNA0408	TW20-100	TW15S		
Ø32	FTGA0511-P	ETNA0408	TW20-100	TW15S		

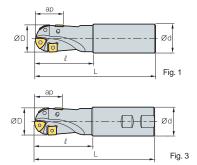
Designation: GBEM320-M16 Modular head threading measure size (M16)

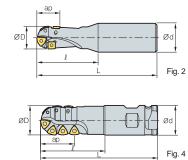
Adaptor spec.: MAT-M16-035-S32S Adaptor threading measure (M16)



# **BRE**











(mm)

Da	-!		D	imensior	ıs		Available	inserts	Part	s	۰	Tim.
De	signation	ØD	Ød	Q	L	ар	Internal	External	Screw	Wrench	kg	Fig.
BRE	20R-S	20	20	50	125	20		SPMT060304			0.25	1
	20R-M	20	20	75	150	20	7DMT090340D MM		ETNA02506	TW07P	0.31	1
	20R-L	20	25	100	200	20	ZDMT080310R-MM	SPIVI1060304	ETNAU2506	TWUTP	0.57	2
	20R-SL	20	25	65	125	20					0.33	3
	25R-S	25	25	70	150	23	ZDMT110312.5R-MM	SPMT060304	ETNA02506	TW07P	0.47	4
	25R-M	25	25	95	175	23					0.56	1
	25R-L	25	32	100	200	23					0.92	2
	25R-SL	25	25	75	135	23					0.41	3
	32R-S	32	32	85	175	31					0.87	
	32R-M	32	32	100	200	31	ZDMT130416R-MM S	ODNATOOOOO NANA	ETNIA 0 400	TM450	1.02	1
	32R-L	32	32	150	250	31		SDMT090308-MM	ETNA0408	TW15S	1.3	
	32R-SL	32	32	75	150	31					0.71	3

### Available inserts







				Coated			
	Designation	NCM325	PC3700	PC5300	PC5400	PC6510	page
SPMT	060304	•					E27
ZDMT	080310R-MM		•	•			
	110312.5R-MM			•			E33
	130416R-MM		•	•			

Specification				
	Screw	Wrench	Wrench	
Ø20~Ø25	ETNA02506	-	TW07P	
Ø32	ETNA0408	TW15S	-	

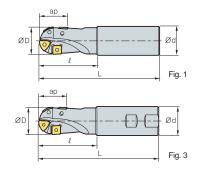


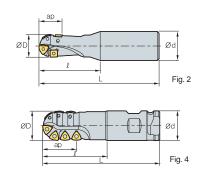




### **BRE**











(mm)

	Decimation		D	imensior	าร		Available	inserts	Pa	rts		Ei-
L	Designation	ØD	Ød	Q	L	ар	Main	Ext. main	Screw	Wrench	kg	Fig
BRE	40R-S	40	42	85	175	41					1.37	
	40R-S-40	40	40	85	175	41					1.35	
	40R-M	40	42	100	200	41					1.62	1
	40R-M-40	40	40	100	200	41	ZDMT4C0F00D MM	SPMT120408-MM	ETNIA OF 44	TW00 400	1.6	1
	40R-L	40	42	150	250	41	ZPMT160520R-MM	SPMT120508-MMN	ETNA0511	TW20-100	2.1	1
	40R-L-40	40	40	150	250	41					2	1
	40R-SL	40	42	80	160	41					1.21	
	40R-SL-40	40	40	80	160	41					1.2	- 3
	50R-S	50	42	100	200	45					2.02	П
	50R-S-40	50	40	100	200	45					1.93	
	50R-L	50	42	100	300	45	7DMT400505D MM	SPMT120408-MM	ETNIA OE44	TW00 400	3.1	'
	50R-L-40	50	40	100	300	45	ZPMT160525R-MM	SPMT120508-MMN	ETNA0511	TW20-100	2.92	
	50R-SL	50	42	100	250	45					2.56	Τ,
	50R-SL-40	50	40	100	250	45					2.5	;
	63R-S	63	42	100	200	52					2.41	
	63R-S-40	63	40	100	200	52	]				2.4	1.
	63R-L	63	42	100	300	52	7DMT400504 5D MM	SPMT120408-MM	ETNIA OF44	TW00 400	3.5	'
	63R-L-40	63	40	100	300	52	ZPMT160531.5R-MM	SPMT120508-MMN	ETNA0511	TW20-100	3.3	
	63R-SL	63	42	100	250	52					2.95	Τ,
	63R-SL-40	63	40	100	250	52					2.9	;
	40XR-SC40 40XR-LC40	40	40	110	200	54	7DMT4004		ETNIA 0 5 4 4	TW00 400	1.43	
		40	40	150	250	54	ZPMT160	DZUK-IVIIVI	ETNA0511	TW20-100	1.89	- 4
	50XR-SC50.8	50	50.8	110	200	57	ZPMT160	525R-MM	ETNIA 0544	TW00 400	2.34	
	50XR-LC50.8	50	50.8	150	250	57	ZPMT160	525R-MR	ETNA0511	TW20-100	3.06	† '

### Available inserts





				Coated			
	Designation	NCM325	PC3700	PC5300	PC5400	PC6510	page
SDMT	090308-MM		•	•			E20
SPMT	120408-MM		•	•			E27
	120508-MMN						E21
ZPMT	160520R-MM		•	•			
	160525R-MM		•	•			F00
	160525R-MR						E33
	160531.5R-MM			•			

Specification			
	Screw	Wrench	
Ø40~Ø63	ETNA0511	TW20-100	



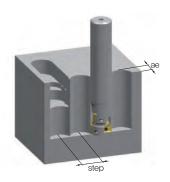
### Multifunctional milling tool for mold making

### **HAVE**

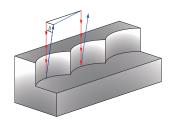
- Tools for Z-axis feed plunge machining to cut faster and more effectively in vertical machining
- Able to utilize the full diameter of the tools, thanks to the position and design of the inserts

### Maximum step in vertical machining

					1	Diameter				1	1
ae	16	17	20	21	25	26	32	33	35	40	50
					ma	x step (n	nm)				
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



Vertical machining route Rapid feed

Angle between tool and workpiece  $(\beta \ge 1^\circ)$ 

- Reduce 30% of feed till 3 mm machining
- Have the tool be away from the workpiece more than 1° (b) after finishing the machining or when moving the tool to the next step.

### Cutting condition

	<b>.</b>			Cutting condition	Ø16	5, 17	Ø20	, 21	Ø25	, 26	Ø32	, 33	ø	35	Ø	40	Ø!	50
	Designation	Hardness	Grades	vc (m/min)		Step (mm)					Feed (mm/rev)						Feed (mm/rev)	
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
н	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

<sup>\*</sup> Please note - Step machining is required for aspect ratio under 0.5D or initial drilling



### **Technical Information for HAVE**

# 1. Ramping Lmin = $\alpha \leq 3^{\circ}$

# ØDc = ØDh-ØDØDc = Tool pass of tool center ØD ØDh = Desirable hole diameter on workpiece ØDh

ØD = Tool diameter

2. Helical cutting

Cutting condition for ramping and helical operation

				Cutting Speed		Ø16	, 17			Ø20	, 21			Ø25	, 26			Ø32	, 33			Ø3	35			Ø4	10			Ø5	50	
1	Designation	Hardness	Grades	vc (m/min)	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)
	Mild steel, Low Carbon steel (SS400)	≤ 200HB	PC3700	200 (150~250)	19 ~30	0.5D ~1D		0.35 ~1.61	23 ~28	0.5D ~1D	0.18 ~0.12	0.35 ~2.07	29 ~47	0.5D ~1D	0.2 ~0.15	0.46 ~2.53	37 ~60	0.5D ~1D	0.25 ~0.2	0.58 ~3.23	41 ~65	0.5D ~1D	0.28 ~0.2	0.69 ~3.46	47 ~75	0.5D ~1D	0.3 ~0.2	0.81 ~4.03	58 ~95	0.5D ~1D	0.35 ~0.25	0.92 ~5.18
ĺ	Carbon steel, Alloy Steel (SM50C,SCM440)	≤100HB	PC3700	180 (120~220)	19 ~30	0.5D ~1D		0.26 ~1.23	23 ~28	0.5D ~1D	0.16 ~0.12	0.26 ~1.58	29 ~47	0.5D ~1D	0.18 ~0.12	0.35 ~1.93	37 ~60	0.5D ~1D	0.2 ~0.15	0.44 ~2.46	41 ~65	0.5D ~1D	0.22 ~0.17	0.53 ~2.63	47 ~75	0.5D ~1D	0.25 ~0.2	0.61 ~3.07	58 ~95		0.28 ~0.25	0.70 ~3.95
N	Stainless steel (STS)	≤ 270HB	PC5300	160 (120~200)	19 ~30	0.2D ~0.5D		0.18 ~0.84	23 ~28	0.2D ~0.5D	0.15 ~0.12	0.18 ~1.09	29 ~47	0.2D ~0.5D		0.24 ~1.33	37 ~60	0.2D ~0.5D	0.2 ~0.15	0.24 ~1.33	41 ~65	0.2D ~0.5D	0.22 ~0.17	0.36 ~1.81	47 ~75	0.2D ~0.5D	0.25 ~0.2	0.42 ~2.11	58 ~95	0.2D ~0.5D	58 ~95	0.48 ~2.71
k	Cast iron (GC, GCD)	≤ 350N/mm <sup>2</sup>	PC5300	200 (150~250)	19 ~30	0.7D ~1D		0.43 ~2.0	23 ~28	0.7D ~1D	0.2 ~0.12	0.42 ~2.57	29 ~47	0.7D ~1D	0.2 ~0.15	0.57 ~3.14	37 ~60	0.7D ~1D	0.25 ~0.2	0.71 ~3.99	41 ~65	0.7D ~1D	0.28 ~0.2	0.86 ~4.28	47 ~75	0.7D ~1D	0.3 ~0.2	1.0 ~4.99	58 ~95		0.35 ~0.25	1.14 ~6.42
F	Hardened steel	40~55HrC	PC5300	80 (50~120)	19 ~30	0.2D ~0.5D		0.18 ~0.84	23 ~28	0.2D ~0.5D	0.12 ~0.07	0.18 ~1.09	29 ~47	0.2D ~0.5D	0.13 ~0.1	0.24 ~1.33	37 ~60	0.2D ~0.5D	0.15 ~0.12	0.30 ~1.69	41 ~65	0.2D ~0.5D	0.17 ~0.13	0.36 ~1.81	47 ~75	0.2D ~0.5D	0.18 ~0.15	0.42 ~2.11	58 ~95	0.2D ~0.5D	0.2 ~0.15	0.48 ~2.71

### Recommended cutting condition in shouldering

				Cutting Speed	Q	ð16, 1	7	Q	ð20, 2	1	Ç	ð25, 2	6	Ç	<b>0</b> 32, 3	3		Ø35			Ø40			Ø50	
[	Designation	Hardness	Grades	vc (m/min)	max ap (mm)	max ae (mm)	max fz (mm/t)		max ae (mm)	max fz (mm/t)			max fz (mm/t)					max ae (mm)	max fz (mm/t)		max ae (mm)	max fz (mm/t)			max fz (mm/t)
	Mild steel, Low Carbon steel (SS400)	≤ 200HB	PC3700	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)	≤100HB	PC3700	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
N	Stainless steel (STS)	≤ 270HB	PC5300	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	Cast iron (GC, GCD)	≤ 350N/mm <sup>2</sup>	PC5300	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
Н	Hardened steel	40~55HrC	PC5300	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 condition in grooving

					9		•	,	9									
				Cutting Speed	Ø16	5, 17	Ø20	), 21	Ø25	i, 26	Ø32	2, 33	Ø	35	Ø	40	Ø!	50
1	Designation	Hardness		vc (m/min)	max ap (mm)	max fz (mm/t)												
	Mild steel, Low Carbon steel (SS400)	≤ 200HB	PC3700	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)	≤100HB	PC3700	180 (120~220)	17	0.15	22	0.15	27	0.18	35	0.2	40	0.22	44	0.25	55	0.3
N	Stainless steel (STS)	≤270HB	PC5300	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	Cast iron (GC, GCD)	≤ 350N/mm <sup>2</sup>	PC5300	200 (150~250)	17	0.15	22	0.18	27	0.2	35	0.25	40	0.27	44	0.3	55	0.35
F	Hardened steel	40~55HRC	PC5300	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** (Multi-edge)



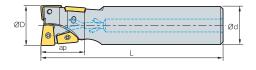
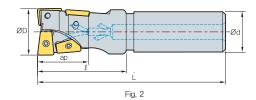


Fig. 1



























(mm)

										(11111)
ı	Designation	©	ØD	Ød	Q	L	ар	Available inserts	kg	Fig.
HAVE	0816HR-S16M	4	16	16	30	120	17.6		0.15	4
	0816HR-L16M	4	16	16	30	200	17.6	XPMT0802ER-MM	0.26	'
	0817HR-S16M	4	17	16	30	120	17.6	APIVI I U8UZER-IVIIVI	0.18	2
	0817HR-L16M	4	17	16	30	200	17.6		0.27	2
	1020HR-S20M	4	20	20	35	130	22		0.26	4
	1020HR-L20M	4	20	20	35	210	22	XPMT1003ER-MM	0.44	I
	1021HR-S20M	4	21	20	35	130	22	APINI 1003ER-ININ	0.26	2
	1021HR-L20M	4	21	20	35	210	22		0.45	2
	1325HR-S25M	4	25	25	45	140	27		0.41	4
	1325HR-L25M	4	25	25	45	220	27	XPMT13T3ER-MM	0.71	I
	1326HR-S25M	4	26	25	45	140	27	APIVITISTSER-IVIIVI	0.45	2
	1326HR-L25M	4	26	25	45	220	27		0.68	2
	1632HR-S32M	4	32	32	50	150	35.2		0.72	4
	1632HR-L32M	4	32	32	50	250	35.2	XPMT1604ER-MM	1.32	1
	1633HR-S32M	4	33	32	50	150	35.2	APIVIT 1604ER-IVIIVI	0.76	2
	1633HR-L32M	4	33	32	50	250	35.2		1.27	
	1835HR-S32M	4	35	32	50	150	40	XPMT1805ER-MM	0.75	4
	1835HR-L32M	4	35	32	50	230	40	APIVIT TOUSER-IVIIVI	1.23	'
	2040HR-S32M	4	40	32	55	160	44	XPMT2006ER-MM	0.74	2
	2040HR-L32M	4	40	32	55	240	44	APIVI I ZUUDER-IVIIVI	1.35	2
	2550HR-S42M	4	50	42	70	170	55	XPMT2507ER-MM	1.53	2
	2550HR-L42M	4	50	42	70	250	55	APIVI I ZOU / EK-IVIIVI	2.60	

### Available inserts

XPMT-MM

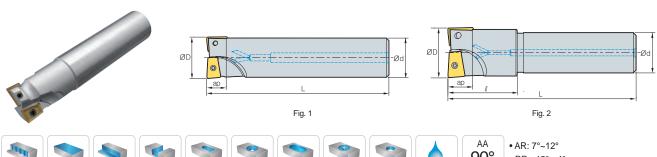


		Cer	met						C	coate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
XPMT	0802ER-MM														•					
	1003ER-MM																			
	13T3ER-MM														•					
	1604ER-MM														•					E32
	1805ER-MM														•					
	2006ER-MM														•					
	2507ER-MM														•					

Specification			
	Screw	Wrench	
Ø16~Ø17	FTNA0204	TW06S	
Ø20~Ø21	FTNA02205	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Ø25~Ø26	FTKA0307	TW09S	
Ø32~Ø33	FTKA0408	TMAEC	
Ø35	F1NAU400	TW15S	
Ø40	FTGA0511-P	TMOOC	
Ø50	FTNA0615	TW20S	

# E HAVE (Single-edge)

# **HAVE** (Single-edge)



The state of the s										90°	• AR: 7°~12° • RR: -12°~-4°
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D	Designation	0	ØD	Ød	Q	L	ар	Available inserts	kg	Fig.
HAVE	0816HR-S16	2	16	16	30	120	7.5		0.16	4
	0816HR-L16	2	16	16	30	200	7.5	VDMT0000ED MM	0.27	1
	0817HR-S16	2	17	16	30	120	7.5	XPMT0802ER-MM	0.16	2
	0817HR-L16	2	17	16	30	200	7.5		0.27	2
	1020HR-S20	2	20	20	35	130	9.5		0.28	4
	1020HR-L20	2	20	20	35	210	9.5	VDMT4002ED MM	0.46	I
	1021HR-S20	2	21	20	35	130	9.5	XPMT1003ER-MM	0.28	
	1021HR-L20	2	21	20	35	210	9.5		0.46	2
	1325HR-S25	2	25	25	45	140	12		0.44	
	1325HR-L25	2	25	25	45	220	12	VDMT40T0ED MAN	0.76	1
	1326HR-S25	2	26	25	45	140	12	XPMT13T3ER-MM	0.47	0
	1326HR-L25	2	26	25	45	220	12		0.76	2
	1632HR-S32	2	32	32	50	150	15.4		0.77	
	1632HR-L32	2	32	32	50	250	15.4	VDMT4004ED MM	1.36	1
	1633HR-S32	2	33	32	50	150	15.4	XPMT1604ER-MM	0.81	0
	1633HR-L32	2	33	32	50	250	15.4		1.41	2
	1835HR-S32	2	35	32	50	150	16.7	VDMT4005ED MAA	0.81	4
	1835HR-L32	2	35	32	50	230	16.7	XPMT1805ER-MM	1.28	1
	2040HR-S32	2	40	32	55	160	19.3	VDMT0000ED MM	0.95	0
	2040HR-L32	2	40	32	55	240	19.3	XPMT2006ER-MM	1.45	2
	2550HR-S42	2	50	42	70	170	24	XPMT2507ER-MM	1.68	0
	2550HR-I 42	2	50	42	70	250	24	XPINI 2507ER-MM	2.54	2

### Available inserts

XPMT-MM

		Cer	met		Coated Uncoated														ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
XPMT	0802ER-MM														•					
	1003ER-MM										•				•					
	13T3ER-MM														•					
	1604ER-MM														•					E32
	1805ER-MM														•					1
	2006ER-MM														•					1
	2507ER-MM														•					1

### Parts

Specification		
	Screw	Wrench
Ø16~Ø17	FTNA0204	TW06S
Ø20~Ø21	FTNA02205	1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Ø25~Ø26	FTKA0307	TW09S
Ø32~Ø33	FTKA0408	TW15S
Ø35	FINAU4U6	1 1 1 1 2 2
Ø40	FTGA0511-P	TWOOS
Ø50	FTNA0615	TW20S

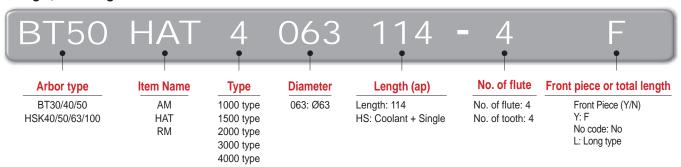
(mm)

Guarantee strong constrain force by 2-side constraint

# BT/HSK Tooling System

### Code system

· Single, Multi-edge



#### • Modular



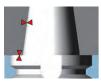
### **DBT** system

### Feature of (D)BT arbor

- Guaranteed strong force by 2-side constraint
- Guarantee strengthen cutting at high speed
- Guaranteed superior surface roughness

### **DBT** (Constrain, increased surface roughness)

2-side constraint (Taper, 1-side)

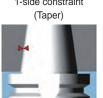




**DBT** Workpiece Ra = 0.3μm

1-side constraint (Taper)

вт





BT Workpiece Ra = 0.5µm

### **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

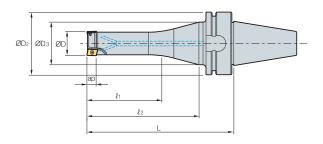
#### HSK A: HSK T key tolerance comparison





# **BT30 AM1000HS**

















• AR: 7.5°~13° • RR: -28°~-7°

(mm)

D	esignation	0	ØD	ØD2	ØD3	Q1	Q2	L	ар
BT30	AM1010HS-2	2	10	46	41	35	83	112	5.6
	AM1012HS-2	2	12	46	41	35	83	112	5.6
	AM1012HS-3	3	12	46	41	35	83	112	5.6
	AM1016HS-3	3	16	46	41	35	83	112	5.6
	AM1016HS-4	4	16	46	41	35	83	112	5.6
	AM1020HS-4	4	20	46	41	45	98	127	5.6
	AM1020HS-5	5	20	46	41	45	98	127	5.6

### Available inserts

APMT-MA APMT-MM

		Cer	met						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	0602PDFR-MA																	•	
	060208PDFR-MA																		
	060202PDSR-MM			•							•				•	•			
	0602PDSR-MM			•					•	•	•	•	•		•	•			E06
	060208PDSR-MM			•							•				•	•			
	060212R-MM			•											•	•			
	060216R-MM														•	•			

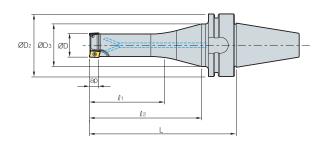
Specification	6		
	Screw	Wrench	Wrench
Ø10~Ø20	FTKA01842	-	TW06S-A





### **BT40 AM1500HS**



















• AR: 7.5°~13° • RR: -28°~-7°

(mm)

	Designation	©	ØD	ØD2	ØD3	Q1	Q2	L	ар
BT40	AM15016HS-2	2	16	63	50	45	83	117	9
	AM15016HS-2L	2	16	63	50	35	118	152	9
	AM15020HS-2	2	20	63	50	60	98	132	9
	AM15020HS-3	3	20	63	50	60	98	132	9
	AM15020HS-2L	2	20	63	50	50	118	152	9
	AM15025HS-3	3	25	63	50	75	113	147	9
	AM15025HS-4	4	25	63	50	75	113	147	9
	AM15025HS-3L	3	25	63	50	65	133	167	9
	AM15032HS-4	4	32	63	50	80	113	147	9
	AM15032HS-5	5	32	63	50	80	113	147	9
	AM15032HS-4L	4	32	63	50	70	133	167	9
	AM15040HS-5	5	40	63	50	60	98	132	9
	AM15040HS-6	6	40	63	50	60	98	132	9
	AM15040HS-5L	5	40	63	50	50	118	152	9

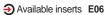
### Available inserts

	APMT-MA	APMT-ML	APMT-MM
	new	new	6

		Cer	met						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	0903PDFR-MA																	•	
	090308PDFR-MA																		
	0903PDER-ML														•	•			
	090308PDER-ML														•	•			
	0903PDSR-MM			•					•	•	•	•			•	•			E06
	090308PDSR-MM			•							•				•	•			
	090312R-MM										•				•	•			
	090316R-MM			•							•				•	•			
	090320R-MM										•				•	•			

### Parts

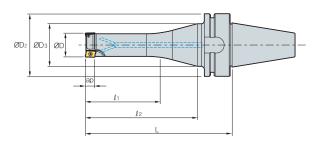
Specification	67		
	Screw	Wrench	Wrench
Ø16~Ø40	FTKA02565S	TW08S	-



343

### **BT40 AM2000HS**

















• AR: 7°~10° • RR: -20°~-7°

(mm)

1	Designation	(i)	ØD	ØD2	ØD3	Q1	<b>Q</b> 2	L	ар
BT40	AM2016HS-2	2	16	63	50	45	83	117	11
	AM2016HS-2L	2	16	63	50	35	118	152	11
	AM2020HS-2	2	20	63	50	60	98	132	11
	AM2020HS-2L	2	20	63	50	50	118	152	11
	AM2025HS-3	3	25	63	50	75	113	147	11
	AM2025HS-3L	3	25	63	50	65	133	167	11
	AM2032HS-4	4	32	63	50	80	113	147	11
	AM2032HS-4L	4	32	63	50	70	133	167	11
	AM2040HS-5	5	40	63	50	60	98	132	11
	AM2040HS-5L	5	40	63	50	50	118	152	11
	AM2050HS-6	6	50	63	50	60	98	132	11
	AM2050HS-6L	6	50	63	50	50	118	152	11

#### Available inserts

		API	MT-M	Α	P	APMT-	ML		APM <sup>°</sup>	T-MM		AP	МТ-М	F	ļ	APMT-	MN													
			Courses		new		new		new		new					6	nev	9	-			1	9		4		ne	W		
			Cer	met						C	oate	d						Unc	oated											
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	НОЧ	page										
APMT	11T3PDFR-MA																		•											
	11T308PDFR-MA																													
	11T3PDER-ML															•	•													
	11T308PDER-ML															•	•													
	11T3PDSR-MM				•	•		•		•	•	•	•	•		•	•													
	11T3PDSR-MF				•							•	•			•	•													
	11T308PDSR-MM				•							•		•	•	•	•			E06										
	11T312PDSR-MM				•							•		•		•	•													
	11T316R-MM				•							•				•	•													
	11T318R-MM																													
	11T324R-MM				•							•				•	•													
	11T3PDSR-MN2															•														
	11T3PDSR-MN3															•														

<sup>\*\*</sup> Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. 

\*\* Please use the cutters with even teeth.

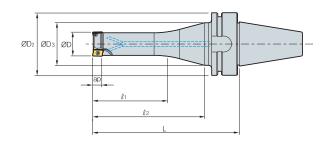
Specification	Screw	Wrench	
Ø16~Ø50	FTKA02565S	TW08S	





# **BT50 AM3000HS**



















• AR: 7°~10° • RR: -20°~-7°

(mm)

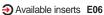
	Designation	0	ØD	ØD2	ØD3	Q1	Q2	L	ар
BT50	AM3025HS-2	2	25	100	80	65	113	158	16
	AM3025HS-2L	2	25	100	80	55	123	168	16
	AM3032HS-3	3	32	100	80	70	113	158	16
	AM3032HS-3L	3	32	100	80	60	123	168	16
	AM3040HS-4	4	40	100	80	50	98	143	16
	AM3040HS-4L	4	40	100	80	40	108	153	16
	AM3050HS-5	5	50	100	80	50	98	143	16
	AM3050HS-5L	5	50	100	80	40	108	153	16

### Available inserts

		API	MT-M	Α	ļ	APMT-	ML		APM <sup>*</sup>	T-MM		AP	МТ-М	F	A	PMT-	MN			
			Cermet			6	new		-			-	9		4		ne	<b>»</b>		
			Cer	met						С	oate	d						Unc	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
APMT	1604PDFR-MA																		•	
	160404PDFR-MA																			
	1604PDER-ML															•	•			
	160404PDER-ML															•	•			
	1604PDSR-MM				•	•		•		•	•	•	•	•	•	•	•			
	1604PDSR-MF				•							•	•			•	•			
	160410PDSR-MM											•				•	•			E06
	160416PDSR-MM				•							•				•	•			
	160424R-MM				•							•				•	•			
	160430R-MM											•				•	•			
	160432R-MM				•							•				•	•			
	1604PDSR-MN3															•				
	1604PDSR-MN4															•				

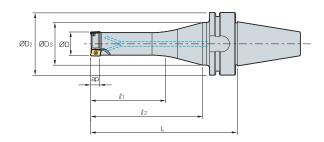
<sup>\*</sup> Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. \* Please use the cutters with even teeth.

<b>3</b> Turto			
Specification		Maran	
	Screw	Wrench	
<u>Ø25</u> <u>Ø32</u> ~Ø50	FTKA0408 FTKA0410	TW15S	



# **BT50 AM4000HS**

















90° • AR: 7°~10° • RR: -20°~-7°

(mm)

D	Designation	0	ØD	ØD2	ØD3	Q1	Q2	L	ар
BT50	AM4020HS-1	1	20	100	80	50	98	143	17
	AM4025HS-2	2	25	100	80	65	113	158	17
	AM4032HS-3	3	32	100	80	70	113	158	17
	AM4032HS-3L	3	32	100	80	60	123	168	17
	AM4040HS-4	4	40	100	80	50	98	143	17
	AM4040HS-4L	4	40	100	80	40	108	153	17
	AM4050HS-5	5	50	100	80	50	98	143	17
	AM4050HS-5L	5	50	100	80	40	108	153	17

### Available inserts

		AP	MT-M	Α	Α	PMT-	ML		APM	T-MM		AP	MT-M	F	Α	PMT-	MN			
				new		6	nev	9	-			-	9		4		nev	9		
			Cer	met						С	oate	d						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	5	page
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																•			E06
	180624PDER-ML															•	•			LOO
	180630R-ML															•	•			
	1806PDSR-MM				•					•	•	•	•	•	•	•	•			
	1806PDSR-MF				•								•			•	•			
	180612PDSR-MM				•												•			
	180616PDSR-MM				•											•	•			
	180620PDSR-MM																			
	180624PDSR-MM				•											•	•			
	180630R-MM															•	•			
	180632R-MM				•											•	•			
	1806PDSR-MN3															•				
	1806PDSR-MN4																			

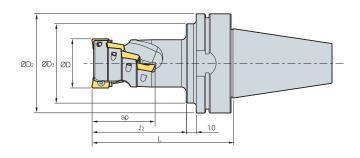
\*\* Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. 

\*\* Please use the cutters with even teeth.



### BT30/40 AM1000













• AR: -12.5°~13° • RR: -17°~-6°

(mm)

ı	Designation	0	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
BT30	AM1016015-2	6	16	46	41	30	62	2	15.5
	AM1020020-3	12	20	46	41	32	64	3	20.5
	AM1025025-4	20	25	46	41	39	71	4	25.5
BT40	AM1016015-2	6	16	63	50	30	67	2	15.5
	AM1020020-3	12	20	63	50	32	69	3	20.5
	AM1025025-4	20	25	63	50	39	76	4	25.5

### Available inserts

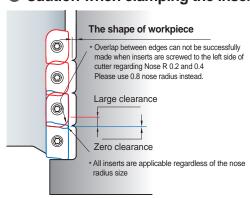


		Cer	met						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	0602PDFR-MA																	•	
	060208PDFR-MA																		
	060202PDSR-MM			•							•				•	•			
	0602PDSR-MM			•					•	•	•	•	•		•	•			E06
	060208PDSR-MM			•							•				•	•			
	060212R-MM			•											•	•			
	060216R-MM														•	•			

#### Parts

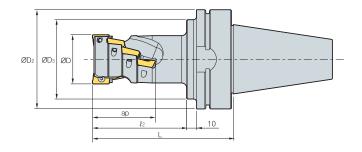
Specification	0		
	Screw	Wrench	Wrench
Ø16~Ø25	FTKA01842	-	TW06S-A

→ Available inserts E06



### BT30/40 AM1500













• AR: -12.5°~13° • RR: -17°~-6°

(mm)

	Designation	<b>(</b>	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
BT30	AM15020026-1	3	20	46	41	42	74	1	26.5
	AM15025035-2	8	25	46	41	50	62	2	35
	AM15032044-2	10	32	46	41	60	92	2	44
BT40	AM15020026-1	3	20	63	50	42	79	1	26.5
	AM15025035-2	8	25	63	50	50	87	2	35
	AM15032044-2	10	32	63	50	60	97	2	44

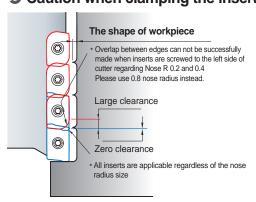
#### Available inserts

				AF	PMT-M	ΙA		APMT	-ML		APM	T-MM							
				0.	0	new	-	6	ne	9	6	-	>						
		Cer	rmet						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H04	page
APMT	0903PDFR-MA																	•	
	090308PDFR-MA																		
	0903PDER-ML														•	•			
	090308PDER-ML														•	•			
	0903PDSR-MM			•					•	•	•	•			•	•			E06
	090308PDSR-MM			•							•				•	•			
	090312R-MM										•				•	•			
	090316R-MM			•							•				•	•			
	090320R-MM										•				•	•			

#### Parts

Specification	67		
	Screw	Wrench	Wrench
Ø20~Ø32	FTKA02565S	TW08S	-

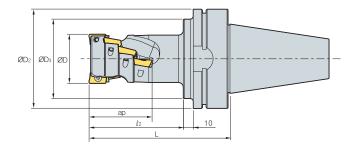
→ Available inserts E06





### BT30/40 AM2000













(mm)

ı	Designation	0	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
BT30	AM2020029-1	3	20	46	41	45	77	1	29.4
	AM2025038-2	8	25	46	45	55	87	2	38.9
	AM2032048-2	10	32	46	45	65	97	2	48.5
	AM2040058-2	14	40	46	45	75	107	2	58
	AM2050039-4	16	50	46	45	58	90	4	39
	AM2063039-4	16	63	46	45	58	90	4	39
	AM2080039-5	20	80	46	45	63	95	5	39
	AM2100039-6	24	100	46	45	63	95	6	39
BT40	AM2020029-1	3	20	63	50	45	82	1	29.4
	AM2025038-2	8	25	63	50	55	92	2	38.9
	AM2032048-2	10	32	63	50	65	102	2	48.5
	AM2040058-2	14	40	63	50	75	112	2	58
	AM2050039-4	16	50	63	50	58	95	4	39
	AM2063039-4	16	63	63	50	58	95	4	39
	AM2080039-5	20	80	63	50	63	100	5	39
	AM2100039-6	24	100	63	50	63	100	6	39

#### Available inserts



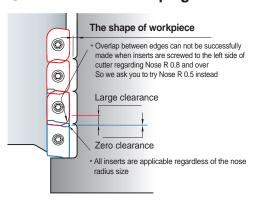
								4			-								
		Ce	rmet						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	11T3PDFR-MA																	•	
	11T308PDFR-MA																		
	11T3PDER-ML														•	•			
	11T308PDER-ML														•	•			
	11T3PDSR-MM				•		•		•	•		•			•	•			
	11T3PDSR-MF			•							•	•			•	•			
	11T308PDSR-MM			•									•	•	•	•			E06
	11T312PDSR-MM			•							•		•		•	•			
	11T316R-MM			•							•				•	•			
	11T318R-MM																		
	11T324R-MM			•							•				•	•			
	11T3PDSR-MN3														•				
	11T3PDSR-MN4														•				

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

### Parts

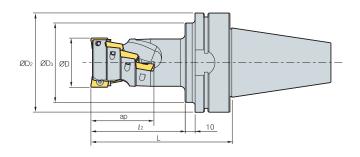
Specification		
	Screw	Wrench
Ø20~Ø100	FTKA02565S	TW08S

Available inserts E06



### **BT50 AM3000**













• AR: 13°~15° • RR: -11°~-4°

(mm)

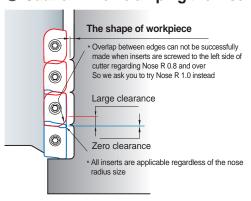
	Designation	©	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
BT50	AM3050043-2	6	50	100	80	72	120	2	43
	AM3063057-4	16	63	100	80	86	134	4	57
	AM3080071-4	20	80	100	80	100	148	4	71
	AM3100071-6	30	100	100	80	100	148	6	71

### Available inserts

		-	APMT-	MA		APM	T-ML		AP	мт-мі	И	P	APMT-	MN					
		4	3	T. T.	w	-		ew	-	9		4		nev	)				
		Cer	met						С	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H04	page
APMT	1604PDFR-MA																	•	
	160404PDFR-MA																		
	1604PDER-ML														•	•			
	160404PDER-ML														•	•			
	1604PDSR-MM				•		•		•	•	•	•	•	•	•	•			
	1604PDSR-MF										•	•			•	•			
	160410PDSR-MM																		E06
	160416PDSR-MM																		
	160424R-MM																		
	160430R-MM										•				•	•			
	160432R-MM										•				•				
	1604PDSR-MN3														•				
	1604PDSR-MN4														•				

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

### Caution when clamping the inserts



### Parts

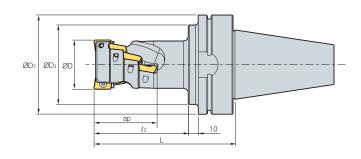
Milling

Specification	6	
	Screw	Wrench
Ø50~Ø100	FTKA0410	TW15S

Available inserts E06

### **BT50 AM4000**













APMT-MA

APMT-ML

(mm)

	Designation	<b>©</b>	ØD	ØD2	ØD3	<b>Q2</b>	L	No. of flute	ар
BT50	AM4040046-2	6	40	100	80	75	123	2	46
	AM4050061-2	8	50	100	80	95	143	2	61
	AM4063061-4	16	63	100	80	90	138	4	61
	AM4080076-4	20	80	100	90	105	153	4	76
	AM4100076-6	30	100	100	80	105	153	6	76

APMT-MM

APMT-MF

APMT-MN

### Available inserts

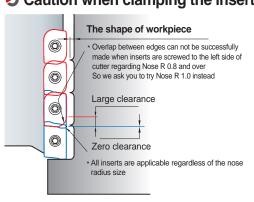
			new	•	6	nev		-			-	9		4		nev	<b>)</b>		
		Cer	met						C	Coate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	1806PDFR-MA																	•	
	180604PDFR-MA																	•	
	180612PDFR-MA																	•	
	180616PDFR-MA																	•	
	180620PDFR-MA																	•	
	180624PDFR-MA																	•	
	180630R-MA																	•	
	1806PDER-ML														•	•			
	180604PDER-ML														•	•			
	180612PDER-ML														•	•			
	180616PDER-ML														•	•			
	180620PDER-ML														•	•			E06
	180624PDER-ML														•	•			E06
	180630R-ML														•	•			
	1806PDSR-MM			•					•	•	•	•	•	•	•	•			
	1806PDSR-MF			•								•			•	•			
	180612PDSR-MM			•							•				•	•			
	180616PDSR-MM			•											•	•			
	180620PDSR-MM																		
	180624PDSR-MM			•											•	•			
	180630R-MM														•	•			
	180632R-MM			•											•	•			
	1806PDSR-MN3																		
	1806PDSR-MN4														•				

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

#### Parts

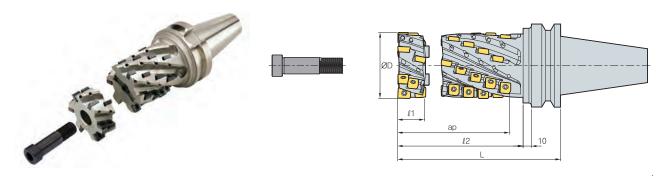
Specification	Screw	Wrench
Ø40~Ø100	FTKA0410	TW15S

Available inserts E06





# **BT50 HAT4000**



(mm)

De	esignation	(	€	ØD	Q1	0.2	- 1	No. of	ар	Application
D.	.signation	SPMT	ZPMT	20	ų,	¥2	-	flute	aμ	Application
BT50-	HAT4050094-2F	10	1	50	32	119	160	2	94	
(Set)	HAT4050104-2F	11	1	50	32	129	170	2	104	HAT4050032-2F
	HAT4050114-2F	12	1	50	32	139	180	2	114	
	HAT4063094-4F	20	2	63	32	119	160	4	94	
	HAT4063104-4F	22	2	63	32	129	170	4	104	HAT4063032-4F
	HAT4063114-4F	24	2	63	32	139	180	4	114	
	HAT4080094-4F	20	2	80	33	119	160	4	94	
	HAT4080104-4F	22	2	80	33	129	170	4	104	HAT4080033-4F
	HAT4080114-4F	24	2	80	33	139	180	4	114	
(Front Piece)	HAT4050032-2F	3	1	50	32	-	-	2	-	
	HAT4063032-4F	6	2	63	32	-	-	4	-	-
	HAT4080033-4F	6	2	80	33	-	-	4	-	

### Available inserts

SPMT-MMN ZPMT-MMN





		Cer	met						C	oate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
SPMT	120508-MMN																		E27
ZPMT	1505PPSR-MMN																		E33

### Set specification

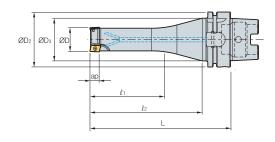
Set Designation	Designation	Front Piece	Clamping Bolt
HAT4050094-2F HAT4050104-2F HAT4050114-2F	HAT4050062-2F HAT4050072-2F HAT4050082-2F	HAT4050032-2F	HSB1255
HAT4063094-4F HAT4063104-4F HAT4063114-4F	HAT4063062-4F HAT4063072-4F HAT4063082-4F	HAT4063032-4F	HSB1670
HAT4080094-4F HAT4080104-4F HAT4080114-4F	HAT4080061-4F HAT4080071-4F HAT4080081-4F	HAT4080033-4F	HSB1682

Specification	<b>6</b>		
	Screw	Wrench	
Ø50~Ø80	ETNA0511	TW20	



# **HSK63A AM1000HS**



















• AR: 7.5°~13° • RR: -28°~-7°

Des	signation	©	ØD	ØD2	ØD3	Q1	Q2	L	ар
HSK63A	AM1010HS-2	2	10	63	53	35	83	116	5.6
	AM1012HS-2	2	12	63	53	35	83	116	5.6
	AM1012HS-3	3	12	63	53	35	83	116	5.6
	AM1016HS-3	3	16	63	53	35	83	116	5.6
	AM1016HS-4	4	16	63	53	35	83	116	5.6
	AM1020HS-4	4	20	63	53	45	98	131	5.6
	AM1020HS-5	5	20	63	53	45	98	131	5.6

### Available inserts

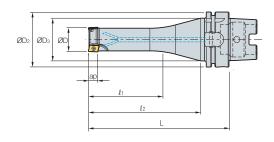
APMT-MM

						_													
		Cer	met						C	Coate	d						Unc	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H0.1	page
APMT	0602PDFR-MA																	•	
	060208PDFR-MA																		
	060202PDSR-MM			•							•				•	•			
	0602PDSR-MM			•					•	•	•	•	•		•	•			E06
	060208PDSR-MM			•							•				•	•			
	060212R-MM			•											•	•			
	060216R-MM														•	•			

Specification	61			
	Screw	Wrench	Wrench	
Ø10~Ø20	FTKA01842	-	TW06S-A	

# **HSK63A AM1500HS**

















90° • AR: 7.5°~13° • RR: -28°~-7°

(mm)

D	esignation	©	ØD	ØD2	ØD3	0.1	0.2		an
	coignation	9	20	902	<b>60</b> 3	ų i	¥2	-	ар
HSK63A	AM15016HS-2	2	16	63	53	45	83	116	9
	AM15016HS-2L	2	16	63	53	35	118	151	9
	AM15020HS-2	2	20	63	53	60	98	131	9
	AM15020HS-3	3	20	63	53	60	98	131	9
	AM15020HS-2L	2	20	63	53	50	118	151	9
	AM15025HS-3	3	25	63	53	75	113	146	9
	AM15025HS-4	4	25	63	53	75	113	146	9
	AM15025HS-3L	3	25	63	53	65	133	166	9
	AM15032HS-4	4	32	63	53	80	113	146	9
	AM15032HS-5	5	32	63	53	80	113	146	9
	AM15032HS-4L	4	32	63	53	70	133	166	9
	AM15040HS-5	5	40	63	53	60	98	131	9
	AM15040HS-6	6	40	63	53	60	98	131	9
	AM15040HS-5L	5	40	63	53	50	118	151	9

### Available inserts

APMT-MA APMT-MM

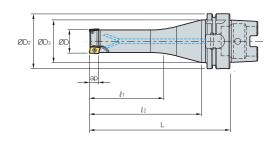
		Cer	met						(	coate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H <u>G</u>	page
APMT	0903PDFR-MA																	•	
	090308PDFR-MA																		
	0903PDER-ML														•	•			
	090308PDER-ML														•	•			F00
	0903PDSR-MM			•					•	•	•	•			•	•			E06
	090308PDSR-MM			•							•				•	•			
	090312R-MM										•				•	•			
	090316R-MM			•							•				•	•			
	090320R-MM										•				•	•			

Specification	67		
	Screw	Wrench	Wrench
Ø16~Ø40	FTKA02565S	TW08S	-



# **HSK63A AM2000HS**



















• AR: 7°~10°

• RR: -20°~-7°

(mm)

De	esignation	0	ØD	ØD2	ØD3	Q1	Q2	L	ар
HSK63A	AM2016HS-2	2	16	63	53	45	83	116	11
	AM2016HS-2L	2	16	63	53	35	118	151	11
	AM2020HS-2	2	20	63	53	60	98	131	11
	AM2020HS-2L	2	20	63	53	50	118	151	11
	AM2025HS-3	3	25	63	53	75	113	146	11
	AM2025HS-3L	3	25	63	53	65	133	166	11
	AM2032HS-4	4	32	63	53	80	113	146	11
	AM2032HS-4L	4	32	63	53	70	133	166	11
	AM2040HS-5	5	40	63	53	60	98	131	11
	AM2040HS-5L	5	40	63	53	50	118	151	11
	AM2050HS-6	6	50	63	53	60	98	131	11
	AM2050HS-6L	6	50	63	53	50	118	151	11

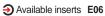
### Available inserts

		APM	APMT-MA		Α	PMT-	ML		APM <sup>°</sup>	T-MM		AP	MT-M	F	A	PMT-	MN			
		3		eW	-	6	nev	9	-				9		4	-	net	<b>W</b>		
			Cerme	et						C	oate	d						Unco	oated	
	Designation		CN2500	200	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
APMT	11T3PDFR-MA																		•	
	11T308PDFR-MA																			
	11T3PDER-ML															•	•			
	11T308PDER-ML															•	•			
	11T3PDSR-MM				•	•		•		•	•	•	•	•		•	•			
	11T3PDSR-MF				•							•	•			•	•			
	11T308PDSR-MM				•							•		•	•	•	•			E06
	11T312PDSR-MM				•							•		•		•	•			
	11T316R-MM				•							•				•	•			
	11T318R-MM																			
	11T324R-MM				•							•				•	•			
	11T3PDSR-MN2															•				
	11T3PDSR-MN3															•				

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

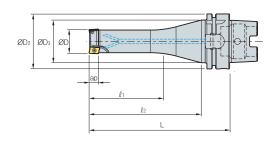
#### Parte

raits			
Specification	6		
	Screw	Wrench	
Ø16~Ø50	FTKA02565S	TW08S	



# **HSK63A AM3000HS**



















• AR: 7°~10° • RR: -20°~-7°

(mm)

De	esignation	<b>(</b>	ØD	ØD2	ØD3	Q1	Q2	L	ар
HSK63A	AM3025HS-2	2	25	63	53	65	113	146	16
	AM3025HS-2L	2	25	63	53	55	123	156	16
	AM3032HS-3	3	32	63	53	70	113	146	16
	AM3032HS-3L	3	32	63	53	60	123	156	16
	AM3040HS-4	4	40	63	53	50	98	131	16
	AM3040HS-4L	4	40	63	53	40	108	141	16
	AM3050HS-5	5	50	63	53	50	98	131	16
	AM3050HS-5L	5	50	63	53	40	108	141	16

#### Available inserts

		APMT-M	IA	Α	PMT-	ML		APM	Г-ММ		AP	MT-M	F	Α	PMT-	MN			
		0	new		6	nev		-			-	9		4		ne	<b>"</b>		
		Ce	rmet						С	oate	t						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H04	page
APMT	1604PDFR-MA																	•	
	160404PDFR-MA																		
	1604PDER-ML														•	•			
	160404PDER-ML														•	•			
	1604PDSR-MM			•	•				•	•	•	•	•	•		•			
	1604PDSR-MF			•							•	•			•	•			
	160410PDSR-MM														•	•			E06
	160416PDSR-MM			•							•				•	•			
	160424R-MM			•							•				•	•			
	160430R-MM										•				•	•			
	160432R-MM			•												•			
	1604PDSR-MN3														•				
	1604PDSR-MN4														•				

<sup>\*\*</sup> Please purchase 2 types of APMT-MN (nick type) inserts with different chip breakers. 

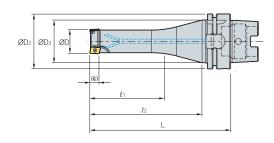
\*\* Please use the cutters with even teeth.

Specification	Screw	Wrench
Ø25 Ø32~Ø50	FTKA0408 FTKA0410	TW15S



### **HSK63A AM4000HS**



















• AR: 7°~10° • RR: -20°~-7°

(mm)

De	signation	<b>(</b>	ØD	ØD2	ØD3	Q1	<b>Q</b> 2	L	ар
HSK63A	AM4020HS-1	1	20	63	53	50	98	131	17
	AM4025HS-2	2	25	63	53	65	113	146	17
	AM4032HS-3	3	32	63	53	70	113	146	17
	AM4032HS-3L	3	32	63	53	60	123	156	17
	AM4040HS-4	4	40	63	53	50	98	131	17
	AM4040HS-4L	4	40	63	53	40	108	141	17
	AM4050HS-5	5	50	63	53	50	98	131	17
	AM4050HS-5L	5	50	63	53	40	108	141	17

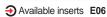
### Available inserts



	`			-				4			4				V				
		Cer	met						C	Coate	d						Unco	oated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
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														•	•			E06
	180624PDER-ML														•	•			L00
	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.

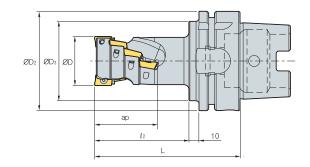
Specification	6		
	Screw	Wrench	
Ø20~Ø25 Ø32~Ø50	FTKA0408 FTKA0410	TW15S	





### **HSK63A AM1000**













(mm)

De	signation	0	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
HSK63A	AM1016015-2	6	16	63	53	30	66	2	15.5
	AM1020020-3	12	20	63	53	32	68	3	20.5
	AM1025025-4	20	25	63	53	39	75	4	25.5

### Available inserts

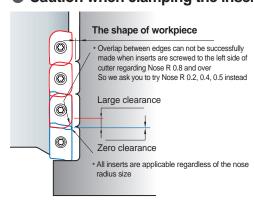
APMT-MA APMT-MM Cermet Coated Uncoated Designation page 둗 **APMT** 0602PDFR-MA 060208PDFR-MA 060202PDSR-MM 0602PDSR-MM • • E06 060208PDSR-MM • • 060212R-MM • • 060216R-MM

#### Parts

Milling

Specification	67		
	Screw	Wrench	Wrench
Ø16~Ø25	FTKA01842	-	TW06S-A

→ Available inserts E06

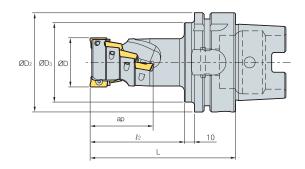






### **HSK63A AM1500**



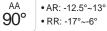








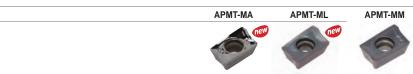




(mm)

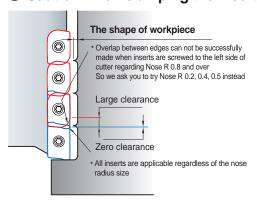
De	esignation	<b>©</b>	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
HSK63A	AM15020026-1	3	20	63	53	42	78	1	26.5
	AM15025035-2	8	25	63	53	50	86	2	35
	AM15032044-2	10	32	63	53	60	96	2	44

### Available inserts

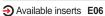


		Cer	met						C	oate	d						Unco	ated	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	F04	page
APMT	0903PDFR-MA																	•	
	090308PDFR-MA																		
	0903PDER-ML														•	•			
	090308PDER-ML														•	•			
	0903PDSR-MM			•					•	•	•	•			•	•			E06
	090308PDSR-MM			•							•				•	•			
	090312R-MM										•				•	•			
	090316R-MM			•							•				•	•			
	090320R-MM										•				•	•			

### Caution when clamping the inserts

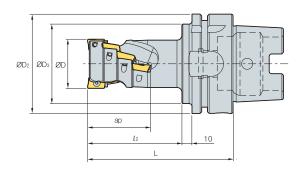


Specification	6		
	Screw	Wrench	Wrench
Ø20~Ø32	FTKA02565S	TW08S	-



### **HSK63A AM2000**













• AR: -12.5°~13° • RR: -17°~-6°

(mm)

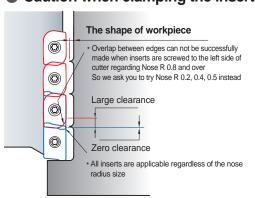
De	signation	<b>©</b>	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
HSK63A	AM2020029-1	3	20	63	53	45	81	1	29.4
	AM2025038-2	8	25	63	53	55	91	2	38.9
	AM2032048-2	10	32	63	53	65	101	2	48.5
	AM2040058-2	14	40	63	53	75	111	2	58
	AM2050039-4	16	50	63	53	58	94	4	39
	AM2063039-4	16	63	63	53	58	94	4	39
	AM2080039-5	20	80	63	53	63	99	5	39
	AM2100039-6	24	100	63	53	63	99	6	39

### Available inserts

		APM	/IT-M	Α	A	PMT-	ML		APM	T-MM		AP	MT-M	F	A	PMT-	MN			
		3		new		6	nev	9	-			1	9		4		ne	9		
			Cer	met						C	oate	d						Unco	oated	
	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	된	page
APMT	11T3PDFR-MA																		•	
	11T308PDFR-MA																			
	11T3PDER-ML																•			
	11T308PDER-ML															•	•			
	11T3PDSR-MM									•				•						
	11T3PDSR-MF				•							•	•			•	•			
	11T308PDSR-MM				•							•		•	•	•	•			E06
	11T312PDSR-MM				•							•		•		•	•			
	11T316R-MM											•				•	•			
	11T318R-MM																			
	11T324R-MM				•							•				•	•			
	11T3PDSR-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

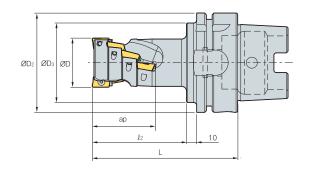
→ Available inserts E06





### **HSK100A AM3000**















(mm)

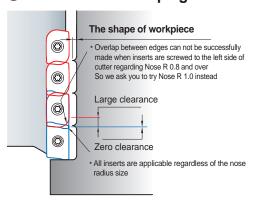
Des	signation	0	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
HSK100A	AM3050043-2	6	50	100	88	72	111	2	43
	AM3063057-4	16	63	100	88	86	125	4	57
	AM3080071-4	20	80	100	88	100	139	4	71
	AM3100071-6	30	100	100	88	100	139	6	71

### Available inserts

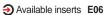
		APM	IT-MA		APMT	-ML		APN	IT-MM		AP	MT-M	F	Α	PMT-	MN			
		0.0	ne		6	ne	W	-			-	-	•			nev	<b>y</b>		
		(	Cermet						С	oate	d						Unc	oated	
	Designation		CN2500 CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	G10	H01	page
APMT	1604PDFR-MA																	•	
	160404PDFR-MA																		
	1604PDER-ML															•			
	160404PDER-ML															•			
	1604PDSR-MM				•														
	1604PDSR-MF										•	•			•	•			
	160410PDSR-MM																		E06
	160416PDSR-MM			•							•				•	•			
	160424R-MM			•							•				•	•			
	160430R-MM										•				•	•			
	160432R-MM			•							•				•	•			
	1604PDSR-MN3														•				
	1604PDSR-MN4																		

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

### Caution when clamping the inserts

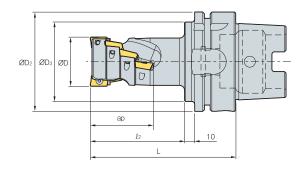


Screw	Wrench
FTKA0410	TW15S
	Screw FTKA0410



### **HSK100A AM4000**













• AR: -13°~15° • RR: -11°~-4°

(mm)

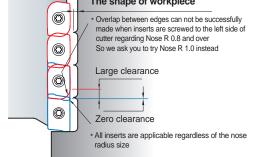
Des	signation	0	ØD	ØD2	ØD3	Q2	L	No. of flute	ар
HSK100A	AM4040046-2	6	40	100	88	75	114	2	46
	AM4050061-2	8	50	100	88	95	134	2	61
	AM4063061-4	16	63	100	88	90	129	4	61
	AM4080076-4	20	80	100	88	105	144	4	76
	AM4100076-6	30	100	100	88	105	144	6	76

### Available inserts

			APMT-	MA		AP	MT-ML		APN	IT-MM	APMT-MF	-	APMT-M	N						
			000	ne	<b>W</b>	4	1	new	-		6	•		new						
	Cermet			Coat	ed			Uncoated				Cerme			Coa	ted			Uncoated	
Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535 NCM545	PC2505 PC2010	PC3700	PC9530	PC9540 PC5300	G10 H01	page		Designation	CN2500 CN30	NC5330 NCM325 NCM335	NCM535 NCM545	PC2505	PC3700	PC6510	PC9540 PC5300 PC5400	G10 H01	page
APMT 1806PDFR-MA								•		APMT	180624PDER-ML							• •		
180604PDFR-M	4							•			180630R-ML					П		• •		
180612PDFR-M	4							•			1806PDSR-MM		•		• •	•	•	• • •		1
180616PDFR-M	4							•	]		1806PDSR-MF		•			(	•	• •		1
180620PDFR-M	4							•	1		180612PDSR-MM		•			•		• •		
180624PDFR-M	4							•	E06		180616PDSR-MM		•					• •		E06
180630R-MA								•	E00		180620PDSR-MM									EU0
1806PDER-ML							• •				180624PDSR-MM		•					• •		1
180604PDER-M							• •		1		180630R-MM							• •		1
180612PDER-M							• •				180632R-MM		•					• •		
180616PDER-M							• •		1		1806PDSR-MN3							•		
180620PDER-M							• •		1		1806PDSR-MN4							•		1

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

### The shape of workpiece



Caution when clamping the inserts

### Parts

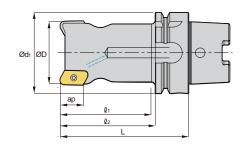
Specification	Screw	Wrench
Ø40~Ø100	FTKA0410	TW15S

Available inserts E06



## HSK-XD19



















• AR: 9°~13°

• RR: -11°~-13°

(mm)

	Designation	0	ØD	Ød₁	Q <sub>1</sub>	Q <sub>2</sub>	L	ар	kg
HSK63A-	PAV032R-3-100-XD19-A,B	3	32	63	60	74	100	17	0.97
	PAV050R-3-100-XD19-A,B	3	50	63	72	74	100	17	1.37

 $<sup>\</sup>times$  Type A uses Insert Nose R 0.4~3.2, and Type B uses Nose R 4.0~5.0

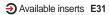
### Available inserts

### XDET-MA



		Cermet	Coated		Uncoated					Coated	Uncoated	
	Designation	CN2500 CN30	NC5330 NCM325 NCM335 NCM535 NCM545 PC3700 PC6510 PC6540	8482	돌	page		Designation	CN2500 CN30	NC5330 NCM325 NCM335 NCM535 NCM545 PC3700 PC6510 PC9530 PC9540 PC5300 PC5300 PC5400	된 원	page
XDET	190504PEFR-MA				• •		XDET	190524PEFR-MA			• •	
	190508PEFR-MA				• •			190530PEFR-MA			• •	
	190512PEFR-MA				• •	E31		190532PEFR-MA			• •	E31
	190516PEFR-MA				• •		-	190540PEFR-MA			• •	
	190520PEFR-MA				• •			190550PEFR-MA			• •	

Specification	6	
	Screw	Wrench
Ø32~Ø50	PTKA0408-A	TW15S





 $<sup>\</sup>times$  When using a spindle at high speed, please check the balance of tool and use it after replacing with the new screw.

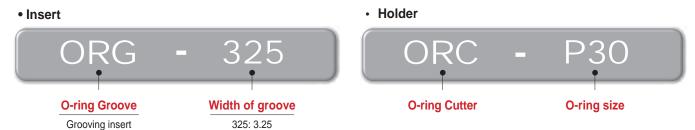
# E Technical Information for O-ring Cutter

### High productivity with optimized grade for high speed machining

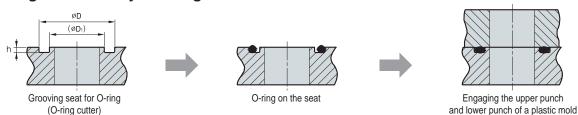
## -ring Cutter

- 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



### Grooving and assembly of O-ring



O-ring size	ØD	(ØD <sub>1</sub> )	h ± 0.05			
P08	11.0	5.8				
P09	12.0	6.8	1.40			
P10	13.0	7.8				
P11	15.0	8.5				
P12	16.0	9.5				
P14	18.0	11.5				
P15	19.0	12.5	1.80			
P16	20.0	13.5				
P18	22.0	15.5				
P20	24.0	17.5				
P21	25.0	18.5				
P22	26.0	19.5				
P24	30.0	20.6	2.70			
P25	31.0	21.6	2.70			

O-ring size	ØD	(ØD <sub>1</sub> )	h ± 0.05		
P26	32.0	22.6			
P28	34.0	24.6			
P29	35.0	25.6			
P30	36.0	26.6			
P31	37.0	27.6	2.70		
P32	38.0	28.6	2.70		
P34	40.0	30.6			
P35	41.0	31.6			
P38	44.0	34.6			
G40	46.0	36.6			
G25	30.0	21.8			
G30	35.0	26.8	2.40		
G35	40.0	31.8	2.40		
G40	45.0	36.8			

(mm)

### Recommended cutting condition

		vc (m/min)
Workpiece	fz (mm/t)	Coating
		PC3500
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

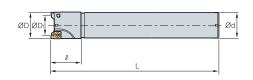
### Machining Example





## ORC





(mm)

De	esignation		ØD	Ød1	Ød	Q	L	Available	O-Ring size
								inserts	
ORC -	P08	1	11.0	5.7	16	30	150	ORG265	P08
	P09	1	12.0	6.7	16	30	150	ORG265	P09
	P10	1	13.0	7.7	16	30	150	ORG265	P10
	P11	1	15.0	8.5	16	30	150	ORG325	P11
	P12	2	16.0	9.5	16	30	200	ORG325	P12
	P14	2	18.0	11.5	20	30	200	ORG325	P14
	P15	2	19.0	12.5	20	30	200	ORG325	P15
	P16	2	20.0	13.5	20	30	200	ORG325	P16
	P18	2	22.0	15.5	20	30	200	ORG325	P18
	P20	2	24.0	17.5	25	30	200	ORG325	P20
	P21	2	25.0	18.5	25	30	200	ORG325	P21
	P22	2	26.0	19.5	25	30	200	ORG325	P22
	P24	2	30.0	20.6	32	40	250	ORG470	P24
	P25	2	31.0	21.6	32	40	250	ORG470	P25
	P26	2	32.0	22.6	32	40	250	ORG470	P26
	P28	2	34.0	24.6	32	40	250	ORG470	P28
	P29	2	35.0	25.6	32	40	250	ORG470	P29
	P30	2	36.0	26.6	32	40	250	ORG470	P30
	P31	2	37.0	27.6	32	40	250	ORG470	P31
	P32	2	38.0	28.6	32	40	250	ORG470	P32
	P34	2	40.0	30.6	42	40	250	ORG470	P34
	P35	2	41.0	31.6	42	40	250	ORG470	P35
	P38	2	44.0	34.6	42	40	250	ORG470	P38
	P40	2	46.0	36.6	42	40	250	ORG470	P40
ORC -	G25	2	30.0	21.9	32	40	250	ORG405	G25
	G30	2	35.0	26.9	32	40	250	ORG405	G30
	G35	2	40.0	31.9	42	40	250	ORG405	G35
	G40	2	45.0	36.9	42	40	250	ORG405	G40

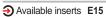
### Available inserts

ORG



lacksquare																					
		Cer	met		Coated Und								ncoat	ed							
Cutter Designation	De	esignation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	Н01	page
ORC-P08~P10	ORG	265																			
ORC-P11~P22		325										•									E15
ORC-P24~P40		470																			
ORC-G25~G40		405																			l

Specification		
	Screw	Wrench
Ø11~Ø26	FTKA0307	TW09S
Ø30~Ø46	ETC A 03 F 00	TMAEC
Ø30~Ø45	FTGA03508	TW15S



# E Technical Information for Chamfer Tool

### All applications for chamfers

## **Chamfer Tool**

- All chamfer applications
- Chamfer angles 15°, 30°, 45°, 60° for a variety of customer's needs
- The long cutting-edge provides a wide chamfering range

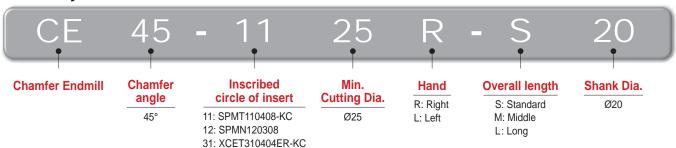




**Back & Front Chamfer Tools** 

**Long Chamfer Tools** 

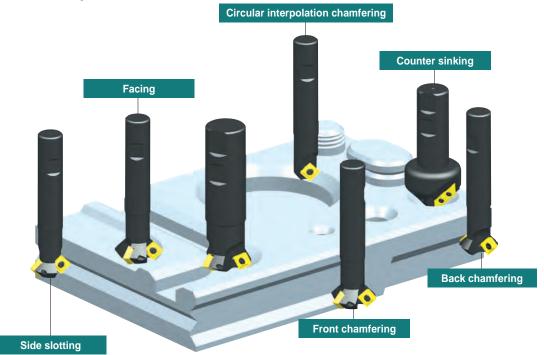
### Code system



### Recommended cutting condition

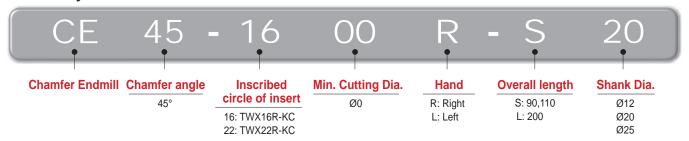
Workpiece	Grades	ØD (Ø	5~Ø20)	ØD (Ø2	.5~Ø35)	
workpiece	Grades	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	
	PC3700	160~270		160~270		
Р	PC5300	190~310	0.05~0.25	190~310	0.05~0.25	
	ST30A	60~100		60~100		
М	PC5300	100~160	0.05.0.00	100~160	0.40, 0.20	
IVI	PC5400	70~120	0.05~0.20	70~120	0.10~0.30	
W.	PC5300	110~180	0.40, 0.20	110~180	0.30~0.50	
K	G10	50~90	0.10~0.30	50~90		

### Application example

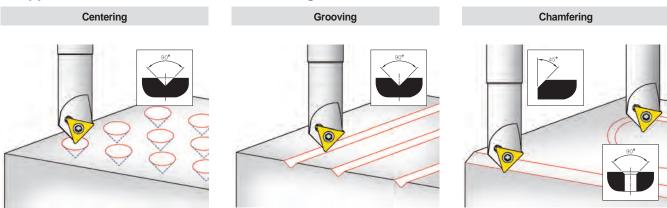


### Multi-functional Chamfer Tool

### Code system



### Application area and recommended cutting condition



Workpiece	Hardness (HpC)	Centering	, Grooving	Chamfering		
workpiece	Hardness (HRC)	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	
Mild steel, Carbon steel, Alloy steel	Under HRC 30	80~200	0.01~0.04	100~250	0.04~0.06	
High Carbon steel, Alloy steel	HRC 30, 40	150~250	0.02~0.06	150~300	0.05~0.10	
Aluminum, Copper	-	150~300	0.04~0.08	150~350	0.05~0.10	
Cast iron	-	80~150	0.02~0.06	100~250	0.05~0.10	
Stainless steel	-	60~120	0.01~0.03	60~150	0.03~0.06	
HRSA		60~80	0.01~0.03	60~100	0.03~0.06	

Note) Please keep fz. backtouch & chipping one caused by wrong fz

### Machining example







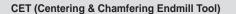


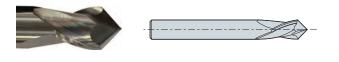
### **Solid Chamfer Tool**

### Code system



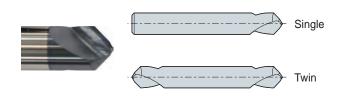
#### Features





- For internal chamfering up to 0.5 mm
- Can be applied to side milling and easy to regrinding

### **CCT (Centering & Chamfering Tool)**



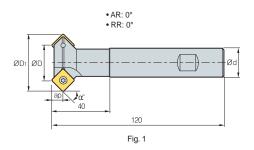
- Chipping resistance realizes machining in high speed due to double point angle
- Lowers cutting load due to web thinning

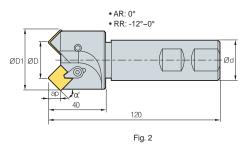
### CET/CCT Application example

Туре	Centering	Hole Chamfering	Chamfering (External)	Chamfering (Internal)	Side milling	Slot milling
Applications (CET)						
60°	×	•	•	●~▲	•	×
90°	<b>A</b>	•	•	•	•	●∼▲
120°	•	•	•	•	•	•
Applications (CCT)						
60°	•	•	●∼▲	<b>▲</b> ~×	×	×
90°	•	•	●~▲	<b>▲</b> ~×	×	×
120°	•	•	•	•	×	•

## **CE** (Back & Front)









(mm)

	Decimation	(i)	ØD	ØD1	Ød		Eia	Available inserts	α° (Cham	fer angle)	Machining range	Uses
	Designation		טש	וטש	Юa	ар	Fig.	Available inserts	Front	Back	(Min~Max)	Uses
CE	15-1125R-S20	2	25	30.5	20	9.5	1		15°	-	Ø25~Ø30	Front chamfering
	30-1125R-S20	2	25	35.5	20	8.5	1		30°	60°	Ø25~Ø35	Front, Back chamfering
	45-1107R-S20	1	7	21.9	20	7.0	1	SPMT110408-KC	45°	-	Ø7~Ø21	Front chamfering
	45-1119R-S20	2	19	33.9	20	7.0	1	3FWIT110400-RC	45°	45°	Ø19~Ø33	Front, Back chamfering
	45-1125R-S20	3	25	39.9	20	7.0	1		45°	45°	Ø25~Ø39	Front, Back chamfering
	60-1125R-S32	3	25	43.3	32	5.0	1		60°	30°	Ø25~Ø42	Front, Back chamfering
	45-1207R-S32	1	7	23.3	32	7.8	2		45°	-	Ø7~Ø22	Front chamfering
	45-1220R-S32	2	20	37.3	32	7.8	2	CDMNI120200	45°	-	Ø21~Ø36	Front chamfering
	45-1225R-S32	2	25	42.3	32	7.8	2	SPMN120308	45°	-	Ø26~Ø41	Front chamfering
	45-1235R-S32	2	35	52.3	32	7.8	2		45°	-	Ø36~Ø51	Front chamfering

### Available inserts

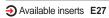




SPMN

							-			-										
		rmet						(	oate	d						Uı	ncoa	ted		
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
SPMT	110408-KC										•						•	•		E27
SPMN	120308																•			E21

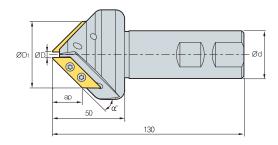
Specification						
	Screw	Clamp	C-Ring	Wrench	Wrench	
Ø7~Ø25 (1100 type)	FTKA0408	-	-	TW15S	-	
Ø7~Ø35 (1200 type)	CHX0617L	CH6R2	CR05	-	HW30L	



# E Chamfer Tools

## **CE** (Long chamfer)







• AR: -5°~1° • RR: 0°

(mm)

	Designation	0	ØD	ØD <sub>1</sub>	Ød	ар	α° (Chamfer angle)	Machining range (Min~Max)	Uses
CE	30-3105R-S32	1	5	35	32	26	30°	Ø5~Ø35	Front Chamfering
	45-3105R-S32	2	5	48	32	21	45°	Ø5~Ø48	Front Chamfering
	60-3105R-S32	2	5	57	32	15	60°	Ø5~Ø57	Front Chamfering

### Available inserts

XCET-KC



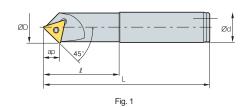
		Cer	met						C	oate	d						Uı	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
XCET	310404ER-KC										•						•	•		E31

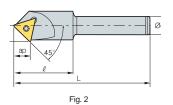
	Specification
Screw Wrench	
FTKA03510 TW15S	Ø5



## **CE** (Multi-functional)















(mm)

	Designation	ØD	Ød	Q	L	ар	Fig.	Available Inserts	Machining range (Min~Max)	Uses
CE	45-1600R-S12	21.2	12	40	90	10	2	TWX16R-KC	Ø0 ~ Ø20	
	45-1600R-S20	21.2	20	50	110	10	1	TWX16R-KC	Ø0 ~ Ø20	
	45-1600R-L20	21.2	20	60	200	10	1	TWX16R-KC	Ø0 ~ Ø20	Centering
	45-2200R-S12	28.8	12	40	90	14	2	TWX22R-KC	Ø0 ~ Ø27	Grooving Chamfering
	45-2200R-S25	28.8	25	50	110	14	1	TWX22R-KC	Ø0 ~ Ø27	eaioinig
	45-2200R-L25	28.8	25	60	200	14	1	TWX22R-KC	Ø0 ~ Ø27	

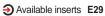
### Available inserts

TWX-KC



		Cer	met						(	oate	d						Uı	ncoa	ted	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H04	page
TWX	16R-KC										•				•					F20
	22R-KC										•									E29

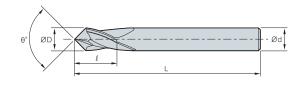
Specification		
	Screw	Wrench
Ø22~Ø29	FTNA0408	TW15L



# E Solid Chamfer Tool

## **CET**

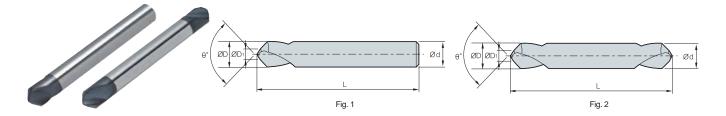




(mm)

Desig	nation	ØD	Ød	Q	L	θ°
CET060 -	030	3	3	5.5	50	
CL1000 -	040	4	4	7	50	
	060	6	6	10	60	
	080	8	8	13	70	60°
	100	10	10	16	70	00
	120	12	12	18	80	
	160	16	16	24	100	
CET090 -	030	3	3	5.5	50	
	040	4	4	7	50	
	060	6	6	10	60	
	080	8	8	13	70	90°
	100	10	10	16	70	
	120	12	12	18	80	
	160	16	16	24	100	
CET120 -	030	3	3	5.5	50	
	040	4	4	7	50	
	060	6	6	10	60	
	080	8	8	13	70	120°
	100	10	10	16	70	
	120	12	12	18	80	
	160	16	16	24	100	

# CCT



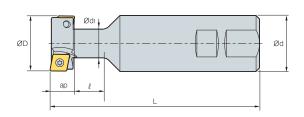
(mm)

Design	nation	ØD = Ød	ØD1	L	θ°	Fig.
CCT060 -	030	3	1.0	40		
	040	4	1.5	40		
	060	6	2.0	50		
	080	8	2.5	60		1
	100	10	3.0	70		
	120	12	4.0	80		
	160	16	5.0	100		
CCT060T -	030	3	1.0	40		
	040	4	1.5	40		
	060	6	2.0	50	60°	
	080	8	2.5	60		
	100	10	3.0	70		
	120	12	4.0	80		
	160	16	5.0	100		2
CCT060T -	030L	3	1.0	100		
	040L	4	1.5	100		
	060L	6	2.0	100		
	080L	8	2.5	120		
	100L	10	3.0	120		
	120L	12	4.0	150		
CT090 -	030	3	1.0	40		
	040	4	1.5	40		
	060	6	2.0	50		
CT090T -	080	8	2.5	60		1
	100	10	3.0	70		
	120	12	4.0	80		
	160	16	5.0	100		
CCT090T -	030	3	1.0	40		
CT090T -	040	4	1.5	40		
	060	6	2.0	50	90°	
	080	8	2.5	60		
	100	10	3.0	70		
	120	12	4.0	80		
	160	16	5.0	100		2
CCT090T -	030L	3	1.0	100		
	040L	4	1.5	100		
	060L	6	2.0	100		
	080L	8	2.5	120		
	100L	10	3.0	120		
	120L	12	4.0	150		
CCT120 -	030	3	1.0	40		
	040	4	1.5	40		
	060 080	6	2.0	50		4
	100	8 10	2.5 3.0	60 70		1
	120	10	4.0	80		
	160	16	<u>4.0</u> 5.0	100		
CT400T	030	3		40		
CCT120T -			1.0			
	040 060	4	1.5 2.0	40		
	000	6 8	2.5	50 60	120°	
	080 100	8 10	3.0			
	100	10 12		70		
	120 160	16	4.0 5.0	80		2
OT400T	100	2	0.0	100		2
CT120T -	030L	3	1.0	100		
	040L	4	1.5	100		
	060L	6	2.0	100		
	080L	8	2.5	120		
	100L	10	3.0	120		
	120L	12	4.0	150		

## E T-Cutter

## **TFE**









(mm)

1	Designation	©	ØD	Ød	Ød1	Q	L	ар	Available inserts
TFE	2125R/L	2	21	25	10.5	20	109	9	CPMT06
	2525R/L	2	25	25	12.5	21	112	11	CPMT08
	3232R/L	2	32	32	16.5	26	120	14	CPMT09
	4032R/L	2	40	32	20.5	32	130	18	CPMH12
	5032R/L	4	50	32	26.5	38	140	22	CPMH12

### Available inserts

						CF	PMT		(	CPMH										
					•															
		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
CPMT	060204-MM										•									
	080308-MM										•									F00
	09T308-MM										•									E08
СРМН	120408-MM										•									

### Parts

Specification				
	Screw	Wrench		
Ø21	FTNA02555	TW08S		
Ø25	FTNA0306	TW09S		
Ø32	FTNA0407	TW15S		
Ø40	DTMAGEAAA	TMACO		
Ø50	PTMA0511A	TW15S		

Assembling





### Inserts feature a buffed top surface ensuring better chip control and reducing built-up edge

### Pro-A Mill

- Buffed top face of insert ensures good chip control and reduces built-up edge
- Small size modular type for aluminum machining
- Various line up of modular system for aluminum machining
- For shouldering, curved surface and ramping
- High rake angle chip breaker ensures excellent surface roughness, improved cooling effects, and chip control by through coolant system, even in deep pocket machining

#### Uses









Copying

Shouldering

Ramping Through coolant

### Pro-A Mill series

Туре			Through coolant system		
Application of small-sized Aluminum machining	Pro-A 2000			<ul> <li>Modular: Ø12~Ø42</li> <li>Shank: Ø12~Ø42</li> <li>Insert: VDKT11T210N-MA VDKT11T220N-MA</li> </ul>	0
General application of Aluminum machining	Pro-A 4000			<ul><li>cutter: Ø40~Ø100</li><li>Shank: Ø32~Ø40</li><li>Insert: VCKT220530N-MA</li></ul>	0

### Recommended cutting condition

Wor	kpiece	Cutting speed vc (m/min)
Alumainum allau	Rm < 280 MPa	1000
Aluminum alloy	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



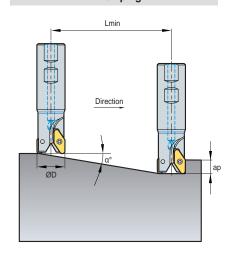
# E Technical Information for Pro-A Mill

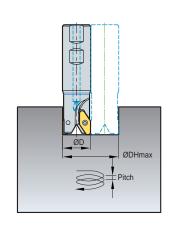
### Pro-A Mill ramping & helical cutting technical data

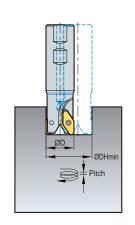
1. Ramping

2. Blind hole helical cutting

3. Thru hole helical cutting







(mm)

		Ramping			Blind hole h	elical cutting		Thru hole he	Thru hole helical cutting	
Designation	ØD	a°	Lmin	ØDHmin	dmax	ØDHmax	dmax	ØDHmin	dmax	
PAS2012HR	12	11.9	38	21	4.4	23	4.8	19	4.0	
PAS2016HR	16	12.5	36	29	6.4	31	6.9	27	6.0	
PAS2020HR	20	9.7	47	37	6.3	39	6.7	35	6.0	
PAS2025HR	25	7.6	60	47	6.3	49	6.5	45	6.0	
PAS2032HR	32	5.8	79	61	6.2	63	6.4	59	6.0	
PAS2042HR	42	4.3	105	81	6.2	83	6.3	79	6.0	
PAS4032HR	32	24.4	22	54	15.0	59	26.8	40	15.0	
PAS4040HR	40	18.4	30	70	15.0	75	25.0	56	15.0	
PAS4050HR	50	14.0	40	90	15.0	95	23.8	76	15.0	
PAS4063HR	63	10.7	53	116	15.0	121	22.8	102	15.0	
PAC(M)4080HR	80	8.1	70	150	15.0	155	22.1	136	15.0	
PAC(M)4100HR	100	6.3	90	190	15.0	195	21.7	176	15.0	

<sup>•</sup> Lmin: When ap = 8 mm

 $Lmin = \frac{ap}{\tan \alpha^{\circ}} (mm)$ 

α°: Max. rampig angle ap: Depth of cut

<sup>•</sup> Lmin: Minimum inclination cutting length

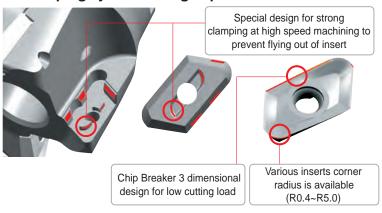


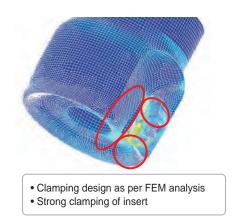
### Features a strong clamping provided by the concave grooves on the back surface of the inserts

### Pro-X Mill

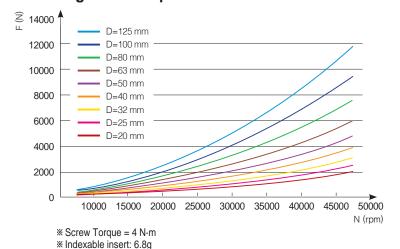
- Inserts feature a buffed top surface ensuring a smoother chip evacuation and reducing built-up edge
- High rake angle of insert provides good surface finish and low cutting load
- Specially designed for high speed machining of aluminum
- Suitable for square shouldering and curved surface machining

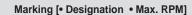
### Clamping system for high speed





### Centrifugal force as per RPM







### Max. RPM as per cutting diameter

Cutting diameter	500	0 type	600	0 type
ØD (mm)	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

<sup>\*</sup> In case of actual machining accidental breakage of insert or tool could happen even under the written RPM special cover or door is necessary to prevent damage from broken insert or broken tool

### Recommended cutting condition

Work	piece	Cutting Speed vc (m/min)	Feed fz (mm/t)	
Aluminum alloy	Rm280 < MPa Rm280 > MPa	1200 1000	0.30 0.25	
Copper alloy Thermo plastic	Long chipping -	400 350	0.20 0.15	
Aluminum alloy	Si < 12% Si ≥ 12%	1000 300	0.25 0.23	
Copper alloy	Short chipping	500	0.20	
Magnesium alloy	-	450	0.20	
Duroplastics -		200	0.15	

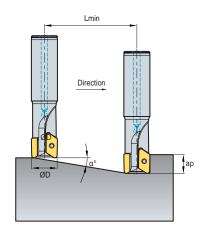
### **Technical Information for Pro-X Mill**

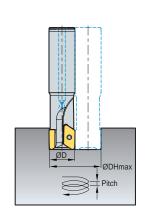
### Pro-X Mill ramping & helical cutting technical data

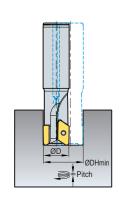
1. Ramping

2. Blind hole helical cutting

3. Thru hole helical cutting







(mm)

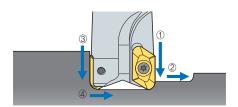
		Ram	nping		Blind hole H	elical cutting		Thru hole He	Thru hole Helical cutting		
Designation	ØD	a°	Lmin	ØDHmin	dmax	ØDHmax	dmax	ØDHmin	dmax		
PAXS5020HR	20	8.4	68	32	4.7	34	5.0	27	4.0		
PAXS5025HR	25	13.2	43	42	9.9	44	10.4	34	8.0		
PAXS5032HR	32	9.5	60	56	9.3	58	9.7	48	8.0		
PAXS5040HR	40	7.1	80	72	9.0	74	9.3	64	8.0		
PAXCM5050HR	50	5.4	105	92	8.8	94	9.0	84	8.0		
PAXCM5063HR	63	4.2	138	118	8.6	120	8.7	110	8.0		
PAXC(M)5080HR	80	3.2	180	152	8.4	154	8.6	144	8.0		
PAXC(M)5100HR	100	2.5	230	192	8.3	194	8.4	184	8.0		
PAXC(M)5125HR	125	2.0	293	242	8.3	244	8.3	234	8.0		
PAXS6025HR	25	9.0	63	42	6.6	44	6.9	38	6.0		
PAXS6032HR	32	6.6	87	56	6.5	58	6.7	52	6.0		
PAXS6040HR	40	12.1	47	72	15.4	74	15.9	56	12.0		
PAXCM6050HR	50	9.0	63	92	14.5	94	14.8	76	12.0		
PAXCM6063HR	63	6.7	85	118	13.9	120	14.1	102	12.0		
PAXC(M)6080HR	80	5.0	113	152	13.4	154	13.6	136	12.0		
PAXC(M)6100HR	100	3.9	147	192	13.1	194	13.2	176	12.0		
PAXC(M)6125HR	125	3.0	188	242	12.8	244	13.0	226	12.0		

<sup>•</sup> Lmin: When ap = 10mm

 $\alpha^{\circ} :$  Max. rampig angle ap: Depth of cut

 $Lmin = \frac{ap}{tan \alpha^{\circ}} (mm)$ 

### Plunging, slotting, drilling technical data



- 1. When drilling, grooving machining sequence is  $\textcircled{1} \rightarrow \textcircled{2} \rightarrow \textcircled{3} \rightarrow \textcircled{4}$
- 2. When drilling, grooving, decrease the feed and cutting speed 30%~50% from the recommended data

### • Cutting condition for drilling

Holder	ap (mm)					
Holder	5000 type	6000 type				
Ø20	8	-				
Ø25	4	11				
Ø32	4	6				
Ø40~125	4	6				

Insert	ap (mm)
XETK19	4
XETK25	6

### Uses





Copying Helical cutting



Slotting & Shouldering

Ramping



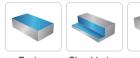
<sup>•</sup> Lmin: Minimum inclination cutting length

### New indexable milling tool for the machining of high quality workpieces

### Pro-L Mill

- Improved perpendicularity and lower cutting resistance due to the combined design of the clearance face and high helix edge of these inserts
- Productivity increase due to more than half as much of depth of cut comparing to existing product
- · Strong clamping design by adaption of double screw on system
- Improved chip flow due to helical type design of chip pocket and application of coolant system

#### Uses





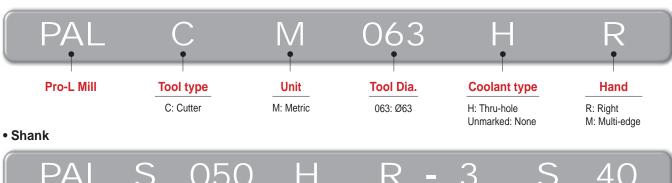


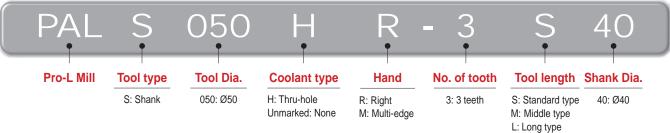


Facing Shouldering S

### Code system

#### Cutter







### Features of chip breakers

Insert		Cutting-edge	Uses	Features
MA	100		AI	Edge optimized for aluminum machining and buffed finish ensuring an excellent machining quality
ML	60		Hard-to-cut material	Design of low cutting resistance chip breaker ensures excellent machining quality for light cutting and hard-to-cut material

### **Technical Information for Pro-L Mill**

### Selection of grades and chip breaker

Category	M (Stainless steel)	N (Aluminum alloy)	S (HRSA)
Grades	PC5300/PC5400	H01	PC5300/PC5400
MA	-	0	-
ML	0	-	0

### Application examples

### AI6061 (HRC30)

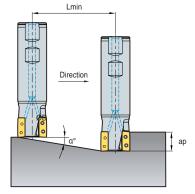
#### ■ Cutting condition

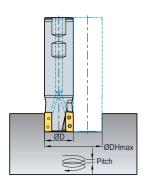
vc = 500 m/min, fz = 0.2 mm/t,  $ap = 30\sim60$  mm,  $ae = 1\sim5$  mm (finishing: 1 mm, roughing: 5 mm), z = 3

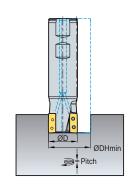


### Pro-L Mill ramping & helical cutting technical data









3. Thru hole helical cutting

(mm)

		Ram	ping		Blind hole h	elical cutting		Thru hole helical cutting			
Designation	ØD	a°	Lmin	ØDHmin	dmax	ØDHmax	dmax	ØDHmin	dmax		
PALS032HR-2S20	32	3.37	170	60	3.5	62	3.6	55	3.2		
PALS032HR-2S25	32	3.37	170	60	3.5	62	3.6	55	3.2		
PALS032HR-2S32	32	3.37	170	60	3.5	62	3.6	55	3.2		
PALS040HR-2S32	40	2.12	270	76	2.8	78	2.9	71	2.6		
PALS040HR-2S40	40	2.12	270	76	2.8	78	2.9	71	2.6		
PALS040HR-2S42	40	2.12	270	76	2.8	78	2.9	71	2.6		
PALS040HR-3S32	40	2.12	270	76	2.8	78	2.9	71	2.6		
PALS040HR-3S40	40	2.12	270	76	2.8	78	2.9	71	2.6		
PALS040HR-3S42	40	2.12	270	76	2.8	78	2.9	71	2.6		
PALS050HR-3S32	50	2.08	275	96	3.5	98	3.6	91	3.3		
PALS050HR-3S40	50	2.08	275	96	3.5	98	3.6	91	3.3		
PALS050HR-3S42	50	2.08	275	96	3.5	98	3.6	91	3.3		
PALS063HR-4S32	63	1.76	325	122	3.8	124	3.8	117	3.6		
PALS063HR-4S40	63	1.76	325	122	3.8	124	3.8	117	3.6		
PALS063HR-4S42	63	1.76	325	122	3.8	124	3.8	117	3.6		
PALS063HM-4S32	63	1.76	325	122	3.8	124	3.8	117	3.6		
PALS063HM-4S40	63	1.76	325	122	3.8	124	3.8	117	3.6		
PALS063HM-4S42	63	1.76	325	122	3.8	124	3.8	117	3.6		
PALCM063HR	63 1.76 32		325	122	3.8	124	3.8	117	3.6		

<sup>•</sup> Lmin: When ap = 10 mm

 $\alpha^{\circ}\,$  : Max. rampig angle

ap : Depth of cut

 $Lmin = \frac{ap}{tan \alpha^{\circ}} (mm)$ 



<sup>•</sup> Lmin: Minimum inclination cutting length

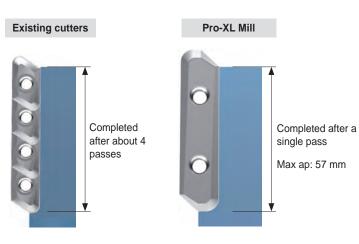


### Deep cutting milling tools to maximize productivity in aluminum machining

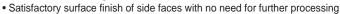
## Pro-XL Mill 🐠

- **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 of Pro-XL Mill









Improved chip flow and inhibited built-up edges thanks to mirror-like finishing of inserts

### Application examples

#### AI7075

#### ■ Cutting condition

vc = 500 m/min, fz = 0.25 mm/t ap = 56 mm, ae = 1 mm z = 2



#### ■ Tools

Insert LDET650550PPFR-MA

Grades H01

**Holder** BT50-PXL04090HR-2F (ØD = 40 mm)



### **Technical Information for Pro-V Mill**

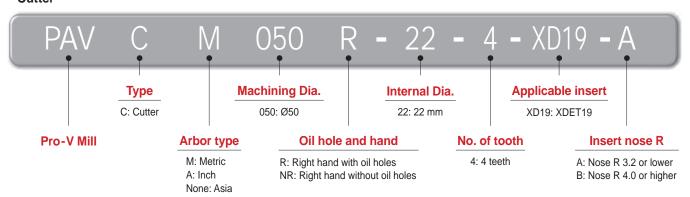
### The Premium High-Speed Milling Tool for Aluminum

## Pro-V Mill new

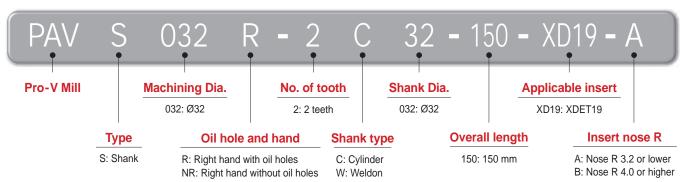
- Enhanced productivity- Increased productivity due to high speed capability
- Improved surface finish- Excellent surface finish and perpendicularity with high-precision products
- Excellent clamping stability- Satisfactory clamping force of inserts by the use of the key shape

### Code system

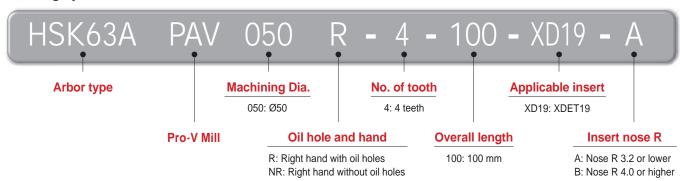
#### Cutter



#### Shank



#### Tooling System



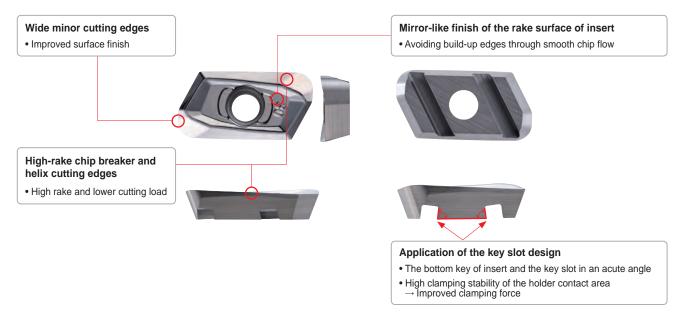


### Cutter Features

- The combined clamping system of the key to key slot structure and simple screw-on type ensures strong clamping force
  - Stable machining / prevention of insert breakage
- Avoiding uplifting problems of insert due to axial acute-angle clamping of cutters
- Reduced vibrations and excellent surface finish



### Insert Features



### Features of chip breaker

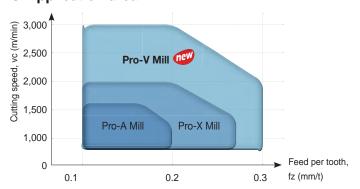
In	sert	Cutting-edge	Uses	Features
MA		120	For non-ferrous metals	Ensuring satisfactory machining quality with the application of mirror-like cutting edges optimized for aluminum machining

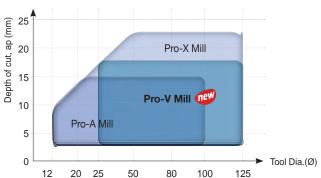
### Recommended cutting condition

		Workpiece	Grade	vc (m/min)	Max. ap (mm)
			H01	1,300 (500 - 2,200)	
N	Aluminum	Si ≤ 5% (Si Lower than 5%)	H05	1,000 (300 - 1,700)	47
N	Aluminum		PD1005	1,500 (500 - 3,000)	17
		Si ≤ 10% (Si Lower than 10%)	PD1010	1,200 (300 - 2,200)	

<sup>\*</sup> The recommended cutting conditions above are a general guideline. Their details may vary depending on the machining method of users and other conditions.

### Application area



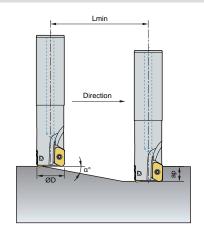


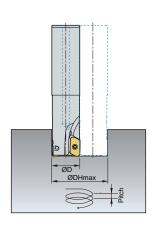
### Pro-V Mill ramping & helical cutting technical data

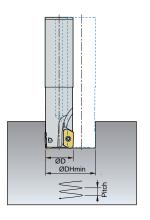
#### 1. Ramping

#### 2. Blind hole helical cutting

#### 3. Thru hole helical cutting







(mm)

	Ram	nping		Blind hole h	Thru hole helical cutting			
ØD	a°	Lmin	ØDHmin	dmax	ØDHmax	dmax	ØDHmin	dmax
25	15.0	59	41	13.0	44	15.5	27	2.0
32	10.0	99	55	11.0	58	12.5	41	4.5
40	7.0	142.5	71	10.5	74	11.5	57	6.0
50	5.0	200	91	10.0	94	10.5	77	6.5
63	3.5	286	117	9.2	120	9.5	103	7.0
80	2.6	385	151	9.0	154	9.5	137	7.3
100	2.0	501	191	9.0	194	9.0	177	7.6
125	1.5	668	241	8.5	244	8.5	227	7.5

- 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: Minimum inclination cutting length

α°: Max. rampig angle

ap: Depth of cut

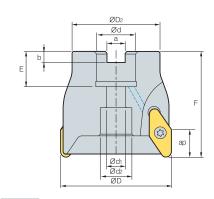


Milling

Lmin: ap/tan(α°) (mm)

## PAC(M)2000/4000























(mm)

_	) a ciamatian		ØD	ØD2	Ød	C(A)	Ød2		h	Е	F		4
L	Designation		טש	ØDZ	Юa	Ød1	<b>19</b> 02	а	b		-	ар	kg
PACM	2040HR	3	40	34	16	9	14	8.4	5.6	18	40	8.7	0.2
	2050HR	4	50	42	22	11	18	10.4	6.3	22	50	8.7	0.4
	2063HR	5	63	49	22	11	18	10.4	6.3	22	50	8.7	0.6
	2080HR	5	80	57	27	14	20	12.4	7.0	25	50	8.7	0.9
	2100HR	6	100	67	32	18	26	14.4	8.0	30	63	8.7	1.9
	4040HR	3	40	32	16	9	11.5	8.4	5.6	20	55	15	0.2
	4050HR	3	50	40	22	11	18	10.4	6.3	20	55	15	0.3
	4063HR	4	63	50	22	11	18	10.4	6.3	20	60	15	0.6
	4080HR	4	80	60	27	14	20	12.4	7.0	25	60	15	1.0
	4100HR	5	100	80	32	18	26	14.4	8.0	26	60	15	1.6
PAC	2080HR	5	80	57	25.4	14	20	9.5	6.0	25	50	8.7	0.9
	2100HR	6	100	67	31.75	-	44	12.7	8.0	37	63	8.7	1.9
	4080HR	4	80	60	25.4	14	20	9.5	6.0	25	60	15	1.0
	4100HR	5	100	80	31.75	-	44	12.7	8.0	37	60	15	1.6

### Available inserts

### VCKT-MA



			Cermet							C	oate	d						Uncoated			
Туре	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page	
2000 type	VDKT	11T210N-MA																		•	E29
4000 type	VCKT	220530N-MA																		•	E29

### Available arbors

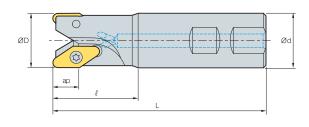
Des	signation	Ød	NC arbors
PAC	2040HR	16	BT□□-FMC16-□□
(PACM)	2050HR	22	BT□□-FMC22-□□
	2063HR	22	BT□□-FMC22-□□
	2080HR	25.4	BT□□-FMC25.4-□□
	2000HK	27	BT□□-FMC27-□□
	2100HR	31.75	BT□□-FMC31.75-□□
	ZIUUMK	32	BT□□-FMC32-□□

Des	signation	Ød	NC arbors
PAC	4040HR	16	BT□□-FMC16-□□
(PACM)	4050HR	22	BT□□-FMC22-□□
	4063HR	22	BT□□-FMC22-□□
	4080HR	25.4	BT□□-FMC25.4-□□
	4000FK	27	BT□□-FMC27-□□
	4100HR	31.75	BT□□-FMC31.75-□□
	41001K	32	BT□□-FMC32-□□

Specification	Screw	Wrench	Arbor Bolt
Ø40~Ø100 (2000 type)	ETNA02506	TW07S	
Ø40 Ø100 (4000 tupo)	FTNC04509(Ø40)	TW20S	PHMA0834(Ø40)
Ø40~Ø100 (4000 type)	FTNC04511	100203	FIIII/A0834(2/40)

### PAS2000/4000





















(mm)

	Designation	©	ØD	Ød	Q	L	ар	kg
PAS	2012HR	1	12	16	25	85	8	0.1
	2016HR	2	16	16	25	90	8	0.11
	* 2016HR-R2.0	2	16	16	25	90	6	0.11
	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	0.36
	2032HR	4	32	32	40	125	8	0.66
	2042HR	5	42	32	42	130	8	0.84
PAS	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.

### Available inserts

Tranable mocres			
	VDKT-MA	VCKT-MA	



			Cer	met		Coated								Uncoated							
Туре	Designation		CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
2000 6000	VDKT	11T210N-MA																		•	
2000 type		11T220N-MA																			E29
4000 type	VCKT	220530N-MA																		•	

### Parts

**Milling** 

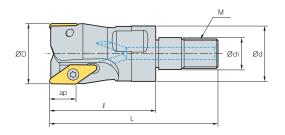
Specification			
	Screw	Wrench	
Ø12 Ø42 (2000 tupa)	ETNA02505*	TW07S	
Ø12~Ø42 (2000 type)	ETNA02506	10073	
Ø32~Ø40 (4000 type)	FTNC04509	TW20S	





### **PAM2000**





















• AR: 7°~10° • RR: -21°~-9°

(mm)

	Designation	<b>©</b>	ØD	Ød	Ød <sub>1</sub>	Q	L	М	ар	kg
PAM	2012HR-M06	1	12	11.0	6.5	33	48	M06	8	0.02
	2016HR-M08	2	16	14.5	8.5	36	53	M08	8	0.04
	2020HR-M10	2	20	18.0	10.5	36	57	M10	8	0.06
	2025HR-M12	3	25	22.5	12.5	41	65	M12	8	0.1
	2032HR-M16	4	32	28.5	17.0	45	72	M16	8	0.18
	2042HR-M16	5	42	28.5	17.0	45	72	M16	8	0.27

### Available inserts

VDKT-MA



		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	된	page
VDKT	11T210N-MA																		•	E29

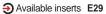
### Available adaptors

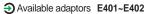
	Designation	Available adaptors
PAM	2012HR-M06	MAT-M06
	2016HR-M08	MAT-M08
	2020HR-M10	MAT-M10
	2025HR-M12	MAT-M12
	2032HR-M16	MAT-M16
	2042HR-M16	MAT-M16

Designation: PAM2012HR-M06 Modular head threading measure size (M06)

Adaptor spec.: MAT-M06-030-S20S Adaptor threading measure (M06)

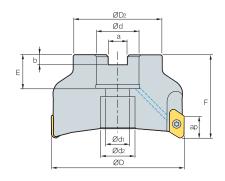
Specification		
	Screw	Wrench
Ø12~Ø42	ETNA02505*	TW07S
Ø12~Ø42	ETNA02506	10073





## PAXC(M)5000





















• AR: 8°~17.5° • RR: -9.5°~-5°

(	n	ır	Υ	Ì,

Des	signation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	Max rpm	ар	kg
PAXCM	5040HR-A,B	3	40	34	16	9	14	8.4	5.6	19	40	25,800	17	0.15
	5050HR-A,B	4	50	42	22	11	18	10.4	6.3	21	50	23,000	17	0.3
	5063HR-A,B	5 (4)	63	49	22	11	18	10.4	6.3	21	50	20,500	17	0.56
PAXC	5080HR-A,B	5	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	24 (23)	50	18,200	17	1.0
(PAXCM)	5100HR-A,B	6	100	67	31.75 (32)	18	26	12.7 (14.4)	8 (8)	32 (26)	63	16,300	17	2.3
	5125HR-A,B	7	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (29)	63	14,600	17	3.2

<sup>•</sup> A type: Insert NoseR 0.4~3.2, B type: Insert NoseR 4.0~5.0

( )Metric size

### Available inserts







			Ocated Harried																												
		Cermet				Coa	ted	ı			l	Jnc	oate	d					Cerme				C	oate	d				Und	coated	
С	esignation	CN2500 CN30	NC5330 NCM535	NCM545	PC2510	PC3700	PC9530	PC9540	PC5300	PD2000	ST30A	3130A			page	D			CN2500 CN30	NC5330	NCM545 NCM545	PC2505	PC3700	PC6510	PC9530	PC5300	PC5400	PD1010	ST30A	55.55 55.55 56.55	page
<b>XEKT</b>	19M504FR-MA									•			•	•		XEKT	19	M504ER-ML													
	19M508FR-MA									•			•	•			191	M508ER-ML													
	19M512FR-MA									•			•	•			191	M512ER-ML													
	19M516FR-MA												•	•			191	M516ER-ML													1
	19M518FR-MA														E04		191	M518ER-ML													F04
	19M520FR-MA									•			•	•	E31		191	M520ER-ML													E31
	19M530FR-MA												•	•			191	M530ER-ML													
	19M532FR-MA									•			•	•			191	M532ER-ML													1
	19M540FR-MA									•			•	•			191	M540ER-ML													1
	19M550FR-MA									•			•	•			191	M550ER-ML													

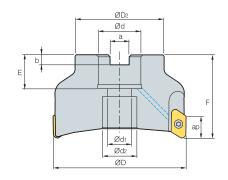
### Available arbors

	Designation	Ød	Available arbors
PAXCM	5040HR-A,B	16	BT□□-FMC16-□□
	5050HR-A,B	22	BT□□-FMC22-□□
	5063HR-A,B	22	BI UU-FMC22-UU
PAXC	EOGOLID A D	25.4	BT□□-FMA25.4-□□
(PAXCM)	5080HR-A,B	27	BT□□-FMC27-□□
	5100HR-A,B	31.75	BT□□-FMA31.75-□□
	3100NK-A,D	32	BT□□-FMC32-□□
	E42EUD A D	38.1	BT□□-FMA38.1-□□
	5125HR-A,B	40	BT□□-FMC40-□□

		Specification
Wrench	Screw Wrench	•
TW15S	PTKA0408 TW15S	Ø40~Ø125

## PAXC(M)6000



















• AR: 8°~17.5°

• RR: -9.5°~-5°

														(mm)
Designation		<b>(</b>	ØD	ØD2	Ød	Ød1	Ød2	а	b	E	F	Max rpm	ар	kg
PAXCM	6050HR-A,B	2	50	42	16	9	14	8.4	5.6	18	50	23,000	23	0.32
	6063HR-A,B	3	63	49	22	11	18	10.4	6.3	21	50	20,500	23	0.53
PAXC	6080HR-A,B	4	80	57	25.4 (27)	14	20	9.5 (12.4)	6 (7)	25 (23)	50	18,200	23	0.73
(PAXCM)	6100HR-A,B	5	100	67	31.75 (32)	18	26	12.7 (14.4)	8 (8)	32.5 (26)	63	16,300	23	1.7
	6125HR-A,B	6	125	87	38.1 (40)	22	32	15.9 (16.4)	10 (9)	35 (29)	63	14,600	23	3.06

• A type: Insert NoseR 0.4~3.2, B type: Insert NoseR 4.0~5.0

( )Metric size

### Available inserts



		Cermet			C	Coa	ted				U	nco	oate	ed					Cermet				Co	ate	d				Unc	oated	
C	Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545	PC2505	PC3700	PC6510	PC9540	PC5300	ST30A	G10	H04	H35	page	ı	Des	signation	CN2500 CN30	NC5330 NCM325	NCM335	NCM535	PC2505	PC2510	PC6510	PC9530	PC9540 PC5300	PC5400	ST30A G10	달 92 193 193 193 193 193 193 193 193 193 193	page
XEKT	250604FR-MA												•			XEK	Γ2	50604ER-ML													
	250608FR-MA												•	•			2	50608ER-ML													
	250612FR-MA										Г		•	•			2	50612ER-ML								П					
	250616FR-MA																2	50616ER-ML													
	250620FR-MA												•	•	E31		2	50620ER-ML													E31
	250630FR-MA																2	50630ER-ML								П					
	250632FR-MA												•	•			2	50632ER-ML													
	250640FR-MA																2	50640ER-ML													
	250650FR-MA												•	•			2	50650ER-ML													

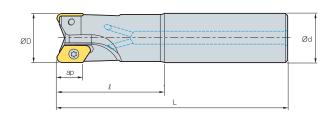
### Available arbors

	6063HR-A,B	Ød	Available arbors
PAXCM	6050HR-A,B	16	BT□□-FMC16-□□
	6063HR-A,B	22	BT□□-FMC22-□□
PAXC	COOOLD A D	25.4	BT□□-FMA25.4-□□
PAXCM)	CUOUND V D	27	BT□□-FMC27-□□
	CADOLID A D	31.75	BT□□-FMA31.75-□□
	610UNK-A,D	32	BT□□-FMC32-□□
0405UD A D		38.1	BT□□-FMA38.1-□□
	6125HR-A,B	40	BT□□-FMC40-□□

cification	
Screw	Wrench
<b>0~Ø125</b> FTGA0513-P	TW20-100

### **PAXS5000**



















• AR: 5°~10°

• RR: -14°~-5°

	Designation	<b>(</b>	ØD	Ød	Q	L	Max rpm	ар	kg
PAXS	5020HR-A,B	1	20	20	60	130	15,000	17	0.24
	5025HR-A,B	2	25	25	60	140	32,600	17	0.4
	5025HR-A,B-L200	2	25	25	60	200	32,600	17	0.63
	5032HR-A,B	2	32	32	70	150	28,800	17	0.74
	5032HR-A,B-L220	2	32	32	70	220	28,800	17	1.2
	5040HR-A,B-S32	3	40	32	70	160	25,800	17	1.0
	5040HR-A,B-L220	3	40	32	70	220	25,800	17	1.4
	5040HR-A,B-S40	3	40	40	70	160	25,800	17	1.3
	5040HR-A,B-S42	3	40	42	70	160	25,800	17	1.4

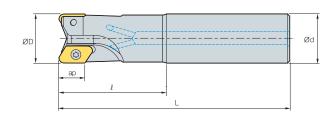
<sup>•</sup> A type: Insert NoseR 0.4~3.2, B type: Insert NoseR 4.0~5.0

### Available inserts

								XEKT-	MA		XE	KT-ML											
							4				K	Tew											
	Cerme	t	Co	ated			Ur	coate	d				Cermet			Co	ated	1			Unc	oated	
Designation	CN2500	NC5330 NCM535 NCM545 NCM545 PC2505	PC2510 PC3700	PC6510 PC9530	PC5300	PD2000	ST30A	6 5 5 5 5 5 5 5 5 5 5 5 7 5 7 5 7 7 7 7		age			CN2500 CN30	NC5330 NCM535	NCM545 PC2505	PC2510 PC3700	PC9530	PC9540 PC5300	PC5400	PD2000	ST30A	동독	page
XEKT 19M504FR-MA						• •		•			XEKT 19M504ER-ML												
19M508FR-MA						• •		•				19M508ER-ML											
19M512FR-MA						• •		•				19M512ER-ML											
19M516FR-MA						•		•				19M516ER-ML											
19M518FR-MA										≣31		19M518ER-ML											E31
19M520FR-MA						• •		•	• 5	201		19M520ER-ML											E31
19M530FR-MA						•		•				19M530ER-ML											
19M532FR-MA						• •		•				19M532ER-ML											
19M540FR-MA						• •		•				19M540ER-ML											
19M550FR-MA						• •		•				19M550ER-ML											

### **PAXS6000**



















• AR: 5°~10°

•	RR:	-14°~-5°	

									(mm)
	Designation	<b>(a)</b>	ØD	Ød	Q	L	Max rpm	ар	\(\rightarrow\) kg
PAXS	6025HR-A,B	1	25	25	60	140	32,600	23	0.42
	6025HR-A,B-L200	1	25	25	60	200	32,600	23	0.63
	6032HR-A,B	1	32	32	70	150	28,800	23	0.72
	6032HR-A,B-L220	1	32	32	70	220	28,800	23	1.14
	6040HR-A,B-S32	2	40	32	70	160	25,800	23	0.88
	6040HR-A,B-L220	2	40	32	70	220	25,800	23	1.23
	6040HR-A,B-S40	2	40	40	70	160	25,800	23	1.2
	6040HR-A,B-S42	2	40	42	70	160	25,800	23	1.3

<sup>•</sup> A type: Insert NoseR 0.4~3.2, B type: Insert NoseR 4.0~5.0

### Available inserts

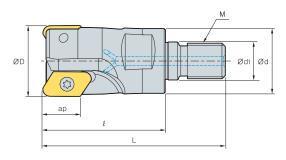
			XEKT-M	Α	XEKT-ML	
						<b>&gt;</b>
C.	ormot	Coatod	Uncoated			

		Cermet			C	oate	ed				Un	coat	ted					Cerme	t			Co	oate	d			Un	coated	
D	Designation	CN2500 CN30	NC5330 NCM325	NCM335 NCM535	NCM545 PC2505	PC2510	PC3/00 PC6510	PC9530	PC9540 PC5300	PC5400	ST30A	530 F330	유 유	page		Designation &		CN2500 CN30	NC5330	NCM325 NCM335	NCM535 NCM545	PC2505	PC2510	PC6510	PC9530	PC5300	ST30A	19 19 19 19 19 19 19 19 19 19 19 19 19 1	page
XEKT	250604FR-MA											•	•		XEK	Γ2	250604ER-ML												
	250608FR-MA											•	•			2	250608ER-ML												
	250612FR-MA											•	•			250612ER-ML													
	250616FR-MA							П								2	250616ER-ML												
	250620FR-MA											•	•	E31		2	250620ER-ML												E31
	250630FR-MA															2	250630ER-ML												
	250632FR-MA											•	•			2	250632ER-ML												
	250640FR-MA															2	250640ER-ML												
	250650FR-MA											•	•			2	250650ER-ML												

Specification		P
	Screw	Wrench
Ø25~Ø32	FTGA0510-P	TW20-100
Ø40	FTGA0513-P	17920-100

### **PAXM5000**























• RR: -7°~-5°

(ı	ı	Ш	1	1)	

	Designation	0	ØD	Ød	Ød <sub>1</sub>	Q	L	M	ар	kg
PAXM	5025HR-A,B-M12	2	25	23	12.5	55	79	M12	17	0.12
	5032HR-A,B-M16	2	32	29	17.0	55	82	M16	17	0.2
	5040HR-A,B-M16	3	40	29	17.0	55	82	M16	17	0.4

<sup>•</sup> A type: Insert NoseR 0.4~3.2, B type: Insert NoseR 4.0~5.0

### Available inserts



		Cermet			С	oat	ed				Un	coat	ted				Cern	net			C	oate	ed				Unco	ated	
D	esignation	CN2500 CN30	NC5330 NCM535	NCM545 PC2505	PC2510	PC6510	PC9530	PC5300	PC5400 PD2000	PD1010	ST30A	등 등 등	윤	page	D	esignation	CN2500	CN30	NCM535 NCM535 NCM646	PC2505	PC2510	PC6510	PC9530	PC5300	PC5400	PD1010	ST30A G10	HG HG	page
XEKT	19M504FR-MA								•	•		•	•		XEKT	19M504ER-M	L												
	19M508FR-MA								•	•		•	•			19M508ER-M	L												
	19M512FR-MA								•	•		•	•			19M512ER-M	L												
	19M516FR-MA									•		•	•			19M516ER-M	L												
	19M518FR-MA													F04		19M518ER-M	L												<b>504</b>
	19M520FR-MA								•	•		•	•	E31		19M520ER-M	L												E31
	19M530FR-MA									•	П	•	•			19M530ER-M	L												
	19M532FR-MA								•	•		•	•			19M532ER-M	L												
	19M540FR-MA								•	•		•	•			19M540ER-M	L												
	19M550FR-MA								•	•		•	•			19M550ER-M	L												

### Available adaptor

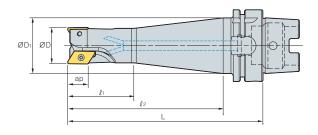
	Designation	Available adaptor
PAXM	5025HR-A,B-M12	MAT-M12
	5032HR-A,B-M16	MAT MAC
	5040HR-A.B-M16	- MAT-M16

Designation: PAXM5025HR-M12 Modular head threading measure size (M12)

Adaptor spec.: MAT-M12-030-S25S Adaptor threading measure (M12)

## HSK63A/100A PAX5000





















(mm)

	Designation	0	ØD	ØD1	Q 1	Q 2	L	ар	kg
HSK63A	PAX5032HR-A, B	2	32	53	58	137	163	17	1.14
HSK100A	PAXCM5080HR-A, B	5	80	-	-	66	95	17	4
	PAXCM5100HR-A, B	6	100	-	-	66	95	17	4.6

- A type: Insert NoseR 0.4~3.2, B type: Insert NoseR 4.0~5.0
- For the maximum rake angle and the rpm limit, please refer to technical information on pp. E377~E378.

### Available inserts



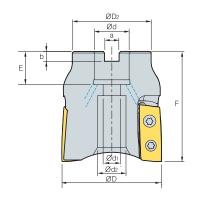
		Cermet				Coa	atec						oated						Cerme	t			C	oate	ed				Unc	coated	
ı	Designation	CN2500 CN30	NC5330 NCM535	NCM545	PC2510	PC3700	PC9530	PC9540	PC5300	PD2000	ST30A	G10 G10	돌	pa	ge	D	es	signation	CN2500	NC5330	NCM545 NCM545	PC2505	PC3700	PC6510	PC9530	PC5300	PC5400	PD1010	ST30A	555	page
XEK1	19M504FR-MA									•			• •			XEKT	19	9M504ER-ML													
	19M508FR-MA									•			• •				19	9M508ER-ML													
	19M512FR-MA									• (			• •				19	9M512ER-ML													
	19M516FR-MA												• •				19	9M516ER-ML													
	19M518FR-MA													E3	,,		19	9M518ER-ML													F04
	19M520FR-MA									• (			• •	) E3	1		19	9M520ER-ML													E31
	19M530FR-MA												• •				19	9M530ER-ML													
	19M532FR-MA									•			• •				19	9M532ER-ML													
	19M540FR-MA									•			• •				19	9M540ER-ML													
	19M550FR-MA									•			• •				19	9M550ER-ML													

Specification	6		
	Screw	Wrench	
Ø32~Ø100	PTKA0407	TW15S	
Ø32~Ø100	PTKA0408	100100	

## Pro-L Mill

## **PALCM**















• AR: 16° • RR: -8°

(mm)

Designation	0	ØD	ØD2	Ød	Ød1	Ød2	а	b	Е	F	ар	kg
PALCM 063HR	4	63	50	22	11	21	10	6.3	20	70	34	0.57

### Available inserts

LXET-MA LXET-ML



		Cer	met						C	oate	d						Ur	ncoat	ed	
	Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	194	page
LXET	340504PEFR-63-MA																			
	3405PEFR-63-MA																		•	
	340512PEFR-63-MA																			
	340516PEFR-63-MA																			E13
	340504PEER-63-ML																			EIS
	3405PEER-63-ML																			
	340512PEER-63-ML																			
	340516PEER-63-ML																			

### Available arbors

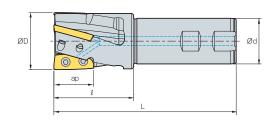
	Designation	Ød	Available arbors
PALCM	063HR	22	BT□□-FMC22-□□

Specification		San Constitution of the Co	
	Screw	Wrench	
Ø63	FTGA0511-P	TW20-100	



# PALS (Single-edge)

















• AR: 12°~16° • RR: -5°~-9°

(mm)

1	Designation	©	ØD	Ød	Q	L	ар	(kg)
PALS	032HR-2S20	2	32	20	50	140	25	0.36
	032HR-2S25	2	32	25	50	140	25	0.48
	032HR-2S32	2	32	32	50	140	25	0.71
	040HR-2S32	2	40	32	50	140	25	0.85
	040HR-2S40	2	40	40	50	140	25	1.16
	040HR-2S42	2	40	42	50	140	25	1.26
	040HR-3S32	3	40	32	50	140	25	0.80
	040HR-3S40	3	40	40	50	140	25	1.10
	040HR-3S42	3	40	42	50	140	25	1.20

## Available inserts

LXET-MA

LXET-ML



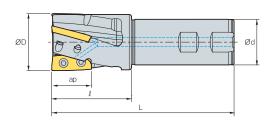


			Cer	met						C	oate	d						Ur	ncoat	ed	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
	LXET	250404PEFR-32-MA																			
		2504PEFR-32-MA																		•	
		250412PEFR-32-MA																			
Ø32		250416PEFR-32-MA																			
<b>Ø32</b>		250404PEER-32-ML																			
		2504PEER-32-ML																			
		250412PEER-32-ML																			
		250416PEER-32-ML																			E13
	LXET	250404PEFR-40-MA																			E13
		2504PEFR-40-MA																			
		250412PEFR-40-MA																			
Ø40		250416PEFR-40-MA																			
940		250404PEER-40-ML																			
		2504PEER-40-ML																			
		250412PEER-40-ML																			
		250416PEER-40-ML																			

Specification			
	Screw	Wrench	
Ø32	FTKA0408	TW15S	
Ø40	FTKA0410	TW15S	

# PALS (Single-edge)

















• AR: 12°~16° • RR: -5°~-9°

/r	n	n	ı۱

	Designation	©	ØD	Ød	Q	L	ар	(kg)
PALS	050HR-3S32	3	50	32	70	160	34	1.10
	050HR-3S40	3	50	40	70	160	34	1.40
	050HR-3S42	3	50	42	70	160	34	1.50
	063HR-4S32	4	63	32	70	160	34	1.60
	063HR-4S40	4	63	40	70	160	34	1.92
	063HR-4S42	4	63	42	70	160	34	2.00

## Available inserts



LXET-ML





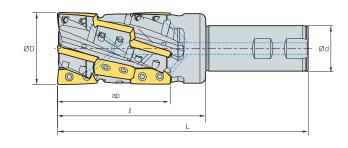
			Cer	met						C	coate	d						Ur	coat	ed	
Туре		Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
	LXET	340504PEFR-50-MA																		•	
		3405PEFR-50-MA																		•	
		340512PEFR-50-MA																			
Ø50		340516PEFR-50-MA																			
<b>930</b>		340504PEER-50-ML																			
		3405PEER-50-ML														•					
		340512PEER-50-ML																			
		340516PEER-50-ML																			E13
	LXET	340504PEFR-63-MA																			E13
		3405PEFR-63-MA																		•	
		340512PEFR-63-MA																			
Ø63		340516PEFR-63-MA																			
203		340504PEER-63-ML																			
		3405PEER-63-ML																			
		340512PEER-63-ML																			
		340516PEER-63-ML																			

Specification	Screw	Wrench	
Ø50	FTGA0510-P	TW20-100	
Ø63	FTGA0511-P	TW20-100	



# PALS (Multi-edge)















• RR: -8°

(r	ľ	1	r	n	I	١

	Designation	•	Ød	Ød <sub>1</sub>	Q	L	ар	_
PALS	063HM-4S32	12	63	32	130	220	96	1.60
	063HM-4S40	12	63	40	130	220	96	1.92
	063HM-4S42	12	63	42	130	220	96	2.00

## Available inserts



	Cer	met							Coate							Uncoated			
Designation	CN2500	CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
340504PEFR-63-MA																			
3405PEFR-63-MA																		•	
340512PEFR-63-MA																			
340516PEFR-63-MA																			F40
340504PEER-63-ML																			E13
3405PEER-63-ML																			
340512PEER-63-ML																			
3/0516DEED_63_MI																			İ

## Parts

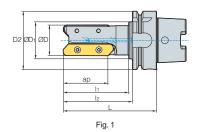
LXET

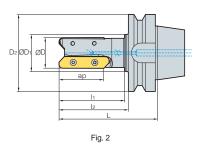
Specification		Sandy .
	Screw	Wrench
Ø63	FTGA0511-P	TW20-100

























• AR: 5°~17.5° • RR: -14°~-5°

(mm)

	Designation	0	ØD	ØD1	ØD2	l1	l2	L	ар	kg	Fig.
HSK63A	PXL04090HR-2F	2	40	48	63	85	90	116	57	1.13	1
HSK100A	PXL04090HR-3F	3	40	70	100	90	100	129	57	2.74	1
	PXL08090HR-5F	5	80	77	100	-	90	119	57	4.29	1
BT50	PXL04090HR-2F	2	40	48	100	85	90	128	57	4.13	2

# Available inserts

LDET-MA

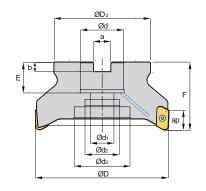


		Cer	met	Coated Uncoat						ed										
	Designation		CN30	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	ST30A	G10	H01	page
LDET	650540PPFR-MA																			F10
	650550PPFR-MA																			E10

Specification		- Constant
	Screw	Wrench
Ø40~80	FTGA0511-P	TW20-100

# PAVCM-XD19 @





















• AR: 11°~14° • RR: -11°~-9°

(mm)

	Designation	0	ØD	ØD <sub>2</sub>	Ød	Ød <sub>1</sub>	Ød <sub>2</sub>	Ød <sub>3</sub>	а	b	E	F	ар	∑ kg \
PAVCM	040R-16-3-XD19-A,B	3	40	34	16	9	13.5	-	8.4	5.6	16	45	17	0.17
	050R-22-4-XD19-A,B	4	50	42	22	11	18	-	10.4	6.3	21	50	17	0.35
	063R-22-5-XD19-A,B	5	63	42	22	11	18	-	10.4	6.3	21	50	17	0.53
	080R-27-5-XD19-A,B	5	80	60	27	14	20	-	12.4	7.0	24	50	17	0.88
	100R-32-6-XD19-A,B	6	100	70	32	18	26	42	14.4	8.0	25	63	17	1.72
	125R-40-7-XD19-A,B	7	125	90	40	22	32	52	16.4	9.0	29	63	17	2.82

- Type A uses Insert Nose R 0.4~3.2, and Type B uses 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.

#### Available inserts

#### XDET-MA



		Cermet	Co	ated		Uncoated				Cermet	Coated	Uncoated	
VDET	Designation	CN2500 CN30	NC5330 NCM325 NCM335 NCM535 NCM545 PC3700	PC6510 PC9530 PC9540 PC5300	PD1005 PD1010	돌	page		Designation	CN2500 CN30	NC5330 NCM325 NCM335 NCM535 NCM545 PC3700 PC5700 PC5500 PC5300 PC5400 PC5400 PC5400	5	page
XDET	190504PEFR-MA					• •		XDET	190524PEFR-MA			• •	
	190508PEFR-MA					• •	E31	1	190530PEFR-MA			• •	
	190512PEFR-MA					• •			190532PEFR-MA			• •	E31
	190516PEFR-MA					• •			190540PEFR-MA			• •	
	190520PEFR-MA					• •			190550PEFR-MA			• •	1

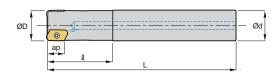
#### Available arbors

	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-□□

# E Pro-V Mill

# PAVS-XD19 OF



















• AR: 8°~11°

• RR: -14°~-11°

(mm)

	Designation	0	ØD	Ød	Q	L	ар	_ kg \
PAVS	025R-2C25-140-XD19-A,B	2	25	25	60	140	17	0.40
	032R-2C32-150-XD19-A,B	2	32	32	70	150	17	0.76
	032R-2C32-200-XD19-A,B	2	32	32	70	200	17	1.06
	040R-3C40-200-XD19-A,B	3	40	40	70	200	17	1.71

- Type A uses Insert Nose R 0.4~3.2, and Type B uses 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.

## Available inserts

#### XDET-MA



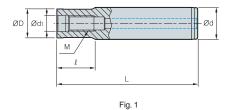
				Coated	l	U	Incoated				Cermet	Coated	Uno	coated	
		CN2500 CN30	NC5330 NCM325 NCM335 NCM535 NCM545	PC3700 PC6510 PC9530	PC9540 PC5300 PC5400	PD1005 PD1010		page		Designation	CN2500 CN30	NC5330 NCM325 NCM335 NCM535 NCM545 PC3700 PC6510	PC540 PC5300 PC5400 PD1005 H01	110	page
XDET	190504PEFR-MA						• •		XDET	190524PEFR-MA			•	•	
	190508PEFR-MA						•			190530PEFR-MA			•	•	
	190512PEFR-MA						•	E31		190532PEFR-MA			•	•	E31
	190516PEFR-MA						•			190540PEFR-MA			•		
	190520PEFR-MA						•			190550PEFR-MA			•	•	

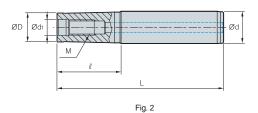
Specification	67	
	Screw	Wrench
Ø25~Ø40	PTKA0408-A	TW15S



# MAT (Steel shank type)







(mm)

								(,
	Designation	ØD	Ød	Ød <sub>1</sub>	Q	L	M	Fig.
MAT-	M06-020-S10S	9.5	10	6.5	20	70	M06	1
	M6B-020-S12S	11.0	12	6.5	20	76	M06	1
	M6B-040-S12S	11.0	12	6.5	40	96	M06	1
	M08-020-S16S	14.5	16	8.5	20	80	M08	1
	M10-030-S20S	18.0	20	10.5	30	100	M10	1
	M12-030-S25S	22.5	25	12.5	29	110	M12	1
	M16-035-S32S	28.5	32	17.0	35	125	M16	1
	M06-040-S12T	9.5	12	6.5	40	96	M06	2
	M06-065-S16T	9.5	16	6.5	65	125	M06	2
	M6B-065-S16T	11.0	16	6.5	65	125	M06	2
	M6B-080-S16T	11.0	16	6.5	80	140	M06	2
	M08-040-S16T	14.5	16	8.5	40	100	M08	2
	M08-065-S16T	14.5	16	8.5	65	125	M08	2
	M08-080-S20T	14.5	20	8.5	80	150	M08	2
	M08-110-S25T	14.5	25	8.5	110	190	M08	2
	M10-050-S20T	18.0	20	10.5	50	120	M10	2
	M10-070-S20T	18.0	20	10.5	70	140	M10	2
	M10-090-S25T	18.0	25	10.5	90	170	M10	2
	M10-110-S25T	18.0	25	10.5	110	190	M10	2
	M10-130-S32T	18.0	32	10.5	130	220	M10	2
	M12-050-S25T	22.5	25	12.5	50	130	M12	2
	M12-070-S25T	22.5	25	12.5	70	150	M12	2
	M12-090-S25T	22.5	25	12.5	90	170	M12	2
	M12-110-S32T	22.5	32	12.5	110	200	M12	2
	M12-175-S40T	22.5	40	12.5	175	300	M12	2
	M16-055-S32T	28.5	32	17.0	55	145	M16	2
	M16-080-S32T	28.5	32	17.0	80	170	M16	2
	M16-120-S32T	28.5	32	17.0	120	210	M16	2
	M16-175-S40T	28.5	40	17.0	175	300	M16	2

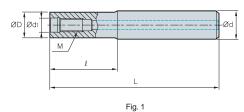
<sup>•</sup> S: straight neck adaptor • T: taper neck adaptor



<sup>3</sup> Applicable modular E45, E46 (FMRM, LBE, PAM, AMM, RM4PM, HFMM, RM4ZM, HRMM, PAXM)

# MAT-C (Carbide shank type)





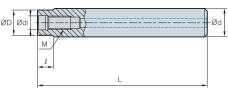


Fig. 2

(mm)

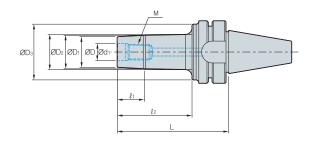
								(mm
	Designation	ØD	Ød	Ød1	Q	L	M	Fig.
MAT-	M06-030-S10S-C-80	9.5	10	6.5	30	80	M06	1
	M06-050-S10S-C-100	9.5	10	6.5	50	100	M06	1
	M06-080-S10S-C-130	9.5	10	6.5	80	130	M06	1
	M6B-030-S12S-C-80	11.0	12	6.5	30	80	M06	1
	M6B-050-S12S-C-100	11.0	12	6.5	50	100	M06	1
	M6B-080-S12S-C-130	11.0	12	6.5	80	130	M06	1
	M08-080-S16S-C	14.5	16	8.5	80	150	M08	1
	M08-110-S16S-C	14.5	16	8.5	110	180	M08	1
	M08-150-S16S-C	14.5	16	8.5	150	250	M08	1
	M08-010-S16S-C-150	14.5	16	8.5	10	150	M08	2
	M08-010-S16S-C-180	14.5	16	8.5	10	180	M08	2
	M08-010-S16S-C-250	14.5	16	8.5	10	250	M08	2
	M10-090-S20S-C	18.0	20	10.5	90	170	M10	1
	M10-110-S20S-C	18.0	20	10.5	110	200	M10	1
	M10-175-S20S-C	18.0	20	10.5	175	300	M10	1
	M10-010-S20S-C-170	18.0	20	10.5	10	170	M10	2
	M10-010-S20S-C-200	18.0	20	10.5	10	200	M10	2
	M10-010-S20S-C-300	18.0	20	10.5	10	300	M10	2
	M12-090-S25S-C	22.5	25	12.5	90	170	M12	1
	M12-110-S25S-C	22.5	25	12.5	110	200	M12	1
	M12-175-S25S-C	22.5	25	12.5	175	300	M12	1
	M12-015-S25S-C-170	22.5	25	12.5	15	170	M12	2
	M12-015-S25S-C-200	22.5	25	12.5	15	200	M12	2
	M12-015-S25S-C-300	22.5	25	12.5	15	300	M12	2
	M16-090-S32S-C	28.5	32	17.0	90	180	M16	1
	M16-120-S32S-C	28.5	32	17.0	120	210	M16	1
	M16-175-S32S-C	28.5	32	17.0	175	300	M16	1
	M16-020-S32S-C-180	28.5	32	17.0	20	180	M16	2
	M16-020-S32S-C-210	28.5	32	17.0	20	210	M16	2
	M16-020-S32S-C-300	28.5	32	17.0	20	300	M16	2





# BT30/BT40/BT50



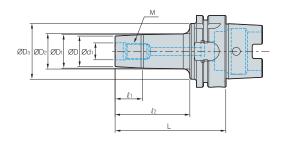


										(mm)
	Designation	ØD	ØD1	ØD2	ØD3	Ød1	Q1	<b>Q2</b>	L	M
BT30-	MAT-M06-053	11.0	11.7	13.0	30	6.5	5	21	53	M06*1.0
	MAT-M08-057	14.5	15.7	17.5	35	8.5	7	25	57	M08*1.25
	MAT-M10-062	18.0	19.7	24.0	38	10.5	7	30	62	M10*1.5
	MAT-M12-067	23.0	24.7	27.5	41	12.5	10	35	67	M12*1.75
	MAT-M16-067	29.0	31.7	33.5	41	17.0	10	35	67	M16*2.0
BT40-	MAT-M06-062	11.0	11.7	14.0	40	6.5	5	25	62	M06*1.0
	MAT-M06-077	11.0	11.7	14.0	40	6.5	5	40	77	M06*1.0
	MAT-M06-092	11.0	11.7	14.0	40	6.5	5	55	92	M06*1.0
	MAT-M08-067	14.5	15.7	19.0	44	8.5	7	30	67	M08*1.25
	MAT-M08-082	14.5	15.7	19.0	44	8.5	7	45	82	M08*1.25
	MAT-M08-097	14.5	15.7	19.0	44	8.5	7	60	97	M08*1.25
	MAT-M10-072	18.0	19.7	23.0	50	10.5	10	35	72	M10*1.5
	MAT-M10-087	18.0	19.7	23.0	50	10.5	10	50	87	M10*1.5
	MAT-M10-102	18.0	19.7	23.0	50	10.5	10	65	102	M10*1.5
	MAT-M12-077	23.0	24.7	30.0	55	12.5	10	40	77	M12*1.75
	MAT-M12-092	23.0	24.7	30.0	55	12.5	13	55	92	M12*1.75
	MAT-M12-107	23.0	24.7	30.0	55	12.5	13	70	107	M12*1.75
	MAT-M16-077	29.0	31.7	37.0	55	17.0	13	40	77	M16*2.0
	MAT-M16-092	29.0	31.7	37.0	55	17.0	13	55	92	M16*2.0
	MAT-M16-107	29.0	31.7	37.0	55	17.0	13	70	107	M16*2.0
BT50-	MAT-M06-083	11.0	11.7	15.0	40	6.5	5	35	83	M06*1.0
	MAT-M06-098	11.0	11.7	15.0	40	6.5	5	50	98	M06*1.0
	MAT-M06-113	11.0	11.7	15.0	40	6.5	5	65	113	M06*1.0
	MAT-M08-088	14.5	15.7	20.0	45	8.5	7	40	88	M08*1.25
	MAT-M08-103	14.5	15.7	20.0	45	8.5	7	55	103	M08*1.25
	MAT-M08-118	14.5	15.7	20.0	45	8.5	7	70	118	M08*1.25
	MAT-M10-093	18.0	19.7	25.0	55	10.5	10	45	93	M10*1.5
	MAT-M10-113	18.0	19.7	25.0	55	10.5	10	65	113	M10*1.5
	MAT-M10-128	18.0	19.7	25.0	55	10.5	10	80	128	M10*1.5
	MAT-M12-103	23.0	24.7	33.0	65	12.5	10	55	103	M12*1.75
	MAT-M12-118	23.0	24.7	33.0	65	12.5	13	70	118	M12*1.75
	MAT-M12-133	23.0	24.7	33.0	65	12.5	13	85	133	M12*1.75
	MAT-M16-103	29.0	31.7	41.0	85	17.0	13	55	103	M16*2.0
	MAT-M16-118	29.0	31.7	41.0	85	17.0	13	70	118	M16*2.0
	MAT-M16-133	29.0	31.7	41.0	85	17.0	13	85	133	M16*2.0

<sup>◆</sup> Applicable modular E45, E46

# HSK63A/HSK100A



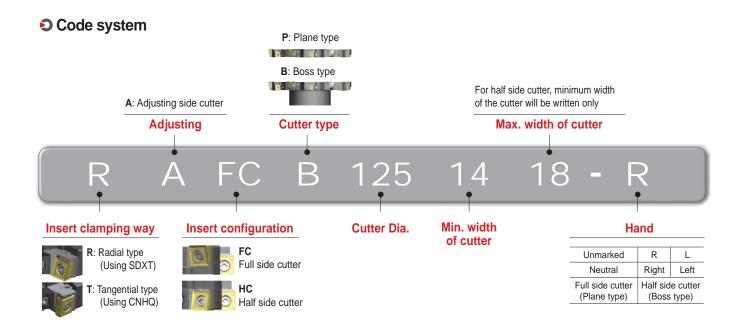


(mm)

										(11111)
Des	signation	ØD	ØD1	ØD2	ØD3	Ød1	Q1	Q2	L	M
HSK63A-	MAT-M06-061	11.0	11.7	27.0	40	6.5	5	25	61	M06*1.0
	MAT-M06-076	11.0	11.7	27.0	40	6.5	5	40	76	M06*1.0
	MAT-M06-091	11.0	11.7	27.0	40	6.5	5	55	91	M06*1.0
	MAT-M08-066	14.5	15.7	30.5	44	8.5	7	30	66	M08*1.25
	MAT-M08-081	14.5	15.7	30.5	44	8.5	7	45	81	M08*1.25
	MAT-M08-096	14.5	15.7	30.5	44	8.5	7	60	96	M08*1.25
	MAT-M10-071	18.0	19.7	34.0	50	10.5	10	35	71	M10*1.5
	MAT-M10-086	18.0	19.7	34.0	50	10.5	10	50	86	M10*1.5
	MAT-M10-101	18.0	19.7	34.0	50	10.5	10	65	101	M10*1.5
	MAT-M12-076	23.0	24.7	36.5	55	12.5	10	40	76	M12*1.75
	MAT-M12-091	23.0	24.7	36.5	55	12.5	13	55	91	M12*1.75
	MAT-M12-106	23.0	24.7	36.5	55	12.5	13	70	106	M12*1.75
	MAT-M16-076	29.0	31.7	38.5	55	17.0	13	40	76	M16*2.0
	MAT-M16-091	29.0	31.7	38.5	55	17.0	13	55	91	M16*2.0
	MAT-M16-106	29.0	31.7	38.5	55	17.0	13	70	106	M16*2.0
HSK100A-	MAT-M06-074	11.0	11.7	15.0	40	6.5	5	35	74	M06*1.0
	MAT-M06-089	11.0	11.7	15.0	40	6.5	5	50	89	M06*1.0
	MAT-M06-104	11.0	11.7	15.0	40	6.5	5	65	104	M06*1.0
	MAT-M08-079	14.5	15.7	20.0	45	8.5	7	40	79	M08*1.25
	MAT-M08-094	14.5	15.7	20.0	45	8.5	7	55	94	M08*1.25
	MAT-M08-109	14.5	15.7	20.0	45	8.5	7	70	109	M08*1.25
	MAT-M10-084	18.0	19.7	25.0	55	10.5	10	45	84	M10*1.5
	MAT-M10-104	18.0	19.7	25.0	55	10.5	10	65	104	M10*1.5
	MAT-M10-119	18.0	19.7	25.0	55	10.5	10	80	119	M10*1.5
	MAT-M12-094	23.0	24.7	33.0	65	12.5	10	55	94	M12*1.75
	MAT-M12-109	23.0	24.7	33.0	65	12.5	13	70	109	M12*1.75
	MAT-M12-124	23.0	24.7	33.0	65	12.5	13	85	124	M12*1.75
	MAT-M16-094	29.0	31.7	41.0	85	17.0	13	55	94	M16*2.0
	MAT-M16-109	29.0	31.7	41.0	85	17.0	13	70	109	M16*2.0
	MAT-M16-124	29.0	31.7	41.0	85	17.0	13	85	124	M16*2.0

Applicable modular E45, E46

# Adjusting side cutter

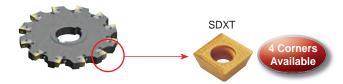


## Tangential type (High rigidity)



- 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)

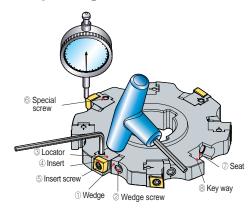


- Medium/Finishing
- Suitable for small width cutting operation (12~24 mm)
- 3 dimensional chip breaker provides smooth cutting operation
- Several chip breakers as per applications are available (MF, MM, FA)
- Economical insert using 4 cutting-edges per insert

#### Insert features

- Precise adjustable side cutter can control the width of the cutter by 5 µm unit
- Since the width of the cutter is adjustable up to ±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 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 wedge slightly on locator-wedge pocket by using wedge screw
- 2. Put (1) locator on (1) locator-wedge pocket along with the (1) key-way
- 3. Tighten the taper screw little bit to set proper position of locator
- 4. Tighten the ② wedge screw tightly by using 70~80N.m torque
- 5. After, put the 4 insert on insert pocket of 9 locator, clamp it with 4 insert screw by using 40~50N.m torque

#### . How to adjust Run-out & cutting width

- 1. Settle the adjusting side cutter after cleaning to the jig for measurement
- 2. Un-screw the ② Wedge screw first, then tighten ① wedge slightly again by using 8N.m torque
- 3. Adjusting the height of cutting-edge by using a dial gauge to set the width of the cutter
- 4. Tighten the **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







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Desi	gnation	Coa	ated	Cutting width for half side cutter	Cutting width for full side cutter	L	d	t
		NCM535	PC6510	(ap)	(ap)			
CNHQ1005	- C0.5			9.0	14~18			
	- R0.5			9.0	14~10	10	10	5.4
	- C1.0			8.5	14~17	10	10	5.4
	- R1.0			0.5	14~17			
CNHQ1305	- C0.5			12	18~21/21~24			
	- R0.5			12	10~21/21~24			
	- C1.0			11.5	18~21/21~23	12.7	10	5.4
	- R1.0			11.5	10~21/21~25	12.7	10	5.4
	- C1.5			11	18~21/21~22			
	- R1.5			''	10~21/21~22			
CNHQ1606	- C0.5			15	24~27/27~30			
	- R0.5			10	24~21/21~00			
	- C1.0			14.5	24~27/27~29			
	- R1.0			14.0	24 21/21 25	16	12	6.4
	- C1.5			14	24~27/27~28	10	12	0.4
	- R1.5			17	24-21/21-20			
	- C2.0			13.5	24~27			
	- R2.0			10.0	24-21			

<sup>→</sup> Applicable cutter E407, E408 → Available arbors and bolt E426~E428

## Recommended cutting condition

ISO	Grades	vc (m/min)	fz (mm/t)
В	NCM535	190~310	0.10~0.30
P	PC3700	160~270	0.10~0.30
0.0	PC5300	90~150	0.10~0.30
M	NCM335	180~290	0.10~0.30
K	PC6510	140~230	0.10~0.30

# Radial type

# Cutting width per insert & type of cutter











			Coated												Unc	oated	Cutting width for	Cutting width for		
D	esignation	NC5330	NCM325	NCM335	NCM535	NCM545	PC2505	PC2510	PC3700	PC6510	PC9530	PC9540	PC5300	PC5400	H01	H05	half side cutter (ap)	full side cutter (ap)	d	t
SDXT	09M405R-MA														•	•				
	09M405L-MA																			
	09M405R-MF												•				8	12~14	9.525	4
	09M405L-MF																0	14~16	9.525	4
	09M405R-MM		•							•	•		•	•						
	09M405L-MM									•										
	130508R-MA														•	•				
	130508L-MA																	16~18		
	130508R-MF		•							•	•		•	•			10.5	18~20	13.5	5.56
	130508L-MF																10.5	20~22	13.5	5.56
	130508R-MM		•							•	•		•	•			22~24			
	130508L-MM																			

## Recommended cutting condition

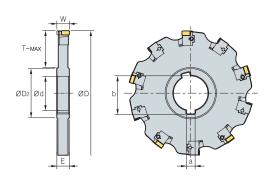
ISO	Grades	vc (m/min)	fz (mm/t)
	NCM325	190~310	0.08~0.30
P	NCM335	180~290	0.08~0.25
	PC3700	160~270	0.10~0.25
M	PC9530	90~150	0.40, 0.25
IVI	PC5300	90~150	0.10~0.25
V	PC8110	140~230	0.10~0.25
K -	PC6510	140~230	0.10~0.25

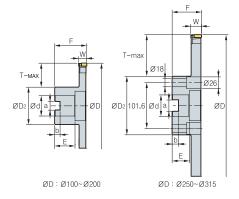
<sup>•:</sup> Stock item

<sup>●</sup> Applicable cutter E409, E4108 ● Available arbors and bolt E426~E428

<sup>•:</sup> Stock item

# Tangential type (Full side cutter)





• TAFCP(M)

• TAFCB(M)

																			(mm)
Desi	gnation	Ød	Е	ØD2	а	b	T-MAX	Des	ignation	Ød	F	ØD2	а	b	Е	T-MAX	Di	mensio	ns
Desig	griation	Du		202	· u	D	I-IIIAA	Des	ignation	Du	•	שטע	u			I-III/A/A	ØD	W	No. of tooth
TAFCP	1001418	31.75 (32)	14	48	7.92 (8)	35.2	24	TAFCB	1001418R/L	31.75 (32)	50	54	12.7 (14.4)	8	28	21	100	14-18	6
(M)	1251418	38.1 (40)	14	56	9.52 (10)	42.3	32	(M)	1251418R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	14-18	8
	1601418	38.1 (40)	14	56	9.52 (10)	42.3	50		1601418R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	14-18	10
	2001418	50.8 (50)	14	72	12.7 (12)	55.8	61		2001418R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	14-18	12
	2501418	50.8 (50)	14	72	12.7 (12)	55.8	86		2501418R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	14-18	16
	3151418	50.8 (50)	14	72	12.7 (12)	55.8	118		3151418R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	14-18	20
TAFCP	1001821	31.75 (32)	18	48	7.92 (8)	35.2	24	TAFCB	1001821R/L	31.75 (32)	50	50	12.7 (14.4)	8	28	21	100	18-21	6
(M)	1251821	38.1 (40)	18	56	9.52 (10)	42.3	32	(M)	1251821R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	18-21	8
	1601821	38.1 (40)	18	56	9.52 (10)	42.3	50		1601821R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	18-21	10
	2001821	50.8 (50)	18	72	12.7 (12)	55.8	61		2001821R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	18-21	12
	2501821	50.8 (50)	18	72	12.7 (12)	55.8	86		2501821R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	18-21	16
	3151821	50.8 (50)	18	72	12.7 (12)	55.8	118		3151821R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	18-21	20
TAFCP	1002124	31.75 (32)	21	48	7.92 (8)	35.2	24	TAFCB	1002124R/L	31.75 (32)	50	54	12.7 (14.4)	8	28	21	100	21-24	6
(M)	1252124	38.1 (40)	21	56	9.52 (10)	42.3	32	(M)	1252124R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	21-24	8
	1602124	38.1 (40)	21	56	9.52 (10)	42.3	50		1602124R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	21-24	10
	2002124	50.8 (50)	21	72	12.7 (12)	55.8	61		2002124R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	21-24	12
	2502124	50.8 (50)	21	72	12.7 (12)	55.8	86		2502124R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	21-24	16
	3152124	50.8 (50)	21	72	12.7 (12)	55.8	118			47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	21-24	20
TAFCP	1252427	38.1 (40)	24	56	9.52 (10)	42.3		TAFCB	1252427R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	24-27	8
(M)	1602427	38.1 (40)	24	56	9.52 (10)	42.3	50	(M)	1602427R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	24-27	10
	2002427	50.8 (50)	24	72	12.7 (12)	55.8	61		2002427R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	24-27	12
	2502427	50.8 (50)	24	72	12.7 (12)	55.8	86		2502427R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	24-27	16
	3152427	50.8 (50)	24	72	12.7 (12)	55.8	118		3152427R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	24-27	20
TAFCP	1252730	38.1 (40)	27	56	9.52 (10)	42.3	32	TAFCB	1252730R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	27-30	8
(M)	1602730	38.1 (40)	27		9.52 (10)			(M)	1602730R/L	38.1 (40)	60		15.9 (16.4)			43	160	27-30	10
	2002730	50.8 (50)	27		12.7 (12)				2002730R/L	50.8 (40)	65		19.0 (16.4)		30	53	200	27-30	12
	2502730	50.8 (50)	27		12.7 (12)					47.625 (60)			25.4 (25.7)			58	250	27-30	16
	3152730	50.8 (50)	27	72	12.7 (12)	55.8	118		3152730R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	27-30	20

<sup>3</sup> Available inserts and Recommended cutting condition E406 • The ap (Maximum width of cutter) size written above is the number when using insert having corner size C0.5 or R0.5 ( )Metric size

#### Parts

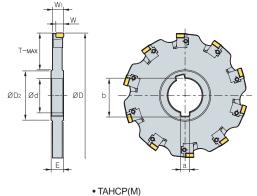
Specification								South of the second	
Edge width TAFCP(B)	1 1	Locator	Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge Wrench	Locator Wrench
□□□1418R/L	CNHQ1005-□□□	LSA-CH10R/L	WSA10N	FTKA0410	DHA0617	SHGA0411	TW15S	HW30	-
□□□1821R/L	CNHQ1305-□□□	LSA-CH13R/L	WSA13N	FTKA0410	DHA0821F	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

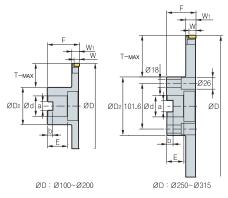
• Note) The Wedge screw for 1001821, 1002124 cutter is DHA0818F



# E Side Milling Cutter

# Tangential type (Half side cutter)





• TAHCB(M)

(mm)

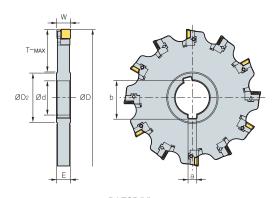
Dooi	anation	Ød	_	ØD2		o T-MAX	Decise	notion	Ød	F	ØD2			<b>L</b>	_	T-MAX		Dime	ension	ıs
Desi	gnation	Юd	_	2טש	₂ a l	o T-MAX	Design	nation	Юa		2טש	а		b	_	I-WAX	ØD	W	<b>W</b> 1	No. of tooth
_	10014R/L	31.75 (32)	14	48	7.92 (8) 35	5.2 24		0014R/L	31.75 (32)	50	54	12.7 (	14.4)	8	28	21	100	9	13.25	6
(M)	12514R/L	38.1 (40)	14	56	9.52 (10) 42	2.3 32	(M) 1	2514R/L	38.1 (40)	60	70	15.9 (	16.4)	10	30	25	125	9	13.25	8
	16014R/L	38.1 (40)	14	56	9.52 (10) 42	2.3 50	1	6014R/L	38.1 (40)	60	70	15.9 (	16.4)	10	30	43	160	9	13.25	10
	20014R/L	50.8 (50)	14	72	12.7 (12) 55	5.8 61	2	20014R/L	50.8 (40)	65	90	19.0 (	16.4)	11	30	53	200	9	13.25	12
	25014R/L	50.8 (50)	14	72	12.7 (12) 55	5.8 86	2	25014R/L	47.625 (60)	65	130	25.4 (	25.7)	14	38	58	250	9	13.25	16
	31514R/L	50.8 (50)	14	72	12.7 (12) 55	5.8 118	3	31514R/L	47.625 (60)	65	130	25.4 (	25.7)	14	38	90	315	9	13.25	20
_	10018R/L	31.75 (32)	18	48	7.92 (8) 35	5.2 24	TAHCB 1	0018R/L	31.75 (32)	50	50	12.7 (	14.4)	8	28	21	100	12	16.75	6
(M)	12518R/L	38.1 (40)	18	56	9.52 (10) 42	2.3 32	(M) 1	2518R/L	38.1 (40)	60	70	15.9 (	16.4)	10	30	25	125	12	16.75	8
	16018R/L	38.1 (40)	18	56	9.52 (10) 42	2.3 50	1	6018R/L	38.1 (40)	60	70	15.9 (	16.4)	10	30	43	160	12	16.75	10
	20018R/L	50.8 (50)	18	72	12.7 (12) 55	5.8 61	2	20018R/L	50.8 (40)	65	90	19.0 (	16.4)	11	30	53	200	12	16.75	12
	25018R/L	50.8 (50)	18	72	12.7 (12) 55	5.8 86	2	25018R/L	47.625 (60)	65	130	25.4 (	25.7)	14	38	58	250	12	16.75	16
	31518R/L	50.8 (50)	18	72	12.7 (12) 55	5.8 118	3	31518R/L	47.625 (60)	65	130	25.4 (	25.7)	14	38	90	315	12	16.75	20
TAHCP	10021R/L	31.75 (32)	21	48	7.92 (8) 35	5.2 24	TAHCB 1	0021R/L	31.75 (32)	50	54	12.7 (	14.4)	8	28	21	100	12	19.75	6
(M)	12521R/L	38.1 (40)	21	56	9.52 (10) 42	2.3 32	(M) 1	2521R/L	38.1 (40)	60	70	15.9 (	16.4)	10	30	25	125	12	19.75	8
	16021R/L	38.1 (40)	21	56	9.52 (10) 42	2.3 50	-	6021R/L	38.1 (40)	60	70	15.9 (	16.4)	10	30	43	160	12	19.75	10
	20021R/L	50.8 (50)	21	72	12.7 (12) 55	5.8 61	2	20021R/L	50.8 (40)	65	90	19.0 (	16.4)	11	30	53	200	12	19.75	12
	25021R/L	50.8 (50)	21	72	12.7 (12) 55	5.8 86	2	25021R/L	47.625 (60)	65	130	25.4 (	25.7)	14	38	58	250	12	19.75	16
	31521R/L	50.8 (50)	21	72	12.7 (12) 55	5.8 118	-		47.625 (60)	65	130	25.4 (	25.7)	14	38	90	315	12	19.75	20
_	12524R/L	38.1 (40)	24	56	9.52 (10) 42	2.3 32	TAHCB 1		38.1 (40)	60	70	15.9 (	16.4)	10	30	25	125	15	22.75	8
(M)	16024R/L	38.1 (40)	24	56	9.52 (10) 42	2.3 50	-	6024R/L	38.1 (40)	60	70	15.9 (	16.4)	10	30	43	160	15	22.75	10
	20024R/L	50.8 (50)	24	72	12.7 (12) 55	5.8 61	-	20024R/L	50.8 (40)	65	90	19.0 (	16.4)	11	30	53	200	15	22.75	12
	25024R/L	50.8 (50)	24	72	12.7 (12) 55	5.8 86	2	25024R/L	47.625 (60)	65	130	25.4 (	25.7)	14	38	58	250	15	22.75	16
	31524R/L	50.8 (50)		72	12.7 (12) 55	5.8 118			47.625 (60)	65	130	25.4 (	25.7)	14	38	90	315	15	22.75	20
_	12527R/L	38.1 (40)		56	9.52 (10) 42	2.3 32	TAHCB 1		38.1 (40)	60	70	15.9 (	16.4)	10	30	25	125	15	25.75	8
(M)	16027R/L	38.1 (40)			9.52 (10) 42		-	6027R/L	( -,			15.9 (			30	43	160		25.75	
	20027R/L	, ,	27		12.7 (12) 55		-	20027R/L	50.8 (40)	65		19.0 (			30	53	200		25.75	
	25027R/L	50.8 (50)			12.7 (12) 55		-		47.625 (60)			25.4 (				58	250		25.75	
	31527R/L	50.8 (50)	27	72	12.7 (12) 55	5.8 118	3	31527R/L	47.625 (60)	65	130	25.4 (	25.7)	14	38	90	315	15	25.75	20

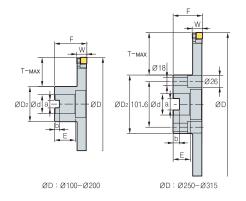
<sup>3</sup> Available inserts and Recommended cutting condition E406 • The ap (Maximum width of cutter) size written above is the number when using insert having corner size C0.5 or R0.5 ( )Metric size

Specification								ADROY	
Edge width TAHCP(B)	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



# Radial type (Full side cutter)





• RAFCP(M) • RAFCB(M)

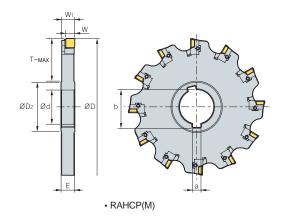
(mm)

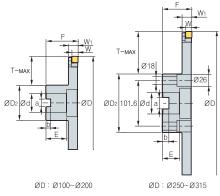
																Di	mensio	ne	
Desig	gnation	Ød	Ε	ØD2	a a	b	T-MAX	Des	ignation	Ød	F	ØD2	а	b	Ε	T-MAX	ØD	W	No. of tooth
RAFCP	1001214	31.75 (32)	12	48	7.92 (8)	35.2	24	RAFCB	1001214R/L	31.75 (32)	50	54	12.7 (14.4)	8	28	21	100	12-14	6
(M)	1251214	38.1 (40)	12	56	9.52 (10)	42.3	32	(M)	1251214R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	12-14	8
	1601214	38.1 (40)	12	56	9.52 (10)	42.3	50		1601214R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	12-14	10
	2001214	50.8 (50)	12	72	12.7 (12)	55.8	61		2001214R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	12-14	12
	2501214	50.8 (50)	12	72	12.7 (12)	55.8	86		2501214R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	12-14	16
	3151214	50.8 (50)	12	72	12.7 (12)	55.8	118		3151214R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	12-14	20
RAFCP	1001416	31.75 (32)	14	48	7.92 (8)	35.2	24	RAFCB	1001416R/L	31.75 (32)	50	50	12.7 (14.4)	8	28	21	100	14-16	6
(M)	1251416	38.1 (40)	14	56	9.52 (10)	42.3	32	(M)	1251416R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	14-16	8
	1601416	38.1 (40)	14	56	9.52 (10)	42.3	50		1601416R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	14-16	10
	2001416	50.8 (50)	14	72	12.7 (12)	55.8	61		2001416R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	14-16	12
	2501416	50.8 (50)	14	72	12.7 (12)	55.8	86		2501416R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	14-16	16
	3151416	50.8 (50)	14	72	12.7 (12)	55.8	118		3151416R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	14-16	20
<b>RAFCP</b>	1251618	38.1 (40)	16	56	9.52 (10)	42.3	32	RAFCB	1251618R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	16-18	8
(M)	1601618	38.1 (40)	16	56	9.52 (10)	42.3	50	(M)	1601618R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	16-18	10
	2001618	50.8 (50)	16	72	12.7 (12)	55.8	61		2001618R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	16-18	12
	2501618	50.8 (50)	16	72	12.7 (12)	55.8	86		2501618R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	16-18	16
	3151618	50.8 (50)	16	72	12.7 (12)	55.8	118		3151618R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	16-18	20
_	1251820	38.1 (40)	18	56	9.52 (10)	42.3	32	RAFCB	1251820R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	18-20	8
(M)	1601820	38.1 (40)	18	56	9.52 (10)	42.3	50	(M)	1601820R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	18-20	10
	2001820	50.8 (50)	18	72	12.7 (12)	55.8	61		2001820R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	18-20	12
	2501820	50.8 (50)	18	72	12.7 (12)	55.8	86		2501820R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	18-20	16
	3151820	50.8 (50)	18	72	12.7 (12)	55.8	118		3151820R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	18-20	20
	1252022	38.1 (40)	20	56	9.52 (10)	42.3	32		1252022R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	25	125	20-22	8
(M)	1602022	38.1 (40)	20	56	9.52 (10)	42.3	50	(M)	1602022R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	20-22	10
	2002022	50.8 (50)	20	72	12.7 (12)	55.8	61		2002022R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	20-22	12
	2502022	50.8 (50)	20	72	12.7 (12)	55.8	86		2502022R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	58	250	20-22	16
	3152022	50.8 (50)	20	72	12.7 (12)	55.8	118		3152022R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	20-22	20
_	1252224	38.1 (40)	22	56	9.52 (10)	42.3	32		1252224R/L	( )	60	70	15.9 (16.4)	10	30	25	125	22-24	8
(M)	1602224	38.1(40)	22	56	9.52 (10)	42.3	50	(M)	1602224R/L	38.1 (40)	60	70	15.9 (16.4)	10	30	43	160	22-24	10
	2002224	50.8 (50)	22		12.7 (12)		61		2002224R/L	50.8 (40)	65	90	19.0 (16.4)	11	30	53	200	22-24	12
	2502224	50.8 (50)	22	72	12.7 (12)	55.8	86		2502224R/L	, ,	65	130	25.4 (25.7)	14	38	58	250	22-24	16
	3152224	50.8 (50)	22	72	12.7 (12)	55.8	118		3152224R/L	47.625 (60)	65	130	25.4 (25.7)	14	38	90	315	22-24	20

Available inserts and Recommended cutting condition
E406 • The ap (Maximum width of cutter) size written above is the number when using insert having corner size C0.5 or R0.5 ( )Metric size

Specification								Sono .
Edge width RAFCP(B)	Insert	Locator	WSD09N WSA10N Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge, locator wrench
□□□1214R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□1416R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□1618R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□1820R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□2022R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□2224R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30

# Radial type (Half side cutter)





• RAHCB(M)

(mm)

																		Dimer	sions	(11111)
Desi	gnation	Ød	Е	ØD2	2 a	b	T-MAX	Designation	on	Ød	F	ØD2	а	b	Е	T-MAX	ØD	W	<b>W</b> 1	No. of tooth
RAHCP	10012R/L	31.75 (32)	12	48	7.92 (8)	35.2	24	<b>RAHCB 1001</b>	12R/L	31.75 (32)	50	54 12	.7 (14.4)	8	28	21	100	8	11.1	6
(M)	12512R/L	38.1 (40)	12	56	9.52 (10)	42.3	32	(M) 1251	12R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	25	125	8	11.1	8
	16012R/L	38.1 (40)	12	56	9.52 (10)	42.3	50	1601	12R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	43	160	8	11.1	10
	20012R/L	50.8 (50)	12	72	12.7 (12)	55.8	61	2001	12R/L	50.8 (40)	65	90 19	.0 (16.4)	11	30	53	200	8	11.1	12
	25012R/L	50.8 (50)	12	72	12.7 (12)	55.8	86	2501	12R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	58	250	8	11.1	16
	31512R/L	50.8 (50)	12	72	12.7 (12)	55.8	118	3151	12R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	90	315	8	11.1	20
	10014R/L	31.75 (32)	14	48	7.92 (8)	35.2	24	<b>RAHCB 1001</b>	14R/L	31.75 (32)	50	50 12	.7 (14.4)	8	28	21	100	8	13.1	6
(M)	12514R/L	38.1 (40)	14	56	9.52 (10)	42.3	32	(M) 1251	14R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	25	125	8	13.1	8
	16014R/L	38.1 (40)	14	56	9.52 (10)	42.3	50	1601	14R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	43	160	8	13.1	10
	20014R/L	50.8 (50)	14	72	12.7 (12)	55.8	61	2001	14R/L	50.8 (40)	65	90 19	.0 (16.4)	11	30	53	200	8	13.1	12
	25014R/L	50.8 (50)	14	72	12.7 (12)	55.8	86	2501	14R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	58	250	8	13.1	16
	31514R/L	50.8 (50)	14	72	12.7 (12)	55.8	118	3151	14R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	90	315	8	13.1	20
_	12516R/L	38.1 (40)	16	56	9.52 (10)	42.3	32	<b>RAHCB</b> 1251	16R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	25	125	10.5	15	8
(M)	16016R/L	38.1 (40)	16	56	9.52 (10)	42.3	50	(M) 1601	16R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	43	160	10.5	15	10
	20016R/L	50.8 (50)	16	72	12.7 (12)	55.8	61	2001	16R/L	50.8 (40)	65	90 19	.0 (16.4)	11	30	53	200	10.5	15	12
	25016R/L	50.8 (50)	16	72	12.7 (12)	55.8	86	2501	16R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	58	250	10.5	15	16
	31516R/L	50.8 (50)	16	72	12.7 (12)	55.8	118	3151	16R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	90	315	10.5	15	20
_	12518R/L	38.1 (40)	18	56	9.52 (10)	42.3	32	RAHCB 1251	18R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	25	125	10.5	17	8
(M)	16018R/L	38.1 (40)	18	56	9.52 (10)	42.3	50	(M) 1601	18R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	43	160	10.5	17	10
	20018R/L	50.8 (50)	18	72	12.7 (12)	55.8	61	2001	18R/L	50.8 (40)	65	90 19	.0 (16.4)	11	30	53	200	10.5	17	12
	25018R/L	50.8 (50)	18	72	12.7 (12)	55.8	86	2501	18R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	58	250	10.5	17	16
	31518R/L	50.8 (50)	18	72	12.7 (12)	55.8	118	3151	18R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	90	315	10.5	17	20
	12520R/L	38.1 (40)	20	56	9.52 (10)	42.3	32	RAHCB 1252		38.1 (40)	60	70 15	.9 (16.4)	10	30	25	125	10.5	19	8
(M)	16020R/L	38.1 (40)	20	56	9.52 (10)	42.3	50	(M) 1602	20R/L	38.1 (40)	60	70 15	.9 (16.4)	10	30	43	160	10.5	19	10
	20020R/L	50.8 (50)	20	72	12.7 (12)	55.8	61		20R/L	50.8 (40)	65	90 19	.0 (16.4)	11	30	53	200	10.5	19	12
	25020R/L	50.8 (50)	20	72	12.7 (12)	55.8	86			47.625 (60)			, ,		38	58	250	10.5	19	16
	31520R/L	50.8 (50)	20	72	12.7 (12)	55.8	118			47.625 (60)	65	130 25	.4 (25.7)	14	38	90	315	10.5	19	20
_	12522R/L	38.1 (40)	22		9.52 (10)			RAHCB 1252	-	38.1 (40)	60		.9 (16.4)		30	25	125	10.5	21	8
(M)	16022R/L	38.1 (40)	22		9.52 (10)		50		22R/L	38.1 (40)	60		.9 (16.4)		30	43	160	10.5	21	10
	20022R/L	50.8 (50)	22		12.7 (12)	-	61		22R/L	50.8 (40)	65	90 19	.0 (16.4)	11	30	53	200	10.5	21	12
	25022R/L	50.8 (50)	22		12.7 (12)		86			47.625 (60)						58	250	10.5	21	16
	31522R/L	50.8 (50)	22	72	12.7 (12)	55.8	118	3152	22R/L	47.625 (60)	65	130 25	.4 (25.7)	14	38	90	315	10.5	21	20

Available inserts and Recommended cutting condition E406

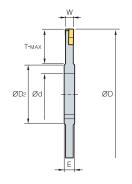
- The ap (Maximum width of cutter) size written above is the number when using insert having corner size R0.5. The ap is subject to change as per insert corner size
- The ap (Maximum width of cutter) size written above is the number when using SDXT09M405R-MM. The ap is subject to change as per insert corner size ( )

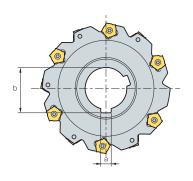
( )Metric size

Specification				6				- Constant of the constant of
Edge width RAHCP(B)	Insert	Locator	WSD09N WSA10N Wedge	Insert screw	Wedge screw	Locator screw	Insert wrench	Wedge, locator wrench
□□□1214R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□1416R/L	SDXT09M40□R/L	LSD09R/L	WSD09N	FTGA03508	DHA0617	SHGA0409	TW15S	HW30
□□□1618R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□1820R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□2022R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30
□□□2224R/L	SDXT13050□R/L	LSD13R/L	WSA10N	FTNC04509	DHA0617	SHGA0411	TW20S	HW30

SPP(M)







• AR: -2°
• RR: -28

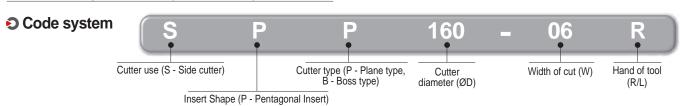
	* KK20												(mm)
Desig	gnation	0	ØD	W	T-MAX	Ød	а	b	Е	ØD2	Insert	Screw	Wrench
SPP	080-04	8	80	4	20	25.4 (27)	6.35 (7)	28.04 (29.8)	8	40	PNEJ1223N	PTMA0403F	TW15S
(SPPM)	080-05	8	80	5	20	25.4 (27)	6.35 (7)	28.04 (29.8)	8	40	PNEJ1230N	PTMA0404F	TW15S
(- /	080-06	8	80	6	20	25.4 (27)	6.35 (7)	28.04 (29.8)	8	40	PNEJ1235N	PTMA0405F	TW15S
	100-04	10	100	4	24	31.75 (32)	7.94 (8)	35.18 (34.8)	8	47	PNEJ1223N	PTMA0403F	TW15S
	100-05	10	100	5	24	31.75 (32)	7.94 (8)	35.18 (34.8)	8	47	PNEJ1230N	PTMA0404F	TW15S
	100-06	10	100	6	25	31.75 (32)	7.94 (8)	35.18 (34.8)	8	47	PNEJ1235N	PTMA0405F	TW15S
	100-07	10	100	7	25	31.75 (32)	7.94 (8)	35.18 (34.8)	10	47	PNEJ1240N	PTMA0406F	TW15S
	100-08	10	100	8	25	31.75 (32)	7.94 (8)	35.18 (34.8)	10	47	PNEJ1245N	PTKA0407F	TW15S
	100-09	10	100	9	25	31.75 (32)	7.94 (8)	35.18 (34.8)	12	47	PNEJ1250N	PTKA0408F	TW15S
	100-10	10	100	10	25	31.75 (32)	7.94 (8)	35.18 (34.8)	12	47	PNEJ1255N	PTKA0409F	TW15S
	125-04	12	125	4	30	38.1 (40)	9.53 (10)	42.32 (43.5)	8	56	PNEJ1223N	PTMA0403F	TW15S
	125-05	12	125	5	32	38.1 (40)	9.53 (10)	42.32 (43.5)	8	56	PNEJ1230N	PTMA0404F	TW15S
	125-06	12	125	6	32	38.1 (40)	9.53 (10)	42.32 (43.5)	8	56	PNEJ1235N	PTMA0405F	TW15S
	125-07	12	125	7	32	38.1 (40)	9.53 (10)	42.32 (43.5)	10	56	PNEJ1240N	PTMA0406F	TW15S
	125-08	12	125	8	32	38.1 (40)	9.53 (10)	42.32 (43.5)	10	56	PNEJ1245N	PTKA0407F	TW15S
	125-09	12	125	9	32	38.1 (40)	9.53 (10)	42.32 (43.5)	12	56	PNEJ1250N	PTKA0408F	TW15S
	125-10	12	125	10	32	38.1 (40)	9.53 (10)	42.32 (43.5)	12	56	PNEJ1255N	PTKA0409F	TW15S
	160-04	16	160	4	45	38.1 (40)	9.53 (10)	42.32 (43.5)	8	66	PNEJ1223N	PTMA0403F	TW15S
	160-05	16	160	5	45	38.1 (40)	9.53 (10)	42.32 (43.5)	8	66	PNEJ1230N	PTMA0404F	TW15S
	160-06	16	160	6	45	38.1 (40)	9.53 (10)	42.32 (43.5)	8	66	PNEJ1235N	PTMA0405F	TW15S
	160-07	16	160	7	45	38.1 (40)	9.53 (10)	42.32 (43.5)	10	66	PNEJ1240N	PTMA0406F	TW15S
	160-08	16	160	8	45	38.1 (40)	9.53 (10)	42.32 (43.5)	10	66	PNEJ1245N	PTKA0407F	TW15S
	160-09	16	160	9	45	38.1 (40)	9.53 (10)	42.32 (43.5)	12	66	PNEJ1250N	PTKA0408F	TW15S
	160-10	16	160	10	45	38.1 (40)	9.53 (10)	42.32 (43.5)	12	66	PNEJ1255N	PTKA0409F	TW15S
	160-11	16	160	11	45	38.1 (40)	9.53 (10)	42.32 (43.5)	14	66	PNEJ1260N	PTKA0410F	TW15S
	160-12	16	160	12	45	38.1 (40)	9.53 (10)	42.32 (43.5)	14	66	PNEJ1265N	PTKA0411F	TW15S
	160-13	16	160	13	45	38.1 (40)	9.53 (10)	42.32 (43.5)	16	66	PNEJ1270N	PTKA0412F	TW15S
	160-14	16	160	14	45	38.1 (40)	9.53 (10)	42.32 (43.5)	16	66	PNEJ1275N	PTKA0413F	TW15S
	200-06	18	200	6	60	50.8 (50)	12.7 (12)	55.83 (53.5)	8	70	PNEJ1235N	PTMA0405F	TW15S
	200-07	18	200	7	60	50.8 (50)	12.7 (12)	55.83 (53.5)	10	70	PNEJ1240N	PTMA0406F	TW15S
	200-08	18	200	8	60	50.8 (50)	12.7 (12)	55.83 (53.5)	10	70	PNEJ1245N	PTKA0407F	TW15S
	200-09	18	200	9	60	50.8 (50)	12.7(12)	55.83 (53.5)	12	70	PNEJ1250N	PTKA0408F	TW15S
	200-10	18	200	10	60	50.8 (50)	12.7 (12)	55.83 (53.5)	12	70	PNEJ1255N	PTKA0409F	TW15S
	200-11	18	200	11	60	50.8 (50)	12.7 (12)	55.83 (53.5)	14	70	PNEJ1260N	PTKA0410F	TW15S
	200-12	18	200	12	60	50.8 (50)	12.7 (12)	55.83 (53.5)	14	70	PNEJ1265N	PTKA0411F	TW15S
	200-13	18	200	13	60	50.8 (50)	12.7 (12)	55.83 (53.5)	16	70	PNEJ1270N	PTKA0412F	TW15S
	200-14	18	200	14	60	50.8 (50)	12.7 (12)	55.83 (53.5)	16	70	PNEJ1275N	PTKA0413F	TW15S

#### Available arbors

		NC arbors								
De	signation	BT30	BT40	BT50						
SPP 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			-						
SPPN	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 condition

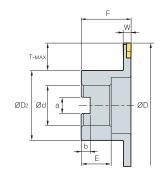
Workpiece	Cutting of	Cutting condition							
workpiece	vc (m/min)	fz (mm/t)	Grades						
	190~310	0.10~0.25	NCM325						
P	160~270	0.10~0.30	PC3700						
	60~100	0.10~0.25	ST30A						
М	90~150	0.10~0.25	PC9530						
IVI	80~150	0.10~0.30	ST30A						
К	140~230	0.10~0.35	PC6510						
K	50~90	0.10~0.40	G10						

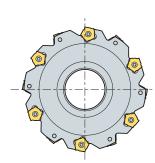


→ Available inserts E16 → Available arbors and bolt E426~E428

( )Metric size









• AR: -2° • RR: 28°

(mm)

Des	ignation	0	ØD	W	T-MAX	ØD2	Ød	а	b	F	E	Insert	Screw	Wrench
SPB	080-04R/L	8	80	4	18	40	25.4 (27)	9.5 (12.4)	6 (7)	50	25 (22)	PNEJ1223N	PTMA0403F	TW15S
(SPBM)	080-05R/L	8	80	5	18	40	25.4 (27)	9.5 (12.4)	6 (7)	50	25 (22)	PNEJ1230N	PTMA0404F	TW15S
	080-06R/L	8	80	6	18	40	25.4 (27)	9.5 (12.4)	6 (7)	50	25 (22)	PNEJ1235N	PTMA0405F	TW15S
	100-04R/L	10	100	4	21	54	31.75 (32)	12.7 (14.4)	8 (8)	50	32 (28)	PNEJ1223N	PTMA0403F	TW15S
	100-05R/L	10	100	5	21	54	31.75 (32)	12.7 (14.4)	8 (8)	50	32 (28)	PNEJ1230N	PTMA0404F	TW15S
	100-06R/L	10	100	6	21	54	31.75 (32)	12.7 (14.4)	8 (8)	50	32 (28)	PNEJ1235N	PTMA0405F	TW15S
	100-07R/L	10	100	7	21	54	31.75 (32)	12.7 (14.4)	8 (8)	50	32 (28)	PNEJ1240N	PTMA0406F	TW15S
	100-08R/L	10	100	8	21	54	31.75 (32)	12.7 (14.4)	8 (8)	50	32 (28)	PNEJ1245N	PTMA0407F	TW15S
	100-09R/L	10	100	9	21	54	31.75 (32)	12.7 (14.4)	8 (8)	50	32 (28)	PNEJ1250N	PTMA0408F	TW15S
	100-10R/L	10	100	10	21	54	31.75 (32)	12.7 (14.4)	8 (8)	50	32 (28)	PNEJ1255N	PTMA0409F	TW15S
	125-04R/L	12	125	4	25	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1223N	PTMA0403F	TW15S
	125-05R/L	12	125	5	25	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1230N	PTMA0404F	TW15S
	125-06R/L	12	125	6	25	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1235N	PTMA0405F	TW15S
	125-07R/L	12	125	7	25	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1240N	PTMA0406F	TW15S
	125-08R/L	12	125	8	25	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1245N	PTKA0407F	TW15S
	125-09R/L	12	125	9	25	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1250N	PTKA0408F	TW15S
	125-10R/L	12	125	10	25	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1255N	PTKA0409F	TW15S
	160-04R/L	16	160	4	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1223N	PTMA0403F	TW15S
	160-05R/L	16	160	5	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1230N	PTMA0404F	TW15S
	160-06R/L	16	160	6	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1235N	PTMA0405F	TW15S
	160-07R/L	16	160	7	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1240N	PTMA0406F	TW15S
	160-08R/L	16	160	8	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1245N	PTKA0407F	TW15S
	160-09R/L	16	160	9	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1250N	PTKA0408F	TW15S
	160-10R/L	16	160	10	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1255N	PTKA0409F	TW15S
	160-11R/L	16	160	11	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1260N	PTKA0410F	TW15S
	160-12R/L	16	160	12	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1265N	PTKA0411F	TW15S
	160-13R/L	16	160	13	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1270N	PTKA0412F	TW15S
	160-14R/L	16	160	14	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60 (50)	38 (30)	PNEJ1275N	PTKA0413F	TW15S
	200-06R/L	18	200	6	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1235N	PTMA0405F	TW15S
	200-07R/L	18	200	7	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1240N	PTMA0406F	TW15S
	200-08R/L	18	200	8	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1245N	PTKA0407F	TW15S
	200-09R/L	18	200	9	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1250N	PTKA0408F	TW15S
	200-10R/L	18	200	10	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1255N	PTKA0409F	TW15S
	200-11R/L	18	200	11	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1260N	PTKA0410F	TW15S
	200-12R/L	18	200	12	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1265N	PTKA0411F	TW15S
	200-13R/L	18	200	13	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1270N	PTKA0412F	TW15S
	200-14R/L	18	200	14	53	90	50.8 (40)	19 (16.4)	11 (9)	65	38 (30)	PNEJ1275N	PTKA0413F	TW15S

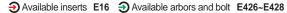
( )Metric size

## Notice (When mounting inserts)

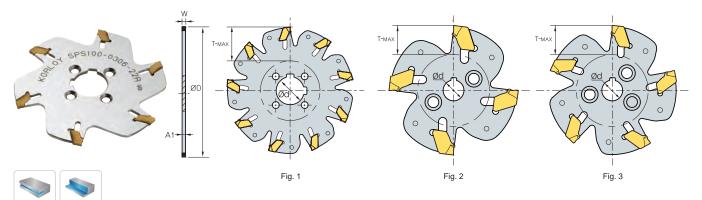
- ▶ Insert chip breaker should face chip pocket of the cutter
- ▶ Fasten screw after insert contacts securely on its seat
- ▶ If there is a gap between insert and its seat after mounting it may cause tool troubles

## Recommended cutting condition

Workpiece	Cutting of	Grades	
workpiece	vc (m/min)	fz (mm/t)	Grades
Р	190~310 160~270 60~100	0.10~0.25 0.10~0.30 0.10~0.25	NCM325 PC3700 ST30A
М	90~150 80~150	0.10~0.25 0.10~0.30	PC9530 ST30A
K	140~230	0.10~0.35 0.10~0.40	PC6510 G10



# **SPS**

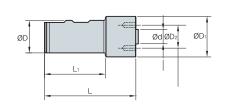


(mm)

	Decignation		ØD	w	T-MAX	Ød	<b>A</b> 1	Fig	Incort	Adapt	or	Wrench
	Designation		טש	VV	I-IVIAA	Юa	A1	Fig.	Insert	WS	DF	wrench
SPS	050-0204-08R	4	50	2.2	11	8	1.8	2		WS2528-M4	-	
	063-0205-10R	5	63	2.2	15.5	10	1.8	3	SPFN	WS2532-M5	-	
	080-0207-22R/F	7	80	2.2	20 (17)	22	1.8	1	200	WS3240-M5	DF22-46	
	100-0209-22R/F	9	100	2.2	30 (27)	22	1.8	1		WS3240-M5	DF22-46	
	125-0211-32F	11	125	2.2	35	32	1.8	1	( )	-	DF32-55	
	160-0214-32F	14	160	2.2	52.5	32	1.8	3		-	DF32-55	
	063-0305-10R	5	63	3	15.5	10	2.55	1	SPFN		WS2532-M5	-
	080-0307-22R/F	7	80	3	20 (17)	22	2.55	1		WS3240-M5	DF22-46	SW17P
	100-0309-22R/F	9	100	3	30 (27)	22	2.55	1	300	WS3240-M5	DF22-46	(separately
	125-0311-32F	11	125	3	35	32	2.55	1		-	DF32-55	ordered)
	160-0314-32F	14	160	3	52.5	32	2.55	1	( )	-	DF32-55	
	200-0318-40F	18	200	3	60	40	2.55	1		-	DF40-80	
	080-0406-22R/F	6	80	4	20 (17)	22	3.4	1		WS3240-M5	DF22-46	
	100-0408-22R/F	8	100	4	30 (27)	22	3.4	1	SPFN	WS3240-M5	DF22-46	
	125-0410-32F	10	125	4	35	32	3.4	1	400	-	DF32-55	
	160-0413-32F	13	160	4	52.5	32	3.4	1	- ( )	-	DF32-55	
	200-0417-40F	17	200	4	60	40	3.4	1	, ,	-	DF40-80	1

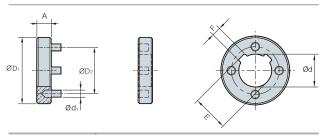
( )Metric size

# WS( )-( ) (Weldon Shank)



Designation	L	L <sub>1</sub>	D	<b>D</b> 1	D <sub>2</sub>	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	D <sub>1</sub>	D <sub>2</sub>	d	<b>d</b> 1	Α	Е	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 condition

Workpiece	Cutting of	Crades	
	vc (m/min)	fz (mm/t)	Grades
P	160~270	0.13~0.25	PC3700
M	90~150	0.10~0.22	PC5300
K	110~180	0.10~0.25	PC6510



# Ε

#### 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





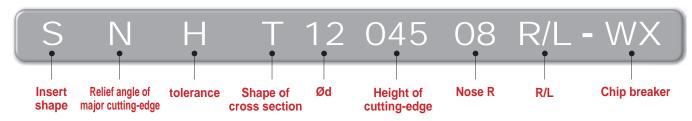


WFSP(M) - Plane type

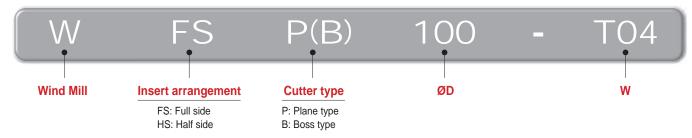
WFSB(M) - Boss type

#### Code system

#### • Insert



#### Cutter

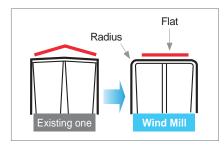


#### Features

• 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)

R0.2	R0.4	R0.6	R0.8	R1.0	R1.2	R1.4	R1.6	R1.8	R2.0

# **Technical Information for Wind Mill**

# Ε

## Application example

■ Use Carriers for Motor Vehicles

■Workpiece FCD500K

■ Cutting vc (m/min) = 200 conditions fz (mm/t) = 0.2

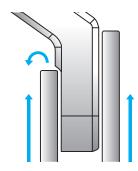
vf (mm/min) = 600 ap (mm) =  $2 \sim 3$ 

■Tool KSF140R-T14-HM-2

SNHT1205408R/L-WX (PC5300)

(re) ssed builting 18% improved 180 152 Wind Mill Competitor's

■ Test result



■Use

Lug for Vessel

■ Workpiece ■ Cutting conditions

vc (m/min) = 560 fz (mm/t) = 0.09

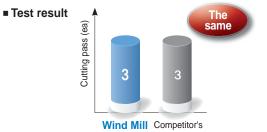
Mild steel

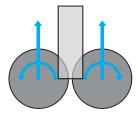
vf (mm/min) = 750

ap (mm) = 6

■Tool WFSP178R/L-T06

SNHT1203508R/L-WX (PC5300)





## Recommended cutting condition

Maukaiaaa	Cutting c	One de a	
Workpiece	vc (m/min)	fz (mm/t)	Grades
Р	150~250	0.10~0.25	PC5300
M	120~200	0.10~0.30	PC5300
K	100~150	0.10~0.30	PC5300



#### Available inserts

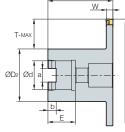
	Deal-matter.	Coated	[	Dimensi	ons (mn	1)			
	Designation		Ød	Ød <sub>1</sub>	t	W	Nose R	Configur	ation
SNHT	1102308R/L-WX	•	11.0	4	2.30	4.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6		
	110308R/L-WX	•	11.0	4	3.00	5.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6	-	
	1203508R/L-WX	•	12.7	5	3.54	6.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0		
	120408R/L-WX		12.7	5	4.00	7.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0		
	1204508R/L-WX	•	12.7	5	4.54	8.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0		
	120508R/L-WX	•	12.7	5	5.00	9.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0		d1
	1205408R/L-WX	•	12.7	5	5.47	10.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0	d	t
	120608R/L-WX		12.7	5	6.00	11.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0		
	1206508R/L-WX		12.7	5	6.50	12.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0		
	120708R/L-WX		12.7	5	7.00	13.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0		
	1207508R/L-WX		12.7	5	7.50	14.0	0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0		

<sup>•</sup> Available cutter stock requires to be asked separately



# WFSB(M) (Boss type)





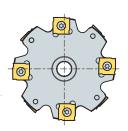
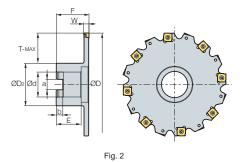


Fig. 1



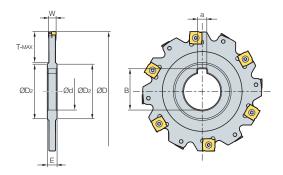


	signation	0	ØD	W	T-MAX	$ØD_2$	Ød	а	b	F	Е	Insert	Screw	Wrenc
VFSBM	080R/L-T04	8	80	4	17	40	22	10.4	6.3	50	21	SNHT11023R/L-WX	PTMA03503	TW09
II ODIII	080R/L-T05	8	80	5	17	40	22	10.4	6.3	50	21	SNHT1103R/L-WX	PTMA03504	TW09
	080R/L-T06	8	80	6	17	40	22	10.4	6.3	50	21	SNHT12035R/L-WX	PTMA04045F	
VFSB	100R/L-T04	10	100	4	21	50 (48)	25.4 (27)	9.5 (12.4)	6 (7)	50	25	SNHT11023R/L-WX	PTMA03503	TW09
NFSBM)		10	100	5	21	50 (48)	25.4 (27)	9.5 (12.4)	6 (7)	50	25	SNHT1103R/L-WX	PTMA03504	TWOS
,	100R/L-T06	10	100	6	21	50 (48)	25.4 (27)	9.5 (12.4)	6 (7)	50	25	SNHT12035R/L-WX	PTMA04045F	
	100R/L-T07	10	100	7	21	50 (48)	25.4 (27)	9.5 (12.4)	6 (7)	50	25	SNHT1204R/L-WX	PTMA0405F	TW15
	100R/L-T08	10	100	8	21	50 (48)	25.4 (27)	9.5 (12.4)	6 (7)	50	25	SNHT12045R/L-WX	PTMA0406F	TW1
	100R/L-T09	10	100	9	21	50 (48)	25.4 (27)	9.5 (12.4)	6 (7)	50	25	SNHT1205R/L-WX	PTMA0407F	TW1
	100R/L-T10	10	100	10	21	50 (48)	25.4 (27)	9.5 (12.4)	6 (7)	50	25	SNHT12054R/L-WX	PTMA0408F	TW15
	125R/L-T04	12	125	4	30	. ,	31.75 (32)	, ,	8	50	32 (30)	SNHT11023R/L-WX	PTMA03503	TWO
	125R/L-T05	12	125	5	30		31.75 (32)	, ,	8	50	32 (30)	SNHT1103R/L-WX	PTMA03504	TWO
	125R/L-T06	12	125	6	30		31.75 (32)	, ,	8	50	32 (30)	SNHT12035R/L-WX	PTMA04045F	
	125R/L-T07	12	125	7	30	. ,	31.75 (32)		8	50	32 (30)	SNHT1204R/L-WX	PTMA0405F	TW1
	125R/L-T08	12	125	8	30		. ,	12.7 (14.4)	8	50	32 (30)	SNHT12045R/L-WX	PTMA0406F	TW1
	125R/L-T09	12	125	9	30	. ,	31.75 (32)	, ,	8	50	32 (30)	SNHT1205R/L-WX	PTM A0407F	TW1
	125R/L-T10	12	125	10	30	60 (58)	. ,	12.7 (14.4)	8	50	32 (30)	SNHT12054R/L-WX	PTMA0408F	TW1
	160R/L-T04	16	160	4	43	70	. ,	15.9 (16.4)		60	38 (32)	SNHT11023R/L-WX	PTMA03503	TW0
	160R/L-T05	16	160	5	43	70	. ,	, ,	10 (9)	60	38 (32)	SNHT1103R/L-WX	PTMA03504	TWO
	160R/L-T06	16	160	6	43	70	. ,	15.9 (16.4)	. ,	60	38 (32)	SNHT12035R/L-WX	PTMA04045F	
	160R/L-T07	16	160	7	43	70	( /	15.9 (16.4)	. ,	60	38 (32)	SNHT1204R/L-WX	PTMA0405F	TW1
	160R/L-T08	16	160	8	43	70		15.9 (16.4)		60	38 (32)	SNHT12045R/L-WX	PTMA0406F	TW1
	160R/L-T09	16	160	9	43	70		15.9 (16.4)		60	38 (32)	SNHT1205R/L-WX	PTMA0407F	TW1
	160R/L-T10	16	160	10	43	70	38.1 (40)	15.9 (16.4)	10 (9)	60	38 (32)	SNHT12054R/L-WX	PTMA0408F	TW1
	160R/L-T11	16	160	11	43	70	. ,	15.9 (16.4)	. ,	60	38 (32)	SNHT1206R/L-WX	PTKA0409F	TW1
	160R/L-T12	16	160	12	43	70	. ,	15.9 (16.4)	. ,	60	38 (32)	SNHT12065R/L-WX	PTKA0410F	TW1
	160R/L-T13	16	160	13	43	70		15.9 (16.4)		60	38 (32)	SNHT1207R/L-WX	PTKA0411F	TW1
	160R/L-T14	16	160	14	43	70		15.9 (16.4)		60	38 (32)	SNHT12075R/L-WX	PTKA0412F	TW1
	200R/L-T06	18	200	6	53	90	. ,	19.1 (16.4)	11 (9)	65	38 (32)	SNHT12035R/L-WX	PTMA04045F	
	200R/L-T07	18	200	7	53	90	. ,	19.1 (16.4)	. ,	65	38 (32)	SNHT1204R/L-WX	PTMA0405F	TW1
	200R/L-T08	18	200	8	53	90	. ,	19.1 (16.4)	. ,	65	38 (32)	SNHT12045R/L-WX	PTMA0406F	TW1
	200R/L-T09	18	200	9	53	90	. ,	19.1 (16.4)	11 (9)	65	38 (32)	SNHT1205R/L-WX	PTMA0407F	TW1
	200R/L-T10	18	200	10	53	90		19.1 (16.4)	11 (9)	65	38 (32)	SNHT12054R/L-WX	PTMA0408F	TW1
	200R/L-T11	18	200	11	53	90	50.8 (40)	19.1 (16.4)	11 (9)	65	38 (32)	SNHT1206R/L-WX	PTKA0409F	TW1
	200R/L-T12	18	200	12	53	90	. ,	. ,	11 (9)	65	38 (32)	SNHT12065R/L-WX	PTKA0410F	TW1
	200R/L-T13	18	200	13	53	90	· ,	19.1 (16.4)	. ,	65	38 (32)	SNHT1207R/L-WX	PTKA0411F	TW1
	200R/L-T14	18	200	14	53	90	50.8 (40)	19.1 (16.4)	11 (9)	65	38 (32)	SNHT12075R/L-WX	PTKA0412F	TW1
	250R/L-T06	20	250	6			. ,	19.1 (16.4)		65	38 (32)	SNHT12035R/L-WX		
	250R/L-T07	20	250	7	. ,	. ,	. ,	19.1 (16.4)	. ,	65	38 (32)	SNHT1204R/L-WX	PTMA0405F	TW1
	250R/L-T08	20	250	8				19.1 (16.4)	. ,	65	38 (32)	SNHT12045R/L-WX	PTMA0406F	TW1
	250R/L-T09	20	250	9	. ,	. ,	. ,	19.1 (16.4)	. ,	65	38 (32)	SNHT1205R/L-WX	PTMA0407F	TW1
	250R/L-T10	20	250	10				19.1 (16.4)		65	38 (32)	SNHT12054R/L-WX	PTMA0408F	TW1
		_						19.1 (16.4)		65	38 (32)	SNHT1206R/L-WX	PTKA0409F	TW1
	250R/L-111	ZU	200	- 11										
	250R/L-T11 250R/L-T12	20	250 250	11 12				19.1 (16.4)		65	38 (32)	SNHT12065R/L-WX	PTKA04091	TW1

38 (32) SNHT12075R/L-WX PTKA0412F

# WFSP(M) (Plane type)







(mm)

Desig	gnation	0	ØD	W	Т-мах	ØD <sub>2</sub>	Ød	а	b	Ε	Insert	Screw	Wrench
WFSP	080-T04	8	80	4	20	40	25.4 (27)	6.35 (7)	28 (29.8)	8	SNHT11023R/L-WX	PTMA03503	TW09S
(WFSBM)	080-T05	8	80	5	20	40	25.4 (27)	6.35 (7)	28 (29.8)	8	SNHT1103R/L-WX	PTMA03504	TW09S
	080-T06	8	80	6	20	40	25.4 (27)	6.35 (7)	28 (29.8)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	100-T04	10	100	4	24	47	31.75 (32)	7.92 (8)	35.2 (34.8)	8	SNHT11023R/L-WX	PTMA03503	TW09S
	100-T05	10	100	5	24	47	31.75 (32)	7.92 (8)	35.2 (34.8)	8	SNHT1103R/L-WX	PTMA03504	TW09S
	100-T06	10	100	6	24	47	31.75 (32)	7.92 (8)	35.2 (34.8)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	100-T07	10	100	7	24	47	31.75 (32)	7.92 (8)	35.2 (34.8)	10	SNHT1204R/L-WX	PTMA0405F	TW15S
	100-T08	10	100	8	24	47	31.75 (32)	7.92 (8)	35.2 (34.8)	10	SNHT12045R/L-WX	PTMA0406F	TW15S
	100-T09	10	100	9	24	47	31.75 (32)	7.92 (8)	35.2 (34.8)	12	SNHT1205R/L-WX	PTMA0407F	TW15S
	100-T10	10	100	10	24	47	31.75 (32)	7.92 (8)	35.2 (34.8)	12	SNHT12054R/L-WX	PTMA0408F	TW15S
	125-T04	12	125	4	32	56	38.1 (40)	9.52 (10)	42.3 (43.5)	8	SNHT11023R/L-WX	PTMA03503	TW09S
	125-T05	12	125	5	32	56	38.1 (40)	9.52 (10)	42.3 (43.5)	8	SNHT1103R/L-WX	PTMA03504	TW09S
	125-T06	12	125	6	32	56	38.1 (40)	9.52 (10)	42.3 (43.5)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	125-T07	12	125	7	32	56	38.1 (40)	9.52 (10)	42.3 (43.5)	10	SNHT1204R/L-WX	PTMA0405F	TW15S
	125-T08	12	125	8	32	56	38.1 (40)	9.52 (10)	42.3 (43.5)	10	SNHT12045R/L-WX	PTMA0406F	TW15S
	125-T09	12	125	9	32	56	38.1 (40)	9.52 (10)	42.3 (43.5)	12	SNHT1205R/L-WX	PTMA0407F	TW15S
	125-T10	12	125	10	32	56	38.1 (40)	9.52 (10)	42.3 (43.5)	12	SNHT12054R/L-WX	PTMA0408F	TW15S
	160-T04	16	160	4	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	8	SNHT11023R/L-WX	PTMA03503	TW09S
	160-T05	16	160	5	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	8	SNHT1103R/L-WX	PTMA03504	TW09S
	160-T06	16	160	6	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	160-T07	16	160	7	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	10	SNHT1204R/L-WX	PTMA0405F	TW15S
	160-T08	16	160	8	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	10	SNHT12045R/L-WX	PTMA0406F	TW15S
	160-T09	16	160	9	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	12	SNHT1205R/L-WX	PTMA0407F	TW15S
	160-T10	16	160	10	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	12	SNHT12054R/L-WX	PTMA0408F	TW15S
	160-T11	16	160	11	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	14	SNHT1206R/L-WX	PTKA0409F	TW15S
	160-T12	16	160	12	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	14	SNHT12065R/L-WX	PTKA0410F	TW15S
	160-T13	16	160	13	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	16	SNHT1207R/L-WX	PTKA0411F	TW15S
	160-T14	16	160	14	45	66	38.1 (40)	9.52 (10)	42.3 (43.5)	16	SNHT12075R/L-WX	PTKA0412F	TW15S
	200-T06	18	200	6	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	200-T07	18	200	7	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	10	SNHT1204R/L-WX	PTMA0405F	TW15S
	200-T08	18	200	8	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	10	SNHT12045R/L-WX	PTMA0406F	TW15S
	200-T09	18	200	9	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	12	SNHT1205R/L-WX	PTMA0407F	TW15S
	200-T10	18	200	10	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	12	SNHT12054R/L-WX	PTMA0408F	TW15S
	200-T11	18	200	11	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	14	SNHT1206R/L-WX	PTKA0409F	TW15S
	200-T12	18	200	12	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	14	SNHT12065R/L-WX	PTKA0410F	TW15S
	200-T13	18	200	13	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	16	SNHT1207R/L-WX	PTKA0411F	TW15S
	200-T14	18	200	14	60	70	50.8 (50)	12.7 (12)	55.8 (53.5)	16	SNHT12075R/L-WX	PTKA0412F	TW15S
	250-T06	20	250	6	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	8	SNHT12035R/L-WX	PTMA04045F	TW15S
	250-T07	20	250	7	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	10	SNHT1204R/L-WX	PTMA0405F	TW15S
	250-T08	20	250	8	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	10	SNHT12045R/L-WX	PTMA0406F	TW15S
	250-T09	20	250	9	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	12	SNHT1205R/L-WX	PTMA0407F	TW15S
	250-T10	20	250	10	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	12	SNHT12054R/L-WX	PTMA0408F	TW15S
	250-T11	20	250	11	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	14	SNHT1206R/L-WX	PTKA0409F	TW15S
	250-T12	20	250	12	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	14	SNHT12065R/L-WX	PTKA0410F	TW15S
	250-T13	20	250	13	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	16	SNHT1207R/L-WX	PTKA0411F	TW15S
	250-T14	20	250	14	88	70	50.8 (50)	12.7 (12)	55.8 (53.5)	16	SNHT12075R/L-WX	PTKA0412F	TW15S



# **Technical Information for High feed Cutter**

## High feed cutter with extra pitch for cast iron and light alloy steels

# High feed Cutter

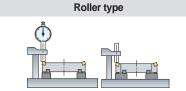
- High feed cutter employs extra pitch for cast iron and light alloy steels
- Quick change type for reduction of cutter change time
- Cutting-edge chatter is controlled
- Quick change type for cutter size under ø160, 2 piece types for cutter size over ø200

#### Guide of insert setting

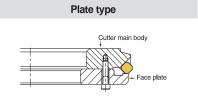
• Special equipment has to be used to get precise run out with high feed cutter.

# Adaptor type

- Mainly under ø160 diameter is used in 1 piece type
- Available for fixed size of cutter and assembling & checking can be done at the same time



- Mainly over ø200 diameter is used in 2 piece type
- Due to 3 adjustable guide rollers, variety size of cutter can be assembled

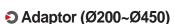


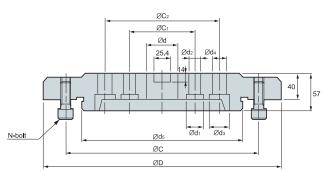
- Suitable for small size cutter due to the simple structure
- It is unnecessary to unclamp the cutter from the machine, it's possible to reassemble the cutter as it mounted on the machine
- You should make plate by yourself

#### • Guide of insert setting in adaptor/roller type

- 1. Clean the cutter and equipment
- 2. Pointer should be assembled with same height with cutter
- 3. Move to each insert on tip seat to end of pointer and tighten (torque 2 N.m) wedge
- 4. Exchange pointer to dial gauge
- 5. Measure the run-out totally
- 6. When a insert over run-out, loosen wedge and adjust run-out. (for roughing 10~20  $\mu,$  for finishing 5~10  $\mu)$
- 7. Tighten (torque 7-8 N.m) wedge
- 8. Measure the final run-out by dial gauge

Note: When you clamp wedge too tightly, run-out will get worse due to cutter distortion. When you clamp the wedge, use torque wrench to set precisely.





De	esignation	ØD	Ød	Ød₁	Ød <sub>2</sub>	Ød₃	Ød4	Ød5	øс	ØC <sub>1</sub>	ØC <sub>2</sub>	N	Cutter
APR	200	180	47.625	26	18	-	-	80	120	101.6	-	4	Ø200
	250	230	47.625	26	18	-	-	120	170	101.6	-	4	Ø250
	315	295	47.625	26	18	32	22	180	230	101.6	177.8	6	Ø315
	355	335	63.50	26	18	32	22	220	270	101.6	177.8	6	Ø355
	400	370	63.50	26	18	32	22	250	300	101.6	177.8	8	Ø400
	450	420	63.50	26	18	32	22	300	350	101.6	177.8	8	Ø450



# 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	45	<b>-</b> 5°	-6°	SNCN1204ENN SNCN1504ENN
CDH4000 CDH5000	Ø100~Ø450	Cast iron Roughing Finishing	18Z	0000 0000 25°	+10°	+5°	SDCN42R SDCN53R
DEH5000	Ø100~Ø450	Al alloy Roughing	20Z	30, 30, 30, 30, 30, 30, 30, 30, 30, 30,	+14°	+6°	HECN090408FN
DPH5000	Ø100~Ø450	Cast iron Roughing Finishing	12Z	30, 20, 20, 20, 20, 20, 20, 20, 20, 20, 2	<b>+</b> 5°	-3°	HPEN090408 HPEN090408-WC
PNH4000 PNH5000	Ø125~Ø450	Cast iron Finishing	12 <b>Z</b>	0.5	-5°	-6°	SNEF435 SNEF535
PPH4000	Ø125~Ø450	Cast iron Finishing	12Z	0.5	<b>+</b> 5°	-5°	SPEN120416-WC

# Recommended cutting condition

Morkmines	Cutting of	condition	Grades	Remark	
Workpiece	vc (m/min)	fz (mm/t)	Grades	Remark	
Cast iron	100~230	0.05~0.20	PC6510	PVD Coated	
Cast Iron	80~150	0.05~0.20	H01, G10	Uncoated	
Al allay	400	0.10~0.30	PC6510	PVD Coated	
Al alloy	400	0.05~0.20	H01, G10	Uncoated	

# **Technical Information for Cube Mill**

#### Special Korloy cutter for cast iron roughing

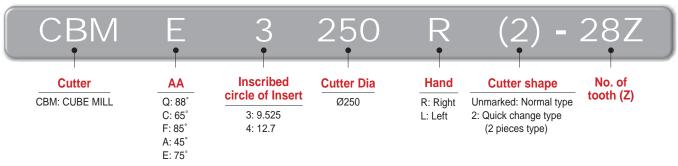
# Cube Mill

- Special Korloy cutter for cast iron roughing
- 8-corner using insert (maximum 16-corner available with 2 cutter, R/L cutter)
- Excellent cutting performance with positive rake angle made by 3-dimensional chip breaker
- Excellent tool life by a wide combination of grade varieties and chip breakers to match most working conditions
- 2 different type of inserts (chamfer/nose R) are available with 1 type cutter



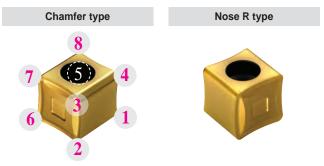
Roughing for cast iron

#### Code system



<sup>\*</sup> Cube Mill and Cube Mill Couple are available by order made.

## Insert (R/L type)



#### Cutter body

	Normal	Quick change			
Cutter diameter (Ø)	Ø80~315 mm	Ø200~450 mm			
ulamotor (2)	3 1/4~12 1/2 Inch	8~18 Inch			
	AA: 88°, 85°, 75°, 65°, 45°				

#### Cutter





Screw on clamping system

#### Parts







Screw

ETGA0520CBM

FTGA0417CBM

Wrench TW15-100 TW20-100



Milling

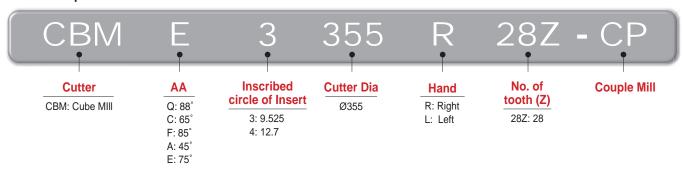
#### Ideal combination of aluminum body with cast iron high feed cutter

# Couple Mill

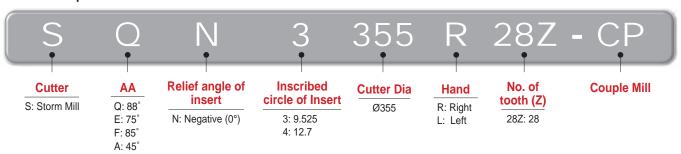
- Ideal combination of Aluminum body with cast iron high feed cutter
- Since the weight of the cutter has been reduced 50% vs. a steel cutter, it is very easy to handle and very effective in preventing loading accidents
- Applicable for Cube Mill, Storm Mill

## Code system

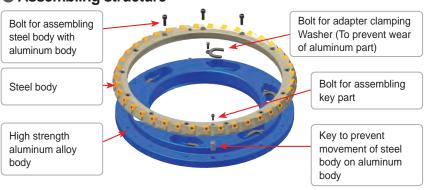
#### • Cube-couple



#### • Storm-couple







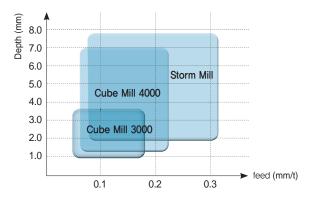
#### Cutter body

	Q	uick change
Cutter diameter (Ø)	Metric	Ø355~450 mm
	Inch	14 1/4~18 Inch

Call September 1		Screw	Wrench	Wrench	Bolt for body	Bolt for key	Key for body
Cube-Couple	3000 type	FTGA0417CBM	TW15-100		BHA0616	MHBO410	PN1019-DRV
	4000 type	ETGA0520CBM	TW20-100		BHA0620	IVINDU410	FINIU19-DRV
Storm-Couple	3000 type	FTNA0513	-	TW15S	-	-	-

# E Technical Information for Couple Mill

## Application range of high feed cutters for cast iron



## Recommended cutting condition

Cube Mill		Gray ca	st iron	Ductile cast iron		
Cui	De MIII	vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)	
PVD	PC6510	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

	Designation		Available arbors and adaptors	
	Designation	Arbors	General arbor	Adaptor
CBMQ	3080R/L-00Z	BT□□-FMA25.4-□□	NT*□□(M/U)-FMA25.4-25	
(CBMF)	3100R/L-00Z	BT□□-FMA31.75-□□	NT*□□(M/U)-FMA31.75-□□	
(CBME)	3125R/L-00Z	BT□□-FMA38.1-□□	NT*□□(M/U)-FMA38.1-□□	
(CBMC)	3160R/L-00Z	BT□□-FMA50.8-□□	NT*□□(M/U)-FMA50.8-□□	
CBMA)	3200R/L-00Z	BT□□-FMA47.625-□□	NT*□□(M/U)-FMA47.625-25, KCP-8***	
	3250R/L-00Z	BT□□-FMA47.625-□□	KNT*□□(M/U)-FMA47.625-25, KCP-8***	
	3315R/L-00Z		KCP-8*** (Centering Plug)	
	3200R/L2-00Z			APR200
	3250R/L2-00Z			APR250
	3315R/L2-00Z			APR315
	3355R/L2-00Z			APR355
	3400R/L2-00Z			APR400
	3450R/L2-00Z			APR450
SQN	3080R/L-00Z	BT□□-FMA25.4-□□	NT*□□(M/U)-FMA25.4-25	
(SFN)	3100R/L-00Z	BTFMA31.75	NT*□□(M/U)-FMA31.75-□□	
(SEN)	3125R/L-00Z	BT□□-FMA38.1-□□	NT*□□(M/U)-FMA38.1-□□	
(SAN)	3160R/L-00Z	BT -FMA50.8-	NT*□□(M/U)-FMA50.8-□□	
	3200R/L-00Z	BT□□-FMA47.625-□□	NT*□□(M/U)-FMA47.625-25, KCP-8***	
	3250R/L-00Z	BT□□-FMA47.625-□□	NT*□□(M/U)-FMA47.625-25, KCP-8***	
	3315R/L-00Z		KCP-8*** (Centering Plug)	
	3200R/L2-00Z			APR200
	3250R/L2-00Z			APR250
	3315R/L2-00Z			APR315
	3355R/L2-00Z			APR355
	3400R/L2-00Z			APR400
	3450R/L2-00Z			APR450



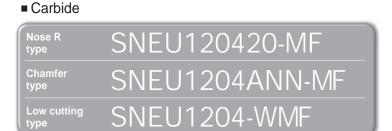
# Optimal cutter for steel and cast iron machining with easily adjustable run-out

# **Shave Mill**

- Adjustable Range (Adjustable range: 0.1 mm, Adjustable allowance: within 2 μm)
- 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





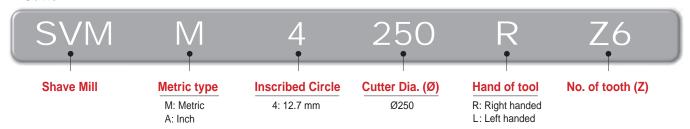
■ cBN

SNEU1204-TBW

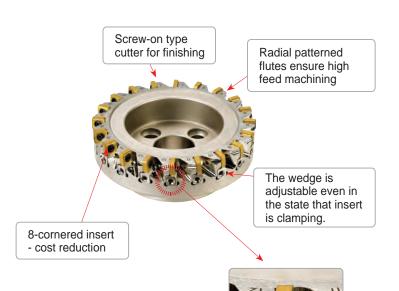
T: Nagaland B: cBN

W: Wiper

#### Cutter



#### Features





# 3-face constrained clamping

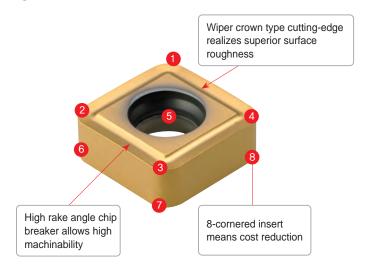
## Adjustment

- Adjustable range: 0.1 mm
- Adjustability: below 2 μ
- Operation: easy and simple



# **Technical Information for Shave Mill**

#### Features of insert





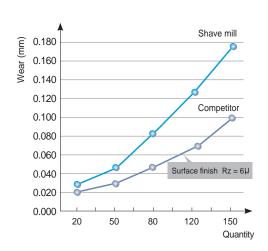
## Recommended cutting condition

Worknings		Cutting condition							
Workpiece	vc (m/min)	fz (mm/t)	ap (mm)	Grades					
Р	160~270	0.05~0.2	~0.5	PC3700					
К	140~230 600~1000	0.05~0.3 0.05~0.2	~0.5 ~0.5	PC6510 DBN920					

## Application example

■Workpiece Cylinder head (facing) **■**Cutting vc = 200, fz = 0.15, ap = 0.5, dryconditions ■ Tools Cutter SVMM4250R Insert PC6510 SNEU120420-MF

■Workpiece FC25 (HB250) Cylinder head (facing) **■**Cutting vc = 700, fz = 0.1, ap = 0.5, dryconditions ■ Tools Cutter SVMM4160R Insert DBN920 SNEU1204-cBN



#### • Results

	Tool life	Surface finish	Machinability
Shave Mill	250 pcs	Rz = 3μ	High
Competitor	180 pcs	Rz = 3.5μ	Normal

• KORLOY's Shave Mills ensure twice the machinability, adjustability, and surface roughness than competitor's, along with twice the tool life.

# Better tool life with special grade which has both toughness and wear resistance

# Shave Mill-Ultra

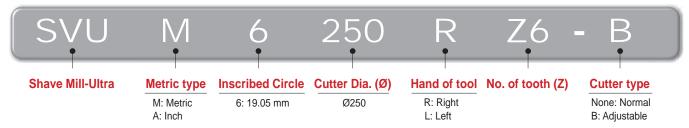
- Superior surface roughness for this Finishing cutter when applied to heavy work pieces
- Easy to handle and good rigidity with simple screw on system
- Superior surface finishes due to the wiper crown cutting-edge
- Better tool life with special grade which has both toughness and wear resistance
- Two different types: economical normal type and adjustable run-out type 'B'

#### Code system

#### Insert



#### • Cutter

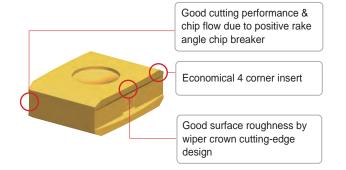


#### Features









# Adjustable Range

· Range: 1.0 mm · Allowance: Within 2 μ

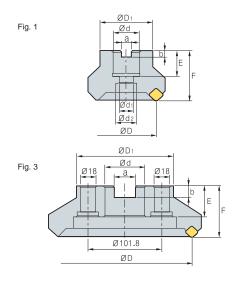
## Recommended cutting condition

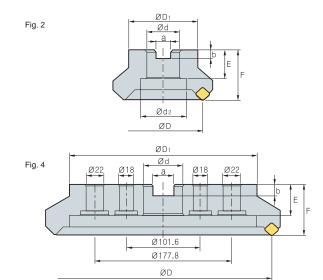
Merkeises		Cutting condition	Tooth	Cradas		
Workpiece	vc (m/min)	fz (mm/t)	ap (mm)	Tooth	Grades	
В.	160~270	0.05~0.20	~0.50	Full use	DC2700	
P	160~270	2~5	~0.03	1 use	PC3700	
l.	140~230	0.05~0.20	~0.50	Full use	DCCE40	
k	140~230	2~5	~0.03	1 use	PC6510	



# Inch

# Actual designations of milling cutter

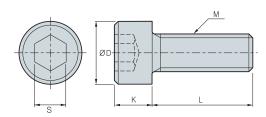




# Inch type

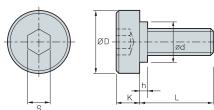
			Eig	Available arbors						
ØD	Ød	а	b	Е	F	ØD1	Ød1	Ød2	Fig.	Available arbors
40	16	8.4	5.6	18	40	34	9	14	1	FMC16, SMA16
50	22	10.4	6.3	20	40	42	11	18	1	FMC22
63	22	10.4	6.3	20	40	49	11	18	1	FMC22
80	25.4	9.5	6	25	50	57	14	20	1	FMA25.4
100	31.75	12.7	8	32	50	67	-	45	2	FMA31.75, SMB31.75
125	38.1	15.9	10	38	63	87	-	56	2	FMA38.1
160	50.8	19	11	38	63	107	-	-	2	FMA50.8
200	47.625	25.4	14	38	63	130	-	-	3	FMA47.625
250	47.625	25.4	14	38	63	180	-	-	3	FMA47.625
315	47.625	25.4	14	38	63	240	-	-	4	-

# Wrench bolt



Designation	ØD	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

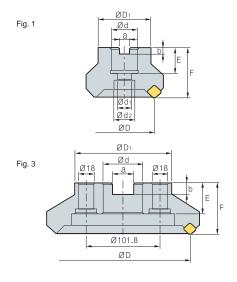


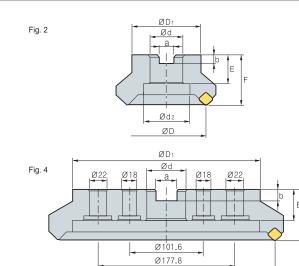
Designation		D	imensi	ons (mn	1)		Cutter size
	D	L	K	S	h	d	Cutter Size
M8×1.25	20	20	7	6	-	-	Ø40
M10×1.5	28	24	9	8	-	-	Ø50, Ø63
M12×1.75	33	28	10	10	2	23	Ø80
M16×2	40	32	10	14	5	23	Ø100
M20×2.5	50	40	14	17	5	27	Ø125
M24×3	64	46	14	19	9	37	Ø160



# **Metric - ISO6462, DIN138**

# Clamping part of milling cutter



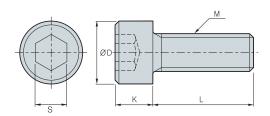


ØD

# Metric type

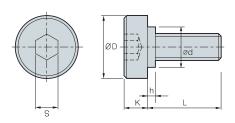
				Fig	Available arbors					
ØD	Ød	а	b	E	F	ØD1	Ød1	Ød2	Fig.	Available arbors
40	16	8.4	5.6	18	40	34	9	14	1	FMC16, SMA16
50	22	10.4	6.3	20	40	42	11	18	1	FMC22
63	22	10.4	6.3	20	40	49	11	18	1	FMC22
80	27	12.4	7	22	50	57	14	20	1	FMC27
100	32	14.4	8	28	50	67	-	45	2	FMC32
125	40	16.4	9	32	63	87	-	56	2	FMB40
160	40	16.4	9	32	63	107	-	-	2	FMB40
200	60	25.7	14	38	63	130	-	-	3	FMB60
250	60	25.7	14	38	63	180	-	-	3	FMB60
315	60	25.7	14	38	63	240	-	-	4	-

## Wrench bolt



Designation	ØD	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
SB1245	18	10	12	45	M12 × 1.75	Ø80 (HRM)
SB1630	24	14	16	30	M16 × 2.0	Ø100
SB1645	24	14	16	45	M16 × 2.0	Ø100 (HRM)
SB2040	30	17	20	40	M20 × 2.5	Ø125

## Clamp bolt



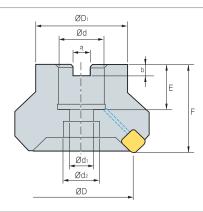
Designation		D	Cutter size				
	D	L	K	S	h	d	Cutter Size
M12 × 1.75	33	28	10	10	2	23	Ø80
M16 × 2	40	32	10	14	5	23	Ø100
M20 × 2.5	50	40	14	17	5	27	Ø125, Ø160



# E Actual Designations of Milling Cutter and Arbor

# Clamping part of milling cutter (Oil-hole)

# Clamping part of milling cutter



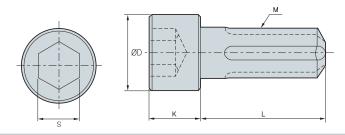
## Inch type

			Aveilable arbara						
ØD	Ød	а	b	E	F	ØD1	Ød1	Ød2	Available arbors
40	16	8.4	5.6	19	40	34	9	14	FMC16, SMA16
50	22	10.4	6.3	21	40	42	11	18	FMC22
63	22	10.4	6.3	21	40	49	11	18	FMC22
80	25.4	9.5	6	24	50	57	14	20	FMA25.4, FMB25.4
100	31.75	12.7	8	32	63	67	18	26	FMA31.75, SMB31.75
125	38.1	15.9	10	35	63	87	22	32	FMA38.1, FMB38.1, FMC38.1

## Metric type

		Available arbors							
ØD	Ød	а	b	E	F	ØD1	Ød1	Ød2	Available arbors
40	16	8.4	5.6	19	40	34	9	14	FMC16, SMA16
50	22	10.4	6.3	21	40	42	11	18	FMC22
63	22	10.4	6.3	21	40	49	11	18	FMC22
80	27	12.4	7.0	23	50	57	14	20	FMC27
100	32	14.4	8.0	25	50	67	18	26	FMC32
125	40	16.4	9.0	29	63	87	22	32	FMB40/FMC40

## Wrench bolt



Designation	ØD	S	К	L	М	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

# E

# 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-

2-1 LNE434-02-1

I 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







LNE434-02-1

## Gear cutter machining example



■ Machine

Gleason-PFAUTER CNC Hobbing Machine (Power: 52kW)

■ Cutting condition

vc = 119.98 m/min (n = 86.8 rpm) fz = 0.518 mm/t (vf = 450 mm/min) ae = 36 mmDry

■ Tools

M16-PT-RACK-KOR03 (Ø440xW90)

■ Semi-finishing cutter (low cut, low resistance)





■ Machine

KARATS (30kw)

■ Cutting condition vc = 150 m/min, n = 119 rpm fz = 0.09 mm/t, vf = 81.6 mm/min

ae = 45 mm Dry

■ Tools

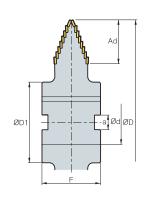
M24 Semi-finishing External type Applicable Insert M40-ROU (Main), KEL150708-MX (Flank)

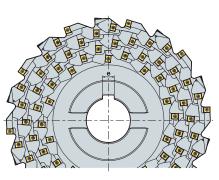
# **E** Gear Cutter Table

Туре	Cutter shape	Cutting-edge shape	Туре	Feature	
Roughing			Step type	Working for big sized gear tooth     Low cutting resistance with step type insert setting	
			V shape type	Low cutting resistance with V shape cutting insert setting     Optimal cutting-edge line setting according to Rach type & cutting-edge shape	
Semi-finishing			Low cutting resistance type	4-Corner insert on Root portion     3D chip breaker shape on flank     Optimal cutting-edge line setting for low cutting resistance	
			External gear high rigidity type	Optimal R type insert setting on Root portion     Superior Semi-finishing cutting with high rigidity shape of cutter & insert	
	R. B.		Internal gear high rigidity type	Exclusive semi-finishing Internal Gear insert     Optimal cutting-edge line setting with Internal tooth shape	
Finishing			External gear	Concave shape of cutting-edge line according to external gear type  Optimal cutting insert setting design according to a customer conditions	
			Internal gear	2-corner insert setting on right & left side and chamfering insert setting     Adjustable chamfering cartridge use for chamfering control	
			2 STEP type	Exclusive insert for machining the root part     4-cornered insert	

### **Gear Roughing Cutter (Step type)**









(mm)

m	©	ØD	Ad	Ød	ØD1	а	е	F
	96	450	90	100	180	25	14	140
30	108	500	90	100	180	25	14	140
	120	560	90	120	220	40	32	160
	112	450	105	100	180	25	14	140
40	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

### Available inserts

(mm)

	Distance Decimation				ated		Unco	oated		Dime	nsion	S		
Picture		Designation	NC5330	PC9530	PC3500	PC5300	H04	G10	ı	d	t	<b>d</b> 1	С	Configuration
	LNE	434-02-1			0	0			19.05	14.29	6.35	5.4	0.6	
Reinforced cutting-edge														c c
	KEL	1906-C0.6-MF			0	0			19.05	14.29	6.35	5.4	0.6	
		190610-MR			0	0			19.05	14.29	6.35	5.4	-	d
Low cutting resistance														

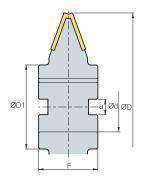
<sup>\*\*</sup> The above specification is subject to change according to customer related condition & Korloy technical condition

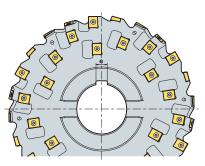
©: 1<sup>st</sup> Rec ○: 2 <sup>nd</sup> Rec



### **Gear Roughing Cutter (V shape type)**









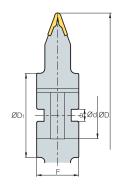
								(mm)
m	Туре	©	ØD	Ød	ØD1	a	е	F
20	rack	48	280	80	135	25	18	95
22	rack	48	280	80	135	25	18	95
24	rack	48	320	80	145	25	18	105
26	rack	60	320	80	145	25	18	105
28	rack	96	400	100	180	25	24	130
30	rack	96	400	100	180	25	24	130
32	rack	96	400	100	180	25	24	130
34	rack	112	400	100	180	25	24	130
36	rack	112	450	100	180	25	24	130
38	rack	112	450	100	180	25	24	130
40	rack	128	450	100	180	25	24	160
42	rack	128	450	100	180	25	24	160
44	rack	128	560	120	220	32	32	160
46	rack	144	560	120	220	32	32	160
48	rack	144	560	120	220	32	32	160
50	rack	144	560	120	220	32	32	160

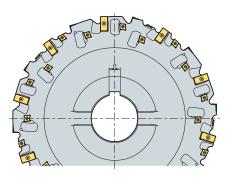
### Available inserts

									1						(mm
					ited		Unco	ated		Dime	ensior	าร			
Picture	D	esignation	NC5330	PC9530	PC3500	PC5300	H01	G10	1	d	t	d <sub>1</sub>	С	Configur	ation
Reinforced cutting-edge	LNE	434-02-1			0	0			19.05	14.29	6.35	5.4	0.6		
	LNE	1906-C0.6-MF 190610-MR			0	0			19.05 19.05	14.29 14.29	6.35	5.4 5.4	0.6		□ C
Low cutting resistance														d l	- d1
Reinforced cutting-edge	KEL	333-02-1			0	©			14.3	12.7	6.35	5.8	0.8		
(3)	CNHQ	1005-C0.5							10	10	5.4	-	-	80	d

**Gear Semi-finishing Cutter** (Low cutting resistance type)







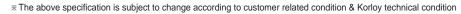


								(mm)
m	No.of teeth	<b>(</b>	ØD	Ød	ØD1	а	е	F
6	30, 60, 120	18	250	60	100	25	18	70
8	30, 60, 120	18	250	60	100	25	18	80
10	30, 60, 120	24	250	60	100	25	18	80
12	30, 60, 120	24	250	60	100	25	18	90
14	30, 60, 120	24	280	80	135	25	24	95
16	30, 60, 120	32	280	80	135	25	24	100
18	30, 60, 120	32	320	80	145	25	24	105
20	30, 60, 120	64	400	100	180	25	24	110
22	30, 60, 120	64	400	100	180	25	24	110
24	30, 60, 120	64	400	100	180	25	24	120

### Available inserts

(mm)

															(mm)
				Coa	ited		Unco	ated		Dir	mensio	ns			
Picture	De	esignation	NC5330	PC9530	PC3500	PC5300	H04	G10	ı	d	t	<b>d</b> 1	С	Configur	ation
		M6-2ST			0	0			19.05	11.6	3.8	4.4	2.25		
6		M8-2ST			0	0			19.05	11.6	4	4.4	3		
		M10-2ST			0	0			19.05	11.6	4.76	4.4	3.75		D
and the same of		M12-2ST			0	0			19.05	14.3	6.35	5.5	4.5		$\sim$
		M14-2ST			0	0			25.4	14.3	6.35	5.5	5.25		dı
		M16-2ST			0	0			31.8	14.3	7.14	5.5	6	+	
		M18-2ST			0	0			31.8	14.3	7.14	5.5	6.75		
		M20-2ST			0	0			31.8	14.3	9.52	5.5	7.5	d	<u>-</u> t_
		M22-2ST			0	0			31.8	14.3	9.52	5.5	8.25		
		M24-2ST			0	0			31.8	14.3	9.52	5.5	9		
	KEC	120606-MX			0	0			12	12.7	6.35	4.5	-		
		150708-MX			0	0			15.15	15	7.6	5.8	-		
														80	d d



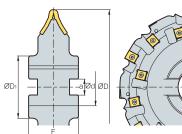
©: 1st Rec o: 2 nd Rec



### **Gear Semi-finishing Cutter** (High rigid edge type, External gear)







ØD <sub>1</sub>		
	F	

								(mm)
m	No.of teeth	<b>(a)</b>	ØD	Ød	ØD1	а	е	F
12	30, 60, 120	24	250	60	100	25	14	70
14	30, 60, 120	36	250	60	100	25	14	80
16	30, 60, 120	36	250	60	100	25	14	80
18	30, 60, 120	36	250	60	100	25	14	90
20	30, 60, 120	48	280	80	135	25	18	95
22	30, 60, 120	48	280	80	135	25	18	100
24	30, 60, 120	48	320	80	145	25	18	105
26	30, 60, 120	72	400	100	180	25	24	110
28	30, 60, 120	72	400	100	180	25	24	110
30	30, 60, 120	72	400	100	180	25	24	120
32	30, 60, 120	84	400	100	180	25	24	130
34	30, 60, 120	84	400	100	180	25	24	130

### Available inserts

(mm)

			Coa	ated		Unco	ated			Dimer	sions				(11111)
Picture	Designation	NC5330	PC9530	PC3500	PC5300	H01	G10	I	d	t	d <sub>1</sub>	R	С	Configura	ation
	M8-ROU			0	0			15.875	11	4.76	4.6	4.6	-		
	M12-M14-ROU			0	0			19.05	14.29	6.35	5.4	5.4	-		
	M16-M18-ROU			0	0			19.05	14.29	7	5.4	5.4	-		
	M20-M22-ROU			0	0			19.05	14.29	7.94	5.4	5.4	-		R
	M40-ROU			0	0			25.4	14.29	9.52	5.4	5.4	-	1	
														d	-t-
	LNE 434-02-1			0	0			19.05	14.29	6.35	5.4	-	0.6		
6															C
	KEL 1906-C0.6-MF			0	0			19.05	14.29	6.35	5.4	-	0.6		
6	190610-MR			0	0			19.05	14.29	6.35	5.4		-	d	t



### Gear Cutter E

### **Gear Semi-finishing Cutter** (High rigid edge type, Internal gear)





No.of teeth

30, 60, 120

30, 60, 120

30, 60, 120

30, 60, 120

30, 60, 120

30, 60, 120

30, 60, 120

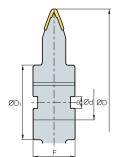
30, 60, 120

30, 60, 120

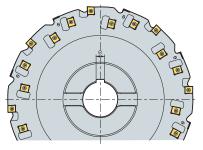
30, 60, 120

30, 60, 120

30, 60, 120



Ød



ØD1

а	е	F
25	14	70
25	14	80
25	14	80
25	14	90
25	18	95
25	18	100
25	18	105
25	24	110
25	24	110

#### Available inserts

(mm)

(mm)

	Picture Designation			Coa	ited		Unco	oated		Di	imensio	าร			(1111)
Picture		Designation	NC5330	PC9530	PC3500	PC5300	H01	G10	I	d	t	d <sub>1</sub>	С	Configura	ation
		M8-ROU			0	0			15.875	11	4.76	4.6	2		
		M12-M14-ROU			0	0			19.05	14.29	6.35	5.4	3		
		M16-M18-ROU			0	0			19.05	14.29	7	5.4	5		
		M20-M22-ROU			0	0			19.05	14.29	7.94	5.4	7		R
		M40-ROU			0	0			25.4	14.29	9.52	5.4	10		
														d t	-t-di
	LNE	433-R80			0	0			19.05	14.29	5.56	5.4	2.5		
6														- d	RBO

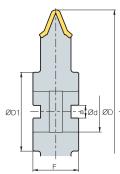
<sup>\*</sup> The above specification is subject to change according to customer related condition & Korloy technical condition

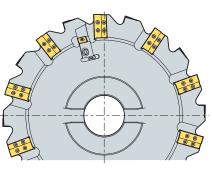
©: 1st Rec ○: 2 nd Rec



# **Gear Finishing Cutter** (1 Step type, External gear)









(mm

m	©	ØD	Ød	ØD <sub>1</sub>	a	F
6	20	400	80	155	25	90
8	20	400	80	155	25	90
10	20	400	80	155	25	90
12	20	400	80	155	25	90
14	20	400	80	155	25	90
16	20	400	80	155	25	90
18	20	400	80	155	25	90
20	20	400	80	155	25	90
22	20	400	80	155	25	90
24	20	400	80	155	25	90

#### Available inserts

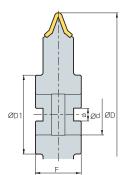
(mm

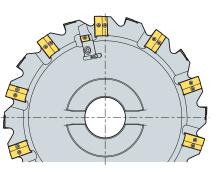
				Coa	ated		Unco	oated		Di	mensio	าร			
Picture	M20 M22 M24		NC5330	PC9530	PC3500	PC5300	H01	G10	ı	d	t	<b>d</b> 1	R	Configura	ation
		M6			0	0			19	14.3	5	5.5	2.25		
		M8			0	0			27	14.3	5.4	5.5	3		
		M10			0	0			29	14.3	6.35	5.5	3.75		R
		M12			0	0			33	14.3	6.35	5.5	4.5	]	
6 6		M14			0	0			39	14.3	6.35	5.5	5.25	<u> </u>	
		M16			0	0			43	14.3	7.94	5.5	6		<u> </u>
		M18			0	0			50	14.3	7.94	5.5	6.75		
		M20			0	0			54	14.3	9.53	5.5	7.5	- d	t
					0	0			57	14.3	9.53	5.5	8.25	<del>  • • •  </del>	<b>→</b> •
		M24			0	0			64	14.3	9.53	5.5	9		
	SNEQ	1507-C0.8			0	0			15.875	15.875	7.94	-	-		
6														d	dt.



# **Gear Finishing Cutter** (1 Step type, Internal gear)









(mm)

m	<u></u>	ØD	Ød	ØD <sub>1</sub>	а	F
6	20	400	80	155	25	90
8	20	400	80	155	25	90
10	20	400	80	155	25	90
12	20	400	80	155	25	90
14	20	400	80	155	25	90
16	20	400	80	155	25	90
18	20	400	80	155	25	90
20	20	400	80	155	25	90
22	20	400	80	155	25	90
24	20	400	80	155	25	90

### Available inserts

(mm)

				Coa	ited		Unco	ated		Di	mension	าร			
Picture	Desi	gnation	NC5330	PC9530	PC3500	PC5300	H01	G10	I	d	t	<b>d</b> 1	R	Configura	ation
		M6			0	0			19	14.3	5	5.5	2.25		
		M8			0	0			27	14.3	5.4	5.5	3		
		M10			0	0			29	14.3	6.35	5.5	3.75		R
		M12			0	0			33	14.3	6.35	5.5	4.5		
6		M14			0	0			39	14.3	6.35	5.5	5.25		
		M16			0	0			43	14.3	7.94	5.5	6	+	+d1
		M18			0	0			50	14.3	7.94	5.5	6.75		
		M20			0	0			54	14.3	9.53	5.5	7.5	d	+
		M22			0	0			57	14.3	9.53	5.5	8.25		<del></del>
		M24			0	0			64	14.3	9.53	5.5	9		
	SNEQ	1507-C0.8			0	0			15.875	15.875	7.94	-	-		
6														d d	dt.

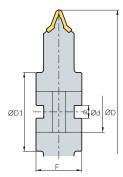
<sup>\*\*</sup> The above specification is subject to change according to customer related condition & Korloy technical condition

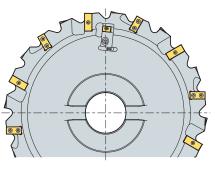
©: 1st Rec o: 2nd Rec



## Gear Finishing Cutter (2 Step type, Internal/Externa gear)









(mm)

						(mm)
m	©	ØD	Ød	ØD <sub>1</sub>	a	F
6	24	400	80	155	25	90
8	24	400	80	155	25	90
10	24	400	80	155	25	90
12	24	400	80	155	25	90
14	24	400	80	155	25	90
16	24	400	80	155	25	90
18	24	400	80	155	25	90
20	24	400	80	155	25	90
22	24	400	80	155	25	90
24	24	400	80	155	25	90

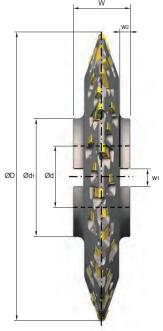
### Available inserts

															(11111)
				Coa	ated		Unco	ated		D	imension	ıs			
Picture	Des	ignation	NC5330	PC9530	PC3500	PC5300	H01	G10	I	d	t	<b>d</b> 1	R	Configura	tion
		М6		0		0			19	14.3	5	5.5	2.25		
		M8		0		0			27	14.3	5.4	5.5	3		
		M10		0		0			29	14.3	6.35	5.5	3.75		R
		M12		0		0			33	14.3	6.35	5.5	4.5	i i	
6		M14		0		0			39	14.3	6.35	5.5	5.25		-
		M16		0		0			43	14.3	7.94	5.5	6	<del>  •  </del>	d1
		M18		0		0			50	14.3	7.94	5.5	6.75		
		M20		0		0			54	14.3	9.53	5.5	7.5	d	<u> </u>
		M22		0		0			57	14.3	9.53	5.5	8.25	<del>                                     </del>	<del>                                     </del>
		M24		0		0			64	14.3	9.53	5.5	9		
	SNEQ	1507-C0.8		0		0			15.875	15.875	7.94	-	-		
6														d d	di
		M6-2ST							19.05	11.6	3.8	4.4	2.25		
		M8-2ST							19.05	11.6	4	4.4	3		
		M10-2ST							19.05	11.6	4.76	4.4	3.75	,	R
		M12-2ST							19.05	14.3	6.35	5.5	4.5	1	
6		M14-2ST							25.4	14.3	6.35	5.5	5.25	<del>(())</del>	d1
(P)		M16-2ST							31.8	14.3	7.14	5.5	6		
		M18-2ST							31.8	14.3	7.14	5.5	6.75	d	ı.
		M20-2ST							31.8	14.3	9.52	5.5	7.5	<del></del>	1
		M22-2ST							31.8	14.3	9.52	5.5	8.25		
		M24-2ST							31.8	14.3	9.52	5.5	9		



<sup>\*</sup>The above specification is subject to change according to customer related condition & Korloy technical condition

### Gear cutter order form



			tı ,		
	1			1	V -
-	1	-	† -		-

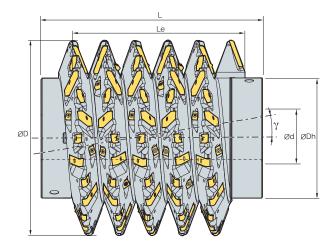
Cutter type
Roughing       Semi-finishing       Finishing         □ Step       □ Low cutting resistance       □ 1 Step         □ V shape       □ High rigid edge       □ 2 Step
■ Stock for finishing (one side) (mm):
■ Outside diameter ØD (mm):
■ Bore diameter Ød (mm):
■ Hub diameter Ød1 (mm):
■ Cutter width W (mm):
■ Radial keyway w1 (mm):
■ Radial keyway w₂ (mm):
Axial keyway t1 (mm):
Axial keyway t2 (mm):

### Involute gear data

□ External gear □ Internal gear	☐ Rack gear
■ Module M:	■ Root diameter d <sub>f</sub> (mm):
■ No.of teeth Z (mm):	■ Root radius ρfp (mm)
■ Pressure angle α (°):	■ Base tangent length Wk (mm)
■Helix angle β (°):	■ No. of measuring teeth K:
■ Addendum modification coefficient x:	■ Dimensions/Dimension over balls M <sub>d</sub> (mm):
■Tip diameter da (mm):	■ Ball diameter D <sub>M</sub> (mm):
	■ Gear quality (DIN, JIS):



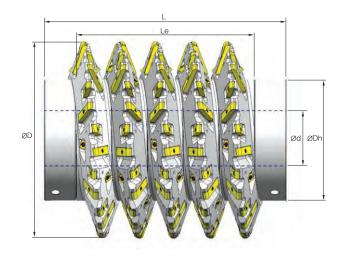
### **Indexable HOB**



(mm)

Gear module	ØD	ØDh	Ød	No.Segm. (Pitch)	Le	Segment insert	Total insert	γ (Lead Ang.)
	180	125	40	6	(113)	15	90	2.084
6	210	125	50	6	(113)	17	102	1.763
	240	160	60	6	(113)	19	114	1.528
	180	125	40	6	(132)	15	90	2.469
7	210	125	50	6	(132)	17	102	2.084
	240	160	60	6	(132)	19	114	1.803
	210	125	50	6	(151)	17	102	2.413
8	240	160	60	6	(151)	19	114	2.084
	270	180	80	6	(151)	21	126	1.834
	210	125	50	6	(169)	17	102	2.751
9	240	160	60	6	(169)	19	114	2.372
	270	180	80	6	(169)	21	126	2.084
	210	125	50	6	(189)	17	102	3.099
10	240	160	60	6	(189)	19	114	2.666
	270	180	80	6	(189)	21	126	2.339
	240	140	60	6	(226)	18	108	3.276
12	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
14	350	215	80	6	(264)	26	156	2.547
16	270	160	80	6	(302)	22	132	3.989
16	350	215	80	6	(302)	26	156	2.959
18	270	145	80	5	(283)	22	110	4.589
10	350	215	80	5	(283)	26	130	3.383
20	350	215	80	5	(314)	26	130	3.823
20	450	265	100	5	(314)	34	170	2.866

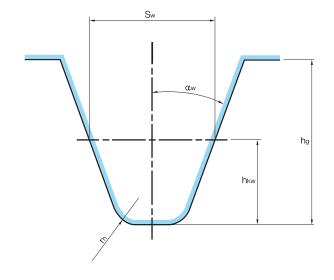
#### **○** Indexable HOB



#### Tool SPEC.

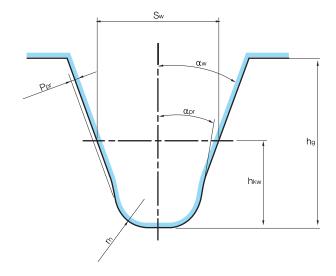
- Outside diameter ØD (mm):
- Bore diameter Ød (mm):
- Hub diameter ØDh (mm):
- Hob length L (mm):
- Cutting length Le (mm):
- Spiral direction RH/LH:
- Quality class acc. to DIN 3968:

#### Profile of hob [Module m6~]



- Module M:
- ■Addendum hkw (mm):
- Tooth thickness Sw (mm):
- Tooth depth hg (mm):

#### Profile of roughing hob [Module m8~]



- Pressure angle  $\alpha_w$  (mm):
- Protuberance amount Ppr (mm):
- Protuberance angle α<sub>pr</sub> (mm):
- Tip radius 'h (mm):

## **DRILL**

Korloy drills provide a total solution for hole making, based on tooling know-how as well as extensive research and development for our tools.



#### **Technical Information for Drills**

F02 KORLOY DrillsF03 Available Insert

#### **Indexable Drills**

F75 Technical Information for WPDC

F78 Center Drill WPDC

#### **Indexable Drills**

F05 Technical Information for King Drill
F11 King Drill
Technical information of King Drill

**F20** Technical information of King Drill (for through coolant system with a lathe)

F21 King Drill (for through coolant system with a lathe)

F24 Technical Information for King Drill (for large diameter drilling)

**F25** King Drill (for large diameter drilling)

F26 Technical Information for KED Plus Drill
F29 KED Plus Drill

F37 Technical Information for TPDC Plus Drill

F47 TPDC Plus Drill

F54 Technical Information for TPDB Plus Drill

F57 TPDB Plus Drill

**F63** Technical Information for TPDB-F

F66 TPDB-F

F68 Technical Information for TPDB-H

F71 TPDB-H

#### Reamer

F82 Technical Information for Indexable ReamerF86 Indexable Reamer

## KORLOY Drills

Туре	Designat	ion	Shape	Drills dia.	Aspect ratio	Page
	King Drill	K□D	Available insert: SP□T, XO□T	Ø12.0~Ø60.5	2D~5D	F11~F19
	King Drill HP	K□DHP	Available insert: SPDT, XODT	Ø12.0~Ø60.5	2D~4D	F21~F23
	King Drill (for large diameter drilling)	K□D	Available insert: SP□T, XO□T	Ø61.0~Ø100.0	2D~4D	F25
	KED Plus Drill @	E□D	Available insert: SP□T, XO□T	Ø12.0~Ø60.5	2D~5D	F29~F36
Indexable	TPDC Plus Drill @	TPDX	Available insert: TPDDDDDDXP	Ø8.0~Ø11.9	3D~8D	F50
Drills	Ti boʻi ias billi	TPDC	Available insert: TPDDDDDCD	Ø12.0~Ø30.9	1.5D~12D	F5~F53
		TPDB-P	Available insert: TPDDDB	Ø10.0~Ø32.9	3D~12D	F58~F62
	TPDB Plus Drill 💞	TPDB-F	Available insert: TPD□□□B-F	Ø14.0~Ø30.9	1.5D	F67
		TPDB-H	Available insert: TPDDDDB-H	Ø14.0~Ø30.9	3D~8D	F72~F74
	Indexable Drills & Drill with center	WPDC	Available insert: WC□T	Ø25.0~Ø80.0	5D~8D	F79~F81
Reamer	Indexable Reamer	IRT	Available Insert: RI	Ø10.0~Ø31.0	3D~5D	F86
		IRB	Available Insert: RI	Ø10.0~Ø31.0	3D~5D	F87

### Available insert

						ated				Uncoated		Dimei	nsions	(mm)			
Picture	Designation	NC5330	NCM535	PC3700	PC6510	PC9530	PC9540	PC5335	PC5300	H01	ı	d	t	r	d <sub>1</sub>	Configuration	Page
	040204-PD	•	•	•	•		•		•		4.7	-	2.4	0.4	2.3		
	050204-PD	•	•	•	•		•		•		5.1	-	2.4	0.4	2.3		
Peripheral ]	060205-PD	•	•	•	•		•		•		6.2	-	2.5	0.5	2.5		
PMT-PD	07T208-PD	•	•	•	•		•		•		7.5	-	2.8	0.7	2.8	<u></u>	
I WIT-I D	090308-PD	•	•	•	•		•		•		9.2	-	3.3	0.8	3.4		F11~
	11T308-PD	•	•	•	•		•		•		11.0	-	4.0	0.8	4.0	d1	F36
	130410-PD	•	•	•	•		•		•		13.0	-	4.5	1.0	4.5	t t	
Universal	15M510-PD	•	•	•	•		•		•		15.2	-	5.0	1.0	5.5		
	180510-PD	•	•	•	•		•		•		18.2	-	5.5	1.0	6.0		
	040204-PD						•		•		4.3	4.9	2.4	0.4	2.3		
	050204-PD						•		•		4.8	5.4	2.4	0.4	2.3		
Central]	060204-PD						•		•		5.8	6.6	2.5	0.4	2.5		
	07T205-PD						•		•		6.9	7.8	2.8	0.5	2.8	4	
OMT-PD	090305-PD						•		•		8.4	9.6	3.3	0.5	3.4	dı	F11~
	11T306-PD						•		•		10.0	11.4	4.0	0.6	4.0		F36
	130406-PD						•		•		11.9	13.6	4.5	0.6	4.5		
Universal	15M508-PD						•		•		13.9	15.9	5.0	0.8	5.5		
	180508-PD						•		•		16.5	18.9	5.5	0.8	6.0		
	100000112										10.0	10.0	0.0	0.0	0.0		
	060205-LD							•			6.2		2.5	0.5	2.5		
	07T208-LD							•			7.5	-	2.8	0.7	2.8		
Peripheral ]	090308-LD							•			9.2	_	3.3	0.8	3.4		
	11T308-LD							•			11.0		4.0	0.8	4.0		
PMT-LD	130410-LD							•			13.0		4.5	1.0	4.5		
	15M510-LD							•			15.0	_	5.0	1.0	5.5	dı	F11~ F36
	180510-LD							•			18.2		5.5	1.0	6.0		130
Mild steel	100010 25																
	060204-LD										5.8	6.6	2.5	0.4	2.5		
	07T205-LD							•			6.9	7.8	2.8	0.5	2.8		
Central ]	090305-LD							•			8.4	9.6	3.3	0.5	3.4		
	11T306-LD							•			10.0	11.4	4.0	0.6	4.0		
OMT-LD	130406-LD							•			11.9	13.6	4.5	0.6	4.5		
	15M508-LD							•			13.9	15.9	5.0	0.8	5.5	dı dı	F11~ F36
	180508-LD							•			16.5	18.9	5.5	0.8	6.0		F30
Mild steel	100300-LD										10.5	10.9	5.5	0.0	0.0		
	040204-ND									•	4.7	-	2.4	0.4	2.3		
Peripheral ]	050204-ND									•	5.1	-	2.4	0.4	2.3		
i . onprioral j	060205-ND									•	6.2	-	2.5	0.5	2.5		
SPET-ND	07T208-ND									•	7.5	-	2.8	0.7	2.8		
	090308-ND									•	9.2	-	3.3	0.8	3.4	Ødı	F11~
	11T308-ND									•	11.0	-	4.0	0.8	4.0		F36
-	130410-ND									•	13.0	-	4.5	1.0	4.5	-	
Al	15M510-ND									•	15.2	-	5.0	1.0	5.5		
	180510-ND									•	18.2	-	5.5	1.0	6.0		

### F Available Insert

### Available insert

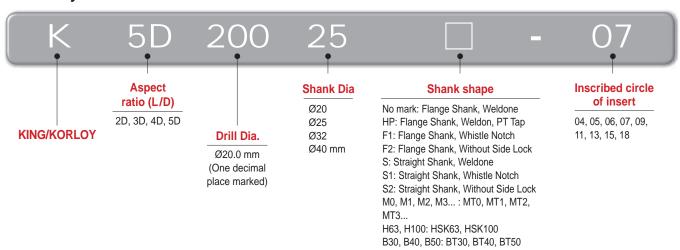
					Coa	ted				Uncoated		Dime	nsions	(mm)			
Picture	Designation	NC5330	NCM535	PC3700	PC6510	PC9530	PC9540	PC5335	PC5300	H01	1	d	t	r	d <sub>1</sub>	Configuration	Page
	040204-ND									•	4.3	4.9	2.4	0.4	2.3		
	050204-ND									•	4.8	5.4	2.4	0.4	2.3	-	
[ Central ]	060204-ND									•	5.8	6.6	2.5	0.4	2.5		
XOET-ND	07T205-ND									•	6.9	7.8	2.8	0.5	2.8		
KOLTND	090305-ND									•	8.4	9.6	3.3	0.5	3.4	d	F11~
	11T306-ND									•	10.0	11.4	4.0	0.6	4.0		F36
	130406-ND									•	11.9	13.6	4.5	0.6	4.5	-   -   t  -	
Al	15M508-ND									•	13.9	15.9	5.0	0.8	5.5		
	180508-ND									•	16.5	18.9	5.5	8.0	6.0		
	07T207-RD								•		6.9	7.8	2.8	0.7	2.8		
[ Central ]	090308-RD								•		8.4	9.6	3.3	0.8	3.4		
[ Contract ]	11T309-RD								•		10.0	11.4	4.0	0.9	4.0		
XOMT-RD	130410-RD								•		11.9	13.6	4.5	1.0	4.5		
new	15M511-RD								•		13.9	15.9	5.0	1.1	5.5	d	F11~
	180512-RD								•		16.5	18.9	5.5	1.2	6.0		F36
Rein fored cutting-edge																	
	030208-C20N							•			3.8	5.56	2.38	0.8	2.8		
	040208-C20N							•			4.3	6.35	2.38	0.8	3.0		
WCMT-	050308-C20N		•					•			5.4	7.94	3.18	0.8	3.4	-	
C20N	06T308-C20N		•					•			6.5	9.525		0.8	3.7	h -	
	080408-C20N							•			8.7	12.7	4.76	0.8	4.3		_
	080412-C20N		•					•			8.7	12.7	4.76	1.2	4.3	80° d d d 7°	-
	030204-C21N							•			3.8	5.56	2.38	0.4	2.55		
	040204-C21N							•			4.3	6.35	2.38	0.4	2.8		
	040208-C21N							•			4.3	6.35	2.38	0.8	2.8	1	
WCMT-	050308-C21N							•			5.4	7.94	3.18	0.8	3.4		
C21N	06T308-C21N							•			6.5	9.525	3.97	0.8	4.4	d di	F79~
	080408-C21N							•			8.7	12.7	4.76	8.0	5.5	80° t 7°	F81
																<del>   -   -   -   -   -   -   -   -  </del>	

•: Stock Item

#### Optimized insert design for maximum drilling efficiency

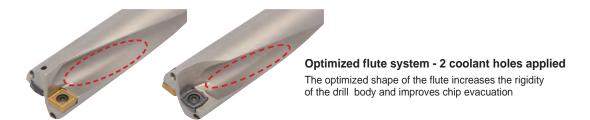
### King Drill

#### 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



### Features of chip breaker

Chip breaker	Р	D	L	D	N	D	RD
Features	- Universal - At medium speed	and medium feed	Superior chip of machining mile stainless steel     Light cutting (a speed and low	d steel and	Sharp cutting ealuminum made     Insert surface I high quality res     E Class tolerar	hining ouffed for sult	Improved chipping resistance     Excellent performance in case of frequent fracture and chipping on the cutting edge
Insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Central insert
Shape						9	
Grades for workpiece	NC5330: P, M, K PC3700: P PC5300: P, M, K, S PC6510: K PC9540: P, M, S	PC5300: P, M, K, S PC9540: P, M, S	PC533	35: P, M	НО	1: N	PC5300: P,M,K,S

### Technical Information for King Drill

### Application examples

■ Use Track link bush

■ Workpiece SM45C

■ **Cutting** vc (m/min) = 120, fn (mm/rev) = 0.1

conditions Through coolant system

■ Tools Inserts SPMT07T208-PD (PC3700)

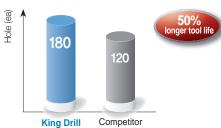
XOMT07T205-PD (PC5300)

Holder K5D20025-07

■ Machine Drilling machine

0





• Superior surface finish and chip evacuation

Use Track link bushWorkpiece SCM415H

■ Cutting Competitor: vc (m/min) = 125, fn (mm/rev) = 0.1 conditions King Drill: vc (m/min) = 140, fn (mm/rev) = 0.12

■ Tools Inserts SPMT090308-PD (PC3700)

XOMT090305-PD (PC5300)

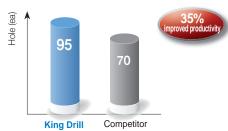
Holder K3D27032-09

■ Machine MCT



#### ■ Test result

■ Test result



 Increased productivity due to higher capabilities for cutting conditions compared to the competitor

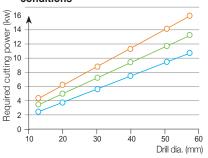
### Recommended cutting condition

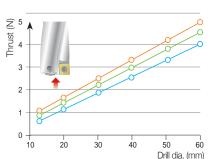
		Workpiece			Insert	!		Aspect ratio (L/D) = 2D, 3D, 4D					
	100	Manhaine	Hardness	Chip	Gra	ade	vc (m/min)		Feed ra	te (mm/rev	) per drill d	ia. (mm)	
	ISO	Workpiece	(HB)	breaker	Central	Peripheral		Ø12~Ø16	Ø17~Ø23	Ø24~Ø29	Ø30~Ø42	Ø43~Ø60	Ø61~Ø100
				LD	PC5335	PC5335	120 (60~170)						
		Low carbon steel	80~180	PD/	PC5300	PC3700	150 (120~180)	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08
	Carbon steel	0.001		RD	PC5300	NC5330	180 (140~220)						
	0.00.	High carbon	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
		steel	100~200	PD	PC5300	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
F				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
		Low alloy steel	140~260	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
	Alloy	0.001		אם	PC5300	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
	steel	Low alloy heattreated 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 heattreated 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
				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
N	Stainless steel	Stainless steel	135-275	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
				רט	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	PC6510	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
ľ	Cast Iron	Ductile cast iron	150~230	PD	PC5300	PC6510	130 (100~160)	0.04~0.07	0.04~0.08	0.04~0.10	0.05~0.12	0.05~0.12	0.05~0.12
		Ni haat maistis a alla.	420, 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
	Heat	Ni-heat resisting alloy	130~400	אם	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
S	resisting	Ti heat registing allow	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
		Ti-heat resisting alloy	130~400	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	over 400	PD	PC5300	PC5300	40 (20~80)	0.04~0.05	0.04~0.06	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08
	A la manimia acces	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
N	Aluminium	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

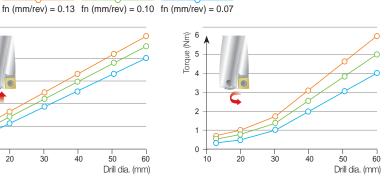
- The Max. feed of 5D holders is 70%~80% of the max. conditions of 2D/3D/4D holders
- In interrupted machining part, reduce 30~50% of feed from the above machining around interrupted part

#### 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 vc (m/min) = 100, Through coolant system conditions

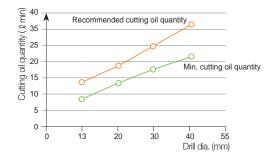






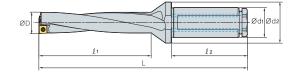
### Cutting oil quantity

- Workpiece SCM440 (240HB)
- Cutting vc (m/min) = 100, Through coolant system conditions
- The data of the graph above could be changed depending on workpiece and cutting condition



#### Drill tolerance and hole tolerance



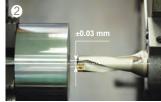


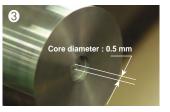
(mm)

Dr	ill dia.	Ø12~Ø29	Ø30~Ø45	Ø46~Ø60.5
2D~3D	Drill tolerance (ØD)	0~-0.15	0~-0.15	0~-0.15
20~30	Hole tolerance	+0.2~-0.1	+0.25~-0.1	+0.28~-0.1
4D~5D	Drill tolerance (ØD)	0~-0.15	0~-0.15	0~-0.15
4D~5D	Hole tolerance	+0.25~-0.05	+0.3~-0.05	+0.33~-0.05

#### Notice for setting the drill in the lathe







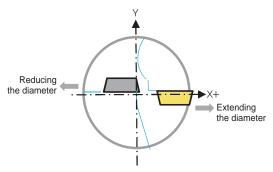
- Set the peripheral insert parallel to the X axis. (based on the side lock)
- If the machined core is 0.5 mm after machining 5 mm, that is the proper setting
- \*\* Please make sure that the location of the side lock could be different depending on manufacturers of machine



### **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)

12.5         12.2-12.9         25.0         24.4-25.6         37.5         36.8-38.2         50.0         49.2-5           13.0         12.7-13.4         25.5         24.9-26.1         38.0         37.3-38.7         50.5         49.7-5           13.5         13.2-13.9         26.0         25.4-26.6         38.5         37.8-39.2         51.0         50.2-5           14.0         13.6-14.5         26.5         25.9-27.1         39.0         38.3-39.7         51.5         50.7-5           14.5         14.1-15.0         27.0         26.4-27.6         39.5         38.8-40.2         52.0         51.2-5           15.0         14.6-15.5         27.5         26.9-28.1         40.0         39.3-40.7         52.5         51.7-5           15.5         15.1-16.0         27.8         27.4-28.6         40.5         39.8-41.2         53.0         52.2-5           16.0         15.6-16.5         28.5         27.9-29.1         41.0         40.3-41.7         53.5         52.7-5           16.5         16.0-17.0         29.0         28.4-29.6         41.5         40.8-42.2         54.0         53.2-5           17.0         16.5-17.5         29.5         28.9-30.1         42.0	Drill dia. (Ø)	Range of adjusting diameter (Ø)	Drill dia. (Ø)	Range of adjusting diameter (Ø)	Drill dia. (Ø)	Range of adjusting diameter (Ø)	Drill dia. (Ø)	Range of adjusting drilling diameter (Ø)
13.0         12.7~13.4         25.5         24.9~26.1         38.0         37.3~38.7         50.5         49.7~5           13.5         13.2~13.9         26.0         25.4~26.6         38.5         37.8~39.2         51.0         50.2~5           14.0         13.6~14.5         26.5         25.9~27.1         39.0         38.3~39.7         51.5         50.7~5           14.5         14.1~15.0         27.0         26.4~27.6         39.5         38.8~40.2         52.0         51.2~5           15.0         14.6~15.5         27.5         26.9~28.1         40.0         39.3~40.7         52.5         51.7~5           15.5         15.1~16.0         27.8         27.4~28.6         40.5         39.8~41.2         53.0         52.2~5           16.0         15.6~16.5         28.5         27.9~29.1         41.0         40.3~41.7         53.5         52.7~5           16.5         16.0~17.0         29.0         28.4~29.6         41.5         40.8~42.2         54.0         53.2~5           17.0         16.5~17.5         29.5         28.9~30.1         42.0         41.3~42.7         54.5         53.7~5           17.5         17.0~18.0         30.0         29.3~30.7         42.5	12.0	11.7~12.4	24.5	23.9~25.1	37.0	36.3~37.7	49.5	48.7~50.2
13.5         13.2~13.9         26.0         25.4~26.6         38.5         37.8~39.2         51.0         50.2~5           14.0         13.6~14.5         26.5         25.9~27.1         39.0         38.3~39.7         51.5         50.7~5           14.5         14.1~15.0         27.0         26.4~27.6         39.5         38.8~40.2         52.0         51.2~5           15.0         14.6~15.5         27.5         26.9~28.1         40.0         39.3~40.7         52.5         51.7~5           15.5         15.1~16.0         27.8         27.4~28.6         40.5         39.8~41.2         53.0         52.2~5           16.0         15.6~16.5         28.5         27.9~29.1         41.0         40.3~41.7         53.5         52.7~5           16.5         16.0~17.0         29.0         28.4~29.6         41.5         40.8~42.2         54.0         53.2~5           17.0         16.5~17.5         29.5         28.9~30.1         42.0         41.3~42.7         54.5         53.7~5           17.5         17.0~18.0         30.0         29.3~30.7         42.5         41.8~43.2         55.0         54.2~5           18.0         17.5~18.5         30.5         29.8~31.2         43.0	12.5	12.2~12.9	25.0	24.4~25.6	37.5	36.8~38.2	50.0	49.2~50.7
14.0         13.6-14.5         26.5         25.9-27.1         39.0         38.3-39.7         51.5         50.7-5           14.5         14.1-15.0         27.0         26.4-27.6         39.5         38.8-40.2         52.0         51.2-5           15.0         14.6-15.5         27.5         26.9-28.1         40.0         39.3-40.7         52.5         51.7-5           15.5         15.1-16.0         27.8         27.4-28.6         40.5         39.8-41.2         53.0         52.2-5           16.0         15.6-16.5         28.5         27.9-29.1         41.0         40.3-41.7         53.5         52.7-5           16.5         16.0-17.0         29.0         28.4-29.6         41.5         40.8-42.2         54.0         53.2-5           17.0         16.5-17.5         29.5         28.9-30.1         42.0         41.3-42.7         54.5         53.7-5           17.5         17.0-18.0         30.0         29.3-30.7         42.5         41.8-43.2         55.0         54.2-5           18.0         17.5-18.5         30.5         29.8-31.2         43.0         42.2-43.7         55.5         55.5         54.7-5           18.5         18.0-19.0         31.0         30.3-31.7	13.0	12.7~13.4	25.5	24.9~26.1	38.0	37.3~38.7	50.5	49.7~51.2
14.5         14.1~15.0         27.0         26.4~27.6         39.5         38.8~40.2         52.0         51.2~5           15.0         14.6~15.5         27.5         26.9~28.1         40.0         39.3~40.7         52.5         51.7~5           15.5         15.1~16.0         27.8         27.4~28.6         40.5         39.8~41.2         53.0         52.2~5           16.0         15.6~16.5         28.5         27.9~29.1         41.0         40.3~41.7         53.5         52.7~5           16.5         16.0~17.0         29.0         28.4~29.6         41.5         40.8~42.2         54.0         53.2~5           17.0         16.5~17.5         29.5         28.9~30.1         42.0         41.3~42.7         54.5         53.7~5           17.5         17.0~18.0         30.0         29.3~30.7         42.5         41.8~43.2         55.0         54.2~5           18.0         17.5~18.5         30.5         29.8~31.2         43.0         42.2~43.7         55.5         54.7~5           18.5         18.0~19.0         31.0         30.3~31.7         43.5         42.7~44.2         56.0         55.2~5           19.0         18.5~19.5         31.5         30.8~32.2         44.0	13.5	13.2~13.9	26.0	25.4~26.6	38.5	37.8~39.2	51.0	50.2~51.7
15.0         14.6~15.5         27.5         26.9~28.1         40.0         39.3~40.7         52.5         51.7~5           15.5         15.1~16.0         27.8         27.4~28.6         40.5         39.8~41.2         53.0         52.2~5           16.0         15.6~16.5         28.5         27.9~29.1         41.0         40.3~41.7         53.5         52.7~5           16.5         16.0~17.0         29.0         28.4~29.6         41.5         40.8~42.2         54.0         53.2~5           17.0         16.5~17.5         29.5         28.9~30.1         42.0         41.3~42.7         54.5         53.7~5           17.5         17.0~18.0         30.0         29.3~30.7         42.5         41.8~43.2         55.0         54.2~5           18.0         17.5~18.5         30.5         29.8~31.2         43.0         42.2~43.7         55.5         54.7~5           18.5         18.0~19.0         31.0         30.3~31.7         43.5         42.7~44.2         56.0         55.2~5           19.0         18.5~19.5         31.5         30.8~32.2         44.0         43.2~44.7         56.5         55.7~5           19.5         19.0~20.0         32.0         31.3~32.7         44.5	14.0	13.6~14.5	26.5	25.9~27.1	39.0	38.3~39.7	51.5	50.7~52.2
15.5         15.1~16.0         27.8         27.4~28.6         40.5         39.8~41.2         53.0         52.2~5           16.0         15.6~16.5         28.5         27.9~29.1         41.0         40.3~41.7         53.5         52.7~5           16.5         16.0~17.0         29.0         28.4~29.6         41.5         40.8~42.2         54.0         53.2~5           17.0         16.5~17.5         29.5         28.9~30.1         42.0         41.3~42.7         54.5         53.7~5           17.5         17.0~18.0         30.0         29.3~30.7         42.5         41.8~43.2         55.0         54.2~5           18.0         17.5~18.5         30.5         29.8~31.2         43.0         42.2~43.7         55.5         54.7~5           18.5         18.0~19.0         31.0         30.3~31.7         43.5         42.7~44.2         56.0         55.2~5           19.0         18.5~19.5         31.5         30.8~32.2         44.0         43.2~44.7         56.5         55.7~5           19.5         19.0~20.0         32.0         31.3~32.7         44.5         43.7~45.2         57.0         56.2~5           20.0         19.4~20.6         32.5         31.8~33.2         45.0	14.5	14.1~15.0	27.0	26.4~27.6	39.5	38.8~40.2	52.0	51.2~52.7
16.0       15.6~16.5       28.5       27.9~29.1       41.0       40.3~41.7       53.5       52.7~5         16.5       16.0~17.0       29.0       28.4~29.6       41.5       40.8~42.2       54.0       53.2~5         17.0       16.5~17.5       29.5       28.9~30.1       42.0       41.3~42.7       54.5       53.7~5         17.5       17.0~18.0       30.0       29.3~30.7       42.5       41.8~43.2       55.0       54.2~5         18.0       17.5~18.5       30.5       29.8~31.2       43.0       42.2~43.7       55.5       54.7~5         18.5       18.0~19.0       31.0       30.3~31.7       43.5       42.7~44.2       56.0       55.2~5         19.0       18.5~19.5       31.5       30.8~32.2       44.0       43.2~44.7       56.5       55.7~5         19.5       19.0~20.0       32.0       31.3~32.7       44.5       43.7~45.2       57.0       56.2~5         20.0       19.4~20.6       32.5       31.8~33.2       45.0       44.2~45.7       57.5       56.7~5         20.5       19.9~21.1       33.0       32.3~33.7       45.5       44.7~46.2       58.0       57.2~5         21.0       20.4~21.6       33.5	15.0	14.6~15.5	27.5	26.9~28.1	40.0	39.3~40.7	52.5	51.7~53.2
16.5       16.0~17.0       29.0       28.4~29.6       41.5       40.8~42.2       54.0       53.2~5         17.0       16.5~17.5       29.5       28.9~30.1       42.0       41.3~42.7       54.5       53.7~5         17.5       17.0~18.0       30.0       29.3~30.7       42.5       41.8~43.2       55.0       54.2~5         18.0       17.5~18.5       30.5       29.8~31.2       43.0       42.2~43.7       55.5       54.7~5         18.5       18.0~19.0       31.0       30.3~31.7       43.5       42.7~44.2       56.0       55.2~5         19.0       18.5~19.5       31.5       30.8~32.2       44.0       43.2~44.7       56.5       55.7~5         19.5       19.0~20.0       32.0       31.3~32.7       44.5       43.7~45.2       57.0       56.2~5         20.0       19.4~20.6       32.5       31.8~33.2       45.0       44.2~45.7       57.5       56.7~5         20.5       19.9~21.1       33.0       32.3~33.7       45.5       44.7~46.2       58.0       57.2~5         21.0       20.4~21.6       33.5       32.8~34.2       46.0       45.2~46.7       58.5       57.7~5         21.5       20.9~22.1       34.0	15.5	15.1~16.0	27.8	27.4~28.6	40.5	39.8~41.2	53.0	52.2~53.7
17.0       16.5~17.5       29.5       28.9~30.1       42.0       41.3~42.7       54.5       53.7~5         17.5       17.0~18.0       30.0       29.3~30.7       42.5       41.8~43.2       55.0       54.2~5         18.0       17.5~18.5       30.5       29.8~31.2       43.0       42.2~43.7       55.5       54.7~5         18.5       18.0~19.0       31.0       30.3~31.7       43.5       42.7~44.2       56.0       55.2~5         19.0       18.5~19.5       31.5       30.8~32.2       44.0       43.2~44.7       56.5       55.7~5         19.5       19.0~20.0       32.0       31.3~32.7       44.5       43.7~45.2       57.0       56.2~5         20.0       19.4~20.6       32.5       31.8~33.2       45.0       44.2~45.7       57.5       56.7~5         20.5       19.9~21.1       33.0       32.3~33.7       45.5       44.7~46.2       58.0       57.2~5         21.0       20.4~21.6       33.5       32.8~34.2       46.0       45.2~46.7       58.5       57.7~5         21.5       20.9~22.1       34.0       33.3~34.7       46.5       45.7~47.2       59.0       58.2~5         22.0       21.4~22.6       34.5	16.0	15.6~16.5	28.5	27.9~29.1	41.0	40.3~41.7	53.5	52.7~54.2
17.5       17.0~18.0       30.0       29.3~30.7       42.5       41.8~43.2       55.0       54.2~5         18.0       17.5~18.5       30.5       29.8~31.2       43.0       42.2~43.7       55.5       54.7~5         18.5       18.0~19.0       31.0       30.3~31.7       43.5       42.7~44.2       56.0       55.2~5         19.0       18.5~19.5       31.5       30.8~32.2       44.0       43.2~44.7       56.5       55.7~5         19.5       19.0~20.0       32.0       31.3~32.7       44.5       43.7~45.2       57.0       56.2~5         20.0       19.4~20.6       32.5       31.8~33.2       45.0       44.2~45.7       57.5       56.7~5         20.5       19.9~21.1       33.0       32.3~33.7       45.5       44.7~46.2       58.0       57.2~5         21.0       20.4~21.6       33.5       32.8~34.2       46.0       45.2~46.7       58.5       57.7~5         21.5       20.9~22.1       34.0       33.3~34.7       46.5       45.7~47.2       59.0       58.2~5         22.0       21.4~22.6       34.5       33.8~35.2       47.0       46.2~47.7       59.5       58.7~6	16.5	16.0~17.0	29.0	28.4~29.6	41.5	40.8~42.2	54.0	53.2~54.7
18.0       17.5~18.5       30.5       29.8~31.2       43.0       42.2~43.7       55.5       54.7~5         18.5       18.0~19.0       31.0       30.3~31.7       43.5       42.7~44.2       56.0       55.2~5         19.0       18.5~19.5       31.5       30.8~32.2       44.0       43.2~44.7       56.5       55.7~5         19.5       19.0~20.0       32.0       31.3~32.7       44.5       43.7~45.2       57.0       56.2~5         20.0       19.4~20.6       32.5       31.8~33.2       45.0       44.2~45.7       57.5       56.7~5         20.5       19.9~21.1       33.0       32.3~33.7       45.5       44.7~46.2       58.0       57.2~5         21.0       20.4~21.6       33.5       32.8~34.2       46.0       45.2~46.7       58.5       57.7~5         21.5       20.9~22.1       34.0       33.3~34.7       46.5       45.7~47.2       59.0       58.2~5         22.0       21.4~22.6       34.5       33.8~35.2       47.0       46.2~47.7       59.5       58.7~6	17.0	16.5~17.5	29.5	28.9~30.1	42.0	41.3~42.7	54.5	53.7~55.2
18.5       18.0~19.0       31.0       30.3~31.7       43.5       42.7~44.2       56.0       55.2~5         19.0       18.5~19.5       31.5       30.8~32.2       44.0       43.2~44.7       56.5       55.7~5         19.5       19.0~20.0       32.0       31.3~32.7       44.5       43.7~45.2       57.0       56.2~5         20.0       19.4~20.6       32.5       31.8~33.2       45.0       44.2~45.7       57.5       56.7~5         20.5       19.9~21.1       33.0       32.3~33.7       45.5       44.7~46.2       58.0       57.2~5         21.0       20.4~21.6       33.5       32.8~34.2       46.0       45.2~46.7       58.5       57.7~5         21.5       20.9~22.1       34.0       33.3~34.7       46.5       45.7~47.2       59.0       58.2~5         22.0       21.4~22.6       34.5       33.8~35.2       47.0       46.2~47.7       59.5       58.7~6	17.5	17.0~18.0	30.0	29.3~30.7	42.5	41.8~43.2	55.0	54.2~55.7
19.0     18.5~19.5     31.5     30.8~32.2     44.0     43.2~44.7     56.5     55.7~5       19.5     19.0~20.0     32.0     31.3~32.7     44.5     43.7~45.2     57.0     56.2~5       20.0     19.4~20.6     32.5     31.8~33.2     45.0     44.2~45.7     57.5     56.7~5       20.5     19.9~21.1     33.0     32.3~33.7     45.5     44.7~46.2     58.0     57.2~5       21.0     20.4~21.6     33.5     32.8~34.2     46.0     45.2~46.7     58.5     57.7~5       21.5     20.9~22.1     34.0     33.3~34.7     46.5     45.7~47.2     59.0     58.2~5       22.0     21.4~22.6     34.5     33.8~35.2     47.0     46.2~47.7     59.5     58.7~6	18.0	17.5~18.5	30.5	29.8~31.2	43.0	42.2~43.7	55.5	54.7~56.2
19.5     19.0~20.0     32.0     31.3~32.7     44.5     43.7~45.2     57.0     56.2~5       20.0     19.4~20.6     32.5     31.8~33.2     45.0     44.2~45.7     57.5     56.7~5       20.5     19.9~21.1     33.0     32.3~33.7     45.5     44.7~46.2     58.0     57.2~5       21.0     20.4~21.6     33.5     32.8~34.2     46.0     45.2~46.7     58.5     57.7~5       21.5     20.9~22.1     34.0     33.3~34.7     46.5     45.7~47.2     59.0     58.2~5       22.0     21.4~22.6     34.5     33.8~35.2     47.0     46.2~47.7     59.5     58.7~6	18.5	18.0~19.0	31.0	30.3~31.7	43.5	42.7~44.2	56.0	55.2~56.7
20.0     19.4~20.6     32.5     31.8~33.2     45.0     44.2~45.7     57.5     56.7~5       20.5     19.9~21.1     33.0     32.3~33.7     45.5     44.7~46.2     58.0     57.2~5       21.0     20.4~21.6     33.5     32.8~34.2     46.0     45.2~46.7     58.5     57.7~5       21.5     20.9~22.1     34.0     33.3~34.7     46.5     45.7~47.2     59.0     58.2~5       22.0     21.4~22.6     34.5     33.8~35.2     47.0     46.2~47.7     59.5     58.7~6	19.0	18.5~19.5	31.5	30.8~32.2	44.0	43.2~44.7	56.5	55.7~57.2
20.5     19.9~21.1     33.0     32.3~33.7     45.5     44.7~46.2     58.0     57.2~5       21.0     20.4~21.6     33.5     32.8~34.2     46.0     45.2~46.7     58.5     57.7~5       21.5     20.9~22.1     34.0     33.3~34.7     46.5     45.7~47.2     59.0     58.2~5       22.0     21.4~22.6     34.5     33.8~35.2     47.0     46.2~47.7     59.5     58.7~6	19.5	19.0~20.0	32.0	31.3~32.7	44.5	43.7~45.2	57.0	56.2~57.7
21.0     20.4~21.6     33.5     32.8~34.2     46.0     45.2~46.7     58.5     57.7~5       21.5     20.9~22.1     34.0     33.3~34.7     46.5     45.7~47.2     59.0     58.2~5       22.0     21.4~22.6     34.5     33.8~35.2     47.0     46.2~47.7     59.5     58.7~6	20.0	19.4~20.6	32.5	31.8~33.2	45.0	44.2~45.7	57.5	56.7~58.2
21.5     20.9~22.1     34.0     33.3~34.7     46.5     45.7~47.2     59.0     58.2~5       22.0     21.4~22.6     34.5     33.8~35.2     47.0     46.2~47.7     59.5     58.7~6	20.5	19.9~21.1	33.0	32.3~33.7	45.5	44.7~46.2	58.0	57.2~58.7
22.0 21.4~22.6 34.5 33.8~35.2 47.0 46.2~47.7 59.5 58.7~6	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
22.5 21.9~23.1 35.0 34.3~35.7 47.5 46.7~48.2 60.0 59.2~6	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 59.7~6	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	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	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

<sup>•</sup> In clamping an insert, please clean the tip seat and apply CASMOLY1000 on the screw

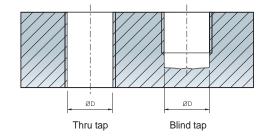
<sup>•</sup> Please make sure to use a Korloy-produced wrench and screw only



### Sking 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



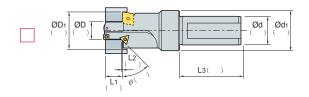


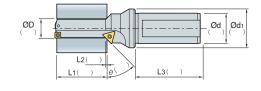
(mm)

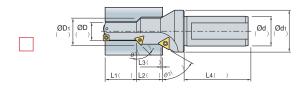
Tap type	Thread	ØD	Designation	Reference
	M14x2.0	12.0	K3D12020-04	G14
	M16x2.0	14.0	K3D14020-05	G14
	M18x2.5	15.5	K3D15520-05	G14
Mertic	M20x2.5	17.5	K3D17525-06	G14
	M22x2.5	19.5	K3D19525-06	G14
	M24x3.0	21.0	K3D21025-07	G14
	M27x3.0	24.0	K3D24032-09	G14
	M30x3.5	26.5	K3D26532-09	G14
	M33x4.0	29.0	K3D29032-09	G14
	M36x4.0	32.0	K3D32032-11	G15
	M39x4.0	35.0	K3D35032-11	G15
	M42x4.5	37.5	K3D37540-13	G15
	9/16-12 UNC	12.2	K3D12220-04	G14
Inch	5/8-11 UNC	13.5	K3D13520-04	G14
	3/4-10 UNC	16.5	K3D16525-06	G14
	7/8-9 UNC	19.5	K3D19525-06	G14
	9/16-18 UNF	12.9	K3D12920-04	G14
	5/8-18 UNF	14.5	K3D14520-05	G14
	3/4-16 UNF	17.5	K3D17525-06	G14

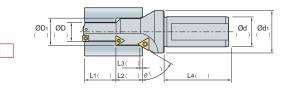
### **Technical Information for King Drill**

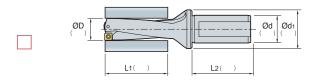
### Special drill order form

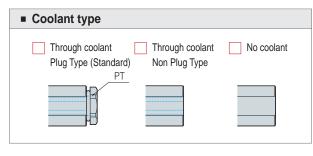


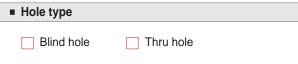


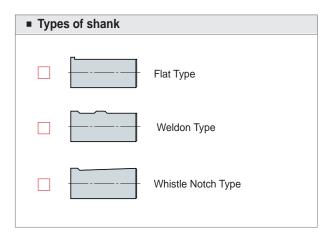


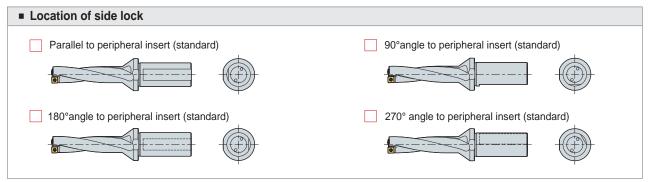












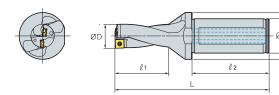
#### ■ Note

- 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:

King Drill (2D)







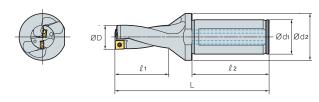
	J									(1
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	Insert	Screw	Wrench
2D	12020-04	12.0	20	25	27	50	91			
	12520-04	12.5	20	25	27	50	91	SP□T040204-□□	FTN14.000.4	T1400D
	13020-04	13.0	20	25	29	50	93	XO□T040204-□□	FTNA0204	TW06P
	13520-04	13.5	20	25	29	50	93			
	14020-05	14.0	20	25	31	50	96			
	14520-05	14.5	20	25	31	50	96	OD TO 5000 4 00		
	15020-05	15.0	20	25	33	50	99	SP□T050204-□□	FTNA0204	TW06P
	15520-05	15.5	20	25	33	50	99	XO□T050204-□□		
	16020-05	16.0	20	25	35	50	101			
	16525-06	16.5	25	34	35	56	107			
	17025-06	17.0	25	34	37	56	109	-		
	17525-06	17.5	25	34	37	56	109			
	18025-06	18.0	25	34	39	56	112	SP□T060205-□□	FTKA02206S	TW07P
	18525-06	18.5	25	34	39	56	112	XO□T060204-□□		
	19025-06	19.0	25	34	41	56	114			
	19525-06	19.5	25	34	41	56	114			
	20025-07	20.0	25	34	43	56	118			
	20525-07	20.5	25	34	43	56	118	-		
	21025-07	21.0	25	34	45	56	120	_		
	21525-07	21.5	25	34	45	56	120	SP□T07T208-□□		
	22025-07	22.0	25	34	47	56	122	XO□T07T205-□□	FTKA02565	TW07S
	22525-07	22.5	25	34	47	56	122	XUL 10/1205-LL		
	23025-07	23.0	25	34	49	56	126			
	23525-07	23.5	25	34		56	126			
	24032-09	1	32	44	49 51	60	133			
		24.0								
	24532-09	24.5	32	44	51	60	133	_		
	25032-09	25.0	32	44	53	60	135			
	25532-09	25.5	32	44	53	60	135	_		
	26032-09	26.0	32	44	55	60	137	SP□T090308-□□		
	26532-09	26.5	32	44	55	60	137	-	FTKA0307	TW09S
	27032-09	27.0	32	44	57	60	140	XO□T090305-□□		
	27532-09	27.5	32	44	57	60	140			
	28032-09	28.0	32	44	59	60	143	_		
	28532-09	28.5	32	44	59	60	143			
	29032-09	29.0	32	44	61	60	145			
	29532-09	29.5	32	44	61	60	145			
	30032-11	30.0	32	44	63	60	150			
	30532-11	30.5	32	44	63	60	150			
	31032-11	31.0	32	44	65	60	152			
	31532-11	31.5	32	44	65	60	152			
	32032-11	32.0	32	44	67	60	154			
	32532-11	32.5	32	44	67	60	154	SP□T11T308-□□	FTKA03508	TW15S
	33032-11	33.0	32		69	60	157	XO□T11T306-□□	1110.00000	
	33532-11	33.5	32	44	69	60	157			
	34032-11	34.0	32	44	71	60	159			
	34532-11	34.5	32	44	71	60	159			
	35032-11	35.0	32	44	73	60	161			
	35532-11	35.5	32	44	73	60	161			

<sup>◆</sup> Applicable inserts F03~04

## King Drill

King Drill (2D)





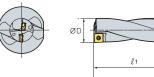


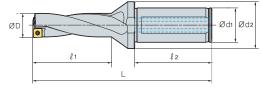
										(1
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q <sub>2</sub>	L	Insert	Screw	Wrench
2D	36040-13	36.0	40	48	76	70	176			
	36540-13	36.5	40	48	76	70	176			
	37040-13	37.0	40	48	78	70	178			
	37540-13	37.5	40	48	78	70	178			
	38040-13	38.0	40	48	80	70	181			
	38540-13	38.5	40	48	80	70	181			
	39040-13	39.0	40	48	82	70	183	SP□T130410-□□	FTKA0410	TW15S
40040-1	39540-13	39.5	40	48	82	70	183	XO□T130406-□□		
	40040-13	40.0	40	48	84	70	186			
	40540-13	40.5	40	48	84	70	186			
	41040-13	41.0	40	48	86	70	188			
	41540-13	41.5	40	48	86	70	188			
	42040-13	42.0	40	48	88	70	191			
	42540-13	42.5	40	48	88	70	191			
	43040-15	43.0	40	58	91	70	196			
	43540-15	43.5	40	58	91	70	196			
	44040-15	44.0	40	58	93	70	198			
	44540-15	44.5	40	58	93	70	198			
	45040-15	45.0	40	58	95	70	201			
	45540-15	45.5	40	58	95	70	201			
	46040-15	46.0	40	58	97	70	203	SP_T15M510 XO_T15M508		
	46540-15	46.5	40	58	97	70	203		FTNC04511	TW20S
	47040-15	47.0	40	58	99	70	206		111100-311	177200
	47540-15	47.5	40	58	99	70	206			
	48040-15	48.0	40	58	101	70	208			
	48540-15	48.5	40	58	101	70	208			
	49040-15	49.0	40	58	103	70	210			
	49540-15	49.5	40	58	103	70	210			
	50040-15	50.0	40	58	105	70	212			
	50540-15	50.5	40	58	105	70	212			
	51040-18	51.0	40	68	108	70	218			
	51540-18	51.5	40	68	108	70	218			
	52040-18	52.0	40	68	110	70	220			
	52540-18	52.5	40	68	110	70	220			
	53040-18	53.0	40	68	112	70	222			
	53540-18	53.5	40	68	112	70	222			
	54040-18	54.0	40	68	114	70	224			
	54540-18	54.5	40	68	114	70	224			
	55040-18	55.0	40	68	116	70	226			
	55540-18	55.5	40	68	116	70	226	SP□T180510-□□	FTNA0511	TW20-10
	56040-18	56.0	40	68	118	70	230	XO□T180508-□□	1111110011	1 1 1 2 0 1 0
	56540-18	56.5	40	68	118	70	230			
	57040-18	57.0	40	68	121	70	233			
	57540-18	57.5	40	68	121	70	233			
	58040-18	58.0	40	68	124	70	236			
	58540-18	58.5	40	68	124	70	236			
	59040-18	59.0	40	68	127	70	239			
	59540-18	59.5	40	68	127	70	239			
	60040-18	60.0	40	68	130	70	242			
	60040-18 60540-18	60.5	40	68	130	70	242			

<sup>→</sup> Applicable inserts F03~04

King Drill (3D)









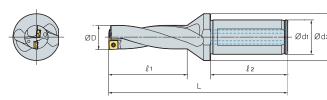
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	Insert	Screw	Wrench
(3D	12020-04*	12.0	20	25	39	50	103			
	12220-04	12.2	20	25	39	50	103			
	12520-04	12.5	20	25	39	50	103	SP□T040204-□□	FTNA0204	TW06P
	12920-04	12.9	20	25	42	50	106	XO□T040204-□□	1 11NA0204	TVVOOF
	13020-04	13.0	20	25	42	50	106			
	13520-04	13.5	20	25	42	50	106			
	14020-05*	14.0	20	25	45	50	110			
	14520-05	14.5	20	25	45	50	110	SP□T050204-□□		
	15020-05	15.0	20	25	48	50	114	XO T050204-	FTNA0204	TW06P
	15520-05*	15.5	20	25	48	50	114	X6-1000201		
	16020-05	16.0	20	25	51	50	117			
	16525-06	16.5	25	34	51	56	123			
	17025-06	17.0	25	34	54	56	126			
	17525-06*	17.5	25	34	54	56	126	SP□T060205-□□		
	18025-06	18.0	25	34	57	56	130	XO T060204-	FTKA02206S	TW07P
	18525-06	18.5	25	34	57	56	130	XO-1000204		
	19025-06	19.0	25	34	60	56	133			
	19525-06*	19.5	25	34	60	56	133			
	20025-07	20.0	25	34	63	56	138			TW07S
	20525-07	20.5	25	34	63	56	138			
	21025-07*	21.0	25	34	66	56	141		FTKA02565	
	21525-07	21.5	25	34	66	56	141	SP□T07T208-□□		
	22025-07	22.0	25	34	69	56	144	XO□T07T205-□□		
	22525-07	22.5	25	34	69	56	144			
	23025-07	23	25	34	72	56	149			
	23525-07	23.5	25	34	72	56	149			
	24032-09*	24.0	32	44	75	60	157			
	24532-09	24.5	32	44	75	60	157			
	25032-09	25.0	32	32 44 78	78	60	160			
	25532-09	25.5	32	44	78	60	160			
	26032-09	26.0	32	44	81	60	163			
	26532-09*	26.5	32	44	81	60	163	SP□T090308-□□	FTKA0307	TW09S
	27032-09	27.0	32	44	84	60	167	XO□T090305-□□	1 INAUGUI	1 1 1 1 1 1 1 1
	27532-09	27.5	32	44	84	60	167			
	28032-09	28.0	32	44	87	60	171			
	28532-09	28.5	32	44	87	60	171			
	29032-09*	29.0	32	44	90	60	174			
	29532-09	29.5	32	44	90	60	174			

<sup>→</sup> Applicable inserts F03~04

## F King Drill

King Drill (3D)





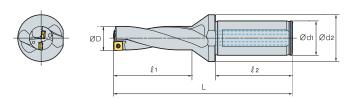


(mm)

	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	Insert	Screw	Wrench
<b>K3D</b>	30032-11 *	30.0	32	44	93	60	180			
	30532-11	30.5	32	44	93	60	180			
	31032-11	31.0	32	44	96	60	183			
	31532-11	31.5	32	44	96	60	183			
	32032-11	32.0	32	44	99	60	186			
	32532-11	32.5	32	44	99	60	186	SP□T11T308-□□	FTKA03508	TW15S
	33032-11	33.0	32	44	102	60	190	XO□T11T306-□□	1 1 NA03300	1 1 1 1 3 3
	33532-11	33.5	32	44	102	60	190			
	34032-11	34.0	32	44	105	60	193			
	34532-11	34.5	32	44	105	60	193			
	35032-11 *	35.0	32	44	108	60	196			
	35532-11	35.5	32	44	108	60	196			
	36040-13	36.0	40	48	112	70	212			
	36540-13	36.5	40	48	112	70	212			
	37040-13	37.0	40	48	115	70	215			
	37540-13	37.5	40	48	115	70	215			
	38040-13	38.0	40	48	118	70	219			
	38540-13	38.5	40	48	118 70 219					
	39040-13	39.0	40	48	121	70	222	SP□T130410-□□	ETIKA 0.440	TW15S
	39540-13	39.5	40	48	121	70	222	XO□T130406-□□	FTKA0410	1 W 155
	40040-13	40.0	40	48	124	70	226			
	40540-13	40.5	40	48	124	70	226			
	41040-13	41.0	40	48	127	70	229			
	41540-13	41.5	40	48	127	70	229			
	42040-13	42.0	40	48	130	70	233			
	42540-13	42.5	40	48	130	70	233			
	43040-15	43.0	40	58	134	70	239			
	43540-15	43.5	40	58	134	70	239			
	44040-15	44.0	40	58	137	70	242			
	44540-15	44.5	40	58	137	70	242	1		
	45040-15	45.0	40	58	140	70	246			
	45540-15	45.5	40	58	140	70	246	1		
	46040-15	46.0	40	58	143	70	249			
	46540-15	46.5	40	58	143	70	249	SP□T15M510-□□	ETNICO4514	TM200
	47040-15	47.0	40	58	146	70	253	XO□T15M508-□□	FTNC04511	TW20S
	47540-15	47.5	40	58	146	70	253			
	48040-15	48.0	40	58	149	70	256			
	48540-15	48.5	40	58	149	70	256			
	49040-15	49.0	40	58	152	70	259			
	49540-15	49.5	40	58	152	70	259			
	50040-15	50.0	40	58	155	70	262			
	50540-15	50.5	40	58	155	70	262	1		

King Drill (3D)



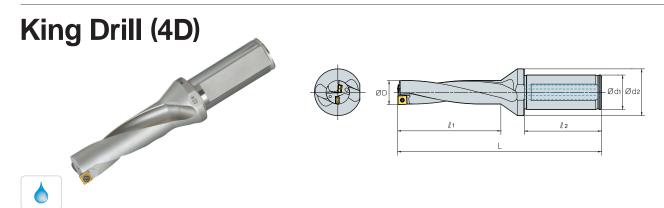




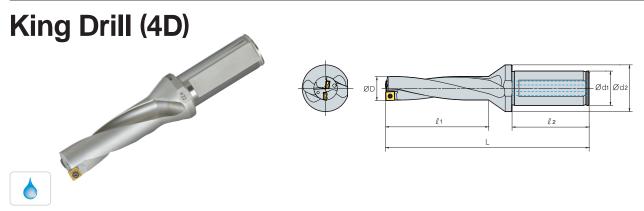
										(mm)
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q <sub>2</sub>	L	Insert	Screw	Wrench
K3D	51040-18	51.0	40	68	159	70	269			
	51540-18	51.5	40	68	159	70	269			
	52040-18	52.0	40	68	162	70	272			
	52540-18	52.5	40	68	162	70	272			
	53040-18	53.0	40	68	165	70	275			
	53540-18	53.5	40	68	165	70	275			
	54040-18	54.0	40	68	168	70	278			
	54540-18	54.5	40	68	168	70	278			
	55040-18	55.0	40	68	171	70	281			
	55540-18	55.5	40	68	171	70	281	SP□T180510-□□	FTNA0511	TW20-100
	56040-18	56.0	40	68	174	70	286	XO□T180508-□□	TINAOSTI	17720-100
	56540-18	56.5	40	68	174	70	286			
	57040-18	57.0	40	68	178	70	290			
	57540-18	57.5	40	68	178	70	290			
	58040-18	58.0	40	68	182	70	294			
	58540-18	58.5	40	68	182	70	294			
	59040-18	59.0	40	68	186	70	298			
	59540-18	59.5	40	68	186	70	298			
	60040-18	60.0	40	68	190	70	302			
	60540-18	60.5	40	68	190	70	302			

<sup>→</sup> Applicable inserts F03~04

### King Drill

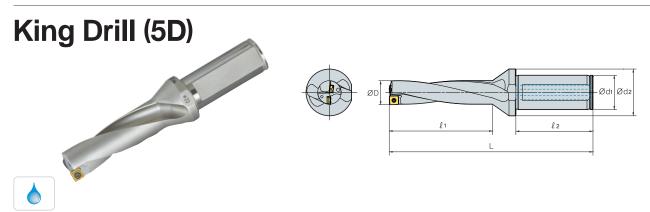


	Designation	ØD	Ød <sub>1</sub>	Ød <sub>2</sub>	Q 1	Q <sub>2</sub>	L	Insert	Screw	Wrench
4D	12020-04	12.0	20	25	51	50	115			
	12520-04	12.5	20	25	51	50	115	SP□T040204-□□		
	13020-04	13.0	20	25	55	50	119	XO□T040204-□□	FTNA0204	TW06P
	13520-04	13.5	20	25	55	50	119	-		
	14020-05	14.0	20	25	59	50	124			
	14520-05	14.5	20	25	59	50	124	OD TO 5000 4 00	FTNA0204	
	15020-05	15.0	20	25	63	50	129	SP□T050204-□□		TW06P
	15520-05	15.5	5.5 20 25 63 50 129 XOLI1050204-L	XO□T050204-□□						
	16020-05	16.0	20	25	67	50	133	-		
	16525-06	16.5	25	34	67	56	139			
	17025-06	17.0	25	34	71	56	143			
	17525-06	17.5	25	34	71	56	143	000700005		
	18025-06	18.0	25	34	75	56	148	SP□T060205-□□	FTKA02206S	TW07P
	18525-06	18.5	25	34	75	56	148	XO□T060204-□□		
	19025-06	19.0	25	34	79	56	152			
	19525-06	19.5	25	34	79	56	152	-		
	20025-07	20.0	25	34	83	56	158			TW07S
	20525-07	20.5	25	34	83	56	158	-		
	21025-07	21.0	25	34	87	56	162	-		
	21525-07	21.5	25	34	87	56	162	SP□T07T208-□□		
	22025-07	22.0	25	34	91	56	166	XO□T07T205-□□	FTKA02565	
	22525-07	22.5	25	34	91	56	166			
	23025-07	23.0	25	34	95	56	172			
	23525-07	23.5	25	34	95	56	172	-		
	24032-09	24.0	32	44	99	60	181			
	24532-09	24.5	32	44	99	60	181	-		
	25032-09	25.0	32	44	103	60	185			
	25532-09	25.5	32	44	103	60	185	-		
	26032-09	26.0	32	44	107	60	189			
	26532-09	26.5	32	44	107	60	189	SP□T090308-□□		
	27032-09	27.0	32	44	111	60	194	XO□T090305-□□	FTKA0307	TW09S
	27532-09	27.5	32	44	111	60	194			
	28032-09	28.0	32	44	115	60	199			
	28532-09	28.5	32	44	115	60	199	1		
	29032-09	29.0	32	44	119	60	203			
	29532-09	29.5	32	44	119	60	203	1		
	30032-11	30.0	32	44	123	60	210			
	30532-11	30.5	32	44	123	60	210			
	31032-11	31.0	32	44	127	60	214			
	31532-11	31.5	32	44	127	60	214			
	32032-11	32.0	32	44	131	60	218			
	32532-11	32.5	32	44	131	60	218	SP□T11T308-□□	FTIMAGGEGG	T1
	33032-11	33.0	32	44	135	60	223	XO□T11T306-□□	FTKA03508	TW15S
	33532-11	33.5			60	223	1			
	34032-11	34.0	32	44	139	60	227			
	34532-11	34.5	32	44	139	60	227			
	35032-11	35.0	32	44	143	60	231			
	35532-11	35.5	32	44	143	60	231	-		



									Carren	14/
	Designation	ØD	Ød <sub>1</sub>	$\emptyset d_2$	Q 1	Q 2	L	Insert	Screw	Wrench
(4D	36040-13	36.0	40	48	148	70	248			
	36540-13	36.5	40	48	148	70	248	-		
	37040-13	37.0	40	48	152	70	252			
	37540-13	37.5	40	48	152	70	252			
	38040-13	38.0	40	48	156	70	257			
	38540-13	38.5	40	48	156	70	257			
	39040-13	39.0	40	48	160	70	261	SP□T130410-□□	=======================================	T144.50
	39540-13	39.5	40	48	160	70	261	XO□T130406-□□	FTKA0410	TW15S
	40040-13	40.0	40	48	164	70	266			
	40540-13	40.5	40	48	164	70	266	-		
	41040-13	41.0	40	48	168	70	270			
	41540-13	41.5	40	48	168	70	270	-		
	42040-13	42.0	40	48	172	70	275			
	42540-13	42.5	40	48	172	70	275			
	43040-15	43.0	40	58	177	70	282			TW20S
	43540-15	43.5	40	58	177	70	282			
	44040-15	44.0	40	58	181	70	286		FTNC04511	
	44540-15	44.5	40	58	181	70	286	SP□T15M510-□□		
	45040-15	45.0	40	58	185	70	291			
	45540-15	45.5	40	58	185	70	291			
	46040-15	46.0	40	58	189	70	295			
	46540-15	46.5	40	58	189	70	295			
	47040-15	47.0	40	58	193	70	300	XO□T15M508-□□		
	47540-15	47.5	40	58	193	70	300	XOLITOWOOO-LL		
	48040-15	48.0	40	58	197	70	304			
	48540-15	48.5	40	58	197	70	304	-		
	49040-15	49.0	40	58	201	70	308			
	49540-15	49.5	40	58	201	70	308			
	50040-15	50.0	40	58	205	70	312			
	50540-15	50.5	40	58	205	70	312			
	51040-18	51.0	40	68	210	70	320			
	51540-18	51.5	40	68	210	70	320			
	52040-18	52.0	40	68	214	70	324			
	52540-18	52.5	40	68	214	70	324			
	53040-18	53.0	40	68	218	70	328			
	53540-18	53.5	40	68	218	70	328			
	54040-18	54.0	40	68	222	70	332			
	54540-18	54.5	40	68	222	70	332			
	55040-18	55.0	40	68	226	70	336			
	55540-18	55.5	40	68	226	70	336	SP□T180510-□□	FTNA0511	TW20-10
	56040-18	56.0	40	68	230	70	342	XO□T180508-□□	HCUMINI	1 VVZU-1U
	56540-18	56.5	40	68	230	70	342			
	57040-18	57.0	40	68	235	70	347			
	57540-18	57.5	40	68	235	70	347			
	58040-18	58.0	40	68	240	70	352			
	58540-18	58.5	40	68	240	70	352			
	59040-18	59.0	40	68	245	70	357			
	59540-18	59.5	40	68	245	70	357			
	60040-18	60.0	40	68	250	70	362			
	60540-18	60.5	40	68	250	70	362			

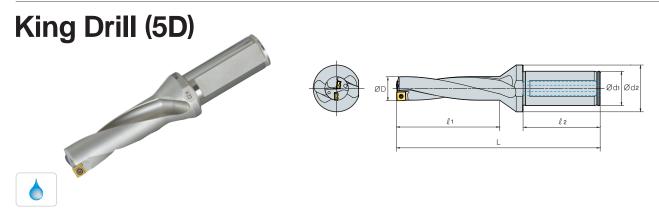
### King Drill



									Screw	Wrench
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	Insert		f
K5D	12020-04	12.0	20	25	63	50	127			
	12520-04	12.5	20	25	63	50	127	SP□T040204-□□	FTNA0204	TW06F
	13020-04	13.0	20	25	68	50	132	XO□T040204-□□	FTNA0204	1 44005
	13520-04	13.5	20	25	68	50	132			
	14020-05	14.0	20	25	73	50	138			
	14520-05	<b>0-05</b> 14.5 20 25 73 50 138 SP□T050204-□□	SP□T050204-□□							
	15020-05	15.0	20	25	78	50	144		FTNA0204	TW06F
	15520-05	15.5	20	25	78	50	144	XO□T050204-□□		
	16020-05	16.0	20	25	83	50	149			
	16525-06	16.5	25	34	83	56	155			
	17025-06	17.0	25	34	88	56	160			
	17525-06	17.5	25	34	88	56	160	SP□T060205-□□		
	18025-06	18.0	25	34	93	56	166		FTKA02206S	TW07F
	18525-06	18.5	25	34	93	56	166	XO□T060204-□□		
	19025-06	19.0	25	34	98	56	171			
	19525-06	19.5	25	34	98	56	171			
	20025-07	20.0	25	34	103	56	178		FTKA02565	TW07S
	20525-07	20.5	25	34	103	56	178	1		
	21025-07	21.0	25	34	108	56	183			
	21525-07	21.5	25	34	108	56	183	SP□T07T208-□□   XO□T07T205-□□		
	22025-07	22.0	25	34	113	56	188		F1KA02363	10073
	22525-07	22.5	25	34	113	56	188			
	23025-07	23.0	25	34	118	56	195			
	23525-07	23.5	25	34	118	56	195			
	24032-09	24.0	32	44	123	60	205			
	24532-09	24.5	32	44	123	60	205			
	25032-09	25.0	32	44	128	60	210			
	25532-09	25.5	32	44	128	60	210	-		
	26032-09	26.0	32	44	133	60	215			
	26532-09	26.5	32	44	133	60	215	SP□T090308-□□	FTKA0307	TW095
	27032-09	27.0	32	44	138	60	221	XO□T090305-□□	FINAUSUI	1 1 1 1 1 1 1
	27532-09	27.5	32	44	138	60	221			
	28032-09	28.0	32	44	143	60	227			
	28532-09	28.5	32	44	143	60	227			
	29032-09	29.0	32	44	148	60	232			
	29532-09	29.5	32	44	148	60	232			
	30032-11	30.0	32	44	153	60	240			
	30532-11	30.5	32	44	153	60	240			
	31032-11	31.0	32	44	158	60	245			
	31532-11	31.5	32	44	158	60	245			
	32032-11	32.0	32	44	163	60	250			
	32532-11	32.5	32	44	163	60	250	SP□T11T308-□□	ETKAOSEOS	T\\\\
	33032-11	33.0	32	44	168	60	256	XO□T11T306-□□	FTKA03508	TW155
	33532-11	33.5	32	44	168	60	256	XOLITI1000 LL		
	34032-11	34.0	32	44	173	60	261			
	34532-11	34.5	32	44	173	60	261			
	35032-11	35.0	32	44	178	60	266			
	35532-11	35.5	32	44	178	60	266			

<sup>◆</sup> Applicable inserts F03~04

(mm)



	Designation	ØD	Ød <sub>1</sub>	Ød <sub>2</sub>	Q 1	Q 2	L	Insert	Screw	Wrench
K5D	36040-13	36.0	40	48	184	70	284			
	36540-13	36.5	40	48	184	70	284			
	37040-13	37.0	40	48	189	70	289			
	37540-13	37.5	40	48	189	70	289			
	38040-13	38.0	40	48	194	70	295			
	38540-13	38.5	40	48	194	70	295			
	39040-13	39.0	40	48	199	70	300	SP□T130410-□□	FTKA0410	
	39540-13	39.5	40	48	199	70	300	XO□T130406-□□		TW15S
	40040-13	40.0	40	48	204	70	306			
	40540-13	40.5	40	48	204	70	306			
	41040-13	41.0	40	48	209	70	311			
	41540-13	41.5	40	48	209	70	311			
	42040-13	42.0	40	48	214	70	317			
	42540-13	42.5	40	48	214	70	317			
	43040-15	43.0	40	58	220	70	325			
	43540-15	43.5	40	58	221	70	326	-		
	44040-15	44.0	40	58	225	70	330			
	44540-15	44.5	40	58	225	70	330	-		
	45040-15	45.0	40	58	230	70	336			
	45540-15	45.5	40	58	230	70	336	SP T15M510- XO T15M508- C		
	46040-15	46.0	40	58	235	70	341			
	46540-15	46.5	40	58	235	70	341		ETNIO04544	TM000
	47040-15	47.0	40	58	240	70	347		FTNC04511	TW20S
	47540-15	47.5	40	58	240	70	347			
	48040-15	48.0	40	58	245 70 352					
	48540-15	48.5	40	58	245	70	352			
	49040-15	49.0	40	58	250	70	357			
	49540-15	49.5	40	58	250	70	357			
	50040-15	50.0	40	58	255	70	362			
	50540-15	50.5	40	58	255	70	362			
	51040-18	51.0	40	68	261	70	371			
	51540-18	51.5	40	68	261	70	371			
	52040-18	52.0	40	68	266	70	376			
	52540-18	52.5	40	68	266	70	376			
	53040-18	53.0	40	68	271	70	381			
	53540-18	53.5	40	68	271	70	381			
	54040-18	54.0	40	68	276	70	386			
	54540-18	54.5	40	68	276	70	386			
	55040-18	55.0	40	68	281	70	391			
	55540-18	55.5	40	68	281	70	391	SP□T180510-□□	FTNA0511	TW20-100
	56040-18	56.0	40	68	286	70	398	XO□T180508-□□	1117.0011	17720 100
	56540-18	56.5	40	68	286	70	398			
	57040-18	57.0	40	68	292	70	404			
	57540-18	57.5	40	68	292	70	404			
	58040-18	58.0	40	68	298	70	410			
	58540-18	58.5	40	68	298	70	410			
	59040-18	59.0	40	68	304	70	416			
	59540-18	59.5	40	68	304	70	416			
	60040-18	60.0	40	68	310	70	422			
	60540-18	60.5	40	68	310	70	422			

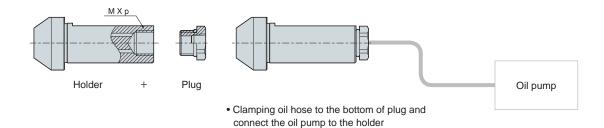


### Technical Inforamation for King Drill (For through coolant system with a lathe)

Drill with through coolant system for general lathe and CNC lathe without through coolant system

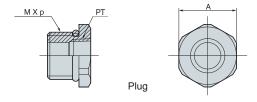
### King Drill (For through coolant system with a lathe)

- 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



(mm)

Tap type	Diameter	Shank dia.	Мхр	Plug
K□D120~16020HP-□□	Ø12.0~Ø16.0	Ø20	M12x1.5	PLG12PT18
K□D161~23525HP-□□	Ø16.1~Ø23.5	Ø25	M16x1.5	PLG16PT18
K□D236~35532HP-□□	Ø23.6~Ø35.5	Ø32	M20x2.0	PLG20PT14
K□D356~60940HP-□□	Ø35.6~Ø60.5	Ø40	M27x2.0	PLG27PT38



• Plug is assembled

Plug type	Мхр	PT tap	Α
PLG12PT18	M12x1.5	1/8	16
PLG16PT18	M16x1.5	1/8	19
PLG20PT14	M20x2.0	1/4	26
PLG27PT38	M27x2.0	3/8	35

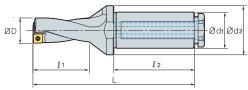


### King Drill (2D)

### For through coolant system with a lathe









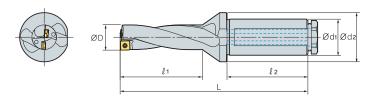
										(mm
	Desiagnation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	Insert	Screw	Wrench
K2D	13020HP-04	13.0	20	25	29	50	93	SP□T040204-□□	FTNA0204	TW06P
	13520HP-04	13.5	20	25	29	50	93	XO□T040204-□□		
	14020HP-05	14.0	20	25	31	50	96	SP□T050204-□□		
	15020HP-05	15.0	20	25	33	50	99	XO□T050204-□□	FTNA0204	TW06P
	16020HP-05	16.0	20	25	35	50	101	XOL 1030204-LL		
	17025HP-06	17.0	25	34	37	56	109	SP□T060205-□□	FTKA02206S	TW07P
	18025HP-06	18.0	25	34	39	56	112	XO\\(\tau\)1060205-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
	19025HP-06	19.0	25	34	41	56	114	XO_1060204		
	20025HP-07	20.0	25	34	43	56	118		FTIMAGOSOS	TW07S
	21025HP-07	21.0	25	34	45	56	120	SP□T07T208-□□		
	22025HP-07	22.0	25	34	47	56	122	XO□T07T205-□□	FTKA02565	10075
	23025HP-07	23.0	25	34	49	56	126			
	24032HP-09	24.0	32	44	51	60	133			
	25032HP-09	25.0	32	44	53	60	135			
	26032HP-09	26.0	32	44	55	60	137	SP_T090308 XO_T090305	ETK A 0 2 0 7	TW09S
	27032HP-09	27.0	32	44	57	60	140		FTKA0307	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	28032HP-09	28.0	32	44	59	60	143			
	29032HP-09	29.0	32	44	61	60	145			

<sup>◆</sup> Applicable inserts F03~04

### King Drill (3D)

### For through coolant system with a lathe





										(mm)
	Designation	ØD	Ød <sub>1</sub>	Ød <sub>2</sub>	Q 1	Q 2	L	Insert	Screw	Wrench
K3D	13020HP-04	13.0	20	25	42	50	106	SP□T040204-□□	FTNIA 0004	TWOCD
	13520HP-04	13.5	20	25	42	50	106	XO□T040204-□□	FTNA0204	TW06P
	14020HP-05	14.0	20	25	45	50	110			
	14520HP-05	14.5	20	25	45	50	110	CD TOFOCOA TO		
	15020HP-05	15.0	20	25	48	50	114	SP□T050204-□□ XO□T050204-□□	FTNA0204	TW06P
	15520HP-05	15.5	20	25	48	50	114	XU_1050204		
	16020HP-05	16.0	20	25	51	50	117			
	16525HP-06	16.5	25	34	51	56	123			
	17025HP-06	17.0	25	34	54	56	126			
	17525HP-06	17.5	25	34	54	56	126	CD TOCOME TO		
	18025HP-06	18.0	25	34	57	56	130	SP□T060205-□□ XO□T060204-□□	FTKA02206S	TW07P
	18525HP-06	18.5	25	34	57	56	130	XO_1000204		
	19025HP-06	19.0	25	34	60	56	133			
	19525HP-06	19.5	25	34	60	56	133			
	20025HP-07	20.0	25	34	63	56	138		FTKA02565	
	20525HP-07	20.5	25	34	63	56	138			
	21025HP-07	21.0	25	34	66	56	141			
	21525HP-07	21.5	25	34	66	56	141	SP□T07T208-□□		TW07S
	22025HP-07	22.0	25	34	69	56	144	XO□T07T205-□□		10075
	22525HP-07	22.5	25	34	69	56	144			
	23025HP-07	23.0	25	34	72	56	149			
	23525HP-07	23.5	25	34	72	56	149			
	24032HP-09	24.0	32	44	75	60	157			
	24532HP-09	24.5	32	44	75	60	157			
	25032HP-09	25.0	32	44	78	60	160			
	25532HP-09	25.5	32	44	78	60	160			
	26032HP-09	26.0	32	44	81	60	163			
	26532HP-09	26.5	32	44	81	60	163	SP□T090308-□□	FTKA0307	TW09S
	27032HP-09	27.0	32	44	84	60	167	XO□T090305-□□	1 TRAUSUT	1 44030
	27532HP-09	27.5	32	44	84	60	167			
	28032HP-09	28.0	32	44	87	60	171			
	28532HP-09	28.5	32	44	87	60	171			
	29032HP-09	29.0	32	44	90	60	174			
	29532HP-09	29.5	32	44	90	60	174			

<sup>→</sup> Applicable inserts F03~04



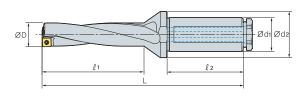
(mm)

### King Drill (4D)

### For through coolant system with a lathe







										(1111
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q <sub>2</sub>	L	Insert	Screw	Wrench
K4D	13020HP-04	13.0	20	25	55	50	119	SP□T040204-□□	FTNA0204	TW06P
	13520HP-04	13.5	20	25	55	50	119	XO□T040204-□□	FTNAU2U4	10000
	<b>14020HP-05</b> 14.0 20 25 59 50 124	SP□T050204-□□								
	15020HP-05	15.0	20	25	63	50	129	XO T050204-	FTNA0204	TW06P
	16020HP-05	16.0	20	25	67	50	133	XOL 1030204-LL		
	17025HP-06	17.0	25	34	71	56	143	SP T060205-	FTKA02206S	TW07P
	18025HP-06	18.0	25	34	75	56	148	XO\\(\tau\)1060205-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
	19025HP-06	19.0 25 34 79 56 152 XOLITO60204-L	XOL 1000204-LL							
	20025HP-07	20.0	25	34	83	56	158		FTKA02565	TW07S
	21025HP-07	21.0	25	34	87	56	162	SP□T07T208-□□		
	22025HP-07	22.0	25	34	91	56	166	XO□T07T205-□□		10073
	23025HP-07	23.0	25	34	95	56	172			
	24032HP-09	24.0	32	44	99	60	181			
	25032HP-09	25.0	32	44	103	60	185			
	26032HP-09	26.0	32	44	107	60	189	SP T090308- XO T090305-	FTKA0307	TWOOS
	27032HP-09	27.0	32	44	111	60	194		r I NAUSU/	TW09S
	28032HP-09	28.0	32	44	115	60	199			
	29032HP-09	29.0	32	44	119	60	203	1		

<sup>→</sup> Applicable inserts F03~04



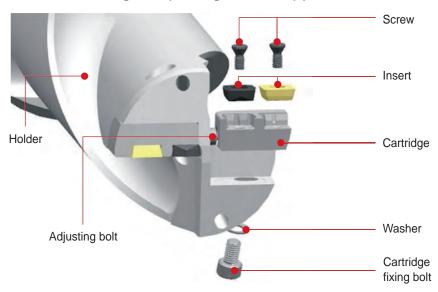
### Technical Information for King Drill (For large diameter drilling)

High rigidity drill produces cost efficiency due to cartridge replacement

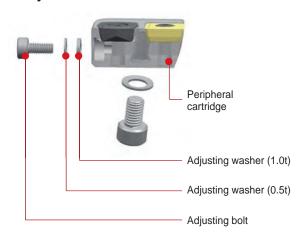
### King Drill (For large diameter drilling)

- Cartridge type for Ø61~Ø100 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

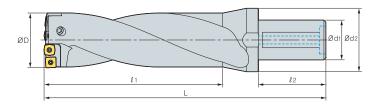




Adjustment	Adjusting washer	Adjusting washer									
Ø (mm)	Designation	Width (mm)									
1	WA0305	0.5									
2	WA0310	1.0									
3	WA0305 + WA0310	1.5									
4	WA0310 x 2	2.0									
5	WA0305 + WA0310 x 2	2.5									

<sup>\*</sup> Adjusting washer adjusts the drilling diameter within 5 mm

# **King Drill**





											(mm
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q <sub>1</sub>	Q <sub>2</sub>	L	Cart	ridge	Screw	Wrench
	Designation	90	⊌u₁	юu <sub>2</sub>	¥.1	¥ 2		Internal	External		
K2D	616550-11	61~65	50	80	130	80	255	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	65~70	50	88	140	80	265	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	70~75	50	88	150	80	275	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	75~80	50	88	160	80	285	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	80~85	50	88	170	80	295	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	85~90	50	95	180	80	305	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	90~95	50	95	190	80	315	KDC9095C	KDC9095P	FTNC04511	TW20S
	9510050-18	95~100	50	95	200	80	325	KDC95100C	KDC95100P	FTNA0511	TW20-100
K3D	616550-11	61~65	50	80	195	80	320	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	65~70	50	88	210	80	335	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	70~75	50	88	225	80	350	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	75~80	50	88	240	80	365	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	80~85	50	88	255	80	380	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	85~90	50	95	270	80	395	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	90~95	50	95	285	80	410	KDC9095C	KDC9095P	FTNC04511	TW20S
	9510050-18	95~100	50	95	300	80	425	KDC95100C	KDC95100P	FTNA0511	TW20-100
K4D	616550-11	61~65	50	80	260	80	385	KDC6165C	KDC6165P	FTKA03508	TW15S
	657050-13	65~70	50	88	280	80	405	KDC6570C	KDC6570P	FTKA0410	TW15S
	707550-13	70~75	50	88	300	80	425	KDC7075C	KDC7075P	FTKA0410	TW15S
	758050-13	75~80	50	88	320	80	445	KDC7580C	KDC7580P	FTKA0410	TW15S
	808550-15	80~85	50	88	340	80	465	KDC8085C	KDC8085P	FTNC04511	TW20S
	859050-15	85~90	50	95	360	80	485	KDC8590C	KDC8590P	FTNC04511	TW20S
	909550-15	90~95	50	95	380	80	505	KDC9095C	KDC9095P	FTNC04511	TW20S
	9510050-18	95~100	50	95	400	80	525	KDC95100C	KDC95100P	FTNA0511	TW20-100

<sup>→</sup> Applicable inserts F03~04

### Parts

Carti	ridge	Range			Screw	Wrench		
Internal	External	(Ø)	Designation	Quantity	Designation	Quantity		wrench
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



## **Technical Information for KED Plus Drill**

#### KORLOY indexable new generation economical drill



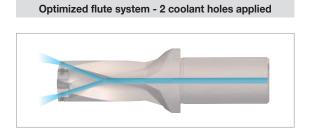
- Economical drill with good chip control due to optimal chip flute enlarging the space for chip flow
- Stable machining due to optimal shape and cutting edge arrangement of central and peripheral inserts

#### Code system



#### 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 optimalized 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

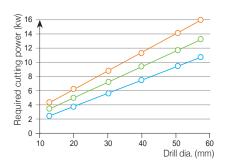
Chip breaker	Р	D	L	D	N	D	RD
Features	- Universal - At medium speed a	and medium feed	Superior chip of machining mile stainless steel     Light cutting (a speed and low	I steel and	Sharp cutting ealuminum mack     Insert surface I high quality res     E Class Toleral	hining ouffed for sult	Improved chipping resistance     Excellent performance in case of frequent fracture and chipping on the cutting edge
Insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Peripheral insert	Central insert	Central insert
Shape						9	
Grades for workpiece	NC5330: P, M, K PC3700: P PC5300: P, M, K, S PC6510: K PC9540: P, M, S	PC5300: P, M, K, S PC9540: P, M, S	PC533	35: P, M	НО	1: N	PC5300: P,M,K,S

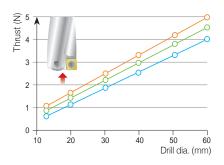
### Required cutting power

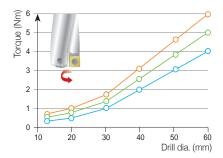
■ Workpiece SCM440 (240HB)

Cutting vc (m/min) = 100, Through coolant system conditions





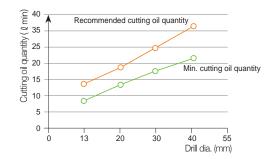




\* Cutting force shown as the above is base on drilling in facilities with enough rigidity and power

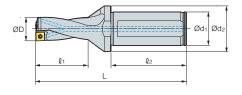
### Cutting oil quantity

- 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





D	rill dia.	Ø12~Ø29	Ø30~Ø45	Ø46~Ø60.5
20. 20.	Drill tolerance (ØD)	0~-0.15	0~-0.15	0~-0.15
2D~3D	Hole tolerance	+0.2~-0.1	+0.25~-0.1	+0.28~-0.1
4D~5D	Drill tolerance (ØD)	0~-0.15	0~-0.15	0~-0.15
40~50	Hole tolerance	+0.25~-0.05	+0.3~-0.05	+0.33~-0.05

# F

## **Technical Information for KED Plus Drill**

### Application examples

■ Workpiece Carbon steel (SM440)

Cutting vc (m/min) = 150, fn (mm/rev) = 0.1 conditions ap (mm) = 80 (through hole), wet

■ Tools Inserts SPMT060205-PD (PC3700)

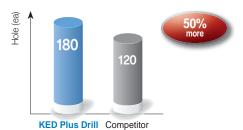
XOMT060205-PD (PC5300)

Holder E4D-18025-06-P

(Drill dia. = Ø18 mm)







■ Workpiece Stainless steel (STS316)

■ **Cutting** vc (m/min) = 120, fn (mm/rev) = 0.06

conditions ap (mm) = 42, wet

■ Tools Inserts SPMT060205-PD (PC3700)

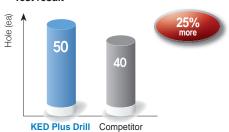
XOMT060204-PD (PC3500)

Holder E3D-18025-06-P

(Drill dia. = Ø18 mm)



#### ■ Test result



#### Recommended cutting condition

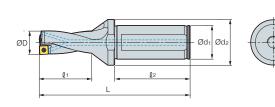
		Workpiece			Insert			Aspect ratio (L/D) = 2D, 3D, 4D				
	100	Montoniana	Hardness	Chip	Gra	ade	vc (m/min)		Feed rate (m	m/rev) per d	rill dia. (mm)	)
	ISO	Workpiece	(HB)	breaker	Central	Peripheral		Ø12~Ø16	Ø17~Ø23	Ø24~Ø29	) per drill dia. (mm)  -Ø29 Ø30~Ø42 Ø4:  ~0.08 0.04~0.08 0.0  ~0.16 0.06~0.16 0.0  ~0.08 0.04~0.08 0.0  ~0.12 0.06~0.14 0.0  ~0.14 0.06~0.16 0.0  ~0.12 0.06~0.14 0.0  ~0.12 0.06~0.14 0.0  ~0.10 0.06~0.12 0.0  ~0.11 0.06~0.12 0.0  ~0.12 0.06~0.14 0.0  ~0.13 0.05~0.15 0.0  ~0.07 0.04~0.08 0.0  ~0.07 0.04~0.08 0.0  ~0.07 0.04~0.08 0.0  ~0.01 0.05~0.12 0.0  ~0.10 0.05~0.12 0.0  ~0.10 0.04~0.10 0.0  ~0.10 0.04~0.10 0.0  ~0.11 0.06~0.14 0.0  ~0.12 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0  ~0.012 0.06~0.14 0.0	Ø43~Ø60
				LD	PC5335	PC5335	120 (60~170)					
		Low carbon steel	80~180	PD/	PC5300	PC3500	150 (120~180)	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08	0.04~0.08
	Carbon steel	0.00.		RD	FC5500	NC5330	180 (140~220)					
		High carbon	180~280	PD	PC5300	PC3500	120 (90~150)	0.04~0.10	0.04~0.12	0.05~0.16	0.06~0.16	0.06~0.18
		steel	100~200	רם	FC5500	NC5330	150 (110~190)	0.04~0.06	0.04~0.07	0.04~0.08	0.04~0.08	0.04~0.08
P				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
		Low alloy steel	140~260	PD	PC5300	PC3500	150 (120~170)	0.06~0.12	0.06~0.12	0.06~0.14	0.06~0.16	0.06~0.16
	Alloy	0.00.		ן דט	FC5500	NC5330	180 (140~210)	0.06~0.08	0.06~0.08	0.06~0.10	0.06~0.12	0.06~0.12
	steel	Low alloy heattreated 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
		High alloy steel	260~320	PD	PC5300	PC3500	100 (50~160)	0.05~0.11	0.05~0.11	0.05~0.13	0.05~0.15	0.05~0.15
		High alloy heattreated 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
				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
M	Stainless steel	Stainless steel	135~275	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
					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	PC6510	190 (150~250)	0.04~0.12	0.05~0.14	0.06~0.18	0.10~0.22	0.10~0.26
, r	Cast IIOII	Ductile cast iron	150~230	PD	PC5300	PC6510	130 (100~160)	0.04~0.07	0.04~0.08	0.04~0.10	0.05~0.12	0.05~0.12
		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
	Heat	INFIRM TESISHING Alloy	130~400	ן דט	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
S	resisting	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
	alloy	TI-fleat resisting alloy	130~400	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
		High hardened steel	over 400	PD	PC5300	PC5300	40 (20~80)	0.04~0.05	0.04~0.06	0.04~0.08	0.04~0.08	0.04~0.08
N	Non-ferrous	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
IN	metal	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
- $\bullet$  In interrupted machining part, reduce 30~50% of feed from the above machining around interrupted part

# **KED Plus Drill(2D)**



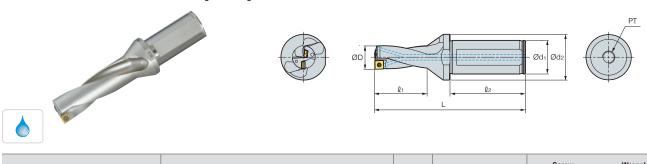




	1.	_	_	_

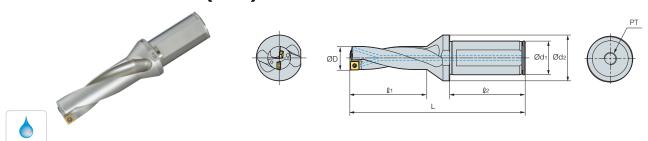
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	PT	Insert	Screw	Wrench
2D-	12020-04-P	12.0	20	25	27	50	91				•
	12520-04-P	12.5	20	25	27	50	91		SP□T040204-□□		
	13020-04-P	13.0	20	25	29	50	93		XO□T040204-□□		
	13520-04-P	13.5	20	25	29	50	93				
	14020-05-P	14.0	20	25	31	50	96			FTNA0204	TW06P
	14520-05-P	14.5	20	25	31	50	96				
	15020-05-P	15.0	20	25	33	50	99		SP_T050204-		
	15520-05-P	15.5	20	25	33	50	99		XO□T050204-□□		
	16020-05-P	16.0	20	25	35	50	101				
	16525-06-P	16.5	25	34	35	56	107				
	17025-06-P	17.0	25	34	37	56	109				
	17525-06-P	17.5	25	34	37	56	109		000700000		
	18025-06-P	18.0	25	34	39	56	112	1/8	SP_T060205	FTKA02206S	TW07P
	18525-06-P	18.5	25	34	39	56	112		XO□T060204-□□		
	19025-06-P	19.0	25	34	41	56	114				
	19525-06-P	19.5	25	34	41	56	114				
	20025-07-P	20.0	25	34	43	56	118				
	20525-07-P	20.5	25	34	43	56	118		SP T07T208- XO T07T205-		
	21025-07-P	21.0	25	34	45	56	120				TW07S
	21525-07-P	21.5	25	34	45	56	120				
	22025-07-P	22.0	25	34	47	56	122			FTKA02565	
	22525-07-P	22.5	25	34	47	56	122				
	23025-07-P	23.0	25	34	49	56	126				
	23525-07-P	23.5	25	34	49	56	126				
	24032-09-P	24.0	32	44	51	60	133				
	24532-09-P	24.5	32	44	51	60	133				
	25032-09-P	25.0	32	44	53	60	135				
	25532-09-P	25.5	32	44	53	60	135				
	26032-09-P	26.0	32	44	55	60	137				
	26532-09-P	26.5	32	44	55	60	137		SP□T090308-□□	FT// 1000	TI. 1/200
	27032-09-P	27.0	32	44	57	60	140		XO□T090305-□□	FTKA0307	TW09S
	27532-09-P	27.5	32	44	57	60	140				
	28032-09-P	28.0	32	44	59	60	143				
	28532-09-P	28.5	32	44	59	60	143				
	29032-09-P	29.0	32	44	61	60	145				
	29532-09-P	29.5	32	44	61	60	145				
	30032-11-P	30.0	32	44	63	60	150	1/4			
	30532-11-P	30.5	32	44	63	60	150				
	31032-11-P	31.0	32	44	65	60	152				
	31532-11-P	31.5	32	44	65	60	152				
	32032-11-P	32.0	32	44	67	60	154		SP□T11T308-□□ XO□T11T306-□□		
	32532-11-P	32.5	32	44	67	60	154			ETIVA COSCO	T14//-C
	33032-11-P	33.0	32	44	69	60	157			FTKA03508	TW15S
	33532-11-P	33.5	32	44	69	60	157				
	34032-11-P	34.0	32	44	71	60	159				
	34532-11-P	34.5	32	44	71	60	159				
	35032-11-P	35.0	32	44	73	60	161				
	35532-11-P	35.5	32	44	73	60	161				

# **KED Plus Drill(2D)**



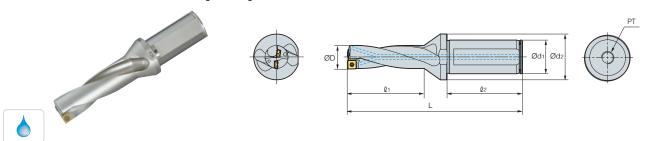
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	PT	Insert	Screw	Wrench
2D-	36040-13-P	36.0	40	48	76	70	176				
	36540-13-P	36.5	40	48	76	70	176				
	37040-13-P	37.0	40	48	78	70	178				
	37540-13-P	37.5	40	48	78	70	178				
	38040-13-P	38.0	40	48	80	70	181				
	38540-13-P	38.5	40	48	80	70	181				TW15S
	39040-13-P	39.0	40	48	82	70	183		SP□T130410-□□	FTKA0410	
	39540-13-P	39.5	40	48	82	70	183		XO□T130406-□□	1 11XA0410	1 1 1 1 3 3
	40040-13-P	40.0	40	48	84	70	186				
	40540-13-P	40.5	40	48	84	70	186				
	41040-13-P	41.0	40	48	86	70	188				
	41540-13-P	41.5	40	48	86	70	188				
	42040-13-P	42.0	40	48	88	70	191				
	42540-13-P	42.5	40	48	88	70	191				
	43040-15-P	43.0	40	58	91	70	196				
	43540-15-P	43.5	40	58	91	70	196				
	44040-15-P	44.0	40	58	93	70	198				
	44540-15-P	44.5	40	58	93	70	198				
	45040-15-P	45.0	40	58	95	70	201				
	45540-15-P	45.5	40	58	95	70	201				
	46040-15-P	46.0	40	58	97	70	203				TW20S
	46540-15-P	46.5	40	58	97	70	203		SP□T15M510-□□	FTNC04511	
	47040-15-P	47.0	40	58	99	70	206		XO□T15M508-□□	FINCU4511	
	47540-15-P	47.5	40	58	99	70	206				
	48040-15-P	48.0	40	58	101	70	208	1/4			
	48540-15-P	48.5	40	58	101	70	208	1/4			
	49040-15-P	49.0	40	58	103	70	210				
	49540-15-P	49.5	40	58	103	70	210				
	50040-15-P	50.0	40	58	105	70	212				
	50540-15-P	50.5	40	58	105	70	212				
	51040-18-P	51.0	40	68	108	70	218				
	51540-18-P	51.5	40	68	108	70	218				
	52040-18-P	52.0	40	68	110	70	220				
	52540-18-P	52.5	40	68	110	70	220				
	53040-18-P	53.0	40	68	112	70	222				
	53540-18-P	53.5	40	68	112	70	222				
	54040-18-P	54.0	40	68	114	70	224				
	54540-18-P	54.5	40	68	114	70	224				
	55040-18-P	55.0	40	68	116	70	226				
	55540-18-P	55.5	40	68	116	70	226		SP□T180510-□□	FTNA0511	TW20-10
	56040-18-P	56.0	40	68	118	70	230		XO□T180508-□□	TINAUUTI	1 4420-10
	56540-18-P	56.5	40	68	118	70	230				
	57040-18-P	57.0	40	68	121	70	233				
	57540-18-P	57.5	40	68	121	70	233				
	58040-18-P	58.0	40	68	124	70	236				
	58540-18-P	58.5	40	68	124	70	236				
	59040-18-P	59.0	40	68	127	70	239				
	59540-18-P	59.5	40	68	127	70	239	1			
	60040-18-P	60.0	40	68	130	70	242	1			
	60540-18-P	60.5	40	68	130	70	242				

# **KED Plus Drill(3D)**



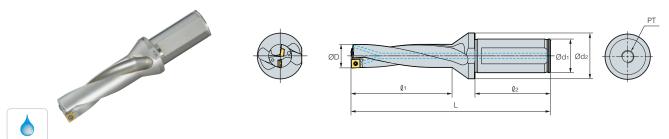
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	PT	Insert	Screw	Wrench
BD-	12020-04-P	12.0	20	25	39	50	103				
	12520-04-P	12.5	20	25	39	50	103		SP□T040204-□□		
	13020-04-P	13.0	20	25	42	50	106		XO□T040204-□□		
	13520-04-P	13.5	20	25	42	50	106				
	14020-05-P	14.0	20	25	45	50	110			FTNA0204	TW06P
	14520-05-P	14.5	20	25	45	50	110		SP□T050204-□□		
	15020-05-P	15.0	20	25	48	50	114		XO\\[\tau\)T050204-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
	15520-05-P	15.5	20	25	48	50	114		7.00.00020.		
	16020-05-P	16.0	20	25	51	50	117				
	16525-06-P	16.5	25	34	51	56	123				
	17025-06-P	17.0	25	34	54	56	126				
	17525-06-P	17.5	25	34	54	56	126	1/8	SP□T060205-□□		
	18025-06-P	18.0	25	34	57	56	130	, -	XO□T060204-□□	FTKA02206S	TW07P
	18525-06-P	18.5	25	34	57	56	130				
	19025-06-P	19.0	25	34	60	56	133				
	19525-06-P	19.5	25	34	60	56	133				
	20025-07-P	20.0	25	34	63	56	138				
	20525-07-P	20.5	25	34	63	56	138				
	21025-07-P	21.0	25	34	66	56	141				TW07S
	21525-07-P	21.5	25	34	66	56	141		SP□T07T208-□□	FTKA02565	
	22025-07-P 22525-07-P	22.0	25	34	69	56	144		XO□T07T205-□□		
		22.5	25	34	69	56	144				
	23025-07-P	23.0	25	34	72	56	149				
	23525-07-P	23.5	25	34	72	56	149				
	24032-09-P	24.0	32	44	75	60	157				
	24532-09-P	24.5	32	44	75	60	157				
	25032-09-P	25.0	32	44	78	60	160				
	25532-09-P	25.5	32	44	78	60	160				
	26032-09-P	26.0	32	44	81	60	163				
	26532-09-P	26.5	32	44	81	60	163		SP T090308-	FTKA0307	TW09S
	27032-09-P	27.0	32	44	84	60	167		XO□T090305-□□		
	27532-09-P	27.5	32	44	84	60	167				
	28032-09-P	28.0	32	44	87	60	171				
	28532-09-P 29032-09-P	28.5	32	44	87	60	171				
		29.0	32		90	60	174				
	29532-09-P	29.5 30.0	32	44	90	60	174 180	1/4			
	30032-11-P										
	30532-11-P 31032-11-P	30.5	32	44	93 96	60	180 183				
	31532-11-P	31.0	32	44	96	60	183				
		32.0	32	44	96	60	183				
	32032-11-P 32532-11-P	32.5	32	44	99	60	186		SP□T11T308-□□		
	32532-11-P 33032-11-P			44	102		190		XO\ T11T308-\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	FTKA03508	TW15S
	33532-11-P	33.0	32	44	102	60	190		\		
	34032-11-P	34.0	32	44	102	60	190				
	34532-11-P	34.0	32	44	105		193				
		35.0	32	44	105	60	193				
	35032-11-P 35532-11-P	J 33.U	32	44	100	60	190	I	I	I	

# **KED Plus Drill(3D)**



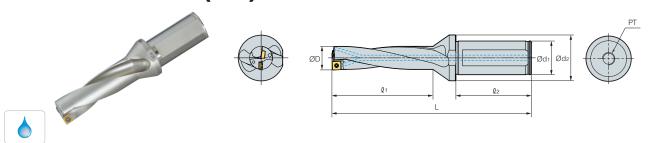
Designation												(mm
35540-13-P		Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	PT	Insert		
37040-13-P 37.5 40 48 115 70 215 37540-13-P 38.5 40 48 118 70 219 38540-13-P 38.5 40 48 118 70 219 38040-13-P 38.5 40 48 118 70 219 38040-13-P 38.5 40 48 118 70 222 385540-13-P 39.5 40 48 121 70 222 49040-13-P 40.0 40 48 124 70 226 49050-13-P 40.0 40 48 124 70 226 49050-13-P 40.0 40 48 127 70 229 41540-13-P 41.5 40 48 127 70 229 42040-13-P 41.5 40 48 127 70 229 42040-13-P 42.5 40 48 130 70 233 42540-13-P 42.5 40 48 130 70 233 42540-13-P 43.5 40 58 134 70 239 44040-15-P 43.5 40 58 137 70 242 45040-15-P 45.5 40 58 137 70 242 45040-15-P 45.5 40 58 140 70 246 45040-15-P 46.5 40 58 140 70 246 45040-15-P 48.0 40 58 143 70 249 45640-15-P 48.5 40 58 140 70 246 45040-15-P 48.0 40 58 140 70 246 45040-15-P 48.0 40 58 140 70 246 45040-15-P 48.0 40 58 140 70 258 45040-15-P 48.5 40 58 140 70 258 45040-15-P 48.5 40 58 149 70 258 45040-15-P 50.0 40 58 165 70 259 50040-15-P 50.5 40 68 159 70 269 50540-18-P 50.5 40 68 159 70 269 50540-18-P 50.5 40 68 159 70 269 50540-18-P 55.0 40 68 159 70 269 50540-18-P 55.0 40 68 159 70 269 50540-18-P 55.0 40 68 165 70 275 53540-18-P 55.0 40 68 159 70 269 55540-18-P 55.0 40 68 168 70 278 55540-18-P 55.0 40 68 171 70 281 55540-18-P 55.0 40 68 178 70 290 55540-18-P 55.0 40 68 171 70 281 55540-18-P 55.0 40 68 178 70 290 55540-18-P 55.0 40 68 171 70 281 55540-18-P 55.0 40 68 178 70 29	E3D-		36.0	40								
37540-13-P 32.5 40 48 115 70 219 38040-13-P 38.0 40 48 118 70 219 38040-13-P 38.5 40 48 118 70 219 38040-13-P 38.5 40 48 1118 70 219 38040-13-P 38.5 40 48 121 70 222 40040-13-P 40.0 40 48 124 70 226 40540-13-P 40.0 40 48 124 70 226 40540-13-P 40.0 40 48 127 70 229 41540-13-P 41.0 40 48 127 70 229 42040-13-P 42.0 40 48 127 70 229 42040-13-P 42.0 40 48 130 70 233 42540-13-P 42.5 40 48 130 70 233 43540-15-P 42.5 40 48 130 70 233 43540-15-P 43.5 40 58 134 70 239 43540-15-P 44.0 40 58 137 70 242 44540-15-P 45.0 40 58 134 70 239 44550-15-P 45.0 40 58 134 70 239 44540-15-P 46.0 40 58 137 70 242 4500-15-P 46.0 40 58 140 70 246 4500-15-P 46.0 40 58 140 70 246 4500-15-P 48.0 40 58 140 70 256 4500-15-P 48.5 40 58 140 70 256 4500-15-P 48.5 40 58 140 70 256 4500-15-P 50.5 40 58 140 70 256 4500-15-P 48.5 40 68 159 70 259 5500-15-P 50.5 40 68 159 70 269 5500-16-P 50.5 40 68 159 70 269 5500-18-P 55.0 40 68 159 70 269 5500-18-P 55.0 40 68 162 70 272 5250-18-P 55.0 40 68 162 70 272 5250-18-P 55.0 40 68 168 70 278 5500-18-P 55.5 40 68 171 70 281 5500-18-P 55.5 40 68 168 70 294 5500-18-P 55.5 40 68 168 70 294 5500-18-P 55.5 40 68 168 70 294 5500-18-P		36540-13-P	36.5	40	48	112	70	212				
38040-13-P 38.5 40 48 118 70 219 38040-13-P 38.5 40 48 118 70 219 39040-13-P 39.5 40 48 121 70 222 40040-13-P 40.0 40 48 121 70 226 405040-13-P 40.0 40 48 124 70 226 405040-13-P 40.5 40 48 127 70 229 415040-13-P 41.0 40 48 127 70 229 415040-13-P 41.0 40 48 127 70 229 415040-13-P 42.5 40 48 130 70 233 42540-13-P 42.5 40 48 130 70 233 42540-13-P 42.5 40 48 130 70 233 43040-15-P 43.0 40 58 134 70 239 44040-15-P 44.0 40 58 137 70 242 45040-15-P 45.5 40 58 140 70 246 45040-15-P 45.5 40 58 140 70 246 45040-15-P 45.5 40 58 140 70 246 45040-15-P 48.0 40 58 140 70 246 45040-15-P 48.0 40 58 140 70 246 45040-15-P 48.0 40 58 140 70 253 47540-15-P 48.0 40 58 140 70 256 45540-15-P 48.5 40 58 140 70 256 45540-15-P 48.5 40 58 140 70 256 45540-15-P 48.5 40 58 140 70 256 45540-15-P 50.0 40 58 140 70 266 45540-15-P 50.0 40 58 155 70 265 50540-15-P 50.5 50 50 58 155 70 262 50540-15-P 50.5 50 68 158 70 275 50040-15-P 50.5 50 68 168 70 275 53540-18-P 55.5 40 68 165 70 275 53540-18-P 55.5 40 68 165 70 275 54040-18-P 55.0 40 68 165 70 275 54040-18-P 55.0 40 68 165 70 275 54040-18-P 55.0 40 68 174 70 266 55540-18-P 55.5 40 68 174 70 266 55540-18-P 55.0 40 68 165 70 275 54040-18-P 55.0 40 68 174 70 266 55540-18-P 55.0 40 68 174 70 266 55540-18-P 55.5 40 68 177 70 266 5540-18-P 55.5 40 68 178 70 290 5540-18-P 55.5 40 68 177 70 266 5540-18-P 55.5 40 68 178 70 290 5540-18-P 55.5 40 68 178 70 290 5540-18-P 55.5 40 68 178 70 290 5540-18-P 55.5 40 68 177 70 266 5540-18-P 55.5 40 68 177 70 266 5540-18-P 55.5 40 68 177 70 266 5540-18-P 55.5 40 68 178 70 290 5540-18-P 55.5 40 68 178 70 290 5540-18-P 55.5 40 68 166 70 298 5540-18-P 55.5 40 68 166 70 298 554			37.0	40	48			215				
38540-13-P 38.5 40 48 118 70 219 39040-13-P 39.0 40 48 121 70 222 39540-13-P 39.5 40 48 121 70 222 40040-13-P 40.0 40 48 124 70 226 40540-13-P 40.5 40 48 127 70 229 41540-13-P 41.0 40 48 127 70 229 41540-13-P 41.0 40 48 127 70 229 41540-13-P 42.0 40 48 127 70 239 42040-13-P 42.0 40 48 130 70 233 42540-13-P 42.0 40 48 130 70 233 43040-15-P 43.0 40 58 134 70 239 43540-15-P 44.0 40 58 137 70 242 44540-15-P 44.5 40 58 137 70 242 44540-15-P 44.5 40 58 137 70 242 44540-15-P 46.5 40 58 140 70 246 45040-15-P 46.0 40 58 143 70 249 45040-15-P 47.5 40 58 140 70 246 45040-15-P 47.0 40 58 143 70 249 45040-15-P 48.6 40 58 149 70 253 47540-15-P 48.6 40 58 149 70 256 48540-15-P 49.0 40 58 152 70 259 49540-15-P 49.0 40 58 152 70 259 49540-15-P 50.0 40 58 155 70 262 50540-15-P 50.0 40 68 150 70 272 52540-18-P 50.5 40 68 162 70 272 52540-18-P 50.5 40 68 168 70 278 5540-18-P 50.5 40 68 174 70 286 55540-18-P 50.5 40 68 174 70 286 55540-18-P 50.5 40 68 174 70 286 55540-18-P 50.5 40 68 178 70 290 57540-18-P 50.5 40 68 174 70 286 55540-18-P 50.5 40 68 186 70 298 55540-18-P 50.5 4			37.5	40	48							
39040-13-P 39.0 40 48 121 70 222   39540-13-P 40.0 40 48 121 70 225   40040-13-P 40.0 40 48 124 70 226   40540-13-P 40.0 40 48 124 70 226   41040-13-P 41.0 40 48 127 70 229   41540-13-P 41.5 40 48 127 70 229   41540-13-P 42.5 40 48 130 70 233   42540-13-P 42.5 40 48 130 70 233   42540-13-P 43.5 40 58 134 70 239   43540-15-P 43.0 40 58 134 70 239   44540-15-P 44.0 40 58 137 70 242   44540-15-P 45.5 40 58 140 70 246   45040-15-P 46.0 40 58 143 70 246   46040-15-P 46.5 40 58 140 70 246   46040-15-P 47.5 40 58 143 70 249   47740-15-P 48.5 40 58 148 70 253   47540-15-P 48.5 40 58 148 70 253   47540-15-P 48.0 40 58 148 70 253   47540-15-P 49.0 58 146 70 253   47540-15-P 49.0 58 146 70 253   47540-15-P 50.5 40 58 152 70 259   49540-15-P 50.0 40 58 152 70 259   59040-15-P 50.0 40 58 152 70 259   59040-15-P 50.0 40 58 155 70 262   51040-16-P 51.0 40 68 159 70 269   51540-18-P 51.5 40 68 162 70 272   53040-18-P 52.5 40 68 162 70 272   53040-18-P 50.3 40 68 162 70 272   53040-18-P 50.5 40 68 162 70 272   55540-18-P 50.5 40 68 162 70 272   55400-18-P 50.5 40 68 162 70 272   55400-18-P 50.5 40 68 162 70 272   55400-18-P 50.5 40 68 171 70 281   55040-18-P 50.5 40 68 178 70 290   55400-18-P 50.5 40 68 186 70 298   55400-18-P 50.5 40 68 182 70 294   55400-18-P 50.5 40 68 182 70 294   55400-18-P 50.5 40 68				40								
39540+13-P		38540-13-P										
39540-13-P		39040-13-P	39.0	40	48						FTKA0410	TW15S
40540-13-P										XO□T130406-□□		
41040-13-P												
41540-13-P												
42040-13-P												
42540-13-P		41540-13-P										
43040-15-P												
43540-15-P		42540-13-P										
44040-15-P				40								
44540-15-P			43.5	40	58	134		239				
45040-15-P			44.0	40	58	137	70	242				
45540-15-P			44.5	40	58	137	70					
46040-15-P				40								
## A6540-15-P		45540-15-P	45.5	40	58	140		246				
47040-15-P		46040-15-P	46.0	40	58	143	70					
47040-15-P		46540-15-P	46.5	40	58	143				SP□T15M510-□□	FTNC04511	TW20S
48040-15-P 48.0 40 58 149 70 256 48540-15-P 48.5 40 58 149 70 256 49040-15-P 49.0 40 58 152 70 259 49540-15-P 50.0 40 58 155 70 262 50540-15-P 50.0 40 58 155 70 262 50540-15-P 50.5 40 58 155 70 262 51040-18-P 51.0 40 68 159 70 269 51540-18-P 52.5 40 68 162 70 272 52540-18-P 53.0 40 68 162 70 275 53540-18-P 53.5 40 68 165 70 275 53540-18-P 54.0 40 68 168 70 278 54540-18-P 55.5 40 68 171 70 281 55540-18-P 55.5 40 68 174 70 286 56540-18-P 57.0 40 68 174 70 286 57040-18-P 57.0 40 68 178 70 290 57540-18-P 57.5 40 68 182 70 294 58540-18-P 58.0 40 68 186 70 298 59040-18-P 58.0 40 68 186 70 298 59040-18-P 59.0 40 68 186 70 298 59540-18-P 59.5 40 68 186 70 298 5960040-18-P 60.0 40 68 186 70 298		47040-15-P	47.0	40						XO□T15M508-□□	111100-011	177200
48540-15-P		47540-15-P	47.5	40	58	146	70	253				
48540-15-P 48.5 40 58 149 70 256 49040-15-P 49.0 40 58 152 70 259 49540-15-P 49.5 40 58 155 70 262 50040-15-P 50.0 40 58 155 70 262 50540-15-P 50.5 40 58 155 70 262 51040-18-P 51.0 40 68 159 70 269 51540-18-P 52.0 40 68 162 70 272 52540-18-P 53.0 40 68 165 70 275 53040-18-P 53.0 40 68 165 70 275 5340-18-P 54.0 40 68 168 70 278 54540-18-P 54.5 40 68 168 70 278 55540-18-P 55.5 40 68 171 70 281 55540-18-P 55.5 40 68 171 70 281 55040-18-P 55.0 40 68 174 70 286 57040-18-P 55.0 40 68 174 70 286 57040-18-P 57.0 40 68 174 70 286 57040-18-P 57.0 40 68 174 70 286 57040-18-P 57.0 40 68 178 70 290 58040-18-P 58.0 40 68 182 70 294 58540-18-P 58.0 40 68 186 70 298 59540-18-P 58.0 40 68 186 70 298 59540-18-P 58.0 40 68 186 70 298 59540-18-P 59.0 40 68 186 70 298 59540-18-P 59.5 40 68 186 70 298			48.0	40	58	149		256	1/4			
49540-15-P			48.5	40	58			256	"'			
50040-15-P       50.0       40       58       155       70       262         50540-15-P       50.5       40       58       155       70       262         51040-18-P       51.0       40       68       159       70       269         51540-18-P       51.5       40       68       162       70       272         52540-18-P       52.0       40       68       162       70       272         53040-18-P       53.0       40       68       165       70       275         534040-18-P       53.5       40       68       168       70       278         54540-18-P       54.5       40       68       168       70       278         55040-18-P       55.5       40       68       171       70       281         55540-18-P       55.5       40       68       171       70       281         55040-18-P       56.5       40       68       174       70       286         57040-18-P       56.5       40       68       174       70       286         57040-18-P       57.5       40       68       178       70       290			49.0	40	58			259				
50540-15-P         50.5         40         58         155         70         262           51040-18-P         51.0         40         68         159         70         269           51540-18-P         51.5         40         68         159         70         269           52040-18-P         52.0         40         68         162         70         272           5340-18-P         52.5         40         68         165         70         275           53540-18-P         53.5         40         68         165         70         275           54040-18-P         54.0         40         68         168         70         278           55040-18-P         55.0         40         68         168         70         278           55540-18-P         55.0         40         68         171         70         281           55640-18-P         56.0         40         68         174         70         286           57040-18-P         56.5         40         68         174         70         286           57040-18-P         57.5         40         68         178         70         290		49540-15-P	49.5	40	58	152	70	259				
51040-18-P     51.0     40     68     159     70     269       51540-18-P     51.5     40     68     159     70     269       52040-18-P     52.0     40     68     162     70     272       52540-18-P     52.5     40     68     162     70     275       53040-18-P     53.0     40     68     165     70     275       5340-18-P     53.5     40     68     168     70     278       54540-18-P     54.5     40     68     168     70     278       55040-18-P     55.5     40     68     171     70     281       55540-18-P     55.5     40     68     171     70     281       55540-18-P     56.5     40     68     174     70     286       56540-18-P     56.5     40     68     174     70     286       57040-18-P     57.0     40     68     174     70     286       57040-18-P     58.0     40     68     174     70     286       58040-18-P     58.0     40     68     178     70     290       58540-18-P     58.5     40     68     182												
51540-18-P     51.5     40     68     159     70     269       52040-18-P     52.0     40     68     162     70     272       52540-18-P     52.5     40     68     162     70     272       53040-18-P     53.0     40     68     165     70     275       53540-18-P     53.5     40     68     165     70     275       54540-18-P     54.5     40     68     168     70     278       55040-18-P     55.0     40     68     171     70     281       56040-18-P     56.0     40     68     174     70     286       56740-18-P     56.5     40     68     174     70     286       57740-18-P     57.5     40     68     174     70     286       57540-18-P     57.5     40     68     174     70     286       57040-18-P     56.5     40     68     178     70     290       58540-18-P     58.0     40     68     182     70     294       58540-18-P     58.5     40     68     182     70     294       59040-18-P     59.0     40     68     186												
52040-18-P 52.0 40 68 162 70 272 52540-18-P 52.5 40 68 162 70 272 53040-18-P 53.0 40 68 165 70 275 53540-18-P 53.5 40 68 165 70 275 54040-18-P 54.0 40 68 168 70 278 55040-18-P 55.0 40 68 168 70 278 55040-18-P 55.5 40 68 171 70 281 55540-18-P 55.5 40 68 174 70 286 5640-18-P 56.0 40 68 174 70 286 57040-18-P 57.0 40 68 174 70 286 57040-18-P 57.5 40 68 178 70 290 57540-18-P 57.5 40 68 178 70 290 58040-18-P 58.0 40 68 182 70 294 58540-18-P 58.5 40 68 182 70 294 58540-18-P 59.0 40 68 182 70 294 59040-18-P 59.0 40 68 186 70 298 59540-18-P 59.5 40 68 186 70 298 60040-18-P 60.0 40 68 190 70 302				40								
52540-18-P         52.5         40         68         162         70         272           53040-18-P         53.0         40         68         165         70         275           53540-18-P         53.5         40         68         165         70         275           54040-18-P         54.0         40         68         168         70         278           55040-18-P         54.5         40         68         171         70         281           55540-18-P         55.5         40         68         171         70         281           56540-18-P         56.5         40         68         174         70         286           57040-18-P         57.0         40         68         178         70         290           57540-18-P         58.0         40         68         178         70         290           58540-18-P         58.5         40         68         182         70         294           58540-18-P         58.5         40         68         182         70         294           59040-18-P         59.0         40         68         186         70         298												
53040-18-P       53.0       40       68       165       70       275         53540-18-P       53.5       40       68       165       70       275         54040-18-P       54.0       40       68       168       70       278         54540-18-P       54.5       40       68       168       70       278         55040-18-P       55.0       40       68       171       70       281         56040-18-P       56.0       40       68       174       70       286         57040-18-P       56.5       40       68       178       70       290         57540-18-P       57.5       40       68       178       70       290         58040-18-P       58.0       40       68       178       70       290         58540-18-P       58.5       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298												
53540-18-P       53.5       40       68       165       70       275         54040-18-P       54.0       40       68       168       70       278         54540-18-P       54.5       40       68       168       70       278         55040-18-P       55.0       40       68       171       70       281         55540-18-P       55.5       40       68       174       70       286         56540-18-P       56.5       40       68       174       70       286         57040-18-P       57.0       40       68       178       70       290         57540-18-P       57.5       40       68       178       70       290         58540-18-P       58.0       40       68       182       70       294         58540-18-P       58.5       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       186       70       298												
54040-18-P       54.0       40       68       168       70       278         54540-18-P       54.5       40       68       168       70       278         55040-18-P       55.0       40       68       171       70       281         55540-18-P       55.5       40       68       174       70       286         56040-18-P       56.0       40       68       174       70       286         57040-18-P       56.5       40       68       178       70       290         57540-18-P       57.5       40       68       178       70       290         58040-18-P       58.0       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302												
54540-18-P       54.5       40       68       168       70       278         55040-18-P       55.0       40       68       171       70       281         55540-18-P       55.5       40       68       174       70       286         56040-18-P       56.0       40       68       174       70       286         56540-18-P       56.5       40       68       174       70       286         57040-18-P       57.0       40       68       178       70       290         57540-18-P       57.5       40       68       182       70       294         58540-18-P       58.5       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302												
55040-18-P       55.0       40       68       171       70       281         55540-18-P       55.5       40       68       171       70       281         56040-18-P       56.0       40       68       174       70       286         56540-18-P       56.5       40       68       174       70       286         57040-18-P       57.0       40       68       178       70       290         57540-18-P       57.5       40       68       182       70       294         58540-18-P       58.5       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302			_									
55540-18-P       55.5       40       68       171       70       281         56040-18-P       56.0       40       68       174       70       286         56540-18-P       56.5       40       68       174       70       286         57040-18-P       57.0       40       68       178       70       290         57540-18-P       57.5       40       68       182       70       294         58540-18-P       58.5       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302												
56040-18-P       56.0       40       68       174       70       286         56540-18-P       56.5       40       68       174       70       286         57040-18-P       57.0       40       68       178       70       290         57540-18-P       57.5       40       68       178       70       290         58040-18-P       58.0       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302												
56040-18-P       56.0       40       68       174       70       286         56540-18-P       56.5       40       68       174       70       286         57040-18-P       57.0       40       68       178       70       290         58040-18-P       58.0       40       68       182       70       294         58540-18-P       58.5       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302											FTNA0511	TW20-100
57040-18-P         57.0         40         68         178         70         290           57540-18-P         57.5         40         68         178         70         290           58040-18-P         58.0         40         68         182         70         294           58540-18-P         58.5         40         68         182         70         294           59040-18-P         59.0         40         68         186         70         298           59540-18-P         59.5         40         68         186         70         298           60040-18-P         60.0         40         68         190         70         302										XO□T180508-□□		3 .00
57540-18-P         57.5         40         68         178         70         290           58040-18-P         58.0         40         68         182         70         294           58540-18-P         58.5         40         68         182         70         294           59040-18-P         59.0         40         68         186         70         298           59540-18-P         59.5         40         68         186         70         298           60040-18-P         60.0         40         68         190         70         302												
58040-18-P       58.0       40       68       182       70       294         58540-18-P       58.5       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302												
58540-18-P       58.5       40       68       182       70       294         59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302												
59040-18-P       59.0       40       68       186       70       298         59540-18-P       59.5       40       68       186       70       298         60040-18-P       60.0       40       68       190       70       302												
59540-18-P     59.5     40     68     186     70     298       60040-18-P     60.0     40     68     190     70     302												
<b>60040-18-P</b> 60.0 40 68 190 70 302												
		59540-18-P										
<b>60540-18-P</b>   60.5 40 68 190 70 302												
		60540-18-P	60.5	40	68	190	70	302				

# **KED Plus Drill(4D)**



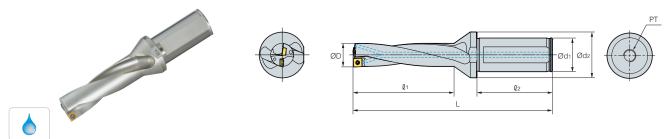
	<i>.</i>										(m
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	PT	Insert	Screw	Wrench
4D-	12020-04-P	12.0	20	25	51	50	115				
	12520-04-P	12.5	20	25	51	50	115		SP□T040204-□□		
	13020-04-P	13.0	20	25	55	50	119		XO□T040204-□□		
	13520-04-P	13.5	20	25	55	50	119				
	14020-05-P	14.0	20	25	59	50	124			FTNA0204	TW06P
	14520-05-P	14.5	20	25	59	50	124		SP□T050204-□□		
	15020-05-P	15.0	20	25	63	50	129		XO T050204-		
	15520-05-P	15.5	20	25	63	50	129		XO_1030204-		
	16020-05-P	16.0	20	25	67	50	133				
	16525-06-P	16.5	25	34	67	56	139				
	17025-06-P	17.0	25	34	71	56	143				
	17525-06-P	17.5	25	34	71	56	143	1/8	SP□T060205-□□		
	18025-06-P	18.0	25	34	75	56	148	1/0	XO T060204-	FTKA02206S	TW07P
	18525-06-P	18.5	25	34	75	56	148		XO_1000204-		
	19025-06-P	19.0	25	34	79	56	152				
	19525-06-P	19.5	25	34	79	56	152				
	20025-07-P	20.0	25	34	83	56	158		SP_T07T208 XO_T07T205		
	20525-07-P	20.5	25	34	83	56	158				TW07S
	21025-07-P	21.0	25	34	87	56	162				
	21525-07-P	21.5	25	34	87	56	162			FT1/400505	
	22025-07-P	22.0	25	34	91	56	166			FTKA02565	
	22525-07-P	22.5	25	34	91	56	166				
	23025-07-P	23.0	25	34	95	56	172				
	23525-07-P	23.5	25	34	95	56	172				
	24032-09-P	24.0	32	44	99	60	181				
	24532-09-P	24.5	32	44	99	60	181				
	25032-09-P	25.0	32	44	103	60	185				
	25532-09-P	25.5	32	44	103	60	185				
	26032-09-P	26.0	32	44	107	60	189				
	26532-09-P	26.5	32	44	107	60	189		SP□T090308-□□		
	27032-09-P	27.0	32	44	111	60	194		XO□T090305-□□	FTKA0307	TW09S
	27532-09-P	27.5	32	44	111	60	194				
	28032-09-P	28.0	32	44	115	60	199				
	28532-09-P	28.5	32	44	115	60	199				
	29032-09-P	29.0	32	44	119	60	203				
	29532-09-P	29.5	32	44	119	60	203				
	30032-11-P	30.0	32	44	123	60	210	1/4			
	30532-11-P	30.5	32	44	123	60	210				
	31032-11-P	31.0	32	44	127	60	214				
	31532-11-P	31.5	32	44	127	60	214				
	32032-11-P	32.0	32	44	131	60	218				
	32532-11-P	32.5	32	44	131	60	218		SP□T11T308-□□		
	33032-11-P	33.0	32	44	135	60	223		XO T11T306-	FTKA03508	TW15S
	33532-11-P	33.5	32	44	135	60	223		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
	34032-11-P	34.0	32	44	139	60	227				
	34532-11-P	34.5	32	44	139	60	227				
	35032-11-P	35.0	32	44	143	60	231				
	35532-11-P										
	3333Z-11-F	35.5	32	44	143	60	231	1	I	I	

# **KED Plus Drill(4D)**



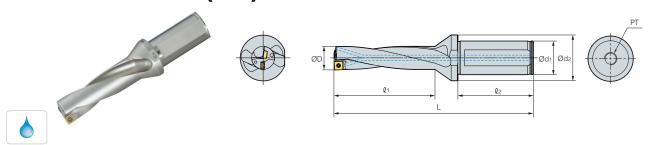
											(mm
	Designation	ØD	Ød <sub>1</sub>	Ød <sub>2</sub>	Q 1	Q 2	L	PT	Insert	Screw	Wrench
E4D-	36040-13-P	36.0	40	48	148	70	248				
	36540-13-P	36.5	40	48	148	70	248				
	37040-13-P	37.0	40	48	152	70	252				
	37540-13-P	37.5	40	48	152	70	252				
	38040-13-P	38.0	40	48	156	70	257				
	38540-13-P	38.5	40	48	156	70	257				
	39040-13-P	39.0	40	48	160	70	261		SP□T130410-□□	FTKA0410	TW15S
	39540-13-P	39.5	40	48	160	70	261		XO□T130406-□□	1 110.0410	1 W 100
	40040-13-P	40.0	40	48	164	70	266				
	40540-13-P	40.5	40	48	164	70	266				
	41040-13-P	41.0	40	48	168	70	270				
	41540-13-P	41.5	40	48	168	70	270				
	42040-13-P	42.0	40	48	172	70	275				
	42540-13-P	42.5	40	48	172	70	275				
	43040-15-P	43.0	40	58	177	70	282				
	43540-15-P	43.5	40	58	177	70	282				
	44040-15-P	44.0	40	58	181	70	286				
	44540-15-P	44.5	40	58	181	70	286				
	45040-15-P	45.0	40	58	185	70	291				
	45540-15-P	45.5	40	58	185	70	291				
	46040-15-P	46.0	40	58	189	70	295				
	46540-15-P	46.5	40	58	189	70	295		SP□T15M510-□□	FTNC04511	TW20S
	47040-15-P	47.0	40	58	193	70	300		XO□T15M508-□□		
	47540-15-P	47.5	40	58	193	70	300				
	48040-15-P	48.0	40	58	197	70	304	1/4			
	48540-15-P	48.5	40	58	197	70	304				
	49040-15-P	49.0	40	58	201	70	308				
	49540-15-P	49.5	40	58	201	70	308				
	50040-15-P	50.0	40	58	205	70	312				
	50540-15-P	50.5	40	58	205	70	312				
	51040-18-P	51.0	40	68	210	70	320				
	51540-18-P	51.5	40	68	210	70	320				
	52040-18-P	52.0	40	68	214	70	324				
	52540-18-P	52.5	40	68	214	70	324				
	53040-18-P	53.0	40	68	218	70	328				
	53540-18-P	53.5	40	68	218	70	328				
	54040-18-P	54.0	40	68	222	70	332				
	54540-18-P	54.5	40	68	222	70	332				
	55040-18-P	55.0	40	68	226	70	336		OD T400540		
	55540-18-P	55.5	40	68	226	70	336		SP_T180510-	FTNA0511	TW20-100
	56040-18-P	56.0	40	68	230	70	342		XO□T180508-□□		
	56540-18-P	56.5	40	68	230	70	342				
	57040-18-P	57.0	40	68	235	70	347				
	57540-18-P	57.5	40	68	235	70	347				
	58040-18-P	58.0	40	68	240	70	352				
	58540-18-P 59040-18-P	58.5	40	68	240	70	352				
		59.0	40	68	245 245	70	357				
	59540-18-P	59.5	40	68		70	357				
	60040-18-P	60.0	40	68	250	70	362				
	60540-18-P	60.5	40	68	250	70	362				

# KED Plus Drill(5D)



											(mr
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	PT	Insert	Screw	Wrench
E5D-	12020-04-P	12.0	20	25	63	50	127				
	12520-04-P	12.5	20	25	63	50	127		SP□T040204-□□		
	13020-04-P	13.0	20	25	68	50	132		XO□T040204-□□		
	13520-04-P	13.5	20	25	68	50	132				
	14020-05-P	14.0	20	25	73	50	138			FTNA0204	TW06P
	14520-05-P	14.5	20	25	73	50	138		SP□T050204-□□		
	15020-05-P	15.0	20	25	78	50	144		XO T050204-		
	15520-05-P	15.5	20	25	78	50	144		XO_1030204		
	16020-05-P	16.0	20	25	83	50	149				
	16525-06-P	16.5	25	34	83	56	155				
	17025-06-P	17.0	25	34	88	56	160				
	17525-06-P	17.5	25	34	88	56	160	1/8	CD TOCOOOF TO		
	18025-06-P	18.0	25	34	93	56	166	1/6	SP□T060205-□□	FTKA02206S	TW07P
	18525-06-P	18.5	25	34	93	56	166		XO□T060204-□□		
	19025-06-P	19.0	25	34	98	56	171				
	19525-06-P	19.5	25	34	98	56	171				
	20025-07-P	20.0	25	34	103	56	178				
	20525-07-P	20.5	25	34	103	56	178				TW076
	21025-07-P	21.0	25	34	108	56	183			FTKA02565	
	21525-07-P	21.5	25	34	108	56	183		SP□T07T208-□□		
	22025-07-P	22.0	25	34	113	56	188		XO□T07T205-□□		TW07S
	22525-07-P	22.5	25	34	113	56	188				
	23025-07-P	23.0	25	34	118	56	195				
	23525-07-P	23.5	25	34	118	56	195	-			
	24032-09-P	24.0	32	44	123	60	205				
	24532-09-P	24.5	32	44	123	60	205				
	25032-09-P	25.0	32	44	128	60	210				
	25532-09-P	25.5	32	44	128	60	210				
	26032-09-P	26.0	32	44	133	60	215				
	26532-09-P	26.5	32	44	133	60	215		SP□T090308-□□		
	27032-09-P	27.0	32	44	138	60	221		XO□T090305-□□	FTKA0307	TW09S
	27532-09-P	27.5	32	44	138	60	221				
	28032-09-P	28.0	32	44	143	60	227				
	28532-09-P	28.5	32	44	143	60	227	1			
	29032-09-P	29.0	32	44	148	60	232	1			
	29532-09-P	29.5	32	44	148	60	232				
	30032-11-P	30.0	32	44	153	60	240	1/4			
	30532-11-P	30.5	32	44	153	60	240	1			
	31032-11-P	31.0	32	44	158	60	245	1			
	31532-11-P	31.5	32	44	158	60	245	1			
	32032-11-P	32.0	32	44	163	60	250	1			
	32532-11-P	32.5	32	44	163	60	250	1	SP□T11T308-□□		
	33032-11-P	33.0	32	44	168	60	256	1	XO□T11T306-□□	FTKA03508	TW15S
	33532-11-P	33.5	32	44	168	60	256	+			
	34032-11-P	34.0	32	44	173	60	261	-			
	34532-11-P	34.5	32	44	173	60	261	-			
	35032-11-P	35.0	32	44	178	60	266	1			
	35532-11-P	35.5	32	44	178	60	266	-			

# **KED Plus Drill(5D)**



										Screw	Wrench
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q <sub>2</sub>	L	PT	Insert		P
D-	36040-13-P	36.0	40	48	184	70	284				
	36540-13-P	36.5	40	48	184	70	284				
	37040-13-P	37.0	40	48	189	70	289				
	37540-13-P	37.5	40	48	189	70	289				
	38040-13-P	38.0	40	48	194	70	295				
	38540-13-P	38.5	40	48	194	70	295				
	39040-13-P	39.0	40	48	199	70	300		SP□T130410-□□	FTKA0410	TW15S
	39540-13-P	39.5	40	48	199	70	300		XO□T130406-□□	1 11010410	1 1 100
	40040-13-P	40.0	40	48	204	70	306				
	40540-13-P	40.5	40	48	204	70	306				
	41040-13-P	41.0	40	48	209	70	311				
	41540-13-P	41.5	40	48	209	70	311				
	42040-13-P	42.0	40	48	214	70	317				
	42540-13-P	42.5	40	48	214	70	317				
	43040-15-P	43.0	40	58	220	70	325				
	43540-15-P	43.5	40	58	221	70	326				
	44040-15-P	44.0	40	58	225	70	330				
	44540-15-P	44.5	40	58	225	70	330				
	45040-15-P	45.0	40	58	230	70	336				
	45540-15-P	45.5	40	58	230	70	336			FTNC04511 TV	TW20S
	46040-15-P	46.0	40	58	235	70	341				
	46540-15-P	46.5	40	58	235	70	341		SP□T15M510-□□		
	47040-15-P	47.0	40	58	240	70	347		XO□T15M508-□□		
	47540-15-P	47.5	40	58	240	70	347				
	48040-15-P	48.0	40	58	245	70	352	1/4			
	48540-15-P	48.5	40	58	245	70	352	1/4			
	49040-15-P	49.0	40	58	250	70	357				
	49540-15-P	49.5	40	58	250	70	357				
	50040-15-P	50.0	40	58	255	70	362				
	50540-15-P	50.5	40	58	255	70	362				
	51040-18-P	51.0	40	68	261	70	371				
	51540-18-P	51.5	40	68	261	70	371				
	52040-18-P	52.0	40	68	266	70	376				
	52540-18-P	52.5	40	68	266	70	376				
	53040-18-P	53.0	40	68	271	70	381				
	53540-18-P	53.5	40	68	271	70	381				
	54040-18-P	54.0	40	68	276	70	386				
	54540-18-P	54.5	40	68	276	70	386				
	55040-18-P	55.0	40	68	281	70	391				
	55540-18-P	55.5	40	68	281	70	391		SP□T180510-□□	FTNA0511	TW20-10
	56040-18-P	56.0	40	68	286	70	398		XO□T180508-□□		
	56540-18-P	56.5	40	68	286	70	398				
	57040-18-P	57.0	40	68	292	70	404				
	57540-18-P	57.5	40	68	292	70	404				
	58040-18-P	58.0	40	68	298	70	410				
	58540-18-P	58.5	40	68	298	70	410				
	59040-18-P	59.0	40	68	304	70	416				
	59540-18-P	59.5	40	68	304	70	416				
	60040-18-P	60.0	40	68	310	70	422				
	60540-18-P	60.5	40	68	310	70	422				



High quality and high feed top solid indexable drill

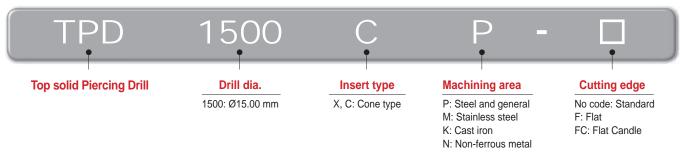
# TPDC Plus Drill

## (TPDC-XP, CP, CM, CN, CP-FC)

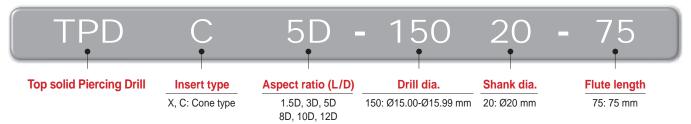
- The optimal tool shape for drilling realizing high precision and high feed machining as of carbide solid drill performance level
- Usable for various machining through enlarged line-up by workpieces, depth of cuts and workpiece shapes

#### Code system

#### Insert

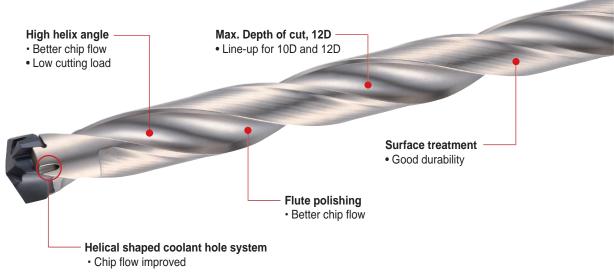


#### • Holder



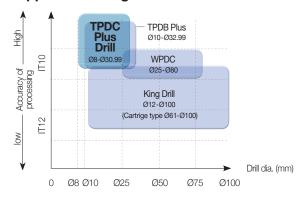
#### Features

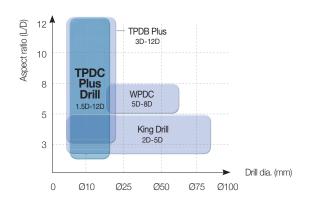
- One step clamp system Increased stability and shortened setting time
- High helix angle and flute polishing Reduced cutting load and enhanced chip evacuation
- Various applications from enlarged line-up by depth of cuts and shapes of workpiece



### **Technical Information for TPDC Plus Drill**

#### Application range





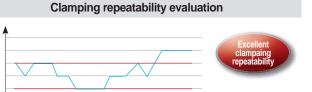
#### Run-out

#### **Durability evaluation**

■ Workpiece Alloy steel (SCM440, HRC22) vc (m/min) = 90, fn (mm/rev) = 0.25Cutting conditions ap (mm) = 60, wet (10bar)

■ Tools Insert TPD1500CP(PC5335) Holder TPDC5D-15020-75

(Drill dia. = Ø15 mm)



150time

Clamping

120time Excellent clamping system keeping the run-out, lower than 6 µm after clamping 150 times repeatedly

60time

90time

Beginning of hole

Middle

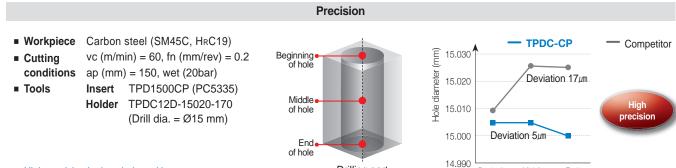
Fnd of hole

**TPDC-CP-FC** 

Competitor

Long tool life with the setting run-out, lower than 15 µm after using 40 inserts

#### Performance evaluation



Drilling part

Run-out (µm) 14 12

8

6

4 2

0

High precision in deep hole-making

■ Workpiece Carbon steel (SM45C, HRC18)

vc (m/min) = 60~100Cutting fn (mm/rev) = 0.2~0.3conditions

ap (mm) = 50, wet (20 bar)

■ Tools Insert TPD2000CP-FC (PC5335)

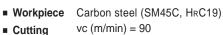
> Holder TPDC3D-20025-60 (Drill dia. = Ø20 mm)

Beginning of hole Middle of hole Fnd of hole Drilling part

High precision and excellent centering due to profiled cutting edge

Hole diameter (mm) Ø20.030 Ø20.025 Ø20.020 Ø20.015 Ø20.010 Ø20.005 Ø20.000 Ø19.995 Drilling part Beginning Beginning Beginning Middle Middle End End Middle End 0.20 0.25 0.30 0.20 0.25 0.30 0.20 0.25 0.30 fn (mm/rev) 60 80 100 vc (m/min)

#### Performance evaluation



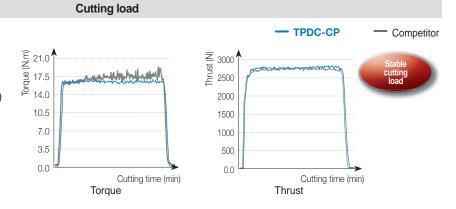
fn (mm/rev) = 0.25conditions

ap (mm) = 60, wet (10bar)

TPD1500CP (PC5335) ■ Tools

TPDC5D-15025-75 Holder (Drill dia. = Ø15 mm)

Stable cutting load due to multi-cutting edge and good chip control



■ Workpiece Carbon steel (SM45C, HRC18)

vc (m/min) = 100 Cutting fn (mm/rev) = 0.25conditions

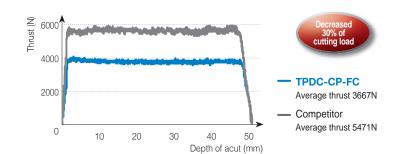
ap (mm) = 50, wet (10bar)

■ Tools Insert TPD2000CP-FC (PC5335)

Holder TPDC3D-20025-60

(Drill dia. = Ø20 mm)

Low and stable cutting load due to profiled-cutting edge



#### Application examples

Part of machine ■ Use

■ Workpiece Alloy steel (SCM440, HrC22)

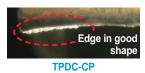
Cutting vc (m/min) = 100conditions fn (mm/rev) = 0.3

ap (mm) = 90, wet

TPD1900CP (PC5335) ■ Tools Insert

> Holder TPDC5D-19025-95

(Drill dia.(mm) = Ø19.0)





Competitor



▶ Lubricative multi-layer coating prevents chipping on cutting edges

Part of machine ■ Use

Carbon steel (SM45C, HRC40) ■ Workpiece

vc (m/min) = 60Cutting conditions fn (mm/rev) = 0.15

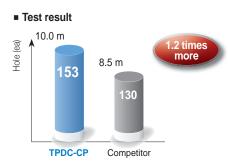
ap (mm) = 65, wet

■ Tools Insert TPD1800CP (PC5335)

Holder TPDC5D-18025-90

(Drill dia.(mm) = Ø18.0)





▶ Lubricative multi-layer coating enhances wear resistance

# F

## **Technical Information for TPDC Plus Drill**

### Application examples

■ Use Tube sheet

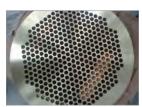
■ Workpiece Carbon steel (S235JR, HRC18)

■ Cutting vc (m/min) = 85 conditions n (rpm) = 1381 fn (mm/rev) = 0.27

ap (mm) = 12mm x 3Passes, wet

■ Tools Insert TPD1960CP (PC330P)

Holder TPDC3D-19025-57



#### ■ Test result



▶ Optimized cutting edge enhances wear resistance due to stable cutting load and lubricated multi-layer coating.

■ Use Turret flange

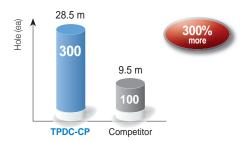
■ Workpiece Alloy steel (SCM440, HrC22)

■ Tools Insert TPD1300CP (PC5335)

Holder TPDC8D-13016-104



#### ■ Test result



▶ Lubricated multi-layer coating improving chipping resistance prevents chipping on the cutting edge.

#### Insert features

Shap	е	Application	Drill dia. (mm)	Features
	XP <b>new</b>	P	Ø8.00~Ø11.99	High durability due to the strong clamping system     Excellent quality of machining and stable machining from high clamping force     Enhanced performance by high lubricated grade
	СР	PK	Ø12.00~Ø30.99	High quality machining due to excellent centering: Good roundness and surface finish     Excellent chip control from exclusive edge design: Stable machining by good chip forming and chip evacuation
	CM new	M	Ø12.00~Ø30.99	Ensuring strength of point and cutting edge: Stable machinability     Increased stability of machining due to low cutting load     Applied grade with high built up edge resistance and chipping resistance
	CN new	N	Ø12.00~Ø30.99	Cutting edge with low cutting load: Excellent chip evacuation from increased surface finish of insert by special after treatment     Long tool life due to ultra-fine substrate application
	CP-FC new	P	Ø12.00~Ø30.99	Cutting edge shape with excellent centering: Stable machinability from low cutting load     Available in various machining applications: Flat surface, angled surface, curved surface drilling, plunging and boring     Reduced cycle time by simplified tools: Endmill+drill machining → TPDC-CP-FC insert



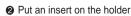
### How to clamp insert

#### Using the improved wrench

• Using the insert with slot on the top (Use the improved inserts only)



1 Clean the mounting seat with air or cloth



3 Put the wrench in the slot parallel







Clamped state

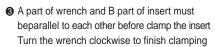
#### Using the existing wrench

• Using any inserts (Use both existing inserts and improved inserts

Use only the improved wrench later



- 1 Clean the mounting seat with air or cloth
- 2 Put an insert on the holder



Clamped state



# Technical Information for TPDC Plus Drill

## Recommended cutting conditions (TPDC-XP)

#### • 3D Drilling

		Morkmines				Aspect rati	o (L/D) = 3D	
		Workpiece		Grade	vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)		
	ISO	Workpiece	НВ		(111/11111)	Ø8.00~Ø9.99	Ø10.00~Ø11.99	
Р	Cook on otacl	Low carbon steel	80~120	PC325U	110 (80~140)	0.40, 0.00	0.45, 0.00	
Р	Carbon steel	High carbon steel	180~280	PC325U	90 (70~110)	0.12~0.22	0.15~0.28	
		Low alloy steel	140~260	PC325U	90 (70~110)	0.40.000	0.44.0.05	
Р	Alloy steel	Low alloy heat treated steel	200~400	PC325U	70 (50~90)	0.12~0.20	0.14~0.25	
	Alloy Steel	High alloy steel	260~320	PC325U	70 (50~90)	0.40, 0.45	0.40, 0.40	
		High alloy heat treated steel	300~450	PC325U	60 (40~80)	0.10~0.15	0.12~0.18	
K	Out to	Gray cast iron	150~230	PC325U	125 (90~160)	0.45, 0.30	0.20, 0.25	
	Cast iron	Ductile cast iron	160~260	PC325U	110 (80~140)	0.15~0.30	0.20~0.35	

 $<sup>\,\,</sup>$ % In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

#### • 5D Drilling

		Workpiece				Aspect ratio (L/D) = 5D  Feed rate (mm/rev) per drill dia. (mm)		
		workpiece		Grade	vc (m/min)			
	ISO	Workpiece	НВ		(11)	Ø8.00~Ø9.99	Ø10.00-Ø11.99	
Р	Carbon steel	Low carbon steel	80~120	PC325U	110 (80~140)	0.12~0.22	0.15~0.28	
P	Carbon Steel	High carbon steel	180~280	PC325U	90 (70~110)	0.12~0.22	0.15~0.26	
		Low alloy steel	140~260	PC325U	90 (70~110)	0.40.000	0.14~0.25	
P	Alley steel	Low alloy heat treated steel	200~400	PC325U	70 (50~90)	0.12~0.20	0.14~0.25	
P	Alloy steel	High alloy steel	260~320	PC325U	70 (50~90)	0.40.045	0.40, 0.40	
		High alloy heat treated steel	300~450	PC325U	60 (40~80)	0.10~0.15	0.12~0.18	
K	Coat iven	Gray cast iron	150~230	PC325U	125 (90~160)	0.15~0.30	0.20, 0.25	
	Cast iron	Ductile cast iron	Ductile cast iron 160~260		110 (80~140)	0.15~0.30	0.20~0.35	

 $<sup>\,\,</sup>$ % In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

#### • 8D Drilling

		Morkeiga				Aspect ration	o (L/D) = 8D	
		Workpiece		Grade	vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)		
	ISO	Workpiece	Workpiece HB		(111/11111)	Ø8.00~Ø9.99	Ø10.00-Ø11.99	
	Oh4l	Low carbon steel	80~120	PC325U	100 (70~130)	0.40, 0.20	0.42, 0.25	
Р	Carbon steel	High carbon steel	180~280	PC325U	80 (60~100)	0.10~0.20	0.12~0.25	
		Low alloy steel	140~260	PC325U	80 (60~100)	0.40, 0.40	0.40, 0.00	
Р	Alley steel	Low alloy heat treated steel	200~400	PC325U	60 (40~80)	0.10~0.18	0.12~0.20	
P	Alloy steel	High alloy steel	260~320	PC325U	60 (40~80)	0.00.040	0.40, 0.40	
		High alloy heat treated steel	300~450	PC325U	50 (30~70)	0.09~0.13	0.10~0.16	
K	Continue	Gray cast iron	150~230	PC325U	115 (80~150)	0.42.0.27	0.47, 0.22	
- K	Cast iron	Ductile cast iron	160~260	PC325U	100 (70~130)	0.12~0.27	0.17~0.32	

<sup>\*</sup> In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

<sup>\*</sup> In case of 8D drilling, please use a Pilot Dirll



### **②** Recommended cutting conditions (TPDC-CP/CM/CN)

#### • 1.5D/3D Drilling

		Markaiaaa					Asp	ect ratio (L/D) = 1.5[	D, 3D	
		Workpiece		Insert	Grade	vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)			
	ISO	Workpiece	НВ			(,	Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99	
	Carbon steel	Low carbon steel	80~120	СР	PC5335 PC330P	120 (90~140)	0.25~0.35	0.30~0.40	0.35~0.45	
	Carbon Steer	High carbon steel	180~280	СР	PC5335 PC330P	110 (80~130)	0.25~0.35	0.30~0.40	0.30~0.45	
Р		Low alloy steel	140~260	СР	PC5335 PC5300	120 (90~140)	0.28~0.40	0.33~0.43	0.38~0.48	
	Alloy steel	Low alloy heat treated steel	200~400	СР	PC5335 PC5300	80 (60~100)	0.28~0.40	0.33~0.43	0.30~0.48	
	Alloy Steel	High alloy steel	260~320	СР	PC5335 PC5300	75 (60~90)	0.20~0.35	0.22~0.40	0.25~0.45	
		High alloy heat treated steel	300~450	СР	PC5335 PC5300	65 (50~80)	0.20~0.35	0.22~0.40	0.22~0.45	
M	Stainless	Austenitic	135~275	СМ	PC330N	65 (50~80)	0.05~0.15	0.10~0.20	0.15~0.25	
101	steel	Ferritic, martensitic	135~275	СМ	PC330N	75 (60~90)	0.10~0.20	0.15~0.30	0.20~0.35	
K	Cast iron	Gray cast iron	150~230	СР	PC5335 PC5300	130 (90~140)	0.35~0.45	0.40~0.50	0.45~0.55	
-K	Cast IIOII	Ductile cast iron	160~260	СР	PC5335 PC5300	120 (80~130)	0.30~0.40	0.30~0.45	0.40~0.50	
N	Non-ferrous	Aluminum	30~150	CN	H01	200 (120~220)	0.35~0.45	0.40~0.50	0.45~0.55	
IN	metal	Copper alloy	150~160	CN	H01	200 (120~220)	0.35~0.45	0.40~0.50	0.45~0.55	

 $<sup>\,\,^{\</sup>times}$  In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

#### • 5D Drilling

	Workpiece						Aspect ratio (L/D) = 5D			
		workpiece		Insert	Grade	vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)			
	ISO	Workpiece	НВ			(,	Ø12.00-Ø17.99	Ø18.00-Ø25.99	Ø26.00-Ø30.99	
	Carbon steel	Low carbon steel	80~120	СР	PC5335 PC330P	110 (80~140)	0.15~0.30	0.20~0.35	0.25~0.40	
	Carbon steer	High carbon steel	180~280	СР	PC5335 PC330P	100 (70~130)	0.15~0.30	0.20~0.35	0.25~0.40	
P		Low alloy steel	140~260	СР	PC5335 PC5300	110 (80~140)	0.18~0.35	0.23~0.38	0.28~0.43	
	Alloy steel	Low alloy heat treated steel	200~400	СР	PC5335 PC5300	75 (50~100)	0.18~0.35	0.23~0.38	0.28~0.43	
	Alloy Steel	High alloy steel	260~320	СР	PC5335 PC5300	70 (50~90)	0.18~0.30	0.20~0.35	0.25~0.40	
		High alloy heat treated steel	300~450	СР	PC5335 PC5300	60 (40~80)	0.18~0.30	0.20~0.35	0.22~0.40	
N	Stainless	Austenitic	135~275	СМ	PC330N	60 (40~80)	0.05~0.15	0.10~0.20	0.15~0.25	
10	steel	Ferritic, martensitic	135~275	СМ	PC330N	70 (50~90)	0.10~0.20	0.15~0.30	0.20~0.35	
K	Cast iron	Gray cast iron	150~230	СР	PC5335 PC5300	120 (80~140)	0.25~0.40	0.30~0.45	0.35~0.50	
	Cast Iron	Ductile cast iron	160~260	СР	PC5335 PC5300	110 (70~130)	0.20~0.35	0.25~0.40	0.30~0.45	
N	Non-ferrous	Aluminum	30~150	CN	H01	200 (90~220)	0.35~0.45	0.40~0.50	0.45~0.55	
- 10	metal	Copper alloy	150~160	CN	H01	200 (90~220)	0.35~0.45	0.40~0.50	0.45~0.55	

 $<sup>\,\,^{\</sup>times}$  In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

<sup>\*</sup> In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions

<sup>\*</sup> In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions



## **Technical Information for TPDC Plus Drill**

#### • 8D Drilling

		Mouleniaga					A	spect ratio (L/D) = 8	BD	
		Workpiece		Insert	Graade	vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)			
	ISO	Workpiece	НВ			(111/111111)	Ø12.00-Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99	
	Carbon steel	Low carbon steel	80~120	СР	PC5335 PC330P	100 (70~130)	0.12~0.25	0.17~0.30	0.22~0.35	
	Carbon Steer	High carbon steel	180~280	СР	PC5335 PC330P	90 (60~120)	0.12~0.25	0.17~0.30	0.22~0.35	
Р		Low alloy steel	140~260	СР	PC5335 PC5300	100 (70~130)	0.15~0.30	0.20~0.33	0.25~0.38	
	Alloy steel	Low alloy heat treated steel	200~400	СР	PC5335 PC5300	65 (40~90)	0.15~0.30	0.20~0.33	0.25~0.38	
	Alloy Steel	High alloy steel	260~320	СР	PC5335 PC5300	60 (40~80)	0.15~0.25	0.17~0.30	0.22~0.35	
		High alloy heat treated steel	300~450	СР	PC5335 PC5300	50 (30~70)	0.15~0.25	0.17~0.30	0.22~0.35	
М	Stainless	Austenitic	135~275	СМ	PC330N	50 (30~70)	0.05~0.10	0.05~0.15	0.10~0.20	
IVI	steel	Ferritic, martensitic	135~275	СМ	PC330N	60 (40~80)	0.05~0.15	0.10~0.25	0.15~0.30	
K	Cast iron	Gray cast iron	150~230	СР	PC5335 PC5300	110 (70 ~130)	0.22~0.35	0.27~0.40	0.32~0.45	
K	Cast Iron	Ductile cast iron	160~260	СР	PC5335 PC5300	PC5335 100 (60~120)	0.17~0.30	0.22~0.35	0.27~0.40	
N	Non-ferrous	Aluminum	30~150	CN	H01	190 (80~200)	0.30~0.40	0.35~0.45	0.40~0.50	
- 14	metal	Copper alloy	150~160	CN	H01	190 (80~200)	0.30~0.40	0.35~0.45	0.40~0.50	

#### • 10D/12D Drilling

		Worknings					Aspe	ect ratio (L/D) = 10D	, 12D	
		Workpiece		Insert	Grade	vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)			
	ISO	Workpiece	НВ			(,	Ø12.00~Ø17.99	Ø18.00~Ø25.99	Ø26.00~Ø30.99	
	Carbon steel	Low carbon steel	80~120	СР	PC5335 PC330P	90 (60~120)	0.10~0.20	0.15~0.25	0.20~0.30	
	Carbon Steer	High carbon steel	180~280	СР	PC5335 PC330P	80 (50~110)	0.10~0.20	0.15~0.25	0.20~0.30	
Р		Low alloy steel	140~260	СР	PC5335 PC5300	90 (60~120)	0.13~0.25	0.18~0.28	0.23~0.33	
	Alloy steel	Low alloy heat treated steel	200~400	СР	PC5335 PC5300	55 (40~80)	0.13~0.30	0.18~0.28	0.23~0.33	
	Alloy Steel	High alloy steel	260~320	СР	PC5335 PC5300	50 (40~70)	0.13~0.25	0.15~0.25	0.20~0.30	
		High alloy heat treated steel	300~450	СР	PC5335 PC5300	40 (30~60)	0.13~0.25	0.15~0.25	0.20~0.30	
М	Stainless	Austenitic	135~275	СМ	PC330N	50 (30~60)	0.05~0.10	0.05~0.15	0.10~0.20	
IVI	steel	Ferritic, martensitic	135~275	СМ	PC330N	60 (40~70)	0.05~0.15	0.10~0.25	0.15~0.30	
K	Cost iron	Gray cast iron	150~230	СР	PC5335 PC5300	100 (60~120)	0.20~0.30	0.25~0.35	0.30~0.40	
	Cast iron	Ductile cast iron	160~260	СР	PC5335 PC5300	90 (50~110)	0.15~0.25	0.20~0.30	0.25~0.35	
N	Non-ferrous	Aluminum	30~150	CN	H01	180 (70~190)	0.28~0.35	0.33~0.40	0.38~0.45	
- IN	metal	Copper alloy	150~160	CN	H01	180 (70~190)	0.28~0.35	0.33~0.40	0.38~0.45	

<sup>\*</sup> In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part

 <sup>\*\*</sup> 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

<sup>\*</sup> In case of 10D and 12D, apply the recommended cutting conditions in the other side

<sup>\*</sup> In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions



### Recommended cutting conditions (TPDC-CP-FC)

		Workpiece				Aspect ratio (L/D) = 1.5D, 3D, 5D)			
	Hortpiece			Graade	vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)			
	ISO	Workpiece	НВ		(11/11111)	Ø12.00-Ø17.99	Ø18.00-Ø25.99	Ø26.00-Ø30.99	
	Carbon steel	Low carbon steel (SM10C, SM20C etc)	80~120		90 (70~110)	0.18~0.28	0.2~0.3	0.23~0.33	
P	Carbon steer	High carbon steel (SM45C, SM50C etc)	180~280	PC5335	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	
	Alloy Steel	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	0	0	0	0	0
5D	0	X	X	X	X

<sup>\*</sup> Please refer to the precaution in drilling in case of angled surface drilling, curved surface drilling, plunging and boring

### ● How to drill a deep hole (10D/12D)

Using a pilot drill (recommended)

### 1. Drilling a pilot hole (with a pilot drill)



• Drill a 0.5D pilot hole in 70% lower cutting speed with 1.5D drill or 3D drill

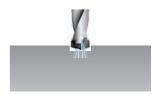
#### 2. Start drilling



· Start drilling in recommended cutting conditions after replacing the drill

#### · Without Pilot Drill

#### 1. Drilling a pilot hole (without a pilot drill)



• After drill 0.5D with 70% lower cutting speed, stop drilling for 2-3 seconds putting the drill in the hole

#### 2. Stop drilling



· Stop supplying the coolant and take out the drill from the hole. Then, stop drilling for 2-3 seconds

#### 3. Ready to drill



• After putting the drill in the hole to 2-3 mm upper than the bottom of the pilot hole, start supplying the coolant. Then, be ready to start drilling

#### 4. Stop drilling



· Start drilling in recommended cutting conditions

### **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°
- 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

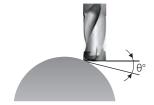
#### • TPDC-CP-FC

#### Angled surface drilling



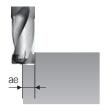
• Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface (Recommended only in case of  $\theta$  is less than 10°)

#### **Curved surface drilling**



Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface (In case, θ is over 3°, 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 longe than drill diameter, plunge with divided depth of cut

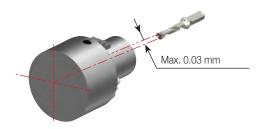
#### Boring



- 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 Q/min



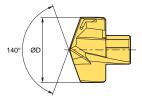


### Available insert



XΡ





Drill dia.	P type (XP)	Coated	Holder	Wrench
ØD (mm)	TPDC-XP	PC325U	Holder	Wiench
8.0	TPD0800XP	•		
8.1	TPD0810XP	•		
8.2	TPD0820XP	•	TPDX□D-08012-□	
8.3	TPD0830XP	•		
8.4	TPD0840XP	•		
8.5	TPD0850XP	•		
8.6	TPD0860XP	•		
8.7	TPD0870XP	•	TPDX□D-08512-□	
8.8	TPD0880XP	•		
8.9	TPD0890XP	•		
9.0	TPD0900XP	•		
9.1	TPD0910XP	•		
9.2	TPD0920XP	•	TPDX□D-09012-□	
9.3	TPD0930XP	•		
9.4	TPD0940XP	•		
9.5	TPD0950XP	•		
9.6	TPD0960XP	•		
9.7	TPD0970XP	•	TPDX□D-09512-□	- TPDC -W0811
9.8	TPD0980XP	•		
9.9	TPD0990XP	•		
10.0	TPD1000XP	•		
10.1	TPD1010XP	•		
10.2	TPD1020XP	•	TPDX□D-10016-□	
10.3	TPD1030XP	•		
10.4	TPD1040XP	•		
10.5	TPD1050XP	•		
10.6	TPD1060XP	•		
10.7	TPD1070XP	•	TPDX□D-10516-□	
10.8	TPD1080XP	•		
10.9	TPD1090XP	•		
11.0	TPD1100XP	•		
11.1	TPD1110XP	•		
11.2	TPD1120XP	•	TPDX□D-11016-□	
11.3	TPD1130XP	•		
11.4	TPD1140XP	•		_
11.5	TPD1150XP	•		
11.6	TPD1160XP	•		
11.7	TPD1170XP	•	TPDX□D-11516-□	
11.8	TPD1180XP	•		
11.9	TPD1190XP	•		

\* 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

# F TPDC Plus Drill

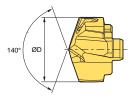
### Available insert











<b>.</b>		P type (	CP)		M type (	(CM)	N type (	(CN)		
Drill dia.			Coated			Coated		Uncoated	Holder	Wrench
ØD(mm)	TPDC-CP	PC5335	PC5300	PC330P	TPDC-CM	PC330N	TPDC-CN	H01		
12.0	TPD1200CP	•			TPD1200CM	•	TPD1200CN		TDD0	
12.2	TPD1220CP	•			TPD1220CM	•	TPD1220CN		TPDC□D-12016-□	
12.5	TPD1250CP	•			TPD1250CM	•	TPD1250CN		TDD0 D 40540 D	
12.6	TPD1260CP	•			TPD1260CM	•	TPD1260CN		TPDC□D-12516-□	
13.0	TPD1300CP	•			TPD1300CM	•	TPD1300CN		TPDC D-13016-	
13.5	TPD1350CP	•			TPD1350CM	•	TPD1350CN		TPDC D-13516-	
14.0	TPD1400CP	•			TPD1400CM	•	TPD1400CN			
14.2	TPD1420CP	•			TPD1420CM	•	TPD1420CN		TPDC □ D-14016- □	TPDC-
14.3	TPD1430CP	•			TPD1430CM	•	TPD1430CN			1
14.5	TPD1450CP	•			TPD1450CM	•	TPD1450CN		TPDC D-14516-	W1216
15.0	TPD1500CP	•			TPD1500CM	•	TPD1500CN			
15.2	TPD1520CP	•			TPD1520CM	•	TPD1520CN		TPDC □ D-15020- □	
15.5	TPD1550CP	•			TPD1550CM	•	TPD1550CN			
16.0	TPD1600CP	•			TPD1600CM	•	TPD1600CN			
16.3	TPD1630CP	•			TPD1630CM	•	TPD1630CN			
16.5	TPD1650CP	•			TPD1650CM	•	TPD1650CN		TPDC □ D-16020- □	
16.7	TPD1670CP	•			TPD1670CM	•	TPD1670CN			
16.9	TPD1690CP	•			TPD1690CM	•	TPD1690CN			
17.0	TPD1700CP	•			TPD1700CM	•	TPD1700CN			
17.5	TPD1750CP	•			TPD1750CM	•	TPD1750CN		TPDC □ D-17020- □	
17.7	TPD1770CP	•			TPD1770CM	•	TPD1770CN			
18.0	TPD1800CP	•			TPD1800CM	•	TPD1800CN			_
18.1	TPD1810CP	•			TPD1810CM	•	TPD1810CN			
18.5	TPD1850CP	•			TPD1850CM	•	TPD1850CN		TPDC □ D-18025- □	
18.6	TPD1860CP	•			TPD1860CM	•	TPD1860CN			
18.7	TPD1870CP	•			TPD1870CM	•	TPD1870CN			TPDC-
19.0	TPD1900CP	•			TPD1900CM	•	TPD1900CN			
19.2	TPD1920CP	•			TPD1920CM	•	TPD1920CN			W1721
19.3	TPD1930CP	•			TPD1930CM	•	TPD1930CN		TPDC □ D-19025- □	
19.5	TPD1950CP	•			TPD1950CM	•	TPD1950CN			
19.7	TPD1970CP	•			TPD1970CM	•	TPD1970CN			
20.0	TPD2000CP	•			TPD2000CM	•	TPD2000CN		TDDC D 20025 D	
20.5	TPD2050CP	•			TPD2050CM	•	TPD2050CN		TPDC□D-20025-□	
21.0	TPD2100CP	•			TPD2100CM	•	TPD2100CN		TDDO D 04005 D	
21.5	TPD2150CP	•			TPD2150CM	•	TPD2150CN		TPDC□D-21025-□	
22.0	TPD2200CP	•			TPD2200CM	•	TPD2200CN			
22.5	TPD2250CP	•			TPD2250CM	•	TPD2250CN		TDDO D COOCE D	
22.6	TPD2260CP	•			TPD2260CM	•	TPD2260CN		TPDC□D-22025-□	
22.7	TPD2270CP	•			TPD2270CM	•	TPD2270CN			
23.0	TPD2300CP	•			TPD2300CM	•	TPD2300CN		TDDO D COCCE	
23.5	TPD2350CP	•			TPD2350CM	•	TPD2350CN		TPDC□D-23025-□	TPDC-
24.0	TPD2400CP	•			TPD2400CM	•	TPD2400CN		TDD0 D 04000 D	
24.5	TPD2450CP	•			TPD2450CM	•	TPD2450CN		TPDC□D-24032-□	W2225
25.0	TPD2500CP	•			TPD2500CM	•	TPD2500CN			
25.3	TPD2530CP	•			TPD2530CM	•	TPD2530CN			
25.5	TPD2550CP	•			TPD2550CM	•	TPD2550CN		TPDC □ D-25032- □	
25.8	TPD2580CP	•			TPD2580CM	•	TPD2580CN			
25.9	TPD2590CP	•			TPD2590CM	•	TPD2590CN			
26.0	TPD2600CP	•			TPD2600CM	•	TPD2600CN		TDDC D 00000 D	
26.5	TPD2650CP	•			TPD2650CM	•	TPD2650CN		TPDC□D-26032-□	
27.0	TPD2700CP	•			TPD2700CM	•	TPD2700CN		TDD0 D 07000 D	1
27.5	TPD2750CP	•			TPD2750CM	•	TPD2750CN		TPDC□D-27032-□	
28.0	TPD2800CP	•			TPD2800CM	•	TPD2800CN		TDDC D 00000	TPDC- W2630
28.5	TPD2850CP	•			TPD2850CM	•	TPD2850CN		TPDC□D-28032-□	
29.0	TPD2900CP	•			TPD2900CM	•	TPD2900CN		TDDC D 00000 D	
29.5	TPD2950CP	•			TPD2950CM	•	TPD2950CN		TPDC□D-29032-□	
30.0	TPD3000CP	•			TPD3000CM	•	TPD3000CN		TDDC D 20020 D	
30.5	TPD3050CP	•			TPD3050CM	•	TPD3050CN		TPDC□D-30032-□	

imes We can provide if you order exact machining specification Ex)  $ilde{ ilde{Q}}15.9$  and carbon steel machining o TPDC1590CP/PC330P

### Parts (applicable wrench)

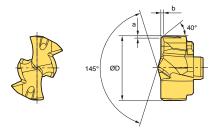
Picture		Designation	Drill diameter ØD (mm)	Torque (N•m)		
	TPDC-	W1216	12.00-16.99	2.0-3.0		
		W1721	17.00-21.99	2.0-4.0		
a-		W2225	22.00-25.99	3.0-4.0		
		W2630	26.00-30.99	4.0-5.0		

<sup>:</sup> Stock Item

### Available insert







	FC type (CP-F	C)		Chamf	er (mm)			
Drill dia.	TDD0 0D 50	Coated	Holder			Wrench		
ØD(mm)	TPDC-CP-FC	PC5335		a	b			
12.0	TPD1200CP-FC		TPDC□D-12016-□					
12.2	TPD1220CP-FC		11 DC D-12010-					
12.5	TPD1250CP-FC		TPDC□D-12516-□					
12.6	TPD1260CP-FC							
13.0	TPD1300CP-FC		TPDC D-13016-					
13.5	TPD1350CP-FC		TPDC□D-13516-□					
14.0 14.2	TPD1400CP-FC TPD1420CP-FC		TPDC□D-14016-□			TPDC-W1216		
14.2	TPD1420CP-FC		1PDC_D-14016	0.38	0.45	11 00-11210		
14.5	TPD1450CP-FC		TPDC □ D-14516- □					
15.0	TPD1500CP-FC							
15.5	TPD1550CP-FC		TPDC □ D-15020- □					
16.0	TPD1600CP-FC							
16.3	TPD1630CP-FC		TDDC D 46000 D					
16.5	TPD1650CP-FC		TPDC□D-16020-□					
16.7	TPD1670CP-FC							
17.0	TPD1700CP-FC							
17.5	TPD1750CP-FC		TPDC□D-17020-□					
17.7	TPD1770CP-FC							
18.0	TPD1800CP-FC							
18.1	TPD1810CP-FC		TDDC D 40005 D					
18.5 18.6	TPD1850CP-FC		TPDC□D-18025-□					
18.7	TPD1860CP-FC TPD1870CP-FC							
19.0	TPD1970CP-FC					TPDC-W1721		
19.2	TPD1900CF-FC				0.55			
19.5	TPD1950CP-FC		TPDC□D-19025-□					
19.7	TPD1970CP-FC							
20.0	TPD2000CP-FC		TDD0 D 00005 D					
20.5	TPD2050CP-FC		TPDC□D-20025-□					
21.0	TPD2100CP-FC		TPDC□D-21025-□	0.46				
21.5	TPD2150CP-FC		1FDCD-21023					
22.0	TPD2200CP-FC							
22.5	TPD2250CP-FC		TPDC □ D-22025- □					
22.6	TPD2260CP-FC		50=5 22020 =					
22.7	TPD2270CP-FC							
23.0	TPD2300CP-FC TPD2350CP-FC		TPDC □ D-23025- □					
24.0	TPD2330CP-FC			_		TPDC-W2225		
24.5	TPD2400CF-FC		TPDC □ D-24032- □			11 00-11/2223		
25.0	TPD2500CP-FC			_				
25.3	TPD2530CP-FC							
25.5	TPD2550CP-FC		TPDC □ D-25032- □					
25.8	TPD2580CP-FC							
25.9	TPD2590CP-FC							
26.0	TPD2600CP-FC		TPDC□D-26032-□					
26.5	TPD2650CP-FC		11 DC_D-20032					
27.0	TPD2700CP-FC		TPDC□D-27032-□					
27.5	TPD2750CP-FC		11 0000 21002					
28.0	TPD2800CP-FC		TPDC □ D-28032- □	0.54	0.65	TPDC-W2630		
28.5	TPD2850CP-FC			0.34	0.65			
29.0 29.5	TPD2900CP-FC		TPDC □ D-29032- □					
30.0	TPD2950CP-FC TPD3000CP-FC			_				
			TPDC □ D-30032- □					
30.5	TPD3050CP-FC							

 $<sup>\</sup>hbox{$\times$ We can provide if you order exact machining specification } \hbox{$Ex$) $\varnothing$15.9 and carbon steel machining $\rightarrow$ TPDC1590CP-FC/PC5335 $$}$ 

## Parts (applicable wrench)

Picture	Designation		Drill diameter ØD (mm)	Torque (N•m)
	TPDC-	W1216	12.00-16.99	2.0-3.0
		W1721	17.00-21.99	2.0-4.0
4-		W2225	22.00-25.99	3.0-4.0
		W2630	26.00-30.99	4.0-5.0

\* TPDC-CP-FC insert: impossible to be reground

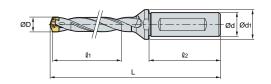
<sup>•:</sup> Stock Item

# F TPDC Plus Drill

# **TPDX(3D/5D/8D)**







(mm)

	Designation	ØD	Ød	Ød₁	Q 1	Q <sub>2</sub>	L	Insert
PDX	3D-08012-24	8.0-8.4	12	16	24	45	82.2	TPD0800XP-0849XP
	3D-08512-26	8.5-8.9	12	16	26	45	84.1	TPD0850XP-0899XP
	3D-09012-27	9.0-9.4	12	16	27	45	85.9	TPD0900XP-0949XP
	3D-09512-29	9.5-9.9	12	16	29	45	87.7	TPD0950XP-0999XP
	3D-10016-30	10.0-10.4	16	20	30	48	94.6	TPD1000XP-1049XP
	3D-10516-32	10.5-10.9	16	20	32	48	96.5	TPD1050XP-1099XP
	3D-11016-33	11.0-11.4	16	20	33	48	98.2	TPD1100XP-1149XP
	3D-11516-35	11.5-11.9	16	20	35	48	100.1	TPD1150XP-1199XP
PDX	5D-08012-40	8.0-8.4	12	16	40	45	98.2	TPD0800XP-0849XP
	5D-08512-43	8.5-8.9	12	16	43	45	101.1	TPD0850XP-0899XP
	5D-09012-45	9.0-9.4	12	16	45	45	103.9	TPD0900XP-0949XP
	5D-09512-48	9.5-9.9	12	16	48	45	106.7	TPD0950XP-0999XP
	5D-10016-50	10.0-10.4	16	20	50	48	114.6	TPD1000XP-1049XP
	5D-10516-53	10.5-10.9	16	20	53	48	117.5	TPD1050XP-1099XP
	5D-11016-55	11.0-11.4	16	20	55	48	120.2	TPD1100XP-1149XP
	5D-11516-58	11.5-11.9	16	20	58	48	123.1	TPD1150XP-1199XP
PDX	8D-08012-64	8.0-8.4	12	16	64	45	122.2	TPD0800XP-0849XP
	8D-08512-68	8.5-8.9	12	16	68	45	126.6	TPD0850XP-0899XP
	8D-09012-72	9.0-9.4	12	16	72	45	130.9	TPD0900XP-0949XP
	8D-09512-76	9.5-9.9	12	16	76	45	135.2	TPD0950XP-0999XP
	8D-10016-80	10.0-10.4	16	20	80	48	144.6	TPD1000XP-1049XP
	8D-10516-84	10.5-10.9	16	20	84	48	149.0	TPD1050XP-1099XP
	8D-11016-88	11.0-11.4	16	20	88	48	153.2	TPD1100XP-1149XP
	8D-11516-92	11.5-11.9	16	20	92	48	157.6	TPD1150XP-1199XP

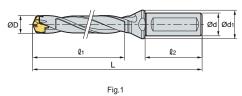
<sup>◆</sup> Applicable inserts F47

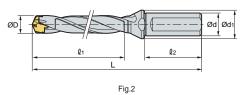
st We can provide if you order exact machining specification. Ex) Ø10 and 60 mm depth of cut ightarrow TPDX6D-10016-60

# TPDC(1.5D/3D)









									(mm
	Designation	ØD	Ød	Ød₁	Q 1	Q 2	L	Insert	Fig.
TPDC	1.5D-12016-18	12.0~12.4	16	20	18	48	85	TPD1200C□-1249C□	1
	1.5D-12516-19	12.5~12.9	16	20	19	48	86	TPD1250C□-1299C□	1
	1.5D-13016-20	13.0~13.4	16	20	20	48	87	TPD1300C□-1349C□	1
	1.5D-13516-20	13.5~13.9	16	20	20	48	88	TPD1350C□-1399C□	1
	1.5D-14016-21	14.0~14.4	16	20	21	48	93	TPD1400C□-1449C□	1
	1.5D-14516-22	14.5~14.9	16	20	22	48	94	TPD1450C□-1499C□	1
	1.5D-15020-23	15.0~15.9	20	25	23	50	95	TPD1500C□-1599C□	2
	1.5D-16020-24	16.0~16.9	20	25	24	50	98	TPD1600C□-1699C□	2
	1.5D-17020-26	17.0~17.9	20	25	26	50	100	TPD1700C□-1799C□	2
	1.5D-18025-27	18.0~18.9	25	33	27	56	110	TPD1800C□-1899C□	2
	1.5D-19025-28	19.0~19.9	25	33	28	56	112	TPD1900C□-1999C□	2
	1.5D-20025-30	20.0~20.9	25	33	30	56	114	TPD2000C□-2099C□	2
	1.5D-21025-31	21.0~21.9	25	33	31	56	116	TPD2100C□-2199C□	2
	1.5D-22025-33	22.0~22.9	25	33	33	56	119	TPD2200C□-2299C□	2
	1.5D-23025-34	23.0~23.9	25	33	34	56	121	TPD2300C□-2399C□	2
	1.5D-24032-36	24.0~24.9	32	43	36	60	130	TPD2400C□-2499C□	2
	1.5D-25032-37	25.0~25.9	32	43	37	60	132	TPD2500C□-2599C□	2
	1.5D-26032-39	26.0~26.9	32	43	39	60	134	TPD2600C□-2699C□	2
	1.5D-27032-40	27.0~27.9	32	43	40	60	136	TPD2700C□-2799C□	2
	1.5D-28032-42	28.0~28.9	32	43	42	60	138	TPD2800C□-2899C□	2
	1.5D-29032-43	29.0~29.9	32	43	43	60	141	TPD2900C□-2999C□	2
	1.5D-30032-45	30.0~30.9	32	43	45	60	143	TPD3000C□-3099C□	2
PDC	3D-12016-36	12.0~12.4	16	20	36	48	99	TPD1200C□-1249C□	1
	3D-12516-38	12.5~12.9	16	20	38	48	101	TPD1250C□-1299C□	1
	3D-13016-39	13.0~13.4	16	20	39	48	103	TPD1300C□-1349C□	1
	3D-13516-41	13.5~13.9	16	20	41	48	105	TPD1350C□-1399C□	1
	3D-14016-42	14.0~14.4	16	20	42	48	106	TPD1400C□-1449C□	1
	3D-14516-44	14.5~14.9	16	20	44	48	107	TPD1450C□-1499C□	1
	3D-15020-45	15.0~15.9	20	25	45	50	113	TPD1500C□-1599C□	2
	3D-16020-48	16.0~16.9	20	25	48	50	117	TPD1600C□-1699C□	2
	3D-17020-51	17.0~17.9	20	25	51	50	120	TPD1700C□-1799C□	2
	3D-18025-54	18.0~18.9	25	33	54	56	132	TPD1800C□-1899C□	2
	3D-19025-57	19.0~19.9	25	33	57	56	135	TPD1900C□-1999C□	2
	3D-20025-60	20.0~20.9	25	33	60	56	138	TPD2000C□-2099C□	2
	3D-21025-63	21.0~21.9	25	33	63	56	141	TPD2100C□-2199C□	2
	3D-22025-66	22.0~22.9	25	33	66	56	145	TPD2200C□-2299C□	2
	3D-23025-69	23.0~23.9	25	33	69	56	149	TPD2300C□-2399C□	2
	3D-24032-72	24.0~24.9	32	43	72	60	159	TPD2400C□-2499C□	2
	3D-25032-75	25.0~25.9	32	43	75	60	162	TPD2500C□-2599C□	2
	3D-26032-78	26.0~26.9	32	43	78	60	173	TPD2600C□-2699C□	2
	3D-27032-81	27.0~27.9	32	43	81	60	176	TPD2700C□-2799C□	2
	3D-28032-84	28.0~28.9	32	43	84	60	180	TPD2800C□-2899C□	2
	3D-29032-87	29.0~29.9	32	43	87	60	185	TPD2900C□-2999C□	2
	3D-30032-90	30.0~30.9	32	43	90	60	188	TPD3000C□-3099C□	2

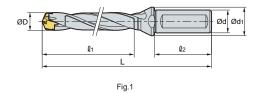
<sup>●</sup> Applicable inserts F48~49

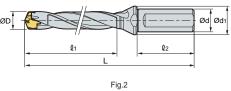
imes We can provide if you order exact machining specification. Ex) Ø15 and 60 mm depth of cut ightarrow TPDC4D-15020-60

# TPDC(5D/8D)









	Designation	ØD	Ød	Ød₁	Q 1	Q 2	L	Insert	Fig.
TPDC	5D-12016-60	12.0~12.4	16	20	60	48	123	TPD1200C□-1249C□	1
	5D-12516-63	12.5~12.9	16	20	63	48	126	TPD1250C□-1299C□	1
	5D-13016-65	13.0~13.4	16	20	65	48	129	TPD1300C□-1349C□	1
	5D-13516-68	13.5~13.9	16	20	68	48	132	TPD1350C□-1399C□	1
	5D-14016-70	14.0~14.4	16	20	70	48	134	TPD1400C□-1449C□	1
	5D-14516-73	14.5~14.9	16	20	73	48	136	TPD1450C□-1499C□	1
	5D-15020-75	15.0~15.9	20	25	75	50	143	TPD1500C□-1599C□	2
	5D-16020-80	16.0~16.9	20	25	80	50	149	TPD1600C□-1699C□	2
	5D-17020-85	17.0~17.9	20	25	85	50	154	TPD1700C□-1799C□	2
	5D-18025-90	18.0~18.9	25	33	90	56	168	TPD1800C□-1899C□	2
	5D-19025-95	19.0~19.9	25	33	95	56	173	TPD1900C□-1999C□	2
	5D-20025-100	20.0~20.9	25	33	100	56	178	TPD2000C□-2099C□	2
	5D-21025-105	21.0~21.9	25	33	105	56	183	TPD2100C□-2199C□	2
	5D-22025-110	22.0~22.9	25	33	110	56	189	TPD2200C□-2299C□	2
	5D-23025-115	23.0~23.9	25	33	115	56	195	TPD2300C□-2399C□	2
	5D-24032-120	24.0~24.9	32	43	120	60	207	TPD2400C□-2499C□	2
	5D-25032-125	25.0~25.9	32	43	125	60	212	TPD2500C□-2599C□	2
	5D-26032-130	26.0~26.9	32	43	130	60	225	TPD2600C□-2699C□	2
	5D-27032-135	27.0~27.9	32	43	135	60	230	TPD2700C□-2799C□	2
	5D-28032-140	28.0~28.9	32	43	140	60	236	TPD2800C□-2899C□	2
	5D-29032-145	29.0~29.9	32	43	145	60	243	TPD2900C□-2999C□	2
	5D-30032-150	30.0~30.9	32	43	150	60	248	TPD3000C□-3099C□	2
TPDC	8D-12016-96	12.0~12.4	16	20	96	48	159	TPD1200C□-1249C□	1
	8D-12516-100	12.5~12.9	16	20	100	48	163	TPD1250C□-1299C□	1
	8D-13016-104	13.0~13.4	16	20	104	48	168	TPD1300C□-1349C□	1
	8D-13516-108	13.5~13.9	16	20	108	48	173	TPD1350C□-1399C□	1
	8D-14016-112	14.0~14.4	16	20	112	48	176	TPD1400C□-1449C□	1
	8D-14516-116	14.5~14.9	16	20	116	48	180	TPD1450C□-1499C□	1
	8D-15020-120	15.0~15.9	20	25	120	50	188	TPD1500C□-1599C□	2
	8D-16020-128	16.0~16.9	20	25	128	50	197	TPD1600C□-1699C□	2
	8D-17020-136	17.0~17.9	20	25	136	50	205	TPD1700C□-1799C□	2
	8D-18025-144	18.0~18.9	25	33	144	56	222	TPD1800C□-1899C□	2
	8D-19025-152	19.0~19.9	25	33	152	56	230	TPD1900C□-1999C□	2
	8D-20025-160	20.0~20.9	25	33	160	56	238	TPD2000C□-2099C□	2
	8D-21025-168	21.0~21.9	25	33	168	56	246	TPD2100C□-2199C□	2
	8D-22025-176	22.0~22.9	25	33	176	56	255	TPD2200C□-2299C□	2
	8D-23025-184	23.0~23.9	25	33	184	56	264	TPD2300C□-2399C□	2
	8D-24032-192	24.0~24.9	32	43	192	60	279	TPD2400C□-2499C□	2
	8D-25032-200	25.0~25.9	32	43	200	60	287	TPD2500C□-2599C□	2
	8D-26032-208	26.0~26.9	32	43	208	60	303	TPD2600C□-2699C□	2
	8D-27032-216	27.0~27.9	32	43	216	60	311	TPD2700C -2799C	2
	8D-28032-224	28.0~28.9	32	43	224	60	320	TPD2800C -2899C	2
	8D-29032-232	29.0~29.9	32	43	232	60	330	TPD2900C -2999C	2
	8D-30032-240	30.0~30.9	32	43	240	60	338	TPD3000C -3099C	2
	0D-3003Z-Z40	30.0~30.9	32	40	240	00	330	1 F D 3000 C 🗀 - 30 8 8 C 🗆	

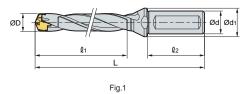
<sup>◆</sup> Applicable inserts F48~49

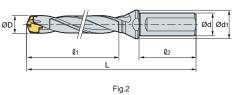
 $<sup>\</sup>times$  We can provide if you order exact machining specification. Ex) Ø15 and 60 mm depth of cut  $\rightarrow$  TPDC4D-15020-60

# **TPDC(10D/12D)**









	Fi
	Fi

	Designation	ØD	Ød	Ød₁	Q 1	Q 2	L	Insert	Fig.
ΓPDC	10D-12016-120	12.0~12.4	16	20	120	48	183	TPD1200C□-1249C□	1
	10D-12516-125	12.5~12.9	16	20	125	48	188	TPD1250C□-1299C□	1
	10D-13016-130	13.0~13.4	16	20	130	48	194	TPD1300C□-1349C□	1
	10D-13516-135	13.5~13.9	16	20	135	48	199	TPD1350C□-1399C□	1
	10D-14016-140	14.0~14.4	16	20	140	48	204	TPD1400C□-1449C□	1
	10D-14516-145	14.5~14.9	16	20	145	48	208	TPD1450C□-1499C□	1
	10D-15020-150	15.0~15.9	20	25	150	50	218	TPD1500C□-1599C□	1
	10D-16020-160	16.0~16.9	20	25	160	50	229	TPD1600C□-1699C□	1
	10D-17020-170	17.0~17.9	20	25	170	50	239	TPD1700C□-1799C□	1
	10D-18025-180	18.0~18.9	25	33	180	56	258	TPD1800C□-1899C□	1
	10D-19025-190	19.0~19.9	25	33	190	56	268	TPD1900C□-1999C□	1
	10D-20025-200	20.0~20.9	25	33	200	56	278	TPD2000C□-2099C□	1
	10D-21025-210	21.0~21.9	25	33	210	56	288	TPD2100C□-2199C□	1
	10D-22025-220	22.0~22.9	25	33	220	56	299	TPD2200C□-2299C□	1
	10D-23025-230	23.0~23.9	25	33	230	56	310	TPD2300C□-2399C□	1
	10D-24032-240	24.0~24.9	32	43	240	60	327	TPD2400C□-2499C□	2
	10D-25032-250	25.0~25.9	32	43	250	60	337	TPD2500C□-2599C□	2
	10D-26032-260	26.0~26.9	32	43	260	60	355	TPD2600C□-2699C□	2
	10D-27032-270	27.0~27.9	32	43	270	60	365	TPD2700C□-2799C□	2
	10D-28032-280	28.0~28.9	32	43	280	60	376	TPD2800C□-2899C□	2
	10D-29032-290	29.0~29.9	32	43	290	60	388	TPD2900C□-2999C□	2
	10D-30032-300	30.0~30.9	32	43	300	60	398	TPD3000C□-3099C□	2
PDC	12D-12016-144	12.0~12.4	16	20	144	48	207	TPD1200C□-1249C□	1
	12D-12516-150	12.5~12.9	16	20	150	48	213	TPD1250C□-1299C□	1
	12D-13016-156	13.0~13.4	16	20	156	48	220	TPD1300C□-1349C□	1
	12D-13516-162	13.5~13.9	16	20	162	48	226	TPD1350C□-1399C□	1
	12D-14016-168	14.0~14.4	16	20	168	48	232	TPD1400C□-1449C□	1
	12D-14516-174	14.5~14.9	16	20	174	48	237	TPD1450C□-1499C□	1
	12D-15020-180	15.0~15.9	20	25	180	50	248	TPD1500C□-1599C□	1
	12D-16020-192	16.0~16.9	20	25	192	50	261	TPD1600C□-1699C□	1
	12D-17020-204	17.0~17.9	20	25	204	50	273	TPD1700C□-1799C□	1
	12D-18025-216	18.0~18.9	25	33	216	56	294	TPD1800C□-1899C□	1
	12D-19025-228	19.0~19.9	25	33	228	56	306	TPD1900C□-1999C□	1
	12D-20025-240	20.0~20.9	25	33	240	56	318	TPD2000C□-2099C□	1
	12D-21025-252	21.0~21.9	25	33	252	56	330	TPD2100C□-2199C□	1
	12D-22025-264	22.0~22.9	25	33	264	56	343	TPD2200C□-2299C□	1
	12D-23025-276	23.0~23.9	25	33	276	56	356	TPD2300C□-2399C□	1
	12D-24032-288	24.0~24.9	32	43	288	60	375	TPD2400C -2499C	2
	12D-25032-300	25.0~25.9	32	43	300	60	387	TPD2500C□-2599C□	2
	12D-26032-312	26.0~26.9	32	43	312	60	407	TPD2600C□-2699C□	2
	12D-27032-324	27.0~27.9	32	43	324	60	419	TPD2700C□-2799C□	2
	12D-28032-336	28.0~28.9	32	43	336	60	432	TPD2800C□-2899C□	2
	12D-29032-348	29.0~29.9	32	43	348	60	446	TPD2900C□-2999C□	2
	12D-30032-360	30.0~30.9	32	43	360	60	458	TPD3000C□-3099C□	2

## **Technical Information for TPDB Plus Drill**

Highly precise and efficient top solid indexable drill

## TPDB Plus Drill

## (TPDB Plus / TPDB-F <sup>™</sup>/ TPDB-H <sup>™</sup>)

- 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

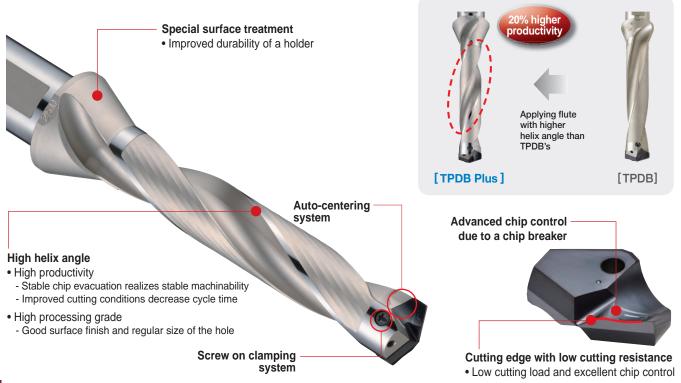
Insert



Holder

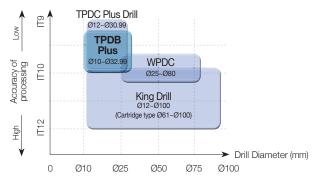


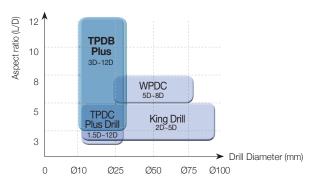
#### Features



# ۰F

### Application range





	Application range									
Tools	Application range	Aspect ratio (L/D)	Tolerance of drill dia.	Tolerance	Surface finish of hole (Ra)	Workpiece				
TPDB Plus	10-32,99 mm	3, 5, 8, 10, 12	h7	IT10	≤ 2.0 µm	P, K				

#### Performance evaluation

#### Run-out

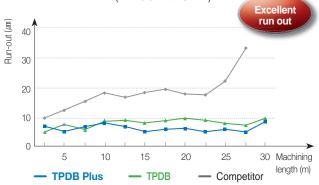
■ Workpiece Alloy steel (SCM440)

■ **Cutting** vc (m/min) = 90, fn (mm/rev) = 0.25

conditions ap (mm) = 120, wet (20 bar)

■ Tools Insert TPD250B (PC5300)

Holder TPDB250-32-5-P (Drill dia. = Ø25 mm)



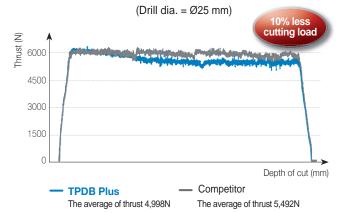
#### **Cutting load**

■ Workpiece Alloy steel (SCM440)

■ Cutting vc (m/min) = 120, fn (mm/rev) = 0.25

conditions ap (mm) = 120, wet (20 bar)

■ Tools Insert TPD250B (PC5300) Holder TPDB250-32-5-P



#### **Outstanding roundness of hole**

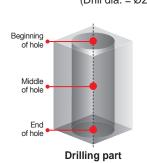
■ Workpiece Alloy steel (SCM440)

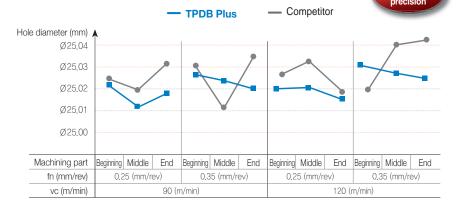
■ Cutting vc (m/min) = 90/120, fn (mm/rev) = 0.25/0.35

conditions ap (mm) = 120, wet (20 bar)

■ Tools Insert TPD250B (PC5300)
Holder TPDB250-32-5-P

(Drill dia. = Ø25 mm)







# Technical Information for TPDB Plus Drill

## Recommended Cutting Conditions

Workpiece					Aspect ratio (L/D) = 3D, 5D				
	workpiece				vc (m/min)	Feed rate (mm/rev) per drill dia. (mm)			
	ISO	Workpiece	НВ		(,	Ø10~Ø16.9	Ø17~Ø26.9	Ø27~Ø32.9	
	Carbon steel	Low carbon steel	80~120	PC5335 PC330P	110 (80~140)	0.15~0.30	0.20~0.35	0.25~0.40	
		High carbon steel	180~280	PC5335 PC330P	100 (70~130)	0.15~0.30	0.20~0.35	0.25~0.40	
Р	Alloy steel	Low alloy steel	140~260	PC5300	110 (80~140)	0.18~0.35	0.23~0.38	0.28~0.43	
		Low alloy heat treated steel	200~400	PC5300	75 (50~100)	0.18~0.35	0.23~0.38	0.28~0.43	
		High alloy steel	50~260	PC5300	70 (50~90)	0.18~0.30	0.20~0.35	0.25~0.40	
		High alloy heat treated steel	220~450	PC5300	60 (40~80)	0.18~0.30	0.20~0.35	0.25~0.40	
K	Coot iron	Gray cast iron	150~230	PC5300	110 (80~140)	0.18~0.35	0.20~0.40	0.25~0.45	
K	Cast iron	Ductile cast iron	160~260	PC5300	100 (70~130)	0.18~0.35	0.20~0.40	0.25~0.45	

<sup>\*</sup> 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.

### Replacement of Holders and Screws

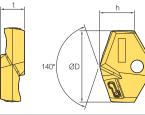
Worn part		How to check	Description
[Pic.1]	[Pic.2]	Check the gap	<ul> <li>In case of drilling for a long time as shown in the [Pic.1] the 'A' part is torn and twisted due to torque.</li> <li>As shown in the [Pic.2] check the gap between the insert and the tip seat turning the clamped insert from side to side. If there is a gap between them, replace the used holder to a new one.</li> </ul>
[Pic.3]	[Pic.4]	Check the moving	<ul> <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 [Pic.3].</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 [Pic.4] replace the used holder to a new one.</li> </ul>
[Pic.5]		Check the moving	<ul> <li>After an extended period of use, the screw can be worn as shown in the 'E' part of [Pic.5] which could decrease the clamping force of the insert. When the screw is worn, replace the old screw to a new one among the enclosed extras.</li> <li>Spreading the grease on the screw makes it last longer.</li> </ul>
① Check the 'C' and 'D' part as shown in the [Pic.6] ② Check whether the chips getting longer or not.		D D	Winding or jamming of long and tiny chips in drilling causes wear or scratch on the 'C' part as shown in the [Pic.6] due to chattering from machining in improper cutting conditions. In that case, reset the cutting conditions and check the Run-out before machining.  The excessive wear of the part 'D' as shown in the

[Pic.6] relating to chip curling might cause long chips.

<sup>\*</sup> In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.

### Available insert





(mm)

			Coated		~~	,	(mm	
	Designation	PC5300	PC5335	PC330P	ØD	h	t	
TPD	100B	•			10.0	5.5	3.5	
	105B	•			10.5	5.5	3.5	
	110B	•	•		11.0	5.8	3.5	
	115B	•			11.5	5.8	3.5	
	120B	•	•		12.0	6.3	3.5	
	125B	•	•		12.5	6.3	3.5	
	130B	•			13.0	6.5	4.0	
	135B	•			13.5	6.5	4.0	
	140B	•	•		14.0	6.8	4.0	
	145B	•	•		14.5	6.8	4.0	
	150B	•	•		15.0	7.0	4.0	
	155B	•	•		15.5	7.0	4.0	
	160B	•	•		16.0	7.7	5.5	
	165B	•			16.5	7.7	5.5	
	170B	•	•		17.0	7.9	5.5	
	175B	•	•		17.5	7.9	5.5	
	180B	•	•		18.0	8.1	6.0	
	185B	•	•		18.5	8.1	6.0	
	190B	•	•		19.0	8.3	6.0	
	195B	•			19.5	8.3	6.0	
	200B	•	•		20.0	9.7	6.5	
	205B	•			20.5	9.7	6.5	
	210B	•	•		21.0	9.4	6.5	
	215B	•			21.5	9.4	6.5	
	220B	•	•		22.0	9.6	7.0	
	225B	•			22.5	9.6	7.0	
	230B	•	•		23.0	9.8	7.0	
	235B	•			23.5	9.8	7.0	
	240B	•	•		24.0	10.7	7.5	
	245B	•			24.5	10.7	7.5	
	250B	•	•		25.0	10.9	7.5	
	255B	•			25.5	10.9	7.5	
	260B	•	•		26.0	11.0	8.5	
	265B	•			26.5	11.0	8.5	
	270B	•			27.0	11.8	8.5	
	275B	•			27.5	11.8	8.5	
	280B	•			28.0	12.6	9.5	
	285B	•			28.5	12.6	9.5	
	290B	•			29.0	12.9	9.5	
	295B	•			29.5	12.9	9.5	
	300B	•			30.0	13.0	10.0	
	305B	•			30.5	13.0	10.0	
	310B	•			31.0	13.2	10.0	
	315B	•			31.5	13.2	10.0	
	320B	•			32.0	13.4	10.0	
	325B	•			32.5	13.4	10.0	

 $<sup>\,</sup>$  We can provide nonstock items with Ø10.00-Ø32.99

#### •: Stock Item

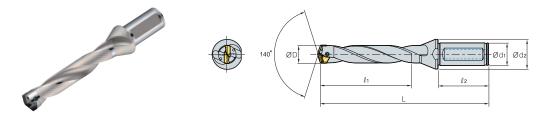
### Parts

(mm

					(mm)
	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

# F TPDB Plus Drill

# TPDB-P(3D)

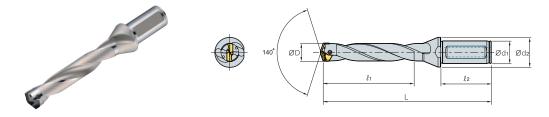




								(mr
	Designation	ØD	Ød₁	$\emptyset d_2$	Q 1	Q 2	L	Insert
TPDB	100-16-3-P	10.0~10.4	16	20	30.0	48	96.6	TPD100B~104B
	105-16-3-P	10.5~10.9	16	20	31.5	48	97.6	TPD105B~109B
	110-16-3-P	11.0~11.4	16	20	33.0	48	99.7	TPD110B~114B
	115-16-3-P	11.5~11.9	16	20	34.5	48	100.7	TPD115B~119B
	120-16-3-P	12.0~12.4	16	20	36.0	48	104.1	TPD120B~124B
	125-16-3-P	12.5~12.9	16	20	37.5	48	106.2	TPD125B~129B
	130-16-3-P	13.0~13.4	16	20	39.0	48	109.3	TPD130B~134B
	135-16-3-P	13.5~13.9	16	20	40.5	48	111.4	TPD135B~139B
	140-16-3-P	14.0~14.4	16	20	42.0	48	113.5	TPD140B~144B
	145-16-3-P	14.5~14.9	16	20	43.5	48	116.6	TPD145B~149B
	150-20-3-P	15.0~15.4	20	25	45.0	50	120.7	TPD150B~154B
	155-20-3-P	15.5~15.9	20	25	46.5	50	122.7	TPD155B~159B
	160-20-3-P	16.0~16.4	20	25	48.0	50	124.9	TPD160B~164B
	165-20-3-P	16.5~16.9	20	25	49.5	50	126.9	TPD165B~169B
	170-20-3-P	17.0~17.4	20	25	51.0	50	130.1	TPD170B~174B
	175-20-3-P	17.5~17.9	20	25	52.5	50	132.1	TPD175B~179B
	180-25-3-P	18.0~18.4	25	33	54.0	56	140.2	TPD180B~184B
	185-25-3-P	18.5~18.9	25	33	55.5	56	142.2	TPD185B~189B
	190-25-3-P	19.0~19.4	25	33	57.0	56	145.3	TPD190B~194B
	195-25-3-P	19.5~19.9	25	33	58.5	56	147.3	TPD195B~199B
	200-25-3-P	20.0~20.4	25	33	60.0	56	149.5	TPD200B~204B
	205-25-3-P	20.5~20.9	25	33	61.5	56	151.5	TPD205B~209B
	210-25-3-P	21.0~21.4	25	33	63.0	60	154.7	TPD210B~214B
	215-25-3-P	21.5~21.9	25	33	64.5	60	156.7	TPD215B~219B
	220-25-3-P	22.0~22.4	25	33	66.0	60	158.9	TPD220B~224B
	225-25-3-P	22.5~22.9	25	33	67.5	60	160.9	TPD225B~229B
	230-25-3-P	23.0~23.4	25	33	69.0	60	164.1	TPD230B~234B
	235-25-3-P	23.5~23.9	25	33	70.5	60	166.1	TPD235B~239B
	240-32-3-P	24.0~24.4	32	43	72.0	60	172.3	TPD240B~244B
	245-32-3-P	24.5~24.9	32	43	73.5	60	174.3	TPD245B~249B
	250-32-3-P	25.0~25.4	32	43	75.0	60	177.5	TPD250B~254B
	255-32-3-P	25.5~25.9	32	43	76.5	60	179.5	TPD255B~259B
	260-32-3-P	26.0~26.9	32	43	78.0	60	181.7	TPD260B~269B
	270-32-3-P	27.0~27.9	32	43	81.0	60	186.9	TPD270B~279B
	280-32-3-P	28.0~28.9	32	43	84.0	60	191.0	TPD280B~289B
	290-32-3-P	29.0~29.9	32	43	87.0	60	196.2	TPD290B~299B
	300-32-3-P	30.0~30.9	32	43	90.0	60	199.4	TPD300B~309B
	310-32-3-P	31.0~31.9	32	43	93.0	60	204.6	TPD310B~319B
	320-32-3-P	32.0~32.9	32	43	96.0	60	206.8	TPD320B~329B

# TPDB Plus Drill **F**

# TPDB-P(5D)



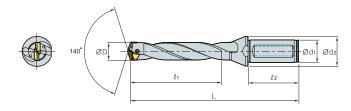


	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	Insert
PDB	100-16-5-P	10.0~10.4	16	20	50.0	48	116.1	TPD100B~104B
	105-16-5-P	10.5~10.9	16	20	52.5	48	118.9	TPD105B~109B
	110-16-5-P	11.0~11.4	16	20	55.0	48	121.7	TPD110B~114B
	115-16-5-P	11.5~11.9	16	20	57.5	48	124.5	TPD115B~119B
	120-16-5-P	12.0~12.4	16	20	60.0	48	128.1	TPD120B~124B
	125-16-5-P	12.5~12.9	16	20	62.5	48	131.2	TPD125B~129B
	130-16-5-P	13.0~13.4	16	20	65.0	48	135.3	TPD130B~134B
	135-16-5-P	13.5~13.9	16	20	67.5	48	138.4	TPD135B~139B
	140-16-5-P	14.0~14.4	16	20	70.0	48	141.5	TPD140B~144B
	145-16-5-P	14.5~14.9	16	20	72.5	48	145.6	TPD145B~149B
	150-20-5-P	15.0~15.4	20	25	75.0	50	150.7	TPD150B~154B
	155-20-5-P	15.5~15.9	20	25	77.5	50	153.7	TPD155B~159B
	160-20-5-P	16.0~16.4	20	25	80.0	50	156.9	TPD160B~164B
	165-20-5-P	16.5~16.9	20	25	82.5	50	159.9	TPD165B~169B
	170-20-5-P	17.0~17.4	20	25	85.0	50	164.1	TPD170B~174B
	175-20-5-P	17.5~17.9	20	25	87.5	50	167.1	TPD175B~179B
	180-25-5-P	18.0~18.4	25	33	90.0	56	176.2	TPD180B~184B
	185-25-5-P	18.5~18.9	25	33	92.5	56	179.2	TPD185B~189B
	190-25-5-P	19.0~19.4	25	33	95.0	56	183.3	TPD190B~194B
	195-25-5-P	19.5~19.9	25	33	97.5	56	186.3	TPD195B~199B
	200-25-5-P	20.0~20.4	25	33	100.0	56	189.5	TPD200B~204B
	205-25-5-P	20.5~20.9	25	33	102.5	56	192.5	TPD205B~209B
	210-25-5-P	21.0~21.4	25	33	105.0	60	196.7	TPD210B~214B
	215-25-5-P	21.5~21.9	25	33	107.5	60	199.7	TPD215B~219B
	220-25-5-P	22.0~22.4	25	33	110.0	60	202.9	TPD220B~224B
	225-25-5-P	22.5~22.9	25	33	112.5	60	205.9	TPD225B~229B
	230-25-5-P	23.0~23.4	25	33	115.0	60	210.1	TPD230B~234B
	235-25-5-P	23.5~23.9	25	33	117.5	60	213.1	TPD235B~239B
	240-32-5-P	24.0~24.4	32	43	120.0	60	220.3	TPD240B~244B
	245-32-5-P	24.5~24.9	32	43	122.5	60	223.3	TPD245B~249B
	250-32-5-P	25.0~25.4	32	43	125.0	60	227.5	TPD250B~254B
	255-32-5-P	25.5~25.9	32	43	127.5	60	230.5	TPD255B~259B
	260-32-5-P	26.0~26.9	32	43	130.0	60	233.7	TPD260B~269B
	270-32-5-P	27.0~27.9	32	43	135.0	60	240.9	TPD270B~279B
	280-32-5-P	28.0~28.9	32	43	140.0	60	247.0	TPD280B~289B
	290-32-5-P	29.0~29.9	32	43	145.0	60	254.2	TPD290B~299B
	300-32-5-P	30.0~30.9	32	43	150.0	60	259.4	TPD300B~309B
	310-32-5-P	31.0~31.9	32	43	155.0	60	266.6	TPD310B~319B
	320-32-5-P	32.0~32.9	32	43	160.0	60	270.8	TPD320B~329B

# F TPDB Plus Drill

# TPDB-P(8D)





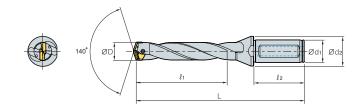


	Designation	ØD	Ød₁	Ød <sub>2</sub>	Ų 1	Q 2	L	Insert
TPDB	100-16-8-P	10.0~10.4	16	20	80	48	146.1	TPD100B~104B
	105-16-8-P	10.5~10.9	16	20	84	48	150.4	TPD105B~109B
	110-16-8-P	11.0~11.4	16	20	88	48	154.7	TPD110B~114B
	115-16-8-P	11.5~11.9	16	20	92	48	159.0	TPD115B~119B
	120-16-8-P	12.0~12.4	16	20	96	48	164.1	TPD120B~124B
	125-16-8-P	12.5~12.9	16	20	100	48	168.7	TPD125B~129B
	130-16-8-P	13.0~13.4	16	20	104	48	174.3	TPD130B~134B
	135-16-8-P	13.5~13.9	16	20	108	48	178.9	TPD135B~139B
	140-16-8-P	14.0~14.4	16	20	112	48	183.5	TPD140B~144B
	145-16-8-P	14.5~14.9	16	20	116	48	189.1	TPD145B~149B
	150-20-8-P	15.0~15.4	20	25	120	50	195.7	TPD150B~154B
	155-20-8-P	15.5~15.9	20	25	124	50	200.2	TPD155B~159B
	160-20-8-P	16.0~16.4	20	25	128	50	204.9	TPD160B~164B
	165-20-8-P	16.5~16.9	20	25	132	50	209.4	TPD165B~169B
	170-20-8-P	17.0~17.4	20	25	136	50	215.1	TPD170B~174B
	175-20-8-P	17.5~17.9	20	25	140	50	219.6	TPD175B~179B
	180-25-8-P	18.0~18.4	25	33	144	56	230.2	TPD180B~184B
	185-25-8-P	18.5~18.9	25	33	148	56	234.7	TPD185B~189B
	190-25-8-P	19.0~19.4	25	33	152	56	240.3	TPD190B~194B
	195-25-8-P	19.5~19.9	25	33	156	56	244.8	TPD195B~199B
	200-25-8-P	20.0~20.4	25	33	160	56	249.5	TPD200B~204B
	205-25-8-P	20.5~20.9	25	33	164	56	254.0	TPD205B~209B
	210-25-8-P	21.0~21.4	25	33	168	60	259.7	TPD210B~214B
	215-25-8-P	21.5~21.9	25	33	172	60	264.2	TPD215B~219B
	220-25-8-P	22.0~22.4	25	33	176	60	268.9	TPD220B~224B
	225-25-8-P	22.5~22.9	25	33	180	60	273.4	TPD225B~229B
	230-25-8-P	23.0~23.4	25	33	184	60	279.1	TPD230B~234B
	235-25-8-P	23.5~23.9	25	33	188	60	283.6	TPD235B~239B
	240-32-8-P	24.0~24.4	32	43	192	60	292.3	TPD240B~244B
	245-32-8-P	24.5~24.9	32	43	196	60	296.8	TPD245B~249B
	250-32-8-P	25.0~25.4	32	43	200	60	302.5	TPD250B~254B
	255-32-8-P	25.5~25.9	32	43	204	60	307.0	TPD255B~259B
	260-32-8-P	26.0~26.9	32	43	208	60	311.7	TPD260B~269B
	270-32-8-P	27.0~27.9	32	43	216	60	321.9	TPD270B~279B
	280-32-8-P	28.0~28.9	32	43	224	60	331.0	TPD280B~289B
	290-32-8-P	29.0~29.9	32	43	232	60	341.2	TPD290B~299B
	300-32-8-P	30.0~30.9	32	43	240	60	349.4	TPD300B~309B
	310-32-8-P	31.0~31.9	32	43	248	60	359.6	TPD310B~319B
	320-32-8-P	32.0~32.9	32	43	256	60	366.8	TPD320B~329B



## TPDB-P(10D)







								(
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q <sub>1</sub>	Q 2	L	Insert
ГРDВ	100-16-10-P	10.0~10.4	16	20	100	48	166.6	TPD100B~104B
	105-16-10-P	10.5~10.9	16	20	105	48	171.6	TPD105B~109B
	110-16-10-P	11.0~11.4	16	20	110	48	176.7	TPD110B~114B
	115-16-10-P	11.5~11.9	16	20	115	48	181.7	TPD115B~119B
	120-16-10-P	12.0~12.4	16	20	120	48	188.1	TPD120B~124B
	125-16-10-P	12.5~12.9	16	20	125	48	193.7	TPD125B~129B
	130-16-10-P	13.0~13.4	16	20	130	48	200.3	TPD130B~134B
	135-16-10-P	13.5~13.9	16	20	135	48	205.9	TPD135B~139B
	140-16-10-P	14.0~14.4	16	20	140	48	211.5	TPD140B~144B
	145-16-10-P	14.5~14.9	16	20	145	48	218.1	TPD145B~149B
	150-20-10-P	15.0~15.4	20	25	150	50	225.7	TPD150B~154B
	155-20-10-P	15.5~15.9	20	25	155	50	231.2	TPD155B~159B
	160-20-10-P	16.0~16.4	20	25	160	50	236.9	TPD160B~164B
	165-20-10-P	16.5~16.9	20	25	165	50	242.4	TPD165B~169B
	170-20-10-P	17.0~17.4	20	25	170	50	249.1	TPD170B~174B
	175-20-10-P	17.5~17.9	20	25	175	50	254.6	TPD175B~179B
	180-25-10-P	18.0~18.4	25	33	180	56	266.2	TPD180B~184B
	185-25-10-P	18.5~18.9	25	33	185	56	271.7	TPD185B~189B
	190-25-10-P	19.0~19.4	25	33	190	56	278.3	TPD190B~194B
	195-25-10-P	19.5~19.9	25	33	195	56	283.8	TPD195B~199B
	200-25-10-P	20.0~20.4	25	33	200	56	289.5	TPD200B~204B
	205-25-10-P	20.5~20.9	25	33	205	56	295.0	TPD205B~209B
	210-25-10-P	21.0~21.4	25	33	210	60	301.7	TPD210B~214B
	215-25-10-P	21.5~21.9	25	33	215	60	307.2	TPD215B~219B
	220-25-10-P	22.0~22.4	25	33	220	60	312.9	TPD220B~224B
	225-25-10-P	22.5~22.9	25	33	225	60	318.6	TPD225B~229B
	230-25-10-P	23.0~23.4	25	33	230	60	325.1	TPD230B~234B
	235-25-10-P	23.5~23.9	25	33	235	60	330.6	TPD235B~239B
	240-32-10-P	24.0~24.4	32	43	240	60	340.3	TPD240B~244B
	245-32-10-P	24.5~24.9	32	43	245	60	345.8	TPD245B~249B
	250-32-10-P	25.0~25.4	32	43	250	60	352.5	TPD250B~254B
	255-32-10-P	25.5~25.9	32	43	255	60	358.0	TPD255B~259B
	260-32-10-P	26.0~26.9	32	43	260	60	363.7	TPD260B~269B
	270-32-10-P	27.0~27.9	32	43	270	60	375.9	TPD270B~279B
	280-32-10-P	28.0~28.9	32	43	280	60	387.0	TPD280B~289B
	290-32-10-P	29.0~29.9	32	43	290	60	399.2	TPD290B~299B
	300-32-10-P	30.0~30.9	32	43	300	60	409.4	TPD300B~309B
	310-32-10-P	31.0~31.9	32	43	310	60	421.6	TPD310B~319B
	320-32-10-P	32.0~32.9	32	43	320	60	430.8	TPD320B~329B

## F TPDB Plus Drill

## TPDB-P(12D)





								(m
	Designation	ØD	Ød₁	Ød <sub>2</sub>	Q 1	Q 2	L	Insert
TPDB	100-16-12-P	10.0~10.4	16	20	120	48	186.6	TPD100B~104B
	105-16-12-P	10.5~10.9	16	20	126	48	192.6	TPD105B~109B
	110-16-12-P	11.0~11.4	16	20	132	48	198.7	TPD110B~114B
	115-16-12-P	11.5~11.9	16	20	138	48	204.7	TPD115B~119B
	120-16-12-P	12.0~12.4	16	20	144	48	212.1	TPD120B~124B
	125-16-12-P	12.5~12.9	16	20	150	48	218.7	TPD125B~129B
	130-16-12-P	13.0~13.4	16	20	156	48	226.3	TPD130B~134B
	135-16-12-P	13.5~13.9	16	20	162	48	232.9	TPD135B~139B
	140-16-12-P	14.0~14.4	16	20	168	48	239.5	TPD140B~144B
	145-16-12-P	14.5~14.9	16	20	174	48	247.1	TPD145B~149B
	150-20-12-P	15.0~15.4	20	25	180	50	255.7	TPD150B~154B
	155-20-12-P	15.5~15.9	20	25	186	50	262.2	TPD155B~159B
	160-20-12-P	16.0~16.4	20	25	192	50	268.9	TPD160B~164B
	165-20-12-P	16.5~16.9	20	25	198	50	275.4	TPD165B~169B
	170-20-12-P	17.0~17.4	20	25	204	50	283.1	TPD170B~174B
	175-20-12-P	17.5~17.9	20	25	210	50	289.6	TPD175B~179B
	180-25-12-P	18.0~18.4	25	33	216	56	302.2	TPD180B~184B
	185-25-12-P	18.5~18.9	25	33	222	56	308.7	TPD185B~189B
	190-25-12-P	19.0~19.4	25	33	228	56	316.3	TPD190B~194B
	195-25-12-P	19.5~19.9	25	33	234	56	322.8	TPD195B~199B
	200-25-12-P	20.0~20.4	25	33	240	56	329.5	TPD200B~204B
	205-25-12-P	20.5~20.9	25	33	246	56	336.0	TPD205B~209B
	210-25-12-P	21.0~21.4	25	33	252	60	343.7	TPD210B~214B
	215-25-12-P	21.5~21.9	25	33	258	60	350.2	TPD215B~219B
	220-25-12-P	22.0~22.4	25	33	264	60	356.9	TPD220B~224B
	225-25-12-P	22.5~22.9	25	33	270	60	363.6	TPD225B~229B
	230-25-12-P	23.0~23.4	25	33	276	60	371.1	TPD230B~234B
	235-25-12-P	23.5~23.9	25	33	282	60	377.6	TPD235B~239B
	240-32-12-P	24.0~24.4	32	43	288	60	388.3	TPD240B~244B
	245-32-12-P	24.5~24.9	32	43	294	60	394.8	TPD245B~249B
	250-32-12-P	25.0~25.4	32	43	300	60	402.5	TPD250B~254B
	255-32-12-P	25.5~25.9	32	43	306	60	409.0	TPD255B~259B
	260-32-12-P	26.0~26.9	32	43	312	60	415.7	TPD260B~269B
	270-32-12-P	27.0~27.9	32	43	324	60	429.9	TPD270B~279B
	280-32-12-P	28.0~28.9	32	43	336	60	443.0	TPD280B~289B
	290-32-12-P	29.0~29.9	32	43	348	60	457.2	TPD290B~299B
	300-32-12-P	30.0~30.9	32	43	360	60	469.4	TPD300B~309B
	310-32-12-P	31.0~31.9	32	43	372	60	483.6	TPD310B~319B
	320-32-12-P	32.0~32.9	32	43	384	60	494.8	TPD320B~329B

### Cutting edge with 180° point angle - Flat bottom machining



- High precision clamping system High precision clamping due to high precise grinding and auto-centering
- Screw on clamping system Easy to replace insert
- Low cutting load cutting edge Low cutting load and excellent chip cpntrol
- High durability holder Improved wear resistance and durability with special surface treatment implementation
- Holder with good chip evacuation Good chip evacuation and reduced cutting load with high helix angle

### Code system

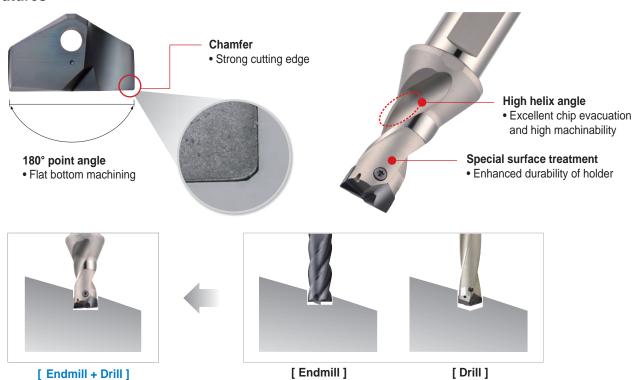
#### · Insert



#### Holder

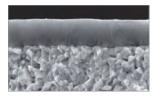


### Features



## Technical Information for TPDB-F

#### Grade selection



#### PC5400

- PVD coating technology with high lubrication, built up edge resistance and chipping resistance
- Excellent chipping resistance due to high toughness coating with high adhesive strength
- Enhanced fracture resistance and stable machinability due to ultra-fine substrate with high toughness substrate

#### Performance evaluation

#### Precision

■ Workpiece Alloy steel (SCM440, HRC22)

■ Cutting vc (m/min) = 70/90, fn (mm/rev) = 0.2/0.3

conditions ap (mm) = 30, wet (20 bar)

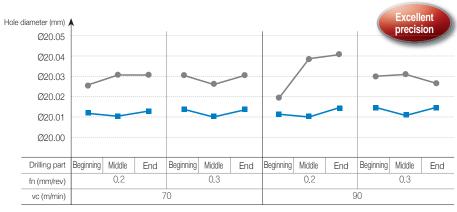
■ Tools Insert TPD200B-F (PC5400) Holder TPDB200-25-1.5-F (Drill dia. = Ø20 mm)

Beginning of hole

Middle of hole

End of hole

Drilling part



Competitor

Competitor

TPDB-F

- TPDB-F

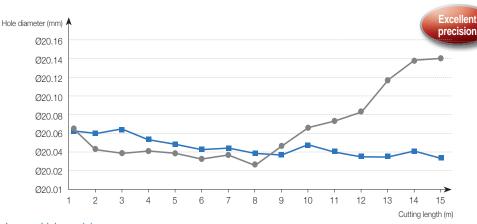
Cutting edge with low cutting load enhances high precision

■ Workpiece Alloy steel (SCM440, HRC22), Angled surface 15°

■ Cutting vc (m/min) = 70, fn (mm/rev) = 0.21 conditions ap (mm) = 20, wet (20 bar)

■ Tools Insert TPD200B-F (PC5400) Holder TPDB200-25-1.5-F (Drill dia. = Ø20 mm)

Angled surface drilling



Cutting edge with low cutting load enhances high precision



D ....

### Recommended cutting condition (TPDB-F)

		Workpiece				Aspect ratio (L/D) = 1.5D			
	***OTAPIECE			Grade	vc (m/min)	Feed rate (mm/rev)	Feed rate (mm/rev) per drill dia. (mm)		
	ISO	Workpiece	НВ		(,	Ø14.0~Ø21.9	Ø22.0~Ø30.9		
	Carbon	Low carbon steel (SM10C, SM20C etc)	80~120	PC5400 -	80 (60~100)	0.2~0.3	0.22~0.32		
P	steel	High carbon steel (SM45C, SM50C etc)	180~280		70 (50~90)	0.2~0.3	0.22~0.32		
	Alloy steel	Low alloy steel (SCM420, SCM440 etc)	140~260	F C 3400	70 (50~90)	0.2~0.3	0.22~0.32		
	Alloy Steel	High alloy steel (SCM435, SCM445 etc)	260~320		60 (40~80)	0.2~0.3	0.22~0.32		

Machining	Flat surface drilling	Angled surface drilling	Curved surface drilling	Plunging	Boring
Pic.					
1.5D	0	0	0	0	0

<sup>\*</sup> Please refer to the precaution in drilling in case of angled surface, curved surface drilling, plunging and boring

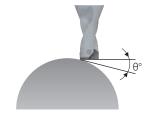
### Precaution in drilling

### Angled surface drilling



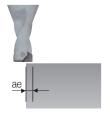
• Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface (In case,  $\theta$  is over 30°, reduce it to 50%)

### **Curved surface drilling**



• Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface (In case,  $\theta$  is over30, 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

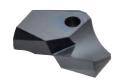
### **Boring**

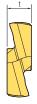


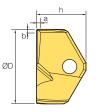
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of boring
- Start with 2 mm stepping before boring to prevent long chip

## F TPDB-F

### Available insert







		Coated					(mı
	Designation	PC5400	ØD	h	t	а	b
TPD	140B-F		14.0	8.75	4.0	0.065	0.055
	145B-F		14.5	8.75	4.0	0.065	0.055
	150B-F		15.0	9.25	4.0	0.065	0.055
	155B-F		15.5	9.25	4.0	0.065	0.055
	160B-F		16.0	10.25	5.5	0.065	0.055
	165B-F		16.5	10.25	5.5	0.065	0.055
	170B-F		17.0	10.75	5.5	0.065	0.055
	175B-F		17.5	10.75	5.5	0.065	0.055
	180B-F		18.0	11.75	6.0	0.065	0.055
	185B-F		18.5	11.75	6.0	0.065	0.055
	190B-F		19.0	12.25	6.0	0.065	0.055
	195B-F		19.5	12.25	6.0	0.065	0.055
	200B-F		20.0	12.75	6.5	0.065	0.055
	205B-F		20.5	12.75	6.5	0.065	0.055
	210B-F		21.0	13.25	6.5	0.065	0.055
	215B-F		21.5	13.25	6.5	0.065	0.055
	220B-F		22.0	13.75	7.0	0.065	0.055
	225B-F		22.5	13.75	7.0	0.065	0.055
	230B-F		23.0	14.25	7.0	0.065	0.055
	235B-F		23.5	14.25	7.0	0.065	0.055
	240B-F		24.0	14.75	7.5	0.065	0.055
	245B-F		24.5	14.75	7.5	0.065	0.055
	250B-F		25.0	15.25	7.5	0.065	0.055
	255B-F		25.5	15.25	7.5	0.065	0.055
	260B-F		26.0	15.75	8.5	0.065	0.055
	265B-F		26.5	15.75	8.5	0.065	0.055
	270B-F		27.0	16.75	8.5	0.065	0.055
	275B-F		27.5	16.75	8.5	0.065	0.055
	280B-F		28.0	17.75	9.5	0.065	0.055
	285B-F		28.5	17.75	9.5	0.065	0.055
	290B-F		29.0	18.25	9.5	0.065	0.055
	295B-F		29.5	18.25	9.5	0.065	0.055
	300B-F		30.0	18.75	10.0	0.065	0.055
	305B-F		30.5	18.75	10.0	0.065	0.055

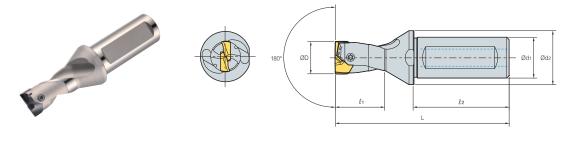
\* We can provide nonstock items with Ø14.00-Ø30.99

### Parts

(mm)

Designation		Drill dia. (ØD)	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)**



_ A	

(mm)

								(mm
	Designation	ØD	Ød₁	$\emptyset d_2$	Q 1	Q 2	L	Insert
TPDB	140-16-1.5-F	14.0~14.4	16	20	28	48	86.0	TPD140B-F~TPD144B-F
	145-16-1.5-F	14.5~14.9	16	20	29	48	87.0	TPD145B-F~TPD149B-F
	150-20-1.5-F	15.0~15.4	20	25	30	50	93.0	TPD150B-F~TPD154B-F
	155-20-1.5-F	15.5~15.9	20	25	31	50	94.0	TPD155B-F~TPD159B-F
	160-20-1.5-F	16.0~16.4	20	25	32	50	95.0	TPD160B-F~TPD164B-F
	165-20-1.5-F	16.5~16.9	20	25	33	50	96.0	TPD165B-F~TPD169B-F
	170-20-1.5-F	17.0~17.4	20	25	34	50	97.0	TPD170B-F~TPD174B-F
	175-20-1.5-F	17.5~17.9	20	25	35	50	98.0	TPD175B-F~TPD179B-F
	180-20-1.5-F	18.0~18.4	20	25	36	50	99.0	TPD180B-F~TPD184B-F
	185-20-1.5-F	18.5~18.9	20	25	37	50	100.0	TPD185B-F~TPD189B-F
	190-25-1.5-F	19.0~19.4	25	33	38	56	101.0	TPD190B-F~TPD194B-F
	195-25-1.5-F	19.5~19.9	25	33	39	56	102.0	TPD195B-F~TPD199B-F
	200-25-1.5-F	20.0~20.4	25	33	40	56	116.0	TPD200B-F~TPD204B-F
	205-25-1.5-F	20.5~20.9	25	33	41	56	117.0	TPD205B-F~TPD209B-F
	210-25-1.5-F	21.0~21.4	25	33	42	56	118.0	TPD210B-F~TPD214B-F
	215-25-1.5-F	21.5~21.9	25	33	43	56	119.0	TPD215B-F~TPD219B-F
	220-25-1.5-F	22.0~22.4	25	33	44	56	120.0	TPD220B-F~TPD224B-F
	225-25-1.5-F	22.5~22.9	25	33	45	56	121.0	TPD225B-F~TPD229B-F
	230-25-1.5-F	23.0~23.4	25	33	46	56	122.0	TPD230B-F~TPD234B-F
	235-25-1.5-F	23.5~23.9	25	33	47	56	123.0	TPD235B-F~TPD239B-F
	240-32-1.5-F	24.0~24.4	32	43	48	60	128.5	TPD240B-F~TPD244B-F
	245-32-1.5-F	24.5~24.9	32	43	49	60	129.5	TPD245B-F~TPD249B-F
	250-32-1.5-F	25.0~25.4	32	43	50	60	130.5	TPD250B-F~TPD254B-F
	255-32-1.5-F	25.5~25.9	32	43	51	60	131.5	TPD255B-F~TPD259B-F
	260-32-1.5-F	26.0~26.4	32	43	52	60	132.5	TPD260B-F~TPD264B-F
	265-32-1.5-F	26.5~26.9	32	43	53	60	133.5	TPD265B-F~TPD269B-F
	270-32-1.5-F	27.0~27.4	32	43	54	60	134.5	TPD270B-F~TPD274B-F
	275-32-1.5-F	27.5~27.9	32	43	55	60	135.5	TPD275B-F~TPD279B-F
	280-32-1.5-F	28.0~28.4	32	43	56	60	136.5	TPD280B-F~TPD284B-F
	285-32-1.5-F	28.5~28.9	32	43	57	60	137.5	TPD285B-F~TPD289B-F
	290-32-1.5-F	29.0~29.4	32	43	58	60	138.5	TPD290B-F~TPD294B-F
	295-32-1.5-F	29.5~29.9	32	43	59	60	139.5	TPD295B-F~TPD299B-F
	300-32-1.5-F	30.0~30.4	32	43	60	60	140.5	TPD300B-F~TPD304B-F
	305-32-1.5-F	30.5~30.9	32	43	61	60	141.5	TPD305B-F~TPD309B-F

<sup>◆</sup> Applicable inserts F66

## F

### **Technical Information for TPDB-H**

### The exclusive top solid indexable drill for steel-frame structure, H-Beam



- High precision clamping system High precision clamping due highly precise grinding and auto-centering
- Screw on clamping system Easy to replace insert
- Edge design with excellent centering Low cutting load and good chip control
- High durability holder Improved wear resistance and durability with special surface treatment implementation
- Holder with good chip evacuation Good chip evacuation and reduced cutting load with high helix angle
- Optimally designed oil hole Long tool life

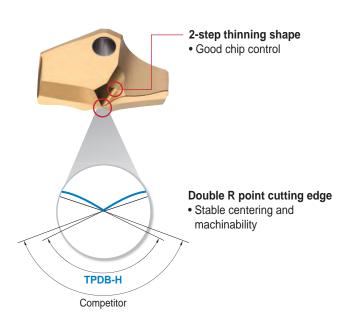
### Code system

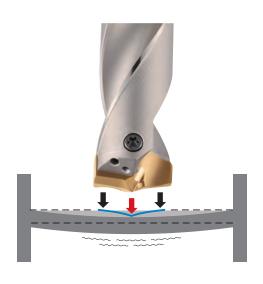
Insert





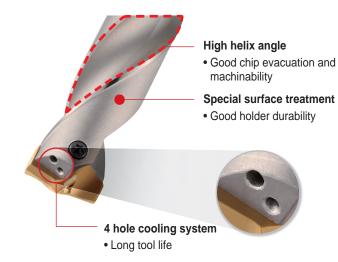
#### Features





- Applied Double R point edge design is optimized for excellent centering and stable machinability
- Machinability and productivity are improved by minimizing both workpiece's bending and chipping at edge corner section

### Features of holder



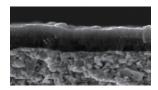




[ Competitor ]

■ Concentrated coolant injection on delicate cutting edge increases tool life

#### Grade selection



### PC340Q 100V

- Application of high hardness lubricative PVD coating technology with excellent resistance on wear, welding, and chipping
- The special surface treatment improves chip evacuation and reduces wear on the rake surface and relief face
- High hardness ultra-fine substrate ensures high rigidity of cutting edge and good chipping resistance

#### Performance evaluation

### Chip control

■ Workpiece Carbon steel (SS275, SM355A) vc (m/min) = 80, fn (mm/rev) = 0.2 Cutting conditions ap (mm) = 30, wet

Insert TPD270B-H (PC340Q) ■ Tools

Holder TPDB270-32-4-H (Drill dia. = Ø27 mm)







**SS275** 

SM355A

### Wear resistance

■ Workpiece Carbon steel (SS275)

vc (m/min) = 65, fn (mm/rev) = 0.25Cutting conditions ap (mm) = 30, wet

■ Tools Insert TPD220B-H (PC340Q)

Holder TPDB220-25-4-H (Drill dia. = Ø22 mm)

■ Workpiece Carbon steel (SM355A)

vc (m/min) = 70, fn (mm/rev) = 0.25 Cutting

conditions ap (mm) = 30, wet

TPD270B-H (PC340Q) ■ Tools Insert

Holder TPDB270-32-4-H (Drill dia. = Ø27 mm)

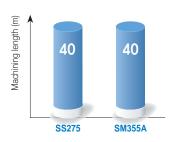


**SS275** 



SM355A

■ Test result



Normal wear and still usable



### Technical Information for TPDB-H

### Workpiece and recommended cutting conditions

	Workpiece					vc (m/min)	Aspect ratio (L/D) = 3D, 4D Feed rate (mm/rev) per drill dia. (mm)	
	ISO	Workpiece		Worpiece materials	Grade ce materials		Ø14.0~Ø21.0	Ø22.0~Ø30.0
	Carbon steel	H-Beam	ann.	SS275 (SS400*) SM355 (SM490*) SHN355 (SHN490*)	PC340Q	65 (60~75)	0.2~0.25	0.2~0.3
		Angle						
P		Plate						
		Plate (Stacked)	233			60 (55~65)	0.15~0.25	0.15~0.25

### Precaution in drilling

### Angled surface drilling

- The approach angle between drill and the workpiece at the beginning and the end should be less than 6°
- Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface

### Stacked plates drilling



- Gap between the plates could make wrong chip evacuation causing fracture of the drill
- Place stacked plates without any gap between each

### Plunging



 Irregular cutting resistance in plunging could cause fracture and deformation of the drill

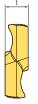
### Boring

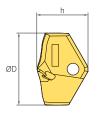


• Boring is not recommended due to wear and chipping in the corner of the insert

### Available insert







(mm)

	Designation	Coated	ØD.	<b>L</b>	
	Designation	PC5300	ØD	h	t
TPD	140B-H		14.0	10.0	4.0
	145B-H		14.5	10.0	4.0
	150B-H		15.0	10.5	4.0
	155B-H		15.5	10.5	4.0
	160B-H		16.0	11.5	5.5
	165B-H		16.5	11.5	5.5
	170B-H		17.0	12.0	5.5
	175B-H		17.5	12.0	5.5
	180B-H		18.0	13.0	6.0
	185B-H		18.5	13.0	6.0
	190B-H		19.0	13.5	6.0
	195B-H		19.5	13.5	6.0
	200B-H		20.0	14.5	6.5
	205B-H		20.5	14.5	6.5
	210B-H		21.0	15.0	6.5
	215B-H		21.5	15.0	6.5
	220B-H		22.0	15.5	7.0
	225B-H		22.5	15.5	7.0
	230B-H		23.0	16.0	7.0
	235B-H		23.5	16.0	7.0
	240B-H		24.0	16.5	7.5
	245B-H		24.5	16.5	7.5
	250B-H		25.0	17.0	7.5
	255B-H		25.5	17.0	7.5
	260B-H		26.0	17.5	8.5
	265B-H		26.5	17.5	8.5
	270B-H		27.0	18.5	8.5
	275B-H		27.5	18.5	8.5
	280B-H		28.0	19.5	9.5
	285B-H		28.5	19.5	9.5
	290B-H		29.0	20.0	9.5
	295B-H		29.5	20.0	9.5
	300B-H		30.0	20.5	10.0
	305B-H		30.5	20.5	10.0

 $\times$  We can provide nonstock items with Ø14.00-Ø30.99

•: Stock Item

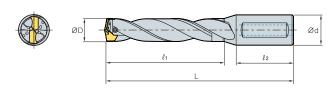
### Parts

(mr

					(11111)
	Designation	Drill dia. (ØD)	Screw	Wrench	Torque (N∙m)
TPD	140B-H~149B-H	14.0~14.9	FTNB02512-P	TW07S	0.8
	150B-H~179B-H	15.0~17.9	FTNB02514-P	TW07S	0.8
	180B-H~199B-H	18.0~19.9	FTNB0316-P	TW09S	1.2
	200B-H~239B-H	20.0~23.9	FTNB0319	TW09S	1.2
	240B-H~259B-H	24.0~25.9	FTNB03522	TW15S	3.0
	260B-H~279B-H	26.0~27.9	FTNB03524	TW15S	3.0
	280B-H~299B-H	28.0~29.9	FTNB0426	TW15S	3.0
	300B-H~309B-H	30.0~30.9	FTNB0528	TW20-100	4.0

## TPDB-H(3D)





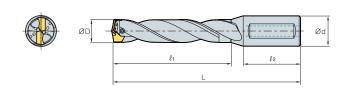


							(
	Designation	ØD	Ød	Q 1	Q 2	L	Insert
PDB	140-16-3-H	14.0~14.4	16	42	48	98.8	TPD140B-144B-H
	145-16-3-H	14.5~14.9	16	43.5	48	100.8	TPD145B-149B-H
	150-20-3-H	15.0~15.4	20	45	50	104.4	TPD150B-154B-H
	155-20-3-H	15.5~15.9	20	46.5	50	106.4	TPD155B-159B-H
	160-20-3-H	16.0~16.4	20	48	50	108.0	TPD160B-164B-H
	165-20-3-H	16.5~16.9	20	49.5	50	110.0	TPD165B-169B-H
	170-20-3-H	17.0~17.4	20	51	50	111.5	TPD170B-174B-H
	175-20-3-H	17.5~17.9	20	52.5	50	113.5	TPD175B-179B-H
	180-20-3-H	18.0~18.4	20	54	50	115.1	TPD180B-184B-H
	185-20-3-H	18.5~18.9	20	55.5	50	117.1	TPD185B-189B-H
	190-20-3-H	19.0~19.4	20	57	50	118.7	TPD190B-194B-H
	195-20-3-H	19.5~19.9	20	58.5	50	120.7	TPD195B-199B-H
	200-25-3-H	20.0~20.4	25	60	56	128.3	TPD200B-204B-H
	205-25-3-H	20.5~20.9	25	61.5	56	130.3	TPD205B-209B-H
	210-25-3-H	21.0~21.4	25	63	56	131.9	TPD210B-214B-H
	215-25-3-H	21.5~21.9	25	64.5	56	133.9	TPD215B-219B-H
	220-25-3-H	22.0~22.4	25	66	56	135.5	TPD220B-224B-H
	225-25-3-H	22.5~22.9	25	67.5	56	137.5	TPD225B-229B-H
	230-25-3-H	23.0~23.4	25	69	56	139.1	TPD230B-234B-H
	235-25-3-H	23.5~23.9	25	70.5	56	141.1	TPD235B-239B-H
	240-32-3-H	24.0~24.4	32	72	60	146.8	TPD240B-244B-H
	245-32-3-H	24.5~24.9	32	73.5	60	148.8	TPD245B-249B-H
	250-32-3-H	25.0~25.4	32	75	60	150.3	TPD250B-254B-H
	255-32-3-H	25.5~25.9	32	76.5	60	152.3	TPD255B-259B-H
	260-32-3-H	26.0~26.4	32	78	60	153.8	TPD260B-264B-H
	265-32-3-H	26.5~26.9	32	79.5	60	155.8	TPD265B-269B-H
	270-32-3-H	27.0~27.4	32	81	60	157.5	TPD270B-274B-H
	275-32-3-H	27.5~27.9	32	82.5	60	159.5	TPD275B-279B-H
	280-32-3-H	28.0~28.4	32	84	60	161.0	TPD280B-284B-H
	285-32-3-H	28.5~28.9	32	85.5	60	163.0	TPD285B-289B-H
	290-32-3-H	29.0~29.4	32	87	60	164.6	TPD290B-294B-H
	295-32-3-H	29.5~29.9	32	88.5	60	166.6	TPD295B-299B-H
	300-32-3-H	30.0~30.9	32	90	60	168.2	TPD300B-309B-H

<sup>→</sup> Applicable inserts F71

## TPDB-H(4D)





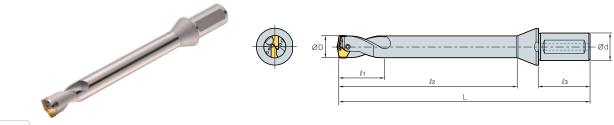


	Designation	ØD	Ød	Q 1	Q 2	L	Insert
PDB	140-16-4-H	14.0~14.4	16	56	48	112.8	TPD140B-144B-H
	145-16-4-H	14.5~14.9	16	58	48	115.3	TPD145B-149B-H
	150-20-4-H	15.0~15.4	20	60	50	119.4	TPD150B-154B-H
	155-20-4-H	15.5~15.9	20	62	50	121.9	TPD155B-159B-H
	160-20-4-H	16.0~16.4	20	64	50	124.0	TPD160B-164B-H
	165-20-4-H	16.5~16.9	20	66	50	126.5	TPD165B-169B-H
	170-20-4-H	17.0~17.4	20	68	50	128.5	TPD170B-174B-H
	175-20-4-H	17.5~17.9	20	70	50	131.0	TPD175B-179B-H
	180-20-4-H	18.0~18.4	20	72	50	133.1	TPD180B-184B-H
	185-20-4-H	18.5~18.9	20	74	50	135.6	TPD185B-189B-H
	190-20-4-H	19.0~19.4	20	76	50	137.7	TPD190B-194B-H
	195-20-4-H	19.5~19.9	20	78	50	140.2	TPD195B-199B-H
	200-25-4-H	20.0~20.4	25	80	56	148.3	TPD200B-204B-H
	205-25-4-H	20.5~20.9	25	82	56	150.8	TPD205B-209B-H
	210-25-4-H	21.0~21.4	25	84	56	152.9	TPD210B-214B-H
	215-25-4-H	21.5~21.9	25	86	56	155.4	TPD215B-219B-H
	220-25-4-H	22.0~22.4	25	88	56	157.5	TPD220B-224B-H
	225-25-4-H	22.5~22.9	25	90	56	160.0	TPD225B-229B-H
	230-25-4-H	23.0~23.4	25	92	56	162.1	TPD230B-234B-H
	235-25-4-H	23.5~23.9	25	94	56	164.6	TPD235B-239B-H
	240-32-4-H	24.0~24.4	32	96	60	170.8	TPD240B-244B-H
	245-32-4-H	24.5~24.9	32	98	60	173.3	TPD245B-249B-H
	250-32-4-H	25.0~25.4	32	100	60	175.3	TPD250B-254B-H
	255-32-4-H	25.5~25.9	32	102	60	177.8	TPD255B-259B-H
	260-32-4-H	26.0~26.4	32	104	60	179.8	TPD260B-264B-H
	265-32-4-H	26.5~26.9	32	106	60	182.3	TPD265B-269B-H
	270-32-4-H	27.0~27.4	32	108	60	184.5	TPD270B-274B-H
	275-32-4-H	27.5~27.9	32	110	60	187.0	TPD275B-279B-H
	280-32-4-H	28.0~28.4	32	112	60	189.0	TPD280B-284B-H
	285-32-4-H	28.5~28.9	32	114	60	191.5	TPD285B-289B-H
	290-32-4-H	29.0~29.4	32	116	60	193.6	TPD290B-294B-H
	295-32-4-H	29.5~29.9	32	118	60	196.1	TPD295B-299B-H
	300-32-4-H	30.0~30.9	32	120	60	198.2	TPD300B-309B-H

Applicable inserts F71

## TPDB-H

## TPDB-H(8D)





(	n	٦r	Υ
,			

								(mm)
	Designation	ØD	Ød	Q 1	Q 2	Q 3	L	Insert
TPDB	140-16-8F-H	14.0~14.4	16	50	112	48	176.3	TPD140B-144B-H
	145-16-8F-H	14.5~14.9	16	50	116	48	180.3	TPD145B-149B-H
	150-20-8F-H	15.0~15.4	20	50	120	50	187.4	TPD150B-154B-H
	155-20-8F-H	15.5~15.9	20	50	124	50	191.4	TPD155B-159B-H
	160-20-8F-H	16.0~16.4	20	50	128	50	196.5	TPD160B-164B-H
	165-20-8F-H	16.5~16.9	20	50	132	50	200.5	TPD165B-169B-H
	170-20-8F-H	17.0~17.4	20	50	136	50	205.5	TPD170B-174B-H
	175-20-8F-H	17.5~17.9	20	50	140	50	209.5	TPD175B-179B-H
	180-20-8F-H	18.0~18.4	20	50	144	50	215.6	TPD180B-184B-H
	185-20-8F-H	18.5~18.9	20	50	148	50	219.6	TPD185B-189B-H
	190-20-8F-H	19.0~19.4	20	50	152	50	223.7	TPD190B-194B-H
	195-20-8F-H	19.5~19.9	20	50	156	50	227.7	TPD195B-199B-H
	200-25-8F-H	20.0~20.4	25	50	160	56	237.8	TPD200B-204B-H
	205-25-8F-H	20.5~20.9	25	50	164	56	241.8	TPD205B-209B-H
	210-25-8F-H	21.0~21.4	25	50	168	56	245.9	TPD210B-214B-H
	215-25-8F-H	21.5~21.9	25	50	172	56	249.9	TPD215B-219B-H
	220-25-8F-H	22.0~22.4	25	50	176	56	254.0	TPD220B-224B-H
	225-25-8F-H	22.5~22.9	25	50	180	56	263.0	TPD225B-229B-H
	230-25-8F-H	23.0~23.4	25	50	184	56	267.1	TPD230B-234B-H
	235-25-8F-H	23.5~23.9	25	50	188	56	271.1	TPD235B-239B-H
	240-32-8F-H	24.0~24.4	32	50	192	60	279.3	TPD240B-244B-H
	245-32-8F-H	24.5~24.9	32	50	196	60	283.3	TPD245B-249B-H
	250-32-8F-H	25.0~25.4	32	50	200	60	287.3	TPD250B-254B-H
	255-32-8F-H	25.5~25.9	32	50	204	60	291.3	TPD255B-259B-H
	260-32-8F-H	26.0~26.4	32	50	208	60	295.3	TPD260B-264B-H
	265-32-8F-H	26.5~26.9	32	50	212	60	299.3	TPD265B-269B-H
	270-32-8F-H	27.0~27.4	32	50	216	60	303.5	TPD270B-274B-H
	275-32-8F-H	27.5~27.9	32	50	220	60	307.5	TPD275B-279B-H
	280-32-8F-H	28.0~28.4	32	50	224	60	313.5	TPD280B-284B-H
	285-32-8F-H	28.5~28.9	32	50	228	60	317.5	TPD285B-289B-H
	290-32-8F-H	29.0~29.4	32	50	232	60	322.6	TPD290B-294B-H
	295-32-8F-H	29.5~29.9	32	50	236	60	326.6	TPD295B-299B-H
	300-32-8F-H	30.0~30.9	32	50	240	60	330.7	TPD300B-309B-H

<sup>→</sup> Applicable inserts F71

 $<sup>\</sup>times$  The maximum length of flute could be  $\ensuremath{\mathbb{Q}}_2$ 

### Convenient and quickly adjustable drill height

### **WPDC**

### **Indexable Drill Clamped with Center Drill**

### Code system

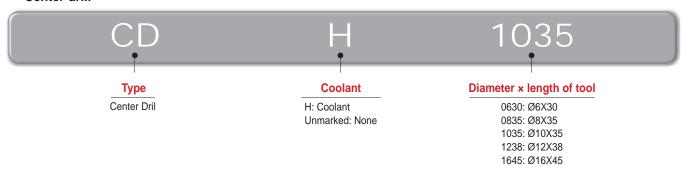
Holder



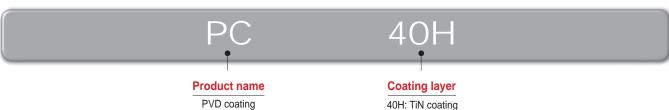
### Cartridge



#### · Center drill



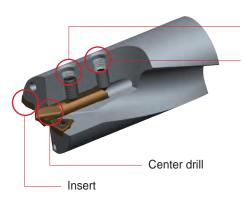
#### Grade



## F

### **Technical Information for WPDC**

### How to clamp the drills



Center Drill fixing bolt

Bolt for adjusting cone point

### 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

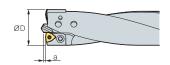
### Clamping

0	0	<b>©</b>	4	6
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

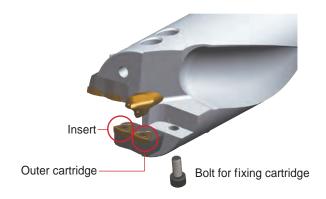
- The length of 'a' being too short can cause bad surface finish or high cutting load
- On the other hand, the length of 'a' being too long can make tool failure and chattering while drilling



Diameter (ØD)		Length of the 'a' part of center drill	
Diameter (DD)	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 Ø41~Ø59) → -1.0 mm
- 2. Dual cartridge type (Drill diameter Ø60~Ø80) → -5.0 mm

### 2) Diameter of the standard drills is provided with maximum size of standards

Ex) WPDC6570-40-6.5 ··· Drill diameter 70.0 mm

Ex) How to adjust drill diameter to Ø66.0 machining with WPDC6570-40-8

... To make the drill diameter of outer cartridge to Ø66.0, machine 2.0 mm (Ø70.0-Ø66.0 = 4 ⋅⋅⋅ 4 ÷ 2 = 2 (radius))

### Recommended cutting condition

	W	orkpiece		Ob.to				Aspe	ect ratio (L/I	D) = 5D, 6.5	D, 8D	
	VV	orkpiece		Chip breaker	Grade	vc (m/min)		Feed ra	ate (mm/rev	) per drill di	ia. (mm)	
	ISO	Workpiece	НВ	Di Galloi		(,	~Ø30	Ø31~Ø40	Ø41~Ø50	Ø51~Ø59	Ø60~Ø75	Ø76~Ø80
	Carbon	Low carbon steel (~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
P	steel	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	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
	Stainless	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	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
		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
К	Cast iron	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	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
IN	metal	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

## Center Drill

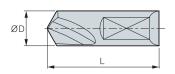
### Parts of WPDC type indexable drills

		Ir	sert			Center drill			Cartridge	
Designation	ØD		Screw	Wrench	Center drill	fixed bolt	cone point bolt			
2001g.i.w.iio.ii		Insert		P				Inner	CWP420P CWP430P CWP440P CWP450P CWP470P CWP470P CWP490P CWP500P CWP520P CWP520P CWP540P	Fixed bolt
WPDC250-32-	25	WC□T030204-C21N	FTKA02206	TW06S		KHA0508				
WPDC260~280-32-	26~28	WC□T040204-C21N	ETNIA02555	TW07S	CD0630	KHAUSUO	KHC0510			
WPDC290~300-32-	29~30	WC_1040204-C21N	11NA02333	10073		KHA0510				
WPDC310~350-32-	31~35	WC□T050308-C21N	ETK 40307	TW09S	CD0835	KHA0610	KHC0610			
WPDC360~400-32-	36~40	WC_1030308-C21N	FINAUSUI	10093	CD0033	KHA0612	KIICOOTO			
WPDC410-40-□	41								CWP410P	
WPDC420-40-□	42								CWP420P	
WPDC430-40-□	43					KHA0812		CWP4145C	CWP430P	BHA0510
WPDC440-40-□	44			TW15S					CWP440P	
WPDC450-40-□	45	 -WC□T06T308-C21N	FTKA03508		CDH1035		- KHC0812		CWP450P	
WPDC460-40-□	46	WC_1001300-021N			SETTION	KHA0815		CWP4650C	CWP460P	BHA0512
WPDC470-40-□	47								CWP470P	
WPDC480-40-□	48								CWP480P	
WPDC490-40-□	49								CWP490P	
WPDC500-40-□	50								CWP500P	
WPDC510-40-□	51								CWP510P	
WPDC520-40-□	52								CWP520P	
WPDC530-40-□	53							CWP5155C	CWP530P	BHA0612
WPDC540-40-□	54								CWP540P	
WPDC550-40-□	55	WC□T080408-C21N	FTKA0411K	TW15S		KHA1015	KHC1016		CWP550P	
WPDC560-40-□	56				CDH1238				CWP560P	
WPDC570-40-□	57				05111200			CWP5659C	CWP570P	BHA0614
WPDC580-40-□	58							0111 00000	CWP580P	Di ii too i i
WPDC590-40-□	59								CWP590P	
WPDC6065-40-□	60~65							CWP6065C	CWP6065P	
WPDC6570-40-□	65~70	WC□T050308-C21N	FTKA0307	7 TW09S	098	KHA1020	KHA1020 KHA1020	CWP6570C	CWP6570P	P BHA0510
WPDC7075-40-□	70~75							CWP7075C	CWP7075P	
WPDC7580-40-□	75~80	WC□T06T308-C21N	FTKA03508	TW15S	CDH1645			CWP7580C	CWP7580T	BHA0612

<sup>→</sup> Applicable inserts F03~04

## **Center Drill**





(mm)

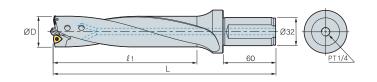
Designation	Grade	ØD	L	Oil-hole
CD 0630	PC40H	6	30	×
CD 0835	PC40H	8	35	×
CDH 1035	PC40H	10	35	0
CDH 1238	PC40H	12	38	0
CDH 1645	PC40H	16	45	0

<sup>•</sup> This is HSS with Tin coating

## WPDC(5D/6.5D/8D)

### Standard type





(mm)

	) a ciamatian	αD	5	D	6.	5D	8	D	Innert	Contou duill
L	Designation	ØD	Q 1	L	Q 1	L	Q 1	L	Insert	Center drill
WPDC	250-32-	25	150	240	185	275	220	310	WC□T030204-C21N	
	260-32-	26	150	240	185	275	220	310		
	270-32-	27	150	240	185	275	220	310		CD0630
	280-32-	28	150	240	185	275	220	310	WC□T040204-C21N	CD0630
	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		
	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	WC□T050308-C21N	CD0835
	360-32-□	36	200	290	250	340	300	390	WC_1030300-021N	CD0033
	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		

<sup>→</sup> Applicable inserts F04

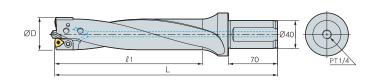
 ${}^{\star}$  We can provide if you order exact diameter Ex) machining hole 32.5 mm \* 6.5D ··· WPDC325-32-6.5

## F WPDC

## WPDC(5D/6.5D/8D)

### Single insert catridge type





(mm)

	ocianotion	ØD	5	D	6.	5D	8	D	Insert	Center	Cartı	rtridge	
D	esignation	טש	Q 1	L	Q 1	L	Q 1	L	insert	drill	Inner	Outer	
WPDC	410-40-	41	225	330	283	388	340	445				CWP410P	
	420-40-	42	225	330	283	388	340	445				CWP420P	
	430-40-	43	225	330	283	388	340	445			CWP4145C	CWP430P	
	440-40-	44	225	330	283	388	340	445				CWP440P	
	450-40-	45	225	330	283	388	340	445	WC□T06T308-C21N	CDH1035		CWP450P	
	460-40-□	46	250	355	315	420	380	485	WC_1001300-C21N	CDH1035		CWP460P	
	470-40-	47	250	355	315	420	380	485				CWP470P	
	480-40-□	48	250	355	315	420	380	485			CWP4650C	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				CWP510P	
	520-40-□	52	275	380	348	453	420	525				CWP520P	
	530-40-	53	275	380	348	453	420	525			CWP5155C	CWP530P	
	540-40-□	54	275	380	348	453	420	525				CWP540P	
	550-40-	55	275	380	348	453	420	525	WC□T080408-C21N	CDH1238		CWP550P	
	560-40-□	56	300	405	380	485	460	565	1			CWP560P	
	570-40-□	57	300	405	380	485	460	565			CWP5659C	CWP570P	
	580-40-□	58	300	405	380	485	460	565			CVVF3039C	CWP580P	
	590-40-□	59	300	405	380	485	460	565				CWP590P	

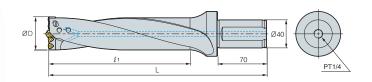
<sup>◆</sup> Applicable inserts F04

 $^{\ast}$  We can provide if you order exact diameter Ex) machining hole 47.5 mm  $^{\ast}$  5D -> WPDC475-40-5

## WPDC(5D/6.5D/8D)

### **Dual insert cartridge type**





(mm)

Do	esignation	ØD	5	D	6.	5D	8	D	Insert	Center	Cartridge		
De	ssignation	טש	Q 1	L	Q 1	L	Q <sub>1</sub>	L	moort	drill	Inner	Outer	
WPDC	6570-40-□ 7075-40-□	60~65	325	430	423	528	520	625	WC□T050308-C21N			CWP6065C	CWP6065P
		65~70	350	455	455	560	560	665		CDH1238	CWP6570C	CWP6570P	
		70~75	375	480	488	593	600	705			CWP7075C	CWP7075P	
		75~80	400	505	520	625	640	745	WC□T06T308-C21N	CDH1645	CWP7580C	CWP7580P	

◆ Applicable inserts F04

\* We can provide if you order exact diameter Ex) machining hole 70.5 mm \* 6.5D -> WPDC705-40-6.5

## F

### **Technical Information for Indexable Reamer**

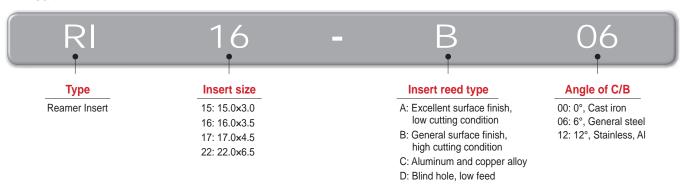
### Mass production and High performance

### Indexable Reamer

- 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

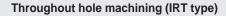
#### Insert



#### Holder



### Application





### Stuffed hole machining (IRB type)

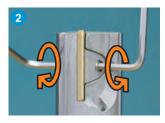


## Technical Information for Indexable Reamer

#### How to set an insert



1. Screw the wedge screw counter clockwise with the exclusive wrench

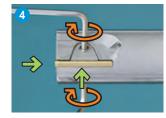


2. Screw the clamp screw

- 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: Ø60x210 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~ +0.020 mm
- 2 Bottom side of insert: +0.005~ +0.010 mm
- ③ Back taper: 0.010~0.015 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 0.010~0.015 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



# F Technical Information for Indexable Reamer

### Recommended cutting condition

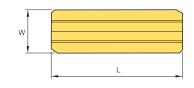
Worknings	Inser	t type	Feed rate (mm/rev)	С	utting speed vc (m/m	in)	
Workpiece	Rake angle	Lead type	per drill dia. (mm)	Coated	Uncoated	Cermet	
		А	0.1~0.4	60~80	40~60		
Carbon steel General steel	6	В	0.1~0.3	80~120	00.00	110~160	
Conoral cico.		D	0.05~0.2	80~120	60~80		
	6	А	0.1~0.4	40~60	20~40		
Mild steel Alloy steel		В	0.1~0.3	00.400	00.00	110~160	
7 mey etce.		D	0.05~0.2	80~120	60~80		
		А	0.1~0.4	20~60	20~40	20~60	
High alloy steel Tool steel	6	В	0.1~0.3	40.00	40.00	40~80	
		D	0.05~0.2	40~80	40~60	40~00	
	12	А	0.1~0.3	40~60	20~40	40~60	
Stainless steel		В	0.1~0.2	- 60~80	40.00	60.00	
		D	0.05~0.2	00~80	40~60	60~80	
		А	0.1~0.3	60~100	40~60		
Cast iron	0.6	В	0.1~0.25	00.400	00.00		
		D	0.05~0.2	80~120	60~80		
		В	0.1~0.3		160~200		
Alloyed aluminum	12	С	0.15~0.3		150~250		
		D	0.05~0.2		110~200		
Alleyed conner	0	В	0.1~0.2		00, 400		
Alloyed copper	0	D	0.05~0.2		80~100		
Non-ferrous alloy	0	В	0.1~0.3		10~70		

### Parts

	Clamp	Wedge	Clamp Screw	Wedge Screw	Clamp Wrench	Wedge Wrench	
Reamer size				(NYLOK)			
10.0~11.9	CV 15	AW2430	DHA0308	HSO306	HW15L	HW15L	
12.0~17.9	CV 16	AW2435	DHA0306	HSO306	HVVIOL	HVVIOL	
18.0~27.9	CV 17	AW3240	DHA0409	HS0406	HW20L	HW20L	
28.0~31.9	CV 22	AW3260	DI IA0409	1130400	TIVVZUL	TIVVZUL	

### Available insert







(mm)

	Designation		Grade			Dimensions		Dood tumo	Rake angle	
	Designation	K10 (Uncoated)	BPK110 (TiAIN)	BPK210 (TiN)	L	W	S	Reed type	(α°)	
RI	15-A06			0	15	3.0	1.5	А	6°	
	15-A12	0			15	3.0	1.5	А	12°	
	15-B06		0	0	15	3.0	1.5	В	6°	
	15-B12		0		15	3.0	1.5	В	12°	
	16-A06			0	16	3.5	1.5	А	6°	
	16-A12	0			16	3.5	1.5	А	12°	
	16-B06		0	0	16	3.5	1.5	В	6°	
	16-B12		0		16	3.5	1.5	В	12°	
	17-A06			0	17	4.5	2.0	А	6°	
	17-A12	0			17	4.5	2.0	А	12°	
	17-B06		0	0	17	4.5	2.0	В	6°	
	17-B12		0		17	4.5	2.0	В	12°	
	22-A06			0	22	6.5	3.0	А	6°	
	22-A12	0			22	6.5	3.0	А	12°	
	22-B06		0	0	22	6.5	3.0	В	6°	
	22-B12		0		22	6.5	3.0	В	12°	

### Angle of chip breaker

Division	00	06	12
Shape	0°	6°	12°
Application	For cast iron machining	For general machining	For stainless and aluminum machining

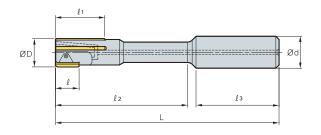
### **○** Insert lead type

Туре	Shape	Working condition	Туре	Shape	Working condition
Α	15°	For excellent surface, low cutting condition	С	75*	For aluminum and copper alloy machining
В	30°	For general application, high cutting condition	D	30°	For blind hole machining, low feed

## Indexable Reamer

## IRT Throughout hole





(mm)

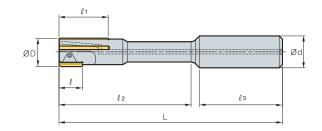
	Designation	ØD	Q	Q <sub>1</sub>	<b>Q</b> 2	Qз	L	Ød	Insert
IRT	10.000-16125-15	10	15	30	75	45	125	16	RI 15
	11.000-16125-15	11	15	30	75	45	125	16	RI 15
	12.000-16135-16	12	16	30	85	45	135	16	RI 16
	13.000-16135-16	13	16	30	85	45	135	16	RI 16
	14.000-16135-16	14	16	30	85	45	135	16	RI 16
	15.000-16135-16	15	16	30	85	45	135	16	RI 16
	16.000-20155-16	16	16	30	100	50	155	20	RI 16
	17.000-20155-16	17	16	30	100	50	155	20	RI 16
	18.000-20155-17	18	17	30	100	50	155	20	RI 17
	19.000-20155-17	19	17	30	100	50	155	20	RI 17
	20.000-25165-17	20	17	30	110	56	165	25	RI 17
	21.000-25165-17	21	17	30	110	56	165	25	RI 17
	22.000-25165-17	22	17	30	110	56	165	25	RI 17
	23.000-25165-17	23	17	30	110	56	165	25	RI 17
	24.000-25165-17	24	17	30	110	56	165	25	RI 17
	25.000-25165-17	25	17	30	110	56	165	25	RI 17
	26.000-25165-17	26	17	30	110	56	165	25	RI 17
	27.000-25165-17	27	17	30	110	56	165	25	RI 17
	28.000-32165-22	28	22	30	110	56	165	32	RI 22
	29.000-32165-22	29	22	30	110	56	165	32	RI 22
	30.000-32165-22	30	22	30	110	56	165	32	RI 22
	31.000-32165-22	31	22	30	110	56	165	32	RI 22

<sup>◆</sup> Applicable inserts F85



**IRB** Stuffed hole





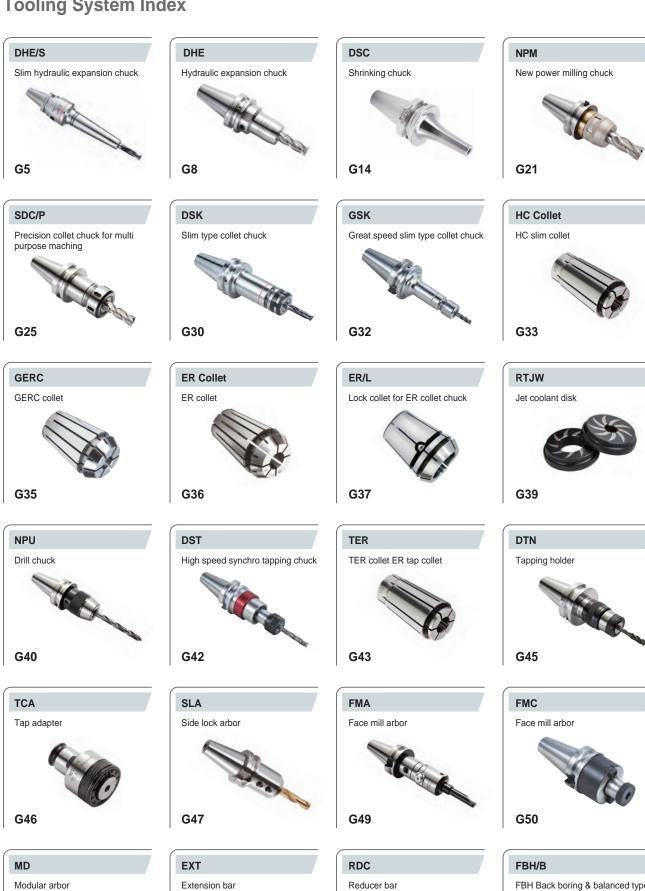
									(mm)
	Designation	ØD	Q	Q <sub>1</sub>	<b>Q</b> 2	<b>Q</b> з	L	Ød	Insert
IRB	10.000-16125-15	10	15	30	75	45	125	16	RI 15
	11.000-16125-15	11	15	30	75	45	125	16	RI 15
	12.000-16135-16	12	16	30	85	45	135	16	RI 16
	13.000-16135-16	13	16	30	85	45	135	16	RI 16
	14.000-16135-16	14	16	30	85	45	135	16	RI 16
	15.000-16135-16	15	16	30	85	45	135	16	RI 16
	16.000-20155-16	16	16	30	100	50	155	20	RI 16
	17.000-20155-16	17	16	30	100	50	155	20	RI 16
	18.000-20155-17	18	17	30	100	50	155	20	RI 17
	19.000-20155-17	19	17	30	100	50	155	20	RI 17
	20.000-25165-17	20	17	30	110	56	165	25	RI 17
	21.000-25165-17	21	17	30	110	56	165	25	RI 17
	22.000-25165-17	22	17	30	110	56	165	25	RI 17
	23.000-25165-17	23	17	30	110	56	165	25	RI 17
	24.000-25165-17	24	17	30	110	56	165	25	RI 17
	25.000-25165-17	25	17	30	110	56	165	25	RI 17
	26.000-25165-17	26	17	30	110	56	165	25	RI 17
	27.000-25165-17	27	17	30	110	56	165	25	RI 17
	28.000-32165-22	28	22	30	110	56	165	32	RI 22
	29.000-32165-22	29	22	30	110	56	165	32	RI 22
	30.000-32165-22	30	22	30	110	56	165	32	RI 22
	31.000-32165-22	31	22	30	110	56	165	32	RI 22

<sup>→</sup> Applicable inserts F85



Tooli	ng System	Toolii	ng System
G02	Tooling System Index	G49	FMA
G04	DHE/S	G50	FMC
G07	DHE	G52	MD
G11	DHC/DHJ Collet	G54	EXT Bar
G12	DSC	G54	RDC Bar
G20	NPM	G55	FBH/B
G23	DCS/DC/TC	G62	DBCA
G24	Collet Chuck Series	G66	DBC
G25	SDC/P	G68	SMB
G30	DSK	G70	KMB
G32	GSK	G72	SMH
G34	GERC	G74	TBCA
G36	ER	G79	TBC
G37	ER/L	G82	FBC
G38	RTJW	G85	SAH
G40	NPU	G86	Angular Head
G41	DST	G94	DZC
G43	TER Tap Collet	G95	DCJ
G44	DTN	G96	DCL
G46	TCA Tap Adaptor	G97	DAMPHNG PRO
G47	SLA	G104	Others

# H Tooling System Index











# Tooling System Index H



G99, 101

**G95** 

**G96** 

H100, 102, 103

## G DHE/S

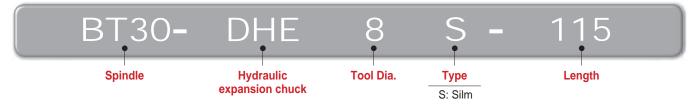
### Slim hydraulic expansion chuck

### DHE/S

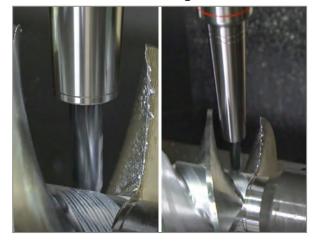
- Optimized chuck for machining that requires high-quality surface roughness and accuracy
- Suitable for challenging mold and automotive parts machining that involves complicated shapes and a lot of interferences
- Ideal for metal impeller machining, which requires deep penetration
- Enables easy tool connection without any additional connecting device
- Easy to perform fine boring operations (0.02-0.2 mm)
- Application scope: milling, drilling, reaming



### Code system

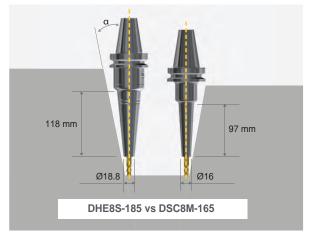


### Recommended Machining Works



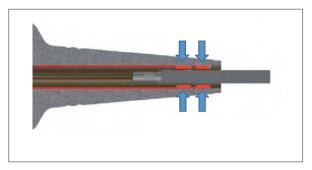
- Optimized for machining that requires high precision
- Enables challenging narrow and deep machining
- Products that require fine boring operations

### 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

### Stable Clamping force



 Maintains high clamping force and good accuracy by holding the tool at two points

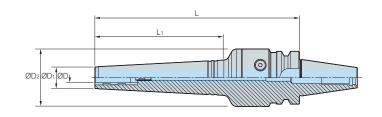
### High-precision





## BT-DHE/S





(mm)

	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	RPM	Run-out Based on 3D	/kg
BT30 -	DHE6S-115	6	16.8	50	115	50	25,000	5 µm	1.1
	DHE6S-180	6	16.8	50	180	115	25,000	8 µm	1.4
	DHE8S-115	8	18.8	50	115	50	25,000	5 µm	1.1
	DHE8S-180	8	18.8	50	180	115	25,000	8 µm	1.4
	DHE10S-120	10	20.8	50	120	55	25,000	5 µm	1.4
	DHE10S-180	10	20.8	50	180	115	25,000	8 µm	1.9
	DHE12S-130	12	22.8	50	130	65	25,000	5 µm	1.2
	DHE12S-180	12	22.8	50	180	115	25,000	8 µm	1.6
BT40 -	DHE6S-120	6	16.8	50	120	50	15,000	5 µm	1.7
	DHE6S-185	6	16.8	50	185	115	15,000	8 µm	2.0
	DHE8S-120	8	18.8	50	120	50	15,000	5 µm	2.0
	DHE8S-185	8	18.8	50	185	115	15,000	8 µm	2.0
	DHE10S-125	10	20.8	50	125	55	15,000	5 µm	1.6
	DHE10S-185	10	20.8	50	185	115	15,000	8 µm	2.0
	DHE12S-135	12	22.8	50	135	65	15,000	5 µm	1.8
	DHE12S-185	12	22.8	50	185	115	15,000	8 µm	2.2

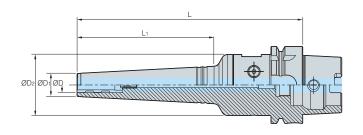
<sup>●</sup> Spare Part G06

<sup>•</sup> Through coolant system installed



### **HSK-DHE/S**





(mm)

De	esignation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	RPM	Run-out Based on 3D	/ kg \
HSK63A -	DHE6S-120	6	16.8	50	120	50	10,000	5 μm	1.4
	DHE6S-185	6	16.8	50	185	115	10,000	8 µm	1.7
	DHE8S-120	8	18.8	50	120	50	10,000	5 μm	1.4
	DHE8S-185	8	18.8	50	185	115	10,000	8 <i>µm</i>	1.8
	DHE10S-125	10	20.8	50	125	55	10,000	5 µm	1.5
	DHE10S-185	10	20.8	50	185	115	10,000	8 µm	1.8
	DHE12S-135	12	22.8	50	135	65	10,000	5 µm	1.8
	DHE12S-185	12	22.8	50	185	115	10,000	8 <i>µm</i>	1.8

<sup>•</sup> Through coolant system installed

### Parts

Basic										
Divi	sion	Clamp bolt Wrench		Division	Adjust screw					
Designation	Parts		A	Parts Designation						
ВТ30	DHE/S 6, 8, 10, 12	BTF1010	DHETW-5	DHE/S 6, 8, 10	DHE-M5 (ADJ)					
BT40/HSK63A	DHE/S 6, 8, 10, 12	BTF1010	DHETW-5	DHE/S 12	DHE-M10 (ADJ)					

### Hydraulic expansion chuck

### DHE

- Ideal for mold making and machining automobile components & precise parts due to high precision machining
- Improved surface roughness due to vibration proof by hydraulic chamber
- Reduced replacement time and tiredness of worker with the use of T wrench for removal
- Applicable shank diameter: Ø6~32



### Code system



### Features

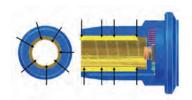
High accuracy provides long tool life due to reduced wear and hydraulic room enhances a surface roughness by lessening vibrations

- RUN OUT: under 5 µm
- $-L = 3 \times \emptyset D$
- Shank: Tolerance of ØD: h6



### Internal sealing structure (Durability)

- Internal sealing system protects the chuck against dust, cutting oil, lubricant and chips getting into it
- Maintaining clamping force and accuracy for a long time



Shank	Grade	Max.rpm
BT50, HSK100A	G6.3	8,000
BT40, HSK63A		10,000
BT30, SK30		15,000



### With simple t-wrench, very easy to change a tool

- Clamping structure for easy operation (Convenience)
- Decrease of worker's fatigue



### Stable clamping

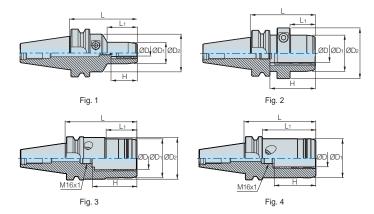
The clearance between holder and tool is fixed by hydraulic pressure



G DHE

## **BT-DHE**





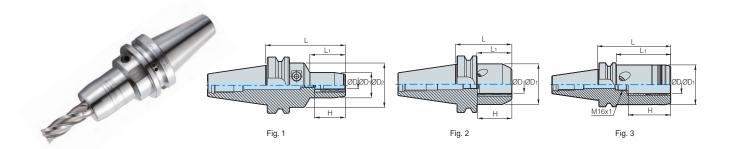
(mm)
------

	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	н	Adjust screw	/kg	Fig.
BT30 -	DHE6-65	6	29	46	65	33	30~39.8	M5	0.7	1
	DHE8-65	8	31	46	65	33	30~39.8	M5	0.7	1
	DHE10-65	10	32	46	65	34	35~44.8	M5	0.7	1
	DHE12-70	12	35	46	70	34	41~50.8	M5	8.0	1
	DHE14-90	14	36	46	90	40	43~52.8	M5	1.0	1
	DHE16-90	16	40	46	90	45	46~55.8	M5	1.0	1
	DHE18-90	18	42	46	90	40	49~58.8	M5	1.1	1
	DHE20-90	20	44	46	90	45	49~58.8	M5	1.1	1
BT40 -	DHE6-90	6	29	50	90	40	30~39.8	M5	1.4	1
	DHE6-140	6	29	50	140	40	30~39.8	M5	2.2	1
	DHE8-90	8	31	50	90	40	30~39.8	M5	1.4	1
	DHE8-140	8	31	50	140	40	30~39.8	M5	2.2	1
	DHE10-90	10	33	50	90	40	35~44.8	M5	1.5	1
	DHE10-140	10	33	50	140	40	35~44.8	M5	2.2	1
	DHE12-90	12	35	50	90	40	41~50.8	M10	1.5	1
	DHE12-140	12	35	50	140	40	41~50.8	M10	2.3	1
	DHE14-90	14	36	50	90	40	43~52.8	M10	1.5	1
	DHE14-140	14	36	50	140	40	43~52.8	M10	2.2	1
	DHE16-90	16	40	50	90	45	46~55.8	M10	1.5	1
	DHE16-140	16	40	50	140	45	46~55.8	M10	2.2	1
	DHE18-90	18	42	50	90	45	49~58.8	M10	1.5	1
	DHE18-140	18	42	50	140	45	49~58.8	M10	2.2	1
	DHE20-90	20	44	50	90	47	49~58.8	M10	1.5	1
	DHE20-140	20	44	50	140	50	49~58.8	M10	2.3	1
	DHE25-90	25	50	70	90	35	58~67.8	M16	2.0	2
	DHE25-105	25	57	-	105	78	51~61	M16	2.0	4
	DHE25-140	25	57	-	140	113	51~61	M16	2.6	4
	DHE32-90	32	63	75	90	35	58~67.8	M16	2.3	2
	DHE32-105	32	57	61	105	45	55~65	M16	2.4	3
	DHE32-140	32	57	61	140	45	55~65	M16	3.0	3

<sup>●</sup> Spare Part G10 ● Applicable collet G11

<sup>•</sup> H: Insertion depth of tool (Min.~max.) • Through coolant system installed

# **BT-DHE**



	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	н	Adjust screw	/ kg	Fig.
BT50 -	DHE6-90	6	29	50	90	34	30~39.8	M5	3.9	1
	DHE6-140	6	29	50	140	40	30~39.8	M5	4.4	1
	DHE8-90	8	31	50	90	34	30~39.8	M5	4.2	1
	DHE8-140	8	31	50	140	40	30~39.8	M5	4.6	1
	DHE10-90	10	33	50	90	34	35~44.8	M5	3.9	1
	DHE10-140	10	33	50	140	34	35~44.8	M5	4.5	1
	DHE12-90	12	35	50	90	34	41~50.8	M10	4.0	1
	DHE12-140	12	35	50	140	34	41~50.8	M10	4.6	1
	DHE14-90	14	36	50	90	34	43~52.8	M10	3.9	1
	DHE14-140	14	36	50	140	34	43~52.8	M10	4.5	1
	DHE16-90	16	40	50	90	34	46~55.8	M10	4.1	1
	DHE16-140	16	40	50	140	34	46~55.8	M10	4.7	1
	DHE18-90	18	42	50	90	40	49~58.8	M10	4.0	1
	DHE18-140	18	42	50	140	45	49~58.8	M10	4.5	1
	DHE20-90	20	44	50	90	34	49~58.8	M10	4.0	1
	DHE20-140	20	44	50	140	47	49~58.8	M10	4.5	1
	DHE25-90	25	66	-	90	52	58~67.8	M16	4.7	2
	DHE25-150	25	57	-	150	112	51~61	M16	4.5	3
	DHE32-90	32	72	-	90	52	58~67.8	M16	5.8	2

<sup>→</sup> Spare Part G10 → Applicable collet G11

 $<sup>\</sup>bullet \text{H: Insertion depth of tool (Min.$^{-}$max.)} \quad \bullet \text{Through coolant system installed}$ 



# **HSK-DHE**



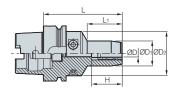
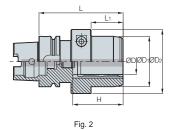


Fig. 1



(mm)

											()
De	esignation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	н	Adjust Screw	RPM	/kg	Fig.
HSK63A -	DHE6-75	6	29	50	75	34	30~39.8	M5	10,000	1.0	1
	DHE8-75	8	31	50	75	34	30~39.8	M5	10,000	1.0	1
	DHE10-85	10	33	50	85	40	35~44.8	M5	10,000	1.2	1
	DHE12-90	12	35	50	90	40	41~50.8	M5	10,000	1.2	1
	DHE16-95	16	40	50	95	45	46~55.8	M10	10,000	1.3	1
	DHE20-100	20	44	50	100	50	49~58.8	M10	10,000	1.4	1
	DHE20-150	20	44	50	150	50	49~58.8	M10	10,000	2.2	1
	DHE25-110	25	50	70	110	48	56~67.8	M16	10,000	2.0	2
	DHE32-110	32	63	80	110	48	56~67.8	M16	10,000	2.0	2
HSK100A -	DHE20-105	20	44	50	105	50	49~58.8	M10	8,000	2.9	1
	DHE25-115	25	50	63	115	62	58~67.8	M16	8,000	3.2	1
	DHE32-115	32	63	75	115	62	58~67.8	M16	8,000	3.8	1

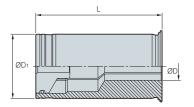
Applicable collet G11

Basic											
Divi	sion	Clamp bolt	Wrench	Division	Adjust screw						
Designation	Parts		A	Parts Designation							
DT00 / HOVEO	DHE 6, 8, 10, 12	BTF1010 DHETW-5		DUE 0 0 40	DUE ME (AD I)						
BT30 / HSK50	DHE 14, 16, 18, 20	BTF1010	DHETW-5	DHE 6, 8, 10	DHE-M5 (ADJ)						
BT40 / BT50	DHE 6, 8, 10, 12, 14, 16, 18, 20	BTF1010	DHETW-5	DHE 12, 14, 16, 18, 20	DHE-M10 (ADJ)						
HSK63A / HSK100A	DHE 25, 32	BTF1212-1.5	DHETW-6	DHE 25, 32	DHE-M16 (ADJ)						

 $<sup>\</sup>bullet \text{ H: Insertion depth of tool (Min.$^{-}$max.)} \quad \bullet \text{Through coolant system is optional}$ 

# DHC Collet General type





(mm)

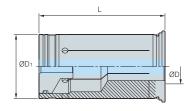
Designation	ØD	ØD <sub>1</sub>	L
DHC12-3, 4, 5, 6, 8	3, 4, 5, 6, 8	12	47
DHC20-3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16	20	52
DHC32-6, 8, 10, 12, 14, 16, 18, 19, 20, 25	6, 8, 10, 12, 14, 16, 18, 19, 20, 25	32	63

<sup>•</sup> Through coolant system not available

Accuracy type

# **DHC Collet**





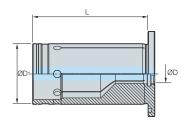
(mm)

Designation	ØD	ØD <sub>1</sub>	L
DHC12-3(P), 4(P), 5(P), 6(P), 8(P)	3, 4, 5, 6, 8	12	47
DHC20-3(P), 4(P), 5(P), 6(P), 7(P), 8(P), 9(P), 10(P), 11(P), 12(P), 14(P), 16(P)	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16	20	52
DHC32-6(P), 8(P), 10(P), 12(P), 14(P), 16(P), 18(P), 19(P), 20(P), 25(P)	6, 8, 10, 12, 14, 16, 18, 19, 20, 25	32	63

<sup>•</sup> Through coolant system installed

Jet coolant

# **DHJ Collet**



Designation	ØD	ØD	L
DHJ20-6, 8, 10, 12, 14, 16	6, 8, 10, 12, 14, 16	20	50

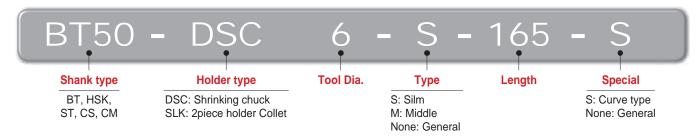
#### **Shrinking chuck**

### DSC

- Use of specially heat-treated steel
- · High precision machining and clamping
- · Increased precision and longer tool life due to minimized overhang when machining deep grooves
- Applicable shank diameter: Ø3~32



#### Code System



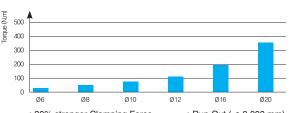
#### Mono curve type

- Integral DSC with excellent precision and balancing
- Long but stable holder design





#### High clamping force



• 30% stronger Clamping Force • Higher Power transmission Clamping Force by Inner-Size

• Run-Out (  $\leq$  0.003 mm)

#### Shrinking chuck Fix the clearance between holder and

tool by heat shrinking

Thermal expansion ▶ Thermal shrinking Highly strong clamping

#### Collet chuck

Fix the tool by elasticity of collet



Elastic deformation Strong clamping

### Slim type series

Straight type Mono type 2piece type

Used by combining with various holders such as hydraulic expansion chuck, milling chuck, and collet chuck

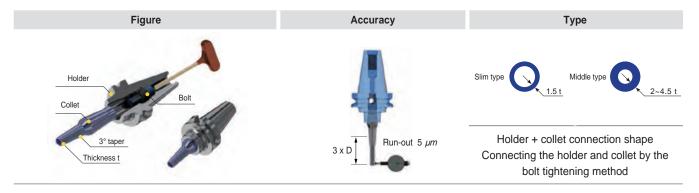
Used with high precision as integral types



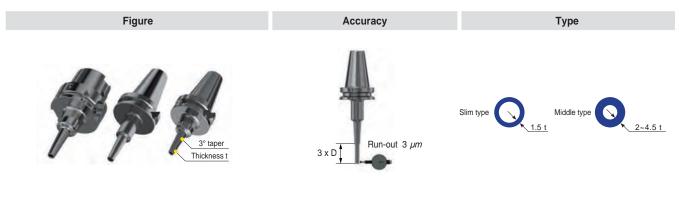
Holder + collet connection shape Connecting the holder and collet by the bolt tightening method

### 2-pieces type

2Piece types enable various machining operations by collet replacement and provide convenience in tool management and use based on easy and fast assembly using tightening bolts.



### Mono type

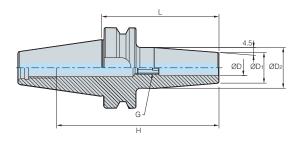


### Straight type

Figure	Accuracy	Туре
3° taper Thickness t	Run-out 3 µm	Used by combining with various holders such as hydraulic expansion chuck, milling chuck, and collet chuck, etc.

# **BT-DSC**





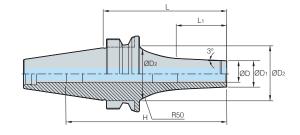
(mm)

	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	Н	G	RPM	kg
BT30 -	DSC3-60	3	11	18.5	60	82	-	25,000	0.4
	DSC4-60	4	13	20.5	60	82	-	25,000	0.4
BT40 -	DSC6-90	6	21	27	90	36	M5	20,000	1.1
	DSC6-120	6	21	27	120	36	M5	20,000	1.2
	DSC6-160	6	21	27	160	36	M5	20,000	1.4
	DSC8-90	8	21	27	90	36	M5	20,000	1.1
	DSC8-120	8	21	27	120	36	M5	20,000	1.2
	DSC8-160	8	21	27	160	36	M5	20,000	1.4
	DSC10-90	10	24	32	90	42	M8	20,000	1.1
	DSC10-120	10	24	32	120	42	M8	20,000	1.3
	DSC10-160	10	24	32	160	42	M8	20,000	1.6
	DSC12-90	12	24	32	90	47	M8	20,000	1.1
	DSC12-120	12	24	32	120	47	M8	20,000	1.3
	DSC12-160	12	24	32	160	47	M8	20,000	1.6
	DSC16-90	16	27	34	90	50	M12	20,000	1.2
	DSC16-120	16	27	34	120	50	M12	20,000	1.3
	DSC16-160	16	27	34	160	50	M12	20,000	1.7
	DSC20-90	20	33	42	90	52	M12	20,000	1.3
	DSC20-120	20	33	42	120	52	M12	20,000	1.5
	DSC20-160	20	33	42	160	52	M12	20,000	2.0

Adjust screw G19

# BT-DSC/M





(mm)

Mono Curve type

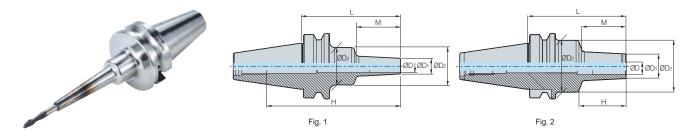
	Designation	ØD	ØD₁	ØD <sub>2</sub>	L	L <sub>1</sub>	н	RPM	kg
BT30 -	DSC3M-75S	3	8	25	75	29.8	97	25,000	0.4
	DSC4M-75S	4	10	25	75	31.8	97	25,000	0.4
	DSC6M-75S	6	12	30	75	28.9	97	25,000	0.5
	DSC8M-75S	8	14	32	75	28.9	97	25,000	0.5
	DSC10M-75S	10	16	32	75	30.7	45	25,000	0.5
	DSC12M-75S	12	19	32	75	33.8	45	25,000	0.5



<sup>•</sup> H: Insertion depth of tool • Through coolant system installed

<sup>•</sup> H: Insertion depth of tool • Not able to use the adjust screw • Through coolant system installed

# BT-DSC/M Mono type



										(mi
	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	M	Н	RPM	kg	Fig.
BT40 -	DSC3M-95	3	8	26	95	42	128	20,000	1.1	1
	DSC4M-95	4	8	26	95	42	128	20,000	1.1	1
	DSC6M-95	6	10	26	95	42	128	20,000	1.0	1
	DSC6M-120	6	10	26	120	67	153	20,000	1.0	1
	DSC6M-160	6	10	36	160	97	193	20,000	1.2	1
	DSC8M-95	8	13	36	95	42	128	20,000	1.3	1
	DSC8M-120	8	13	36	120	67	153	20,000	1.3	1
	DSC8M-160	8	13	36	160	97	193	20,000	1.3	1
	DSC10M-95	10	16	36	95	42	128	20,000	1.1	1
	DSC10M-120	10	16	36	120	67	153	20,000	1.1	1
	DSC10M-160	10	16	36	160	97	193	20,000	1.3	1
	DSC12M-95	12	19	36	95	42	128	20,000	1.1	1
	DSC12M-120	12	19	36	120	67	153	20,000	1.2	1
	DSC12M-160	12	19	36	160	97	193	20,000	1.4	1
	DSC16M-95	16	24	50	95	42	47	20,000	1.3	2
	DSC16M-120	16	24	50	120	67	47	20,000	1.4	2
	DSC16M-160	16	24	50	160	97	47	20,000	1.7	2
	DSC20M-95	20	29	50	95	42	55	20,000	1.3	2
	DSC20M-120	20	29	50	120	67	55	20,000	1.5	2
	DSC20M-160	20	29	50	160	97	55	20,000	1.9	2
T50 -	DSC6M-110	6	10	26	110	42	163	15,000	3.5	1
	DSC6M-160	6	10	36	160	97	213	15,000	3.6	1
	DSC8M-110	8	13	36	110	42	163	15,000	3.7	1
	DSC8M-160	8	13	36	160	97	213	15,000	3.7	1
	DSC10M-110	10	16	36	110	42	163	15,000	3.7	1
	DSC10M-160	10	16	36	160	97	213	15,000	3.7	1
	DSC12M-110	12	19	36	110	42	163	15,000	3.7	1
	DSC12M-160	12	19	50	160	97	213	15,000	4.0	1
	DSC16M-110	16	24	50	110	42	163	15,000	3.9	1
	DSC16M-160	16	24	50	160	97	213	15,000	4.1	1
	DSC20M-110	20	29	50	110	42	55	15,000	3.9	2
	DSC20M-160	20	29	50	160	97	55	15,000	4.2	2

Adjust screw G19

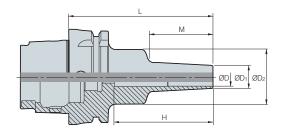
<sup>•</sup> H: Insertion depth of tool • Through coolant system installed



## **HSK-DSC/M**

#### Mono type





(mm)

D	esignation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	M	н	RPM	/kg
HSK63A -	DSC6M-95	6	10	26	95	42	73	20,000	0.7
	DSC8M-95	8	13	36	95	42	39	20,000	0.8
	DSC10M-120	10	16	36	120	67	45	20,000	0.8
	DSC12M-120	12	19	36	120	67	45	20,000	0.9
	DSC16M-120	16	24	50	120	67	47	20,000	1.1

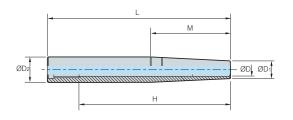
• H: Insertion depth of tool • Not able to use the adjust screw

Through coolant system is optional

# ST-DSC/M

### Straight Shank Shrinking Chuck





(mm)

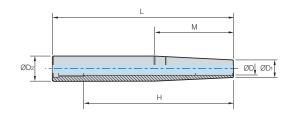
	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	М	н	kg
ST16 -	DSC6M-115	6	10	16	115	50	95	0.1
	DSC6M-140	6	10	16	140	60	120	0.1
ST20 -	DSC6M-175	6	10	20	175	95	155	0.2
	DSC8M-145	8	13	20	145	70	125	0.2
	DSC10M-120	10	16	20	120	50	45	0.2
ST25 -	DSC8M-175	8	13	25	175	105	155	0.4
	DSC10M-145	10	16	25	145	75	45	0.4
	DSC10M-175	10	16	25	175	105	45	0.4
	DSC12M-120	12	19	25	120	50	45	0.3
	DSC12M-150	12	19	25	150	80	45	0.4
	DSC16M-175	16	24	25	175	50	47	0.5
ST32 -	DSC20M-175	20	29	32	175	50	55	0.8

•H: Insertion depth of tool •Not able to use the adjust screw •Through coolant system installed

# ST-DSC/S

#### Straight Shank Shrinking Chuck





(mm)

	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	М	н
ST16 -	DSC6S-115	6	9	16	115	55	95
	DSC6S-140	6	9	16	140	70	120
	DSC8S-115	8	11	16	115	50	95
ST20 -	DSC6S-175	6	9	20	175	105	155
	DSC8S-175	8	11	20	175	85	155
	DSC10S-145	10	13	20	145	75	77
	DSC12S-120	12	15	20	120	50	52
ST32 -	DSC12S-315	12	15	32	315	185	295

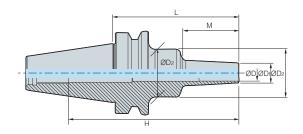
• H: Insertion depth of tool • Not able to use the adjust screw

Through coolant system installed

# BT-DSC/S

#### Mono slim type





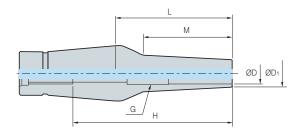
	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	M	н	RPM	/kg
BT30 -	DSC6S-60	6	9	20	60	22	82	25,000	0.4
	DSC6S-80	6	9	20	80	42	102	25,000	0.5
	DSC6S-120	6	9	25	120	67	142	25,000	0.5
BT40 -	DSC6S-95	6	9	26	95	42	128	20,000	1.0
	DSC6S-120	6	9	26	120	67	153	20,000	1.0
	DSC6S-160	6	9	36	160	97	193	20,000	1.2
	DSC8S-95	8	11	36	95	42	128	20,000	1.1
	DSC8S-120	8	11	36	120	67	153	20,000	1.1
	DSC8S-160	8	11	36	160	97	193	20,000	1.2
	DSC10S-95	10	13	36	95	42	128	20,000	1.0
	DSC10S-120	10	13	36	120	67	153	20,000	1.1
	DSC10S-160	10	13	36	160	97	193	20,000	1.2
	DSC12S-95	12	15	36	95	42	128	20,000	1.1
	DSC12S-120	12	15	36	120	67	153	20,000	1.1
	DSC12S-160	12	15	36	160	97	193	20,000	1.2
BT50 -	DSC6S-110	6	9	26	110	42	166	15,000	3.5
	DSC6S-160	6	9	36	160	97	216	15,000	3.6
	DSC8S-110	8	11	36	110	42	166	15,000	3.6
	DSC8S-160	8	11	36	160	97	216	15,000	3.6
	DSC10S-110	10	13	36	110	42	166	15,000	3.6
	DSC10S-160	10	13	36	160	97	216	15,000	3.6
	DSC12S-110	12	15	36	110	42	166	15,000	3.6
	DSC12S-160	12	15	36	160	97	216	15,000	3.7

<sup>•</sup> Through coolant system installed



CS/CM 2-pieces type





(mm)

	Designation	ØD	ØD <sub>1</sub>	L	М	н	
CS12	6-35	6	9	35	22	55	0.1
	6-80	6	9	80	67	100	0.2
	6-110	6	9	110	97	130	0.2
	8-35	8	11	35	22	55	0.1
	8-110	8	11	110	97	130	0.3
	10-35	10	13	35	22	45	0.1
	10-80	10	13	80	67	65	0.2
	10-110	10	13	110	97	65	0.3
	12-35	12	15	35	22	45	0.1
	12-55	12	15	55	42	49.5	0.2
	12-80	12	15	80	67	65	0.2
	12-110	12	15	110	97	65	0.3

•H: Insertion depth of tool •Not able to use the adjust screw •Through coolant system installed

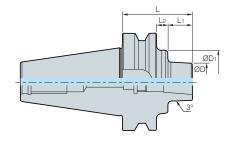
(mm)

	Designation	ØD	ØD <sub>1</sub>	L	М	Н	G	kg
CM12	6-35	6	12	35	22	55	M5	0.2
	6-80	6	12	80	67	100	M5	0.2
	8-35	8	14	35	22	55	M5	0.2
	8-55	8	14	55	42	75	M5	0.2
	8-80	8	14	80	67	100	M5	0.3
	10-35	10	16	35	22	45	M8	0.2
	10-55	10	16	55	42	45	M8	0.2
	10-80	10	16	80	67	45	M8	0.3
	12-35	12	20	35	22	45	M8	0.2
	12-55	12	20	55	42	45	M8	0.3
	12-80	12	20	80	52	55	M8	0.3

•H: Insertion depth of tool •Not able to use the adjust screw •Through coolant system installed

BT-SLK 2-pieces type





(mm)

	Designation	ØD	ØD <sub>1</sub>	L	L <sub>1</sub>	L <sub>2</sub>	∑ kg \
BT30 -	SLK12-35	38	-	35	13	-	0.4
	SLK12-45F	41	-	45	18	-	1.0
	SLK12-75F	41	-	75	48	-	1.3
	SLK12-135F	41	-	135	108	-	2.1
BT50 -	SLK12-75	38	65	75	25	12	4.1
	SLK12-75F	41	65	75	25	12	4.1
	SLK12-105F	41	65	105	55	12	4.5
	SLK12-135F	41	65	135	85	12	5.3
	SLK12-225	38	65	225	150	37	6.2
	SLK12-315	38	90	315	150	127	11.5

•Through coolant system installed •PULL STUD BOLT is needed for BT30-SLK12-35

	Basic										
	Туре	DSC6	DSC8	DSC10	DSC12	DSC14	DSC16	DSC18	DSC20	DSC25	DSC32
Adjust screw		M52	20C	M82	20C			M12	30C		



#### New power milling chuck

### **NPM**

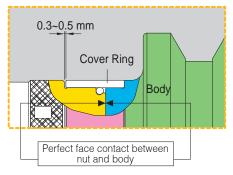
- Strong clamping over 500kgf·m (on NPM42 basis)
- DUST BLOCK functions for blocking foreign substance
- Jet coolant available
- High precision within 15  $\mu$ m at L/D = 3
- Boring range: Ø20~42



#### Code system



#### Improvement of durability by preventing minute dust, chips and coolant



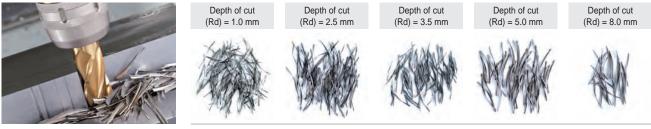
- Adopted Stop Ring on Head parts
- Preventing minute dust by Shim & O-Ring



Needle Roller Bearing

#### Stable machining from heavy to fine

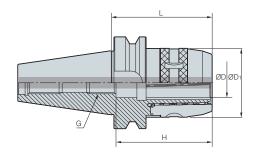
Perfect face contact and Powerful clamping force strengthen both Cutting force and Absorbtion of vibration.





## **BT-NPM**





(mm)

	Designation	ØD	ØD <sub>1</sub>	L	н	G	Collet	kg
BT30 -	NPM20-85	20	54	85	85	M16	DC20, DCS20, DCJ20	1.2
BT40 -	NPM20-85	20	54	85	85	M16	DC20, DCS20, DCJ20	2.6
	NPM20-100	20	54	100	85	M16	DC20, DCS20, DCJ20	2.3
	NPM25-85	25	61	85	85	M16	DC25	1.7
	NPM32-90	32	75	90	87	M16	DC32, DCS32, DCJ32	2.3
	NPM32-110	32	75	110	95	M16	DC32, DCS32, DCJ32	2.8
	NPM32-135	32	75	135	95	M16	DC32, DCS32, DCJ32	3.5
BT50 -	NPM20-95	20	54	95	85	M16	DC20, DCS20, DCJ20	4.3
	NPM20-125	20	54	125	85	M16	DC20, DCS20, DCJ20	4.7
	NPM20-165	20	54	165	85	M16	DC20, DCS20, DCJ20	5.2
	NPM32-110	32	75	110	105	M24	DC32, DCS32, DCJ32	5.0
	NPM32-135	32	75	135	105	M24	DC32, DCS32, DCJ32	5.7
	NPM32-165	32	75	165	105	M24	DC32, DCS32, DCJ32	6.9
	NPM42-110	42	90	110	125	M24	DC42, DCS42	5.4
	NPM42-135	42	90	135	125	M24	DC42, DCS42	6.5
	NPM42-165	42	90	165	125	M24	DC42, DCS42	7.9

<sup>◆</sup> Applicable collet G23

• H: Insertion depth of tool • Through coolant system is optional

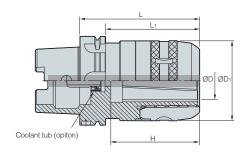
• In case of L  $\leq$  90, chucks with over 90mm are recommended for medium cutting by short cap

For separate purchase									
Division	Collet	Spanner	Through coolant system						
Parts Designation			0						
NPM20	DC20, DCS20, DCJ20	57-60	CTC20-□□						
NPM32	DC32, DCS32, DCJ20	75-79	CTC32-□□						
NPM42	DC42, DCS42	92-96	CTC42-□□						



## **HSK-NPM**





(mm)

De	Designation		ØD <sub>1</sub>	L	L <sub>1</sub>	н	Collet	kg \
HSK63A -	NPM20-100	20	54	100	74	75	DC20, DSC20, DCJ20	2.5
	NPM32-120	32	75	120	84	90	DC32, DCS32, DCJ32	2.9
HSK100A -	NPM32-130	32	75	130	101	90	DC32, DCS32, DCJ32	4.0

● Spare Part G21, G22 ● Applicable collet G23

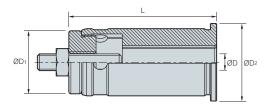
 $\bullet \text{H: Insertion depth of tool } \quad \bullet \text{Through coolant system is optional }$ 



Classification by shank						
HSK50	HSK50A-CNS					
HSK63	HSK63A-CNS					
HSK100	HSK100A-CNS					

DCS Straight Collet



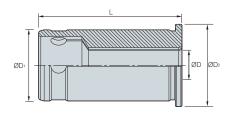


(mm)

Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	
DCS20-6, 8, 10, 12, 16	6, 8, 10, 12, 16	20	26	55	0.2
DCS32-6, 8, 10, 12, 14, 16, 19, 20, 25	6, 8, 10, 12, 14, 16, 19, 20, 25	32	38	70	0.4
DCS42-6, 8, 10, 12, 16, 20, 25, 32	6, 8, 10, 12, 16, 20, 25, 32	42	48	75	0.7

DC Straight Collet



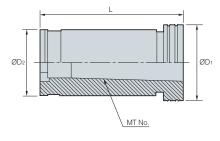


(mm)

Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	∏ _kg
DC20-6, 8, 10, 12, 14, 16	6, 8, 10, 12, 14, 16	20	26	53	0.1
DC25-6, 8, 10, 12, 16	6, 8, 10, 12, 16	25	29	61.5	0.2
DC32-6, 8, 10, 12, 14, 16, 19, 20, 25	6, 8, 10, 12, 14, 16, 19, 20, 25	32	38	64.5	0.2
DC42-6, 8, 10, 12, 16, 20, 25, 32	6, 8, 10, 12, 16, 20, 25, 32	42	48	73	0.5

Taper Collet





(mm

									(11111)
Designation	ØD	ØD <sub>1</sub>	L	MT No.	Designation	ØD	ØD <sub>1</sub>	L	MT No.
TC20-1	26	20	60	MT1	TC32-3	38	32	90	MT3
TC20-2	26	20	72	MT2	TC42-1	48	42	60	MT1
TC25-1	32	25	60	MT1	TC42-2	48	42	72	MT2
TC25-2	32	25	72	MT2	TC42-3	48	42	90	MT3
TC32-1	38	32	60	MT1	TC42-4	48	42	112.5	MT4
TC32-2	38	32	72	MT2					

# G Collet Chuck Series

#### **Collet chuck**

### SDC/P

- Improved precision (higher than conventional SDC)
- Simpler model number management than conventional SDC due to its organized gauge line
- Collet chuck suitable for multi-purpose machining with SWISSMADE sleeve nut adopted
- Boring range: Ø1~Ø25







General R/RU Nut Before

Soft sleeve bearing RN Nut After

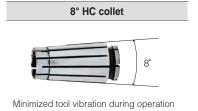
#### High speed collet chuck

### **DSK**

- Available for machining at max.15,000 RPM and balancing of G6.3
- Minimized tool vibration during operation by using collet 8°
- · Swiss made high precision nut enhances stability
- Tool clamping range: Ø2~25

Standard type & Precision type	Designation	Max chucking	Run-out
	HC6-Ød	6.0	
	HC10-Ød	10.0	Standard type
III III	HC13-Ød	13.0	5 μm ´
	HC16-Ød	16.0	Precision type
	HC20-Ød	20.0	3 µm
	HC25-Ød	25.0	





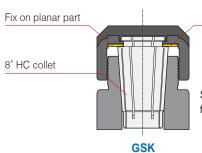
#### Great speed slim collet chuck

### **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

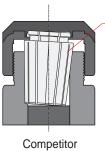






Nut ideal for high speed rotation

Strong clamping by 8° collet and stable fixing with the use of planar part fixing



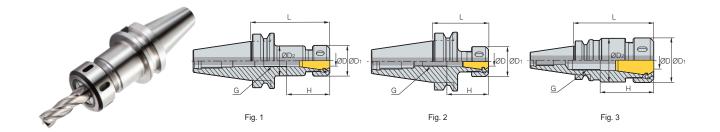
Chattering due to imbalance

Imbalance due to centrifugal force during high speed rotation



**Tooling System** 

# BT-SDC/P



										(mm)
	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	н	Collet	G	kg	Fig.
BT30 -	SDC7P-70	1.0~7.0	18	17	70	33	GERC11	M7	0.5	1
	SDC7P-100	1.0~7.0	18	17	100	33	GERC11	M7	0.5	1
	SDC10P-50	1.0~10.0	32	-	50	44.5	GERC16	M10	0.5	2
	SDC10P-70	1.0~10.0	32	31	70	44.5	GERC16	M10	0.6	1
	SDC10P-100	1.0~10.0	32	31	100	44.5	GERC16	M10	0.7	1
	SDC13P-50	1.0~13.0	35	-	50	49	GERC20	M7	0.5	2
	SDC13P-70	1.0~13.0	35	34	70	49	GERC20	M13	0.6	1
	SDC13P-100	1.0~13.0	35	34	100	49	GERC20	M13	0.8	1
	SDC16P-50	2.0~16.0	42	-	50	50	GERC25	M7	0.5	2
	SDC16P-70	2.0~16.0	42	41	70	50	GERC25	M18	0.7	1
	SDC16P-100	2.0~16.0	42	41	100	50	GERC25	M18	1.0	1
	SDC20P-60	2.0~20.0	50	-	60	60	GERC32	M7	0.6	2
	SDC20P-90	2.0~20.0	50	49	90	60	GERC32	M22	1.0	3
	SDC20P-120	2.0~20.0	50	49	120	60	GERC32	M22	1.4	3
BT40 -	SDC7P-70	1.0~7.0	18	17	70	33	GERC11	M7	0.9	1
	SDC7P-90	1.0~7.0	18	17	90	33	GERC11	M7	0.9	1
	SDC7P-130	1.0~7.0	18	17	130	33	GERC11	M7	1.0	1
	SDC10P-70	1.0~10.0	32	31	70	44.5	GERC16	M10	1.0	1
	SDC10P-90	1.0~10.0	32	31	90	44.5	GERC16	M10	1.2	1
	SDC10P-130	1.0~10.0	32	31	130	44.5	GERC16	M10	1.4	1
	SDC13P-70	1.0~13.0	35	34	70	49	GERC20	M13	1.1	1
	SDC13P-90	1.0~13.0	35	34	90	49	GERC20	M13	1.2	1
	SDC13P-130	1.0~13.0	35	34	130	49	GERC20	M13	1.4	1
	SDC13P-150	1.0~13.0	35	34	150	49	GERC20	M13	1.6	1
	SDC16P-70	2.0~16.0	42	41	70	50	GERC25	M18	1.1	1
	SDC16P-90	2.0~16.0	42	41	90	50	GERC25	M18	1.3	1
	SDC16P-130	2.0~16.0	42	41	130	50	GERC25	M18	1.7	1
	SDC20P-70	2.0~20.0	50	-	70	60	GERC32	M22	1.1	2
	SDC20P-90	2.0~20.0	50	49	90	60	GERC32	M22	1.4	1
	SDC20P-130	2.0~20.0	50	49	130	60	GERC32	M22	1.9	1
	SDC20P-150	2.0~20.0	50	49	150	60	GERC32	M22	2.2	1
	SDC26P-90	16.0~26.0	63	62	90	71	GERC40	M28	1.7	1

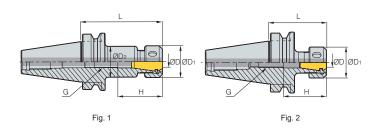
<sup>◆</sup> Spare Part G26 ◆ Applicable collet G34

<sup>•</sup> H: Insertion depth of tool • Through coolant system is optional • Collets in the right size are recommended for oil hole type

# G SDC/P

# BT-SDC/P





(mm)

	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	н	Collet	G	\( \begin{aligned} \times \\ kg \end{aligned} \)	Fig.
BT50 -	SDC10P-100	1.0~10.0	32	31	100	44.5	GERC16	M10	3.7	1
	SDC10P-120	1.0~10.0	32	31	120	44.5	GERC16	M10	3.7	1
	SDC10P-160	1.0~10.0	32	31	160	44.5	GERC16	M10	3.8	1
	SDC13P-100	1.0~13.0	35	34	100	49	GERC20	M13	3.8	1
	SDC13P-130	1.0~13.0	35	34	130	49	GERC20	M13	3.8	1
	SDC13P-160	1.0~13.0	35	34	160	49	GERC20	M13	4.1	1
	SDC13P-180	1.0~13.0	35	34	180	49	GERC20	M13	4.2	1
	SDC16P-100	2.0~16.0	42	41	100	50	GERC25	M18	3.9	1
	SDC16P-160	2.0~16.0	42	41	160	50	GERC25	M18	4.3	1
	SDC20P-70	2.0~20.0	50	-	70	60	GERC32	M22	1.7	2
	SDC20P-100	2.0~20.0	50	49	100	60	GERC32	M22	4.0	1
	SDC20P-130	2.0~20.0	50	49	130	60	GERC32	M22	4.3	1
	SDC20P-160	2.0~20.0	50	49	160	60	GERC32	M22	4.7	1
	SDC20P-180	2.0~20.0	50	49	180	60	GERC32	M22	5.0	1
	SDC26P-160	16.0~26.0	63	62	160	71	GERC40	M28	5.5	1

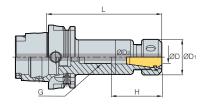
<sup>⇒</sup> Spare Part G26 ⇒ Applicable collet G34

	Basic		For separate purchase				
Division	Sleeve bearing nut	Adjust screw	Spanner	Collet			
Parts Designation	O:			<b>(</b>			
SDC7P	RN11	BN0716F	20-22	GERC/ER 11-ØD			
SDC10P	RN16	BN1025F	32-35	GERC/ER 16-ØD			
SDC13P	RN20	BN1325F	35-38	GERC/ER 20-ØD			
SDC16P	RN25	BN1830F	42-46	GERC/ER 25-ØD			
SDC20P	RN32	BN2230F	48-52	GERC/ER 32-ØD			
SDC26P	RN40	BN2838F	62-65	GERC/ER 40-ØD			

 $<sup>\</sup>ast$  NOTES: In case of the BT30-SDC13P-50/HSK63A-SDC13P-100, a BN0716F screw

# **HSK-SDC/P**





(mm)

De	esignation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	н	Collet	G	kg \
HSK63A -	SDC10P-100	1.0~10.0	32	31	100	44.5	GER16	M10	1.0
	SDC13P-100	1.0~13.0	35	34	100	49	GER20	M7	1.1
	SDC16P-100	1.0~16.0	42	41	100	50	GER25	M7	1.2
	SDC20P-110	1.0~20.0	50	49	110	60	GER32	M7	1.5
HSK100A -	SDC16P-110	1.0~16.0	42	41	110	50	GER25	M13	2.6
	SDC20P-120	2.0~20.0	50	49	120	60	GER32	M10	2.9

Division	For separate purchase
Internal coolant system	

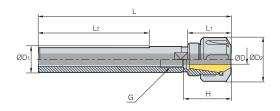
Classification	on by shank
HSK50	HSK50A-CNS
HSK63	HSK63A-CNS
HSK100	HSK100A-CNS

# G SDC/P

# S-SDC





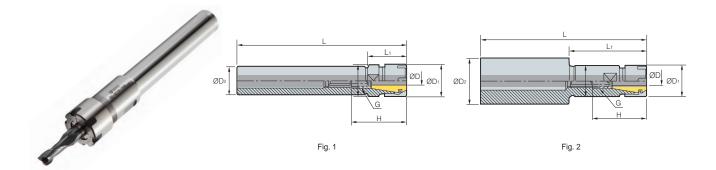


	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	н	Collet	G	/kg \
S16 -	SDC7-120M	1.0~7.0	19	16	120	-	-	33	GERC11	M7	0.1
	SDC7-120T	1.0~7.0	19	16	120	-	73	33	GERC11	M7	0.1
	SDC10-150T	1.0~10.0	28	16	150	46.5	83	34.5	GERC16	M10	0.2
S20 -	SDC10-150M	1.0~10.0	28	20	150	26.5	-	34.5	GERC16	M10	0.3
	SDC10-150T	1.0~10.0	28	20	150	26.5	83	34.5	GERC16	M10	0.3
	SDC13-150M	1.0~13.0	35	20	150	50	-	49	GERC20	M13	0.3
	SDC13-150T	1.0~13.0	35	20	150	50	83	49	GERC20	M13	0.3
S25 -	SDC10-150M	1.0~10.0	28	25	150	-	-	34.5	GERC16	M10	0.4
	SDC10-150T	1.0~10.0	28	25	150	-	83	34.5	GERC16	M10	0.4
	SDC13-150M	1.0~13.0	35	25	150	-	-	49	GERC20	M13	0.4
	SDC13-150T	1.0~13.0	35	25	150	-	83	49	GERC20	M13	0.4
S32 -	SDC13-150M	1.0~13.0	35	32	150	-	-	49	GERC20	M13	0.7
	SDC13-150T	1.0~13.0	35	32	150	-	83	49	GERC20	M13	0.7
	SDC20-165M	2.0~20.0	50	32	165	-	-	60	GERC32	M22	0.9
	SDC20-165T	2.0~20.0	50	32	165	-	83	60	GERC32	M22	0.9

<sup>→</sup> Applicable collet G34

 $<sup>\</sup>bullet \text{H: Insertion depth of tool} \qquad \bullet \text{Through coolant system is optional}$ 

# S-SDC/S



										(mm)
	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	н	Collet/Step	G	/ kg
S16 -	SDC7S-100M	1.0~7.0	16	16	100	21	33	GERC11/0.5	M7	0.1
	SDC7S-150M	1.0~7.0	16	16	150	21	33	GERC11/0.5	M7	0.1
	SDC10S-100M	1.0~10.0	22	16	100	50	44.5	GERC16/1.0	M10	0.1
	SDC10S-150M	1.0~10.0	22	16	150	50	44.5	GERC16/1.0	M10	0.1
S20 -	SDC7S-100M	1.0~7.0	16	20	100	30	35	GERC11/0.5	M7	0.1
	SDC7S-150M	1.0~7.0	16	20	150	80	35	GERC11/0.5	M7	0.2
	SDC10S-100M	1.0~10.0	22	20	100	50	44.5	GERC16/1.0	M10	0.1
	SDC10S-150M	1.0~10.0	22	20	150	50	44.5	GERC16/1.0	M10	0.2
	SDC10S-200M	1.0~10.0	22	20	200	50	44.5	GERC16/1.0	M10	0.3
	SDC13S-100M	1.0~13.0	28	20	100	50	49	GERC20/1.0	M13	0.1
	SDC13S-150M	1.0~13.0	28	20	150	50	49	GERC20/1.0	M13	0.2
S25 -	SDC7S-100M	1.0~7.0	16	25	100	30	33	GERC11/0.5	M7	0.2
	SDC7S-150M	1.0~7.0	16	25	150	80	33	GERC11/0.5	M7	0.2
	SDC10S-100M	1.0~10.0	22	25	100	30	44.5	GERC16/1.0	M10	0.2
	SDC10S-150M	1.0~10.0	22	25	150	80	44.5	GERC16/1.0	M10	0.3
	SDC13S-100M	1.0~13.0	28	25	100	50	49	GERC20/1.0	M13	0.2
	SDC13S-150M	1.0~13.0	28	25	150	50	49	GERC20/1.0	M13	0.4
	SDC16S-100M	1.0~16.0	35	25	100	50	50	GERC25/1.0	M18	0.3
	SDC16S-150M	1.0~16.0	35	25	150	50	50	GERC25/1.0	M18	0.4
	SDC16S-200M	1.0~16.0	35	25	200	50	50	GERC25/1.0	M18	0.6
S32 -	SDC16S-120M	1.0~16.0	35	32	120	50	50	GERC25/1.0	M18	0.5
	SDC16S-150M	1.0~16.0	35	32	150	50	50	GERC25/1.0	M18	0.6

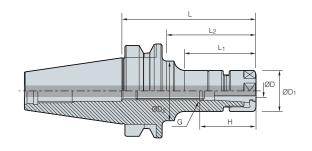
Applicable collet G34

<sup>•</sup> H: Insertion depth of tool • Through coolant system is optional

# G DSK

## **BT-DSK**





	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	н	Collet	G	RPM	/kg \
BT30 -	DSK6-60	3.0~6.0	19.5	19.5	60	33	33	31	HC6	M8	15,000	0.4
	DSK6-90	3.0~6.0	19.5	32	90	56	65	31	HC6	M8	15,000	0.5
	DSK10-60	2.0~10.0	27.5	27.5	60	35	35	38	HC10	M12	15,000	0.5
	DSK10-90	2.0~10.0	27.5	27.5	90	65	65	38	HC10	M12	15,000	0.6
	DSK13-60	3.0~13.0	33	33	60	36	36	43	HC13	M12	15,000	0.5
	DSK16-60	3.0~16.0	40	40	60	37	37	52	HC16	M12	15,000	0.6
	DSK16-90	3.0~16.0	40	40	90	67	67	52	HC16	M18	15,000	0.8
	DSK25-90	16.0~25.0	55	55	90	67.5	67.5	63.5	HC25	M12	15,000	0.9
BT40 -	DSK6-90	3.0~6.0	19.5	32	90	51	61	31	HC6	M8	10,000	1.1
	DSK6-120	3.0~6.0	19.5	32	120	60	90	31	HC6	M8	10,000	1.1
	DSK6-150	3.0~6.0	19.5	25	150	60	120	31	HC6	M8	10,000	1.1
	DSK10-90	2.0~10.0	27.5	40	90	48	60	38	HC10	M12	10,000	1.2
	DSK10-120	2.0~10.0	27.5	40	120	73	90	38	HC10	M12	10,000	1.2
	DSK10-150	2.0~10.0	27.5	34.5	150	73	118	38	HC10	M12	10,000	1.4
	DSK13-90	3.0~13.0	33	33	90	59	59	43	HC13	M15	10,000	1.3
	DSK16-90	3.0~16.0	40	40	90	58	58	52	HC16	M18	10,000	1.3
	DSK16-120	3.0~16.0	40	40	120	88	88	52	HC16	M18	10,000	1.5
	DSK16-150	3.0~16.0	40	40	150	118	118	52	HC16	M18	10,000	1.9
	DSK20-90	4.0~20.0	48.5	48.5	90	60	60	60	HC20	M22	10,000	1.5
	DSK20-120	4.0~20.0	48.5	48.5	120	90	90	60	HC20	M22	10,000	1.8
	DSK25-90	16.0~25.0	55	55	90	61	61	63.5	HC25	M28	10,000	1.6
	DSK25-120	16.0~25.0	55	55	120	91	91	85	HC25	M28	10,000	2.0

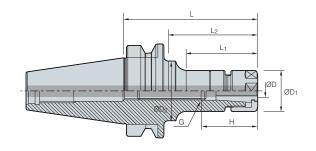
<sup>●</sup> Spare Part G31 ● Applicable collet G33

<sup>•</sup>H: Insertion depth of tool •Through coolant system is optional

<sup>•</sup> Coolant collets are recommended when using the coolant system

# **BT-DSK**





(mm)

	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	н	Collet	G	RPM	kg
BT50 -	DSK6-105	3.0~6.0	19.5	32	105	55	64	31	HC6	M8	8,000	3.6
	DSK6-135	3.0~6.0	19.5	32	135	60	92	31	HC6	M8	8,000	3.7
	DSK6-165	3.0~6.0	19.5	32	165	60	114	31	HC6	M8	8,000	4.1
	DSK10-105	2.0~10.0	27.5	27.5	105	57	57	38	HC10	M12	8,000	3.8
	DSK10-135	2.0~10.0	27.5	32	135	70	92	38	HC10	M12	8,000	3.9
	DSK10-165	2.0~10.0	27.5	36	165	75	114	38	HC10	M12	8,000	4.1
	DSK13-135	3.0~13.0	33	33	135	92	92	43	HC13	M15	8,000	3.8
	DSK16-105	3.0~16.0	40	40	105	62	62	52	HC16	M18	8,000	4.0
	DSK16-135	3.0~16.0	40	40	135	92	92	52	HC16	M18	8,000	4.2
	DSK16-165	3.0~16.0	40	50	165	40	122	52	HC16	M18	8,000	4.6
	DSK20-105	4.0~20.0	48	40	105	62	62	60	HC20	M22	8,000	4.2
	DSK20-135	4.0~20.0	48	40	135	92	92	60	HC20	M22	8,000	4.5
	DSK20-165	4.0~20.0	48	40	165	122	122	60	HC20	M22	8,000	4.9
	DSK25-105	16.0~25.0	55	55	105	62	62	63.5	HC25	M28	8,000	4.4
	DSK25-135	16.0~25.0	55	55	135	92	92	63.5	HC25	M28	8,000	4.5
	DSK25-165	16.0~25.0	55	55	165	122	122	63.5	HC25	M28	8,000	5.2

<sup>→</sup> Applicable collet G33

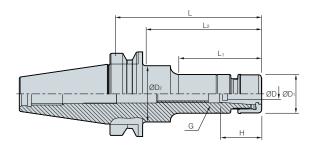
	Basic							
Division	Nut	Nut Adjust screw Extractor		Spanner				
Parts Designation	0							
DSK6	DN6	BN0825F	DSK-6CE	DSS-6				
DSK10	DN10	BN1225F	DSK-10CE	DSS-10				
DSK13	DN13	BN1230 (BT30)/BN1524F (Others)	DSK-13CE	DSS-13				
DSK16	DN16	BN1830F	DSK-16CE	DSS-16				
DSK20	DN20	BN2230F	DSK-20CE	DSS-20				
DSK25	DN25	BN2838F	DSK-25CE	DSS-25				

H: Insertion depth of tool
 Through coolant system is optional
 Coolant collets are recommended when using the coolant system

# G GSK

# **BT-GSK**





												(mm)
	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	н	Collet / Step	G	RPM	kg
BT30 -	GSK6-60	3.0~6.0	19.5	19.5	60	33	33	31	HC6/1.0	M8	25,000	0.4
	GSK6-90	3.0~6.0	19.5	32	90	56	65	31	HC6/1.0	M8	25,000	0.5
	GSK10-60	2.0~10.0	27	27	60	35	35	38	HC10/1.0	M12	25,000	0.5
	GSK10-90	2.0~10.0	27	27	90	65	65	38	HC10/1.0	M12	25,000	0.6
	GSK13-60	3.0~13.0	35	35	60	36	36	43	HC13/1.0	M12	25,000	0.6
	GSK16-60	3.0~16.0	40	40	60	37	37	52	HC16/1.0	M12	25,000	0.6
	GSK16-90	3.0~16.0	40	40	90	67	67	52	HC16/1.0	M18	25,000	8.0
	GSK25-90	16.0~25.0	55	55	90	67.5	67.5	63.5	HC25/1.0	M12	25,000	1.0
BT40 -	GSK6-90	3.0~6.0	19.5	32	90	51	61	31	HC6/1.0	M8	20,000	1.0
	GSK6-120	3.0~6.0	19.5	32	120	60	90	31	HC6/1.0	M8	20,000	1.2
	GSK6-150	3.0~6.0	19.5	25	150	60	120	31	HC6/1.0	M8	20,000	1.2
	GSK10-90	2.0~10.0	27	40	90	48	60	38	HC10/1.0	M12	20,000	1.1
	GSK10-120	2.0~10.0	27	40	120	73	90	38	HC10/1.0	M12	20,000	1.3
	GSK10-150	2.0~10.0	27	34.5	150	73	118	38	HC10/1.0	M12	20,000	1.4
	GSK13-90	3.0~13.0	35	35	90	59	59	43	HC13/1.0	M15	20,000	1.2
	GSK16-90	3.0~16.0	40	40	90	58	58	52	HC16/1.0	M18	20,000	1.3
	GSK16-120	3.0~16.0	40	40	120	88	88	52	HC16/1.0	M18	20,000	1.5
	GSK16-150	3.0~16.0	40	40	150	118	118	52	HC16/1.0	M18	20,000	1.8
	GSK20-90	4.0~20.0	48	48	90	60	60	60	HC20/1.0	M22	20,000	1.4
	GSK20-120	4.0~20.0	48	48	120	90	90	60	HC20/1.0	M22	20,000	1.8
	GSK25-90	16.0~25.0	55	55	90	61	61	63.5	HC25/1.0	M28	20,000	1.6
	GSK25-120	16.0~25.0	55	55	120	91	91	63.5	HC25/1.0	M28	20,000	2.0
BT50 -	GSK6-105	3.0~6.0	19.5	32	105	55	64	31	HC6	M8	15,000	3.6
	GSK6-135	3.0~6.0	19.5	32	135	60	92	31	HC6	M8	15,000	3.6
	GSK6-165	3.0~6.0	19.5	32	165	60	114	31	HC6	M8	15,000	3.9
	GSK10-105	2.0~10.0	27	27	105	57	57	38	HC10	M12	15,000	3.7
	GSK10-135	2.0~10.0	27	32	135	70	92	38	HC10	M12	15,000	3.7
	GSK10-165	2.0~10.0	27	36	165	75	114	38	HC10	M12	15,000	4.0
	GSK13-135	3.0~13.0	35	35	135	92	92	43	HC13	M15	15,000	3.9
	GSK16-105	3.0~16.0	40	40	105	62	62	52	HC16	M18	15,000	3.9
	GSK16-135	3.0~16.0	40	40	135	92	92	52	HC16	M18	15,000	4.1
	GSK16-165	3.0~16.0	40	50	165	40	122	52	HC16	M18	15,000	4.3
	GSK20-105	4.0~20.0	48	-	105	62	62	60	HC20	M22	15,000	4.1
	GSK20-135	4.0~20.0	48	-	135	92	92	60	HC20	M22	15,000	4.4
	GSK20-165	4.0~20.0	48	-	165	122	122	60	HC20	M22	15,000	4.9
	GSK25-105	16.0~25.0	55	55	105	62	62	63.5	HC25	M28	15,000	4.2
	GSK25-135	16.0~25.0	55	55	135	92	92	63.5	HC25	M28	15,000	4.6
	GSK25-165	16.0~25.0	55	55	165	122	122	63.5	HC25	M28	15,000	5.1

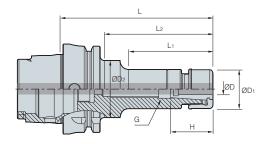
<sup>⇒</sup> Spare Part G33 ⇒ Applicable collet G33

 $<sup>\</sup>bullet \text{H: Insertion depth of tool} \qquad \bullet \text{Through coolant system is optional}$ 

Coolant collets are recommended when using the coolant system

# **HSK-GSK**





(mm)

De	esignation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	н	Collet / Step	G	RPM	kg
HSK63A -	GSK6-100	3.0~6.0	19.5	32	100	51	61	35	HC6/0.5	M8	20,000	8.0
	GSK10-105	2.0~10.0	27	34.5	105	73	118	50	HC10/0.5	M12	20,000	0.9
	GSK16-120	3.0~16.0	40	40	120	58	58	60	HC16/0.5	M18	20,000	1.3
	GSK20-120	4.0~20.0	48	48	120	60	60	70	HC20/0.5	M22	20,000	1.6
HSK100A -	GSK6-120	3.0~6.0	19.5	32	120	55	64	35	HC6/0.5	M8	15,000	2.2
	GSK10-120	2.0~10.0	27	27	120	57	57	50	HC10/0.5	M12	15,000	2.3
	GSK16-140	3.0~16.0	40	40	140	62	62	60	HC16/0.5	M18	15,000	2.8
	GSK25-155	16.0~25.0	55	55	155	62	62	85	HC25/0.5	M28	15,000	3.6

• H: Insertion depth of tool

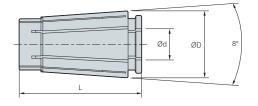
#### Parts

	Basic							
Division	Nut	Adjust screw	Extractor	Spanner				
Parts Designation	6							
GSK6	GN6	M820C	DSK-6CE	GSK-6				
GSK10	GN10	M1230C	DSK-10CE	GSK-10				
GSK13	GN13	BN1530F	DSK-13CE	GSK-13				
GSK16	GN16	BN1830F	DSK-16CE	GSK-16				
GSK20	GN20	BN2230F	DSK-20CE	GSK-20				
GSK25	GN25	BN2838F	DSK-25CE	GSK-25				

# **HC** Slim Collet

General & precision type





Destauration.		ØD.		Ød	Distance	Tolerance		
	Designation	ØD		(Max.)	(mm)	Standard type	Precision type (P)	
HC6 -	Ød(P)	10.5	25.0	6.0	1.0			
HC10 -	Ød(P)	15.6	30.5	10.0	1.0		•	
HC13 -	Ød(P)	20.1	39.0	13.0	1.0	_		
HC16 -	Ød(P)	24.6	45.0	16.0	1.0	- 5 μm	3 μm	
HC20 -	Ød(P)	29.2	54.3	20.0	2.0			
HC25 -	Ød(P)	35.7	57.0	25.0	1.0			

# **GERC**

#### **GERC Collet**



- · Corrosion resistant collet to micro unit
- High tech coating for long lasting precision
- Longer tool life and higher productivity

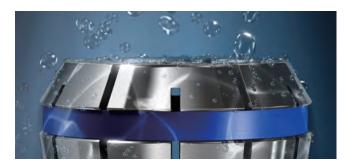


#### Code system



#### 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





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



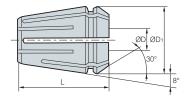
### Precision (L/D = 3) Degree of precision Finishing GERC-HP Medium cutting HPS roughingt Standard ER collet chuck Clamping force

# Standard type = $5 \mu m$ Precision type = $2 \mu m$

#### General/Precision/Water proof type

# **GERC** Collet





(mm)

Decimation	ED aire	ER size ØD			Min. pi of	Distance	Tolerance	
Designation	ER SIZE	(Max.)	וטש		water proof type	(mm)	Standard type	Precision type (HP)
GER11-Ød(HP)	11	7.0	11.5	18.0	-	0.5		2 µm
GER16-Ød(HP, C)	16	10.0	17.0	27.5	5.0	1.0		
GER20-Ød(HP, C)	20	13.0	21.0	31.5	6.0	1.0	E	
GER25-Ød(HP, C)	25	16.0	26.0	34.0	6.0	1.0	5 μm	
GER32-Ød(HP, C)	32	20.0	33.0	40.0	8.0	1.0		
GER40-Ød	40	26.0	41.0	46.0	10.0	1.0		

# GERC Collet



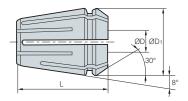
Designation	ØD	Distance	Collet amount	Tolerance	/kg \
GERC11 1.0-7.0 mm/0.5 mm	1.0-7.0	0.5	13 pcs	5 μm	0.1
GERC16 1.0-10.0 mm/1.0 mm	1.0-10.0	1.0	10 pcs	5 μm	0.2
GERC20 2.0-13.0 mm/1.0 mm	2.0-13.0	1.0	12 pcs	5 μm	0.5
GERC25 2.0-16.0 mm/1.0 mm	2.0-16.0	1.0	15 pcs	5 μm	1,1
GERC32 3.0-20.0 mm/1.0 mm	3.0-20.0	1.0	18 pcs	5 μm	2.6
GERC40 4.0-26.0 mm/1.0 mm	4.0-26.0	1.0	23 pcs	5 μm	5.8

General/Water proof type



# **ER** Collet





(mm)

Designation	ER size	ØD (Max.)	ØD <sub>1</sub>	L	Min. pi of water proof type	Distance (mm)	Tolerance
ER11-Ød	11	7.0	11.5	18.0	-	0.5	
ER16-Ød (C)	16	10.0	17.0	27.5	5.0	1.0	-
ER20-Ød (C)	20	13.0	21.0	31.5	6.0	1.0	10 μm
ER25-Ød (C)	25	16.0	26.0	34.0	6.0	1.0	-
ER32-Ød (C)	32	20.0	33.0	40.0	8.0	1.0	1

ER Collet



Designation	ØD	Distance	Collet amount	Tolerance
ER11(SET)	1.0-7.0	0.5	12 pcs	1Ο μm
ER16(SET)	1.0-10.0	1.0	10 pcs	10 μm
ER20(SET)	2.0-13.0	1.0	12 pcs	1Ο μm
ER25(SET)	2.0-16.0	1.0	15 pcs	1Ο μm
ER32(SET)	3.0-20.0	1.0	18 pcs	1Ο <i>μ</i> m

#### Lock collet for ER collet chuck

### ER/L

- Designed to prevent the end mill from falling out
- Prevents tool fallout, slipping, or idle running
- Uses the Weldon flat (DIN 6535HB) end mill without any special endmill
- Useful for machining large-sized mold or difficult-to-cut materials

#### Structural Features

#### Designed to prevent fallout

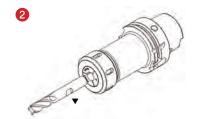
- Tool fallout is prevented by a key inserted in the collet
- A key is inserted to prevent the tool from falling out

#### How to use

- Assemble the collet with nut (same for general ER collet in use)
- Assemble the end tool (in the direction of assembling notch with key)
- Tighten the nut with the body

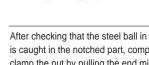




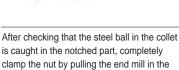


Clamp the nut after inserting no. 1 into the collet chuck. After that, insert the end mill notch to be aligned with the part ▼ (steel ball

Note If an auto clamp device is used, skip step (Endmill rotation may cause injury.)



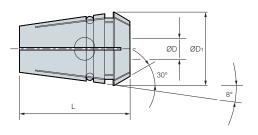
axial direction (arrow direction)



# **ER/L** Collet







Designation	ØD	ØD	ØD <sub>1</sub>	L
ER20-6L	20	6	20.7	31.5
ER20-8L	20	8	20.7	31.5
ER20-10L	20	10	20.7	31.5
ER20-12L	20	12	20.7	3 1.5
ER32-12L	32	12	32.7	40
ER32-16L	32	16	32.7	40
ER32-20L	32	20	32.7	40

# G RTJW

#### Jet coolant disk

### **RTJW**

- Provides a longer cutting tool service life by preventing chips from adhering to the tool
- Improveds chip breakability/breaking strong jet injection
- Reduces equipment non-operation time as nozzle position change is not necessary



#### Code system

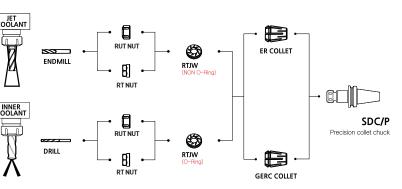


#### Application

• 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								
Туре	M	D	L					
RT16	M22x1.50	28.0	22.5					



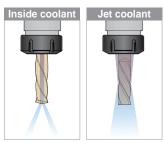


RUT	RUTNUT									
Туре	M	D	L							
RUT20	M25x1.50	35.0	24.0							
RUT25	M32x1.50	42.0	25.0							
RUT32	M40x1.50	50.0	27.5							
RUT40	M50x1.50	63.0	30.5							



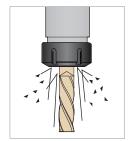


	Pocket machining	After	Remarks
Jet coolant			► The chips in the pocket completely are removed by a strong jet injection
Outside coolant		A	<ul> <li>The chips in the pocket are not removed</li> <li>Chips are accumulated in the collet and nut</li> </ul>



#### **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**





Designation		ER size	Inner diameter	Designation		ER size	Inner diameter
RTJW16 -	RTJW16-6	16	6	RTJW32 -	RTJW32-6	32	6
	RTJW16-7	16	7		RTJW32-7	32	7
	RTJW16-8	16	8		RTJW32-8	32	8
RTJW20 -	RTJW20-6	20	6		RTJW32-9	32	9
	RTJW20-7	20	7		RTJW32-10	32	10
	RTJW20-8	20	8		RTJW32-11	32	11
	RTJW20-9	20	9		RTJW32-12	32	12
	RTJW20-10	20	10		RTJW32-13	32	13
RTJW25 -	RTJW25-6	25	6		RTJW32-14	32	14
	RTJW25-7	25	7		RTJW32-15	32	15
	RTJW25-8	25	8		RTJW32-16	32	16
	RTJW25-9	25	9		RTJW32-17	32	17
	RTJW25-10	25	10		RTJW32-18	32	18
	RTJW25-11	25	11		RTJW32-20	32	20
	RTJW25-12	25	12	RTJW40 -	RTJW40-18	40	18
	RTJW25-13	25	13		RTJW40-19	40	19
	RTJW25-14	25	14		RTJW40-20	40	20
	RTJW25-15	25	15		RTJW40-21	40	21
	RTJW25-16	25	16		RTJW40-22	40	22
					RTJW40-24	40	24

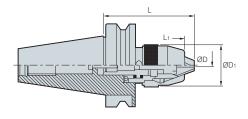
<sup>◆</sup> Clamping items: G25~G27

 $<sup>\</sup>bullet$  Less than Ø5 cannot be used for production

G NPU

# **BT-NPU**





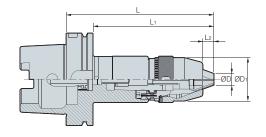
(mm)

	Designation	ØD	ØD <sub>1</sub>	L	L <sub>1</sub>	
BT30 -	NPU8-97	1~ 8	38	97	8.5	0.8
	NPU13-125	1~13	50	125	12.5	1.4
BT40 -	NPU8-87	1~ 8	38	87	8.5	1.2
	NPU13-105	1~13	50	105	12.5	1.6
	NPU13-130	1~13	50	130	12.5	1.9
BT50 -	NPU13-130	1~13	50	130	12.5	4.5
	NPU13-190	1~13	50	190	12.5	5.3

<sup>•</sup> Through coolant system not available

# **HSK-NPU**





(mm)

Designation	ØD	ØD <sub>1</sub>	L	L <sub>1</sub>	L <sub>2</sub>	
HSK63A - NPU13-175	1~13	50	175	149	12.5	2.4
HSK100A - NPU13-180	1~13	50	180	151	12.5	3.6

<sup>•</sup> Through coolant system not available

	For separate purchase			
Division	Chuck	Bolt	Spanner	
Parts Designation				
NPU8	NPU08	BX0620	NPU0836	
NPU13	NPU13	BX0825	NPU1348	

#### **High speed synchro tapping chuck**



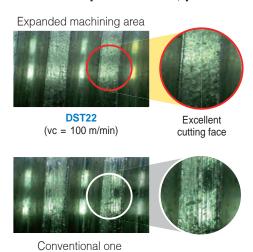
- Tapping chuck for high speed machining
- Specially designed structure for absorbing thrust load and preventing damage on the tap
- Through coolant system available
- Applicable range: M1~M22

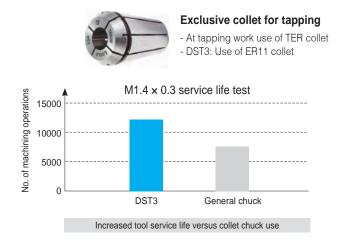


#### Code system

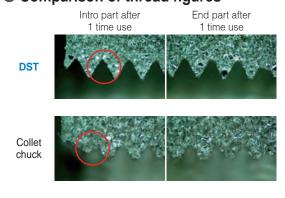


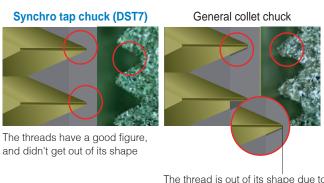
#### **Excellent performance, precise machining**





#### Comparison of thread figures



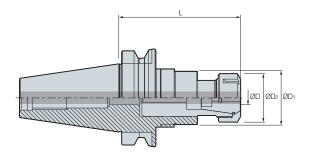


The thread is out of its shape due to synchronization error

# G DST

## **BT-DST**





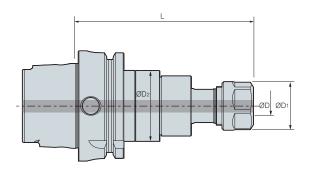
(mm)

	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	Collet	F-	F+	
BT30 -	DST3-70	M1~M3	20	19	70	ER11	0.5	0.5	0.5
	DST10-100	M3~M10	40.4	28	100	TER16	0.5	0.5	0.8
BT40 -	DST3-70	M1~M3	20	19	70	ER11	0.5	0.5	1.0
	DST10-100	M3~M10	40.4	28	100	TER16	0.5	0.5	1.3
	DST22-110	M6~M22	60	49.5	110	TER32	0.7	0.7	1.7
BT50 -	DST10-110	M3~M10	60	49.5	110	TER16	0.5	0.5	3.8
	DST22-130	M6~M22	60	49.5	130	TER32	0.7	0.7	4.5

<sup>→</sup> Applicable collet G36, G43

# **HSK-DST**





D	esignation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	Collet	F-	F+	
HSK63A -	DST3-80	M1~M3	19	20	80	ER11	0.5	0.5	0.7
	DST10-100	M3~M10	28	40.4	100	TER16	0.5	0.5	0.9
	DST22 130	M6~M22	49.5	60	130	TER32	0.7	0.7	1.8

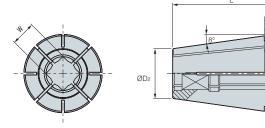
<sup>→</sup> Applicable collet G36, G43

<sup>•</sup> Through coolant system is optional

<sup>•</sup> Through coolant system is optional

TER Tap Collet





									(11111)
I	Designation	Tapping Range	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	W	\( \sqrt{kg} \)
TER16 -	4x3.2	M3	4	16.74	10.1	27.5	6.3	3.2	0.03
	5x4	M4	5	16.74	10.1	27.5	6.3	4	0.03
	5.5x4.5	M5	5.5	16.74	10.1	27.5	6.3	4.5	0.02
	6x4.5	M6,U1/4	6	16.74	10.1	27.5	6.3	4.5	0.02
	6.2x5	M7, M8	6.2	16.74	10.1	27.5	6.3	5	0.02
	7x5.5	M9, M10, U3/8	7	16.74	10.1	27.5	6.3	5.5	0.02
ΓER20 -	5x4	M4	5	20.74	13.2	31.5	7.2	4	0.05
	5.5x4.5	M5	5.5	20.74	13.2	31.5	7.2	4.5	0.05
	6x4.5	M6,U1/4	6	20.74	13.2	31.5	7.2	4.5	0.05
	6.2x5	M7, M8	6.2	20.74	13.2	31.5	7.2	5	0.04
	7x5.5	M9, M10, U3/8	7	20.74	13.2	31.5	7.2	5.5	0.05
	8x6	M11, U7/16, P1/8	8	20.74	-	-	-	6	0.04
	8.5x6.5	M12	8.5	20.74	13.2	31.5	7.2	6.5	0.04
ΓER25 -	5x4	M4	5	25.74	17.6	34	7.5	4	0.9
	5.5x4.5	M5	5.5	25.74	17.6	34	7.5	4.5	0.8
	6x4.5	M6	6	25.74	17.6	34	7.5	4.5	0.8
	6.2x5	M7, M8	6.2	25.74	17.6	34	7.5	5	0.1
	7x5.5	M9, M10, U3/8	7	25.74	17.6	34	7.5	5.5	0.8
	8.5x6.5	M12	8.5	25.74	17.6	34	7.5	6.5	0.8
ΓER32 -	6x4.5	M6,U1/4	6	32.74	23.1	40	8.2	4.5	0.2
	6.2x5	M7, M8	6.2	32.74	23.1	40	8.2	5	0.2
	7x5.5	M9, M10, U3/8	7	32.74	23.1	40	8.2	5.5	0.2
	8X6	M11, U7/16, P1/8	8	32.74	23.1	40	8.2	6	0.2
	8.5x6.5	M12	8.5	32.74	23.1	40	8.2	6.5	0.2
	10.5x8	M14, U9/16	10.5	32.74	23.1	40	8.2	8	0.2
	12.5x10	M16	12.5	32.74	23.1	40	8.2	10	0.2
	14x11	M18, P3/8	14	32.74	23.1	40	8.2	11	0.1
	15x12	M20	15	32.74	23.1	40	8.2	12	0.1
	17x13	M22, U7/8	17	32.74	23.1	40	8.2	13	0.1
	11x9	P1/4	11	32.74	23.1	40	8.2	9	0.2
	12x9	U5/8	12	32.74	23.1	40	8.2	9	0.2
	9x7	U1/2	9	32.74	23.1	40	8.2	7	0.2

 $\bullet$  Water proof tapping is possible with the use of RTJW and nuts (limited to the right sizes)



#### **Tapping holder**

### DTN

- Compact design and slim type
- Improvement of tapping force
- Tapping range: M3~M38

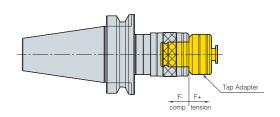


### Code system



### **⑤** 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



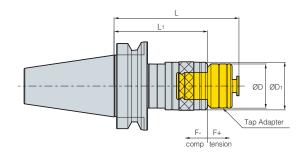


### How to clamp TCA and a tap holder

Before installation	After installation	Disassembly		
Insert TCA pushing the cover of tap holder     Clamp the TCA in the Key groove and firmly	The cover of tap holder is placed correctly	Seaparate the TCA pushing the cover of tap holder		

## **BT-DTN**



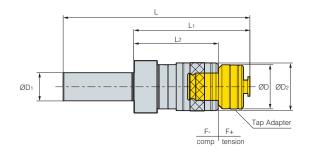


(mm)

	Designation	Tapping range	ØD	ØD <sub>1</sub>	L	L <sub>1</sub>	Adaptor	F-	F+	/kg
BT30 -	DTN12-85	M3~M12	32	39	85	60	TCA1-M	4	10	0.5
BT40 -	DTN12-90	M3~M12	32	39	90	65	TCA1-M	4	10	1.2
	DTN12-120	M3~M12	32	39	120	95	TCA1-M	4	10	1.5
	DTN22-130	M8~M24	50	56	130	96	TCA2-M	12.5	12.5	1.7
	DTN22-160	M8~M24	50	56	160	126	TCA2-M	12.5	12.5	2.2
BT50 -	DTN12-100	M3~M12	32	39	100	75	TCA1-M	4	10	3.9
	DTN12-130	M3~M12	32	39	130	105	TCA1-M	4	10	3.9
	DTN22-140	M8~M24	50	56	140	106	TCA2-M	12.5	12.5	4.3
	DTN22-170	M8~M24	50	56	170	136	TCA2-M	12.5	12.5	4.7
	DTN38-185	M16~M38	72	81	185	140	TCA3-M	20	20	5.7
	DTN38-215	M16~M38	72	81	215	170	TCA3-M	20	20	6.7

### S-DTN





	Designation	Tapping range	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	F-	F+	Adaptor	∠ kg \
S32 -	DTN12-90	M3-M12	32	32	39	170	90	65	4	10	TCA1	1.0
	DTN22-130	M8-M24	32	50	56	210	130	96	12.5	12.5	TCA2	1.8

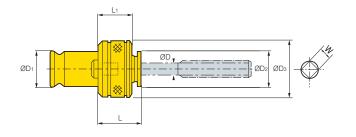
<sup>•</sup> Through coolant system not available

<sup>•</sup> Through coolant system not available



# **TCA** Tap Adaptor



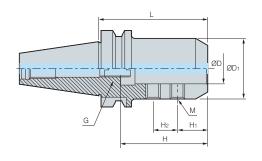


	Designation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	ØD <sub>3</sub>	L	L <sub>1</sub>	W	√kg√
TCA1 -	M3	4	19	18.5	32	26.5	24.5	3.2	0.2
	M4	5	19	18.5	32	26.5	24.5	4	0.2
	M5	5.5	19	18.5	32	26.5	24.5	4	0.2
	M6	6	19	18.5	32	26.5	24.5	4	0.2
	M8	6.2	19	18.5	32	26.5	24.5	5	0.2
	M10	7	19	18.5	32	26.5	24.5	5.5	0.2
	M11	8	19	18.5	32	26.5	24.5	6	0.2
	M12	8.5	19	18.5	32	26.5	24.5	6.5	0.2
TCA2 -	M8	6.2	31	29	50	34	30.5	5	0.5
	M10	7	31	29	50	34	30.5	5.5	0.5
	M12	8.5	31	29	50	34	30.5	6.5	0.5
	M14	10.5	31	29	50	34	30.5	8	0.5
	P(=1/4)	11	31	29	50	34	30.5	9	0.5
	M16	12.5	31	29	50	34	30.5	10	0.5
	M18	14	31	29	50	34	30.5	11	0.5
	M20	15	31	29	50	34	30.5	12	0.5
	M22	17	31	29	50	34	30.5	13	0.5
	P1/2	18	31	29	50	34	30.5	14	0.5
	M24	19	31	29	50	34	30.5	15	0.5
TCA3 -	M16	12.5	48	46	72	45	41	10	1.4
	M18	14	48	46	72	45	41	11	1.4
	M20	15	48	46	72	45	41	12	1.4
	M22	17	48	46	72	45	41	13	1.4
	M24	19	48	46	72	45	41	15	1.4
	M27	20	48	46	72	45	41	15	1.4
	M30	23	48	46	72	45	41	17	1.4
	M33	25	48	46	72	45	41	19	1.4
	M36	28	48	46	72	45	41	21	1.4

<sup>•</sup> Through coolant system not available

## **BT-SLA**





(mm)

	Designation	ØD	ØD <sub>1</sub>	L	н	<b>H</b> 1	<b>H</b> <sub>2</sub>	М	G	kg
BT30 -	SLA16-90	16	40	90	72	25	20	M10	M12	0.9
	SLA20-90	20	50	90	72	25	20	M12	M12	1.2
	SLA25-90	25	50	90	72	25	20	M12	M12	1.1
BT40 -	SLA16-90	16	40	90	72	25	20	M10	M12	1.4
	SLA20-90	20	50	90	72	25	20	M12	M12	1.8
	SLA25-90	25	50	90	72	25	20	M12	M12	1.6
	SLA32-90	32	60	90	82	25	25	M14	M12	1.8
	SLA32-105	32	60	105	82	25	25	M14	M12	2.0
	SLA40-105	40	80	105	82	25	25	M16	M12	2.9
BT50 -	SLA20-105	20	50	105	72	25	20	M12	M12	4.4
	SLA25-105	25	50	105	72	25	20	M12	M12	4.3
	SLA32-105	32	60	105	82	25	25	M14	M12	4.5
	SLA40-105	40	90	105	82	25	20	M16	M12	6.1
	SLA42-105	42	90	105	80	25	25	M16	M12	5.9

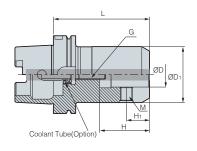
	Ва	sic		For separa	te purchase		
Division	Set s	screw	Adjust screw	Wrench			
Parts							
Designation	BT type	HSK type		BT type	HSK type		
SLA16	BTF1010	BTF1414-1.5		LW-5	LW-6		
SLA20	BTF1212-1.5	BTF1616-1.5		LW-6	LW-8		
SLA25	BTF1212-1.5	BTF1818-1.5	M40000	LW-6	LW-8		
SLA32	BTF1414-1.5	BTF2020-1.5	M1230C	LW-6	LW-10		
SLA40	BTF1624-1.5	BTF2020-1.5		LW-8	LW-10		
SLA42	BTF1624-1.5	BTF2020-1.5		LW-8	LW-10		

<sup>•</sup> H: Insertion depth of tool • Through coolant system installed

G SLA

## **HSK-SLA**





(mm)

De	esignation	ØD	ØD <sub>1</sub>	L	н	<b>H</b> 1	М	G	/ kg
HSK63A -	SLA20-100	20	52	100	51	25	M8	M12	1.6
	SLA25-105	25	65	105	59	25	M8	M12	2.1
	SLA32-105	32	72	105	63	30	M5	M12	2.3
HSK100A -	SLA20-105	20	52	105	51	25	M16	M12	3.1
	SLA25-110	25	65	110	59	25	M18	M12	3.8
	SLA32-125	32	72	125	63	30	M20	M12	4.4

• H: Insertion depth of tool • Through coolant system is optional

	Ва	sic		For separate purchase			
Division	Set s	screw	Adjust screw	Wre	nch		
Parts							
Designation	BT type	HSK type	Ī	BT type	HSK type		
SLA20	BTF1212-1.5	BTF1616-1.5		LW-6	LW-8		
SLA25	BTF1212-1.5	BTF1818-1.5	M1230C	LW-6	LW-8		
SLA32	BTF1414-1.5	BTF2020-1.5		LW-6	LW-10		

Division	For separate purchase
Internal coolant system	0

Classification by shank								
HSK50	HSK50A-CNS							
HSK63	HSK63A-CNS							
HSK100	HSK100A-CNS							

## **BT-FMA**



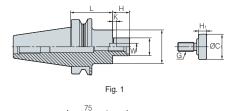


Fig. 3

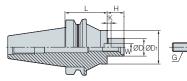


Fig. 2

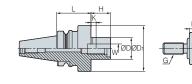


Fig. 4

(mm)

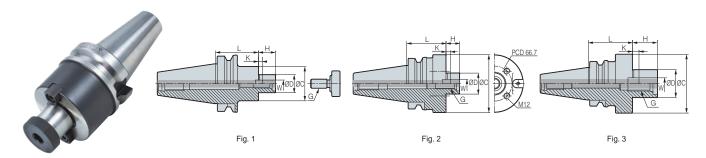
	Designation	Cutter dia.	ØD	ØD <sub>1</sub>	L	н	w	К	G	/kg	Fig.
BT30 -	FMA25.4-45	80	25.4	50	45	22	9.5	5	M12	1.0	4
BT40 -	FMA25.4-45	80	25.4	50	45	22	9.5	5	M12	1.4	1
	FMA25.4-90	80	25.4	50	90	22	9.5	5	M12	2.2	1
	FMA31.75-45	100	31.75	60	45	30	12.7	7	M16	1.6	1
	FMA31.75-90	100	31.75	60	90	30	12.7	7	M16	2.5	1
	FMA38.1-60	125	38.1	80	60	34	15.87	9	M20	2.6	4
BT50 -	FMA25.4-45	80	25.4	50	45	22	9.5	5	M12	4.0	1
	FMA25.4-90	80	25.4	50	90	22	9.5	5	M12	4.7	1
	FMA25.4-150	80	25.4	50	150	22	9.5	5	M12	6.4	2
	FMA31.75-45	100	31.75	60	45	30	12.7	7	M16	4.1	1
	FMA31.75-75	100	31.75	60	75	30	12.7	7	M16	4.8	1
	FMA31.75-105	100	31.75	60	105	30	12.7	7	M16	5.6	2
	FMA38.1-45	125	38.1	80	45	34	15.87	9	M20	4.4	1
	FMA38.1-75	125	38.1	80	75	34	15.87	9	M20	5.6	1
	FMA50.8-45	160	50.8	100	45	36	19.05	10	M24	4.9	1
	FMA50.8-75	160	50.8	100	75	36	19.05	10	M24	6.8	1
	FMA47.625-75	200	47.625	128	75	38	25.4	12.5	-	8.3	3

<sup>•</sup>H: Insertion depth of tool •Through coolant system is optional •The weight above exclude the face cutter

	Basic									
Division	Key	Key bolt	Mount bolt	Clamp bolt	Wrench					
Parts  Designation		<b>GAMMA</b>	04							
FMA25.4	K9.5	BX0412	MBA-M12	BX1230	LW-10					
FMA31.75	K12.7	BX0515	MBA-M16	-	LW-14					
FMA38.1	K15.87	BX0616	MBA-M20	-	LW-17					
FMA50.8	K19.05	BX0820	MBA-M24	-	-					
FMA47.625	K25.4	BX1020	-	BX1645	-					

# G FMC

## **BT-FMC**



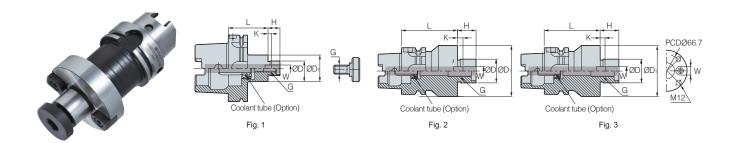
(mm)

	Designation	Cutter dia.	ØD	ØD <sub>1</sub>	L	Н	W	К	G	∑ kg \	Fig.
BT30 -	FMC16-45	40	16	38	45	17	8	5.0	M8	0.7	1
	FMC22-45	50/63	22	48	45	19	10	5.6	M10	0.8	2
	FMC27-50	80	27	60	50	21	12	6.3	M12	1.2	2
BT40 -	FMC16-60	40	16	38	60	17	8	5.0	M8	1.2	1
	FMC22-45	50/63	22	48	45	19	10	5.6	M10	1.2	1
	FMC22-90	50/63	22	48	90	19	10	5.6	M10	1.2	1
	FMC27-60	80	27	60	60	21	12	6.3	M12	1.8	1
	FMC27-90	80	27	60	90	21	12	6.3	M12	3.2	1
	FMC32-60	100	32	78	60	24	14	7.0	M16	2.3	2
	FMC40-50	125/160	40	89	50	27	15.87	8.0	M20	3.3	3
BT50 -	FMC16-60	40	16	38	60	17	8	5.0	M8	3.9	1
	FMC22-60	50/63	22	48	60	19	10	5.6	M10	4.1	1
	FMC27-40	80	27	60	40	21	12	6.3	M12	4.1	1
	FMC27-90	80	27	60	90	21	12	6.3	M12	5.5	1
	FMC27-150	80	27	60	150	21	12	6.3	M12	6.1	1
	FMC32-45	100	32	78	45	24	14	7.0	M16	4.2	1
	FMC32-75	100	32	78	75	24	14	7.0	M16	4.2	1
	FMC32-105	100	32	78	105	24	14	7.0	M16	4.2	1
	FMC40-50	125/160	40	89	50	27	15.87	8.0	M20	4.6	2

<sup>•</sup>H: Insertion depth of tool •Through coolant system is optional •The weight above exclude the face cutter

		Basic			For separate purchase
Division	Key	Mount bolt	Key bolt	Clamp bolt	Wrench
Parts Designation		000			
FMC16	K8.0	-	BX0310	BX0830	LW-6
FMC22	K10.0	-	BX0412	BX1030	LW-8
FMC27	K12.0	MBA-M12	BX0616	BX1230	LW-10
FMC32	K14.0	MBA-M16	BX0616	-	LW-14
FMC40	K15.87	MBA-M20	BX0616	BX1030	I W-17

## **HSK-FMC**



(mm)

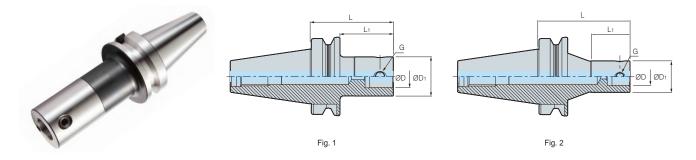
De	esignation	Cutter dia.	ØD	ØD <sub>1</sub>	L	н	W	К	G	/ kg	Fig.
HSK50A -	FMC16-40	40	16	38	40	17	8	5	M8	0.4	1
	FMC22-50	50/63	22	48	50	19	10	5.6	M10	0.8	1
HSK63A -	FMC16-50	40	16	38	50	17	8	5.0	M8	0.9	1
	FMC22-50	50/63	22	48	50	19	10	5.6	M10	1.1	1
	FMC27-60	80	27	60	60	21	12	6.3	M12	1.4	1
	FMC32-60	100	32	78	60	24	14	7.0	M16	1.7	2
	FMC40-60	125/160	40	89	60	27	15.87	8.0	M20	2.5	3

•H: Insertion depth of tool •Through coolant system is optional •The weight above exclude the face cutter

	Basic								
Division	Key	Mount bolt	Key bolt	Clamp bolt	Wrench				
Parts Designation		Ohn.							
FMC16	K8.0	-	BX0310	BX0830	LW-6				
FMC22	K10.0	-	BX0412	BX1030	LW-8				
FMC27	K12.0	MBA-M12	BX0516	BX1230	LW-10				
FMC32	K14.0	MBA-M16	BX0616	-	LW-14				
FMC40	K15.87	MBA-M20	BX0616	BX1230	LW-17				

G MD

## BT-MD Modular Arbor

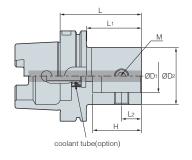


1	1	_		_

	Designation	ØD	ØD <sub>1</sub>	L	L <sub>1</sub>	G	/ kg	Fig.
BT30 -	MD19F-70	11	19	70	45	M5	0.5	1
	MD25F-90	14	25	90	63	M6	0.6	1
	MD32F-80	18	32	80	55	M8	0.7	1
	MD40F-45	22	40	45	22	M10	0.5	1
	MD40F-60	22	40	60	36	M10	0.7	1
	MD40F-80	22	40	80	56	M10	0.9	1
	MD50F-70	28	50	70	48	M12	0.9	1
BT40 -	MD19F-70	11	19	70	40	M5	1.0	1
	MD25F-95	14	25	95	63	M6	1.1	1
	MD25F-105R	14	25	105	40	M6	1.2	2
	MD32F-100	18	32	100	70	M8	1.2	1
	MD32F-115R	18	32	115	45	M8	1.5	2
	MD40F-60	22	40	60	31	M10	1.1	1
	MD40F-110R	22	40	110	60	M10	1.6	2
	MD40F-115	22	40	115	83	M10	1.6	1
	MD50F-105	28	50	105	73	M12	1.8	1
	MD63F-64	36	63	64	37	M16	1.5	1
	MD63F-110	36	63	110	83	M16	2.4	1
	MD63F-135	36	63	135	108	M16	3.0	1
	MD80F-100	45	80	100	73	M16	2.9	1
BT50 -	MD19F-85	11	19	85	44	M5	3.7	1
	MD25F-105	14	25	105	62	M6	3.8	1
	MD25F-120R	14	25	120	40	M6	3.8	2
	MD32F-110	18	32	110	67	M8	4.0	1
	MD32F-115R	18	32	115	45	M8	4.1	2
	MD32F-235R	18	32	235	115	M8	5.5	2
	MD40F-60	22	40	60	22	M10	3.7	1
	MD40F-195	22	40	195	152	M10	4.8	1
	MD40F-230R	22	40	230	180	M10	5.0	2
	MD50F-125	28	50	125	82	M12	4.6	1
	MD50F-225	28	50	225	182	M12	6.0	1
	MD50F-250R	28	50	250	81	M12	7.0	2
	MD63F-75	36	63	75	35	M16	4.2	1
	MD63F-130	36	63	130	87	M16	5.3	1
	MD63F-195	36	63	195	152	M16	6.8	1
	MD63F-230	36	63	230	187	M16	7.5	1
	MD80F-75	45	80	75	36	M16	4.3	1
	MD80F-110	45	80	110	69	M16	5.7	1
	MD80F-175	45	80	175	134	M16	8.0	1
	MD90F-75	45	90	75	34	M16	4.8	1
	MD90F-145	45	90	145	104	M16	7.4	1
	MD90F-195	45	90	195	154	M16	9.4	1

## HSK-MD Modular Arbor





(mm)

De	esignation	ØD₁	ØD <sub>2</sub>	L	L <sub>1</sub>	Н	M	_ kg \
HSK 63A -	MD19F-60	11	19	60	31	15.5	M5	0.7
	MD25F-60	14	25	60	31	18.5	M6	0.7
	MD32F-65	18	32	65	36	23.5	M8	0.8
	MD40F-70	22	40	70	41	29	M10	0.9
	MD50F-85	28	50	85	58	36	M12	1.3
	MD63F-95	36	63	95	69	46	M16	1.7

<sup>•</sup> Through coolant system is optional

	Basic	For separate purchase		
Division	Taper screw	Wrench		
Parts Designation				
MD19F	BTT0506F	LW-2.5		
MD25F	BTT0608F	LW-3		
MD32F	BTT0810F	LW-4		
MD40F	BTT1013F	LW-5		
MD50F	BTT1215F	LW-6		
MD63F	BTT1620F	LW-8		
MD80F	BTT1626F	LW-8		
MD90F	BTT1631F	LW-8		

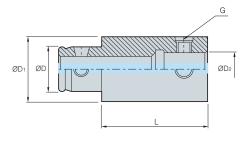
Division	For separate purchase
Internal coolant system	

Classification by shank					
HSK50	HSK50A-CNS				
HSK63	HSK63A-CNS				
HSK100	HSK100A-CNS				

# G EXT/RDC

### **EXT** Extension Bar





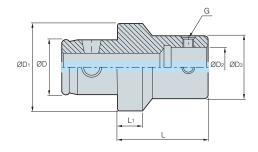
(mm)

De	esignation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	L	G	/kg
XT	1930F	11	19	11	30	M5	0.1
	1950F	11	19	11	50	M5	0.1
	2530F	14	25	14	30	M6	0.1
	2550F	14	25	14	50	M6	0.2
	3235F	18	32	18	35	M8	0.2
	3260F	18	32	18	60	M8	0.4
	4040F	22	40	22	40	M10	0.4
	4090F	22	40	22	90	M10	0.9
	5050F	28	50	28	50	M12	0.7
	50100F	28	50	28	100	M12	1.4
	6360F	36	63	36	60	M16	1.4
	63120F	36	63	36	120	M16	2.9
	8070F	45	80	45	70	M16	2.5
	80120F	45	80	45	120	M16	4.5
	9080F	45	90	45	80	M16	3.8
	90130F	45	90	45	130	M16	6.4

Through coolant system installed

## **RDC** Reducer Bar





De	esignation	ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	ØD <sub>3</sub>	L	L <sub>1</sub>	G	/kg
RDC	3225F	18	32	14	25	30	9	M6	0.1
	4025F	22	40	14	25	30	9	M6	0.3
	4032F	22	40	18	32	30	9	M8	0.2
	5025F	28	50	14	25	30	9	M6	0.3
	5032F	28	50	18	32	40	9	M8	0.3
	5040F	28	50	22	40	40	10	M10	0.5
	6325F	36	63	14	25	30	9	M6	0.6
	6332F	36	63	18	32	40	9	M8	0.6
	6340F	36	63	22	40	40	10	M10	0.7
	6350F	36	63	28	50	45	10	M12	0.9
	8040F	45	80	22	40	40	10	M10	1.2
	8050F	45	80	28	50	45	10	M12	1.3
	8063F	45	80	36	63	50	13	M16	1.6

#### FBH back boring & balanced type

### FBH/B

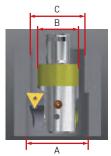
- High speed boring and back boring capability
- High precision balancing: G2.5, Head: G6.3
- Min. adjustment range: 2 μm



#### Code system



#### Back boring range calculation



- A: Boring range (Ø)
- B: FBH/B body size (Ø)
- C: Diameter for pass (Ø)

Designation	Min. diameter for pass (Ø)
FBH1920B	≥ Ø24
FBH2526B	≥ Ø30.5
FBH3233B	≥ Ø35
FBH4042B	≥ Ø44
FBH5053B	≥ Ø54
FBH6368B	≥ Ø71.5
FBH6398B	≥ Ø100
FBH8098B	≥ Ø100

Α	Max. range of back boring (Ø)	A Max. value = (2 x C) - B
В	B Max. FBH body size (Ø)	B Max. value = (2 x C) - A
С	C Min. diameter for pass (Ø)	C Min. value = (A + B) / 2

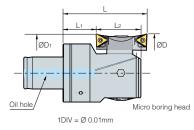
#### Boring range adjustment method

#### 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

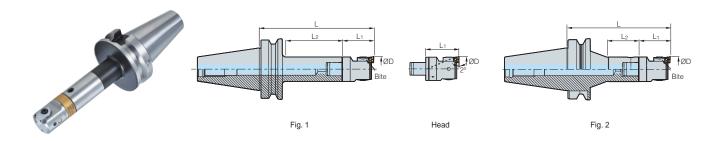


Declaration.		Boring range ØD			Backboring	g Range (Ø)	(1111)
Designation	Min	Max	L	Min	Max	L <sub>1</sub>	L <sub>2</sub>
FBH1920B	20	26 (30)	35.3	29	30	13.1	18.6
FBH2526B	26	34 (40)	40.9	36	40	15.1	21.9
FBH3233B	33	43 (50)	40.9	38	46 (50)	13.1	24.9
FBH4042B	42	54 (62)	50.4	48	54 (62)	15.2	31.4
FBH5053B	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 Balance type



	Designation		Boring	range ØD	ØD	ØD <sub>1</sub>		1.	1.	д	Fi.e.
Head	Bite	Arbor	Min	Max	טש	וטש	L	L <sub>1</sub>	L <sub>2</sub>	kg	Fig.
FBH1920B	FBB20N-□-□□	BT30-MD19F-70	20 (24)	26 (30)	19	11	105.2	35.2	45	0.2	1
FBH2526B	FBB26N-□-□□	BT30-MD25F-90	26 (32)	34 (40)	25	14	131	41	63	0.2	1
FBH3233B	FBB33N-□-□□	BT30-MD32F-80	33 (40)	43 (50)	32	18	121	41	55	0.3	1
FBH4042B	FBB42N-□-□□	BT30-MD40F-45	42 (50)	54 (62)	40	22	95.5	50.5	22	0.5	1
FBH4042B	FBB42N-□-□□	BT30-MD40F-60	42 (50)	54 (62)	40	22	110.5	50.5	36	0.5	1
FBH4042B	FBB42N-□-□□	BT30-MD40F-80	42 (50)	54 (62)	40	22	130.5	50.5	56	0.5	1
FBH5053B	FBB53N-□-□□	BT30-MD50F-70	53 (65)	70 (82)	50	28	128.4	58.5	48	0.8	1
FBH1920B	FBB20N-□-□□	BT40-MD19F-70	20 (24)	26 (30)	19	11	105.4	35.2	40	0.2	1
FBH2526B	FBB26N-□-□□	BT40-MD25F-95	26 (32)	34 (40)	25	14	135.9	41	63	0.2	1
FBH2526B	FBB26N-□-□□	BT40-MD25F-105R	26 (32)	34 (40)	25	14	146	41	40	0.2	2
FBH3233B	FBB33N-□-□□	BT40-MD32F-100	33 (40)	43 (50)	32	18	140.9	41	70	0.3	1
FBH3233B	FBB33N-□-□□	BT40-MD32F-115R	33 (40)	43 (50)	32	18	156	41	45	0.3	2
FBH4042B	FBB42N-□-□□	BT40-MD40F-60	42 (50)	54 (62)	40	22	165.5	50.5	31	0.5	1
FBH4042B	FBB42N-□-□□	BT40-MD40F-110R	42 (50)	54 (62)	40	22	160.5	50.5	60	0.5	2
FBH4042B	FBB42N-□-□□	BT40-MD40F-15	42 (50)	54 (62)	40	22	165.5	50.5	83	0.5	1
FBH5053B	FBB53N-□-□□	BT40-MD50F-105	53 (65)	70 (82)	50	28	163.4	58.5	73	0.8	1
FBH5053B	FBB53N-□-□□	BT40-MD63F-64	53 (65)	70 (82)	50	28	122.5	58.5	37	0.8	1
FBH6368B	FBB68N-□-□□	BT40-MD63F-110	68 (90)	100 (122)	63	36	190.6	80.6	83	2.1	1
FBH6398B	FBB68N-□-□□	BT40-MD63F-135	98 (120)	150 (172)	63	36	235.6	100.6	108	3.6	1
FBH8098B	FBB68N-□-□□	BT40-MD80F-100	98 (120)	150 (172)	80	45	200.6	100.6	73	4.8	1

<sup>●</sup> Spare Part G59 ● FBB Bite G61

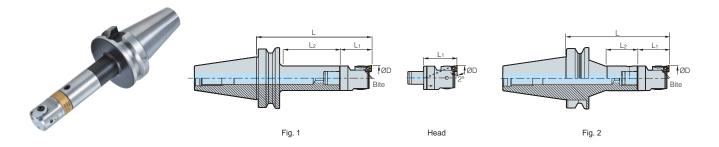
<sup>\*</sup> FBB bites are divided into two sorts Normal type: FBB  $\square$  N, Scalable type: FBB  $\square$  N-1 There are also the other options for your insert type: FBB \\_N-\\_-C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

<sup>•</sup> Head: Basic, Bite/Arbor: For separate purchase • Through coolant system installed

### BT-FBH/B

#### Micro Boring Balance type



	Designation		Boring I	range ØD	an.	αD				Д	F:
Head	Bite	Arbor	Min	Max	ØD	ØD₁	L	L <sub>1</sub>	L <sub>2</sub>	kg	Fig.
FBH1920B	FBB20N-□-□□	BT50-MD19F-85	20 (24)	26 (30)	19	11	120.2	35.2	44	0.2	1
FBH2526B	FBB26N-□-□□	BT50-MD25F-105	26 (32)	34 (40)	25	14	146	41	62	0.2	1
FBH2526B	FBB26N-□-□□	BT50-MD25F-120R	26 (32)	34 (40)	25	14	161	41	40	0.2	2
FBH3233B	FBB33N-□-□□	BT50-MD32F-110	33 (40)	43 (50)	32	18	151	41	67	0.3	1
FBH3233B	FBB33N-□-□□	BT50-MD32F-115R	33 (40)	43 (50)	32	18	156	41	45	0.3	2
FBH3233B	FBB33N-□-□□	BT50-MD32F-235R	33 (40)	43 (50)	32	18	276	41	115	0.3	2
FBH4042B	FBB42N-□-□□	BT50-MD40F-60	42 (50)	54 (62)	32	18	110.5	50.5	22	0.5	1
FBH4042B	FBB42N-□-□□	BT50-MD40F-195	42 (50)	54 (62)	40	22	245.5	50.5	152	0.5	1
FBH4042B	FBB42N-□-□□	BT50-MD40F-230R	42 (50)	54 (62)	40	22	280.5	50.5	180	0.5	2
FBH5053B	FBB53N-□-□□	BT50-MD50F-125	53 (65)	70 (82)	40	22	183.5	58.5	82	0.8	1
FBH5053B	FBB53N-□-□□	BT50-MD50F-225	53 (65)	70 (82)	50	28	283.5	58.5	182	0.8	1
FBH5053B	FBB53N-□-□□	BT50-MD50F-205R	53 (65)	70 (82)	50	28	263.5	58.5	81	0.8	2
FBH6368B	FBB68N-□-□□	BT50-MD63F-75	68 (90)	100 (122)	63	36	145.6	80.6	35	2.1	1
FBH6368B	FBB68N-□-□□	BT50-MD63F-130	68 (90)	100 (122)	63	36	210.6	80.6	87	2.1	1
FBH6368B	FBB68N-□-□□	BT50-MD63F-195	68 (90)	100 (122)	63	36	275.6	80.6	152	2.1	1
FBH6368B	FBB68N-□-□□	BT50-MD63F-230	68 (90)	100 (122)	63	36	310.6	80.6	187	2.1	1
FBH6398B	FBB68N-□-□□	BT50-MD63F-75	98 (120)	150 (172)	63	36	175.6	100.6	35	3.6	1
FBH6398B	FBB68N-□-□□	BT50-MD63F-130	98 (120)	150 (172)	63	36	230.6	100.6	87	3.6	1
FBH6398B	FBB68N-□-□□	BT50-MD63F-95	98 (120)	150 (172)	63	36	295.6	100.6	152	3.6	1
FBH6398B	FBB68N-□-□□	BT50-MD63F-230	98 (120)	150 (172)	63	36	330.6	100.6	187	3.6	1
FBH8098B	FBB68N-□-□□	BT50-MD80F-75	98 (120)	150 (172)	80	45	175.6	100.6	36	4.8	1
FBH8098B	FBB68N-□-□□	BT50-MD80F-110	98 (120)	150 (172)	80	45	215.6	100.6	69	4.8	1
FBH8098B	FBB68N-□-□□	BT50-MD80F-175	98 (120)	150 (172)	80	45	275.6	100.6	134	4.8	1

<sup>◆</sup> Spare Part G59 ◆ FBB Bite G61

<sup>\*</sup> FBB bites are divided into two sorts Normal type: FBB \( \B\), Scalable type: FBB \( \B\)N-1 There are also the other options for your insert type: FBB \( \B\)N-\( \B\)-C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

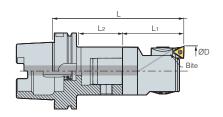
Head: Basic, Bite/Arbor: For separate purchase
 Through coolant system installed

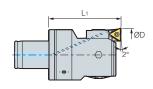


### **HSK-FBH/B**

#### Micro Boring Balance type







(mm)

	Designation		Boring I	range ØD	ØD	ØD <sub>1</sub>		L <sub>1</sub>	L <sub>2</sub>	kg
Head	Bite	Arbor	Min	Max	טש	וטש		<b>L</b> 1	<b>L</b> 2	/ 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

<sup>◆</sup> Spare Part G59 ◆ FBB Bite G61

\* FBB bites are divided into two sorts Normal type: FBB \( \B\), Scalable type: FBB \( \B\)N-1 There are also the other options for your insert type: FBB \( \B\)N-\( \B\)-C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L



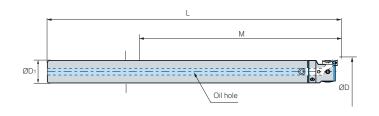
Classification by shank						
HSK50	HSK50A-CNS					
HSK63	HSK63A-CNS					
HSK100	HSK100A-CNS					

<sup>•</sup> Head: Basic, Bite/Arbor: For separate purchase • Through coolant system is optional

### S-FBH/B

#### Micro Boring Balance type





(mm)

Designation	Boring r	ange ØD	ØD <sub>1</sub>		М	Main c	omponent		/kg
Designation	Min	Max	וטש		IVI	Basic shank	Boring head	Bite	<u>/ kg \</u>
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

<sup>◆</sup> Spare Part G59 ◆ FBB Bite G61

<sup>\*</sup> FBB bites are divided into two sorts Normal type: FBB \( \B\) \( N\), Scalable type: FBB \( \B\) \( N-1\)

There are also the other options for your insert type: FBB \( \B\) \( N-\Box\) -C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

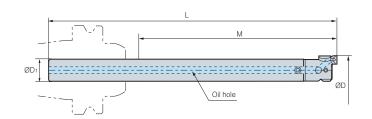
Basic							
Type(FBH/B)	Lock screw	Clamp screw	Wrench				
		000	1				
FBH1920B	BTF0404	BXC0304	LW-2				
FBH2526B	BTF0505	BXC0405	LW-2.5				
FBH3233B	BTF0606	BXC0506	LW-3				
FBH4042B	BTF0808	BXC0610	LW-4				
FBH5053B	BTF0812	BXC0610	LW-4				
FBH6368B	BTF1016	BXC0810	LW-5				
FBH6398B	BTF1012	BXC0810	LW-5				
FBH8098B	BTF1014	BXC0810	LW-5				

 $<sup>\</sup>bullet \, \mathsf{S} \square \square \mathsf{W} \mathsf{:} \, \, \mathsf{Cemented} \, \, \mathsf{carbide} \, \, \mathsf{shank}, \, \mathsf{S} \square \square \mathsf{:} \, \, \mathsf{steel} \, \, \mathsf{shank} \quad \bullet \, \mathsf{Through} \, \, \mathsf{coolant} \, \, \mathsf{system} \, \, \mathsf{installed}$ 

G FBH/B

S-FBH Small Micro Boring





(mm)

Designation	Boring range ØD		ØD₁ L		М	I				
Designation	Min	Max	וטש		IVI	Basic shank	Boring head Bite		/ kg \	
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	

<sup>●</sup> Spare Part G59, G60 ● FBB Bite G61

<sup>\*</sup> FBB bites are divided into two sorts Normal type: FBB \( \B\) \( N\), Scalable type: FBB \( \B\) \( N-1\)
There are also the other options for your insert type: FBB \( \B\) \( N-\Box\) -C09 or T11

Bite	Applicable insert
FBB□□N, FBB□□N-1	TPGT, TPGW0802□□L
FBB□□N-□-C	CCMT, CCGT0602□□L
FBB□□N-□-C09	CCMT, CCGT09T3□□L
FBB□□N-□-T11	TPGT1103□□L

	Basic									
Type(FBH)	Lock screw	FBB	Clamp screw							
600		5								
FBH15	BT02503	FBB15-C	BFTX02505N							
FBH18	BT02503	FBB15-C	BFTX02505N							

 $<sup>\</sup>bullet \, S \square \square W \text{: Cemented carbide shank, } S \square \square \text{: steel shank} \quad \bullet \text{Through coolant system installed}$ 

### FBB Bite

Designation	Boring range	Insert	Insert screw	Clamp bolt
FBB15-C	Ø15~Ø18 mm	CCET0301-□□L	BFTX01604N	BFTX02505N
LPD 12-C	Ø18~Ø22 mm	CCET0301-□□L	BFTX01604N	BFTX02505N
FBB20N	Ø20~Ø26 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0304
FBB20N-C	Ø20~Ø26 mm	CCET0401□□L	FTNA0238	BXC0304
FBB20N-1	Ø24~Ø30 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0304
FBB20N-1-C	Ø24~Ø30 mm	CCET0401□□L	FTNA0238	BXC0304
FBB26N	Ø26~Ø34 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0405
FBB26N-C	Ø26~Ø34 mm	CCET0401□□L	FTNA0238	BXC0405
FBB26N-1	Ø32~Ø40 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0405
FBB26N-1-C	Ø32~Ø40 mm	CCET0401□□L	FTNA0238	BXC0405
FBB33N	Ø33~Ø43 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0506
FBB33N-C	Ø33~Ø43 mm	CCMT0602□□,CCGT0602□□	BFTX02506N	BXC0506
FBB33N-1	Ø41~Ø50 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0506
FBB33N-1-C	Ø41~Ø50 mm	CCMT0602□□,CCGT0602□□L	BFTX02506N	BXC0506
FBB42N	Ø42~Ø54 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0610
FBB42N-C	Ø42~Ø54 mm	CCMT0602 CCGT0602 L	BFTX02506N	BXC0610
FBB42N-11	Ø42~Ø54 mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB42N-1	Ø50~Ø62 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0610
FBB42N-1-C	Ø50~Ø62 mm	CCMT0602□□,CCGT0602□□L	BFTX02506N	BXC0610
FBB42N-1-T11	Ø50~Ø62 mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB53N	Ø53~Ø70 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0610
FBB53N-C	Ø53~Ø70 mm	CCMT0602□□,CCGT0602□□	BFTX02506N	BXC0610
FBB53N-11	Ø53~Ø70 mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB53N-1	Ø65~Ø82 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0610
FBB53N-1-C	Ø65~Ø82 mm	CCMT0602□□CCGT0602□□L	BFTX02506N	BXC0610
FBB53N-1-C09	Ø65~Ø82 mm	CCMT09T3□□,CCGT09T3□□L	BFTX0409N	BXC0610
FBB53N-1-T11	Ø65~Ø82 mm	TPGT1103□□L	BFTX0307A	BXC0610
FBB68N	Ø68~Ø100 mm/Ø98~Ø150 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0810
FBB68N-C	Ø68~Ø100 mm/Ø98~Ø150 mm	CCMT09T3□□,CCGT09T3□□L	BFTX0409N	BXC0810
FBB68N-11	Ø68~Ø100 mm/Ø98~Ø150 mm	TPGT1103□□L	BFTX0307A	BXC0810
FBB68N-1	Ø90~Ø122 mm/Ø120~Ø172 mm	TPGT0802□□L,TPGW0802□□	BFTX0204A	BXC0810
FBB68N-1-C09	Ø90~Ø122 mm/Ø120~Ø172 mm	CCMT09T3□□,CCGT09T3□□L	BFTX0409N	BXC0810
FBB68N-1-T11	Ø90~Ø122 mm/Ø120~Ø172 mm	TPGT1103□□L	BFTX0307A	BXC0810

## G DBCA

#### New balance cut tool



- Applied adjustment function simultaneously in Bi/Uni-direction of cartridge
- Improves the rigidity of cutting by applying cover for rotating type
- Increased machining area versus conventional own products
- Improved capacity to evacuate chips by unique design of helical type Head
- Boring range: Ø28~Ø136



#### Code system



#### Main features

#### **Helical Type**



- Improved capacity to discharge chips from clogged and deep holes
- Minimized damage to tools and insert due to chip clogging

Extended head length	Deep hole machining implemented
Helical Type	Improved capacity to discharge chips from holes

#### Boring area optimization



- Max. diameter expanded owing to reinforced rigidity
- Boring range expanded per model no. versus conventional boring range of DINE

Coolant Hole (Direct spray to cutting edge)

- Improved capacity to discharge chips
- Improved capacity of machining

#### Effect of improved rigidity for cartridge by cover

Clamps the top of the cartridge stably, minimizing the vibration of tools and improving the roughness of the working surface

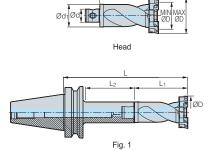


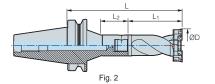


BT-DBC/A

Helical type







Des	ignation	Boring r	ange ØD	<b>~</b> .1	<b>~</b>				П	(11111)
Head	Arbor	Min	Max	Ød	Ød₁	L	L <sub>1</sub>	L <sub>2</sub>	kg	Fig.
DBCA2528S-H	BT30-MD25F-90	28	38	14	25	193	103	63	0.3	1
DBCA3238S-H	BT30-MD32F-80	38	54	18	32	190	110	55	0.5	1
DBCA5054S-H	BT30-MD50F-70	54	74	28	50	215	145	48	1.8	1
DBCA2528S-H	BT40-MD25F-95	28	38	14	25	198	103	63	0.3	1
DBCA2528S-H	BT40-MD25F-105R	28	38	14	25	208	103	40	0.3	2
DBCA3238S-H	BT40-MD32F-100	38	54	18	32	210	110	70	0.5	1
DBCA3238S-H	BT40-MD32F-115R	38	54	18	32	225	110	45	0.5	2
DBCA5054S-H	BT40-MD50F-105	54	74	28	50	250	145	73	1.8	1
DBCA6374S-H	BT40-MD63F-64	74	100	36	63	244	180	37	3.3	1
DBCA6374S-H	BT40-MD63F-110	74	100	36	63	290	180	83	3.3	1
DBCA6374S-H	BT40-MD63F-135	74	100	36	63	315	180	108	3.3	1
DBCA80100S-H	BT40-MD80F-100	100	136	45	80	315	215	73	7.3	1
DBCA2528S-H	BT50-MD25F-105	28	38	14	25	208	103	62	0.3	1
DBCA2528S-H	BT50-MD25F-120R	28	38	14	25	223	103	40	0.3	2
DBCA3238S-H	BT50-MD32F-110	38	54	18	32	220	110	67	0.5	1
DBCA3238S-H	BT50-MD32F-115R	38	54	18	32	225	110	45	0.5	2
DBCA3238S-H	BT50-MD32F-235R	38	54	18	32	345	110	115	0.5	2
DBCA5054S-H	BT50-MD50F-125	54	74	28	50	270	145	82	1.8	1
DBCA5054S-H	BT50-MD50F-225	54	74	28	50	370	145	182	1.8	1
DBCA5054S-H	BT50-MD50F-250R	54	74	28	50	395	145	81	1.8	2
DBCA6374S-H	BT50-MD63F-75	74	100	36	63	255	180	35	3.3	1
DBCA6374S-H	BT50-MD63F-130	74	100	36	63	280	180	87	3.3	1
DBCA6374S-H	BT50-MD63F-195	74	100	36	63	375	180	152	3.3	1
DBCA6374S-H	BT50-MD63F-230	74	100	36	63	410	180	187	3.3	1
DBCA80100S-H	BT50-MD80F-75	100	136	45	80	290	215	36	7.3	1
DBCA80100S-H	BT50-MD80F-110	100	136	45	80	325	215	69	7.3	1
DBCA80100S-H	BT50-MD80F-175	100	136	45	80	390	215	134	7.3	1

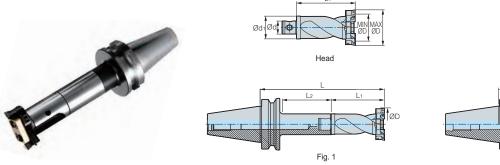
<sup>●</sup> Spare Part G67

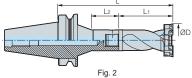
<sup>•</sup> Head: Basic, Arbor: For separate purchase • Through coolant system installed

<sup>\*</sup> In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.



#### Straight type **BT-DBC/A**





Des	signation	Boring r	ange ØD							(11111)
Head	Arbor	Min	Max	Ød	Ød₁	L	L <sub>1</sub>	L <sub>2</sub>	kg	Fig.
DBCA2528S	BT30-MD25F-90	28	38	14	25	193	103	63	0.2	1
DBCA3238S	BT30-MD32F-80	38	54	18	32	190	110	55	0.4	1
DBCA5054S	BT30-MD50F-70	54	74	28	50	215	145	48	1.1	1
DBCA2528S	BT40-MD25F-95	28	38	14	25	198	103	63	0.2	1
DBCA2528S	BT40-MD25F-105R	28	38	14	25	208	103	40	0.2	2
DBCA3238S	BT40-MD32F-100	38	54	18	32	210	110	70	0.4	1
DBCA3238S	BT40-MD32F-115R	38	54	18	32	225	110	45	0.4	2
DBCA5054S	BT40-MD50F-105	54	74	28	50	205	145	73	1.1	1
DBCA6374S	BT40-MD63F-64	74	100	36	63	244	180	37	1.9	1
DBCA6374S	BT40-MD63F-135	74	100	36	63	315	180	83	1.9	1
DBCA6374S	BT40-MD80F-100	74	100	36	63	280	180	108	1.9	1
DBCA80100S	BT40-MD80F-100	100	136	45	80	315	215	73	3.7	1
DBCA2528S	BT50-MD25F-105	28	38	14	25	208	103	62	0.2	1
DBCA2528S	BT50-MD25F-120R	28	38	14	25	223	103	40	0.2	2
DBCA3238S	BT50-MD32F-110	38	54	18	32	220	110	67	0.4	1
DBCA3238S	BT50-MD32F-115R	38	54	18	32	225	110	45	0.4	2
DBCA3238S	BT50-MD32F-235R	38	54	18	32	345	110	115	0.4	2
DBCA5054S	BT50-MD50F-125	54	74	28	50	270	145	82	1.1	1
DBCA5054S	BT50-MD50F-225	54	74	28	50	370	145	182	1.1	1
DBCA5054S	BT50-MD50F-250R	54	74	28	50	395	145	81	1.1	2
DBCA6374S	BT50-MD63F-75	74	100	36	63	255	180	35	1.9	1
DBCA6374S	BT50-MD63F-130	74	100	36	63	310	180	87	1.9	1
DBCA6374S	BT50-MD63F-195	74	100	36	63	375	180	152	1.9	1
DBCA6374S	BT50-MD63F-230	74	100	36	63	410	180	187	1.9	1
DBCA80100S	BT50-MD80F-75	100	136	45	80	290	215	36	3.7	1
DBCA80100S	BT50-MD80F-110	100	136	45	80	325	215	69	3.7	1
DBCA80100S	BT50-MD80F-175	100	136	45	80	390	215	134	3.7	1

<sup>●</sup> Spare Part G67

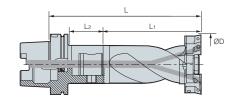
<sup>•</sup> Head: Basic, Arbor: For separate purchase • Through coolant system installed

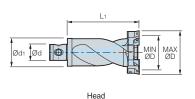
<sup>\*</sup> In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

### **HSK-DBC/A**

#### Helical type







(mm)

Designation		Boring range ØD		Ød	Ød <sub>1</sub>		L <sub>1</sub>	l.	д
Head	Arbor	Min	Max	Юa	Юu1	_	Li	L2	<u>/ kg \</u>
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

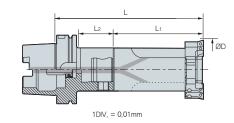
<sup>◆</sup> Spare Part G67

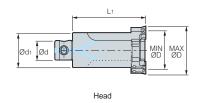
\* In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

### **HSK-DBC/A**

#### Straight type







(mm)

Designation		Boring r	Boring range ØD		Ød₁		1.	La	
Head	Arbor	Min	Max	Ød	ØQ1		<b>L</b> 1	L2	kg
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

<sup>◆</sup> Spare Part G67

\* In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

Designation	For separate purchase
Internal coolant system	0

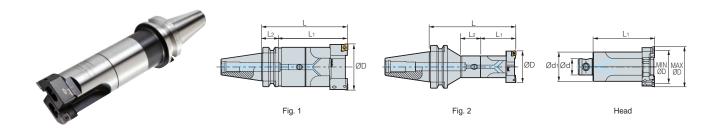
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HSK50A-CNS
HSK63A-CNS
HSK100A-CNS

<sup>•</sup> Head: Basic, Arbor: For separate purchase • Through coolant system is optional

<sup>•</sup> Head: Basic, Arbor: For separate purchase • Through coolant system is optional

# G DBC

### **BT-DBC**



Head											(mm)
DBC2528S   BT30-MD25F-90   28   35   14   25   150   60   63   0.3   1	D	esignation	Boring r	ange ØD	Ød	Ød <sub>1</sub>	1	Ιı	I 2	/ka	Fig.
DBC3235S   BT30-MD32F-80   35   46   18   32   145   65   55   0.4   1	Head	Arbor	Min	Max	- Du	Dui			<b>-</b> 2	/ kg \	9.
DBC4046S   BT30-MD40F-45   46   58   22   40   115   70   22   0.6   1	DBC2528S	BT30-MD25F-90	28	35	14	25	150	60	63	0.3	1
DBC4046S   BT30-MD40F-60   46   58   22   40   130   70   36   0.6   1	DBC3235S	BT30-MD32F-80	35	46	18	32	145	65	55	0.4	1
DBC4046S   BT30-MD40F-80	DBC4046S	BT30-MD40F-45	46	58	22	40	115	70	22	0.6	1
DBC50588   BT30-MD50F-70   58	DBC4046S	BT30-MD40F-60	46	58	22	40	130	70	36	0.6	1
DBC2528S   BT40-MD25F-95   28   35   14   25   155   60   63   0.3   1	DBC4046S	BT30-MD40F-80	46	58	22	40	140	70	56	0.6	1
DBC2528S         BT40-MD25F-105R         28         35         14         25         165         60         40         0.3         2           DBC3235S         BT40-MD32F-110R         35         46         18         32         165         65         70         0.4         1           DBC3235S         BT40-MD40F-615R         35         46         18         32         180         65         45         0.4         2           DBC4046S         BT40-MD40F-110R         46         58         22         40         130         70         31         0.6         1           DBC4046S         BT40-MD40F-115         46         58         22         40         180         70         60         0.6         2           DBC5058S         BT40-MD40F-115         46         58         22         40         185         70         83         0.6         1           DBC6374S         BT40-MD63F-64         74         94         36         63         154         90         37         2.0         1           DBC6374S         BT40-MD63F-135         74         94         36         63         200         90         83         2.0	DBC5058S	BT30-MD50F-70	58	74	28	50	150	80	48	1.1	1
DBC3235S   BT40-MD32F-100   35   46   18   32   165   65   70   0.4   1	DBC2528S	BT40-MD25F-95	28	35	14	25	155	60	63	0.3	1
DBC3335S         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-MD63F-64         74         94         36         63         154         90         37         2.0         1           DBC6374S         BT40-MD63F-135         74         94         36         63         225         90         108         2.0         1           DBC6374S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC394S         BT40-MD80F-105         28         35         14         25         165         60         62         0.3	DBC2528S	BT40-MD25F-105R	28	35	14	25	165	60	40	0.3	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         225         90         108         2.0         1           DBC6574S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC3528S         BT50-MD25F-105         28         35         14         25         165         60         62         0.3	DBC3235S	BT40-MD32F-100	35	46	18	32	165	65	70	0.4	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           DBC6378S         BT40-MD63F-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         225         90         108         2.0         1           DBC6374S         BT40-MD63F-135         74         94         36         63         225         90         108         2.0         1           DBC394S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC3258S         BT50-MD25F-102R         28         35         14         25         185         60         62         0.3	DBC3235S	BT40-MD32F-115R	35	46	18	32	180	65	45	0.4	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         200         90         83         2.0         1           DBC394S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC2528S         BT50-MD25F-105         28         35         14         25         165         60         62         0.3         1           DBC3252SS         BT50-MD25F-120R         28         35         14         25         185         60         40         0.3	DBC4046S	BT40-MD40F-60	46	58	22	40	130	70	31	0.6	1
DBC5058S         BT40-MD50F-105         58         74         28         50         185         80         73         1.1         1           DBC6374S         BT40-MD63F-64         74         94         36         63         154         90         37         2.0         1           DBC6374S         BT40-MD63F-110         74         94         36         63         200         90         83         2.0         1           DBC6374S         BT40-MD63F-135         74         94         36         63         225         90         108         2.0         1           DBC8094S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC2528S         BT50-MD25F-105         28         35         14         25         165         60         62         0.3         1           DBC2528S         BT50-MD25F-120R         28         35         14         25         185         60         40         0.3         2           DBC3235S         BT50-MD32F-115R         35         46         18         32         180         65         47         0.4	DBC4046S	BT40-MD40F-110R	46	58	22	40	180	70	60	0.6	2
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           DBC6374S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC2528S         BT50-MD25F-105         28         35         14         25         185         60         62         0.3         1           DBC2528S         BT50-MD25F-120R         28         35         14         25         185         60         40         0.3         2           DBC3235S         BT50-MD32F-115R         35         46         18         32         175         65         67         0.4         1           DBC3235S         BT50-MD32F-235R         35         46         18         32         180         65         45         0.4	DBC4046S	BT40-MD40F-115	46	58	22	40	185	70	83	0.6	1
DBC6374S         BT40-MD63F-110         74         94         36         63         200         90         83         2.0         1           DBC6374S         BT40-MD63F-135         74         94         36         63         225         90         108         2.0         1           DBC8094S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC2528S         BT50-MD25F-105         28         35         14         25         165         60         62         0.3         1           DBC3258S         BT50-MD25F-110R         28         35         14         25         185         60         40         0.3         2           DBC3235S         BT50-MD32F-115R         35         46         18         32         175         65         67         0.4         1           DBC3235S         BT50-MD32F-235R         35         46         18         32         180         65         45         0.4         2           DBC4046S         BT50-MD40F-230R         46         58         22         40         130         70         122         0.6	DBC5058S	BT40-MD50F-105	58	74	28	50	185	80	73	1.1	1
DBC6374S         BT40-MD63F-135         74         94         36         63         225         90         108         2.0         1           DBC8094S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC2528S         BT50-MD25F-105         28         35         14         25         165         60         62         0.3         1           DBC3258S         BT50-MD35F-120R         28         35         14         25         185         60         40         0.3         2           DBC3235S         BT50-MD32F-110R         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         122         0.6	DBC6374S	BT40-MD63F-64	74	94	36	63	154	90	37	2.0	1
DBC8094S         BT40-MD80F-100         94         120         45         80         200         100         73         3.5         1           DBC2528S         BT50-MD25F-105         28         35         14         25         165         60         62         0.3         1           DBC2528S         BT50-MD25F-120R         28         35         14         25         185         60         40         0.3         2           DBC3235S         BT50-MD32F-115R         35         46         18         32         175         65         67         0.4         1           DBC3235S         BT50-MD32F-235R         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-230R         46         58         22         40         300         70         180         0.6	DBC6374S	BT40-MD63F-110	74	94	36	63	200	90	83	2.0	1
DBC2528S         BT50-MD25F-105         28         35         14         25         165         60         62         0.3         1           DBC2528S         BT50-MD25F-120R         28         35         14         25         185         60         40         0.3         2           DBC3235S         BT50-MD32F-110R         35         46         18         32         180         65         45         0.4         2           DBC3235S         BT50-MD32F-235R         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         205         70         152         0.6         1           DBC4046S         BT50-MD40F-230R         46         58         22         40         300         70         180         0.6	DBC6374S	BT40-MD63F-135	74	94	36	63	225	90	108	2.0	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         305         80         82         1.1	DBC8094S	BT40-MD80F-100	94	120	45	80	200	100	73	3.5	1
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-2250R         58         74         28         50         330         80         81         1.1	DBC2528S	BT50-MD25F-105	28	35	14	25	165	60	62	0.3	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-MD63F-75         74         94         36         63         165         90         35         2.0	DBC2528S	BT50-MD25F-120R	28	35	14	25	185	60		0.3	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-MD40F-230R         46         58         22         40         300         70         180         0.6         2           DBC5058S         BT50-MD50F-230R         46         58         22         40         300         70         180         0.6         2           DBC5058S         BT50-MD50F-250F         58         74         28         50         305         80         182         1.1         1           DBC5058S         BT50-MD63F-250R         58         74         28         50         330         80         81         1.1 <th>DBC3235S</th> <th>BT50-MD32F-110</th> <th>35</th> <th>46</th> <th>18</th> <th>32</th> <th>175</th> <th>65</th> <th>67</th> <th>0.4</th> <th>1</th>	DBC3235S	BT50-MD32F-110	35	46	18	32	175	65	67	0.4	1
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-MD60F-250R         58         74         28         50         305         80         182         1.1         1           DBC6374S         BT50-MD63F-250R         58         74         28         50         330         80         81         1.1         2           DBC6374S         BT50-MD63F-130         74         94         36         63         220         90         87         2.0	DBC3235S	BT50-MD32F-115R	35	46	18	32	180	65	45	0.4	2
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         80         320         90         187         2.0	DBC3235S	BT50-MD32F-235R	35	46	18	32	300	65	115	0.4	2
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	DBC4046S	BT50-MD40F-60	46	58	22	40	130	70	22	0.6	1
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	DBC4046S	BT50-MD40F-195	46	58	22	40	265	70	152	0.6	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	DBC4046S	BT50-MD40F-230R	46	58	22	40	300	70	180	0.6	2
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	DBC5058S	BT50-MD50F-125	58	74	28	50	205	80	82	1.1	1
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	DBC5058S	BT50-MD50F-225	58	74	28	50	305	80	182	1.1	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	DBC5058S	BT50-MD50F-250R	58	74	28	50	330	80			2
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	DBC6374S	BT50-MD63F-75	74	94	36	63	165	90	35	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	DBC6374S	BT50-MD63F-130	74	94	36	63	220	90	87	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	DBC6374S	BT50-MD63F-195	74	94	36	63	285	90	152	2.0	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	DBC6374S	BT50-MD63F-230	74	94	36	80	320	90	187	2.0	1
<b>DBC8094S BT50-MD80F-175</b> 94 120 45 80 275 100 134 4.5 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
<b>DBC120S</b>   <b>BT50-MD80F-175</b>   120   175   45   80   275   100   134   4.1   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

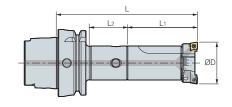
<sup>◆</sup> Spare Part G67

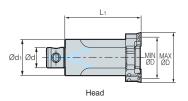
<sup>•</sup> Head: Basic, Arbor: For separate purchase • Through coolant system installed

<sup>\*</sup> In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

### HSK-DBC Modular type







(mm)

Г	Designation		ange ØD	_ Ød Ød₁	l <sub>1</sub> I	L <sub>1</sub>	L <sub>2</sub>	<del>L</del>	
Head	Arbor	Min	Max	ωu	901	-	L1	<b>L</b> 2	/ kg \
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

<sup>●</sup> Spare Part G67

#### Parts

#### • DBCA

	Basic												
Division	Head	Spring pin	Wrench bolt	Wrench	Cartridge	Set screw	Wrench	Clamp screw	Torx wrench				
Parts Designation					6			Chillin	/				
DBCA2528S	DBCA2528	SP0308	BX0420	LW-3	BCC28-EC	BT0308	LW-1.5	BFTX02506N	TRX8				
DBCA3238S	DBCA3238	SP0410	BX0525	LW-4	BCC38-EC	BT0310	LW-1.5	BFTX02506M	TRX8				
DBCA5054S	DBCA5054	SP0616	BX0630	LW-5	BCC54-EC	BT0414	LW-2	BFTX0407N	TRX15				
DBCA6374S	DBCA6374	SP1018	BX0635	LW-5	BCC74-EC	BT0520	LW-2.5	BFTX0511N	TRX20				
DBCA80100S	DBCA80100	SP1020	BX0840	LW-6	BCC100-EC	BT0625	LW-3	BFTX0511N	TRX20				

#### • DBC

	Basic												
Division	Division Head Spring pin Wrench bolt Wrench Cartridge Set screw Wrench												
Parts Designation					6				/				
DBC2528S	DBC2528	SP0308	BX0415	LW-3	BCC28	BT0306	LW-1.5	FTKA02565	TRX7				
DBC3235S	DBC3235	SP0410	BX0515	LW-4	BCC35	BT0308	LVV-1.5		IRA/				
DBC4046S	DBC4046	SP0516	DV0600	LW-5	BCC46	BT0410	LW-2	FTNA0408	TRX15				
DBC5058S	DBC5058	SP0616	BX0620	LVV-5	BCC58	BT0412	LVV-Z	FINAU4U6	IKAIS				
DBC6374S	DBC6374	SP1018	BX0830	LW-6	BCC74	BT0516	LW-2.5	BFTX0511N	TRX20				
DBC8094S	DBC8094	SP1020	BX1035	LW-8	BCC94	BT0620	LW-3	DE LY0211IN	TRX20				
DBC120S	DBC120N	SP1020	BX0830	LW-6	BCC120	BT0830	LW-4	BFTX0511N	TRX20				

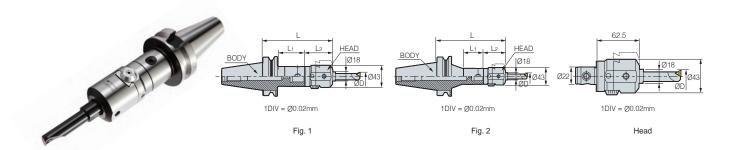
<sup>•</sup> Head: Basic, Arbor: For separate purchase • Through coolant system is optional

<sup>\*</sup> In the above table, the Arbor Model No. is an example model no. and able to adjust the depth of boring with a combination of MD arbors and extension bars. For more details, see the MD arbor page.

G SMB

### **BT-SMB**

#### **Small Micro Boring Bar**

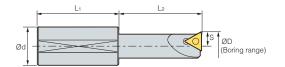


(mm)

	Designation		Paring range (ID	L	1.	1.	Д	Fi.e.
Head	Arbor	Bite	Boring range ØD	L	L <sub>1</sub>	L <sub>2</sub>	kg	Fig.
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

<sup>\*</sup> Adjustment length: 7mm

### **ᢒ** BB Bite (For SMB)



(mm)

	Decimation	Boring	g range	۵٦	1.	1.		Д	lucant	Incort corour
	Designation	Min	Max	Ød	L <sub>1</sub>	L <sub>2</sub>	S	kg	Insert	Insert screw
ВВ	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

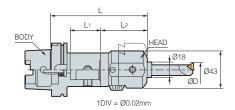
	Bas	sic		For separate purchase			
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder		
Parts Designation							
SMB	SMB4022	BTT1013F	LW-2.5	BB18	MD40F		

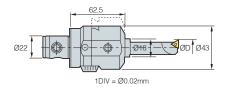
<sup>•</sup> Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

### **HSK-SMB**

#### **Small Micro Boring Bar**







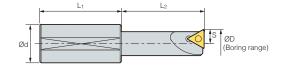
Head

(mm)

	Designation	Poring range (ID		1.	La		
Head	Arbor	Bite	Boring range ØD		L1	L2	<u>/ kg \</u>
SMB4022	HSK63A-MD40F - 70	BB18-□(S)	Ø6.0~Ø34.0	132.5	41	62.5	0.6

<sup>\*</sup> Adjustment length: 17mm

### **ᢒ** BB Bite (For SMB)



(mm)

	Designation	Boring	Boring range		1.	1.	s	/ kg	Imaget	Incort corour
	Designation	Min	Max	Ød	L <sub>1</sub>	L <sub>2</sub>	3	<u>/ kg \</u>	Insert	Insert screw
ВВ	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

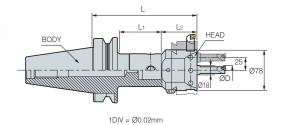
	Ва		For separate purchase			
Division	Boring head	Boring bite	Basic holder			
Parts Designation						
SMB	SMB4022	BTT1013F	LW-2.5	BB18	MD40F	

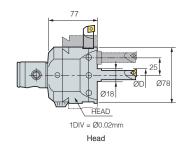
<sup>•</sup> Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

G KMB

### BT-KMB Micro Boring





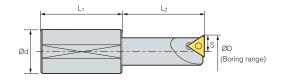


(mm)

	Designation		Boring r	ange ØD		L <sub>1</sub>	L <sub>2</sub>	kg
Head	Arbor	Bite	Bite position	ØD	L	L1	L2	<u>/ kg \</u>
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

<sup>\*</sup> Adjustment length: 7mm

### **ᢒ** BB Bite (For KMB)



(mm)

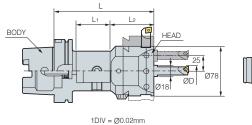
	Designation		Boring range (Center)			Ød	L <sub>1</sub>	L <sub>2</sub>	S	/ kg \	Insert	Insert Screw
	Designation	Cei	nter	Eccentric		ьu	L1	<b>L</b> 2	3	/ kg \	moore	insert screw
ВВ	18-7(S)	7	40	27	91	18	30	30	3.5	0.1	TBGT0601□□L	BFTX0204A
	18-9(S)	9	42	29	93	18	30	40	4.5	0.1	TPGT0802□□L	BFTX0204A
	18-11(S)	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

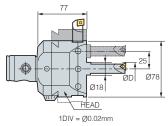
	Ba		For separate purchase				
Division	Boring head	Taper screw	Wrench	Boring bite Basic ho			
Parts Designation							
KMB	KMB6336	BTT1620F	LW-4.0	BB18	MD63F		

<sup>•</sup> Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

### HSK-KMB Micro Boring





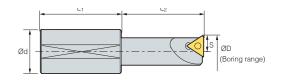


(mm)

	Designation		Boring range ØD			1.	1.	д
Head	Arbor	Bite	Bite position	ØD		L1	<b>L</b> 2	<u>/ kg \</u>
KMB6336	HSK63A-MD63F-95	BB18-□(S)	Center Hole	Ø8.0~Ø38.0	172	69	77	2.2

<sup>\*</sup> Adjustment length: 7mm

### **ᢒ** BB Bite (For KMB)



(mm)

<b>Designation</b>		Boring range (Center)			Ød	1.	L <sub>2</sub>	s	kg	Insert	Insert Screw	
		Center		Eccentric		Вu	L <sub>1</sub>	L2	3	/ kg \	msert	iliseit Sciew
ВВ	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

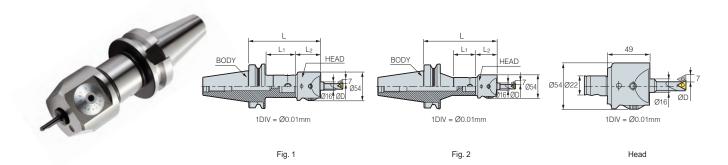
	Ва	For separate purchase			
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Parts Designation					-
KMB	KMB6336	BTT1620F	LW-4.0	BB18	MD63F

<sup>•</sup> Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

G SMH

### **BT-SMH**

#### **Small Micro Boring Bar (For High precision)**

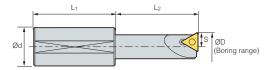


(mm)

	Designation		Boring range ØD		L <sub>1</sub>	1.	/ kg	Fi.a
Head	Arbor	Bite	Boring range 90		L1	L <sub>2</sub>	<u>/ kg \</u>	Fig.
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

<sup>\*</sup> Adjustment length: 7 mm

### **ᢒ** BB Bite (For SMH)



(mm)

	Designation	Boring r	Boring range ØD					lucout	In sout Course	M/non ob
Designation		Min	Max	Ød	L <sub>1</sub>	L2	S	Insert	Insert Screw	Wrench
ВВ	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

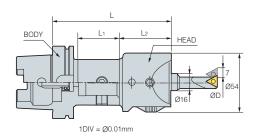
	Ва	For separate purchase			
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Parts Designation					
SMH	SMH4022	BTT1013F	LW-3.0	BB16	MD40F

 $<sup>\</sup>bullet \ \, \text{Head: Basic, Arbor/Bite: For separate purchase} \quad \bullet \ \, \text{Through coolant system not available}$ 

### **HSK-SMH**

#### **Small Micro Boring Bar (For High precision)**



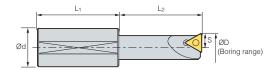


(mm)

Designation			Boring range ØD	1	1.	1.	Д
Head	Arbor	Bite	Borning ranige 8D	L	Li	L2	<u>/ kg \</u>
SMH4022	HSK63-MD40F-70	BB16-□(S)	Ø6.0~Ø34.0	132.5	41	49	0.6

<sup>\*</sup> Adjustment length: 17mm

#### **ᢒ** BB Bite (For SMH)



(mm)

	Designation	Boring range ØD		Insert	Insert Screw	kg
Designation		Min	Max	IIISEIT	iliseit sciew	<u>/ kg \</u>
ВВ	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

	Ва	For separate purchase			
Division	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Parts Designation					
SMH	SMH4022	BTT1013F	LW-3.0	BB16	MD40F

<sup>•</sup> Head: Basic, Arbor/Bite: For separate purchase • Through coolant system not available

# G TBCA

#### Wide diameter boring system

# TBCA new

- Convenience in use simultaneously (available both inside and outside)
- Broad boring diameter and range
- Rough/Finishing boring with replaceable cartridge and common rail
- Boring range for outer diameter: Ø0~Ø395
- Boring range for inner diameter: Ø130~Ø631



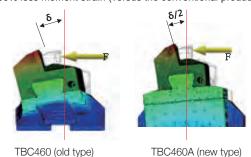
#### Code system



#### Features

#### Reinforced rigidity

• 50% less moment strain (versus the conventional product of DINE)



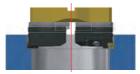
#### Lightweight design(Head set)

• BCC (Cartridge) + DBR (Bridge) + DBB (Rail)

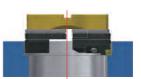


TBC130A	TBC175A	TBC220A	TBC265A
4.2 Kg	5.6 Kg	6.6 Kg	7.5 Kg
TBC310A	TBC385A	TBC460A	TBC535A
9.5 Kg	11.6Kg	14 Kg	16 Kg

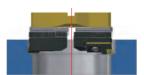
#### Application



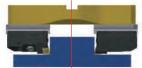
Twin edge boring



Single edge boring

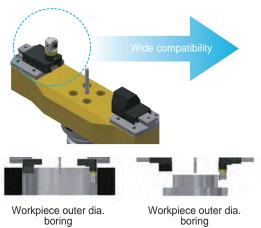


Step boring



Outside boring

#### Wide compatibility



Inner dia. boring	
• TBC310	Δir

	Images	List of clamping parts	Cutting type
Outer dia. boring		FBH3233B + FCE310 + FCB310	Finishing boring
		DBCA3235S + FCE310 + CB310	Rough boring
		DBS CA + SCGCL16C-1A2	Rough boring
Inner dia. boring		FCC310	Finishing boring
	8	BCC1354	Rough boring

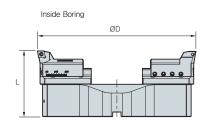
n case

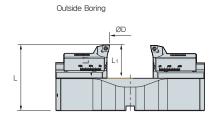
boring

## **TBCA**

#### Wide diameter boring system







(mm)

		Twin Edge Boring for Roughing								
FMC Arbor	д				Boring range ØD					
(Individual order)	kg	TBC Head set (Rail + Cartridge (Main))	L	Inside	Boring	Ou	Outside Boring			
		(ran r oarriage (maii))		Min	Max	Min	Max	L <sub>1</sub>		
BT50-FMC40-50	4.6	TBC130A (DBR130 + BCC1348 + BCC1348)	108	130	180	0	35	65	3.8	
BT50-FMC40-50	4.6	TBC175A (DBR175 + BCC1348 + BCC1348)	113	175	225	0	75	65	5.2	
BT50-FMC40-50	4.6	TBC220A (DBR07015 + BCC1348 + BCC1348)	118	220	270	60	124	65	7.3	
BT50-FMC40-50	4.6	TBC265A (DBR07015 + BCC1348 + BCC1348)	123	265	315	64	174	65	7.3	
BT50-FMC40-50	4.6	TBC310A (DBR10015 + BCC1345 + BCC1345)	128	310	390	79	159	65	9.7	
BT50-FMC40-50	4.6	TBC385A (DBR10015 + BCC1354 + BCC1345)	133	385	465	153	233	65	11.8	
BT50-FMC40-50	4.6	TBC460A (DBR10015 + BCC1354 + BCC1345)	138	460	540	229	309	65	14.3	
BT50-FMC40-50	4.6	TBC535A (DBR10015 + BCC1354 + BCC1345)	143	535	615	303	383	65	16.4	

• TBC Head set: Basic, Arbor: For separate purchase • Through coolant system is optional

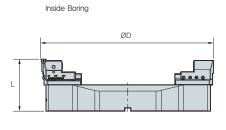
	Basic		For separate purchase				
Head set Bridge		Rail	Cartridge	Arbor Pir			
				5	/		
TBC130A	DBB130	DBR130					
TBC175A	DBB175	DBR175	DCC4240C				
TBC220A	DBB220	DBR07015	BCC1348S				
TBC265A	DBB265	DBR07015		DT50 5M040 50			
TBC310A	DBB310	DBR10015		BT50-FMC40-50	PN1080		
TBC385A	DBB385	DBR10015	D0042540				
TBC460A	DBB460	DBR10015	BCC1354S				
TBC535A	DBB535	DBR10015					

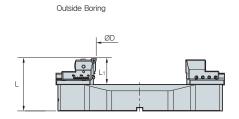
G TBCA

## **TBCA**

#### Wide diameter boring system







(mm)

		Single Edge Bo	oring fo	r Roughi	ing				
FMC Arbor	kg				Bori	ng range	ØD		
(Individual order)	/ kg \	TBC Head set (Rail + Cartridge (Separate sale))	L	Inside	Boring	Out	side Bor	kg	
		(Ruii i Gartifuge (Goparate Sale))		Min	Max	Min	Max	L <sub>1</sub>	
BT50-FMC40-50	4.6	TBC130A (DBR130 + FCC130 + FCB130 + FBB33N)	101	130	180	37	37	72	4.4
BT50-FMC40-50	4.6	TBC175A (DBR175 + FCC130 + FCB130 + FBB33N)	106	175	225	80	80	72	5.7
BT50-FMC40-50	4.6	TBC220A (DBR07015 + FCC130 + FCB130 + FBB33N)	111	220	270	173	173	72	7.8
BT50-FMC40-50	4.6	TBC265A (DBR07015 + FCC130 + FCB130 + FBB33N)	116	265	315	176	176	72	7.9
BT50-FMC40-50	4.6	TBC310A (DBR10015 + FCC310 + FCB310 + BB33N)	121	310	390	155.5	155.5	72	10.1
BT50-FMC40-50	4.6	TBC385A (DBR10015 + FCC310 + FCB310 + FBB33N)	126	385	465	229.5	229.5	72	12.2
BT50-FMC40-50	4.6	TBC460A (DBR10015 + FCC310 + FCB310 + FBB33N)	131	460	540	305.5	305.5	72	14.7
BT50-FMC40-50	4.6	TBC535A (DBR10015 + FCC310 + FCB310 + FBB33N)	136	535	615	379.5	379.5	72	16.7

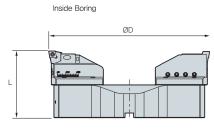
• TBC Head set/Rail: Basic, Arbor/Cartridge: For separate purchase • Through coolant system is optional

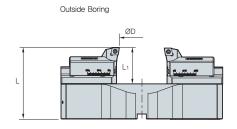
	Basic			F	or separate purcha	ise	
Head set	Bridge	Rail	Cartridge	Bite	Balance block	Arbor	Pin
	1			5	•	0	/
TBC130A	DBB130	DBR130			FCB130		
TBC175A	DBB175	DBR175	F00400				
TBC220A	DBB220	DBR07015	FCC130				
TBC265A	DBB265	DBR07015		<b>EDD</b> 400		DT50 514040 50	
TBC310A	DBB310	DBR10015		FBB130△□□		BT50-FMC40-50	PN1080
TBC385A	DBB385	DBR10015	50040		FCB310		
TBC460A	DBB460	DBR10015	FCC310				
TBC535A	DBB535	DBR10015					

## **TBCA**

#### Wide diameter boring system







(mm)

		Step Boring for Roughing									
FMC Arbor	/kg				Boring range ØD						
(Individual order)	/ kg \	TBC Head set (Rail + Cartridge (Separate sale))	L	Inside	Boring	Out	utside Boring		kg		
		(Nail + Gaithlage (Geparate Sale))		Min	Max	Min	Max	L <sub>1</sub>			
BT50-FMC40-50	4.6	TBC130A (DBR130 + DBS25-□□CA + SCGCL16CA-12)	108	130	180	0	13.5	65	4.3		
BT50-FMC40-50	4.6	TBC175A (DBR175 + DBS25-□□CA + SCGCL16CA-12)	113	175	225	0	55	65	5.7		
BT50-FMC40-50	4.6	TBC220A (DBR07015 + DBS25-□□CA + SCGCL16CA-12)	118	220	270	64	128	65	7.8		
BT50-FMC40-50	4.6	TBC265A (DBR07015 + DBS25-□□CA + SCGCL16CA-12)	123	265	315	68	118	65	7.9		
BT50-FMC40-50	4.6	TBC310A (DBR10015 + DBS40-□□CA + SCGCL16CA-12)	128	310	390	109	159	65	10.2		
BT50-FMC40-50	4.6	TBC385A (DBR10015 + DBS40-□□CA + SCGCL16CA-12)	133	385	465	183	233	65	12.3		
BT50-FMC40-50	4.6	TBC460A (DBR10015 + DBS40-□□CA + SCGCL16CA-12)	138	460	540	259	309	65	14.8		
BT50-FMC40-50	4.6	TBC535A (DBR10015 + DBS40-□□CA + SCGCL16CA-12)	143	535	615	333	383	65	16.9		

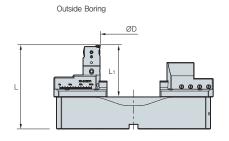
• TBC Head set/Rail: Basic, Arbor/Cartridge: For separate purchase • Through coolant system is optional

	Ва	asic		For separate purchase					
Head set	Bridge	Rail	Cartridge	Arbor	Slide	Cartridge	Plate	Pin	
				5	•	00	76	/	
TBC130A	DBB130	DBR130	BCC1348S						
TBC175A	DBB175	DBR175	BCC1348S		DBS25-16CA				
TBC220A	DBB220	DBR07015	BCC1348S		DBS25-20CA DBS25-25CA				
TBC265A	DBB265	DBR07015	BCC1348S	BT50-	22020 2007	100 0 111	ISO Cartridge		
TBC310A	DBB310	DBR10015	BCC1354S	FMC40-50		ISO Cartridge	Plates	PN1080	
TBC385A	DBB385	DBR10015	BCC1354S		DBS40-16CA				
TBC460A	DBB460	DBR10015	BCC1354S		DBS40-20CA DBS40-25CA				
TBC535A	DBB535	DBR10015	BCC1354S		220.32007				

# **TBCA**

#### Wide diameter boring system





(mm)

		Step Boring for Roughing							
FMC Arbor				Boring range ØD Outside Boring					
(Individual order)	/ kg \	TBC Head set (Rail + Cartridge (Separate sale))	L				/kg		
		(Nan + Cartriage (Ocparate Sale))		Min	Max	L <sub>1</sub>	_1		
BT50-FMC40-50	4.6	TBC130A (DBR130 + FCB130 + FCE130 + FBH3233B + FBB33N)	145	0	39	102	5.2		
BT50-FMC40-50	4.6	TBC175A (DBR175 + FCB130 + FCE130 + FBH3233B + FBB33N)	150	0	84	102	6.5		
BT50-FMC40-50	4.6	TBC220A (DBR07015 + FCB130 + FCE130 + FBH3233B + FBB33N)	155	26	180	102	8.7		
BT50-FMC40-50	4.6	TBC265A (DBR07015 + FCB130 + FCE130 + FBH3233B + FBB33N)	160	26	180	102	8.7		
BT50-FMC40-50	4.6	TBC310A (DBR10015 + FCB310 + FCE310 + FBH3233B + FBB33N)	165	16	170	102	11		
BT50-FMC40-50	4.6	TBC385A (DBR10015 + FCB310 + FCE310 + FBH3233B + FBB33N)	170	90	244	102	13.1		
BT50-FMC40-50	4.6	TBC460A (DBR10015 + FCB310 + FCE310 + FBH3233B + FBB33N)	175	166	318	102	15.6		
BT50-FMC40-50	4.6	TBC535A (DBR10015 + FCB310 + FCE310 + FBH3233B + FBB33N)	180	240	394	102	17.7		

• TBC Head set/Rail: Basic, Arbor/Cartridge: For separate purchase • Through coolant system is optional

Basic			For separate purchase					
Head set	Bridge	Rail	Arbor	Slide	B/B	Head	Pin	
	The state of the s		0	-			/	
TBC130A	DBB130	DBR130						
TBC175A	DBB175	DBR175		F0F400	FCB130			
TBC220A	DBB220	DBR07015		FCE130				
TBC265A	DBB265	DBR07015	DT50 5M040 50			EDLIGOSOD		
TBC310A	DBB310	DBR10015	BT50-FMC40-50			FBH3233B	PN1080	
TBC385A	DBB385	DBR10015		F00040				
TBC460A	DBB460	DBR10015	1	FCE310	FCB310			
TBC535A	DBB535	DBR10015	1					

#### **Balance cut tool for Rough boring**

## TBC

- Wide boring range for big diameters: Ø130~Ø540 mm
- Stable structure against for cutting load Assembly by dove-tail structure
- Interconvert with FBC
  - Common boring head and rail adopted, different cartridge
- Light-weight (5%~20% reduced)
- Various cartridge approach angle: 15°, 45°



#### Code system

#### TBC boring tool structure & features





Cartridge: BCC1348
Incert: CCMT1204 CNMG1204



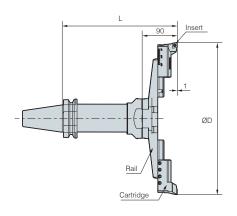
### Boring range

One de	Dia (Ø)		Used set	Incont
Grade	Min	Max	Head set	Insert
TBC130	130	180	TBC130 (TBR130 + BCC1348 + BCC1348)	CCMT1204□□
TBC175	175	225	TBC175 (TBR175 + BCC1348 + BCC1348)	CCMT1204□□
TBC220	220	270	TBC220 (TBR220 + BCC1348 + BCC1348)	CCMT1204□□
TBC265	265	315	TBC265 (TBR265 + BCC1348 + BCC1348)	CCMT1204□□
TBC310	310	390	TBC310 (TBR310 + BCC1348 + BCC1348)	CCMT1204□□
TBC385	385	465	TBC385 (TBR310 + BCC1348 + BCC1348)	CCMT1204□□
TBC460	460	540	TBC460 (TBR460 + BCC1348 + BCC1348)	CCMT1204□□

## **BT-TBC**

#### Balance cut tool for rough boring





		Rou	igh boring (TBC	)		
FMC Arbor (Individual order)	kg	TBC Head set		Boring r	ange ØD	Д
(marviadar order)		(Rail + Cartridge)	L	Min	Max	kg
BT50-FMD50-85	5.9	TBC130 (TBR130 + BCC1348)	175	130	180	3.2
BT50-FMD50-155	7.9	TBC130 (TBR130 + BCC1348)	245	130	180	3.2
BT50-FMD50-205	9.7	TBC130 (TBR130 + BCC1348)	295	130	180	3.2
BT50-FMD50-255	13.4	TBC130 (TBR130 + BCC1348)	345	130	180	3.2
BT50-FMD50-85	5.9	TBC175 (TBR175 + BCC1348)	175	175	225	3.6
BT50-FMD50-155	7.9	TBC175 (TBR175 + BCC1348)	245	175	225	3.6
BT50-FMD50-205	9.7	TBC175 (TBR175 + BCC1348)	295	175	225	3.6
BT50-FMD50-255	13.4	TBC175 (TBR175 + BCC1348)	345	175	225	3.6
BT50-FMD50-85	5.9	TBC220 (TBR220 + BCC1348)	175	220	270	4
BT50-FMD50-155	7.9	TBC220 (TBR220 + BCC1348)	245	220	270	4
BT50-FMD50-205	9.7	TBC220 (TBR220 + BCC1348)	295	220	270	4
BT50-FMD50-255	13.4	TBC220 (TBR220 + BCC1348)	345	220	270	4
BT50-FMD50-85	5.9	TBC265 (TBR265 + BCC1348)	175	265	315	4.2
BT50-FMD50-155	7.9	TBC265 (TBR265 + BCC1348)	245	265	315	4.2
BT50-FMD50-205	9.7	TBC265 (TBR265 + BCC1348)	295	265	315	4.2
BT50-FMD50-255	13.4	TBC265 (TBR265 + BCC1348)	345	265	315	4.2
BT50-FMD50-85	5.9	TBC310 (TBR310 + BCC1354)	175	310	390	5.2
BT50-FMD50-155	7.9	TBC310 (TBR310 + BCC1354)	245	310	390	5.2
BT50-FMD50-205	9.7	TBC310 (TBR310 + BCC1354)	295	310	390	5.2
BT50-FMD50-255	13.4	TBC310 (TBR310 + BCC1354)	345	310	390	5.2
BT50-FMD50-85	5.9	TBC385 (TBR385 + BCC1354)	175	385	465	5.5
BT50-FMD50-155	7.9	TBC385 (TBR385 + BCC1354)	245	385	465	5.5
BT50-FMD50-205	9.7	TBC385 (TBR385 + BCC1354)	295	385	465	5.5
BT50-FMD50-255	13.4	TBC385 (TBR385 + BCC1354)	345	385	465	5.5
BT50-FMD50-85	5.9	TBC460 (TBR460 + BCC1354)	175	460	540	12.5
BT50-FMD50-155	7.9	TBC460 (TBR460 + BCC1354)	245	460	540	12.5
BT50-FMD50-205	9.7	TBC460 (TBR460 + BCC1354)	295	460	540	12.5
BT50-FMD50-255	13.4	TBC460 (TBR460 + BCC1354)	345	460	540	12.5

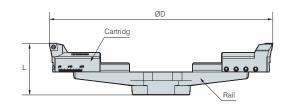
<sup>◆</sup> Spare Part G81

<sup>•</sup> TBC Head set: Basic, Arbor: For separate purchase • Through coolant system is not available

# **TBC Head Set**

#### Balance cut tool for rough boring





(mm)

Head se	et (Main compo	nent)	Boring r	ange ØD		/ kg \	For separate purchase	
Designation	Rail	Cartridge	Min	Max	L	<u>/ kg \</u>	Insert	
TBC130S	TBR130	BCC1348	130	180	90	3.5	CCMT1204□□	
TBC175S	TBR175	BCC1348	175	225	90	3.9	CCMT1204□□	
TBC220S	TBR220	BCC1348	220	270	90	4.3	CCMT1204□□	
TBC265S	TBR265	BCC1348	265	315	90	4.5	CCMT1204□□	
TBC310S	TBR310	BCC1354	310	390	90	5.5	CCMT1204□□	
TBC385S	TBR385	BCC1354	385	465	90	5.8	CCMT1204□□	
TBC460S	TBR460	BCC1354	460	540	90	12.8	CCMT1204□□	

<sup>\*</sup> If CNMG1204 \( \subseteq \) insert is used, BCN1348, BCN1354 cartridges can be ordered.

			Bas	sic			
Division	Rail	Cartridge	Clamp bolt	Clamp bolt	Hexagonal wrench	Clamp screw	Torx wrench
Parts Head set			S. Salama			<b>Manual</b>	*
TBC130S	TBR130			BT0645	LW-3 LW-4	BFTX0511N	TRX20
TBC175S	TBR175	BCC1348					
TBC220S	TBR220	(BCN1348)					
TBC265S	TBR265		BX0820				
TBC310S	TBR310				LW-6		
TBC385S	TBR385	BCC1354 (BCN1354)		BT0660			
TBC460S	TBR460	(50111334)					



#### Balance cut tool for fine boring

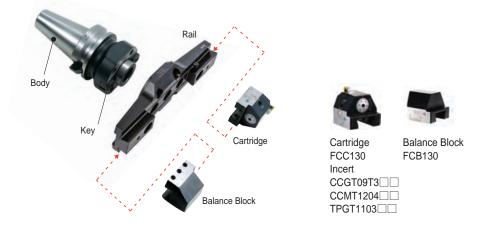
## **FBC**

- Broad boring diameter and range
  - Wide Boring Range: Ø130~Ø540 mm
- Structurally stable enough to resist cutting load
  - Provides strong cutting performance based on the precision grinding dovetail method
- Can perform rough boring operation by changing boring head cartridges
  - Compatible boring head and rail as they are in the same structure
- Various cartridge tip angles
  - cartridge fore end angles 15° and 45° selectable



#### Code system

#### FBC boring tool structure & features



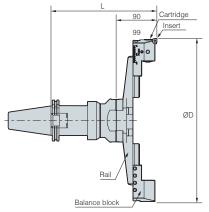
#### Boring range

Decimation	Dia	ı (Ø)	Head set	Import		
Designation	Min	Max	nead set	Insert		
FBC130	130	180	FBC130S (TBR130 + FCC130 + FCB130)			
FBC175	175	225	FBC175S (TBR175 + FCC130 + FCB130)			
FBC220	220	270	FBC220S (TBR220 + FCC130 + FCB130)	FBB130-C09 (CCMT09T3□□, CCGT09T3□□		
FBC265	265	315	FBC265S (TBR265 + FCC130 + FCB130)	FBB130-C12 (CCMT1204□□)		
FBC310	310	390	FBC310S (TBR310 + FCC310 + FCB310)	FBB130-T11 (TPMT1103, TPGT1103L)		
FBC385	385	465	FBC385S (TBR385 + FCC310 + FCB310)			
FBC460	460	540	FBC460S (TBR460 + FCC310 + FCB310)			

# **BT-FBC**

# Balance cut tool for fine boring





(mm)

FMO Ashan		Rough	boring (TBC)			
FMC Arbor (Individual order)	/ kg	TBC Head set	L	Boring ra	nge (ØD)	/kg
(		(Rail + Cartridge + Balance block)	_	Min	Max	/ kg \
BT50-FMD50-85	5.9	FBC130S (TBR130 + FCC130 + FCB130)	182	130	180	3.7
BT50-FMD50-155	7.9	FBC130S (TBR130 + FCC130 + FCB130)	252	130	180	3.7
BT50-FMD50-205	9.7	FBC130S (TBR130 + FCC130 + FCB130)	302	130	180	3.7
BT50-FMD50-255	13.4	FBC130S (TBR130 + FCC130 + FCB130)	352	130	180	3.7
BT50-FMD50-85	5.9	FBC175S (TBR175 + FCC130 + FCB130)	182	175	225	4.1
BT50-FMD50-155	7.9	FBC175S (TBR175 + FCC130 + FCB130)	252	175	225	4.1
BT50-FMD50-205	9.7	FBC175S (TBR175 + FCC130 + FCB130)	302	175	225	4.1
BT50-FMD50-255	13.4	FBC175S (TBR175 + FCC130 + FCB130)	352	175	225	4.1
BT50-FMD50-85	5.9	FBC220S (TBR220 + FCC130 + FCB130)	182	220	270	4.5
BT50-FMD50-155	7.9	FBC220S (TBR220 + FCC130 + FCB130)	252	220	270	4.5
BT50-FMD50-205	9.7	FBC220S (TBR220 + FCC130 + FCB130)	302	220	270	4.5
BT50-FMD50-255	13.4	FBC220S (TBR220 + FCC130 + FCB130)	352	220	270	4.5
BT50-FMD50-85	5.9	FBC265S (TBR265 + FCC130 + FCB130)	182	265	315	4.7
BT50-FMD50-155	7.9	FBC265S (TBR265 + FCC130 + FCB130)	252	265	315	4.7
BT50-FMD50-205	9.7	FBC265S (TBR265 + FCC130 + FCB130)	302	265	315	4.7
BT50-FMD50-255	13.4	FBC265S (TBR265 + FCC130 + FCB130)	352	265	315	4.7
BT50-FMD50-85	5.9	FBC310S (TBR310 + FCC310 + FCB310)	182	310	390	5.5
BT50-FMD50-155	7.9	FBC310S (TBR310 + FCC310 + FCB310)	252	310	390	5.5
BT50-FMD50-205	9.7	FBC310S (TBR310 + FCC310 + FCB310)	302	310	390	5.5
BT50-FMD50-255	13.4	FBC310S (TBR310 + FCC310 + FCB310)	352	310	390	5.5
BT50-FMD50-85	5.9	FBC385S (TBR385 + FCC310 + FCB310)	182	385	465	5.8
BT50-FMD50-155	7.9	FBC385S (TBR385 + FCC310 + FCB310)	252	385	465	5.8
BT50-FMD50-205	9.7	FBC385S (TBR385 + FCC310 + FCB310)	302	385	465	5.8
BT50-FMD50-255	13.4	FBC385S (TBR385 + FCC310 + FCB310)	352	385	465	5.8
BT50-FMD50-85	5.9	FBC460S (TBR460 + FCC310 + FCB310)	182	460	540	12.8
BT50-FMD50-155	7.9	FBC460S (TBR460 + FCC310 + FCB310)	252	460	540	12.8
BT50-FMD50-205	9.7	FBC460S (TBR460 + FCC310 + FCB310)	302	460	540	12.8
BT50-FMD50-255	13.4	FBC460S (TBR460 + FCC310 + FCB310)	352	460	540	12.8

<sup>◆</sup> Spare Part G84

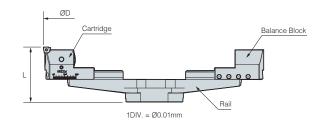
<sup>•</sup> TBC Head set: Basic, Arbor: For separate purchase • Through coolant system not available

**G** FBC

# **FBC Head Set**

#### Balance cut tool for fine boring





(mm)

Н	lead set (Main	component)		Boring	Boring range ØD			For separate purchase
Designation	Rail	Cartridge	Balance block	Min	Max	_	/kg	Bite
TBC130S	TBR130	FCC130	FCB130	130	180	97	3.8	
TBC175S	TBR175	FCC130	FCB130	175	225	97	4.1	]
TBC220S	TBR220	FCC130	FCB130	220	270	97	4.5	FBB130-C09
TBC265S	TBR265	FCC130	FCB130	265	315	97	4.6	FBB130-C12
TBC310S	TBR310	FCC310	FCB310	310	390	97	5.5	FBB130-T11
TBC385S	TBR385	FCC310	FCB310	385	465	97	5.8	
TBC460S	TBR460	FCC310	FCB310	460	540	97	12.8	

#### Parts

	Basic						For separate purchase
Division	Rail	Cartridge	Balance block	Clamp bolt	Clamp bolt	Hexagonal wrench	Bite
Parts Head set		4					9
FBC130S	TBR130				BT0645	LW-3 LW-4	FBB130-C09
FBC175S	TBR175	FCC130	FCB130				
FBC220S	TBR220	FCC130	FCB130				
FBC265S	TBR265			BTF0810 BTF0814			FBB130-C12
FBC310S	TBR310			B1F0014			FBB130-T11
FBC385S	TBR385	FCC310	FCB310		BT0660		
FBC460S	TBR460						

# **FBB Bite**



D	esignation	Insert
FBB130 -	C09	CCMT09T3□□, CCGT09T3□□
	C12	CCMT1204□□
	T11	TPMT1103□□, TPGT1103□□

#### **Slim Angular Head**

# BT-SAH

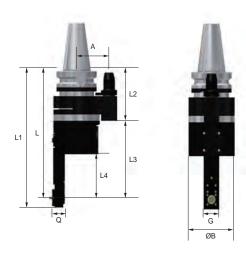
- Angular head for narrow inside boring (min. inner diameter of workpiece: Ø40, min. boring width: 32 mm)
- MAX 3,500 RPM, Spindle: applied rotation ratio = 1:1.37
- Boring range: Ø3, Ø4, Ø6



#### Code system



#### Details



#### Machining Features



Min. Ø40 Hole (except tool projection)



Min.32mm gap (except tool projection)

Designation	L	L1	L2	L3	L4	A	Q	G	ØB	Rotation ratio (IN: OUT)	Rotation direction	MAX RPM	/kg
BT50-SAH6-277	277	298	183.5	166.5	93.5	80 (110)	31.5	40	76	1: 1.37	CW: CW	3,500	14

#### Clamping Force

Division	Measurement Measured value (N-m)				
Clamp torque	2	2.5	3	3.5	4
Clamping Force	Not measurable	5.5	6.5	7	7

#### Exclusive collet

	Designation	Clamping range
	SAH6-C3	3
1	SAH6-C4	4
	SAH6-C6	6

#### How to clamp



- 1. Couple the tool with SAH dedicated collet
- 2. Insert the coupled tool into SAH and fix it with a dedicated tightening jig
- 3. Turn the bolt using a hexagonal wrench

# **G** Angular head

#### **ANGULAR HEAD**

# **ANGULAR HEAD**

- Doubled effect by one equipment/Available for various angles
- Lighter aluminum body



#### Code system



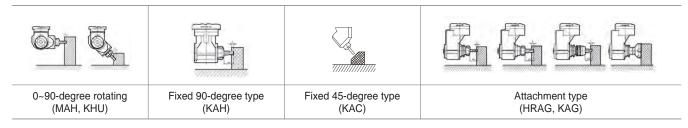
#### Name of angular head parts







#### Various applications



#### Components



#### **MAH**

#### **Universal type MAH (Reinforced series)**

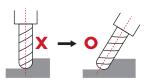
- Reinforced type Better performance by improving existing universal Angular head
  - Stability on large mold machining
  - Use 32mm Ball Endmill



#### **KHU**

#### Universal type KHU (Free angle)

- Adjustable angle-type angular head that enables flexible machining
  - Wide vertical (0°~90°) and horizontal (0°~360°) machining angle range
  - To use Tap-exclusive collet, please contact us in advance
  - HSK and SK types are customizable



Be sure to give a slope to the cutting edge of a ball end mill when machining it as the ball end mill edge is worn out and the surface roughness of the workpiece becomes defective

#### **HRAG**

#### Attachment type HRAG (Reinforced type)

- HRAG: The reinforced bracket enhanced durability upto 200%
  - Stablility on face milling machining
  - Enhances compatibility with the machining device due to easy bracket disassembly/ assembly even on the BT50 shank
  - Improves product life cycle



#### **KAG**

#### Attachment type KAG

- Free 360° angle adjusting from side to side
  - Possible to use various tools of BT40 and BT30
  - HSK and SK type are order made
  - Coolant types are to be ordered separately



#### **KAH**

#### Modular type KAH (90° type)

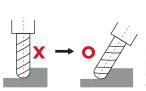
- Adjustable angle-type angular head that enables flexible machining
  - Adjusting angle up to 360°
  - To use Tap-exclusive Collet, please contact us in advance
  - HSK and SK type are order made



#### **KAC**

#### Modular type KAC (45° type)

- Fixed angle type angular head that enables flexible machining
  - Adjusting angle up to 360°
  - To use Tap-exclusive Collet, please contact us in advance
  - 45-degree fixed type angular head
  - For BT40 types, please contact us separately



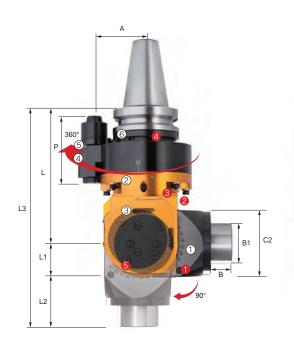
Be sure to give a slope to the cutting edge of a ball end mill when machining it as the ball end mill edge is worn out and the surface roughness of the workpiece becomes defective



# **G** Angular Head

## MHA for mold (0°~90°)\_Reinforced type

# BT-MAH







## • Positioning pin



Shank size	M	A1	ØD
BT50	56.5	20°	Ø40

NO	Name
1	Inclination angle gradation (Axial positioning in 0°~90°)
2	Rotating angle graduation (Free radius position in 360°)
3	Head
4	Positioning pin part
5	Jaw key
6	Positioning ring
7	Positioning pin cover
8	Positioning pin

NO	Part name	Designation
1	Inclination angle gradation screw	BT1216
2	Head fixed bolts	BT0645
3	Rotating angle graduation screw	BT0640
4	Positioning ring set screw	MSST5-12
6	Tilt Axies fixing bolt	BH0616
6	Positioning pin height control bolt	BT0516
7	Positioning pin set screw	BT0512
8	Body position block set screw	BX0516

Designation	ØD	L	L1	L2	L3	С	C1	G	C2	Q	Q1	В	B1	Р	Α	Max RPM	Install tool	kg
BT50-MAH32-200	32	200	47	78	325	136	95	154	95	125	63	31	60	95	80	3,000	SIDE LOCK	19.6

## KHU (0°~90°)\_Collet type

# **BT-KHU**







## **○** Positioning pin



Shank size	M	M1	Α	ØD
BT40	Max: 32 Min: 26	10	20°	Ø19.6

NO	Name
1	Inclination angle gradation (Axial positioning in 0°~90°)
2	Rotating angle graduation (Free radius position in 360°)
3	Head
4	Positioning pin part
5	Jaw key
6	Height control wrench hole

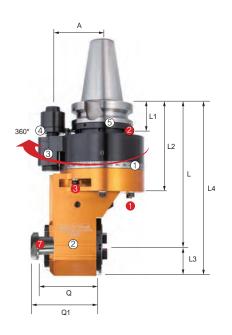
NO	Part name	Designation
1	Tilt Axies fixing bolt	BH0630
2	Bracket angle fixing bolt	BX0630
3	Position block fixing bolt	BX0512
4	Set screw	BT0404
<b>5</b>	Fixing bolts	BX05630

Designation	ØD	ØD1	L	L1	L2	L3	В	B1	Е	F	С	Α	G	Q	Q1	Torque rate (IN: OUT)	Direction of rotation (IN: OUT)	Max RPM	Collet	kg
BT40-KHU10-160	1.0~10.0	58	247	160	33	54	22	28	51	98	96	65	90	87	40	1 :2	CW: CW	6,000	GER16	8.3
BT50-KHU10-180	1.0~10.0	84	267	180	33	54	22	28	53	103	114	80	90	87	40	1 :2	CW: CW	6,000	GER16	11.5
BT50-KHU20-195	1.0~20.0	84	315	195	47	73	29	50	53	132	114	80	124	120	63	1 :1	CW: CW	3,000	GER32	17.9

# **G** Angular Head

## HRAG (90° fixed)\_Reinforced type

# **BT-HRAG**







## Positioning pin



Shank size	M	A1	ØD
BT50	56.5	20°	Ø40

NO	Name
1	Rotating angle graduation (Free radius position in 360°)
2	Head
3	Positioning pin part
4	Jaw key
5	Positioning ring
6	Positioning pin cover
7	Positioning pin

NO	Part name	Designation
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
6	Positioning pin set screw	BT0512
6	Body position block set screw	BX0516
7	BT/NT Bolt	

|--|--|

Designation	L	L1	L2	L3	L4	Q	Q1	Α	G	G1	Max RPM	Tool shank	kg
BT50-HRAG40-230	230	56.5	145	46.5	276.5	89	101	80	93	136	3000	BT/NT40	18.2

## KAG (90° fixed type)

# BT-KAG







## • Positioning pin



Shank size	M	M1	A1	ØD
BT40	Max: 32 Min: 26	10	20°	Ø19.6
BT50	Max: 35 Min: 29	15	20°	Ø28

NO	Name
1	Rotating angle graduation (Free radius position in 360°)
2	Head
3	Positioning pin part
4	Jaw key
(5)	Height control wrench hole

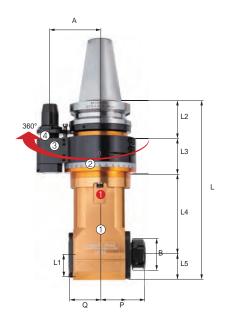
NO	Part name	Designation
1	Set screw	BT0404
2	Fixing bolts	BX50630
3	BT / NT Bolt	

Designation	L	L1	L2	L3	L4	L5	Q	Q1	Α	С	G	Torque rate (IN: OUT)	Direction of rotation (IN: OUT)	MAX RPM	Holder shank	kg
BT40-KAG30-195	195	44	86	65	37.5	232.5	66	70	65	96	75	1: 1	CW: CW	4,000	BT30/NT30	6.4
BT50-KAG40-230	230	57	88	85	46.5	276.5	89	94	80	114	93	1: 1	CW: CW	3,000	BT40/NT40	15.8

# **G** Angular Head

## HRAG (90° fixed)\_Collet type

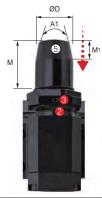
# **BT-KAH**







## **○** Positioning pin



Shank size	M	M1	<b>A</b> 1	ØD
BT40	Max: 32 Min: 26	10	20°	Ø19.6
BT50	Max: 35 Min: 29	15	20°	Ø28

NO	Name
1	Head
2	Rotating angle graduation (Free radius position in 360°)
3	Positioning pin part
4	Jaw key
5	Height control wrench hole

NO	Part name	Designation
1	Head fixing bolts	BX0618
2	Set screw	BT0404
3	Fixing bolts	BX50630

Designation	ØD	L	L1	L2	L3	L4	L5	В	Α	Р	Q	G	G1	Torque rate (IN: OUT)	Max RPM	Collet	/kg\
BT40-KAH7-170	1.0~7.0	190	20	44	71	55	20	19	65	37	24.5	40	96	1: 1	5,000	GER11	4.6
BT40-KAH10-195	1.0~10.0	220	25	44	71	80	25	28	65	46	32	58	96	1: 1	5,000	GER16	5.8
BT40-KAH13-165	1.0~13.0	193	28	44	71	50	28	35	65	53	35	60	96	1: 1	5,000	GER20	5.7
BT40-KAH20-180	2.0~20.0	218	38	44	71	65	38	50	65	71	49	76	96	1: 1	3,500	GER32	6.7
BT50-KAH07-220	1.0~7.0	240	20	57	54	109	20	19	80	37	24.5	40	96	1: 1	5,000	GER11	9.8
BT50-KAH10-215	1.0~10.0	240	25	57	54	104	25	28	80	46	32	58	96	1: 1	5,000	GER16	10.7
BT50-KAH10-260	1.0~10.0	285	25	57	54	149	25	28	80	46	32	58	96	1: 1	5,000	GER16	11.0
BT50-KAH13-260	1.0~13.0	288	28	57	54	149	28	35	80	53	35	60	96	1: 1	5,000	GER20	11.2
BT50-KAH20-200	2.0~20.0	238	38	57	54	89	38	50	80	71	49	76	96	1: 1	3,500	GER32	11.6
BT50-KAH20-240	2.0~20.0	278	38	57	54	129	38	20	80	71	49	76	96	1: 1	3,500	GER32	12.4

## KAC (45° fixed)\_Collet type

# BT-KAC







## **○** Positioning pin



Shank size	M	M1	A1	ØD
BT40	Max: 32 Min: 26	10	20°	Ø19.6
BT50	Max: 35 Min: 29	15	20°	Ø28

NO	Name
1	Head
2	Rotating angle graduation (Free radius position in 360°)
3	Positioning pin part
4	Jaw key
(5)	Height control wrench hole

NO	Part name	Designation
1	Head fixing bolts	BX0618
2	Set screw	BT0404
3	Fixing bolts	BXS0630

Designation	ØD	L	L1	L2	L3	В	G	G1	Р	Q	Α	Max RPM	Collet	kg
BT50-KAC10-240	1.0~10.0	240	57	54	129	28	60	96	25	54	80	5,000	GER16	9.7
BT50-KAC13-240	1.0~13.0	240	57	54	129	28	60	96	25	54	80	5,000	GER20	10.7
BT50-KAC20-250	2.0~20.0	240	57	54	139	50	72	96	30	60	80	3,500	GER32	11.7



#### Zero fit collet

# DZC

#### Correcting 10 - 20 $\mu m$ runout generated at tool tip to 0-2 $\mu m$

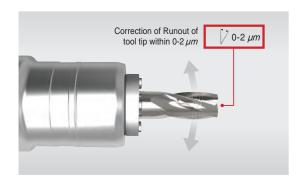
- Improves the runout and straightness of end tools
- Improves the surface roughness and quality of the machining area
- Improves the accuracy of boring hole dimension
- Improves the tool life of end tools

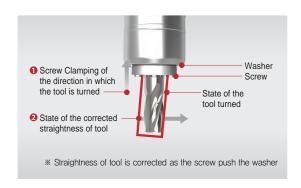


#### Code system

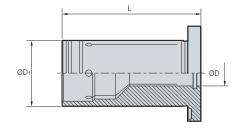


#### Features









(mm)

Designation	ØD	ØD <sub>1</sub>	L
DZC20-6	20	6	56.5
DZC20-8	20	8	56.5
DZC20-10	20	10	56.5
DZC20-12	20	12	56.5
DZC20-14	20	14	56.5
DZC20-16	20	16	56.5
DZC32-6	32	6	67.5
DZC32-8	32	8	67.5
DZC32-10	32	10	67.5
DZC32-12	32	12	67.5
DZC32-16	32	16	67.5
DZC32-20	32	20	67.5
DZC32-25	32	25	67.5

#### Jetcoolant collet (for milling chuck)

## DCJ

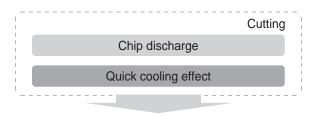
- Ensures a longer service life of cutting tools by preventing chips from adhering to tools
- Improveds chip breakability/breaking strong jet injection
- Maintains the performance of the conventional milling chuck
- Enables a fast change of the inside jet coolant by collet replacement
- Available an ultrahigh-pressure inside coolant



Designation	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
NPM20	•	•	•	•	•			
NPM32	•	•	•	•	•	•	•	
NPM42	•	•	•	•	•	•	•	•

· Can be used for an ultrahigh-pressure inside coolant

#### **○** NPM + Jet coolant Collet



Increased tool service life

#### Easy assembly



Can be used by only combining a collet with the conventional chuck (NPM)

#### Coolant type

Jet coolant



· Inside coolant



#### Coolant type

	Designation
	DCJ20-6
DCJ20	DCJ20-8
	DCJ20-10
	DCJ20-12
	DCJ20-16
	DCJ32-6
	DCJ32-8
	DCJ32-10
DCJ32	DCJ32-12
	DCJ32-16
	DCJ32-20
	DCJ32-25

#### Chip evacuation







#### Lock collet for milling chuck

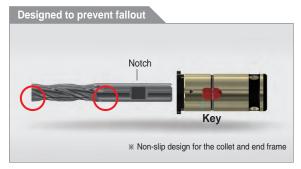
## DCL

Milling chuck equipped with anti-fallout feature to prevent poor milling when machining a workpiece and improve tool service life (with DINE's milling chuck)

- Prevents the tool from falling out due to coolant pressure and vibration
- · Useful for working with difficult-to-cut materials that require high workload
- Fit for difficult-to-cut materials with ultralight weight and high hardness in aerospace and automobile industries

# space and

#### Features

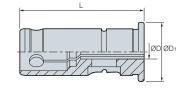


- Designed especially for extreme machining with a lot of mechanical actions, prevents the tool from deviating or falling out.
- Weldon flat (DINE 6535HB) end mill used

# Inserting the key to the body slotting Designed to be assembled regardless of 6 places of slotting

 Closely adhered to the grooves of the milling chuck - No slip occurring even under high torque

#### Detailed Specifications



(mm)

Designation	ØD	ØD <sub>1</sub>	L	Designation	ØD	ØD <sub>1</sub>	L
DCL20-6	6	20	53	DCL32-10	10	32	64.5
DCL20-8	8	20	53	DCL32-12	12	32	64.5
DCL20-10	10	20	53	DCL32-14	14	32	64.5
DCL20-12	12	20	53	DCL32-16	16	32	64.5
DCL20-14	14	20	53	DCL32-18	18	32	64.5
DCL20-16	16	20	53	DCL32-20	20	32	64.5
DCL32-6	6	32	64.5	DCL32-25	25	32	64.5
DCL32-8	8	32	64.5				

	Basic			Basic	
Division	Key	C-Grip	Division	Key	C-Grip
Parts Designation	•		Parts Designation	•	
DCL20-6	DCL20-6K	DCL-CG20	DCL32-10	DCL32-10K	DCL-CG32
DCL20-8	DCL20-8K	DCL-CG20	DCL32-12	DCL32-12K	DCL-CG32
DCL20-10	DCL20-10K	DCL-CG20	DCL32-14	DCL32-14K	DCL-CG32
DCL20-12	DCL20-12K	DCL-CG20	DCL32-16	DCL32-16K	DCL-CG32
DCL20-14	DCL20-14K	DCL-CG20	DCL32-18	DCL32-18K	DCL-CG32
DCL20-16	DCL20-16K	DCL-CG20	DCL32-20	DCL32-20K	DCL-CG32
DCL32-6	DCL32-6K	DCL-CG32	DCL32-25	DCL32-25K	DCL-CG32
DCL32-8	DCL32-8K	DCL-CG32			



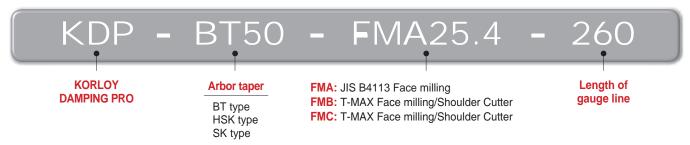


#### **KORLOY Anti-Vibration tool**

# 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





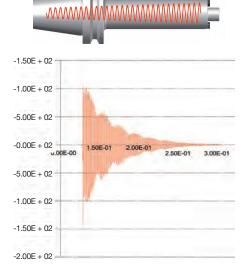


ype HSK type SK

Various types and sizes are applicable

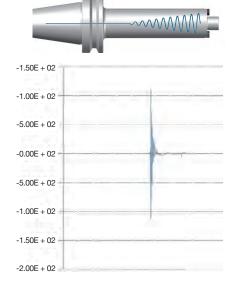
#### Comparison of vibration damping time

#### Standard Arbor



Longer Vibration damping time/ Chattering is caused while Overhang work

#### KORLOY DAMPIG PRO



Short Vibration damping time/
Performance is 2~3 times better than standard arbor



# G

## **Technical Information for DAMPING PRO**

#### Performance evaluation

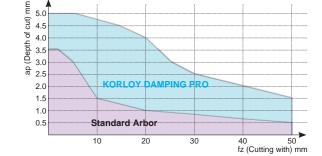
■ Cutting condition: fz (mm/t) = 0.1

vc (m/min) = 100

• Cutter: AMC4063HS 6flute

Arbor: BT50-FMC22-210 General arbor
 KDP-RT50-FMC22-210 Damping pr

KDP-BT50-FMC22-210 Damping pro



• Cutting condition: fz (mm/t) = 0.1

vc (m/min) = 100

• Cutter: FMRC3063HRD-H 6flute

 Arbor: BT50-FMC22-210 General arbor KDP-BT50-FMC22-210 Damping pro



#### Application examples

Mold machining	Side milling cutter machining	Facing for long depth	Deep-hole Boring machining
Better productivity than general arbor	Excellent performance in the deep grooving	Better productivity and surface roughness than general arbor	Better surface roughness and machinability than general arbor

#### Side milling cutter machining example

- Faulty occurrence on size and surface roughness by the vibration, when use the general arbor
- Using DAMPING PRO, good size and surface roughness

#### Big size Crankshaft machining example

- General arbor: ap = 2 mm
- KORLOY DAMPING PRO: ap = 4mm available
- 2 times better productivity



# ■ General arbor Cutting condition:

vc (m/min) = 50fz (mm/t) = 0.1 ae (mm) = 20

#### **DAMPING PRO**

Cutting condition: vc (m/min) = 100 fz (mm/t) = 0.1 ae (mm) = 20



# ■ General arbor Cutting condition: vc (m/min) = 100

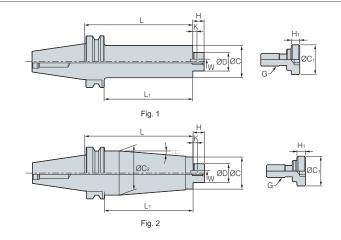
vc (m/min) = 100fz (mm/t) = 0.15ap (mm) = 2

#### ■ DAMPING PRO

Cutting condition: vc (m/min) = 100 fz (mm/t) = 0.15 ap (mm) = 4

# **BT-FMA**





(mm)

De	signation	Cutter dia.	ØD	L	L <sub>1</sub>	ØС	ØC <sub>2</sub>	Н	w	К	G	ØC <sub>1</sub>	Hı	kg	Fig.	α°
KDP-BT40 -	FMA25.4-210	80	25.4	210	183	50	60	22	9.5	5	M12	33	10	5.42	2	1
	FMA25.4-260	80	25.4	260	233	50	60	22	9.5	5	M12	33	10	6.5	2	1.1
	FMA31.75-210	100	31.75	210	183	60	-	30	12.7	7	M16	40	10	5.94	1	-
	FMA31.75-260	100	31.75	260	233	60	-	30	12.7	7	M16	40	10	7.25	1	-
KDP-BT50 -	FMA25.4-210	80	25.4	210	172	50	78	22	9.5	5	M12	33	10	9.63	2	4
	FMA25.4-260	80	25.4	260	222	50	78	22	9.5	5	M12	33	10	11.8	2	3
	FMA31.75-210	100	31.75	210	172	60	85	30	12.7	7	M16	40	10	11.8	2	3
	FMA31.7 -260	100	31.75	260	222	60	85	30	12.7	7	M16	40	10	13.6	2	2.5

• The A type is for JIS B4113 Face milling

	For separate purchase				
Division	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Parts Designation		8			
FMA25.4	K9.5 (B)	MBA-M12	BX0412	BX1225	LW-10
FMA31.75	K12.7 (D)	MBA-M16	BX0515	-	LW-14

<sup>•</sup> The B type and C type are arbors for T-MAX Face Milling and shoulder cutter

<sup>•</sup> The weight (kg) shown in the chart does not include the weight of face cutter

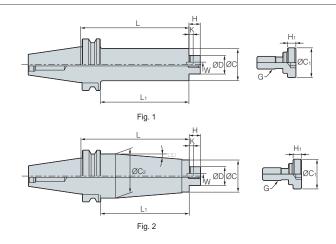
<sup>·</sup> Key and screw are clamped

<sup>·</sup> Wrench is separately sold

# **G** DAMPING PRO

# **BT-FMC**





(mm)

Des	signation	Cutter dia.	ØD	L	L <sub>1</sub>	øс	ØC <sub>2</sub>	н	W	K	G	kg	Fig.	α°
KDP-BT40 -	FMC16-160	40	16	160	133	38	-	17	8	5	M8	2.45	1	-
	FMC22-210	50/63	22	210	183	48	4.95	19	10	5.6	M10	4.37	2	0.1
	FMC22-260	50/63	22	260	233	48	60	19	10	5.6	M10	6.3	2	1.5
	FMC27-210	80	27	210	183	60	-	21	12	6.3	M12	6	1	-
	FMC27-260	80	27	260	233	60	-	21	12	6.3	M12	7.25	1	-
KDP-BT50 -	FMC16-171	40	16	171	133	38	-	17	8	5	M8	5.1	1	-
	FMC22-210	50/63	22	210	172	48	49.5	19	10	5.6	M10	7.3	2	0.1
	FMC22-260	50/63	22	260	222	48	62	19	10	5.6	M10	10	2	1
	FMC27-210	80	27	210	172	60	78	21	12	6.3	M12	10.6	2	2.5
	FMC27-260	80	27	260	222	60	78	21	12	6.3	M12	12.6	2	2
	FMC27-320	80	27	320	282	60	78	21	12	6.3	M12	14.8	2	1
	FMC32-210	100	32	210	172	78	-	24	14	7	M16	11.7	1	-
	FMC32-260	100	32	260	222	78	-	24	14	7	M16	14.2	1	-
	FMC32-330	100	32	330	292	78	-	24	14	7	M16	16.6	1	-

 $\bullet\,\mbox{The A}$  type is for JIS B4113 Face milling

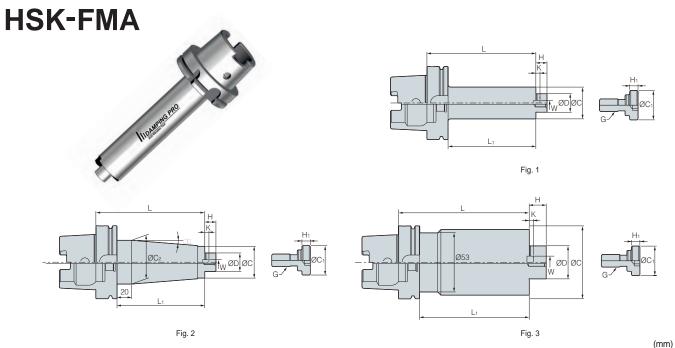
	For separate purchase				
Division	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Parts Designation		84	a de la companya de l		
FMC16	K8.0 (A)	-	BX0310	BX0820	LW-6
FMC22	K10.0 (C)	-	BX0412	BX1030	LW-8
FMC27	K12.0	MBA-M12	BX0616	-	LW-10
FMC32	K14.0	MBA-M16	BX0820	-	LW-14

<sup>•</sup> The B type and C type are arbors for T-MAX Face Milling and shoulder cutter

 $<sup>\</sup>bullet$  The weight (kg) shown in the chart does not include the weight of face cutter

<sup>•</sup> Key and screw are clamped

Wrench is separately sold



																(111111)
Desig	nation	Cutter dia.	ØD	L	L <sub>1</sub>	øс	ØC <sub>2</sub>	н	W	K	G	ØC <sub>1</sub>	H1	kg	Fig.	α°
KDP-HSK63 -	FMA25.4-210	80	25.4	210	184	50	53	22	9.5	5	M12	33	10	4.55	3	0.1
	FMA25.4-260	80	25.4	260	234	50	53	22	9.5	5	M12	33	10	5.6	3	0.1
	FMA31.75-210	100	31.75	210	184	60	-	30	12.7	7	M16	40	10	5.52	2	-
	FMA31.75-260	100	31.75	260	234	60	-	30	12.7	7	M16	40	10	6.9	2	-
KDP-HSK100 -	FMA25.4-210	80	25.4	210	181	50	78	22	9.5	5	M12	33	10	8.32	3	4
	FMA25.4-260	80	25.4	260	231	50	78	22	9.5	5	M12	33	10	10.5	3	3
	FMA31.75-210	100	31.75	210	181	60	85	30	12.7	7	M16	40	10	10.9	3	3
	FMA31.75-260	100	31.75	260	231	60	85	30	12.7	7	M16	40	10	12.8	3	2.5

 $\bullet\,\mbox{The A}$  type is for JIS B4113 Face milling

	For separate purchase				
Division	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Parts Designation		84			
FMA25.4	K9.5 (B)	MBA-M12	BX0412	BX1230	LW-10
FMA31.75	K12.7 (D)	MBA-M16	BX0515	-	LW-14

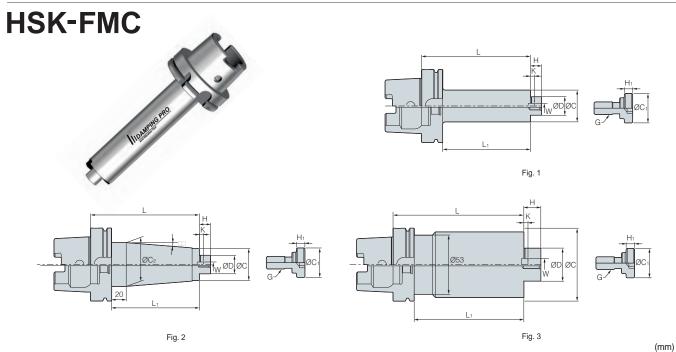
 $<sup>\</sup>bullet\,\mbox{The B}$  type and C type are arbors for T-MAX Face Milling and shoulder cutter

 $<sup>\</sup>bullet$  The weight (kg) shown in the chart does not include the weight of face cutter

Key and screw are clamped

<sup>•</sup> Wrench is separately sold

# **G** DAMPING PRO



														()
Desig	nation	Cutter dia.	ØD	L	L <sub>1</sub>	øс	ØC <sub>2</sub>	н	W	K	G	/ kg \	Fig.	α°
KDP-HSK63 -	FMC16-160	40	16	160	134	38	-	17	8	5	M8	2.10	1	-
	FMC22-210	50/63	22	210	184	48	4.95	19	10	5.6	M10	3.82	1	0.1
	FMC22-260	50/63	22	260	234	48	62	19	10	5.6	M10	6.14	3	1.6
	FMC27-210	80	27	210	184	60	-	21	12	6.3	M12	5.53	2	-
	FMC27-260	80	27	260	234	60	-	21	12	6.3	M12	6.83	2	-
KDP-HSK100 -	FMC16-160	40	16	160	131	38	-	17	8	5	M8	3.45	1	-
	FMC22-210	50/63	22	210	181	48	49.5	19	10	5.6	M10	4.60	3	0.1
	FMC22-260	50/63	22	260	231	48	62	19	10	5.6	M10	8.10	3	1
	FMC27-210	80	27	210	181	60	78	21	12	6.3	M12	8.44	3	2.5
	FMC27-260	80	27	260	231	60	78	21	12	6.3	M12	10.40	3	2
	FMC27-320	80	27	320	291	60	78	21	12	6.3	M12	13.60	3	1
	FMC32-210	100	32	210	181	78	-	24	14	7	M16	10.20	1	-
	FMC32-260	100	32	260	231	78	-	24	14	7	M16	13.00	1	-
	FMC32-330	100	32	330	301	78	-	24	14	7	M16	15.43	1	-

• The A type is for JIS B4113 Face milling

 $\bullet\,\mbox{The B}$  type and C type are arbors for T-MAX Face Milling and shoulder cutter

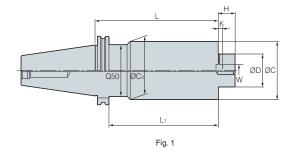
• The weight (kg) shown in the chart does not include the weight of face cutter • Key and screw are clamped

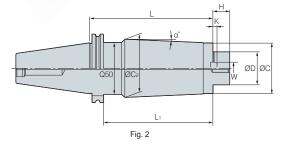
Wrench is separately sold

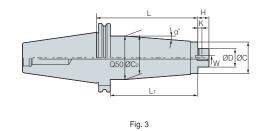
	Basic									
Division	Key	Key Clamp bolt		Wrench bolt	Wrench					
Parts Designation		Oh.	<b>Salara</b>							
FMC16	K8.0 (A)	-	BX0310	BX0820	LW-6					
FMC22	K10.0 (C)	-	BX0412	BX1030	LW-8					
FMC27	K12.0	MBA-M12	BX0616	-	LW-10					
FMC32	K14.0	MBA-M16	BX0820	-	LW-14					

# **SK-FMC**









(mm)
------

De	signation	Cutter dia.	ØD	L	L <sub>1</sub>	øс	ØC <sub>2</sub>	н	w	К	G	/ kg	Fig.	α°
KDP-SK40 -	FMC22-210	50/63	22	210	183.0	48	49.5	19	10	4.4	M10	4.4	3	0.1
	FMC22-260	50/63	22	260	233.0	48	60	19	10	5.6	M10	6.2	2	1.4
	FMC27-210	80	27	210	183.0	60	60	21	12	6.3	M12	5.9	1	-
	FMC27-260	80	27	260	233.0	60	60	21	12	6.3	M12	7.2	1	-
KDP-SK50 -	FMC22-210	50/63	22	210	190.9	48	49.5	19	10	5.6	M10	6.4	3	0.1
	FMC22-260	50/63	22	260	240.9	48	62	19	10	5.6	M10	9.1	3	1
	FMC27-210	80	27	210	190.9	60	78	21	12	6.3	M12	9.8	3	2.5
	FMC27-260	80	27	260	240.9	60	78	21	12	6.3	M12	12.4	3	1.8
	FMC27-320	80	27	320	300.9	60	78	21	12	6.3	M12	14.5	3	1.2
	FMC32-210	100	32	210	190.9	78	-	24	14	7	M16	11.5	1	-
	FMC32-260	100	32	260	240.9	78	-	24	14	7	M16	14	1	-
	FMC32-330	100	32	330	310.9	78	-	24	14	7	M16	16.4	1	-

• The A type is for JIS B4113 Face milling

		Basic			For separate purchase
Division	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Parts Designation		800			
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

<sup>•</sup> The B type and C type are arbors for T-MAX Face Milling and shoulder cutter

<sup>•</sup> The weight (kg) shown in the chart does not include the weight of face cutter

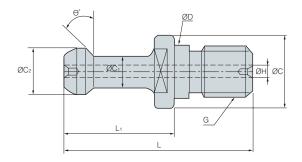
<sup>•</sup> Key and screw are clamped

<sup>·</sup> Wrench is separately sold

# **G** Others

# **Pull Stud Bolt**



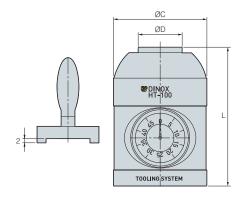


(mm)

Designation	ØD	ØС	ØC <sub>1</sub>	ØC <sub>2</sub>	L <sub>1</sub>	L	θ	G	ØН
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





(mm)

Designation	ØD	ØC	L
HT-100	32	68	100

Good for setting the Tool length at CNC machine
 No inturferance between height Touch setter and Tool makes safe work
 Location Accuracy: ±0.003 mm

# **PARTS**



#### **Parts**

H02 Shim H03 Cartridge H03 Chip Breaker H03 Chip Cover H03 Clamp H04 Coolant Bolt H04 Wrench Bolt H04 Lever H05 Locator H05 Nut H05 Pin H05 Screw H06 Shim Pin H07 Spring Wrench H07 H07 Stop Ring H07 Washer H07 Stopper H07 Nozzle

# H Parts

## Shim

			Dir	nensions
Geometry	Designation	а	b	c d angle
	SC32	8.5	3.18	4.9
	SC32N	8.5	3.18	4.88
	SC42	12.5	3.18	6.9
a b	SC42 SC42N	11.6	3.18	6.5
80°	SC53	15.7	4.76	7.9
	SC53N	14.6	4.76	8.11
(+)) + a   +   +	SC63	18.85	4.76	10
	SC63N	17.8	4.76	9.6
1	SC83	24.4	4.76	12.8
	SC84N	24.2	6.35	13
	SC42B	12.5	3.18	6.9
a 30°	d‡	12.0	0.10	<u> </u>
a 80° b	SC42CC	12.5	3.18	3.5
a	d 🕽			
<b>a</b> . b .	SC32D	9.27	3.18	6.48
80°	SC43D	12.45	4.76	7.34
	SC53D	15.62	4.76	9.65
( + ) a + 1 +	d SC63D	18.8	4.76	11.25
	SC84D	25.08	6.35	14.85
<del></del>				
a b	SC42S	11.5	3.18	6.4
80°	SC32S	8.3	3.18	5.4
	SC63V	18.35	4.76	5.5
80° b	- SC83V	25.3	4.76	6.55
	SC84V	25.3	6.35	6.35
	SC32V	9.12	3.18	3.4
	SC42V	12.6	3.18	4.5
	SC44V	12.6	6.35	4.5
	SC54V	15.75	6.35	5.5
a b	SS32V	9.12	3.18	3.4
a 90°	SS42V	12.6	3.18	4.5
	SS54V	15.75	6.35	5.5
a	d SS64V	18.9	6.35	5.5
	SD317	9.35	2.7	5.2
a	SD317	8.5	3.18	4.88
X9. +101	+ SD32N	12.5	3.18	6.9
	SD42 SD42N	11.6	3.18	6.5
	SD42N SD43N	11.6	4.75	6.5
/a b	SD32D	9.2	3.18	5.8
\(\sqrt{55\circ}\)	SD43D	12.45	4.76	7.34
a	d			
/a b	SD32S	8.5	3.18	5.4
a 55°	SD42S	11.5	3.18	6.4
/\ ab	SD32V	9.12	3.18	3.4
\\\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	SD43V	12.6	4.76	4.5
	SD44V	12.6	6.35	4.5

Geometry	Designation	а	Dii b	mensio c	ns d	anala
► 80° . C.	SES33C	9.1	12	4.76	3.5	angle
a d	35330	3.1	12	4.70	3.3	
b <u>c</u>	SK33C	9.33	14.7	4.8	3.5	
55°	SK33CL	9.33	14.7	4.8	3.5	
b	SR10	8.4	3.18		4.7	
, <del>       </del>	SR12	10	3.18		4.7	
	SR16	13.55	4.76		6.9	
((+)) a + + d	SR20	17.1 22	4.85 6.35		7.9	
	SR25 SR32	27.8	6.35		9.6	
	SR42CC	12.575	3.18		3.5	
a	0114200	121070	00			
b	SR10S	8.8	3.18		5.4	
	SR12S	10.55	3.18		5.4	
a						
	SS32	8.5	3.18		4.9	
	SS32N	8.5	3.18		4.88	
a b	SS42	12.5	3.18		6.9	
90°	SS42B SS42N	12.5 11.6	3.18		6.9	
	SS53	15.7	4.76		7.9	
	SS53N	14.6	4.76		8.11	
	SS63	18.85	4.76		10	
·	SS63N	17.8	4.76		9.6	
	SS84	24.4	6.35		12.8	
	SS84N	24.2	6.35		13	
a b	SS42CC	12.5	3.18		3.5	
a	SS32CC	9.3	3.18		3.5	
a 1 000 b	SS32D	9.27	3.18		5.77	
90°	SS43D	12.45	4.76		7.34	
a	SS53D SS63D	15.62 18.8	4.76 4.76		9.65	
	SS84D	25.15	6.35		14.43	
	00070	23.10	5.50		. 1. 40	
a b	SS32S	8.3	3.18		5.4	
	SS42S	11.5	3.18		6.4	
a						
a , b,	SS42SAF	11.2	3		5.5	
a						
	ST317	9.35	2.7		5	
	ST317B	9.35	2.7		5	
	ST317N	8.5	2.7		4.88	
a d	ST42	12.5	3.18		6.9	
	ST42N	11.6 15.7	3.18 4.76		6.5 7.9	
·	ST53	15./	4./0		1.9	

## Shim

				Din	nensions	
Geomet	ry	Designation	а	b	c d	angle
	, b ,	ST32CC	9.35	3.18	3.5	
		0.000				
(+) a	#   d					
60°	<u>→</u>   b	ST32C1	9.13	3.18	4.95	
		ST42C1	12.3	3.18	4.95	
	d I					
°,	T- " "					
60°	b	ST32D	9.35	3.18	5.77	
		ST43D	12.52	4.76	7.34	
		ST53D	15.7	4.76	9.65	
(+) a	+ + d ↑	ST63D	18.87	4.76	11.25	
60°	- b	ST32M	8.7	3.18	4.7	
$\wedge$		ST43M	12.5	4.76	6.3	
	h					
a a	<u> </u>					
7						
60°	, b .	ST32S	8.5	3.18	5.4	
a a	T d I					
60°	<u> </u>	ST32V	9.12	3.18	3.4	
		ST44V	12.6	6.35	4.5	
(+) \ a	<del> </del>					
	·					
		SV32D	9.2	3.18	5.8	
•	35°	SV43D	12.29	4.76	7.34	
	₹ <del>П</del>					
	<u>`</u>					
∕ a	b	SV32D2	9.2	3.18	5.8	
	35°	SV32S	8.4	3.18	5.4	
a l	d d					
80°	b_	SW317	9.35	2.7	5	
Š	+	SW317N	8.5	2.7	4.88	
		SW42	12.5	3.18	6.9	
(+)) a	d <b>↓</b>	SW42N	11.6	3.18	6.5	
		01110		0.7-		
80°	<u> </u>	SW32D	9.25	3.18	5.8	
		SW43D	12.45	4.76	7.34 9.65	
	<b>T</b>	SW53D SW63D	15.62 18.8	4.76 4.76	9.65	
a a	+ + d	SW84D	24.89	6.35	14.43	
		511070	50	2.00	1 1. 10	
80°	. b .	SW43M	12.5	4.76	6.2	
		SW32M	8.52	3.18	5.2	
4 a	- d					
	<u> </u>					
	_ <del>_</del>	014/2017	0.12	2.40	0.4	
80°	<u> </u>	SW32V	9.12	3.18	3.4	
		SW44V SW54V	12.6 15.75	6.35 4.76	4.5 5.5	
		344344	13.73	7.70	ა.ა	
a a	d d					
•						

## Cartridge

Geometry	Designation	Dimensions						
Geometry		а	b	С	d	angle		
	LAPDR-AJ	M4x0.7	30	15	10			
b a								

## Chip breaker

Geometry		Decignation	Dimensions						
		Designation	а	b	С	d	angle		
a I <del>⊲ ►</del> I	b	CB20	8.5	3.4	20				
c									

## • Chip cover

Geometry		Designation	Dimensions						
Geo	лиси у	Designation	а	b	С	d	angle		
∳ D		CFMP3R14R1-A	10.5	20	1	(Ø4.3)			
d∄	₩ i	CFMP3R-A	8	18	1	(Ø4.3)			
†		CFMP4R-A	8	22	1	(Ø4.3)			
c									

## Clamp

- Olding						
Geometry	Designation			mensio		
	Doorgination	а	b	С	d	angle
a b	CA05R	8.9	5.5	17.6	3.3	
	CA06R	12	7.2	20.6	5.3	
	CH5R3	7.85	7.2	14.8	3.1	
	CH6R4	12.02	9	23.97	3.75	
a b	CBH4.5R1	8	5.74	17.7	4	
	CBH4.5R2	9.5	6.4	18	4	
	CBH5R1	10	7.8	21.3	5	
	CBH6R1	12	9.3	26	6	
d						
, a , b ,	CDH6N	9.5	10	18.6	6.1	
	CDH7N	7.9	11.4	14.7	4.7	
<del>(())</del>	CDH8N	10.9	16.9	22.4	6.1	
	CDH8N1	10.9	16.9	19.1	6.1	
	CDH8N2	10.9	16.9	25.4	6.1	
<u>□</u>   =	CDH8N3	12.5	19.8	25.4	9.2	
	CDS8N	10.8	17	22.2	5	
a b	CDSoN	10.0	17	22.2	<u> </u>	
d_ , , , _	CGH5R1	19.5	9.5	28.8	2.5	
<del>~</del>	CGH5R2	20.5	9.5	28.8	3.5	
	CGH5R3	22.5	9.5	28.8	5.5	

# H Parts

## Clamp

			ъ:			
Geometry	Designation	а	b b	mensio c	ns d	angle
d	CGH6R1	22.3	11.9	23.2	2.5	angle
	CGH6R2	23.2	11.9	23.2	3.4	
	CGH6R3	24.0	11.9	23.2	4.2	
a b						
<del>-                                    </del>						
a b	CHH3.5R1	7.5	6.7	13	2.45	
	CHH4.5R1	7.9	7.85	14.1	2.54	
	CHH5.5R1	9.8	10	16.4	4	
a b	CH4R1	7.4	5	14.1	3.1	
	CH5R1	10.0	6.6	20.2	4.5	
	CHISKT	10.0	0.0	20.2	7.0	
d T						
a b	CH5R2	6.85	7	13.8	2	
	CH6R2	8.85	8.7	16.5	2	
	CH6R3	11.8	10	23	4.2	
a		40.5	7.0	- 10	0.00	
a	CMH5R1	18.5	7.9	16	6.26	
	CMH6R2	20.0	11	17.5	13.8	
	CMH6R6 CMH6R1	18.5 24	7.9 8.5	16 16.5	6.26 8.28	
	CIVILLOK I	24	0.0	10.0	0.20	
d b						
	CMH6R3	20.0	11	17.51		
	CMH6L3	20.0	11	17.51		
a b						
a d	CS5R1	6.8	7	14.5	2	
	CS6R1 CS8R1	8.8 11.8	8.5	18.1	2.7 4.2	
	COOKI	11.0	10	23	4.2	
d H						
d	CTH6L1	23.5	12	25.4	14.35	
	CTH6R1	23.5	12	25.4	14.35	
	CTH6R2	21.78	12.9	31.22	17.33	
a b						
	0)///2	0.4	44	F 0	77	
b c d	CVH3V	21	11	5.8	7.7	
	CVH3V CVH4	29 25.5	14 14.5	7 6	- 8 - 7	
a F	CVH4 CVH5	30	17	7.5	9.5	
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	CVH6	33.5	18.5	8	10	
Ψ	3.110	20.0				
	CXH8N	10.1	10.0	17.5	-	
<u> </u>	OXIIOI					
a	OXITOR					
a b	OXIION					
a b	OATION					

## **○** Coolant bolt

Geometry	Designation	Dimensions							
Geometry	Designation	а	b	С	d	B(T)	á		
B (a')	CBA063-3IN/MM	M10	Ø25	Ø16	37	8	(27)		
a	CBA063-4IN/MM	M10	Ø25	Ø16	42.5	8	(27)		
	CBA080-IN/MM	M12	Ø28	Ø18	45.5	10	(32)		
	CBP063-IN/MM	M10	Ø22	Ø16	38.6	8	(27)		
d	CBP080-IN/MM	M12	Ø25	Ø18	48.6	10	(32)		

#### Coolant bolt

Geometry	Designation		- 1	Dimer	sions	3	
Geometry	Designation	а	b	С	d	B(T)	á
	CBA100-IN/MM	M16	Ø54	Ø43	47	14	(32)
	CBA100-IN-25.4	M12	Ø44	Ø36	41.5	10	(25)
	CBA125-IN	M20	Ø65	Ø54	56	17	(38)
	CBA125-IN-25.4	M12	Ø44	Ø36	43.5	10	(25)
B (a')	CBA125-MM	M20	Ø65	Ø54	57	17	(35)
The second secon	CBA160-IN	M24	Ø83	Ø73	56	19	(38)
/	CBA160-MM	M20	Ø83	Ø73	53	17	(34)
	CBP100-IN	M16	Ø50	Ø43	48.6	14	(32)
	CBP100-IN-25.4	M12	Ø44	Ø36	46.5	10	(25)
- ·	CBP100-MM-1	M16	Ø50	Ø43	48.6	14	(36)
	CBP125-IN	M20	Ø65	Ø54	56	17	(38)
	CBP125-IN-25.4	M12	Ø44	Ø36	55	10	(25)
	CBP125-MM	M20	Ø65	Ø54	57	17	(35)
	CBP125-MM-1	M20	Ø61	Ø54	65.6	14	(33)
	CBP160-IN	M24	Ø83	Ø73	56	19	(38)
	CBP160-MM	M20	Ø83	Ø73	53	17	(34)

#### Wrench bolt

Geometry	Decimation			Dimens	ions	
Geometry	Designation	Α	С	K	L	M
	SB0825	13	6	8	25	M08 × 1.25
A A S	SB1025	16	8	10	25	M10 × 1.50
	SB1035	16	8	10	35	M10 × 1.50
	SB1230	18	10	12	30	M12 × 1.75
	SB1630	24	14	16	30	M16 × 2.0
	SB1645	24	14	16	45	M6 × 2.0
	SB2040	30	17	20	40	M20 × 2.5
	CB1025	13	6	8	25	M08×1.25
	CB1025	16	8	10	25	M10×1.50
	CB1035	16	8	10	35	M10×1.50
<b>→</b> • • • • • • • • • • • • • • • • • • •	CB1230	18	10	12	30	M12×1.75
	CB1245	18	10	12	45	M12×1.75
	CB1630	24	14	16	30	M16×2.0
C	CB1645	24	14	16	45	M16×2.0
	CB2040	30	17	20	40	M20×2.5

#### Lever

Geometry		Decignation	Dimensions						
	onich y	Designation	а	b	С	d			
a I <del>de</del> l		LR10	3.4	10.8	11.7	3			
		LR12	3.7	13.5	13.4	3.5			
/   b	, / \	LR16	4.75	18.7	18.3	4.3			
	d	LR20	5.9	20.5	18.7	5.55			
		LR25	7.35	24.25	23.7	6.2			
	<b>→</b>	LR32	8.45	29.7	26.95	7.9			
a		LV2	2.6	7.75	6	2.1			
		LV3B	3.1	10	9.5	3.7			
	LV4B	4.7	14.55	15.6	4.7				
		LV4BN	4.7	16	14.9	4.68			
<u> </u>									
		LV3	3.7	10	12	3.6			
		LV3N	3.75	10	12	3.55			
		LV3AN	3.75	12.1	11.4	4.64			
		LV3C	3.1	10	7.85	3.6			
a   <del>==</del>		LV3CN	3.2	10	7.8	3.6			
H -		LV3DN	3.2	11.65	9.5	3.55			
Ь		LV4	4.7	14.55	14	4.7			
<b>₩</b>	d T	LV4N	4.7	13.45	13.2	4.68			
<del>\$\frac{1}{2}\frac{1}{</del>	С	LV5	6	17.1	17	6			
l <del>-</del>		LV5N	6	16.4	17.08	5.95			
		LV5AN	6	18.82	17.3	5.95			
		LV6N	7.5	20.5	21	7.6			
		LV8N	8.6	25.5	25.4	8.6			

#### Lever

Geometry	Designation	Dimensions					
Geometry		а	b	С	d		
a I	LV4A	4.6	13.24	9.95	4.7		
d c	LV4AN	4.7	13.3	10	4.68		

## Locator

G	eometry	Decimation		Di	mensio	ns	
G	-ometry	Designation	а	b	С	d	
d	<u>a</u>	LFMP3R-A	M3.5	18.7	10.1	4.6	
		LFMP4R1-A	M4.5	24.3	13.8	6.2	
		LFMP4R-A	M4.5	26.3	13.8	6.2	
c b							
d	a	LFMA3R-A	M3	18.5	9.5	4.8	
		LFMA4R-A	M3.5	26	13.1	7.3	
c	b						

## Nut

Geometry		Daalamatian	Dimensions						
G	eoineti y	Designation	а	b	С	d	B(T)	á	
_	-	N0407	M4 X 0.7	7.5	6	7	3		
В	d a a	N0508	M5 X 0.8	8.3	6.6	7	3		

## Pin

Geometry	Decignation	Dimensions					
Geometry	Designation	а	b	С			
1	PN0308	3.0	8				
h	PN0310	3.0	10				
	PN0312	3.0	12				
	PN0314	3.0	14				
	PN0515	4.8	3.3	14.5			
a c							

#### Screw

Geometry	Decimation		Diı	nensi	ions		
Geometry	Designation	а	b	С	d	B(T)	á
<u>a</u>	AZ0508F	M5 X 0.5	13	8	9	Ø2	
	AZ0514	M5 X 0.8	14	7	9	Ø2.5	
B							
	BHA0510	M5 X 0.8	15	10	8.5	4.0	
	BHA0512	M5 X 0.8	17	12	8.5	4.0	
	BHA0612	M6 X 1.0	18	12	10	5.0	
В	BHA0614	M6 X 1.0	20	14	10	5.0	
b	BHA0616	M6 X 1.0	22	16	10	5	
	BHA0619-NYLOK	M6 X 1.0	25	19	10	5	
	CHX0407	M4 X 0.7	9.5	7.36	5.7	2.5	
	CHX0415	M4 X 0.7	17.5	15	5.4	2.5	
В	CHX0510	M5 X 0.8	13.1	10.1	7.7	3	
- b	CHX0518	M5 X 0.8	21.5	18	8	3	
<del></del>	CHX0622	M6 X 1.0	26.5	22	10	4	
d a	CHX0513	M5 X 0.8	13	8	6.4	2.5	
	CHX0616	M6 x 1.0	16.2	10.1	8.5	3	
	CHX0617L	M6 x 1.0(인나사)	17.2	10.1	8.5	3	
<b>→</b> b	CHX0621	M6 X 1.0	21	10.1	8.5	3	

#### Screw

	Geometry	Designation			mens			
	Journally	Designation	а	b	С	d	B(T)	a
		CHX0625	1/4-20UNC		11	10	4	
		CTX03510	M3.5 X 0.6	10	4.7	5.3	15	
))	d a	CTX04513	M4.5 X 0.75	13.1	6.9	6.8	20	
	, c	CTX04513H	M4.5 X 0.75	13.1	7.2	6.8	20	
-	b	CTX0515	M5 X 0.8	15	8	7	20	
		CTX0517	M5 X 0.8	17.5	10	7	20	
		CTX0621	M6 X 1.0	21.2	12.4	9	25	
		DHA0514	M5 X 0.8	14.0	5.0	7.0	2.5	
		DHA0617	M6 x 1.0	17.0	7.0	7.5	3.0	
		DHA0620	M6 x 1.0	20.0	8.0	8.0	3.0	
	T	DHA0624	M6 x 1.0	24.0	12.0	8.5	3.0	
7	a a	DHA0815	M8 X 1.25	15.5	6.25	6.25	4.0	
_	c d	DHA0818F	M8 X 1.0	18	8.5	5.5	4.0	
	b	DHA0820	M8 X 1.25	20.0	8.0	9.0	4.0	
		DHA0821F	M8 X 1.0	21.0	8.5	8.5	4.0	
		DHA0825	M8 X 1.25	25.0	10.0	9.0	4.0	
		DHA0830	M8 X 1.25	30.0	11.5	11.5	4.0	
		ETGA0520CBM	M5 X 0.8	20	11.0	6.5	20	43
		ETGD0825	M8 X 1.25	25.2		11.1	40	4(
		ETKA0523	M5 X 0.8	23		7.6	20	43
			M6 X 1.0	25.5		8.8	20	43
		ETKA0625	M5 X 0.8	16.4		6.8	20	4(
		ETKD0516	M6 X 1.0	20		8.3	25	40
		ETKD0620				3.4	7	43
		ETNA02506	M2.5 X 0.45 M4 X 0.7	5.7 8.0		5.1	15	43
		ETNA0408					15	43
		ETNA0412	M4 X 0.7	12		5.1		43
	ETNA0511	M5 X 0.8	11.0		6.4	20		
	ETND02506F	M2.5 X 0.35			3.1	7	40	
	ETND0307F	M3 X 0.35	7.8		3.7	8	40	
	ETND03509	M3.5 X 0.6	9.6		4.7	10	40	
	FTGA03507	M3.5 X 0.6	7.0		5.3	15	60	
	FTGA03508	M3.5 X 0.6	8.0		5.3	15	60	
	FTGA03510	M3.5 X 0.6	10.0		5.3	15	60	
	FTGA03512	M3.5 X 0.6	12.0		5.0	15	60	
	FTGA0411F	M4 X 0.5	11.0		7.0	15	60	
	FTGA0417CBM	M4 X 0.7	17.0		5.5	15	62	
	FTGA0510-P		10.0		7.0	20	63	
		FTGA0512-P		12.0		7.0	20	60
		FTGA0513	M5 X 0.8	13.2		7.0	20	61
		FTGA0513-P	M5 X 0.8	13.0		7.0	20	60
	$\lambda$	FTGA0517	M5 X 0.8	17.0		7.5	20	61
		FTGA0621	M6 X 1.0	21.5		9.0	20	61
3))	- a' d   a	FTGA0826	M8 X 1.25	26.0		11.6	25	61
/		FTKA02206	M2.2 X 0.45	5.5		3.0	6	60
	b	FTKA02206S	M2.2 X 0.45	5.6		3.05	7	60
		FTKA02555	M2.5 X 0.45			3.5	7	60
		FTKA02565	M2.5 X 0.45			3.5	7	60
		FTKA02565S				3.8	8	60
		FTKA0307	M3 X 0.5	7.2		4.2	9	60
		FTKA03508	M3.5 X 0.6	8.4		5.5	15	60
		FTKA03510	M3.5 X 0.6	10.4		5.5	15	60
		FTKA03511A		11.0		5.2	15	60
		FTKA0408	M4 X 0.7	8.4		5.5	15	60
		FTKA0410	M4 X 0.7	10.0		5.5	15	60
		FTKA0410	M4 X 0.7	11.0		6.8	15	60
		FTKA0411K	M4 X 0.7	12.5		5.5	15	60
		FTKA0412B	M4 X 0.7	13.0		5.5	15	60
		FTNA0413	M1.6 X 0.35	3.3		2.6	6	60
			M2 X 0.4	3.0		2.7	6	60
	FTNA0203				2.7	6	60	
	FTNA02033	M2 X 0.4	3.3			6	60	
	FTNA0204	M2 X 0.4	4.3		2.7		60	
	FTNA02205	M2.2 X 0.45			3.0	6		
	FTNA0238	M2 X 0.4	3.8		3.0	6	60	
	FTNA0305	M3 X 0.5	5.2		4.2	9	60	
	FTNA0306	M3 X 0.5	6.2		4.2	9	60	
	FTNA0307	M3 X 0.5	7.2		4.2	9	60	
		FTNA0408	M4 X 0.7	8.5		5.5	15	60
		FTNA0411	M4 X 0.7	11.0		5.5	15	60
		FTNA0511	M5 X 0.8	11		7.0	20	63
		FTNA0513	M5 X 0.8	13.0		7.0	20	60
						7.0		60

# H Parts

#### Screw

Geometry	Designation			nensi			
Geometry		а	b	С	d	B(T)	á
$\lambda$	FTNB0411	M4 X 0.7	10.8		5.7	15	60°
	FTNC04509	M4.5 X 0.75	9.5		6.8	20	55°
((C)) a' d       a'   a	FTNC04511	M4.5 X 0.75	11.5		6.8	20	55°
	•						
<u>✓</u> T							
	FTNB0209	2 X 0.4	9	2.5	2.7		60°
	FTNB0209-P	2 X 0.4 2 X 0.4	9		2.7		60°
	FTNB0209-P		12	2.5			
	FTNB02512-P	2.5 X 0.45 2.5 X 0.45	12	3.5	3.5		60°
	FTNB02512-P	2.5 X 0.45	14	3.5	3.5		60
	FTNB02514-P		14	3.5	3.5		60
a d a	FTNB02314-F	3 X 0.5	16	4.5	4.2		60
T b	FTNB0316-P	3 X 0.5	16	4.5	4.2		60
_  -	FTNB0319	3 X 0.5	19	5	4.5		60
	FTNB03522	3.5 X 0.6	22	5.6	5.5		60
	FTNB03524	3.5 X 0.6	24	5.6	5.5		60
	FTNB0426	4 X 0.7	26	6.7	5.5		60
	FTNB0528	5 X 0.8	28	6.5	7		60
	KHA0508	M5 X 0.8	8			2.5	
	KHA0510	M5 X 0.8	10			2.5	
	KHA0610	M6 X 1.0	10			3	
	KHA0612	M6 X 1.0	12			3.0	
	KHA0812	M8 X 1.25	12			4.0	
Bc	KHA0815	M8 X 1.25	15			4.0	
	KHA1015	M10 X 1.5	15			5.0	
	KHA1020	M10 X 1.5	20			5.0	
а	KHB0417	M4 X 0.7	17.2	4.5	2.5	2	
B a	KHB0406	M4 X 0.7	6	4.2	3	2	
	-						
	-						
_ C							
<u>→</u> b							
	KIICOE40	MEVAA	40	0.4		0.5	00
÷ —	KHC0510	M5 X 0.8	10	8.1		2.5	909
a a	KHC0610	M6 X 1.0	10	7.8		3.0	90
	KHC0812 KHC1016	M8 X 1.25	12	9		4.0	90
B	KHC1010	M10 X 1.5 M10 X 1.5	16 20	12.3 16.3		5.0	90
b	KIIC 1020	W110 A 1.5	20	10.3		5.0	90
	KHD0510	M5 X 0.8	10	9	3	2.5	
	KHD0510	M6 X 1.0	10	10	4	3	
	KHD0810	M8 X 1.25	10	10	7.5	4	
B	MIDOOTO	MOX 1.20	-10	-10	7.0		
B							
	LTX0512	M5 X 0.8	15.1	12	7.3	20	
d al	LTX0514	M5 X 0.8	17.1	14	7.3	20	
d a							
/T TI							
b							
•		Ne					
<b>→</b> ⊤□	MHA0512	M5 X 0.8	17.0	10.8	8.0	4.0	
d - a	MHB0310	M3 X 0.5	13.4	8.0	5.5	2.5	
	MHB0410	M4 X 0.7	14.0	8.0	7.0	3.0	
B	MHB1055	M10 X 1.5	65	50	16	10	
<del>-</del> □	MHB1260 MHB1680	M12 X 1.75 M16 X 2.0	72 96	55 75	18 24	10 14	
	MHX0523	M5 X 0.8	23.5	9.7	10	2.5	
	MHX0626	M6 X 1.0	25.8	10	11	3	
	MHX0630	M6 X 1.0	30	12.5	10.5	4	
B c	III IAVVOV	1110 A 1.0	50	12.0			
b							
	PTKA02508	M2.5 X 0.45	8	5	3.8	8	92
	PTKA03510	M3.5 X 0.6	10	5	5	15	92
	PTKA0407	M4 X 0.7	7	4.6	5.5	15	86
	PTKA0407F	M4 X 0.5	7.3	3.8	6.5	15	91
	PTKA0408	M4 X 0.7	8	5.6	5.5	15	86
	PTKA0408F	M4 X 0.5	8.3	5.7	6.5	15	91
Τ	PTKA0409F	M4 X 0.5	9.3	6.7	6.5	15	91
√ A A	PTKA0410F	M4 X 0.5	10.3	7.7	6.5	15	91
a d	PTKA0411F	M4 X 0.5	11.3	8.7	6.5	15	91
	PTKA0412	M4 X 0.7	12	7.5	5.9	15	92
	PTKA0412F	M4 X 0.5	12.3	9.7	6.5	15	91
	PTKA0413F	M4 X 0.5	13.3	10.7	6.5	15	91
y	PTKA0512	M5 X 0.8	12	7	6.9	20	92
y  b		M3.5 X 0.6	8	5.3	6	9	90
y  b	PTMA03508				0 5	4.5	91
y b	PTMA03508 PTMA0403F	M4 X 0.5	3.3	1.7	6.5	15	
y <u>b</u>	PTMA03508 PTMA0403F PTMA0404F	M4 X 0.5 M4 X 0.5	4.3	2.7	6.5	15	91
y <u>b</u>	PTMA03508 PTMA0403F PTMA0404F PTMA0405F	M4 X 0.5 M4 X 0.5 M4 X 0.5	4.3 5.3	2.7 3.7	6.5 6.5	15 15	91°
у   <u> </u>	PTMA03508 PTMA0403F PTMA0404F	M4 X 0.5 M4 X 0.5	4.3	2.7	6.5	15	91

Coometry	Dealawett	Dimensions					
Geometry	Designation	а	b	С	d	B(T)	á
T R3.0/ <u>a</u>	FHGA0618	M4 X 0.7	11	6.9	6	15	
d c							
	FHGA0618	M6 X 1.0	18		8.5	4.0	61°
	PXMA0306	M3 X 0.5	5.9		5.7	2	90°
a' d a	SHX0310	M3 X 0.5	10		5.9	2	91°
B							
	RHA0510	M5 X 0.8		10		4.0	
	RHA0613	M6 X 1.0	16.3	13	10.5	4.0	
( a   a	RHA0620	M6 X 1.0	24	20	10.5	4.0	
B							
	VHX0509B	M5 X 0.8	9	4.15	5	2	
	VHX0512B	M5 X 0.8	12	6.5	5	2	
	VHX0512BN	M5 X 0.8	12	6.56	5	2	
	VHX0514	M5 X 0.8	14.5	8.25	5	2	
	VHX0613N	M6 X 1.0	13.4		5.93	2.5	
	VHX0617	M6 X 1.0	17	10	6	2.5	
	VHX0617N	M6 X 1.0	16.75		5.9	2.5	
	VHX0621	M6 X 1.0	21	14	6		
<u> </u>	VHX0817N	M8 X 1.0	17.05	7.98	7.9	3	
B c b	VHX0820N	M8 X 1.0	20.7	7.98	7.9	3	
<del>-                                    </del>	VHX0820AN VHX0821	M8 X 1.0	20.5	10.36	7.9	3	
	VHX0821N	M8 X 1.0	21.2	9.68	7.9	3	
	VHX0823N	M8 X 1.0	23.5	10.36	7.9	3	
	VHX0825	M8 X 1.0	25.3	12	8	3	
	VHX1027N	M10 X 1.0	27.2	14.4	9.8	5	
	VHX1236N	M12 X 1.0	36		11.8	5	
a c b	VHX0613A	M6 X 1.0	13.4	9.1	6.0	2.5	
	SHXN0509F	M5 X 0.5	M3.5 X 0.6	8.65	6.3	3.5	
	SHXN0609F	M6 X 0.75	M4 X 0.7	9	7.8	4	
d b a	SHXN0610F	M6 X0.75	M4 X 0.5	10	7.8	4	
В	SHXN0712F	M7 X0.75	M5 X 0.8	12	8.5	5	
	WTX0813	M8 X 1.25	17.2	4.9	8.5	25	
T C b	WTX0817	M8 X 1.25	22	4.9	8.5	25	
	I.	I.					

## Shim pin

Geometry	Designation		Dime	nsions	
Geometry	Designation	а	b	С	d
	SP3	5.5	3.5	5.9	
c a	SP3N	6.85	3.3	5.55	
	SP4	7.0	4.0	7.6	
	SP4N	5.8	4.35	7.4	
	SP5	8.5	4.5	8.8	
	SP5N	8.5	5.68	9	
	SP6N	11.1	6.0	11.0	
	SP8N	12.0	10.0	15.35	
	SP2M	5	14	M5 X 0.8	6
	SP3M	3.5	19.5	M4 X 0.7	4
a c	SP3M-1	3.5	16.5	M4 X 0.7	4
	SP4M	5	19	M5 X 0.8	6
-					



## Shim pin

Geometry	Decimation		Dir	mensions	
Geometry	Designation	а	b	С	d
	SP3D	3.7	13.1	UNF10-32	5.6
	SP3D2	3.6	12	UNF10-32	5.5
	SP3DS	3.7	11.54	UNF10-32	5.6
a d c	SP4D	4.97	17.19	UNF1/4 28	7.12
<u>*                                    </u>	SP4DL	5	17.1	UNF1/4 28	7
b	SP4DS	4.97	13.26	UNF1/4 28	
	SP5D	6.21	21.9	UNF5/16-24	9.44
	SP6D	7.75	21.9	UNF3/8-24	11.02
	SP8D	9.02	29.63	UNF7/16-20	14.21
	LSPS3	60	8.2	5.55	
b 4	LSPS4	65	10	7	
a	LSPS5	69	11.4	8.85	
	LSPS6	69	13	11	
	LSPS8	73	16.5	15.2	

## Spring

Geometry	Decimation		Di	mensio	ns
Geometry	Designation	а	b	С	d
a d	SR2	4.0	2.8	12.6	0.4
D O O O O	SPR0315	3.0	15		
	SPR0415	4.0	15		
- <del>      /     /                          </del>	SR3	9.2	12.5		
$\mathbb{D} \cap \mathbb{D} \cap \mathbb{D}$	SR4	4.0	11.0		
b	SPR0714	7	14		
10 0 0 0 0 0 0 V	SPR0510	5	10		
a	SPR0714	7	14		
b	SPR0811	8	11		

#### Wrench

Coometry	Designation		Di	mensions
Geometry	Designation	а	b	B (T)
	HW20L	52	18	2
<del>- a -</del>   BI	HW25L	58.5	20.5	2.5
	HW30L	66	23	3
b]	HW35L	72	25	3.5
<u></u>	HW40L	74	29	4
b a a	HW50L	85	33	5
b	HW40	82	80	4
	HW50	96	90	5
. В				
a	SW50L	70	27.5	
<u>↓</u>				
	TW06P	63		6
TI	TW07P	63		7
	TW08P	71		8
	TW09P	75		9
a	TW10P	78		10
	TW15P	82		15
	TW20P	86		20
<del>&lt; a</del>	TW15L	60	21	15
1	TW20L	60	21	20
b <u> </u>				

#### Wrench

Geometry	Desimation		Di	mensions	
Geometry	Designation	а	b	B (T)	
	TW07S	140	60	7	
	TW08S	150	76	8	
	TW09S	165	70	9	
b T	TW15S	190	90	15	
a	TW20S	195	91	20	
b	TW20	75	80	20	
	TW25	74	80	25	
a	TW15-100	127	80	15	
	TW20-100	127	80	20	
₩ <u></u> ⊤					
	SW15S	150	13		
a a					

## Stop ring

Geometry	v	Decimation		Dii	mensio	ns
Geometr	у	Designation	а	b	С	d
d	CR03	4.8	2.6	0.4	3.0	
	CR04	6.6	3.6	0.4	4.0	
	#	CR05	7.6	4.6	0.4	5.0
b	<del></del>					
	П	ER03	7.0	2.6	0.6	3.0
		ER04	9.0	3.5	0.6	4.0
	-11-	ER05	11	4.3	0.6	5.0
a a	<u>-</u>					

## Washer

Geometry	Geometry Designation	Dimensions				
Geometry	Designation	а	b	С		
	WA3	11.0	6.8	0.5~1.0		
a a c	WA4	10.0	5.3	0.5~1.0		

## Stopper

Geometry	Designation	Dimensions				
		а	b	С	ď°	
	STP5	11	10.2	11	30°	
b 80° c						

#### Nozzle

Geometry	Docianation		Dimensions	
Geometry	Designation	а	b	
	CN0605	6	4.6	
a				





Y+7 Y+1.0 Y+15

0.25

/+7.6

Y+15.

#### **General Information I**

 I 02 Workpiece Material Grades
 I 06 Steel, Non-ferrous Metal Symbol List
 I 07 SI unit Conversion Table
 I 08 Hardness Calculating Table
 I 09 Properties of Korloy Grades

#### **Technical Information**

I 10 Technical Information for Turning
 I 20 Technical Information for Milling
 I 24 Technical Information for Tapers
 I 27 Technical Information for Endmills
 I 30 Technical Information for Drills

#### **General Information II**

- I 36 The comparision of chip breakersI 37 KORLOY GradesI 40 The comparision of grades for
  - Turning/Milling

## **General Information I**

## Carbon steel and alloy steel for structural use

		Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
	Туре	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Ca	rbon 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	C15R 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	\$30C	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 F
		SM48C SM50C	- C50 C50E4 C50M2	\$48C \$50C	1049	080A47 080M50 C50 C50E	- C50 C50E C50R	C50 C50E C50R	45 F 50 F
		SM53C	-	S53C	1050 1053	C50R -	-	-	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 SNC415(H) SNC631(H) SNC815(H)	- - - 15NiCr13	SNC236 SNC415(H) SNC631(H) SNC815(H)	-	- - - 655M13(655H13)	- - - 15NiCr13	-	40XH - 30XH3A -
	Nickel chromium molybdenum steel	SNC836 SNCM220	20NiCrMo2 20NiCrMoS2	SNC836 SNCM220	8615 8617(H) 8620(H) 8622(H)	805A20 805M20 805A22 805M22	20NiCrMo2 20NiCrMoS2	20NCD2	-
	Sieei	SNCM240	41CrNiMo2 41CrNiMoS2	SNCM240	8637 8640	-	-	-	-
		SNCM415 SNCM420(H) SNCM431 SNCM439 SNCM447	- - - -	SNCM415 SNCM420(H) SNCM431 SNCM439 SNCM447	- 4320(H) - 4340	-	-   -   -   -	- - - -	- 20XH2M(20XHM) - -
		SNCM616 SNCM625 SNCM630 SNCM815	- - -	SNCM616 SNCM625 SNCM630 SNCM815	- - -	- - -	-   -   -	-	- - -
	Chromium steel	SCr415(H)	-	SCr415(H)	-	-	17Cr3 17CrS3	-	15X 15XA
		SCr420(H)	20Cr4(H) 20CrS4	SCr420(H)	5120(H)	-	-	-	20X
		SCr430(H)	34Cr4 34Cr54	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	SCr440(H)	5140(H)	530M40 41Cr4 41CrS4	41Cr4 41CrS4	41Cr4 41CrS4	40X
		SCr445(H)	41CrS4	SCr445(H)					45X

<sup>•</sup> The above Alloy steel can supplied by domestic manufacturing

# General Information I

		Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
	Туре	KS	s ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Alloy	Chromium	SCM415(H)	-	SCM415(H)	-	-	-	-	-
teel	molybdenum steel	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	SMn420(H) SMn433(H)	22Mn6(H)	SMn420(H) SMn433(H)	1522(H) 1534	150M19 150M36	-	-	- 30 Γ 2 35 Γ 2
	chromium steel	SMn438(H)	36Mn6(H)	SMn438(H)	1541(H)	150M36			35 Г 2 40 Г 2
		SMn443(H)	42Mn6(H)	SMn443(H)	1541(H)	-	-	-	40 Г 2 45 Г 2
		SMnC420(H) SMnC443(H)	-	SMnC420(H) SMnC443(H)	-	-	-	-	-
	Aluminum chromium molybdenum steel	SACM645	41CrAlMo74	SACM645	-	-	-	-	-

<sup>•</sup> The above Alloy steel can supplied by domestic manufacturing

## Tool steel

	Korea	ISO	Japan	U.S.A	<b>Great Britain</b>	Germany	France	Russia
Туре	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
High speed steel	SKH2	HS18-0-1	SKH2	T1				
	SKH3	-	SKH3	T4				
	SKH4	-	SKH4	T5				
	SKH10	-	SKH10	T15	BM 2	S6/5/2	Z 85 WDCV	
	SKH51	HS6-5-2	SKH51	M2				
	SKH52	HS6-6-2	SKH52	M3-1				
	SKH53	HS6-5-3	SKH53	M3-2				
	SKH54	HS6-5-4	SKH54	M4	BM 35	S6/5/2/5	6-5-2-5	
	SKH55	HS6-5-2-5	SKH55	M 35	DIVI 00	00/0/2/0	0020	
	SKH56	-	SKH56	M36				
	SKH57	HS10-4-3-10	SKH57	-		S2/9/2		
	SKH58	HS2-9-2	SKH58	M7		02/3/2		
	SKH58 SKH59	HS2-9-2 HS2-9-1-8	SKH58 SKH59	M42				
		H52-9-1-8		F2				
Alloy tool steel	STS11	-	SKS11					
	STS2	-	SKS2	-				
	STS21	-	SKS21	-				
	STS5	-	SKS5	-				
	STS51	-	SKS51	L6				
	STS7	-	SKS7	-				
	STS8	-	SKS8	-				
	STS4	-	SKS4	-				
	STS41	-	SKS41	-				
	STS43	105V	SKS43	W2-9 1/				
	STS44	-	SKS44	W2-8 1-2				
	STS3	-	SKS3	-		105WCr6	105WC13	
	STS31	105WCr1	SKS31	-				
	STS93	-	SKS93	-				
	STS94	_	SKS94	-				
	STS95	_	SKS95	_	BD3	X210Cr12	Z200C12	
	STD1	210Cr12	SKD1	D3				
	STD11	-	SKD11	D2	BA2	X100CrMoV5 1	Z100CDV5	
	STD12	100CrMoV5	SKD11	A2	5,12	7.13001W0V01	2.0000	
	STD4	-	SKD12 SKD4	-	BH21	X30WCrV9 3	Z30WCV9	
	STD5	X30WCrV9-3	SKD4 SKD5	H21	DIE	70000010103	2500000	
	STD6	X37CrMoV5-1	SKD6	H11	BH13	X40CrMoV5 1	Z40CDV5	
	STD61	X40CrMoV5-1	SKD61	H13	פוווט	A40CHVIOV3 I	Z400DV3	
	STD62	X35CrWMoV5	SKD62	H12				
	STD7	32CrMoV12-28	SKD7	H10				
	STD8	-	SKD8	H19		=======================================		
	STF3	-	SKT3	-		55NiCrMoV6	55NCDV7	
	STF4	55NiCrMoV7	SKT4	L6				

<sup>•</sup> The above Alloy steel can supplied by domestic manufacturing

# **General Information I**

	Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
Туре	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Free cutting	SUM11	-	SUM11	1110				
carbon steel	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	STB1	-	SUJ1	-				
chromiom	STB2	B1	SUJ2	52100	534A99	100Cr6	100Cr6	
	STB3	B2	SUJ3	ASTM A				
				485				
				Grade 1				
	STB4	-	SUJ4	-				
	STB5	-	SUJ5	-				

<sup>•</sup> The above Alloy steel can supplied by domestic manufacturing

## Stainless steel

_		Korea	ISO	Japan	U.	S.A	Great Britain	Germany	France	Russia
T	ype	KS	KS ISO		UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
tainless	Austenitic	STS201	X12CrMnNiN17-7-5		S20100	201	284S16	X12CrNi17-7	Z12CMN17-07Az	12X17•9AH4
	, taotoriilo	STS202	X12CrMnNiN18-9-5	SUS202	S20200		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		303S21			
		STS303	X10CrNiS18-9	SUS303	S30300		303S41		Z8CNF18-09	12X18H10E
		STS303Se		SUS303Se	S30323			X5CrNi18-10	200111 10 00	
		STS303Cu		SUS303Cu	000020	00000	304S31	7.00114110 10		08X18H10
		STS304	X5CrNi18-9	SUS304	S30400	304	00.00.	X2CrNi19-11	Z7CN18-09	00/110/110
		010004	X2CrNi18-9	000001	000400	001	304S11	AZOINITO IT	2/01/10-03	03X18H11
		STS304L	X2CrNi19-11	SUS304L	S30403	3041	004011	X2CrNiN18-10	Z3CN19-11	00/(10/1111
		STS304N1	X5CrNiN18-8	SUS304N1	S30451			AZCIIVIIVIO-10	Z6CN19-09Az	
		STS304LN	X2CrNiN18-8	SUS304LN	S30453			X5CrNi18-12	Z3CN18-10Az	
		STS304LN STS304J1	7.2011411100	SUS304J1	330433	JU4LIN	305S19	ASCHNITO-12	ZOCINTO-TUAZ	06X18H11
		STS30431	X6CrNi18-12	SUS305	S30500	205	303319		Z8CN18-12	00/101111
			7.00114110 12	SUS309S	S30908		240024	VEC-NUM-07.40.0		10X23H18
		STS309S	X6CrNi25-20	SUS310S	S31008		310S31	X5CrNiMo27-12-2		10/23/110
		STS310S	X5CrNiMo17-12-2	SUS316			316S31	X5CrNiMo27-13-3		
		STS316	X3CrNiMo17-12-3	505316	S31600	316	040044	X2CrNiMo17-13-2		001/47/14 414
		0700404	X2CrNiMo17-12-2	01100401	201000	0401	316S11	X2CrNiMo17-14-3		03X17H14M
		STS316L	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			X6CrAl13	Z6CNNb18-10	
		STS384	X3NiCr18-16	SUS384	S38400		405S17	7.0017.010	Z6CN18-16	
	- ···	STS405	X6CrAl13	SUS405	S40500		100011		Z8CA12	
	Ferritic	STS410L		SUS410L				X6Cr17	Z3C14	
		STS429		SUS429	S42900	429	430S17	X7CrS18		12X17
		STS430	X6Cr17	SUS430	S43000			X6CrMo17-1	Z8C17	
		STS430F	X7CrS17	SUS430F	S43020		434S17	7.001110171	Z8CF17	
		STS434	X6CrMo17-1	SUS434	S43400		.5.017		Z8CD17-01	
		STS444	X2CrMoTi18-2	SUS444	S44400				Z3CDT18-02	
		STSXM27		SUSXM27	S44627			X10Cr13	Z1CD26-01	
		STS403		SUS403	S40300	403	410S21	XIOOIII	210020-01	
	Martensitic	STS410	X12Cr13	SUS410	S41000		416S21	X20Cr13	Z13C13	
		STS416	X12CrS13	SUS416	S41600		420S29	X20CrNi17-2	Z11CF13	20X13
		STS420J1	X20Cr13	SUS420J1	S42000		420S29 431S29	AZUCINI17-Z		20X13 20X17H2
			X19CrNi16-2	SUS42031			431329		Z20C13	ZUA 1 / ПZ
		STS431	X70CrMo15	SUS431 SUS440A	S43100			VZO-NUALZ Z	Z15CN16-02	
	Dan sinitati	STS440A	X5CrNiCuNb16-4		S44002			X7CrNiAl17-7	Z70C15	00/47/17/0
	Precipitation	STS630	X7CrNiAl17-7	SUS630		S17400			Z6CNU17-04	09X17H7IO
	hardening type	STS631	A/CINIAIT/-/	SUS631	S17700	S17700			Z9CNA17-07	
ty	type	STS631J1		SUS631J1						

## Casting or forging steel

		Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
Ty	ype	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Casting Iron	Grey iron casting	GC100 GC150 GC200 GC250 GC350	100,150, 200, 250, 300, 350	FC100 FC150 FC200 FC250 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	
	Spheroidal graphite iron casting	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	
	Austempered Spheroidal graphite iron casting	FCAD	-	FCAD	-	EN-GJS-	EN-GJS-	EN-GJS-	
	Austenitic iron casting	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

		Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
Ту	/pe	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Juminum	Aluminum	AC1B	Al-Cu4MgTi	AC1B	204.0	-	-	A-U5GT	
loy	alloy ingots	AC2A	-	AC2A	-	-	-	-	
ioy	for casting	AC2B	-	AC2B	319.0	-	-	-	
	ror odoming	AC3A	-	AC3A	-	LM-6	-	-	
		AC4A	-	AC4A	-	-	G(GK)-AlSi9Cu3	-	
		AC4B	-	AC4B	-	-	- '	-	
		AC4C	Al-Si7Mg(Fe)	AC4C	356.0	LM-25	G(GK)-AISi7MG	A-S7G	
		AC4CH	Al-Si7Ma	AC4CH	A356.0	-	-	-	
		AC4D	Al-Si5Cu1Mg	AC4D	355.0	LM-16	-	-	
		AC5A	Al-Cu4Ni2Mg2	AC5A	242.0	-	G(GK)-AIMq5	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	
	Aluminum alloy die	ALDC1	Al-Si12CuFe	ADC1	A413.0	LM20	GD-AlSi10Ma	A-S13	
		ALDC2	-	ADC3	A360.0	-	GD-AlMq9	A-S9G	
	casting	ALDC3	-	ADC5	518.0	-	-	A-G6	
	casting	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	-	
	Aluminum	A5052S	-	A5052S	5052	EN AW-5052	EN AW-5454	EN AW-5052	
	alloy	A5454S	-	A5454S	5454	EN AW-5454	EN AW-5083	EN AW-5454	
	extruded	A5083S	AlMq4.5Mn0.7	A5083S	5083	EN AW-5083	EN AW-5086	EN AW-5083	
	shapes	A5086S	-	A5086S	5086	EN AW-5086	EN AW-6061	EN AW-5086	
	Shapes	A6061S	AlMq1SiCu	A6061S	6061	EN AW-6061	EN AW-6063	EN AW-6061	
		A6063S	AlMq0.7Si	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

		Korea	ISO	Japan	U.	S.A	Great Britain	Germany	France	Russia
Туре		KS	ISO	JIS	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Heat	Austenitic	STR31		SUH31			331S42		Z35CNWS14-14	
resistant	7 14010111110	STR35		SUH35			349S52	X53CrMnNi21-9	Z52CMN21-09-Az	
		STR36		SUH36			349S54		Z55CMN21-09-Az	
steel		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		
	Ferritic	STR21		SUH21	R30155			X6CrTi12		
	i ennuc	STR409	X6CrTi12	SUH409			409S19		Z6CT12	
		STR409L	X2CrTi12	SUH409L	S40900				Z3CT12	
		STR446		SUH446		409		X45CrSi9-3	Z12C25	
	Martensitic	STR1		SUH1	S44600		401S45		Z45CS9	
	Marterisitic	STR3		SUH3	S65007	446			Z40CSD10	
		STR4		SUH4			443S65		Z80CSN20-02	
		STR11		SUH11						
		STR600		SUH600						
		STR616		SUH616	S42200					

<sup>•</sup> The above Heat resistant steel can supplied by domestic manufacturing



# Steel, Non-ferrous metal symbol list

# **O Comparison of workpiece material standards**

Gr	oup	Standard term	Code		
		Rolled Steel for Welded Structure	SWS		
		Rerolled Steel	SBR		
Stru	ctural	Rolled Steel for General Structure	SB		
S	teel	Light Gauge Steel for General Structure	SBC		
		Hot- rolled Steel Plate, Sheet/ Strip for Automobile Structural Use	SAPH		
S	teel	Cold-rolled Steel Sheet/Strip	SBC		
P	late	Hot-rolled Soft Steel Sheet/Strip	SHP		
		Carbon Steel Pipe for Ordinary Piping	SPP		
		Carbon Steel Pipe for Boiler and Heat Exchanger	STH		
		Seamless Steel Pipe for High Pressure Gas Cylinder	STHG		
		Carbon Steel Pipe for General Structural Use	SPS		
		Carbon Steel Pipe for Machine Structural Use	STST		
		Alloy Steel Pipe for Structural Use	STA		
_	teel ipe	Stainless Steel Pipe for Machine and Structural Use	STS-TK		
۰	ipe	Carbon Steel Square Pipe for General Structural Use	SPSR		
		Alloy Steel Pipe	SPA		
		Carbon Steel Pipe for Pressure Service	SPPS		
		Carbon Steel Pipe for High Temperature Service	SPSR		
		Carbon Steel Pipe for High Pressure Service	SPPH		
		Stainless Steel Pipe	STSxT		
		Carbon Steel for Machine Structural Use	SMxxC, SMxxCl		
		Aluminum Chromium Molybdenum Steel	SACM		
		Chromium Molybdenum Steel	SCM		
	ron ind	Chromium Steel	SCr		
-	teel	Nickel Chromium Steel	SNC		
		Nickel Chromium Molybdenum Steel	SNCM		
		Manganese Steel and manganese Chromium Steel for Machine Structural Use	SMn, SMnC		
		Carbon Tool Steel	STC		
	Tool	Hollow Drill Steel	SKC		
	steel	Alloy Tool Steel	STS, STD, STF		
		High Speed Tool Steel	SKH		
Special steel	Stainless steel	Stainless Steel Bar	STS		
eci	Heat	Heat Resisting Steel	STR		
ഗ്റ	resisting	Heat Resisting Steel Bar	STR		
	steel	Heat Resisting Steel Sheet	STR		
		Free cutting carbon steel	SUM		
		Special steel	STB		
		Spring steel	SPS		

Group	Standard term	Code
	Carbon Steel Forging	SF
Forged steel	Chromium Molybdenum Steel Forging	SFCM
Olooi	Nickel Chromium Molybdenum Steel Forging	SFNCM
	Gray Cast iron	GC
	Spheroidal Graphite Cast iron	GCD
Cast iron	Blackheart Malleable Cast iron	ВМС
11011	Whiteheat Malleable Cast iron	WMC
	Pearlitic Malleable Cast iron	PMC
	Carbon Cast Steel	SC
	High Tensile Strength Carbon Cast Steel & Low Alloy Cast Steel	HSC
Cast	Stainless Cast Steel	SSC
steel	Heat Resisting Cast Steel	HRSC
	High Manganese Cast Steel	HMnSC
	Cast Steel for High Temperature and High Pressure Service	SCPH
	Brass Casting	BsC
	High Strength Brass Casting	HBsC
	Bronze Casting	BrC
	Phosphoric Bronze Casting	PCB
	Aluminum Bronze Casting	AIBC
	Aluminum Alloy Casting	ACxA
Casting	Magnesium Alloy Casting	MgC
	Zinc Alloy Die Casting	ZnDC
	Aluminum Alloy Die Casting	Al DC
	Magnesium Alloy Die Casting	MgDC
	White Metal	WM
	Aluminum Alloy Casting for Bearing	AM
	Brass Alloy Casting for Bearing	KM

# SI unit conversion table

# Major SI unit conversion table

## ■ Force

N	kgf	dyn
1	1.01972×10 <sup>-1</sup>	1×10 <sup>-5</sup>
9.80665	1	9.80665×10 <sup>5</sup>
1×10 <sup>-5</sup>	1.01972×10 <sup>-6</sup>	1

#### ■ Stress

Pa or N/m <sup>2</sup>	MPa or N/mm²	kgf/mm²	kgf/cm²	kgf/m²
1	1×10 <sup>-6</sup>	1.01972×10 <sup>-7</sup>	1.01972×10⁻⁵	1.01972×10 <sup>-1</sup>
1×10 <sup>6</sup>	1	1.01972×10 <sup>-1</sup>	1.01972×10	1.01972×10 <sup>5</sup>
9.80665×10 <sup>6</sup>	9.80665	1	1×10 <sup>2</sup>	1×10 <sup>6</sup>
9.80665×10 <sup>4</sup>	9.80665×10 <sup>-2</sup>	1×10 <sup>-2</sup>	1	1×10 <sup>4</sup>
9.80665	9.80665×10 <sup>-6</sup>	1×10 <sup>-6</sup>	1×10 <sup>-4</sup>	1

## ■ Pressure

Pa	kPa	MPa	bar	kgf/cm²
1	1×10 <sup>-3</sup>	1×10 <sup>-6</sup>	1×10⁻⁵	1.01972×10 <sup>-5</sup>
1×10 <sup>3</sup>	1	1×10 <sup>-3</sup>	1×10 <sup>-2</sup>	1.01972×10 <sup>-2</sup>
1×10 <sup>6</sup>	1×10³	1	1×10	1.01972×10
1×10 <sup>5</sup>	1×10 <sup>2</sup>	1×10 <sup>-1</sup>	1	1.01972
9.80665×10 <sup>4</sup>	9.80665×10	9.80665×10 <sup>-2</sup>	9.80665×10 <sup>-1</sup>	1

## **■** Work, Energy, Calorie

J	kW∙h	kgf⋅m	kcal
1	2.77778×10 <sup>-7</sup>	1.01972×10 <sup>-1</sup>	2.38889×10 <sup>-4</sup>
3.60000×10 <sup>6</sup>	1	3.67098×10⁵	8.60000×10 <sup>2</sup>
9.80665	2.72407×10 <sup>-6</sup>	1	2.34270×10 <sup>-3</sup>
4.18605×10 <sup>3</sup>	1.16279×10 <sup>-3</sup>	4.26858×10 <sup>2</sup>	1

#### ■ Power

W	kW	kgf · m/s	PS	kcal/h
1	1×10 <sup>-3</sup>	1.01972×10 <sup>-1</sup>	1.35962×10 <sup>-3</sup>	0.860
1×10 <sup>3</sup>	1	1.01972×10 <sup>2</sup>	1.359 62	8.60000×10 <sup>2</sup>
9.81 65	9.80665×10 <sup>-3</sup>	1	1.33333×10 <sup>-2</sup>	8.433 71
7.355×10 <sup>2</sup>	7.355×10 <sup>-1</sup>	7.5×10	1	6.32529×10 <sup>2</sup>
1.16279	1.16279×10 <sup>-3</sup>	1.18572×10 <sup>-1</sup>	1.58095×10 <sup>-3</sup>	1

## ■ Specific heat

<b>J/</b> (kg⋅K)	kcal/(kg·°c) cal/(g·°c)		
1	2.38889×10 <sup>-4</sup>		
4.18605×10 <sup>3</sup>	1		

## ■ Thermal conductivity

<b>W/</b> (m⋅k)	kcal/(h·m·°C)		
1	8.6000×10 <sup>-1</sup>		
1.16279	1		

## ■ Revolution per minute

min⁴	<b>S</b> -1	r.p.m.
1	0.0167	1
60	1	60

# Hardness calculating table

# Work piece hardness calculating table

		nell gf HB	Rockwell					Tensile strength
Vickers 50kgf	Standard ball 10mm	Cemented carbide ball	particle	B scale 100kgf 1/16in ball	C scale 150kgf Diamond particle	D scale 100kgf Diamond particle	Shore	(approximate value)  MPa (1)
HV			HRA	HRB	HRC	HRD	HS	
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		73	
	-	564	78.6		55.2	67.5	74	
600			78.4			67.0	-	2055
590	-	554		-	54.7	66.7		2055
580	-	545	78.0	-	54.1	66.2	72	2020
570	-	535	77.8	-	53.6	65.8	74	1985
560	(505)	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

		nell kgf HB	Rockwell					Tensile strength
Vickers 50kgf	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	Shore	(approximate value)  MPa (1)
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/mm²

2. The number In the blank is not generally used ranges

# **Properties of KORLOY grades**

# Physical properties of KORLOY grades

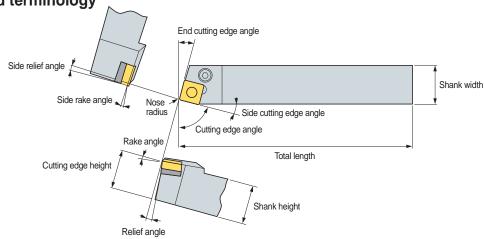
Application		ication	KORLOY grades	Specific gravity (g/cm²)	Hardness (HRA)	TRS (kgf/m²)	Compressive strength (kg/m²)	Young's modulus (10 <sup>3</sup> kgf/m²)	Thermal expansion coefficient (10-6/°C)	Thermal conductivity (cal/cmsec°C)
		P01	ST05	10.6	92.7	140	440	-	-	-
	Р	P10	ST10	10.0	92.1	175	460	48	6.2	25
	Ρ.	P20	ST20	11.8	91.9	200	480	56	5.2	42
		P30	ST30A	12.2	91.3	230	500	53	5.2	-
		M10	U10	12.9	92.4	170	500	47	-	-
Grades for cutting tools	М	M20	U20	13.1	91.1	210	500	-	-	88
cutting tools	IVI	M30	ST30A	12.2	91.3	230	500	53	5.2	-
		M40	U40	13.3	89.2	270	440	-	-	-
		K01	H02	14.8	93.2	185	-	61	4.4	105
	K	K10	H01	13.0	92.9	210	570	66	4.7	109
		K20	G10	14.7	90.9	250	500	63	-	105
Ultra fine	7	Z10	FA1	14.1	91.4	290	-	58	5.7	-
grain alloy	Z	Z20	FCC	12.5	91.3	235	-	-	-	-
		V1	D1	15.0	92.3	205	520	-	-	-
Grade for		V2	D2	14.8	90.9	250	150	-	-	-
tungsten carbide	V	V3	D3	14.6	89.7	310	410	-	-	-
wear parts		V4	G5	14.3	89.0	320	380	-	-	-
		V5	G6	14.0	87.7	350	330	-	-	-
		E1	GR10	14.8	90.9	220	-	-	-	-
Grade for mining		E2	GR20	14.8	90.3	240	-	-	-	-
and civil	E	E3	GR30	14.8	89.0	270	-	-	-	-
engineering tools	3	E4	GR35	14.8	88.2	270	-	-	-	-
		E5	GR50	14.5	87.0	300	-	-	-	-

# The physical properties of element

Element	Specific gravity (g/cm²)	Hardness (HB)	Young's modulus (×10³kgf/m²)	Thermal conductivity (cal/cmsec°C)	Thermal expansion coefficient (×10-6/°C)	Melting point (°C)
WC	15.6	2,150	70	0.3	5.1	2,900
TiC	4.94	3,200	45	0.04	7.6	3,200
TaC	14.5	1,800	29	0.05	6.6	3,800
NbC	8.2	2,050	35	0.04	6.8	3,500
TiN	5.43	2,000	26	0.07	9.2	2,950
Al203	3.98	3,000	42	0.07	8.5	2,050
cBN	3.48	4,500	71	3.1	4.7	-
Diamond	3.52	9,000	99	5.0	3.1	-
Со	8.9	-	10~18	0.165	12.3	1,495
Ni	8.9	-	20	0.22	13.3	1,455

# **Technical Information for Turning**

Insert shape and terminology

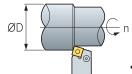


## • Relating angles between tool and workpiece

Cutting edge inclination	Terminology	Function	Effect		
Rake angle	Side rake angle Rake angle	Cutting force, Cutting heat, The effects of chip control on tool life	(+): Excellent machine-ability(reducing cutting force, weakening cutting edge strength)     (+): When machining excellent machine-ability or thin workpiece     (-): When strong cutting edge is needed at interrupted condition or mill scale		
Relief angle	Relief angle Side relief angle	Only cutting edge contact with cutting face	• (-): Cutting edge is strong but has short tool life to make bad influence on flank wear		
	Cutting edge angle	Affects chip control and cutting force direction	• (+): Improved chip control because chip thickness is big		
Cutting edge angle	Side cutting edge angle	Affects chip control and cutting force direction	(+): Strong cutting edge due to distributed cutting force but chip control is bad by thin chip thickness     (-): Improved chip performance		
	End cutting edge angle	Prevent friction between cutting edge and cutting face	• (-): Cutting edge is strong but has short tool life to make bad influence on flank wear		

# Calculation formulas for machining

#### Cutting speed



$$vc = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

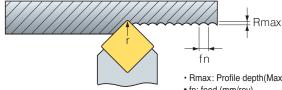
- vc: Cutting speed (m/min)
- n: Revolution per minute (min<sup>-1</sup>)
- D: Diameter (mm)
- π: Circular constant (3.14)

#### Feed

$$fn = \frac{vf}{n} \text{ (mm/rev)}$$

- fn: Feed per revolution (mm/rev)
- n: Revolution per minute (min-1)
- vf: Table feed (mm/min)

#### Surface finish



- Rmax: Profile depth(Maximum height roughness) (µ)
- fn: feed (mm/rev)
- r : nose radius

#### • Theoretical surface roughness

$$Rmax = \frac{fn^2}{8r} 1000(\mu m)$$

• Practical surface roughness

Steel: Rmax x (1.5~3) Cast iron: Rmax x (3~5)

#### Power requirement

$$P_{kw} = \frac{Q \times kc}{60 \times 102 \times r}$$

$$P_{HP} = \frac{P_{KW}}{0.75}$$

$$Q = \frac{vc \times fn \times ap}{1000}$$

- Pkw: Power requirement [kW]
- Php: Power requirement (horse power) [HP]
- vc: Cutting speed [m/min]
- ap: Depth of cut [mm]

- fn: Feed per revolution [mm/rev]
- kc: Specific cutting resistance [kg/mm²]
- η: Machine efficiency rate (0.7~0.8)

#### Rough Kc Mild steel 190 Medium carbon steel 210 High carbon steel 240 Low alloy steel 190 High alloy steel 245 93 Cast iron Malleable cast iron 120 Bronze, Brass 70

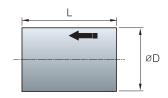
#### Material removal rate

Q (cm<sup>3</sup>/min) = vc × ap × fn

- Q: Material removal rate [cm³/min] • ap: Depth of cut [mm]
- vc: Cutting speed [m/min]
- fn: Feed per revolution [mm/rev]

## Machining time

## External face machining 1



## Constant revolution per minute

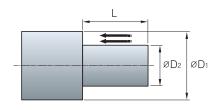
$$T = \frac{60 \times L}{\text{fn} \times \text{n}}$$

#### **Constant cutting speed**

$$T = \frac{60 \times \pi \times L \times D}{1000 \times \text{fn} \times \text{vc}}$$

- T: Machining time [sec]
- L: Cutting length [mm]
- fn: Feed per revolution [mm/rev]
- n: Revolution per minute [min-1]
- D: Diameter of workpiece [mm]
- vc: Cutting speed [m/min]

#### External face machining 2



#### Constant revolution per minute

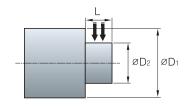
$$T = \frac{60 \times L}{fn \times n} \times N$$

#### Constant cutting speed

$$T = \frac{60 \times \pi \times L \times (D_1 + D_2)}{2 \times 1000 \times \text{fn} \times \text{vc}} \times N$$

- T: Machining time [sec]
- L: Cutting length [mm]
- fn: Feed per revolution [mm/rev]
- n: Revolution per minute [min-1]
- D1: Maximum diameter of workpiece [mm]
- D2: Minimum diameter of workpiece [mm]
- vc: Cutting speed [m/min]
- N: The number of pass = (D1-D2)/d/2

#### Facing



#### Constant revolution per minute

$$T = \frac{60 \times (D_1 - D_2)}{2 \times fn \times n} \times N$$

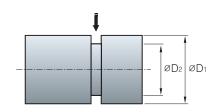
## Constant cutting speed

$$T_1 = \frac{60 \times \pi \times (D_1 + D_2) \times (D_1 - D_2)}{4000 \times \text{fn} \times \text{vc}} \times N$$

#### T: Machining time [sec]

- T1: Machining time before the maximum rpm[sec]
- L: Width of machining [mm]
- fn: Feed per revolution [mm/rev]
- n: Revolution per minute [min-1]
- D1: Maximum diameter of workpiece [mm]
- D2: Minimum diameter of workpiece [mm]
- vc: Cutting speed [m/min]
- N: The number of pass = (D1-D2)/d/2

#### Grooving



#### Constant revolution per minute

$$T = \frac{60 \times (D_1 - D_2)}{2 \times fn \times n}$$

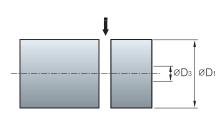
## Constant cutting speed

$$T_1 = \frac{60 \times \pi \times (D_1 + D_2) \times (D_1 - D_2)}{4000 \times \text{fn} \times \text{vc}}$$

#### T: Machining time [sec]

- T1: Machining time before the maximum rpm[sec]
- L: Width of machining [mm]
- fn: Feed per revolution [mm/rev]
- n: Revolution per minute [min-1]
- D1: Maximum diameter of workpiece [mm]
- D2: Minimum diameter of workpiece [mm]
- vc: Cutting speed [m/min]

#### **Parting**



#### Constant revolution per minute

$$T = \frac{60 \times D_1}{2 \times f_0 \times n}$$

#### Constant cutting speed

$$T_1 = \frac{60 \times \pi \times (D_1 + D_3) (D_1 - D_3)}{4000 \times \text{fn} \times \text{vc}}$$

$$T_3 = T_1 + \frac{60 \times D_3}{2 \times fn \times n_{max}}$$

- T: Machining time [sec]
- T1: Machining time before the maximum rpm[sec]
- T3: Machining time till maximum RPM[sec]
- fn: Feed per revolution [mm/rev]
- n: Revolution per minute [min<sup>-1</sup>]
- nmax: Maximum revolution per minute [min-1]
- D1: Maximum diameter of workpiece [mm]
- D3: Maximum diameter at maximum RPM [mm]
- vc: Cutting speed [m/min]

## **Technical Information for Turning**

## The affects of cutting condition

• The most desirable machining means short machining time, long tool life and good precision

This is the reason that proper cutting condition for each tools should be selected according to material's properties, hardness, shapes, the efficiency of machine

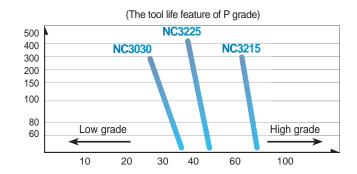
## Cutting speed

Workpiece: S45C (180HB)Tool life criterion: VB = 0.2 mm

• Depth of cut: 1.5 mm • Feed: 0.3 mm/rev

• Holder: PCLNR2525-M12

• Insert: CNMG120408, Dry cutting



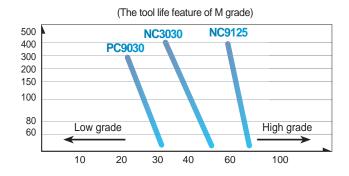
• Workpiece: STS304 (200HB)

• Tool life criterion: VB = 0.2 mm

• Depth of cut: 1.5 mm • Feed: 0.3 mm/rev

• Holder: PCLNR2525-M12

• Insert: CNMG120408, Dry cutting



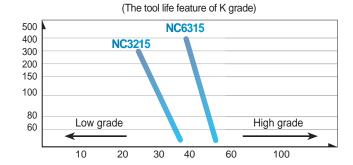
• Workpiece: GC300 (180HB)

• Tool life criterion: VB = 0.2 mm

Depth of cut: 1.5 mmFeed: 0.3 mm/rev

• Holder: PCLNR2525-M12

• Insert: CNMG120408, Dry cutting



## Cutting Speed's effects

When the cutting speed increases up to 20% in an application, the tool life respectively decreases down 50%
 Although inversely, if the cutting speed increases up to 50% the tool life decreases 20%. On the other hand if cutting speed is too low (20-40m/min) Tool life shortens due to vibration

#### Feed

• The feed rate in turning means the progressed interval of a distance in a work piece within 1 revolution

The feed rate in a milling application means the table feed divided by number of teeth of cutter (feed rate per tooth)

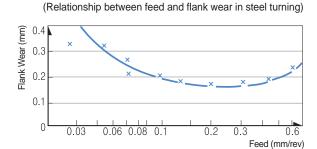
#### The effects of feed

- When the feed rate decreases the flank wear is increased. When the feed rate is too low, the tool life shortens radically
- When the feed rate increases, the flank wear increases due to high temperatures, however the feed rates effects tool life less than the cutting speed. And higher feed rates improve machining efficiency

• Workpiece: SNCN431

• Grade: ST20

Cutting speed: 200 m/min
Depth of cut: 1.0 mm
Cutting time: 10 min



## Depth of cut

• Determined by the required allowances in machining a material and the capacity the machine can tolerate There are cutting limits according to the different shapes and sizes of the insert

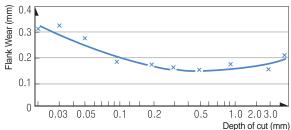
• Workpiece: SNCN431

• Grade: ST20

• Cutting speed: 200 m/min

Feed: 0.2 mm/revCutting time: 10 min

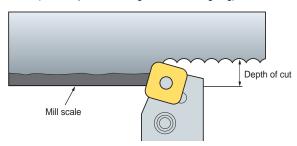
(Relationship between depth of cut and flank wear in steel turning)



## The effect of a depth of cut

- The depth of cut does not have a big influence on tool life
- When the depth of cut is small the work piece is not cut but rather rubbed. In these cases, machine off the work hardened parts that decrease tool life
- When machining a cast skin or milling scale smaller depth of cuts usually cause chipping and abnormal wear because of hard impurities in the surface of the work piece

(Surface parts including mill scale Roughing)



# **Technical Information for Turning**

## Relief angle

• Relief angle avoids the friction between workpiece and relief face and makes cutting edge move along workpiece easily

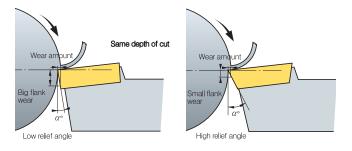
#### • Relationship between various relief angle and flank wear

#### Affects

- 1. If relief angle is big Flank wear decreases
- 2. If relief angle is big Cutting edge strength weakens
- 3. If relief angle is small Chattering occurs

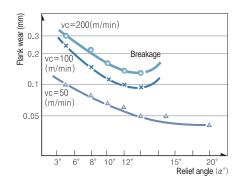
#### Selection system

- 1. Hard workpiece/When strong cutting edge is needed
  - Low relief angle
- 2. Soft workpiece/Workpiece turning to work hardening easily
  - High relief angle



• Workpiece: SNCM431 (HB)

• Grade: P20
• Depth of cut: 1 mm
• Feed: 0.32 mm/rev
• Cutting time: 20 min



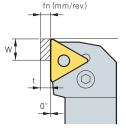
## Side cutting edge angle

 Side cutting edge angle has big influence on chip flow and cutting force therefore proper Side cutting edge angle is very important

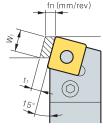
#### Side cutting edge angle and chip thickness

- As side cutting edge angle is getting bigger chips are getting thinner and wider (refer to left picture)
- At the same feed and depth of cut with approach angle 0° Chip thickness is the same as feed (t = fn) and chip width is equal to depth of cut (W=ap)

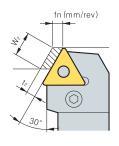
 $t_1 = 0.97t, W_1 = 1.04W$  $t_2 = 0.87t, W_2 = 1.15W$ 



① Approach angle 0°



② Approach angle 15°



3 Approach angle 30°

## • Side cutting edge angle and 3 cutting forces

#### **Affects**

- Big side cutting edge angle with the same feed makes chip attaching length longer and chip thickness thinner. So that cutting forces scatter to long cutting edge therefore tool life gets longer
- Big side cutting edge angle for machining long bars can cause bending

## Selection system

- 1.Deep depth of cut finishing/Long thin workpiece/Low machine rigidity
- Side cutting edge angle
- 2.Hard and high calorific power workpiece/Roughing big workpiece/ High machine rigidity - Side cutting edge angle

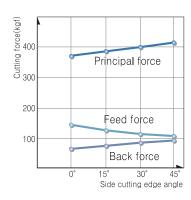
## • Workpiece : SCM440 (HB250)

• **Grade:** TNGA220412

• vc: 100 m/min

• ap: 4 mm

• fn: 0.45 mm/rev

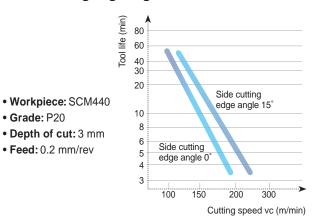


## Side cutting edge angle and cutting load

# fn (mm/rev) fn (mm/rev) 2 "Force P is scattered to P1, P2." ① "Force P is loaded."

As approach angle gets bigger Back force gets bigger and feed force gets smaller

## • Side cutting edge angle and tool life



## Side cutting edge angle and cutting performance

Specification	Low Approach angle High
Wear rate	High ∢> Low
Workpiece	Easy to cut material   → Difficult to cut material
Machining power	Small ∢····· > Big
Chatter	Hard to occur ← ➤ Easy to occur
How to machine	Finishing
Workpiece rigidity	Long thin workpiece ◆ Thick workpiece
Machine rigidity	In case of low rigidity ◀ In case of high rigidity

• Grade: P20

## End cutting edge angle

• It affects machined surface to prevent interference between surface of workpiece and insert

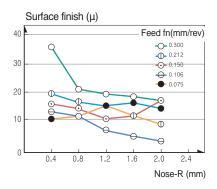
#### **Affects**

- 1. If end cutting edge angle reduces cutting edge get stronger but cutting heat generated by machining increases
- 2. Small end cutting edge angle can cause chattering due to the increases cutting force

#### Nose-R

- Nose-R affects not only surface roughness but strength of cutting edge
- In general, It's desirable that Nose-R is 2~3 times bigger than feed

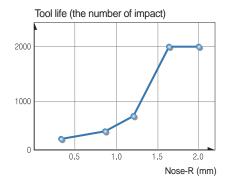
#### Nose R and surface finish



• Workpiece: SNCM439, HB200

• Grade: P20 • vc: 120 m/min • ap: 0.5 mm

#### Nose R and tool life



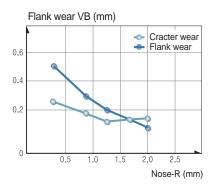
• Workpiece: SCM440, HB280

• Grade: P10

• vc: 100 m/min, ap: 0.5 mm

• fn: 0.3 mm/rev

#### Nose R and wear of tool



• Workpiece: SNCM439, HB200

• Grade: P10

• vc: 140 m/min, ap: 2 mm

• fn: 0.2 mm/rev, T: 10 min



# **Technical Information for Turning**

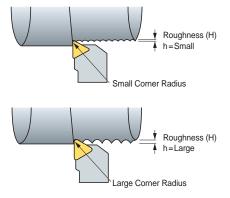
## Nose-R

#### Affects

- 1. Big Nose-R improves surface finish
- 2. Big Nose-R improves cutting edge strength
- 3. Big Nose-R reduces flank wear and crater wear
- 4. Too big Nose-R causes chattering due to increased cutting force

#### Selection system

- 1. For finishing with small depth of cut/long and thin workpiece/ When machine power is low - Small Nose-R
- 2. For applications that need strong cutting edge such as intermittent and machining mill scale/For roughing of big workpiece/When the machine power is strong eough Big Nose-R



## • Relationship between nose radius, feed and various surface roughness

Nose R Feed (mm/rev)	0.4	0.8	1.2
0.15			
0.26			
0.46			

## Cutting edge shape and the affects

## Rake angle (a)

Rake angle has big influence on cutting force, chip flow and tool life

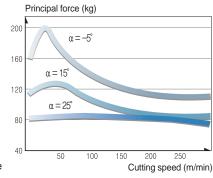
#### **Affects**

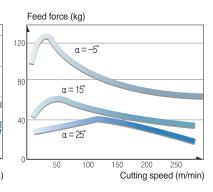
- 1. High rake angle results in good suface finish
- 2. As the rake angle increases by 1° Machining power decreases by 1%.
- 3. High rake angle weakens cutting edge

#### Selection system

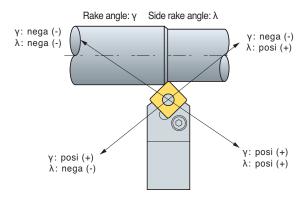
- For hard workpiece/For applications that need strong cutting edge such as interrupted and machining mill scale - Low rake angle
- For soft workpiece/Easy to cut material/When the rigidity of machine power and workpiece is low
   High rates and a

- High rake angle

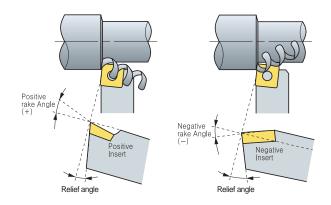




## • Rake angle and the direction of chip flow



In order to prevent machined surface from damages Avoid nega, posi combination.  $\gamma : \text{nega (-)} \quad \lambda : \text{posi (+)}$ 



## Selecting proper tools

• Nowadays, It's very difficult to select the best tools in complicating tooling system and various cutting conditions However, It can be simplified by classifying basic factors below

#### Selection of inserts and tool holder

Listed below is the basic factors and choose B according to A

#### A: Basic factors

- · Workpiece material
- · Workpiece shape
- · Workpiece size
- · Hardness of workpiece
- · Surface roughness of workpiece (before machining)
- · Surface finish required
- · Type of lathe machine
- · Condition of lathe machine (rigidity, power etc)
- · Horse power of machine
- · Clamping method of workpiece

#### B: Selection system

- ① Select as big approach angle as possible
- ② Select as big shank as possible
- 3 Select as strong cutting edge of insert as possible
- 4 Select as big nose radius as possible
- ⑤ In finishing, Select the insert using many corners
- 6 Select as small insert as possible
- ② Cutting speed should be determined carefully according to cutting conditions
- ® Select as deep depth of cut as possible
- 9 Select as fast feed as possible
- © Cutting condition should be determined within chip breaker application ranges

# **Technical Information for Turning**

# **○** Trouble shooting

	Tool failur	е	Cause	Solution
Crater wear			Improper grade     Excessive cutting condition	Choose harder grade     Decrease cutting condition
Fracture			Improper grade     Excessive feed     Shorten cutting edge strength     Insufficient rigidity of holder	Choose tougher grade Decrease feed Apply to large honed or chamfered edge Choose bigger size holder
Plastic deforma	ation		Improper grade     Excessive cutting condition     High cutting temperature	Choose harder grade Decrease cutting condition Choose grade wich heat conductivity are big
Wear on nose r (Flank wear)	radius		When the hardness of workpiece is too high compare with tool     When machinig surface hardened workpiece     Improper grade     Excessive cutting speed     Too small relief angle     Too low feed	Choose harder grade Decrease cutting speed Choose lager relief angle Increase feed
Thermal crack			Expansion and shrinking by cutting temperature     Improper grade (*Specially milling operation)	Apply to dry cutting     (In case of wet cutting, use enough coolant)     Choose tougher grade
Chipping			Improper grade     Excessive feed     Shorten cutting edge strength     Insufficient rigidity of holder	Choose tougher grade Decrease feed Apply to large honing or chamfer edge Choose bigger size holder
Notch wear			Surface hardened workpiece     Friction due to bad chip geometry (Generate vibration)	Choose harder grade     Improve chip control form large rake angle
Flaking			Deposition on cutting edge     Bad chip control	Improve cutting performance fromd large rake angle     Apply to chip pocket with big size
Complete brea	akage		Unusable condition due to wear off the most parts of cutting edge by progress of wear	<ul> <li>Reduce the feed rate.</li> <li>Reduce the depth of cut.</li> <li>Select a tougher grade.</li> <li>Select a stronger chipbreaker.</li> <li>Select a thicker insert.</li> </ul>
Built-up edge			Slow cutting speed     Sticky materials	<ul><li>Increase cutting speed.</li><li>Use more positive rake geometry.</li><li>Use tougher grade</li></ul>

# Types of tool failure and trouble shooting

										Solu	ution								
		Cut	ting c	ondit	ions	Selec	cting i	nsert (	grade			То	ol sha	аре			Mach	ine cla	mping
Troubles	Causes	Cutting speed	Feed	Depth of cut	Coolant	Select harder grade	Select tougher grade	Select better heat-impact resistance grade	Select better adhesion resistance grade	Chip breaker valuation	Rake angle	Nose radius	Side cutting edge angle	Cutting edge strength Honing	Improving insert precision M class → G class	Improving holder rigidity	Clamping workpiece	Holder overhang	Machine vibration
Poor precision Unstable machining	Insert precision is variable														•				
size	Workpiece, Separation of tool									•	t	1				•	•	•	•
Cutting edge back thrust is big It's necessary to adjust	Flank wear increase					•						1							
because machining precision changes during operation.	Cutting condition is improper	1	1			•													
	Weakened cutting force by increasing wear of tool	1			Wet cutting				•	•	t	1		1	•				
	Cutting edge chipping		1	1			•			•		1		1			•	•	•
Poor surface roughness for	Adhesion, built-up edge	t	1		Wet cutting				•	•	t			1	•				
<b>finishing</b> Criterion of tool life.	Improper cutting conditions	1	1	1	Wet cutting														
	Improper tool and shape of cutting edge									•		1		1	•				
	Vibration, chattering	1	1	1	Wet cutting		•			•	t	1		1		•	•	•	•
Cutting heat generation Poor machining precision	Improper cutting conditions	1	1	1		•													
and short tool life by cutting heat	Improper tool and shape of cutting edge									•	t			1					
Burr, chipping, nap	Improper cutting conditions	1	1		Wet cutting	•													
steel, aluminum (burr)	Wear on the tool, improper shape of cutting edge								•	•	1	1		1					
Cast iron	Improper cutting conditions		1	1		•													
(Weak chipping)	Wear on the tool, improper shape of cutting edge									•	1	1		1		•	•	•	•
Soft steel (nap)	Improper cutting conditions	1	1		Wet cutting	•													
Out steel (liah)	Wear on the tool, improper shape of cutting edge								•	•	1			1					

**↑**: Increase **↓**: Decrease **•**: use **•**: Correct use

## **○** Tool life criterion

## • KS B0813

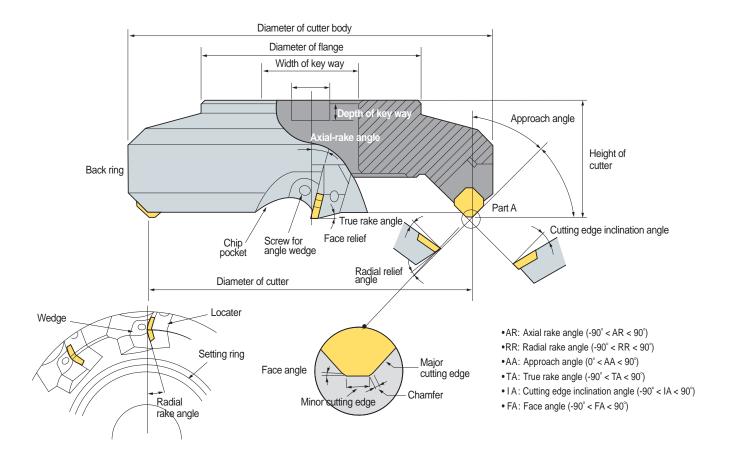
	0.2 mm	Precision light cutting , Finishing in nonferrous alloy	
Flank	0.4 mm	Machining special steel	
wear width	0.7 mm	General cutting in cast iron, steel etc	
	1~1.25 mm	General cutting in cast iron, steel etc	
Depth of crater wear	In general 0.05~0.1 mm		

## • ISO (B8688)

Tool life criterion	Application
Complete breakage	Machining special steel
Flank wear width VB = 0.3 mm	Even flank wear of cemented carbides, Ceramic tool
VBmax = 0.5 mm	Uneven flank wear
Crater wear width KT = 0.06+0.3fmm (f:mm/rev)	Cemented carbides tool
Criterion by surface roughness 1, 1.6, 2.5, 4, 6.3, 10µmRa	When surface roughness is important

# **Technical Information for Milling**

## Milling cutter shape and designation



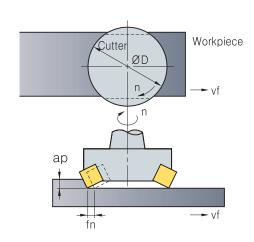
## • The terminology and functions of cutting edge angle

No.	Tool failure	Symbol	Function	Effects
1	Axial rake angle	A.R	Chip flow direction, Adhesion	Positive: Excellent cutting, built-up edge prevented
2	Radial rake angle	R.R	Affecting on thrust	Negative: Excellent chip control
3	Approach angle	A.A	Chip thickness, Determines flow direction	(+): Chip thickness become thinner, cutting force could be reduced
4	True rake angle	T.A	Effective rake angle	(+): Better cutting. Preventing adhesion, Weakening cutting edge strength (–): Cutting edge strength increases, easy to adhere
5	Cutting edge inclination angle	I.A	Determines chip flow direction	(+): Good chip flow, cutting force could decreases, Comer edge strength weakens
6	Relief angle	F.A	Controlling cutting edge strenght, tool life and chattering	Surface roughness increases as F.A gets close to 0 degree

## Features by combination of rake angle

	Double positive angle	Double negative angle	Posi - Negative angle	Nega - Positive angle
Division	A·R(+)	A·R(-)	A·R(+)	A·R(-)
Use	General machining of steel, cast iron, stainless steel     Machining soft steel that brings about built-up edge easily     Machining material having tendency to poor surface roughness	Under interrupted cutting condition     Roughing of cast iron and steel	Machining difficult to cut material     Roughing with deep depth of cut and wide width of cut in steel and cast iron	Chip flows to center of cutter body
Advantages	• Strong quitting adga		Good chip flow and machinability.     Suitable for machining of difficult-to-cut material	-
Disadvantages	Weak cutting edge strength     Only single sided inserts are available (No economical)     Machine and cutter need enough power and rigidity	Machine and cutter need enough power and rigidity	Only single sided inserts are available (No economical)	Since the chips flows toward the center of cutter. Chips scratch on machined surface     Bad chip flow     No economical

# Major cutting formulas



## Cutting speed

$$vc = \frac{\pi \cdot D \cdot n}{1000} (m/min)$$

- vc: Cutting speed (m/min)
- D: Diameter of tool (mm)
- n: Revolution per minute (min<sup>-1</sup>) π: Circular constant (3.14)

#### Feed

$$fz = \frac{vf}{z \cdot n} (mm/t)$$

- fz: Feed per tooth (mm/t)
- vf: Feed per minute (mm/min) • n: Revolution per minute (min-1)
- z: Number of tooth

## Chip removal amount

$$Q = \frac{Lxvfxap}{1000} (cm^3/min)$$

- Q: Chip removal amount (cm³/min)
- L: Width of cut (mm)
- vf: Table feed (mm/min)
- ap: Depth of cut (mm)

## Power

requirement

$$P_{kw} = \frac{Q \times kc}{60 \times 102 \times \eta}$$

$$P_{hp} = \frac{P_{kw}}{0.75}$$

- Pc: Power requirement (kW)
- H: Horse power requirement (hp) (mm/min)
- Q: Chip removal amount (cm³/min)
- kc: Specific cutting resistance (kgf/mm³)
- η: Machine efficiency rate (0.7~0.8)

#### Machining time

$$T = \frac{60 \text{ x Lt}}{\text{vf}} \text{ (sec)}$$

- 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) x cos(AA) + tan(A) x sin(C)Cutting edge inclination angle tan(I) = tan(A) x cos(AA) - tan(R) x sin(C)

## Values of specific cutting resistance

Workniego	Tensile strength	Spe	cific cuttii to vari	ng resista ous feed k	nce accord c(MPa)	ding
Workpiece	(kg/mm²) and – hardness	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 (AI - Mg)	16	58	48	40	35	32
Light alloy (AI - Si)	20	70	60	52	45	39

## Ohip removal amount (cm³/min) per rated horse power

Workpiece	Rated horse power	5Нр	10Hp	20Hp	30Hp	40Hp	50Hp
	Soft	32	75	163	295	425	570
Steel	Medium	26	55	127	212	310	425
	hard	18	41	93	163	228	310
C4	Soft	52	116	260	455	670	880
Cast	Medium	32	75	163	295	425	570
iron	hard	26	55	127	212	310	425
D	Soft	77	163	390	670	980	1,280
Bronze	Medium	54	118	275	490	700	910
Brass	hard	26	55	127	245	325	425
Aluminum		90	195	440	780	1,110	1,500

## Selection of MILL-MAX diameter (D)

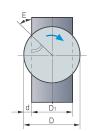
## Selection by machine rigidity

Machine horse power (PS)	10~15	15~20	Over 20
Proper cutter body specification (mm)	Ø80~Ø100	Ø125~Ø160	Ø160~Ø200

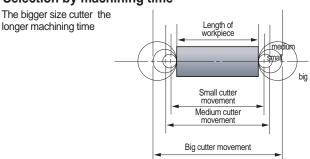
#### Selection by machine rigidity

Workpiece	E	δ
Steel	+20°~-10°	3:2
Cast iron	Under +50°	5:4
Light alloy	Under +40°	5:3

- D: External diameter of cutter body
- D<sub>1</sub>: Width of workpiece
- d: Projected part of cutter body
- E: Engage angle
- δ: Ratio of cutter body and width of workpiece (D: D1)



## Selection by machining time



## • Selection by number of tooth

Workpiece	Steel	Cast iron	Light alloy
Number of tooth	Dx (1~1.5)	Dx (1~4)	D×1+a

ex) D =  $\emptyset 100 \Rightarrow 4$ "  $x(1\sim1.5) = 4\sim6$ 

D is the size of cutter body converted into inch size

## Classification of surface roughness

Туре	Symbol	How to calculate	Measured value
Maximum height	Rmax	<ul> <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>	Rmax1 Rmax2 Rmax2  £1 £2 £3 : Measuring length
+10 point mean roughness	Rz	$\bullet$ 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 ( $\mu$ )	Measuring length £
Arithmetic mean roughness	Ra	• Sampling only the reference length from the roughness curve in the direction of mean line , taking X-axis in the direction of mean line and Y-axis in the direction of longitudinal magnification of this sampled part and is expressed by micro meter ( $\mu$ ) • Generally, Read measured value by Ra measurer	Measured surface roughness curve f  Measuring length ?  Measured surface roughness curve f  Measuring length ?

Finish m	ark	$\nabla\nabla\nabla\nabla$	$\nabla\nabla\nabla$	$\nabla\nabla$	∇	~
Cuntaga	Rmax	0.8s	6.3s	25s	100s	
Surface roughness	Rz	0.8z	6.3z	25z	100z	Unspecified
rouginiess	Ra	0.2a	1.6a	6.3a	25a	

# Trouble shooting for milling

							Solution	s				
Trouble	Causes		Cutting o	onditio	าร			Tool shap	ре		Inser	t grade
		Cutting speed	Depth of cut	Feed	Coolant	Rake angle	Relief angle	Approach angle	Chattering at cutting edge	Nose radius	Toughness	Hardness
Flank wear	Improper insert grade     Improper cutting conditions     Chattering	1		1			1	1		t		t
Crater wear	Improper cutting conditions     Improper insert grade	1	1	1	•	<b>†</b>	t			1		t
Chipping	Lack of insert toughness     Excessive feed     Excessive cutting load			1		1	1	1		t	t	
Built-up edge	Improper cutting conditions     Improper cutting edge shape     Improper insert grade	1	1			1				1		
Chattering	Improper cutting conditions     Lack of number of cutting teeth     Improper cutting edge shape     Bad chip flow     Unstable workpiece clamping		1	1	•	t		1	1	1		
Poor surface finish	Built-up edge     Improper cutting conditions     Chattering     Bad chip flow	t	1	1	•	t			1	1		
Thermal crack	Improper cutting conditions     Improper insert grade	1	1	1	•	t				1	t	
Fracture	Improper insert grade     Excessive cutting load     Bad chip flow     Chattering     Excessive overhang		1	ţ	•						1	

**↑**: Increase **↓**: Decrease **•**: use **•**: Correct use

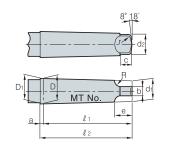
# General formulas for milling

## • Machine efficiency rate (η)

Power transmission mode	Efficiency rate (E)	Reference
Principal axis direct connection driving	0.90	
Belt driving	0.85	Double connection: 0.85 × 0.85 ≒ 0.70
Starting driving	0.75	
Oil pressure driving	0.60~0.90	

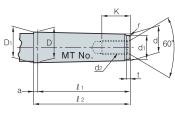
# **Technical Information for Tapers**

# Morse taper (Tang type)



														(111111)
MTNo.	Taper	Taper angle (a)	D	а	<b>D</b> <sub>1</sub>	d₁	Q1	Q2	<b>d</b> <sub>2</sub>	b	С	е	R	r
0	<u>1</u> 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	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	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	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	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	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	<u>1</u> 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	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

# Morse taper (Screw type)

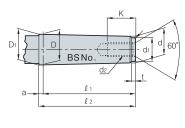


	MTNo.	Taper	Taper angle (a)	D	а	<b>D</b> <sub>1</sub>	d	Q1	Q <sub>2</sub>	d₁	d <sub>2</sub>	k	t	r
	0	<u>1</u> 19.212	1°29′27″	9.045	3	9.201	6.442	50	53	6	-		4	0.2
	1	20.047	1°25′43″	12.065	3.5	12.230	9.396	53.5	57	9	M6	16	5	0.2
١	2	20.020	1°25′50″	17.780	5	18.030	14.583	64	69	14	M10	24	5	0.2
•	3	19.922	1°26′16″	23.825	5	24.076	19.759	81	86	19	M12	28	7	0.6
	4	<u>1</u> 19.254	1°29′15″	31.267	6.5	31.605	25.943	102.5	109	25	M16	32	9	1
	5	19.002	1°30′26″	44.399	6.5	4.741	37.584	129.5	136	35.7	M20	40	9	2.5
	6	<u>1</u> 19.180	1°29′36″	63.348	8	63.765	53.859	182	190	51	M24	50	12	4
	7	<u>1</u> 19.231	1°29′22″	83.058	10	83.578	70.058	250	260	65	M33	80	18.5	5

(mm)

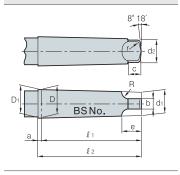
(mm)

# Brown sharp taper (Screw type)



B&S No.	D	а	<b>D</b> <sub>1</sub>	d	d <sub>1</sub>	Q1	Q <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

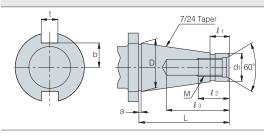
## **Brown sharp taper (Tang type)**



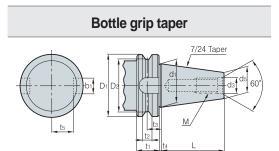
B&S No.	D	а	$\mathbf{D}_1$	<b>d</b> 1	$d_2$	Q1	Q <sub>2</sub>	b	С	е	R	r
4	10.221	2.4	10.321	8.458	8.1	42.1	44.5	5.5	8.7	14.4	7.9	1.3
5	13.286	2.4	13.386	10.962	10.7	55.6	58.0	6.3	9.5	16.2	7.9	1.5
6	15.229	2.4	15.330	12.167	11.7	73.0	75.4	7.1	11.1	18.0	7.9	1.5
7	18.424	2.4	18.524	14.675	14.2	89.7	92.1	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	190	32.5	12.7	3.8
13	52.654	3.2	52.787	43.589	43.4	217.5	220.7	12.7	19.0	35.7	15.9	4.3
14	59.533	3.2	59.666	49.841	49.8	232.6	235.8	14.2	21.4	41.2	19.0	4.8
15	66.408	3.2	66.541	56.186	56.1	245.3	248.5	14.2	21.4	44.4	22.2	5.3
16	73.292	3.2	73.425	62.441	62.2	260.4	263.6	15.8	23.8	50.0	25.4	5.8

# **Technical Information for Tapers**

## Standard taper of american milling machine

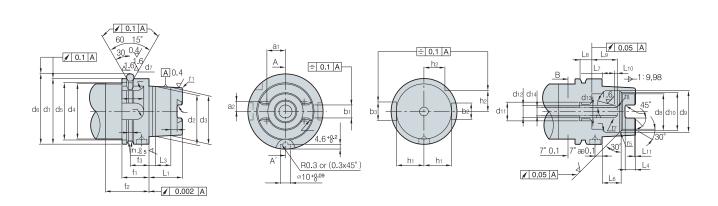


D	D <sub>1</sub>	L	Q <sub>1</sub>	М	Q <sub>2</sub>	Qз	а	t	b
1.750	17.40 <sup>-</sup> 0.29	70	20	UNC $\frac{1}{2}''$	24	50	1.6	15.9	6
4.450	25.32 <sup>-0.30</sup> <sub>-0.384</sub>	95	25	UNC $\frac{5''}{8}$	30	60	1.6	15.9	22.5
9.850	39.60 <sup>- 0.31</sup> - 0.41	130	25	UNC 1"	45	90	3.2	25.4	35
7.950	60.20-0.34	210	45	UNC $1\frac{1''}{4}$	56	110	3.2	25.4	60
1 4 9	.750 .450 .850	750 17.40 0.29 0.36 450 25.32 0.384 850 39.60 0.31	750 17.40 0.29 70 450 25.32 0.384 95 850 39.60 0.31 130	750 17.40 <sup>-0.29</sup> <sub>-0.36</sub> 70 20 450 25.32 <sup>-0.30</sup> <sub>-0.384</sub> 95 25 850 39.60 <sup>-0.31</sup> <sub>-0.41</sub> 130 25	7.50 $17.40_{-0.36}^{-0.29}$ 70 20 UNC $\frac{1}{2}^{"}$ 450 $25.32_{-0.384}^{-0.30}$ 95 25 UNC $\frac{5}{8}^{"}$ 850 $39.60_{-0.41}^{-0.31}$ 130 25 UNC 1"	7.50 $17.40_{-0.36}^{-0.29}$ 70 20 UNC $\frac{1}{2}^{"}$ 24 4.50 $25.32_{-0.384}^{-0.30}$ 95 25 UNC $\frac{5}{8}^{"}$ 30 8.50 $39.60_{-0.41}^{-0.31}$ 130 25 UNC 1" 45	7.50 $17.40_{-0.36}^{-0.29}$ 70 20 UNC $\frac{1}{2}^{"}$ 24 50 450 $25.32_{-0.384}^{-0.30}$ 95 25 UNC $\frac{5}{8}^{"}$ 30 60 850 $39.60_{-0.41}^{-0.31}$ 130 25 UNC 1" 45 90	7.50 $17.40_{-0.36}^{-0.29}$ 70 20 UNC $\frac{1}{2}$ 24 50 1.6 4.50 $25.32_{-0.384}^{-0.30}$ 95 25 UNC $\frac{5}{8}$ 30 60 1.6 8.50 $39.60_{-0.41}^{-0.31}$ 130 25 UNC 1" 45 90 3.2	D         D1         L $Q_1$ M $Q_2$ $Q_3$ a         t           .750         17.40 $^{-0.29}_{-0.36}$ 70         20         UNC $\frac{1}{2}^{"}$ 24         50         1.6         15.9           .450         25.32 $^{-0.30}_{-0.384}$ 95         25         UNC $\frac{5}{8}^{"}$ 30         60         1.6         15.9           .850         39.60 $^{-0.31}_{-0.41}$ 130         25         UNC 1"         45         90         3.2         25.4           .950         60.20 $^{0.34}_{-0.46}$ 210         45         UNC 1 $\frac{1}{4}^{"}$ 56         110         3.2         25.4



													(mm)
BT No.	D <sub>1</sub>	$D_2$	t <sub>1</sub>	<b>t</b> 2	<b>t</b> <sub>3</sub>	<b>t</b> 4	d₁	d₃	L	M	<b>b</b> <sub>1</sub>	<b>t</b> 5	<b>d</b> 5
35	53	43	22	10	14.6	2	38.1	13	56.5	M12×1.75	16.1	19.6	21.62
40	63	52	25	10	16.6	2	44.45	17	65.4	M16×2	16.1	22.6	25.3
45	85	73	30	12	21.2	3	57.15	21	82.8	M20×25	19.3	29.1	33.1
50	100	85	35	15	23.2	3	69.85	25	101.8	M24×3	25.7	35.4	40.1
60	155	135	45	20	28.2	3	107.95	31	161.8	M30×3.5	25.7	60.1	60.7

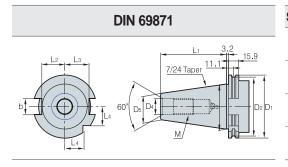
# **HSK shank (DIN 69893)**



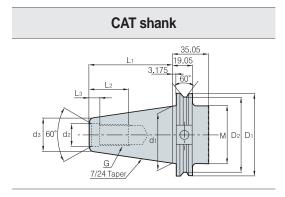
																			(mm)
HSK No.	<b>b</b> <sub>1</sub>	<b>b</b> <sub>2</sub>	<b>b</b> 3	d₁	d <sub>2</sub>	<b>d</b> ₃	<b>d</b> 4	<b>d</b> 5	<b>d</b> 6	<b>d</b> 7	d₃	<b>d</b> 9	<b>d</b> 10	<b>d</b> 11	<b>d</b> 12	<b>d</b> 13	<b>d</b> 14	<b>a</b> 1	<b>a</b> 2
50	10.54	12	14	50	38	36.90	42	43	59.3	7	26	32	29	M16X1	10	6.8	6.8	13.997	7.648
63	12.5	16	14	63	48	46.53	53	55	72.3	7	34	40	37	M18X1	12	8	8.4	17.862	9.25
100	20	20	14	100	75	72,80	85	92	109.75	7	53	63	58	M24X1.5	16	12	12	27.329	15.00

																										(mm)
HSK No.	<b>f</b> 1	<b>f</b> <sub>2</sub>	<b>f</b> 3	f <sub>4</sub>	<b>b</b> <sub>1</sub>	<b>b</b> <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	$L_6$	L <sub>7</sub>	L	L <sub>9</sub>	L <sub>10</sub>	L <sub>11</sub>	L <sub>12</sub>	<b>r</b> 1	<b>r</b> 2	<b>r</b> 3	r <sub>4</sub>	<b>r</b> 5	<b>r</b> 6	<b>r</b> 7	<b>r</b> 8
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

# **Technical Information for Tapers**

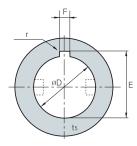


											(mm)
Shank No	D <sub>1</sub>	$D_2$	<b>D</b> <sub>3</sub>	$D_4$	<b>D</b> <sub>5</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L	b	M
30	50.0	44.3	31.75	13	17.8	47.8	16.4	19.0	33.5	16.0	M12×1.75
40	63.5	56.2	44.45	17	24.5	68.4	22.8	25.0	42.5	16.1	M16x2
45	82.5	57.2	57.15	21	33.0	82.7	29.1	31.3	52.5	19.3	M20×2.5
50	97.5	91.2	68.85	25	40.1	101.7	35.5	37.7	61.5	25.7	M24x3



										(mm)
Shank No	D <sub>1</sub>	$D_2$	M	<b>d</b> 1	d <sub>2</sub>	d₃	L <sub>1</sub>	$L_2$	L <sub>3</sub>	G
CAT40	63.5	56.36	M16×2	44.45	16.28	21.84	68.25	28.45	4.78	5/8-11
CAT45	82.55	75.41	M20×25	57.15	19.46	27.69	82.55	38.1	4.78	3/4-10
CAT50	98.43	91.29	M24x3	69.85	26.19	35.05	101.6	44.45	6.35	1-8

## Standard of milling cutter hole (KSB3203)



## Type A

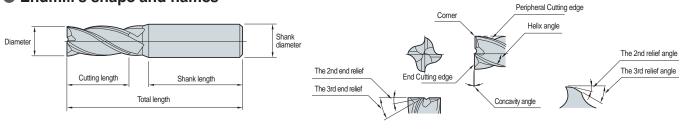
Турсл				
Diameter	øDH <sub>7</sub>	Е	F	r
8	8 + 0.015 0	8.9 + 0.25	2 + 0.16 + 0.06	0.4
10	10 + 0.015	11.5 + 0.25	3 + 0.16 + 0.06	0.4
13	13 + 0.018	14.6 + 0.25	3 +0.16 +0.06	0.6
16	16 <sup>+ 0.018</sup>	17.7 + 0.25	4 + 0.19 + 0.07	0.6
19	19 <sup>+ 0.021</sup>	21.1 + 0.25	5 + 0.19 + 0.07	1
22	22 + 0.021	24.1 + 0.25	6 + 0.19 + 0.07	1
27	27 + 0.021	29.8 + 0.25	7 + 0.23 + 0.08	1.2
32	32 + 0.025	34.8 + 0.25	8 + 0.23 + 0.08	1.2
40	40 + 0.025	43.5 + 0.3	10 + 0.23 + 0.08	1.2
50	50 + 0.025	53.5 + 0.3	12 <sup>+ 0.23</sup> + 0.095	1.6
60	60 + 0.030	64.2 + 0.3	14 + 0.275 + 0.095	1.6
70	70 + 0.030	75.0 + 0.3	16 + 0.275 + 0.095	2
80	80 + 0.030	85.5 + 0.3	18 + 0.275 + 0.095	2
100	100 + 0.035	107.0 + 0.3	24 + 0.32 + 0.11	2.5

## ● Type B

Diameter	øDH <sub>7</sub>	E	F	r
1 2	12.70 + 0.018	14.17 + 0.25	2.38 + 0.31 + 0.13	0.5
<u>5</u> 8	15.875 <sup>+ 0.018</sup>	17.74 + 0.25	3.18 <sup>+ 0.31</sup> + 0.13	0.8
3 4	19.050 + 0.021	20.89 + 0.25	3.18 <sup>+ 0.31</sup> + 0.13	0.8
7 8	22.225 + 0.021	24.07 + 0.25	3.18 <sup>+ 0.31</sup> + 0.13	0.8
1	25.40 <sup>+ 0.021</sup>	28.04 + 0.25	6.35 <sup>+ 0.31</sup> + 0.13	1.2
1-1/4	31.750 + 0.025	35.18 <sup>+ 0.25</sup>	7.94 <sup>+ 0.32</sup> + 0.14	1.6
1-1/2	38.10 + 0.025	42.32 + 0.25	9.53 <sup>+ 0.89</sup> + 0.25	1.6
1 3	44.450 <sup>+</sup> 0.025	49.48 + 0.25	11.11 <sup>+ 0.89</sup> <sub>+ 0.25</sub>	1.6
2	50.80 + 0.03	55.83 <sup>+ 0.25</sup>	12.7 <sup>+ 0.89</sup> + 0.25	1.6
2-1-2	63.50 + 0.03	69.42 + 0.25	15.81 <sup>+ 0.89</sup> <sub>+ 0.25</sub>	1.6
3	76.20 <sup>+ 0.03</sup>	82.93 <sup>+ 0.25</sup>	19.05 <sup>+ 0.89</sup> <sub>+ 0.25</sub>	2.4
3 1 2	88.90 <sup>+ 0.035</sup>	98.81 <sup>+ 0.25</sup>	22.23 <sup>+0.89</sup> <sub>+0.25</sub>	2.4
4	101.60 + 0.035	111.51 <sup>+</sup> 0.25	25.4 <sup>+ 0.89</sup> + 0.25	2.4
4 1 2	114.30 + 0.035	125.81 <sup>+0.25</sup>	25.58 <sup>+ 0.89</sup> <sub>+ 0.25</sub>	3.2
5	127.0 + 0.04	140.08 + 0.25	31.75 <sup>+0.89</sup> <sub>+0.25</sub>	3.2

## **Technical Information for Endmills**

## Endmill's shape and names



## The comparison according to number of flute

#### • Features of number of flute

Ø10 mm	2 flutes	3 flutes	4 flutes			
Shape						
Cross section	44 mm <sup>2</sup>	46 mm <sup>2</sup>	48 mm <sup>2</sup>			
Ratio	56%	58%	61%			
Advantages	Good chip flow	Good chip flow	High rigidity			
Disadvantages	Weak rigidity	Difficult to measure external diameter	Bad chip flow			
Headoc	Side facing, Grooving	Side facing, Grooving	Side cutting			
Usages	Multi-functional	Medium, finishing	Finishing			

#### Affection of number of flute

Specification	Major features	2 flutes	4 flutes
Tool rigidity	Torsional rigidity	0	0
Tool rigidity	Bending rigidity	0	0
Surface finish	Surface roughness	0	0
Surface fillish	Machining precision	0	0
Chin control	Chip clogging	0	0
Chip control	Chip evacuation	0	0
Creating	Chip evacuation	0	0
Grooving	Grooving	0	0
Cido facina	Surface finish	0	0
Side facing	Vibration	0	0

O: Excellent O: Good

## • The differences between general endmills and high speed endmills

	General endmills	High speed endmills						
Cross section shape	Features	Cross section shape	Features					
	- Applied for Low speed, High depth of cut, Low feed - Low hardness workpiece(general steel, cast iron)		- Applied for high speed, low depth of cut, high feed - Useful for hardened workpiece such as die steel					

# Calculations of cutting condition

# Calculations of Cutting speed

$$vc = \frac{\pi \times D \times n}{1000} \qquad n = \frac{1000 \times vc}{\pi \times D}$$

## Calculations of feed speed

 $vf = n \times fn \text{ or } n \times fz \times z$ 

$$fn = \frac{vf}{n}$$
  $fz = \frac{fn}{z}$  or  $\frac{vf}{n \times z}$ 

vc: Cutting speed (m/min)

π: Circular constant (3.141592)

vf: Feed speed (m/min)

fn: Feed per revolution (mm/rev)

D: Endmill diameter (mm)

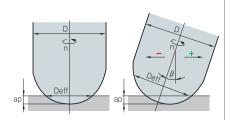
fz: Feed per flute (mm/t)

n: Revolution per minute (min-1) z: Number of flute

## Ball endmills cutting speed calculation formulas

Revolution per minute	$n = \frac{vc \times 1000}{D \times \pi}$				
Cutting speed	$vc = \frac{D \times \pi \times n}{1000}$				
Feed per tooth	$fz = \frac{vf}{z \times n}$				
Feed per revolution	$fn = fz \times z$				
Feed speed	$vf = fz \times z \times n$				
Chip removal rate	$Q = ae \times ap \times vf$				

Effective diameter of Ball Endmill



 $D_{eff} = 2 \times \sqrt{DXap-ap^2} \frac{Calculation}{Table}$ 

 $D_{eff} = D \times sin \left[ \beta \pm arccos \left( \frac{D-2ap}{D} \right) \right]$ 

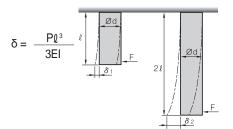
## The affection of flute length

## Expression of aspect ratio

- Aspect ratio
- Q/d
- Ex) 3D, 15D, 22D

## • Deformation rate according to length

- Deformation rate is reaction force against external force
- Proportional to the cube of length
- Set flute length and overall length as short as possible
- The more flute the better rigidity
- When flute width rate is narrower drill's rigidity is higher



 $\delta$  = Deformation volume  $\ell$  = Length of cut

**P** = Cutting force **E** = Elasticity coefficient

I = Inertia moment (I = 
$$\frac{\pi G^*}{64}$$

• 
$$\delta$$
1:  $\delta$ 1 =  $8\delta$ 1 =  $\delta$ 2

## Spindle revolution conversion table (RPM) - external diameter

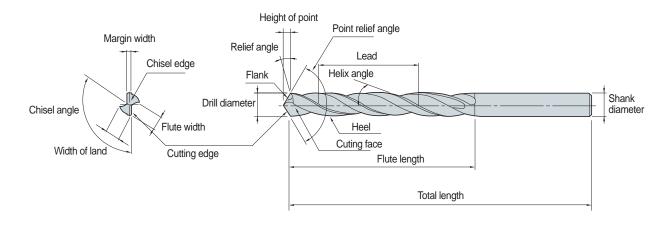
VC							Cuttii	ng spee	d (vc, m	/min)						
External	20	30	40	50	60	70	80	90	100	120	140	150	180	200	250	300
0.2	31,831	47,746	63,662	79,577	95,493	111,408	127,324	143,239	159,155	190,986	222,817	238,720	286,479	318,310	397,887	477,465
0.3	21,221	31,831	42,441	53,052	63,662	74,272	84,883	95,493	106,103	127,324	148,545	159,155	190,986	212,207	265,258	318,310
0.4	15,915	23,873	31,831	39,789	47,746	55,704	63,662	71,620	79,577	95,493	111,408	119,366	143,239	159,155	198,944	238,732
0.5	12,732	19,099	25,465	31,831	38,197	44,563	50,930	57,296	63,662	76,394	89,127	95,493	114,592	127,324	159,155	190,986
0.6	10,610	15,915	21,221	26,526	31,831	37,136	42,441	47,746	53,052	63,662	74,272	79,577	95,493	106,103	132,629	159,155
0.7	9,095	13,642	18,189	22,736	27,284	31,831	36,378	40,926	45,473	54,567	63,662	68,209	81,851	90,946	113,682	136,419
0.8	7,958	11,937	15,915	19,894	23,873	27,852	31,831	35,810	39,789	47,746	55,704	59,683	71,620	79,577	99,472	119,366
0.9	7,074	10,610	14,147	17,684	21,221	24,757	28,294	31,831	35,368	42,441	49,515	53,052	63,662	70,736	88,419	106,103
1	6,366	9,549	12,732	15,915	19,009	22,282	25,465	28,648	31,831	38,197	44,563	47,746	57,296	63,662	79,577	95,793
1.5	4,244	6,366	8,488	10,610	12,732	14,854	16,977	19,099	21,221	25,465	29,709	31,831	38,197	42,441	53,052	63,662
2	3,183	4,775	6,366	7,958	9,549	11,141	12,732	14,324	15,915	19,099	22,282	23,873	28,648	31,831	39,789	47,746
2.5	2,546	3,820	5,093	6,366	7,639	8,913	10,186	11,459	12,732	15,279	17,825	19,099	22,918	25,465	31,831	38,197
3	2,122	3,183	4,244	5,305	6,366	7,427	8,488	9,549	10,610	12,732	14,854	15,915	19,099	21,221	26,526	31,831
3.5	1,819	2,728	3,638	4,547	5,457	6,366	7,276	8,185	9,095	10,913	12,732	13,642	16,370	18,189	22,736	27,284
4	1,592	2,387	3,183	3,979	4,775	5,570	6,366	7,162	7,958	9,549	11,141	11,937	14,324	15,915	19,894	23,873
4.5	1,415	2,122	2,829	3,537	4,244	4,951	5,659	6,366	7,074	8,488	9,903	10,610	12,732	14,147	17,684	21,221
5	1,273	1,910	2,546	3,183	3,820	4,456	5,093	5,730	6,366	7,639	8,913	9,549	11,459	12,732	15,915	19,099
5.5	1,157	1,736	2,315	2,894	3,472	4,051	4,630	5,209	5,787	6,945	8,102	8,681	10,417	11,575	14,469	17,362
6	1,061	1,592	2,122	2,653	3,183	3,714	4,244	4,775	5,305	6,366	7,427	7,958	9,549	10,610	13,263	15,915
6.5	979	1,469	1,959	2,449	2,938	3,428	3,918	4,407	4,897	5,876	6,856	7,346	8,815	9,794	12,243	14,691
7	909	1,364	1,819	2,274	2,728	3,183	3,638	4,093	4,547	5,457	6,366	6,821	8,185	9,095	11,368	13,642
7.5	849	1,273	1,698	2,122	2,546	2,971	3,395	3,820	4,244	5,093	5,942	6,366	7,639	8,488	10,610	12,732
8	796	1,194	1,592	1,989	2,387	2,785	3,183	3,581	3,979	4,775	5,570	5,968	7,162	7,958	9,947	11,937
8.5	749	1,123	1,498	1,872	2,247	2,621	2,996	3,370	3,745	4,494	5,243	5,617	6,741	7,490	9,362	11,234
9	707	1,061	1,415	1,768	2,122	2,476	2,829	3,183	3,537	4,244	4,951	5,305	6,366	7,074	8,842	10,610
9.5	670	1,005	1,340	1,675	2,010	2,345	2,681	3,016	3,351	4,021	4,691	5,026	6,031	6,701	9,377	10,052
10	637	955	1,273	1,592	1,910	2,228	2,546	2,865	3,183	3,820	4,456	4,775	5,730	6,366	7,958	9,549
11	579	868	1,157	1,447	1,736	2,026	2,315	2,604	2,894	3,472	4,051	4,341	5,209	5,787	7,234	8,681
12	531	796	1,061	1,326	1,592	1,857	2,122	2,387	2,653	3,183	3,714	3,979	4,775	5,305	6,631	7,958
13	490	735	979	1,224	1,469	1,714	1,959	2,204	2,449	2,938	3,428	3,673	4,407	4,897	6,121	7,346
14	455	682	909	1,137	1,364	1,592	1,819	2,046	2,274	2,728	3,183	3,410	4,093	4,547	5,684	6,821
15	424	637	849	1,061	1,273	1,485	1,698	1,910	2,122	2,546	2,971	3,183	3,820	4,244	5,305	6,366
16	398	597	796	995	1,194	1,393	1,592	1,790	1,989	2,387	2,785	2,984	3,581	3,979	4,974	5,968
17	374	562	749	969	1,123	1,311	1,498	1,685	1,872	2,247	2,621	2,809	3,370	3,745	4,681	5,617
18	354	531	707	884	1,061	1,238	1,415	1,592	1,768	2,122	2,476	2,653	3,183	3,537	4,421	5,305
19	335	503	670	838	1,005	1,173	1,340	1,508	1,675	2,010	2,345	2,513	3,016	3,351	4,188	5,026
20	318	477	637	796	955	1,114	1,273	1,432	1,592	1,910	2,228	2,387	2,865	3,183	3,979	4,775
21	303	455	606	758	909	1,061	1,213	1,364	1,516	1,819	2,122	2,274	2,728	3,032	9,789	4,547
22	289	434	579	723	868	1,013	1,157	1,302	1,447	1,736	2,026	2,170	2,604	2,894	3,617	4,341
23	277	415	554	692	830	969	1,107	1,246	1,384	1,661	1,938	2,076	2,491	2,768	3,460	4,152
24	265	398	531	663	796	928	1,061	1,194	1,326	1,592	1,857	1,989	2,387	2,653	3,316	3,979
25	255	382	509	637	764	891	1,019	1,146	1,273	1,528	1,783	1,910	2,292	2,546	3,183	3,820

# **ᢒ** Tool failure and trouble shooting

Trouble			Solutions																
				Cuttir	ng co	nditio	n			Tool	shap	е		Gr	ade		•	tc	
		Causes	Cutting speed	Feed	Depth of cut	Coolant	Up cut-down cut	Relief angle	Lead angle	Length of flute	Number of flute	Honing	Chip pocket	Toughness	Hardness	Machine rigidity	Machine vibration	Workpiece fixing	Overhang
	Excessive periphery cutting edge	Improper cutting condition	1	1		•											1		
Damage at cutting edge	Chipping	Improper cutting condition Generating built up edge Weak tool rigidity Improper grade		•			1	1				•		1			ţ	1	1
Dama	Fracture during operation	Improper cutting conditions Excessive cutting load Excessive overhang		1	1					1			1			1		1	1
		Generating built-up edge	1	1		•			1			•							
Po	oor surface finish	Chattering	1				1			1						1	1	1	1
		Poor straightness		1	1		1		1	1									1
	machining precision (Machined size, erpendicularity)	Improper cutting conditions Improper tool shape	1	1			1			1	1					1	1		1
Ва	d chip evacuation	Excessive cutting volume Improper chip pocket Improper cutting conditions		1	•						1		1						

↑: Increase ↓: Decrease •: use •: Correct use

# The shape of drills and the names

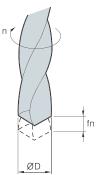


## Shape and the feature of cutting

Halin anala	Plays rake angle of cutting edge's role. If he too big Drill rigidity decreases	lix angle increases Cutting force	decreases. On the other hand If helix angle					
Helix angle	Poor machinability	Iow - Helix angle - high ▶	Smooth chip evacuation					
	Hard workpiece (hardened steel)		Soft material (aluminum etc)					
ength of flute	The path of both chip evacuation and cooling lubricant  Too big length of flute weakens drill rigidity and too small length of flute worsens chip evacuation to breakage							
	Point angle has big influence on cutting performance	ce. It mainly depends on workpiece. In	case of standard drills Point angle is generally 118					
Point angle	thrust resistance decrease	Iow - Point angle - high ▶	thrust resistance increase					
Foilit aligie	Torque increase, Burr on exit increase	Iow - Point angle - high ▶	Torque decrease, Burr on exit decrease					
	Soft material (aluminum etc)	Iow - Point angle - high ▶	Hard workpiece (hardened steel)					
Morein	While machining Margin is the part of contact b	etween workpiece and drill's extern	nal. It prevents bending and plays guide's role					
Margin	Cutting force decrease Poor guide	<ul><li>small - Margin - big ►</li><li>small - Margin - big ►</li></ul>	Cutting force increase Good guide					
	Web is the part of center of drill and drill's ric							
	because drill makes a hole at the beginning o							
Veb thickness	Cutting force decrease	small - Web thickness - big ▶	Cutting force increase					
	Rigidity decrease		Rigidity increase					
	Good chip evacuation	9	Bad chip evacuation					
	Soft material (aluminum etc)		Hard workpiece (hardened steel)					
	Drill diameter size is getting smaller from poin							
Back taper	The decrease of diameter divided by flute len- drills for hole shrinkage workpiece during ope		.04~0.1mm. As for high performance drills an					
	In general drills Thrust effects on chisel over somethin brill rigidity weaken. Therefore without In other words, Thinning makes rake angle at	web thickness change Thinning n	nakes chisel edge short or gives rake angle.					
	is thin Drill rigidity weaken. Therefore without	web thickness change Thinning n chisel and improves chip evacua	nakes chisel edge short or gives rake angle. tion and decrease thrust					
Thinning	is thin Drill rigidity weaken. Therefore without In other words, Thinning makes rake angle at	web thickness change Thinning n chisel and improves chip evacua	nakes chisel edge short or gives rake angle. tion and decrease thrust   Korloy's drills  Mach solid drill (MSD)					

# Major cutting formulas

Cutting speed	Feed	Helix angle	Machining time
$ \text{VC} = \frac{\pi \cdot D \cdot n}{1000} \text{ (m/min)} $ • vc: Cutting speed (m/min) • D: Drill diameter (mm) • n: Revolution per minute (min¹) • $\pi$ : Circular constant (3.14)	fn = \frac{vf}{n} \text{ (mm/rev)}  • fn: Feed per revolution (mm/rev)  • vf: Feed per minute (mm/min)  • n: Revolution per minute (min <sup>-1</sup> )	$\begin{split} \delta &= tan^{\text{-}} \left(\frac{\pi  D}{L}\right) \\ \bullet  \delta \text{: Helix angle} \\ \bullet  D \text{: Drill diameter (mm)} \\ \bullet  L \text{: Lead (mm)} \\ \bullet  \pi \text{: Circular constant (3.14)} \end{split}$	tc = \frac{Id}{n\cdot fn} \text{ (min)}  • tc: Machining time (min)  • n: Revolution per minute (min^1)  • Id: Drilling time (mm)  • fn: Feed (mm/rev)



## **Cutting torque and thrust (calculation formulas)**

$$Md = KD^2 \times (0.0631 + 1.686 \times fn) (kg \cdot cm)$$

$$T = 57.95 KDfn^{0.85}(kg)$$

- Md: Cutting torque (kg-cm)
   T: Cutting thrust (kg)
   D: Drill diameter (mm)

- fn: Feed per revolution (mm/rev)
- K: Material coefficient

Workpi	ece material (SAE/AISI)	Tensile strength (kgf)	Hardness (HB)	Material coefficient K
	Cast iron (Gray)	21	177	1.00
Cast iron	Cast iron	28	198	1.39
	Cast iron (Ductile)	35	224	1.88
	1020(carbon steel C 0.2%)	55	160	2.22
General steel	1112(C 0.12, S 0.2%)	62	183	1.42
	1335(Mn 1.75%)	63	197	1.45
	3115 (Ni 1.25, Cr 0.6, Mn 0.5)	53	163	1.56
Nickel Chrome steel	3120 (Ni 1.25, Cr 0.6, Mn 0.7)	69	174	2.02
31001	3140	88	241	2.32
	4115 (Cr 0.5, Mo 0.11, Mn 0.8)	63	167	1.62
Chrome molybdenum steel	4130 (Cr 0.95, Mo 0.2, Mn 0.5)	77	229	2.10
mory bacham steel	4140 (Cr 0.95, Mo 0.2, Mn 0.85)	94	269	2.41
Nickel	4615 (Ni 1.8, Mo 0.25, Mn 0.5)	75	212	2.12
molybdenum steel	4820 (Ni 3.5, Mo 0.25, Mn 0.6)	140	390	3.44
Chrome steel	5150 (Cr 0.8, Mn 0.8)	95	277	2.46
Chrome	6115 (Cr 0.6, Mn 0.6, V 0.12)	58	174	2.08
vanadium steel	6120 (Cr 0.8, Mn 0.8, V 0.1)	80	255	2.22

## Cutting torque and thrust (empirical formula)

 $Md = K_1d^2 \cdot fn^m$ 

• Md: Cutting torque (kg-cm)

• fn: Feed (mm/rev)

• d: Drill diameter (mm)

 $T = K_2 d \cdot fn^n$ • T: Thrust (kg) • K1, K2, m, n: Experimental Data Characteristic value

Workpiece	<b>K</b> 1	m	<b>K</b> 2	n
Soft steel	5.9	1.00	125.0	0.88
Rolled steel	3.5	1.00	55.0	0.88
7-3 brass	2.5	0.94	44.4	0.87
Aluminum	1.5	0.90	33.3	0.78
Zinc	1.4	0.88	27.0	0.74
Gun metal	2.0	0.94	21.6	0.75
Galvanized iron	0.3	0.57	6.4	0.55

# **Technical Information for Drills**

## Tool failures and solutions

										Sol	lutior	ıs							
				Cuttir	ng cor	nditio	า			Tools	shape	)		Grade		etc			
Tro	uble	Causes	Cutting speed	Feed	Step feed	Initial feed	Coolant	Relief angle	Point angle	Thinning angle	Honing	Flute width rate	Thinning	Toughness	Hardness	Machine rigidity	Machine vibration	Guide bush	Clamping workpiece
		• Too sharp cutting edge (too big relief angle) (thinning edge is too sharp)						1		1	1			1					
Chip	ping	Excessive cutting speed	1				•												
		Built-up edge					•	1		1	1			1					
		Vibration and chattering	1													1	1		•
387	ear	• Excessive cutting speed (Abnormal wear at margin)	1				•												
	adi .	Insufficient cutting speed     (Abnormal wear at center)	1				•												
		Long chip	1	1			•				1								
Cl	nip	Over lap	1	1															
		Chip burning	1				•												
		Tool clamping precision				1			1		1					1	1		•
-	ision burr, ace finish	Excessive feed, sharp point angle		1					1		1								
		Excessive cutting speed     (Considered tool grade)	1				•	1	•						1				
	Breakage	Poor surface finish			•	1												•	
	on	Insufficient machine rigidity														1			•
Fracture	contact	Improper cutting condition	t	1															
	Breakage	Crooked hole	t						1				•				1	•	
	at hole bottom	Chip clogging		1	•							1							

**1**: Increase **↓**: Decrease **•**: use **⊚**: Correct use

# Hole size for threading

## • Metric coarse screw threads

M1 X 0.25	Specification	Hole diameter
M1.2 X 0.25 M1.4 X 0.3 M1.6 X 0.35 M1.7 X 0.35 M1.8 X 0.35 M1.8 X 0.35 M1.8 X 0.35 M2.2 X 0.45 M2.2 X 0.45 M2.3 X 0.4 M2.5 X 0.45 M3.4 X 0.5 M3.5 X 0.6 M4.5 X 0.75 M4.5 X 0.75 M4.5 X 0.75 M5.5 X 0.9 M6.5 X 0.9 M7.5 X 0.9 M8.5 X 0.9 M9.5 X 0.9 M1.5 X 0.9 M1.5 X 0.9 M1.5 X 0.9 M2.5 X 0.9 M3.5 X 0.9 M4.6 M5.7 X 1 M5.8 M5.8 M5.25 M6.8 M9.7 X 1 M7.7 X 1 M8.7 X 1 M9.7 X 1 M9.7 X 1 M1.5 M9.5 M10.7 X 1.5	M1 X 0.25	0.75
M1.4 X 0.3       1.1         M1.6 X 0.35       1.25         M1.7 X 0.35       1.35         M1.8 X 0.35       1.45         M2 X 0.4       1.6         M2.2 X 0.45       1.75         M2.3 X 0.4       1.9         M2.5 X 0.45       2.1         M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5	M1.1 X 0.25	0.85
M1.6 X 0.35       1.25         M1.7 X 0.35       1.35         M1.8 X 0.35       1.45         M2 X 0.4       1.6         M2.2 X 0.45       1.75         M2.3 X 0.4       1.9         M2.5 X 0.45       2.1         M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5 <td< td=""><td>M1.2 X 0.25</td><td>0.95</td></td<>	M1.2 X 0.25	0.95
M1.7 X 0.35       1.35         M1.8 X 0.35       1.45         M2 X 0.4       1.6         M2.2 X 0.45       1.75         M2.3 X 0.4       1.9         M2.5 X 0.45       2.1         M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M6 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5 <td>M1.4 X 0.3</td> <td>1.1</td>	M1.4 X 0.3	1.1
M1.8 X 0.35       1.45         M2 X 0.4       1.6         M2.2 X 0.45       1.75         M2.3 X 0.4       1.9         M2.5 X 0.45       2.1         M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5	M1.6 X 0.35	1.25
M2 X 0.4       1.6         M2.2 X 0.45       1.75         M2.3 X 0.4       1.9         M2.5 X 0.45       2.1         M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 Y 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M1.7 X 0.35	1.35
M2.2 X 0.45       1.75         M2.3 X 0.4       1.9         M2.5 X 0.45       2.1         M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M1.8 X 0.35	1.45
M2.3 X 0.4       1.9         M2.5 X 0.45       2.1         M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M2 X 0.4	1.6
M2.5 X 0.45       2.1         M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M5 X 0.9       4.1         M5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M2.2 X 0.45	1.75
M2.6 X 0.45       2.2         M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M2.3 X 0.4	1.9
M3 X 0.6       2.4         M3 X 0.5       2.5         M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M2.5 X 0.45	2.1
M3 X 0.5  M3.5 X 0.6  2.9  M4 X 0.75  3.25  M4 X 0.7  3.3  M4.5 X 0.75  3.8  M5 X 0.9  4.1  M5 X 0.8  M6 X 1  M7 X 1  M8 X 1.25  M9 X 1.25  M10 X 1.5  M11 X 1.5  M12 X 1.75  M12 X 1.75  M18 X 2.5  M10 X 2.5  M10 X 2.5  M10 X 2.5  M10 X 3  M14 X 2  M15.5  M17 X 3  M18 X 2.5  M20 X 2.5  M20 X 2.5  M30 X 3.5  M30 X 3.5  M33 X 3.5  M36 X 4  M30 X 3.5	M2.6 X 0.45	2.2
M3.5 X 0.6       2.9         M4 X 0.75       3.25         M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M3 X 0.6	2.4
M4       X 0.75       3.25         M4       X 0.7       3.3         M4.5       X 0.9       4.1         M5       X 0.8       4.2         M5.5       X 0.9       4.6         M6       X 1       5         M7       X 1       6         M8       X 1.25       7.8         M9       X 1.25       7.8         M10       X 1.5       8.5         M11       X 1.5       9.5         M12       X 1.75       10.3         M14       X 2       12         M16       X 2       14         M18       X 2.5       15.5         M20       X 2.5       17.5         M22       X 2.5       19.5         M24       X 3       21         M27       X 3       24         M30       X 3.5       26.5         M33       X 3.5       29.5         M36       X 4       32	M3 X 0.5	2.5
M4 X 0.7       3.3         M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M3.5 X 0.6	2.9
M4.5 X 0.75       3.8         M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M4 X 0.75	3.25
M5 X 0.9       4.1         M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M4 X 0.7	3.3
M5 X 0.8       4.2         M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M4.5 X 0.75	3.8
M5.5 X 0.9       4.6         M6 X 1       5         M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M5 X 0.9	4.1
M6 X 1       5         M7 X 1       6         M8 X1.25       6.8         M9 X1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M5 X 0.8	4.2
M7 X 1       6         M8 X 1.25       6.8         M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M5.5 X 0.9	4.6
M8       X 1.25       6.8         M9       X 1.25       7.8         M10       X 1.5       8.5         M11       X 1.5       9.5         M12       X 1.75       10.3         M14       X       2       12         M16       X       2       14         M18       X 2.5       15.5         M20       X 2.5       17.5         M22       X 2.5       19.5         M24       X 3       21         M27       X 3       24         M30       X 3.5       26.5         M33       X 3.5       29.5         M36       X 4       32	M6 X 1	5
M9 X 1.25       7.8         M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M7 X 1	6
M10 X 1.5       8.5         M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M8 X 1.25	6.8
M11 X 1.5       9.5         M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M9 X 1.25	7.8
M12 X 1.75       10.3         M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M10 X 1.5	8.5
M14 X 2       12         M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M11 X 1.5	9.5
M16 X 2       14         M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M12 X 1.75	10.3
M18 X 2.5       15.5         M20 X 2.5       17.5         M22 X 2.5       19.5         M24 X 3       21         M27 X 3       24         M30 X 3.5       26.5         M33 X 3.5       29.5         M36 X 4       32	M14 X 2	12
M20 X 2.5     17.5       M22 X 2.5     19.5       M24 X 3     21       M27 X 3     24       M30 X 3.5     26.5       M33 X 3.5     29.5       M36 X 4     32	M16 X 2	14
M22 X 2.5     19.5       M24 X 3     21       M27 X 3     24       M30 X 3.5     26.5       M33 X 3.5     29.5       M36 X 4     32	M18 X 2.5	15.5
M24 X 3     21       M27 X 3     24       M30 X 3.5     26.5       M33 X 3.5     29.5       M36 X 4     32	M20 X 2.5	17.5
M27 X 3     24       M30 X 3.5     26.5       M33 X 3.5     29.5       M36 X 4     32	M22 X 2.5	19.5
M30 X 3.5 26.5 M33 X 3.5 29.5 M36 X 4 32	M24 X 3	21
M33 X 3.5 29.5 M36 X 4 32	M27 X 3	24
M36 X 4 32	M30 X 3.5	26.5
	M33 X 3.5	29.5
M39 X 4 35	M36 X 4	32
	M39 X 4	35
M42 X 4.5 37.5	M42 X 4.5	37.5
M45 X 4.5 40.5	M45 X 4.5	40.5
M48 X 5 43	M48 X 5	43

## • Metric coarse screw threads

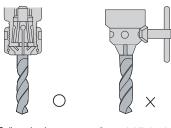
Specification	Hole diameter
M2.5 X 0.35	2.2
M3 X 0.35	2.7
M3.5 X 0.35	3.2
M4 X 0.5	3.5
M4.5 X 0.5	4
M5 X 0.5	4.5
M5.5 X 0.5	5
M6 X 0.75	5.3
M7 X 0.75	6.3
M8 X 1	7
M8 X 0.75	7.3
M9 X 1	8
M9 X 0.75	8.3
M10 X 1.25	8.8
M10 X 1	9
M10 X 0.75	9.3
M11 X 1	10
M11 X 0.75	10.3
M12 X 1.5	10.5
M12 X 1.25	10.8
M12 X 1	11
M14 X 1.5	12.5
M14 X 1 M15 X 1.5	13
M15 X 1.5	13.5
M16 X 1.5	14 14.5
M16 X 1.5	15
M17 X 1.5	15.5
M17 X 1.3	16
M18 X 2	16
M18 X 1.5	16.5
M18 X 1	17
M20 X 2	18
M20 X 1.5	18.5
M20 X 1	19
M22 X 2	20
M22 X 1.5	20.5
M22 X 1	21
M24 X 2	22
M24 X 1.5	22.5
M24 X 1	23
M25 X 2	23
M25 X 1.5	23.5
M25 X 1	24
M26 X 1.5	24.5
M27 X 2	25

## **Technical Information for Drills**

#### Cautions

#### Selection of drill chuck

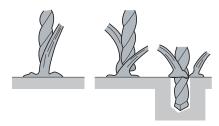
 Collect chuck is favorable Because it has strong grip power (General drill-chuck and Keyless chuck don't have enough grip power.)



Collect chuck
 General drill-chuck

## Coolant supply

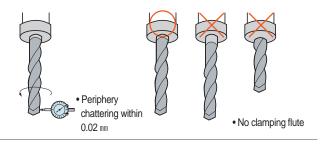
- Supply enough coolant around hole entrance
- Standard cutting oil pressure: 3~5 kg/cni, Flux: 2~5 l/min



• Supply much coolant at hole entrance

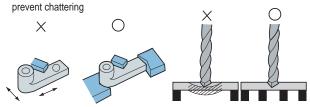
## Mounting drill

- When mounting drill Periphery chattering should be within 0.02 mm
- Flute should not be clamped



## How to clamp workpiece

At high performance drilling High thrust, torque and horizontal cutting force work at the same time so that workpiece should be clamped strongly to



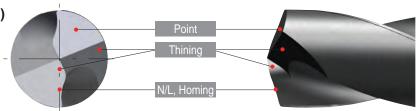
 Uniformed and strong clamping is needed (Right and left, up and down) • Strong clamping is needed because bending causes chipping

#### Notice

- 1) For better drill's life, small damage and wear are favorable to be regrinding
- 2) Damage and wear size should be within 1.5 mm for regrinding
- 3) If drill has crack, regrinding is impossible
- 4) Ordering for regrinding is acceptable or purchase regrinding machine

## Regrinding procedures

Regrinding mathod (Mach Drill)



#### 1) Preparation Determination of regrinding areas

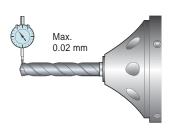
- Check the cutting edge for damage and wear If large fracture is found, remove it by rough grinding





#### 2) Grinding operation Drills setting

- Drill is clamped to collet chuck Chattering is kept within 0.02 mm

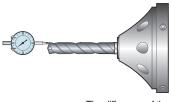


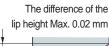
## **Technical Information for Drills**

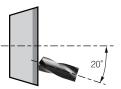
#### 3) Grinding operation-Grinding point

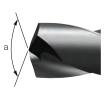
- Check damage and wear at the point and remove it completely
- The difference of the lip height is kept within 0.02 mm

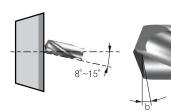
Point angle (a): 140° Point relief angle (b)t: 8°~15°







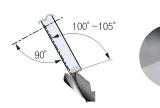




#### 4) Grinding operation-Thinning grinding

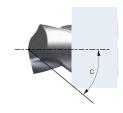
- Considering N/L width Cutting edge length from the center of drill axis should be 0.03~0.08mm for balancing
- Set the wheel to tilt drill axis by 34°~40°.

Thinning angle (a)°: 155°~160° Thining open angle (b): 100°~105°
Thinning relief angle (c): 34°~40°





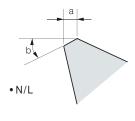




#### 5) Grinding-N/L grinding and honing

- Using diamond chisel Grinds the width flat along point cutting edge
- After negaland operation Finishes with brush or handstone

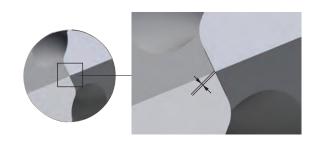
N/L width (a): 0.05mm~0.16mm/N/L angle (b): 24°~26°





#### TIP

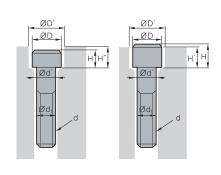
- · Making point
- Without center drill, the point width should be below 0.10 mm
- · Recommended grinding condition
  - Diamond wheel: 240~400 mesh
  - Diamond chisel: 400~600 mesh
  - Diamond hand stone: 800~1500 mesh



## Hexagonal socket bolt (clamping screw) size

## • Counter boring and size of bolt hole for hexagonal socket bolt

ISO (d)	МЗ	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30
Ød <sub>1</sub>	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
Ød′	3.4	4.5	5.5	6.5	8.5	11	14	16	18	20	22	24	26	30	33
ØD	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45
ØD'	5	8	9.5	11	14	17.5	20	23	26	29	32	35	39	43	48
Н	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
H′	2.7	3.6	4.6	5.5	7.4	9.2	11.0	12.8	14.5	16.5	18.5	20.5	22.5	25	28
H"	3.3	4.4	5.4	6.5	8.6	10.8	13.0	15.2	17.5	19.5	21.5	23.5	25.5	29	32



# The comparison of chip breakers

		Applica	tion	KORLOY	KYOCERA	TAEGUTEC	SUMITOMO	SANDVIK	KENNAMETAL	ISCAR	WLATER	MITSUBISHI	SECO	TUNGALLOY
			Ultra-		DP (G-class)	-	FA	PMC	FF (G-class)	SF	-	PK (G-class), FY	FF1	TF
			Finishing	VL	GP	FA	FL, FB	QF	UF	PF	NF3	FH, FS, SY	FF2	NS, ZF
			Finishing	VF, VB	PP	FG	LU, FE	PF, XF	FN	NF, SM	NF4	FP		NM, NS, SS
			Finishing	-	-	SF	SU	61	К	F3P	FP5	LP, SH, SA	MF2	TS, TSF
			Medium to	VC	HQ, CQ	MC	SE	НМ	LF, CT	TF	NS6	C(Cermet)		AS
			finishing	LP, CP	PQ, CJ	FC	SX	PMC	-	-	MP3	MV	MF5	ZM, AM
		Application	Medium	VM, HM	HK, GS, HS, PS	MP, MT	GU(UG)	QM, SM	MP, MN	PP, TF	NM4, NP5	MA, MH	M3, M5	TQ, TM
			machining	MP	PG	PC	GE, UX	PM, XM	-	МЗР	MP5	MP	-	DM, None C/B
			Roughing	B25				-	RP, MR	GN	-	GM, None C/B	M5	TH
	Р			GR	PT, GT, HT, PH	RT	MU, ME, MX	PR, WR	RN, None C/B	R3P	RP5, NM9	GH, RP	MR5, MR6, MR7	THS
			Haarri distri	GH	PX	HB, RH, RX	HG, MP	PR, XMR	RH	NR, HT	RP7, NR4, NRF	HZ	R4, R5	CH
			Heavy duty machining	VH	-	HZ, EH	HP	QR	RM	HR	NRR, NR8	HX	R6, R7, R8, PR6	THS, TRS
				VT	-	HT, HY, HD	HU, HW, HF	HR	MM	T3P	-	HV	PR9, R56, R57, R68	65, TUS
		Low carbon	Soft steel	VL	XF, XP, XP-T	SF	FL	LC	-	-	-	FY	-	-
tive		steel		-	XQ, XS	-	-	-	-	-	-	SY	-	-
Negative		High		VW	WP, WF	WS	LUW, SEW	WF, WL	FW	WF	NF	SW	FF2, MF2	AFW, FW
Z		feed	Wiper	LW	WQ, WE	WT	GUW	WM, WMX	MW	WG	NM	MW	MF5, M3	ASW, SW
				-	-	-	-	WR	RW	-	-	-	R4, R7	-
		Application	Shaft (long bar)	SH	CJ, ST	FS, VF, FX	HM	K	-	-	-	ES	UX	P, S
				KNUX-	KNMX-	KNUX-	-	KNUX-71	-	-	-	KNMX-19	-	KNMX
		Stainless	Finishing Medium	VP2, MP	MQ, GU, SK	EA, SF	SU, EF	MF, XF	FP, FF	SF, VL, F3M	NF4, FM5	SH, LM	FF1, MF1	SS, SF, SA
	M	steel	cutting	MM	HU, TK, MS	MP, EM	EX, EG, GU	MM,XM,QM,MMC	MP, UP, MS	PP, TF, M3M	NM4, NR4	MS, GM, MM	MF3, MF4	SM
			Roughing	RM	MU	ET	MU, HM, EM	MR, XMR, MRR	RP, P	MR, R3M	RM5, NRS	MA, ES	MF5, M5	S, SH
		Cast	Finishing Medium	MP	None C/B, C, KQ		UZ	KF, PMC, XF	T-20, FN	TF	NM, MK5	LK, MA	M4	CF
	K	iron	cutting	B25, MK	ZS, KG	RT, KT	UX, GZ	KM, XM	UN, RP	GN	NM5, RK5	MK, GK, None C/B		CM, None C/B
			Roughing	-MA, RK	-MA, GC, KH	-MA	-MA	KR, XMR, KRR	MR, S-20, -MA FS (G-class)	-MA, NR	-MA, RK7	RK, -MA	MR7	CH
			Ultra-finishing	VP1	MQ, SK	EA	EF LID FO	SF, SGF	LF (G-class)	SF, PF	NF4	FJ(G-class)	M1	SF
	S	HRSA	Finishing Medium	VP2 VP3	TK MS	ML EM	UP, EG EX	23.SR, XF, SMC SM, SMR, XM	MS, GP, P, UN	PP TF	NFT NMS, NMT	LS MS	MF1 MF4. MR3	HMM
			cutting Roughing	VP4	MU	ET	MU	XMR	RP	MR	NRS, NRT		MR4	HRM
	N	Alum	inium alloy	HA	AH	ML	AX	23	GP, MS	NF, PP	FN2, PF2,	RS, GJ MJ	MF1	P
	14	Alulli	inum anoy	FP	XP, PP	FA, FX	FC	PF, XF	11	PF	MN2, PM2 FP4	SMG (G-class), FV	FF1	01
			Finishing	VL, VF	GP	-	FB, LU(FP, FK)	UF	UF	F3P	FK6	SV, FP	F1	PSF, PF
	Р			HMP	XQ	FG	LB, NF	PM, XM	LF, FP	14	MP4,FM2,FM4,MK4	LP	MF2	PSS
	M	Application	Medium cutting	MP	HQ, GK	PC, FM	SU, SC	UM, PMC	MP, T-20	SM	FP6,MM4,FM6,RK4	MV	F2, M3	PS
	K		Roughing	C25	None C/B	MT	MU	PR, UR, XR	MF, GM, -C	19	RP4, RM4, RK6	None C/B, MP	M5	PM
				-	WP	-	LUW	WL, WF	FW	WF	PM	SW	-	-
ive			Wiper	-	-	WT	SDW	WM, WMX	MW	WG	-	MW	-	-
Positive			Finishing	FS, MS, VP1	CF, GF, GQ	FG	FC, FM	MF, MM, MMC	11, UF, LF	PF	FM4, NM4	FJ (G-class), FM, LM	F1, MF2	PSF, PSS
	M S	Stainless steel For	Medium to finish cutting	FP, VL, LU	MQ	SA	LB, SI	MR, XR	MF	SM	RM4	MM	M3	PS
	3	HRSA	Medium cutting	MU	MF	-	-	SMC	-	МЗМ	-	None C/B	M5	CM
		Cast	Medium cutting	MP	HQ	PC	MU	KF, KM	LF	17	FK6	MK	M3	CM
	K	iron Roughing C25 GK MT		MT	None C/B	KR	MF, UF	19	MK4, RK6	None C/B, -MW	M5	None C/B		
	N	Alum	Aluminium alloy		AH	FL	AW, AG, AY	AL	HP, LF	AS, AF	PM2	AZ, FS	AL	AL
			n bar turning class G&E)	KF, KM	FSF, USF, J, A3	GF, FF, GW	FY, FX, FZ	K, F, UM	GH	LF, RF, XL	-	F, SR, SS, SM	UX	JS, J10, JRP, JPP

# **⊙** KORLOY grades

Cat.		Grade	Р	N.O	IS		N	Н	Turning	Multi functional	Threading	Milling	Endmill	Index drill	Solid drill	Brazed tools	Coating Is	ayer
	CVD	NC3215		M	K	S	IN	п	•	tools				<b></b>	<b>4.</b> III			TiN —— Al2O3 —— MT-TiCN
	CVD	NC3225							•	•								TiN —— Al2O3 —— MT-TiCN
	CVD	NC3120							•	•								Al <sub>2</sub> O <sub>3</sub>
	CVD	NC3030							•	•								MT-TICN  TIN Al2O3 TIC
	PVD	PC3030T		MOE MOE							•							MT-TICN TIAIN
		PC3035		IVI23-IVI33														★ New TiAIN film
	PVD	1	■W		1/04 1/40					•								(High hardness Oxidation resistance TIN Al <sub>2</sub> O <sub>3</sub> MT-TICN
	CVD	NC6310	eW)		K01-K10				•									MT-TiCN  Al2O3
	CVD	NC6315			K10-K20				•	•								MT-TICN TIAIN
	PVD	PC8105		M05-M15		S01-S10			•									
	PVD	PC8110		M10-M20		S05-S15			•	•								—★ New TiAIN film (High hardness/ Oxidation resistance)
	PVD	PC8115		M15-M25		S10-S20			•									TiAlN
	PVD	PC8120				S15-S25			•									— ★ New Al203 film — TIAIN
	CVD	NC9115		M10-M20					•									TiN Al2O3 MT-TiCN
מ	CVD	NC9125	eW)	M20-M30		S10-S20			•									TiN Al2O3 MT-TiCN
Coating	CVD	NC9135	w)	M30-M40		S15-S25			•									TiN Al2O3 MT-TiCN
0	PVD	PC9030		M25-M35					•	•								—— TiAIN
	PVD	PC9070T		M25-M35							•							—— TiAlN
	PVD	PC2005						H01-H10				•						TiMeN TiAIN
	PVD	PC2010						H05-H15				•						TiMeN TiAIN
	PVD	PC2015						H10-H20				•						AICrN
	PVD	PC2505						H01-H10				•						—★ New TiAIN film (High hardness/ Oxidation resistance)
	PVD	PC2510						H05-H15				•	•					★ New TiAIN film      (High hardness/  Oxidation resistance)
	PVD	PC210F						H10-H20				•						—★ New TiAIN film (High hardness/ Oxidation resistance)
	CVD	NCM325	P30-P40									•		•				TiN Al2O3 MT-TiCN
-	CVD	NCM335	P35-P45									•						TiN Al2O3 MT-TiCN
	PVD	PC3700	P25-P40									•		•				TiN TiAlCrN
	CVD	NC5330	P30-P35	M25-M35	K15-K25				•	•		•		•				TiN Al2O3 MT-TiCN
	CVD	NCM535	eW)		K20-K30					•		•		•				TiN Al2O3
	CVD	NCM545	eW)		K30-K40							•						MT-TICN TIN Al2O3
	CAD	INCIVID45	F4U-P5U		NoU-1\4U													MT-TICN

# **General Information II**

# **⊙** KORLOY grades

	at.	Grade	Р	M	IS K	50 S	N	Н	Turning	Multi functional	Threading	Milling	Endmill	Index drill	Solid drill	Brazed tools	Coating la	nyer
	PVD	PC5300		M20-M30					•	•	•	•		•				—★ New TiAIN film (High hardness/ Oxidation resistance)
	PVD	PC5335	P30-P40	M20-M30										•				★ TiAlCrN film (Lubricative)
ng	PVD	PC5400	P35-P45	M30-M40	K25-K35	S25-S35			•			•						★ TiAlCrN film (Lubricative)
Coating	PVD	PC6510			K05-K15							•		•				TiN TiAIN
	PVD	PC9530		M25-M35								•						TIAIN
	PVD	PC9540		M35-M45		S30-S40						•						Al2O3 TiAIN
	PVD	CC1500	W P10-P20		K05-K15				•									—★ New TiAIN film (High hardness/ Oxidation resistance)
	PVD	CC2500	W P20-P30		K10-K15				•									→ New TiAIN film (High hardness/ Oxidation resistance)
Cermet		CN1500	P10-P20		K10-K20				•									Oxidation resistance)
ర		CN2500	P15-P30		K15-K25				•									
		CN30	P25-P35									•						
		ST10	P10-P15								•					•		
		ST20	P15-P20							•						•		
_		ST30A	P25-P35							•		•						
Uncoated		U20		M25-M30												•		
Ď		H01			K05-K10	S01-S10	N10-N20	H05-H10	•	•		•	•	•		•		
		H05			K10-K15	S05-S15	N15-N25		•			•						
		G10				K15-K20			•			•				•		
	PVD	PC203F						H05-H15					•					—★ New TiAIN film (High hardness/ Oxidation resistance)
	PVD	PC210C					N10-N20						•					CrN
	PVD	PC215F	P20-P35										•					—★ New TiAIN film (High hardness/ Oxidation resistance)
	PVD	PC215G	P15-P30		K15-K30										•			TiAIN
	PVD	PC221F	P35-P45		K35*K45								•					★ New TiAIN film (High hardness/ Oxidation resistance)
Coating	PVD	PC230F	P05-P15	M05-M15	K05-K15											•		★ New TiAIN film     (High hardness/ Oxidation resistance)
ŏ	PVD	PC303S	P05-P15		K05-K15			H05-H15					•					TiMeN TiAIN
	PVD	PC310U	P10-P20		K10-K20			H10-H20					•					TiMeN TiAIN
	PVD	PC315E	P20-P35		K20-K35								•					AICrN
	PVD	PC315G	P15-P30		K15-K30										•			TiAlCrN
	PVD	PC320	P20-P35		K20-K35								•					——— TiAIN

### **⊙** KORLOY grades

	at.	Grade			IS	0			Turning	Multi functional tools	Throading	Milling	Endmill	Index drill	Solid drill	Brazed tools	Coating la	vor
	al.	Grade	Р	M	K	S	N	Н	Turning	tools	Tilledullig	wiiiiiig	Enamin	drill	drill	tools	Coaling la	
	PVD	PC320S		M20-M30		S20-S30							•					TiMeN TiAIN
	PVD	PC320U	P01-P10		K05-K10								•					—— AICrN
Coating	PVD	SL				S25-S35							•					—— TiAIN
Ö	PVD	PC325T	W			S20-S30									•			TiMeN TiAIN
	PVD	PC325U	P20-P35	M20-M30	K20-K35										•			TiAlCrN
		H01					N10-N20						•					
ъ		H05S					N10-N20						•					
Uncoated		FCC			N15-N35								•					
ō		FG2	P05-P25				N05-N25								•			
		FA1	P05-P25				N05-N25								•			
		DBN500			K05-K15				•									
		DBN700A			K01-K10				•									
		DB7000	S01-S10						•									
		DB1000						H01-H10	•									
		DB2000						H05-H15	•									
cBN		DBNX20						H15-H25	•									
3		DBN250						H15-H25	•									
		DBN400						H15-H25	•									
	PVD	DNC100						H01-H10	•									_★ New TiAIN film (High hardness)
	PVD	DNC250						H05-H15	•									TIN TIAIN
	PVD	DNC350						H25-H35	•									_★ New TiAIN film (High hardness)
	PVD	DNC400	<b>y</b>					H15-H25	•									TiN TiAIN
		DP90					N01-N20					•						
PCD		DP150					N05-N25					•						
		DP200					N10-N30					•						
DIA	CVD	ND2100					N2.5-N7.5		•			•	•		•			_ Dia Coating
	CVD	ND3000	<b>y</b>				N01-N05		•			•	•					_ Dia Coating
DLC	PVD	PD1005					N05-N10		•			•	•					
٥	PVD	PD1010					N10-N15		•			•	•					

### The comparison of grade for turning

### **OWC**

	ISC	)	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
ı		P	ST10 ST20	ST10 ST20			S1P SM30			TX10S TX20	STi10T STi20T	SRN5 WS20B	S1F		P10 P20		
5 4		F	ST30A	ST30A ST40E	PW30	IC50M IC54	S30T S6	TTX TTM TTR	K45 KM K420	TX30 TX40	UTi20T	EX35 EX40 EX45	VC6 VC5 VC56		P30 P40		
F		М	U20	U10E U20 ST30A A40			H13A H10F	AT10 AT15 TTR	K2885 K2S	TU10 TU20 TU40	UTi20T	WAM10B EX35	VC27 VC28		M10 M20 M40		
			H01 H05 G10	H1	KW10H	IC4 IC20 IC28	H1P H10F	THM THR	K68 K8735	TH03 TH10 KS20	HTi10T HTi20T	WH05 W10 WH20	VC3 VC2 VC1		K10 K20 K20M K30		

### CVD coated

IS	0	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
			AC805P	CA5505 CA510		GC4305 GC4205	TP0500 TP0501	KCP05 KCP05B	T9105	UE6105				TT8105		
		NC3215 <b>★</b>	AC810P AC700G AC900G	CA515 VP5115 CA5515	IC8150	GC4315 GC4215	TP1500 TP1501 TGP25	KCP10 KCP10B	T9115	UE6110 MY5015	HG8010	VP5515	WPP10S WKP13S	TT8110 LC215P TT8115		
	Р	NC3225★ NC3120	AC820P AC2000 AC8025P	CA525 VP5125 CA5525	IC8250	GC4325 GC4225	TP2500 TP2501 TGP35 TP3501	KCP25 KCP25B	T9125	MC6025 UE6020	HG8025	VP5525	WPP20S WKP23S	TT8120 LC225P TT8125	CP5	JC110V JC215V
ng		NC3030 NC5330	AC830P	CR9025 CA5535 CA530	IC8350	GC4335 GC4235	TP3500 TGP45	KCP30 KCP30B	T9135	MC6035 UE6035	GM8035	VP5535	WPP30S WKP33S	TT5100 TT8135		JC325V
Turning								KCP40 KCP40B		UH6400				TT7100		JC450
₽		NC9115*	AC610M	CA6515	IC6015	S05F GC2015	TM2000	KCM15 KCM15M	T6120	MC7015		VP8515	WAM10	TT9215		
	M	NC9125* NC9135*	AC630M AC6030M	CA6525	IC6025	GC2220 GC2025	TM4000	KCM25 KCM25B KCM35 KCM35B	T6130	MC7025 US7020 US735	GM25 GX30	VP8525	WMP20S WAM20 WAM30	TT9225 TT9235		
		Nocodo	AC405K	CA4505	ICEOOF	GC3205	TK1001	KCK05 KCK05B	T5105	MC5005 UC5105	HG3505	VP1505	WKK10S	TT7005	CP2	JC105V
	K	NC6310* NC6315	AC415K	CA4010 CA4515 CA4115	IC5005	GC3210 GC3215 GC3225	TK2001 TGK1500	KCK15 KCK15B	T5115	MC5015 UC5115	HG3515	VP1510 VP1515	WKK20S	TT7505 TT7310 TT7015	CP5	JC110V JC215V
			AC420K	CA4120	IC5015			KCK20 KCK20B	T5125				WAK30	TT7025		

### PVD coated

IS	0	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
	Р	PC8105 * PC8110 PC8115 * PC3035 PC5300		PR1005 PR915 PR1115 PR930 PR1025 PR630 PR660	IC507 IC808 IC830 IC908 IC3028	GC1025 GC4125	CP200 CP250 CP500	KU10T KU25T	AH710 GH730 AH330 AH740 AH120 GH330	VP15TF VP20MF	IP2000 IP3000	VC907 VC927 VC905	WTA43 WTA41	TT5030		JC5003 JC5015
Turning	M	PC8105* PC8110 PC8115* PC8120* PC5300* PC9030 PC5400*	AC510U EH510Z AC520U EH520Z AC530U	PR915 PR930 PR1125 PR630 PR660	IC808 IC907 IC3028 IC830	GC1005 GC1105 GC1020 GC1025 GC4125 GC2035	CP200 CP250 CP500	KC5010 KC5510 KC5025 KC5525	AH330 GH330 AH120 GH730 AH140 AH630	MP9005 VP10RT VP15TF VP20MF MP7035	IP50S IP100S	VC929 VC927 VC902 VC901 VC905	WSM10S WSM20S WSM30S WSM40S	TT5030	ZM3 QM3 VM1 TAS	JC5003 JC5015
	K	PC5300	EH510Z EH520Z		IC5100 IC810 IC220 IC908 IC228		CP200 CP250 CP500		AH110 GH110 AH120		CY110H	VC929 VC903 VC927 VC902 VC901 VC907		TT5030		
	S	PC8105 PC8110 PC8115 * PC8120 * PC5300 PC5400 *	AC510U AC520U	PR915 PR660 PR1325	IC808 IC907 IC3028 IC328	GC1105 GC1025 GC2035	TS2000 CP500 TS2500	KC5010 KC5025	AH110 AH120	VP05RT VP10RT VP15TF MP7035			WSM10 WSM20 WSM30	TT5030		

### **OCERMET**

ISO	0		SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
Turning	Р	CC1500 * CN1500 * CN2500 * CN2500 * CN2500 *	T110A T2000Z* T1500A	PV30* TN30 PV7020* TN60 TN620 TN6020 TN90 PV90*	IC20N IC520N IC30N IC530N	CT5015 CT525 GC1525*	CM C15M TP1020 TP1030★	HT2 KT125 HT5 KT175 KT195M	NS520 GT530* NS530 NS9530 GT9530* NS540 NS730	NX2525 NX3035 UP35N* AP25N* NX335 MP3025*	CH350 CZ25* CH530 CH550 CH570	VC83	WTA43 <b>★</b> WTA41 <b>★</b>	PV3010* CT3000	T3N T15 N20 C30 N40	LN10 CX50 CX75 CX90 CX99
	M															
	K	CN1500★ CN2500★	T110A							NX2525				CT3000	T15	LN10 CX75

### The comparison of grade for milling

### CVD coated

IS	03	KORLOY	SUMITOMO	<b>KYOCERA</b>	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
			ACP100		IC5100	GC4210				FH7020			WKP25S			
	Р	NC5330 NCM325 NCM535*			IC5400	GC4220 GC4230	MP1500 MS2500 MP2500 MS2500 T350M MM4500	KCPM20 KCMP30	T3130	F7030		SM245	WKP25S WKP35S WKP35G	TT8525 TT7800		
		NCM335 NCM545★						KC927M					WINI 35G			
Milling	M	NC5330 NC5340* NC5350*	ACP400			GC2040	MP2500 MS2500 MM4500		T3130	F7030						
	К	NC5330 NCM535*	ACK200		IC5100	GC33330 GC3040	MK2000 MS2500 T350M MK3000	KC907M KCK15 KC914M KCPK30 KC917M KC924M	T1115 T1015	MC5020			WAK15 WKK25 WKP25S WKP35S WKP35G	TT7515 TT6800		

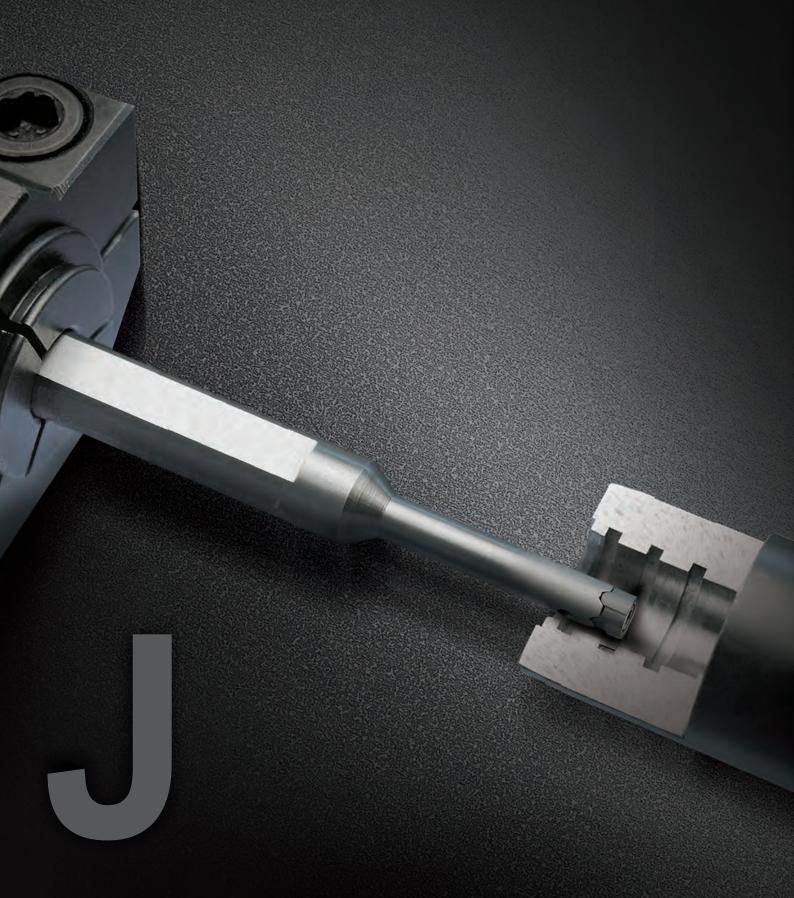
### PVD coated

IS	0	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
		PC2005* PC2010* PC2015*				P20A					ATH80D PCA08M ACS05E PCA12M					
		PC2505* PC2510*				GC1010				AP20M GP20M	PC20M JX1005 TB6005 JX1020			TT2510		DH102
		PC3600 PC3700★	ACZ310		IC903		MP3000				CY9020		WKP25			JC5003
	Р		ACP200	PR730 PR830	IC908 IC950	GC1025	F25M F30M	KC522M KUC20M	GH330	MP6120 VP15TF	TB6045	VC935		TT7070 TT7080		JC5015
		PC210F	ACZ330	PR630	IC1008	GC1030		KC525M KUC30M	AH120	UP20M	CY250 PTH30E			TT7030	QM3	
		PC5300	ACP300							MP6130	JP4160		WKP35		ZM3	JC5030 JC5040
Milling		PC5400 <b>★</b>	ACZ350	PR660	IC928	GC1030	F40M T60M	KC935M KC7140 KC720	AH3135	VP30RT	JM4160 PTH40H		WKP45	TT8020		
Ē				PR730	IC903			KC5510 KC7020	AH120		JX1020 CY9020 JX1015 TB6020					JC5003
	M	PC210F PC5300	ACM100 ACP200	PR1025	IC900	GC1125 GC1025	F25M	KC522M KC725M		MP7130	CY250	VC928 VC902		TT9030	QM3 ZM3	JC5015
		PC9530	ACM300 ACP300 ACZ350	PR630 PR660 PR1535	IC250 IC928	GC2030 GC1030	F30M	KC735M KC7030	AH140		JX1045 TB6045	VC901	WQM35 WSM35S	TT9080		JC5030 JC5040
		PC5400★ PC9540★	7102000	PR660	IC328		F40M	KC722	AH3135	MP7140	JX1060 TB6060		WSP45 WSM45S	TT8020		
	K	PC6510		PR510 PR905	DT7150 IC900 IC910		MK2050	KC510M KC915M		VP10MF VP15TF		VC903 VC928		TT6290		JC5003
		PC5300			IC950 IC350			KC520M	AH120	VP20RT		VC902 VC901		TT6030 TT6060		JC5015
	S	PC5300 PC5400* PC9540*	AC520U	PR620 PR660 PR1535	IC328 IC408	GC1025 GC1040 S40T	F40M MS2050	KC510M KCU30M		VP15TF VP30RT MP9130	ACS05E		WSM35S WSM45S	TT9030 TT8020 TT8080		

### **O CERMET**

IS	0	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENNAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAEGUTEC	NTK	DIJET
ō	Р	CN2000 CN30	T250A	TN100M TC60M	IC30N			KT195M	NS540 NS740	NX2525 NX4545	CH550 CH570			CT3000 CT7000	C50	
Milling	M		T250A			CT530										
	K									NX2525						

# OLD-FASHIONED PRODUCT INFORMATION



## Old-fashioned product information

J02 Grade J02 External Holder J02 Fine Tool J03 Threading Tool J03 Mill-Max J04 Cen-Mill

J04 Jip Drill LPD/SPD/NPD J04

### J

### Old-fashioned product information

### Grade

ISO materia	Il code	Old grade	New grade
		NC5340	NCM535
		NCM325	INCINISSS
	Р	NCM335	NCM545
		NC5350	ING/I/1040
Coating grade		PC3530, PC3525, PC3535, PC3500, PC3600	PC3700
Coating grade	V	NC6215	NC6315
	K	NC6110, NC6210, NC6205	NC6310
	P  ting grade  K  S  P, M, K, S	PC8010	PC8110
	DM K S	PC8520, PC215K	PC5300
	P, IVI, K, S	PC225F	PC205F
Cormo	· · · · · · · · · · · · · · · · · · ·	CN1000	CN1500
Cerme	grade  K  S  P, M, K, S	CT10, CN200	CN2500

<sup>•</sup> KORLOY always study and develops cutting-edge technology tools and grades which covers higher speed and feed conditions

### External holder

Decimation	Incert		Old par	ts name		Now holder	Dogo
Designation	Insert	Wedge clamp	Screw	Washer	Others	New holder	Page
WTENN   16 (Old Type: MTEEN)	TN**1604	CMH5R1	MHX0523	WA4	Same as before	WTEEN 16	B179
WTJNR UUU-U16 (Old Type: MTJNR)	TN**1604	CMH5R1	MHX0523	WA4	Same as before	WTJNR	B179
WTXNR	TN**1604	CMH5R1	MHX0523	WA4	Same as before	WTXNR 16	B179

<sup>•</sup> Old parts are not interchangeable with new type holder part

### Fine tool

Decimation	Inc	a out	Old part	s name	Now holder	Dogo
Designation	Ins	sert	Screw	Wrench	New holder	Page
	FTIH08***	FTG08, FTT08, FTF08	PTKA02508	TW08P		
FTILL	FTIH11***	FTG11, FTT11, FTF11	PTKA03510	TW15P	NETUI	000
FTIH	FTIH14***	FTG14, FTT14, FTF14	PTKA0412	TW15P	NFTIH	C69
	FTIH16***	FTG16, FTT16, FTF16	PTKA0512	TW20P	1	

<sup>•</sup> Old inserts and parts are not interchangeable with new fine tool

<sup>•</sup> KORLOY guarantees better performance and wide stock-management range for the new grade

<sup>•</sup> Good performance and convenient use of New type holder gives customer best quality of service

<sup>•</sup> Good performance and convenient use of new fine tool gives customer best quality of service

### Threading tool

	_				C	old parts nam	ie			
Designation	Ins	sert	Clamp	Clamp screw	Shim	Screw	C-ring	Wrench	New holder	Page
ETH	~ ETH3**R	ECTR3***	CH5R3	CHX0513	ST32C1	SHX0310	CR04	HW20L, HW25L	ED/L)LL *	D24
EIN	~ ETH4**R	ECTR4***	CH6R4	CHX0621	ST42C1	SHX0310	CR05	HW20L, HW30L	ER(L)H-*	D31
	~ ITH2**R	ICTR2***	CH5R3	CHX0513	ST32C1	FTKA02565	CR04	TW07P		
ITH	~ ITH3**R	ICTR3***	CH5R3	CHX0513	ST32C1	SHX0310	CR04	TW15P, HW20L, HW25L	IR(L)H-*	D32
	~ ITH4**R	ICTR4***	CH6R4	CHX0621	ST42C1	SHX0310	CR05	HW20L, HW30L		

<sup>•</sup> Old inserts and parts are not interchangeable with threading holders

### Mill-Max

Design that		Old parts name					Now holden	Dama
Designation Inse	Insert	Locator	Wedge	Wedge screw	Locator screw	Wrench	New holder	Page
AD(ADM)4000	SD**1203	LAS4R/L	WASR/L	WTX0817	LTX0512	TW25	ADN(ADNM)4000	E47
AD(ADM)5000	SD**1504	LAS5R/L	WASR/L	WTX0817	LTX0512	TW25	4 DNI/4 DNIM/5000+	E40
ADN(ADNM)5000	SD**1504	LADN5R/L	WEPN5R/L	DHA0821F	LTX0514	HW40	ADN(ADNM)5000+	E48
EP(EPM)4000	SP**1203	LES4R/L LES4R1/L1 (Ø80 ~ Ø100)	WESR/L	WTX0817 WTX0813 (Ø80 ~ Ø100)	LTX0512	TW25	EPN(EPNM)4000	E53
EP(EPM)5000	SP**1504	LES5R/L LES5R1/L1 (Ø80 ~ Ø100)	WESR/L	WTX0817 WTX0813 (Ø80 ~ Ø100)	LTX0512	TW25	EDN/EDNIM/E000+	EE4
EPN(EPNM)5000	SP**1504	LEPN5R/L LEPN5R1/L1 (Ø80 ~ Ø100)	WEPN5R/L	DHA0821F DHA0817F (Ø80 ~ Ø100)	LTX0514	HW40	EPN(EPNM)5000+	E54
PP(PPM)4000	TP**2204	LPT4R/L LPT4R1/L1 (Ø80 ~ Ø100)	WESR/L	WTX0817 WTX0813 (Ø80 ~ Ø100)	LTX0512	TW25	PPN(PPNM)4000	E56

<sup>•</sup> Parts are not interchangeable with new mill-max cutters

<sup>•</sup> Good performance and convenient use of new fine tool gives customer best quality of service

<sup>•</sup> Good performance and convenient use of new mill-max gives customer best quality of service

### J

### Old-fashioned product information

#### Cen-Mill

Designation	Insert		Old part	Now we duct	Done	
			Screw	Wrench	New product	Page
HE	Ø25	MCMT080308EN ZCMT080308ER	FTNA0307	TW09P	AMS****M	E185~E187
	Ø32, 40, 50	MCMT09T308EN ZCMT09T308ER	FTNA0408	TW15P		E103~E187
LE (LEM)	LOCX1205ZZ		FTNB0411	TW15S	AMC***M	E172~E174
C.F.	Ø25	MPMT090308	FTNA0408	TW15S	- AMS***MH	E188~E189
SE	Ø32, 40	MPMT120408	FTNA0513	TW20S		
ТМ		150,200,300,400 ,150,200,300,400	FTNB0411(TM632R) FTNA0513	TW15L(TM632R) TW20L	TMS(I)	D49
PM	EDCW1604ZDF/TR		FTNA0513	TW20L	RM4Z	E118~E119
CE (Code changed)	SPG(M)N1203**				CE45-***R-S32 (New code)	E369~E371

- Old inserts and parts are not interchangeable with new milling product
- New product : Alpha mill which has unique alpha-curve edge guarantees wide range machining and good performance.
- Good performance and convenient use of new milling tool gives customer best quality of service

### Jip Drill

Designation	Insert		Old part	Now product	Dawa	
			Screw	Wrench	New product	Page
	~ JD200	WCMT030208-C20	FTNA02565 TW07P  FTNA0307 TW09P  (KING-DE	TMOZD	14 <sup>-</sup>	
~ JD250	~ JD250	WCMT040208-C20		1007P		
JD	<b>JD</b> ~ JD300	WCMT050308-C20		K∐D - (KING-DRILL)	F11~F25	
	~ JD410	WCMT06T308-C20	FTGA03508		- (KINO-DIVILL)	
	~ JD580	WCMT080408-C20	FTNA0408	TW15P		

- Old inserts and parts are not interchangeable with new indexable drill
- Good performance and convenient use of new indexable drill gives customer best quality of service

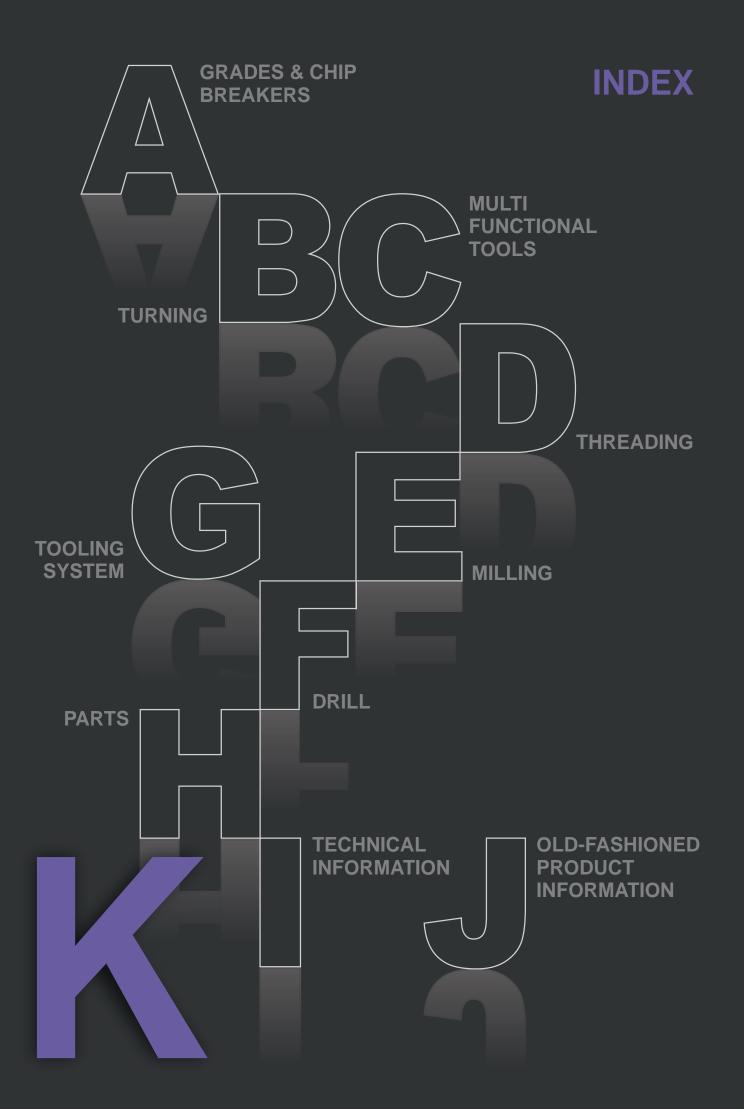
### **○** LPD/SPD/NPD

Decimation	Insert		Old parts name		Now product	Dawa
Designation			Screw	Wrench	New product	Page
LPD	~ LPD135	LPMT040203-DF	FTNA0204	TW06P		
	~ SPD155	SPM(E)T050203-DM, DF, DS, DA	FTNA0204	TW06P		
SPD	~ SPD195	SPM(E)T060204-DM, DS, DR, DA	FTKA02206S	TW07S		
	~ SPD225	SPM(E)T070204-DM, DS, DR, DA	FTKA02565	TW07S	K□D (KING-DRILL)	
	~ NPD245	NPM(E)T222408-DM, DS, DR, DA	FTKA02565	TW07S		F44 F0F
	~ NPD285	NPM(E)T252808-DM, DS, DR, DA	FTKA0307	TW09S		F11~F25
NDD	~ NPD325	NPM(E)T293208-DM, DS, DR, DA	FTKA0307	TW09S		
NPD	~ NPD405	NPM(E)T334008-DM, DS, DR, DA	FTKA03508	TW15S		
	~ NPD505	NPM(E)T415008-DM, DS, DR, DA	FTKA0410	TW15S		
	~ NPD605	NPM(E)T516012-DM, DS, DR, DA	FTNC04511	TW20S		

- Old inserts and parts are not interchangeable with new indexable drill
- Good performance and convenient use of new indexable drill gives customer best quality of service







### **INDEX**

**K02** Index by items

## K Index by items



Actual Designations of Milling Cutter and Arbor	Milling	E426
Aero Mill	Milling	E151
Aero Mill Mini	Milling	E154
Aero Mill Plus	Milling	E152
Alpha Mill	Milling	E164
Alpha Mill-X		E197
Alpha Mill-X	Milling	E145
Aluminum Insert (Positive)	Turning	B102
American ACME	Threading	D24
American Buttress (ABUT)	Threading	D28
American UN	Threading	D16
Angular Head		G86
API Buttress Casing (BUT)	Threading	D30
API Round Casing & Tubing (APIRD)	Threading	D30
Application Example	Multi functional Tools	C02
Application range of KORLOY Main Chip Breakers	Turning	B02
Auto Tools (Blade Type)	Turning	B136
Auto Tools (ISO Type)	Turning	B122
Auto Tools (KGT/MGT Type)	Turning	B142
Auto Tools (MSB Tool)	Turning	B145
Auto Tools (Multi Utility Type)	Turning	B139
Available Insert	Drills	F03
Available Insert for Fine Tools	Multi functional Tools	C68
Available Insert for K Notch	Multi functional Tools	C57
Available Insert for KGT	Multi functional Tools	C12
Available Insert for MGT	Multi functional Tools	C28
Available Insert for MGT Aluminum Wheel	Multi functional Tools	C44
Available Insert for TB/TB-M	Multi functional Tools	C51
Available Insert for TB/TB-M	Multi functional Tools	C50



Bearing Solution	Turning	B156
BFE	Milling	E331
Boring Bar Code System (ISO)	Turning	B204
BRE	Milling	E335
British Buttress (BBUT)	Threading	D28
British Standard Pipe Thread	Threading	D22
BT Tooling System (Alpha Mill)	Milling	E342
BT Tooling System (Mono-Tool)	Milling	E347



Cartridge		H03
Cartridge Code System (ISO)	Turnina	B241



cBN incerts grades	Grades & Chip Breakers	A31
cBN Insert	Turning	B110
Cen-Mill	Old-Fashioned Product Information	J04
Center Drill	Drills	F78
Ceramic Holder	Turning	B197
Cermet grades (Milling)	Grades & Chip Breakers	A24
Cermet grades (Turning)	Grades & Chip Breakers	A13
Chamfer Tool	Milling	E366
Chip breaker		H03
Chip breaker for drilling	Grades & Chip Breakers	A49
Chip breaker for milling	Grades & Chip Breakers	A42
Chip breaker for turning	Grades & Chip Breakers	A37
Chip Cover	Parts	H03
Clamp	Parts	H03
Clamp On System (Boring Bar)	Turning	B212
Clamp On System (Cartridge)	Turning	B243
Clamp On System (Holder)	Turning	B181
Coated cermet grades (Turning)	Grades & Chip Breakers	A15
Collet Chuck Series	Tooling System	G24
Compact Mini	Turning	B225
Coolant Bolt	Parts	H04
CVD coated grades (Milling)	Grades & Chip Breakers	A17
CVD coated grades (Turning)	Grades & Chip Breakers	A05



	G97
Tooling System	G66
Tooling System	G62
Multi functional Tools	C70
	G95
	G96
Tooling System	G23
Tooling System	G11
Tooling System	G07
Tooling System	G04
Grades & Chip Breakers	A29
Grades & Chip Breakers	A30
Turning	B208
Turning	B167
Milling	E62
Tooling System	G12
Tooling System	G30
Tooling System	G41
	Tooling System Multi functional Tools  Tooling System Tooling System Tooling System Tooling System Grades & Chip Breakers Grades & Chip Breakers Turning Turning Milling Tooling System Tooling System Tooling System



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DTN	Tooling System	G44
DZC		G94



ER	Tooling System	G36
ER/L	Tooling System	G37
EXT Bar	Tooling System	G54
External Holder	Threading	D31
External Holder	Old-Fashioned Product Information	J02
External Tool Holder Code System (ISO)	Turning	B162
Extreme Line Casing (EL)	Threading	D30



FBC	Tooling System	G82
FBH/B	Tooling System	G55
Feature of Chip Breakers	Turning	B16
Fine Tool	Old-Fashioned Product Information	J03
Fine Tools Holder	Multi functional Tools	C69
FMA	Tooling System	G49
FMC	Tooling System	G50
FMR P-positive	Milling	E242
Future Mill	Milling	E216



Milling	G82
Milling	G55
Milling	B16
Milling	J03
Tooling System	C69
Multi functional Tools	G49
Old-Fashioned Product Information	G50
Grades & Chip Breakers	E242
Tooling System	E216
	Milling Milling Milling Tooling System Multi functional Tools Old-Fashioned Product Information Grades & Chip Breakers



Hardness calculating table		108
HAVE (Single edge/Multi edge)	Milling	E339
HFM	Milling	E281
HFMD		E267
HFMD	Milling	E264
HRM	Milling	E300



HRMDouble	Milling	E289
HSK Tooling System	Turning	B231
HSK Tooling System (Alpha Mill)	Milling	E353
HSK Tooling System (Mono-Tool)	Milling	E358
HSK Tooling System (Pro-V Mill)	Milling	E363



IGH	Multi functional Tools	C70
Index for Boring Bar	Turning	B205
Index for Cartridge	Turning	B242
Index for External Holder	Turning	B163
Index for HSK Tooling System	Turning	B230
Index for KM Tooling System	Turning	B230
Indexable HOB	Milling	E440
Indexable HOB Order Form	Milling	E441
Indexable Reamer		F86
Instruction of Boring Bar assembly	Turning	B207
Instruction of External Holder	Turning	B166
Internal Holder	Threading	D32
ISO Metric	Threading	D12
Jip Drill	Old-Fashioned Product Information	J04



K Notch Holder	Multi functional Tools	C59
KED Plus Drill	Drills	F29
KGT Blade for Parting off	Multi functional Tools	C25
KGT Cartridge	Multi functional Tools	C41
KGT Holder	Multi functional Tools	C15
KGT/MGT Cartridge Holder	Multi functional Tools	C40
KHP Coolant	Turning	B127
KHP Coolant	Turning	B202
KING DRILL	Drills	F11
KING DRILL for large diameter drilling	Drills	F25
KING DRILL for through coolant system with a lathe	Drills	F21
KM Tooling System	Turning	B237
КМВ	Tooling System	G70
KORLOY Cutters	Milling	E34
KORLOY Grades	Technical Information	I 37
KORLOY Modular Adaptors	Milling	E45
KORLOY Shanks	Milling	E42
KRLOY Drills	Drills	F02

## K Index by items



Laser Mill	Milling	E326
Lever	Parts	H04
Lever Lock System (Boring Bar)	Turning	B210
Lever Lock System (Holder)	Turning	B172
Locator	Parts	H05
LPD/SPD/NPD	Old-Fashioned Product Information	J04



MD	Tooling System	G52
Metric Buttress (SAGE)/API	Threading	D29
MGT Aluminum Wheel	Multi functional Tools	C45
MGT Cartridge	Multi functional Tools	C42
MGT Holder	Multi functional Tools	C31
MGT Holder (Face Grooving)	Multi functional Tools	C36
MGT Special Order Form for MGT	Multi functional Tools	C72
Milling grade selections	Grades & Chip Breakers	A16
Milling Insert Code System (ISO)	Milling	E02
Milling Inserts	Milling	E04
Mill-max	Milling	E47
Mill-Max	Old-Fashioned Product Information	J03
Mill-max Heavy	Milling	E58
Mill-max Plus	Milling	E48, 54
Modular Adaptor	Milling	E401
Multi Lock System (Boring Bar)	Turning	B213
Multi Lock System (Holder)	Turning	B183
Multi Turn	Turning	B154





National Pipe Thread	Threading	D22
National Pipe Thread-Dry seal	Threading	D23
Nozzle	Parts	H07
NPM	Tooling System	G20
NPU	Tooling System	G40
Nut	Parts	H05
O-Ring Cutter	Milling	E364
Others	Tooling System	G104



Partial Profile 55°	Threading	D11
Partial Profile 60°	Threading	D10
PCD Face Cutter	Milling	E156
PCD incerts grades	Grades & Chip Breakers	A36



PCD Insert	Turning	B113
Pin	Parts	H05
Power Buster	Milling	E68
Pro-A Mill	Milling	E385
Pro-L Mill	Milling	E394
Properties of Korloy grades	Technical Information	I 09
Pro-V Mill		E399
Pro-V Mill	Milling	E368
Pro-X Mill	Milling	E388
Pro-XL Mill	Milling	E398
PVD coated grades (Milling)	Grades & Chip Breakers	A18
PVD coated grades (Turning)	Grades & Chip Breakers	A10



RDC Bar	Tooling System	G54
Recommended Chip Breakers for workpiece	Turning	B04
Rich Mill	Milling	E99
Round DIN 405	Threading	D23
RTJW	Tooling System	G38



SAH		G85
Save Turn Boring Bar	Turning	B119
Save Turn Holder	Turning	B116
Save Turn Insert	Turning	B115
Saw man	Multi functional Tools	C61
Saw man-X	Multi functional Tools	C65
Screw	Parts	H05
Screw On System (Boring Bar)	Turning	B215
Screw On System (Cartridge)	Turning	B245
Screw On System (Holder)	Turning	B190
SDC/P	Tooling System	G25
Shim		H02
Shim Pin	Parts	H06
SI unit conversion table	Technical Information	I 07
Side Cutter	Milling	E411
Side Milling Cutter	Milling	E407
SLA	Tooling System	G47
Sleeve	Turning	B151
SMB	Tooling System	G68
SMH	Tooling System	G72
Solid drills grade selections	Grades & Chip Breakers	A27
Solid drills grades	Grades & Chip Breakers	A28





Solid endmills grade selections	Grades & Chip Breakers	A25
Solid endmills grades	Grades & Chip Breakers	A26
Special Order Form for Bearing Inserts	Turning	B161
Special Order Form for V-Pulley Insert	Multi functional Tools	C73
Spring	Parts	H07
Steel, Non-ferrous metal symbol list	Technical Information	I 06
Stop Ring	Parts	H07
Stopper	Parts	H07
Stub ACME	Threading	D25



Tank Mill	Milling	E307
ТВС	Tooling System	G79
TBCA	Tooling System	G74
TB-M/TB Holder	Multi functional Tools	C54
TCA Tap Adaptor	Tooling System	G46
T-Cutter	Milling	E374
Technical Information for Aero Mill	Milling	E147
Technical Information for Aero Mill Mini	Milling	E150
Technical Information for Aero Mill Plus	Milling	E149
Technical Information for Alpha Mill	Milling	E157
Technical Information for Alpha Mill Nick		E158
Technical Information for Alpha Mill-X		E193
Technical Information for Alpha Mill-X	Milling	E142
Technical Information for Auto Tools	Turning	B121
Technical Information for Bearing Solution	Turning	B155
Technical Information for BRE	Milling	E325
Technical Information for BT/HSK Tooling System	Milling	E341
Technical Information for Couple Mill	Milling	E421
Technical Information for Cube Mill	Milling	E420
Technical Information for Drills	Technical Information	I 30
Technical Information for Endmills	Technical Information	I 27
Technical Information for Fine Tools	Multi functional Tools	C67
Technical Information for FMR P-positive	Milling	E211
Technical Information for Future Mill	Milling	E201
Technical Information for GBE	Milling	E322
Technical Information for Gear Cutter Tools	Milling	E429
Technical Information for HAVE	Milling	E337
Technical Information for HFM	Milling	E277
Technical Information for HFMD		E262
Technical Information for HFMD	Milling	E260
Technical Information for Hihg feed Cutter	Milling	E418
Technical Information for HRMDouble	Milling	E284
Technical Information for HSK Tooling System	Turning	B228



Technical Information for Indexable Reamer		F82
Technical Information for K Notch	Multi functional Tools	C55
Technical Information for KED Plus Drill	Drills	F26
Technical Information for KGT	Multi functional Tools	C07
Technical Information for KGT/MGT Cartridge	Multi functional Tools	C39
Technical Information for KHP Coolant	Turning	B199
Technical Information for KING DRILL	Drills	F05
Technical Information for KING DRILL (for large diameter drilling)	Drills	F24
Technical Information for KING DRILL (for through coolant system with a lathe)	Drills	F20
Technical Information for Laser Mill	Milling	E317
Technical Information for MGT	Multi functional Tools	C26
Technical Information for MGT Aluminum Wheel	Multi functional Tools	C43
Technical Information for Milling	Technical Information	I 20
Technical Information for Mill-max Heavy	Milling	E57
Technical Information for Multi Functional Tools Series	Multi functional Tools	C04
Technical Information for Multi Turn	Turning	B152
Technical Information for Power Buster	Milling	E64
Technical Information for Pro-A Mill	Milling	E375
Technical Information for Pro-L Mill	Milling	E379
Technical Information for Pro-L Mill		E382
Technical Information for Pro-V Mill	Milling	E351
Technical Information for Pro-X Mill	Milling	E377
Technical Information for Pro-XL Mill	Milling	E381
Technical Information for Rich Mill	Milling	E71
Technical Information for Save Turn	Turning	B114
Technical Information for Saw man	Multi functional Tools	C60
Technical Information for Saw man-X	Multi functional Tools	C63
Technical Information for Shave Mill	Milling	E423
Technical Information for Shave Mill Ultra	Milling	E425
Technical Information for Side Milling Cutters	Milling	E405
Technical Information for Tapers	Technical Information	I 24
Technical Information for TB/TB-M	Multi functional Tools	C47
Technical Information for Thread Milling	Threading	D34
Technical Information for Threading	Threading	D03
Technical Information for TP2P	Milling	E308
Technical Information for TPDB Plus Drill	Drills	F54
Technical Information for TPDB-F		F63
Technical Information for TPDB-H	Drills	F68
Technical Information for TPDC Plus Drill	Drills	F37
Technical Information for Triple Mill		E254
Technical Information for Turning	Technical Information	I 10
Technical Information for Wind Mill	Milling	E414
Technical Information for WPDC	Drills	F75
Technical Information KM Tooling System	Turning	B229
TER Tap Collet	Tooling System	G43

## K Index by items



The Comparision of Grade for Milling	Technical Information	I 41
The Comparision of Grade for Turning	Technical Information	I 40
The Comparison of Chip Breakers	Technical Information	I 36
Thread Milling Holder	Threading	D49
Thread Milling Inserts	Threading	D44
Threading Holder Code System	Threading	D02
Threading Insert Code System	Threading	D02
Threading Insert with Chip Breaker	Threading	D09
Threading Tool	Old-Fashioned Product Information	J03
Tooling System Index	Tooling System	G02
TP2P	Milling	E311
TPDB Plus Drill	Drills	F57
TPDB-F		F66
TPDB-H	Drills	F71
TPDC Plus Drill	Drills	F47
Trapez DIN 103	Threading	D24
Triple Mill		E258
Turbo Mill	Milling	E59
Turning grade selections	Grades & Chip Breakers	A04
Turning Insert (Negative)	Turning	B36
Turning Insert (Positive)	Turning	B73
Turning Insert Code System (ISO)	Turning	B34



Uncoated carbide grades (Milling)	Grades & Chip Breakers	A23
Uncoated carbide grades (Turning)	Grades & Chip Breakers	A12
UNJ (Unified Constant Thread)	Threading	D26



Vertical Type Holder Threading D33



Washer	Parts	H07
Wedge Clamp System(Holder)	Turning	B179
Wind Mill	Milling	E416
With Worth	Threading	D18
Workpiece material grades	Technical Information	I 02
WPDC	Drills	F79
Wrench	Parts	H07
Wrench Bolt	Parts	H04







A		
ADKA	Milling insert (Indexable Endmill)	E04
ADKT-ML	Milling insert (Alpha Mill-X)	E04
ADKT-MM	Milling insert (Alpha Mill-X)	E04
ADLT	Milling insert (Tank Mill)	E04
ADN(M)4000	Mill-max	E47
ADN(M)5000+	Mill-max Plus	E48
ADS4000	Turbo Mill	E59
ADS5000	Turbo Mill	E60
AE(M)4000	Mill-max	E49
AE(M)5000	Mill-max	E50
AFO(M)4000	Double Mill	E62
AFO(M)5000	Double Mill	E63
AMC(M)1000S	Alpha Mill	E164
AMC(M)1000SE	Alpha Mill	E170
AMC(M)1500S	Alpha Mill	E165
AMC(M)2000M	Alpha Mill	E172
AMC(M)2000S	Alpha Mill	E166
AMC(M)2000SE	Alpha Mill	E170
AMC(M)3000M	Alpha Mill	E173
AMC(M)3000S	Alpha Mill	E167
AMC(M)3000SE	Alpha Mill	E171
AMC(M)3000S-K	Alpha Mill	E168
AMC(M)4000M	Alpha Mill	E174
AMC(M)4000S	Alpha Mill	E169
AMM1000	Alpha Mill	E190
AMM1500	Alpha Mill	E191
AMM2000	Alpha Mill	E192
AMS1000M	Alpha Mill	E185
AMS1000MH	Alpha Mill	E188
AMS1000S	Alpha Mill	E175
AMS1000SE	Alpha Mill	E183
AMS1500M	Alpha Mill	E185
AMS1500MH	Alpha Mill	E188
AMS1500S	Alpha Mill	E176
AMS2000M	Alpha Mill	E186
AMS2000MH	Alpha Mill	E189
AMS2000S	Alpha Mill	E178
AMS2000SE	Alpha Mill	E183
AMS3000MH(-K)	Alpha Mill	E189
AMS3000S	Alpha Mill	E179
AMS3000SE	Alpha Mill	E184
AMS3000S-K	Alpha Mill	E180
AMS4000M	Alpha Mill	E187
AMS4000S	Alpha Mill	E181
AMXCM-AD10/12	Alpha Mill-X	E197

AMXCM-AD17	Alpha Mill-X	E198
AMXS-AD10/12	Alpha Mill-X	E199
AMXS-AD17	Alpha Mill-X	E200
APD(M)-A	Aero Mill	E151
APD(M)-PB	Aero Mill-Plus	E152
API	Thread Insert	D29
APKT	Milling Insert (Alpha Mill)	E04
APKT-MA	Milling Insert (Alpha Mill)	E04
APKT-MA2	Milling Insert (Alpha Mill)	E04
APKT-MA3	Milling Insert (Alpha Mill)	E04
APKT-MF	Milling Insert (Alpha Mill)	E04
APKT-MM	Milling Insert (Alpha Mill)	E04
APLT	Milling insert (Tank Mill)	E05
APMT-MA	Milling Insert (Alpha Mill)	E05
APMT-ML	Milling Insert (Alpha Mill)	E05
APMT-MM	Milling Insert (Alpha Mill)	E06
APMT-MN	Milling Insert (Alpha Mill)	E06

В		
BAMPR/L-XAF	Milling Insert (Aero Mill-Plus)	E07
BAMPR/L-XAW	Milling Insert (Aero Mill-Plus)	E07
BAMPR/L-XAWR	Milling Insert (Aero Mill-Plus)	E07
BF	Multi functional Insert (Grooving Tools)	C71
BFE	BFE	E331
BRE	BRE	E335
BT30	Modular Adaptor (BT)	E403
BT30 AM1000	BT Tooling System (Mono-Tool)	E347
BT30 AM1000HS	BT Tooling System (Alpha Mill)	E342
BT30 AM1500	BT Tooling System (Mono-Tool)	E348
BT30 AM2000	BT Tooling System (Mono-Tool)	E349
BT40	Modular Adaptor (BT)	E403
BT40 AM1000	BT Tooling System (Mono-Tool)	E347
BT40 AM1500	BT Tooling System (Mono-Tool)	E348
BT40 AM1500HS	BT Tooling System (Alpha Mill)	E343
BT40 AM2000	BT Tooling System (Mono-Tool)	E349
BT40 AM2000HS	BT Tooling System (Alpha Mill)	E344
BT50	Modular Adaptor (BT)	E403
BT50 AM3000	BT Tooling System (Mono-Tool)	E350
BT50 AM3000HS	BT Tooling System (Alpha Mill)	E345
BT50 AM4000	BT Tooling System (Mono-Tool)	E351
BT50 AM4000HS	BT Tooling System (Alpha Mill)	E346
BT50 HAT4000	BT Tooling System (Mono-Tool)	E352





CCET	Turning Insert_Positive (Carbide Shank Boring Bar)	B75
CCET-KF	Auto tools Insert (ISO type)	B130
CCET-KF	Auto tools Insert (ISO type)	B76
CCET-KM	Auto tools Insert (ISO type)	B131
CCET-KM	Auto tools Insert (ISO type)	B77
CCGT-AK	Aluminum Insert_Positive (Screw on System)	B103
CCGT-AR	Aluminum Insert_Positive (Screw on System)	B103
CCGT-FS	Auto tools Insert (ISO type)	B131
CCGT-FS	Turning Insert_Positive (Screw on System)	B74
CCGT-KF	Auto tools Insert (ISO type)	B130
CCGT-KF	Turning Insert_Positive (Screw on System)	B76
CCGT-KM	Auto tools Insert (ISO type)	B130
CCGT-KM	Turning Insert_Positive (Screw on System)	B77
CCGT-MS	Auto tools Insert (ISO type)	B131
CCGT-MS	Turning Insert_Positive (Screw on System)	B74
CCGT-VP1	Auto tools Insert (ISO type)	B131
CCGT-VP1	Turning Insert_Positive (Screw on System)	B75
CCLNR/L	Ceramic Holder	B197
ССМТ	PCD Insert_Positive	B113
CCMT-C25	Turning Insert_Positive (Screw on System)	B74
CCMT-FP	Turning Insert_Positive (Screw on System)	B73
CCMT-HMP	Turning Insert_Positive (Screw on System)	B73
CCMT-MP	Turning Insert_Positive (Screw on System)	B73
CCMT-VF	Turning Insert_Positive (Screw on System)	B73
CCMT-VL	Turning Insert_Positive (Screw on System)	B73
CCMT-VP1	Turning Insert_Positive (Screw on System)	B74
CCMW	cBN Insert_Positive (Regrinding)	B112
CCMW	PCD Insert_Positive	B113
ССТ	Solid Chamfer Tool	E373
CD	Drill Insert (Center Drill)	F78
CDEW-NAF	Milling Insert (Aero Mill)	E07
CDEW-NAW	Milling Insert (Aero Mill)	E07
CDEW-XAF	Milling Insert (Aero Mill)	E07
CDEW-XAW	Milling Insert (Aero Mill)	E07
CDEW-XCF	Milling Insert (Aero Mill)	E07
CDH	Drill Insert (Center Drill)	F78
CE	Chamfer Tool (Back & Front Champer)	E369
CE	Chamfer Tool (Long Champer)	E370
CE	Chamfer Tool (Multi-functional)	E371
CET	Solid Chamfer Tool	E372
CKFNR/LRW	Bearing Solution	B159
CKGNRRW	Bearing Solution	B159
CKJNR/L	Holder (Clamp on System)	B181
CKNNR/L	Holder (Clamp on System)	B181
CKUNR/L	Boring Bar (Clamp on System)	B212



CMSNR/LB	Bearing Solution	B156
CMSNR/LF	Bearing Solution	B156
CNGG-VP1	Turning Insert_Negative (Multi Lock/Lever Lock System)	B40
CNGG-VP3	Turning Insert_Negative (Multi Lock/Lever Lock System)	B41
CNHQ	Milling Insert (Side milling cutter_Tangential type)	E07
CNMA	cBN Insert_Negative(Regrinding)	B112
CNMA	Turning Insert_Negative (Multi Lock / Lever Lock System)	B39
CNMG-B25	Turning Insert_Negative (Multi Lock/Lever Lock System)	B38
CNMG-CP	Turning Insert_Negative (Multi Lock/Lever Lock System)	B36
CNMG-GR	Turning Insert_Negative (Multi Lock/Lever Lock System)	B38
CNMG-HA	Turning Insert_Negative (Multi Lock/Lever Lock System)	B41
CNMG-HM	Turning Insert_Negative	B37
CNMG-LP	Turning Insert_Negative (Multi Lock/Lever Lock System)	B36
CNMG-LW	Turning Insert_Negative (Multi Lock/Lever Lock System)	B42
CNMG-MK	Turning Insert_Negative (Multi Lock/Lever Lock System)	B38
CNMG-MM	Turning Insert (SAVE TURN)	B115
CNMG-MM	Turning Insert_Negative (Multi Lock/Lever Lock System)	B40
CNMG-MP	Turning Insert (SAVE TURN)	B115
CNMG-MP	Turning Insert_Negative (Multi Lock/Lever Lock System)	B37
CNMG-RK	Turning Insert_Negative (Multi Lock/Lever Lock System)	B39
CNMG-RM	Turning Insert_Negative (Multi Lock/Lever Lock System)	B40
CNMG-VB	Turning Insert_Negative (Multi Lock/Lever Lock System)	B36
CNMG-VC	Turning Insert_Negative (Multi Lock/Lever Lock System)	B36
CNMG-VF	Turning Insert_Negative (Multi Lock/Lever Lock System)	B36
CNMG-VL	Turning Insert_Negative (Multi Lock/Lever Lock System)	B36
CNMG-VM	Turning Insert_Negative (Multi Lock/Lever Lock System)	B37
CNMG-VP1	Turning Insert_Negative (Multi Lock/Lever Lock System)	B40
CNMG-VP2	Turning Insert_Negative (Multi Lock/Lever Lock System)	B41
CNMG-VP3	Turning Insert_Negative (Multi Lock/Lever Lock System)	B41
CNMG-VP4	Turning Insert_Negative (Multi Lock/Lever Lock System)	B41
CNMG-VQ	Turning Insert (SAVE TURN)	B115
CNMG-VQ	Turning Insert_Negative (Multi Lock/Lever Lock System)	B38
CNMG-VR	Turning Insert_Negative (Multi Lock/Lever Lock System)	B39
CNMG-VW	Turning Insert_Negative (Multi Lock/Lever Lock System)	B41
CNMM	PCD Insert_Negative	B113
CNMM-GH	Turning Insert_Negative (Multi Lock / Lever Lock System)	B42
CNMM-GR	Turning Insert_Negative (Lever Lock System)	B42
CNMM-VH	Turning Insert_Negative (Lever Lock System)	B42
CNMM-VT	Turning Insert_Negative (Lever Lock System)	B42
CP Chip Breaker	Turning Chip Breaker	B16
CPGT	Turning Insert_Positive (Screw on System)	B78
CPGT-HMP	Turning Insert_Positive (Screw on System)	B78
СРМН	Milling Insert (T-Cutter)	E07
CPMT	Milling Insert (T-Cutter)	E08
CPMT-C25	Turning Insert_Positive (Screw on System)	B78



CPMT-VF	Turning Insert_Positive (Screw on System)	B78
CPMT-VL	Turning Insert_Positive (Screw on System)	B78
CRDNN	Ceramic Holder	B197
CRGNR/L	Ceramic Holder	B197
CSBNR/LBS	Bearing Solution	B160
CSDNN	Ceramic Holder	B197
CSDPN	Holder (Clamp on System)	B181
CSGNR/LRW	Bearing Solution	B159
CSKNR/L	Ceramic Holder	B198
CSKNR/LBS	Bearing Solution	B160
CSKPR/L	Holder (Clamp on System)	B182
CSKPR/L	Boring Bar (Clamp on System)	B212
CSKPR/L	Cartridge (Clamp on System)	B243
CSKPR/LB	Bearing Solution	B158
CTFNR/L	Ceramic Holder	B198
CTFPR/L	Holder (Clamp on System)	B182
CTFPR/L	Boring Bar (Clamp on System)	B212
CTFPR/L	Cartridge (Clamp on System)	B243
CTGNR/L	Ceramic Holder	B198
CTGNR/LBS	Bearing Solution	B160
CTGPR/L	Holder (Clamp on System)	B182

Cartridge (Clamp on System)

Cartridge (Clamp on System)

Cartridge (Clamp on System)

B244

B244

B245

DNMA

DNMA

DNMG-B25

DNMG-CP

**DNMG-GR** 

DNMG-HA

DNMG-HM

DNMG-LP

DNMG-LW

DNMG-MK

DNMG-MM

**DNMG-MM** 

DNMG-MP

DNMG-MP

DNMG-RK

DNMG-RM

DNMG-VB

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CTSPR/L

CTTPR/L

CTWPR/L

DB	Multi functional Insert (Grooving Tools)	C70
DBH	Multi functional holder (Grooving Tools)	C70
DC	Multi functional Insert (Grooving Tools)	C70
DCBNR/L	Holder (Double clamp system)	B167
DCET-KF	Auto tools Insert (ISO type)	B132
DCET-KF	Turning Insert_Positive (Screw on System)	B81
DCET-KM	Auto tools Insert (ISO type)	B132
DCET-KM	Turning Insert_Positive (Screw on System)	B82
DCGT	PCD Insert_Positive	B113
DCGT-AK	Aluminum Insert_Positive (Screw on System)	B104
DCGT-AR	Aluminum Insert_Positive (Screw on System)	B104
DCGT-FS	Auto tools Insert (ISO type)	B132
DCGT-FS	Turning Insert_Positive (Screw on System)	B80
DCGT-KF	Auto tools Insert (ISO type)	B131
DCGT-KF	Turning Insert_Positive (Screw on System)	B81
DCGT-KM	Auto tools Insert (ISO type)	B132
DCGT-KM	Turning Insert_Positive (Screw on System)	B82
DCGT-MS	Auto tools Insert (ISO type)	B132

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D		
DCGT-MS	Turning Insert_Positive (Screw on System)	B80
DCGT-VP1	Auto tools Insert (ISO type)	B133
DCGT-VP1	Turning Insert_Positive (Screw on System)	B81
DCGW	cBN Insert_Positive (Regrinding)	B112
DCKNR/L	Holder (Double clamp system)	B167
DCLNR/L	Holder (Double clamp system)	B167
DCLNR/L	Boring Bar (Double clamp system)	B208
DCLNR/L	HSK Tooling System	B231, 235
DCLNR/L	KM Tooling System	B237
DCMNN	HSK Tooling System	B231
DCMNN	KM Tooling System	B237
DCMT	PCD Insert_Positive	B113
DCMT-C25	Turning Insert_Positive (Screw on System)	B80
DCMT-FP	Turning Insert_Positive (Screw on System)	B79
DCMT-HMP	Turning Insert_Positive (Screw on System)	B79
DCMT-MP	Turning Insert_Positive (Screw on System)	B79
DCMT-VF	Turning Insert_Positive (Screw on System)	B79
DCMT-VL	Turning Insert_Positive (Screw on System)	B79
DCMT-VP1	Turning Insert_Positive (Screw on System)	B80
DDJNR/L	Holder (Double clamp system)	B168
DDJNR/L	HSK Tooling System	B231
DDJNR/L	KM Tooling System	B237
DDNNN	HSK Tooling System	B231
DDNNN	KM Tooling System	B238
DDUNR/L	Boring Bar (Double clamp system)	B208
DF	Side Cutter	E413
DNGG-VP1	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B47
DNGG-VP3	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B47

cBN Insert\_Negative (Regrinding)

Turning Insert\_Negative

Turning Insert\_SAVE TURN

Turning Insert\_SAVE TURN

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) **B46** 

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) **B45** 

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) **B44** 

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) **B45** 

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) B48

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) **B43** 

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) B48

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) B46

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) B46

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) **B44** 

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) B46

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) B47

Turning Insert\_Negative (Multi Lock/Lever Lock, HSK Tooling System) B43



B115

B115

B112



DNMG-VC	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B44
DNMG-VF	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B43
DNMG-VL	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B43
DNMG-VM	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B45
DNMG-VP1	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B47
DNMG-VP2	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B47
DNMG-VP3	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B47
DNMG-VP4	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B48
DNMG-VQ	Turning Insert_SAVE TURN	B115
DNMG-VQ	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B45
DNMG-VR	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B46
DNMG-VW	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B48
DNMM	PCD Insert_Negative/Positive	B113
DNMX-SH	Turning Insert_Negative (Multi Lock/Lever Lock, HSK Tooling System)	B48
DNMX-SR	Turning Insert_Negative	B48
DSBNR/L	Holder (Double clamp system)	B168
DSDNN	Holder (Double clamp system)	B169
DSKNR/L	Holder (Double clamp system)	B169
DSKNR/L	Boring Bar (Double clamp system)	B208
DSSNR/L	Holder (Double clamp system)	B169
DTFNR/L	Holder (Double clamp system)	B170
DTFNR/L	Boring Bar (Double clamp system)	B209
DTGNR/L	Holder (Double clamp system)	B170
DVJNR/L	Holder (Double clamp system)	B170
DVVNN	Holder (Double clamp system)	B171
DWLNR/L	Holder (Double clamp system)	B171
DWLNR/L	Boring Bar (Double clamp system)	B209



Drill (KED Plus-2D)	F29~30
Drill (KED Plus-3D)	F31~32
Drill (KED Plus-4D)	F33~34
Drill (KED Plus-5D)	F35~36
Mill-max	E51
Mill-max	E52
Mill-max	E53
Mill-max Plus	E54
Thread I nsert	D10~30
Thread External Holder (Screw on System)	D31
Thread External Holder (Clamp on System)	D31
Thread Insert	D10~19
HSK Tooling System	B236
HSK Tooling System	B236
HSK Tooling System	B236
	Drill (KED Plus-3D)  Drill (KED Plus-4D)  Drill (KED Plus-5D)  Mill-max  Mill-max  Mill-max  Mill-max  Mill-max Plus  Thread I nsert  Thread External Holder (Screw on System)  Thread Insert  HSK Tooling System  HSK Tooling System



FGD	MGT Insert	C28
FGHH	MGT Holder (Face Grooving)	C37
FGM	MGT Insert	C28
FGVH	MGT Holder (Face Grooving)	C38
FMAC(M)3000	Future Mill	E216
FMAC(M)3000-A	Future Mill (Aluminum body)	E218
FMAC(M)4000	Future Mill	E217
FMAC(M)4000-A	Future Mill (Aluminum body)	E219
FMAS3000	Future Mill	E220
FMAS4000	Future Mill	E221
FMM	MGT Insert	C28
FMPC(M)3000	Future Mill	E222
FMPC(M)3000-A	Future Mill (Aluminum body)	E224
FMPC(M)4000	Future Mill	E223
FMPC(M)4000-A	Future Mill (Aluminum body)	E225
FMPS3000	Future Mill	E226
FMPS4000	Future Mill	E227
FMRC(M)3000	Future Mill	E228
FMRC(M)4000	Future Mill	E229
FMRC(M)4000	Future Mill P-Positive	E243
FMRC(M)5000	Future Mill	E230
FMRC(M)5000	Future Mill P-Positive	E244
FMRC(M)6000	Future Mill	E231
FMRC(M)6000	Future Mill P-Positive	E245
FMRCM3000	Future Mill P-Positive	E242
FMRM1000	Future Mill	E238
FMRM1500	Future Mill	E238
FMRM2000	Future Mill	E239
FMRM2500	Future Mill	E239
FMRM2500	Future Mill P-Positive	E250
FMRM3000	Future Mill	E240
FMRM3000	Future Mill P-Positive	E251
FMRM4000	Future Mill	E241
FMRM4000	Future Mill P-Positive	E252
FMRM5000	Future Mill	E241
FMRM5000	Future Mill P-Positive	E253
FMRS1000	Future Mill	E232
FMRS1500	Future Mill	E232
FMRS2000	Future Mill	E233
FMRS2500	Future Mill	E233
FMRS2500	Future Mill P-Positive	E246
FMRS3000	Future Mill	E234
FMRS3000	Future Mill P-Positive	E247
FMRS4000	Future Mill	E235
FMRS4000	Future Mill P-Positive	E248



F		
FMRS5000	Future Mill	E236
FMRS5000	Future Mill P-Positive	E249
FMRS6000	Future Mill	E237
FMRS6000	Future Mill P-Positive	E249
FP Chip Breaker	Turning Chip Breaker	B17
FS Chip Breaker	Turning Chip Breaker	B18

G		
GBE	GBE (Single edge type)	E332
GBEM	GBE (Modular type)	E334
GBE-M	GBE (Multi edge type)	E333
GFIP	Multi functional holder (Grooving Tools)	C71
GFIP	Multi functional holder (Grooving Tools)	C71

Multi functional Insert (Grooving Tools)

C71

E295

GW

HRMDS13

 ${\sf HRMDouble}$ 

G)		
HAVE	HAVE (Multi Edge type)	E339
HAVE	HAVE (Single Edge type)	E340
HDDCM7000	Mill-max Heavy	E58
HDDCM9000	Mill-max Heavy	E58
HECN	Milling Insert (High feed Cutter)	E08
HFMDC(M)-LN10	HFMD (Cutter)	E273
HFMDCM-LN06	HFMD (Cutter)	E272
HFMDM-LN04	HFMD (Modular)	E274
HFMDM-LN06	HFMD (Modular)	E275
HFMDM-LN10	HFMD (Modular)	E276
HFMDS-LN04	HFMD (Shank)	E267
HFMDS-LN06	HFMD (Shank)	E269
HFMDS-LN10	HFMD (Shank)	E271
HFMM	HFMD (Modular)	E283
HFMS1000	HFMD (Shank)	E281
HPEN	Milling Insert (High feed Cutter)	E08
HPEN-WC	Milling Insert (High feed Cutter)	E08
HRMC(M)13	HRM	E300
HRMC(M)15	HRM	E301
HRMDC(M)09	HRMDouble	E289
HRMDC(M)13	HRMDouble	E290
HRMDC(M)16	HRMDouble	E291
HRMDM 06	HRMDouble	E297
HRMDM 09	HRMDouble	E298
HRMDM 13	HRMDouble	E299
HRMDS06	HRMDouble	E292
HRMDS09	HRMDouble	E293

W		
HRMM08	HRM	E305
HRMM10	HRM	E306
HRMM13	HRM	E306
HRMS 08	HRM	E302
HRMS 10	HRM	E302
HRMS 13	HRM	E303
HRMS 15	HRM	E304
HSK100A	Modular Adaptor (HSK)	E404
HSK100A AM3000	HSK Tooling System (Mono-Tool)	E361
HSK100A AM4000	HSK Tooling System (Mono-Tool)	E362
HSK63A	Modular Adaptor (HSK)	E404
HSK63A AM1000	HSK Tooling System (Mono-Tool)	E358
HSK63A AM1000HS	HSK Tooling System (Alpha Mill)	E353
HSK63A AM1500	HSK Tooling System (Mono-Tool)	E359
HSK63A AM1500HS	HSK Tooling System (Alpha Mill)	E354
HSK63A AM2000	HSK Tooling System (Mono-Tool)	E360
HSK63A AM2000HS	HSK Tooling System (Alpha Mill)	E355
HSK63A AM3000HS	HSK Tooling System (Alpha Mill)	E356
HSK63A AM4000HS	HSK Tooling System (Alpha Mill)	E357
HSK63A/100A PAX5000	Pro-X Mill	E393
HSK-XD19	HSK Tooling System (Mono-Tool)	E363

IG	Multi functional Insert (Grooving Tools)	C70
IG	Multi functional holder (Grooving Tools)	C70
IR(L)	Thread Insert	D10~30
IR(L)H	Thread External Holder (Screw on System)	D32
IR(L)H-C	Thread External Holder (Clamp on System)	D32
IRB	Indexable Reamer (Stuffed hole)	F87
IRM	Thread Insert	D10~21
IRT	Indexable Reamer (Throughout hole)	F86

K2D	KING DRILL-2D	F11~12
K2D	KING DRILL (for through coolant system with a lathe)-2D	F21
K2D	KING DRILL (for large diameter drilling)-2D	F25
K3D	KING DRILL-3D	F13~15
K3D	KING DRILL (for through coolant system with a lathe)-3D	F22
K3D	KING DRILL (for large diameter drilling)-3D	F25
K3D*	KING DRILL (for machining a tap foundation hole)-3D	F13~14
K4D	KING DRILL-4D	F16~17
K4D	KING DRILL (for through coolant system with a lathe)-4D	F23
K4D	KING DRILL (for large diameter drilling)-4D	F25





K5D	KING DRILL-5D	F18~19
KCER/L	Multi functional (KGT Cartridge)	C41
KCFR/L	Multi functional (KGT Cartridge)	C41
KEL-ANN	Milling insert (Storm Mill)	E08
KEL-MF	Milling insert (Gear cutter)	E08
KEL-QNN	Milling insert (Storm Mill)	E08
KGEHR/L	Multi functional (KGT Holder)	C15
KGEHR/L-D00A	Multi functional (Auto Tool Holder)	C17
KGEHR/L-D00B	Multi functional (Auto Tool Holder)	C17
KGEHR/L-DOOA	Auto tools (KGT type)	B143
KGEHR/L-DOOB	Auto tools (KGT type)	B143
KGEHR/L-T00	Multi functional (KGT Holder)	C18
KGEUR/L	Multi functional (KGT Holder)	C20
KGEVR/L-T00	Multi functional (KGT Holder)	C19
KGFHR/L	Multi functional (KGT Holder)	C22
KGFVR/L	Multi functional (KGT Holder)	C21
KGGN-A	Multi functional Insert (KGT series)	C14
KGGN-B	Multi functional Insert (KGT series)	C13
KGGN-R	Multi functional Insert (KGT series)	C14
KGIUR/L	Multi functional (KGT Holder)	C23
KGIVR/L	Multi functional (KGT Holder)	C24
KGMI-T	Multi functional Insert (KGT series)	C13
KGML-LP	Auto tools Insert (KGT type)	B144
KGML-LP	Multi functional Insert (KGT series)	C13
KGML-RP	Auto tools Insert (KGT type)	B144
KGML-RP	Multi functional Insert (KGT series)	C13
KGMN-C	Auto tools Insert (KGT type)	B144
KGMN-L	Auto tools Insert (KGT type)	B143
KGMN-L	Multi functional Insert (KGT series)	C12
KGMN-R	Auto tools Insert (KGT type)	B143
KGMN-R	Multi functional Insert (KGT series)	C12
KGMN-T	Auto tools Insert (KGT type)	B143
KGMN-T	Multi functional Insert (KGT series)	C12
KGMR-LP	Auto tools Insert (KGT type)	B144
KGMR-LP	Multi functional Insert (KGT series)	C13
KGMR-RP	Auto tools Insert (KGT type)	B144
KGMR-RP	Multi functional Insert (KGT series)	C13
КСТВ	KGT Blade for Parting off	C25
KM-DCLNR/L	KM Tooling System	B240
KNB	Multi functional Insert (K Notch, Metric)	C57
KNG	Multi functional Insert (K Notch, Metric)	C57
KNG	Multi functional Insert (K Notch, Inch)	C58
KNGP	Multi functional Insert (K Notch, Metric)	C57
KNGP	Multi functional Insert (K Notch, Inch)	C58
KNR	Multi functional Insert (K Notch, Inch)	C58



KNRP	Multi functional Insert (K Notch, Inch)	C58
KNSR	Multi functional (K Notch Holder)	C59
KNT	Multi functional Insert (K Notch, Threading)	C57
KNUX-11	Turning Insert_Negative (Clamp on System)	B49
KNUX-12	Turning Insert_Negative (Clamp on System)	B49
KRGN-A	Multi functional Insert (KGT series)	C14
KRMI-C	Multi functional Insert (KGT series)	C12
KRMN-C	Auto tools Insert (KGT type)	B144
KRMN-C	Multi functional Insert (KGT series)	C12
KSPB	Multi functional (Saw Man-X, Blade)	C65
KSPH	Multi functional(Saw Man-X, Shank)	C66



LBE08/10/12/16/20/25/30/32	Laser Mill (Carbide Shank-Ball, Straight type)	E326
LBE08/10/12/16/20/25/30/32	Laser Mill (Steel Shank-Ball, Taper type)	E327
LBE12/16/20/25/30/32	Laser Mill (Steel Shank-Ball, Straight type)	E327
LBE-MHD	Laser Mill (Modular type)	E330
LBH	Milling Insert (Laser Mill)	E08
LBH-KF	Milling Insert (Laser Mill)	E08
LBH-KH	Milling Insert (Laser Mill)	E09
LBS	Milling Insert (Laser Mill)	E09
LCF	Milling Insert (Laser Mill)	E09
LDET	Milling Insert (Pro-XL Mill)	E09
LDET-MA	Milling Insert (Pro-XL Mill)	E10
LFH	Milling Insert (Laser Mill)	E09
LNCS	Milling Insert (Rich Mill)	E10
LNE	Milling Insert (Gear cutter)	E10
LNEX-MA	Milling Insert (Rich Mill)	E11
LNEX-MF	Milling Insert (Rich Mill)	E11
LNEX-MM	Milling Insert (Rich Mill)	E11
LNKT-MA	Milling Insert (TP2P)	E10
LNKT-ML	Milling Insert (TP2P)	E11
LNKT-MM	Milling Insert (TP2P)	E11
LNMX-MF	Milling Insert (Rich Mill)	E11
LNMX-MF	Milling Insert (HFMD)	E12
LNMX-ML	Milling Insert (HFMD)	E12
LNMX-MM	Milling Insert (Rich Mill)	E11
LNMX-MM	Milling Insert (HFMD)	E12
LP Chip Breaker	Turning Chip Breaker	B20
LPEW	Milling Insert (HFM)	E12
LPMT-MF	Milling Insert (HFM)	E12
LPMW	Milling Insert (HFM)	E13
LR	Milling Insert (Laser Mill)	E09
LRE10/12	Laser Mill (Steel Shank-Corner R, Taper type)	E329





LRE10/12/16/20/25/30/32	Laser Mill (Carbide Shank-Corner R, Straight type)	E328
LRE12/16/25/30/32	Laser Mill (Steel Shank-Corner R, Straight type)	E329
LRH	Milling Insert (Laser Mill)	E09
LW Chip Breaker	Turning Chip Breaker	B32
LXET-MA	Milling Insert (Pro-L Mill)	E13
LXET-ML	Milling Insert (Pro-L Mill)	E13



MAPD000HR/L-Z0	Aero Mill-Mini	E155
MAPDS000HR/L-Z0	Aero Mill-Mini	E154
MAT	Modular Adaptor (Steel Shank)	E401
MAT-C	Modular Adaptor (Carbide Shank)	E402
MBBR	Auto tools (MSB Tools_Back Boring)	B148
MBCR	Auto tools (MSB Tools_Copying)	B147
MBFR	Auto tools ((MSB Tools_Chamfering)	B148
MBR	Auto tools ((MSB Tools_Boring)	B147
МС	Multi functional Insert (Bearing Solution)	B156
MCER/L	HSK Tooling System (Cartridge)	B234
MCER/L	KM Tooling System (Cartridge)	B240
MCER/L	Multi functional (MGT Cartridge)	C42
MCFR/L	HSK Tooling System (Cartridge)	B235
MCFR/L	Multi functional (MGT Cartridge)	C42
MCHR/L	HSK Tooling System	B234
MCHR/L	KM Tooling System (Cartridge)	B239
MCHR/L	Multi functional (MGT Cartridge Holder)	C40
MCKNR/L	Holder (Multi Lock System)	B183
MCLNR/L	Holder (Multi Lock System)	B183
MCLNR/L	Boring Bar (Multi Lock System)	B213
MCMNN	Holder (Multi Lock System)	B183
MCRNR/L	Holder (Multi Lock System)	B184
MCVR/L	Multi functional (MGT Cartridge Holder)	C40
MDJNR/L	Holder (Multi Lock System)	B184
MDNNN	Holder (Multi Lock System)	B184
MDQNR/L	Holder (Multi Lock System)	B185
MDUNR/L	Boring Bar (Multi Lock System)	B213
MFMN	Multi functional Insert (MGT Cartridge, MGT)	C28
MGEHR/L	Auto tools (MGT type)	B144
MGEHR/L	Multi functional (MGT Holder)	C31
MGEHR/L	Multi functional (MGT for Aluminum Wheel)	C45
MGEHR/L-15	Multi functional (MGT for Aluminum Wheel)	C45
MGEUR/L	Multi functional (MGT Holder)	C32
MGEVR/L	Multi functional (MGT Holder)	C33
MGEXR/L	Multi functional (MGT for Aluminum Wheel)	C46
MGFHR/L	Multi functional (MGT Holder)	C36



MGFR	Auto tools (MSB Tools_Face Grooving)	B150
MGFVR/L	Multi functional (MGT Holder)	C36
MGGN-A	Multi functional Insert (MGT Cartridge, MGT)	C29
MGGN-M	Multi functional Insert (MGT Cartridge, MGT)	C28
MGIUR/L	Multi functional (MGT Holder)	C34
MGIUR/L-MR	Multi functional (MGT for Aluminum Wheel)	C45
MGIUR/L-MV	Multi functional (MGT for Aluminum Wheel)	C46
MGIVR/L	Multi functional (MGT Holder)	C35
MGIXR/L-MR	Multi functional (MGT for Aluminum Wheel)	C46
MGML-PS	Multi functional Insert (MGT Cartridge, MGT)	C30
MGML-PT	Multi functional Insert (MGT Cartridge, MGT)	C30
MGMN-G	Auto tools Insert (MGT type)	B144
MGMN-G	Multi functional Insert (MGT Cartridge, MGT)	C28
MGMN-L	Multi functional Insert (MGT Cartridge, MGT)	C29
MGMN-M	Auto tools Insert (MGT type)	B144
MGMN-M	Multi functional Insert (MGT Cartridge, MGT)	C28
MGMN-R	Multi functional Insert (MGT Cartridge, MGT)	C29
MGMN-T	Multi functional Insert (MGT Cartridge, MGT)	C29
MGMR-PS	Multi functional Insert (MGT Cartridge, MGT)	C30
MGMR-PT	Multi functional Insert (MGT Cartridge, MGT)	C30
MGR	Auto tools (MSB Tools_Square Grooving)	B149
MGRR	Auto tools (MSB Tools_Round Grooving)	B150
MK Chip Breaker	Turning Chip Breaker	B24
MM Chip Breaker	Turning Chip Breaker	B22
MP Chip Breaker	Turning Chip Breaker	B21
МРМТ	Milling Insert	E14
MRGN-A	Multi functional Insert (MGT Cartridge, MGT)	C30
MRGN-A	Multi functional Insert (MGT for Aluminum Wheel)	C44
MRMN-M	Multi functional Insert (MGT Cartridge, MGT)	C30
MS Chip Breaker	Turning Chip Breaker	B19
MSBNR/L	Holder (Multi Lock System)	B185
MSDNN	Holder (Multi Lock System)	B185
MSKNR/L	Holder (Multi Lock System)	B186
MSKNR/L	Boring Bar (Multi Lock System)	B213
MSRNR/L	Holder (Multi Lock System)	B186
MSSNR/L	Holder (Multi Lock System)	B187
МТ	Multi functional (Multi Turn)	B154
MTENN	Holder (Multi Lock System)	B187
MTFNR/L	Holder (Multi Lock System)	B187
MTFNR/L	Boring Bar (Multi Lock System)	B214
MTGNR/L	Holder (Multi Lock System)	B188
MTJNR/L	Holder (Multi Lock System)	B188
MTR		
INITIX	Auto tools (MSB Tools_Threading)	B151
MVGN	· · · ·	B151 C44







MVQNR/L	Holder (Multi Lock System)	B189
MVUNR/L	Boring Bar (Multi Lock System)	B214
MVVNN	Holder (Multi Lock System)	B189
MWLNR/L	Holder (Multi Lock System)	B189
MWLNR/L	Boring Bar (Multi Lock System)	B214



NFTFR/L	Multi functional Insert ( Fine Tools)	C69
NFTGR/L	Multi functional Insert ( Fine Tools)	C68
NFTIH	Multi functional (Fine Tools Holder)	C69
NFTTR/L	Multi functional Insert ( Fine Tools)	C68
NU-CCGW	cBN Insert_Positive (Multi-Corner Type)	B111
NU-CNGA	cBN Insert_Negative (Multi-Corner Type)	B110
NU-DCGW	cBN Insert_Positive (Multi-Corner Type)	B111
NU-DNGA	cBN Insert_Negative (Multi-Corner Type)	B110
NU-SNGA	cBN Insert_Negative (Multi-Corner Type)	B110
NU-TCGW	cBN Insert_Positive (Multi-Corner Type)	B111
NU-TNGA	cBN Insert_Negative (Multi-Corner Type)	B110
NU-TPGB	cBN Insert_Positive (Multi-Corner Type)	B111
NU-TPGN	cBN Insert_Positive (Multi-Corner Type)	B111
NU-TPGW	cBN Insert_Positive (Multi-Corner Type)	B111
NU-VBGW	cBN Insert_Positive (Multi-Corner Type)	B111
NU-VCGW	cBN Insert_Positive (Multi-Corner Type)	B111
NU-VNGA	cBN Insert_Negative (Multi-Corner Type)	B110



OFCN	Milling Insert (Double Mill)	E14
OFCW	Milling Insert (Double Mill)	E14
OFKR-MA	Milling Insert (Double Mill)	E14
OFKR-MF	Milling Insert (Double Mill)	E14
OFKR-MM	Milling Insert (Double Mill)	E14
OFKT-MA	Milling Insert (Double Mill)	E14
OFKT-MF	Milling Insert (Double Mill)	E14
OFKT-MM	Milling Insert (Double Mill)	E15
ONHX-MA	Milling Insert (Rich Mill)	E15
ONHX-MF	Milling Insert (Rich Mill)	E15
ONHX-ML	Milling Insert (Rich Mill)	E15
ONHX-MM	Milling Insert (Rich Mill)	E15
ONHX-W	Milling Insert (Rich Mill)	E15
ONMX-MF	Milling Insert (Rich Mill)	E15
ONMX-MM	Milling Insert (Rich Mill)	E15
ORC	O-ring Cutter	E365
ORG	Milling Insert (O-Ring Cutter)	E15



PAC(M)2000	Pro-A Mill	E385
PAC(M)4000	Pro-A Mill	E385
PALCM	Pro-L Mill	E394
PALS (Multi-edge)	Pro-L Mill	E397
PALS (Single-edge)	Pro-L Mill	E395
PAM2000	Pro-A Mill	E387
PAS2000	Pro-A Mill	E386
PAS4000	Pro-A Mill	E386
PAVCM-XD19	Pro-V Mill	E399
PAVS-XD19	Pro-V Mill	E400
PAXC(M)5000	Pro-X Mill	E388
PAXC(M)6000	Pro-X Mill	E389
PAXM5000	Pro-X Mill	E392
PAXS5000	Pro-X Mill	E390
PAXS6000	Pro-X Mill	E391
PBAC(M)5000	Power Buster	E68
PBPCM6000	Power Buster	E70
PBZC(M)5000	Power Buster	E69
PCBNR/L	Holder (SAVE TURN)	B116
PCBNR/L	Holder (Lever Lock System)	B172
PCKNR/L	Holder (Lever Lock System)	B172
PCLNR	Holder (KHP)	B202
PCLNR/L	Holder (SAVE TURN)	B116
PCLNR/L	Boring Bar (SAVE TURN)	B119
PCLNR/L	Holder (Lever Lock System)	B173
PCLNR/L	Boring Bar (Lever Lock System)	B210
PCLNR/L	HSK Tooling System	B232
PCLNR/L	KM Tooling System	B238
PCMNN	HSK Tooling System	B232
PCMNN	KM Tooling System	B238
PDF	PCD Face Cutter	E156
PDJNR	Holder (KHP)	B202
PDJNR/L	Holder (SAVE TURN)	B116
PDJNR/L	Holder (Lever Lock System)	B173
PDJNR/L	HSK Tooling System	B232
PDJNR/L	KM Tooling System	B239
PDNNN	HSK Tooling System	B232
PDNNN	KM Tooling System	B239
PDNNR/L	Holder (SAVE TURN)	B117
PDNNR/L	Holder (Lever Lock System)	B174
PDQNR/L	Holder (SAVE TURN)	B117
PDSNR/L	Boring Bar (Lever Lock System)	B210
PDUNR/L	Boring Bar (SAVE TURN)	B119
PDUNR/L	Boring Bar (Lever Lock System)	B210
PDZNR/L	Boring Bar (SAVE TURN)	B120





P		
PES2000	Turbo Mill	E61
PES3000	Turbo Mill	E61
PES4000	Turbo Mill	E61
PF(M)4000	Mill-max	E55
PNEJ	Milling Insert (Side Cutter)	E16
PNEJ-C	Milling Insert (Side Cutter)	E16
PPN(M)4000	Mill-max	E56
PRDCN	Holder (Lever Lock System)	B174
PRDCN	HSK Tooling System	B233
PRGCR/L	Holder (Lever Lock System)	B175
PRGCR/L	HSK Tooling System	B233
PSBNR/L	Holder (SAVE TURN)	B117
PSBNR/L	Holder (Lever Lock System)	B175
PSDNN	Holder (SAVE TURN)	B118
PSDNN	Holder (Lever Lock System)	B176
PSKNR/L	Holder (SAVE TURN)	B118
PSKNR/L	Boring Bar (SAVE TURN)	B120
PSKNR/L	Holder (Lever Lock System)	B176
PSKNR/L	Boring Bar (Lever Lock System)	B211
PSSNR	Holder (KHP)	B202
PSSNR/L	Holder (SAVE TURN)	B118
PSSNR/L	Holder (Lever Lock System)	B177
PT	Tap Series (Point Tap)	D80
PTFNR/L	Holder (Lever Lock System)	B177
PTFNR/L	Boring Bar (Lever Lock System)	B211
PTGNR/L	Holder (Lever Lock System)	B178
PTTNR/L	Holder (Lever Lock System)	B178
PWLNR	Holder (KHP)	B203
PWLNR/L	Holder (SAVE TURN)	B119
PWLNR/L	Boring Bar (SAVE TURN)	B120
PWLNR/L	Holder (Lever Lock System)	B178
PWLNR/L	Boring Bar (Lever Lock System)	B211
PXL(S)	Pro-XL Mill	E398
Q		
QCGT	Multi functional Insert (Multi Turn)	B154
QCMT	Multi functional Insert (Multi Turn)	B154
R		
RAFCB	Side Milling Cutter (Radial type-Full side cutter)	E409
RAFCP	Side Milling Cutter (Radial type-Full side cutter)	E409
RAHCB	Side Milling Cutter (Radial type-Half side cutter)	E410
RAHCP	Side Milling Cutter (Radial type-Half side cutter)	E410

R		
RC	Milling Inport /PFF)	E46
RCGT-AK	Milling Insert (BFE)	E16
RCGT-AR	Aluminum Insert_Positive (Screw on System)	B105 B105
RCMT-VM	Aluminum Insert_Positive (Screw on System)	
RCM1-VM	Turning Insert_Positive (Screw on System)	
	Turning Insert_Positive (Screw on System)	E16
RDCT-MA	Milling Insert (Future Mill)	
RDHW RDKT-MF	Milling Insert (Future Mill)	E16
RDKT-ML	Milling Insert (Future Mill)	E17
RDKT-MM	Milling Insert (Future Mill)	E17
	Milling Insert (Future Mill)	
RDKW	Milling Insert (Future Mill)	E17
REKR-MM	Milling Insert (Double Mill)	E17
RI	Drill (Indexable Reamer Insert)	F85
RK Chip Breaker	Turning Chip Breaker	B25
RM Chip Breaker	Turning Chip Breaker	B23 F142
RM14XCM-XN06	Rich Mill	
RM16AC(M)6000	Rich Mill	E143
RM16AC(M)8000	Rich Mill	E144
RM3PC(M)3000	Rich Mill	E99
RM3PC(M)4000	Rich Mill	E100
RM3PC(M)5000	Rich Mill	E101
RM3PM3000	Rich Mill	E104
RM3PM4000	Rich Mill	E104
RM3PS3000	Rich Mill	E102
RM3PS4000	Rich Mill	E103
RM4PC(M)3000	Rich Mill	E105
RM4PC(M)4000	Rich Mill	E106
RM4PFCB3000	Rich Mill	E107
RM4PFCB4000	Rich Mill	E108
RM4PFCP3000	Rich Mill	E111
RM4PFCP4000	Rich Mill	E112
RM4PHCB3000	Rich Mill	E109
RM4PHCB4000	Rich Mill	E110
RM4PHCP3000	Rich Mill	E113
RM4PHCP4000	Rich Mill	E114
RM4PM3000	Rich Mill	E117
RM4PS3000	Rich Mill	E115
RM4PS4000	Rich Mill	E116
RM4ZC(M)3000	Rich Mill	E118
RM4ZC(M)4000	Rich Mill	E118
RM4ZM3000	Rich Mill	E119
RM4ZS3000	Rich Mill	E119
RM6PC(M)-WN08	Rich Mill	E121
RM6PCM-WN04	Rich Mill	E120
RM6PM-WN04	Rich Mill	E124





RM6PM-WN08	Rich Mill	E125
RM6PS-WN04	Rich Mill	E122
RM6PS-WN08	Rich Mill	E123
RM8AC(M)4000	Rich Mill	E126
RM8AC(M)5000	Rich Mill	E128
RM8EC(M)4000	Rich Mill	E130
RM8EC(M)5000	Rich Mill	E132
RM8QC(M)4000	Rich Mill	E134
RMH8AC(M)4000	Rich Mill	E127
RMH8AC(M)5000	Rich Mill	E129
RMH8EC(M)4000	Rich Mill	E131
RMH8EC(M)5000	Rich Mill	E133
RMH8QC(M)4000	Rich Mill	E135
RMRC(M)-RN12	Rich Mill	E145
RMRS-RN12	Rich Mill	E146
RMT8A(M)4000	Rich Mill	E136
RMT8A(M)5000	Rich Mill	E137
RMT8E(M)4000	Rich Mill	E138
RMT8E(M)5000	Rich Mill	E139
RMT8Q(M)4000	Rich Mill	E140
RMX8AC(M)-SA14	Rich Mill	E141
RNMG-B25	Turning Insert_Negative	B49
RNMX-ML	Milling Insert (Rich Mill)	E17
RPCT-MA	Milling Insert (Future Mill P-Positive)	E17
RPET-ML	Milling Insert (Future Mill P-Positive)	E18
RPGT	Multi functional Insert (Bearing Solution)	B158
RPMT-MF	Milling Insert (Future Mill P-Positive)	E18
RPMT-MM	Milling Insert (Future Mill P-Positive)	E18
RPMW	Milling Insert (Future Mill P-Positive)	E18
RT	Tap Series (Roll Tap)	D77, 82



SAGX-ML	Milling Insert (Alpha Mill)	E18
SAGX-MM	Milling Insert (Alpha Mill)	E18
SBBR/L	Auto Tools Insert (Blade type)	B137
SBCR/L	Auto Tools Insert (Blade type)	B138
SBGR/L	Auto Tools Insert (Blade type)	B137
SBHR/L	Holder (Auto Tools_Blade type)	B137
SBHR/L-X	Holder (Auto Tools_Blade type)	B137
SBR/L	Auto Tools Insert (Multi utility type)	B140
SBTR/L	Auto Tools Insert (Blade type)	B137
SCACR/L	Holder (Auto Tools_ISO type)	B123
SCACR/L	Holder (Screw on System)	B190
SCGT-AK	Aluminum Insert_Positive (Screw on System)	B106



SCGT-AR	Aluminum Insert_Positive (Screw on System)	B106
SCKN	Milling Insert (Mill Max Heavy)	E19
SCLCR/L	Holder (Auto Tools_ISO type)	B123
SCLCR/L	Holder (Auto Tools_KHP)	B129
SCLCR/L	Holder (Screw on System)	B190
SCLCR/L	Boring Bar (Screw on System)	B215
SCLCR/L	Compact Mini	B225
SCLPR/L	Boring Bar (Screw on System)	B216
SCMT-C25	Turning Insert_Positive (Screw on System)	B84
SCMT-FP	Turning Insert_Positive (Screw on System)	B84
SCMT-HMP	Turning Insert_Positive (Screw on System)	B84
SCMT-MP	Turning Insert_Positive (Screw on System)	B84
SCMT-VF	Turning Insert_Positive (Screw on System)	B84
SCMT-VL	Turning Insert_Positive (Screw on System)	B84
SCR/L	Auto Tools Insert (Multi utility type)	B140
SDACR/L	Holder (Screw on System)	B190
SDCN	Milling Insert (Mill-max, High feed Cutter)	E19
SDET-MA	Milling Insert (Future Mill)	E19
SDET-MF	Milling Insert (Future Mill)	E19
SDET-MM	Milling Insert (Future Mill)	E19
SDJCR/L	Holder (Auto Tools-ISO Type)	B123
SDJCR/L	Holder (Auto Tools-KHP)	B129
SDJCR/L	Holder (Screw on System)	B191
SDKN-CM	Milling Insert	E19
SDKN-MU	Milling Insert (Mill-Max)	E20
SDKN-SU	Milling Insert (Mill-max, Turbo Mill)	E20
SDKR-MX	Milling Insert (Mill-max, Turbo Mill)	E20
SDMT-MM	Milling Insert (Tank Mill, GBE)	E20
SDNCN	Holder (Auto Tools-ISO Type)	B124
SDNCN	Holder (Screw on System)	B191
SDQCR/L	Boring Bar (Screw on System)	B217
SDUCR/L	Boring Bar (Screw on System)	B218
SDXT-MA	Milling Insert (Future Mill)	E20
SDXT-MF	Milling Insert (Future Mill)	E20
SDXT-MM	Milling Insert (Future Mill)	E20
SDZCR/L	Boring Bar (Screw on System)	B219
SECA	Milling Insert	E20
SECN	Milling Insert (Mill-max)	E21
SEET-MA	Milling Insert (Future Mill)	E21
SEET-MF	Milling Insert (Future Mill)	E21
SEET-MM	Milling Insert (Future Mill)	E21
SEEW	Milling Insert (Future Mill)	E21
SEEW-W	Milling Insert (Future Mill)	E21
SEKN-SU	Milling Insert (Mill-max)	E21
SEKR-MX	Milling Insert (Mill-max)	E22







SE	MN	Milling Insert	E22
SE	XT-MF	Milling Insert (Future Mill)	E22
SE	XT-MM	Milling Insert (Future Mill)	E22
SE	XT-MR	Milling Insert (Future Mill)	E22
SF	CN	Milling Insert (Mill-max)	E22
SG	BR/L	Auto Tools Insert (Multi utility type)	B141
SG	R/L	Auto Tools Insert (Multi utility type)	B141
SH	I Chip Breaker	Turning Chip Breaker	B33
SL		Sleeve	B151
SN	/IBB	Multi functional(Saw Man_Block)	C61
SN	<b>IBB</b>	Multi functional(Saw Man-X_Block)	C65
SN	ICF-MF	Milling Insert (Rich Mill)	E22
SN	ICF-MM	Milling Insert (Rich Mill)	E23
SN	ICN	Milling Insert (Mill-max)	E23
SN	IEF	Milling Insert (High feed Cutter)	E23
SN	IEU-MF	Milling Insert (Shave Mill)	E23
SN	IEU-TBW	Milling Insert (Shave Mill)	E24
SN	IEU-WMF	Milling Insert (Shave Mill)	E24
SN	IEW	Milling Insert (Aero Mill-Mini)	E24
SN	IEW-NAF	Milling Insert (Aero Mill-Mini)	E24
SN	IEW-XAF	Milling Insert (Aero Mill-Mini)	E24
SN	IEX	Milling Insert (Cube Mill)	E24
SN	IEX-CU1	Milling Insert (Cube Mill)	E24
SN	IEX-MA	Milling Insert (Rich Mill)	E24
SN	IEX-MF	Milling Insert (Rich Mill)	E25
SN	IEX-ML	Milling Insert (Rich Mill)	E24
SN	IEX-MM	Milling Insert (Rich Mill)	E25
SN	IEX-W	Milling Insert (Rich Mill)	E26
SN	IGA	Turning Insert_Negative (Multi Lock/Lever Lock System)	B54
SN	IGG	Turning Insert_Negative (Multi Lock/Lever Lock System)	B53
SN	IGG-VP3	Turning Insert_Negative (Multi Lock/Lever Lock System)	B55
SN	IGN	Turning Insert_Negative (Lever Lock System/Ceramic Holder)	B56
SN	IGX	Turning Insert_Negative (Multi Lock/Lever Lock System)	B57
SN	IHT-WX	Milling Insert (Wind Mill)	E25
SN	IKN	Milling Insert (Mill-max)	E25
SN	IMA	Turning Insert_Negative (Multi Lock/Lever Lock System)	B53
SN	IMF-MF	Milling Insert (Rich Mill)	E22
SN	IMF-MM	Milling Insert (Rich Mill)	E23
SN	IMG-B25	Turning Insert_Negative (Multi Lock/Lever Lock System)	B52
SN	IMG-CP	Turning Insert_Negative (Multi Lock/Lever Lock System)	B50
SN	IMG-GR	Turning Insert_Negative (Multi Lock/Lever Lock System)	B52
SN	IMG-HA	Turning Insert_Negative (Multi Lock/Lever Lock System)	B56
SN	IMG-HM	Turning Insert_Negative	B51
SN	IMG-LP	Turning Insert_Negative (Multi Lock/Lever Lock System)	B50
SN	IMG-MK	Turning Insert_Negative (Multi Lock/Lever Lock System)	B53



CNING MIM	Turning Insert (SAVE TURN)	B115
SNMG-MM	Turning Insert_Negative (Multi Lock/Lever Lock System)	B54
SNMG-MP	Turning Insert (SAVE TURN)	B115
SNMG-MP	Turning Insert_Negative (Multi Lock/Lever Lock System)	B51
SNMG-RK	Turning Insert_Negative (Multi Lock/Lever Lock System)	B54
SNMG-RM	Turning Insert_Negative (Multi Lock/Lever Lock System)	B55
SNMG-VB	Turning Insert_Negative (Multi Lock/Lever Lock System)	B50
SNMG-VC	Turning Insert_Negative (Multi Lock/Lever Lock System)	B50
SNMG-VF	Turning Insert_Negative (Multi Lock/Lever Lock System)	B50
SNMG-VL	Turning Insert_Negative (Multi Lock/Lever Lock System)	B50
SNMG-VM	Turning Insert_Negative (Multi Lock/Lever Lock System)	B51
SNMG-VP2	Turning Insert_Negative (Multi Lock/Lever Lock System)	B55
SNMG-VP3	Turning Insert_Negative (Multi Lock/Lever Lock System)	B55
SNMG-VP4	Turning Insert_Negative (Multi Lock/Lever Lock System)	B55
SNMG-VQ	Turning Insert (SAVE TURN)	B115
SNMG-VQ	Turning Insert_Negative (Multi Lock/Lever Lock System)	B52
SNMG-VR	Turning Insert_Negative (Multi Lock/Lever Lock System)	B54
SNMM-GH	Turning Insert_Negative (Multi Lock/Lever Lock System)	B57
SNMM-GR	Turning Insert_Negative (Multi Lock/Lever Lock System)	B57
SNMM-VH	Turning Insert_Negative (Lever Lock System)	B57
SNMM-VT	Turning Insert_Negative (Lever Lock System)	B57
SNMX	Turning Insert_Negative (Ceramic Holder)	B56
SNMX-MF	Milling Insert (Rich Mill)	E25
SNMX-MM	Milling Insert (Alpha Mill)	E18
SNMX-MM	Milling Insert (Rich Mill)	E25
SNUN	Turning Insert_Negative (Ceramic Holder)	B56
SP	Multi functional Insert (Saw Man)	C60
SP	Tap series (Spiral Tap)	D76, 81
SPB	Multi functional (Saw Man_Blades)	C61
SPB(M)	Side Cutter	E412
SPB-S	Multi functional (Saw Man_Blades)	C61
	Milling Insert (Mill-max)	E26
SPCN		
	Milling Insert (High feed Cutter)	E26
SPEN-WC	Milling Insert (High feed Cutter)  Drill Insert (KING DRILL)	
SPEN-WC SPET-ND	0 ( 0	E26
SPEN-WC SPET-ND SPEX	Drill Insert (KING DRILL)	E26 F03
SPEN-WC SPET-ND SPEX SPFN	Drill Insert (KING DRILL) Milling Insert (Mill-max)	E26 F03 E26
SPEN-WC SPET-ND SPEX SPFN SPGA	Drill Insert (KING DRILL)  Milling Insert (Mill-max)  Milling Insert (Side Cutter)	E26 F03 E26 E26
SPEN-WC SPET-ND SPEX SPFN SPGA SPGH	Drill Insert (KING DRILL)  Milling Insert (Mill-max)  Milling Insert (Side Cutter)  Turning Insert_Positive	E26 F03 E26 E26 B86
SPEN-WC SPET-ND SPEX SPFN SPGA SPGH SPGN	Drill Insert (KING DRILL)  Milling Insert (Mill-max)  Milling Insert (Side Cutter)  Turning Insert_Positive  Multi functional Insert (Bearing Solution)	E26 F03 E26 E26 B86 B158
SPEN-WC SPET-ND SPEX SPFN SPGA SPGH SPGN	Drill Insert (KING DRILL)  Milling Insert (Mill-max)  Milling Insert (Side Cutter)  Turning Insert_Positive  Multi functional Insert (Bearing Solution)  PCD Insert_Positive	E26 F03 E26 E26 B86 B158 B113
SPEN-WC SPET-ND SPEX SPFN SPGA SPGH SPGN SPGN SPGR	Drill Insert (KING DRILL)  Milling Insert (Mill-max)  Milling Insert (Side Cutter)  Turning Insert_Positive  Multi functional Insert (Bearing Solution)  PCD Insert_Positive  Turning Insert_Positive	E26 F03 E26 E26 B86 B158 B113 B86 B158
SPEN-WC SPET-ND SPEX SPFN SPGA SPGH SPGN SPGN SPGR SPGR	Drill Insert (KING DRILL)  Milling Insert (Mill-max)  Milling Insert (Side Cutter)  Turning Insert_Positive  Multi functional Insert (Bearing Solution)  PCD Insert_Positive  Turning Insert_Positive  Multi functional Insert (Bearing Solution)	E26 F03 E26 E26 B86 B158 B113 B86 B158 B85
SPEN-WC SPET-ND SPEX SPFN SPGA SPGH SPGN SPGN SPGR SPGR SPGR-F SPGR-M	Drill Insert (KING DRILL)  Milling Insert (Mill-max)  Milling Insert (Side Cutter)  Turning Insert_Positive  Multi functional Insert (Bearing Solution)  PCD Insert_Positive  Turning Insert_Positive  Multi functional Insert (Bearing Solution)  Turning Insert_Positive (Clamp on System)	E26 F03 E26 E26 B86 B158 B113 B86 B158 B158 B85 B85





SPH-S	Multi functional (Saw Man_Holder)	C62
SPKN-MU	Milling Insert (Mill-max)	E27
SPKN-SU	Milling Insert (Mill-max)	E27
SPKR-MX	Milling Insert (Mill-max)	E27
SPMN	Milling Insert (Chamfer tools)	E27
SPMR-F	Turning Insert_Positive (Clamp on System)	B85
SPMR-M	Turning Insert_Positive (Clamp on System)	B85
SPMT	Milling Insert (Tank Mill, GBE, BT Tooling System)	E27
SPMT-KC	Milling Insert (Chamfer tools)	E27
SPMT-LD	Drill Insert (KING DRILL)	F03
SPMT-MM	Milling Insert (Tank Mill, GBE)	E27
SPMT-PD	Drill Insert (KING DRILL)	F03
SPMT-VF	Turning Insert_Positive (Clamp on System)	B85
SPMT-VL	Turning Insert_Positive	B85
SPP(M)	Side Cutter	E411
SPS	Side Cutter	E413
SPUN	Turning Insert_Positive	B85
SR	Tap series (Spiral Roll Tap)	D78, 83
SR Chip Breaker	Turning Chip Breaker	B33
SRCPR/LB	Bearing Solution	B157
SRDCN	Holder (Screw on System)	B191
SRGCR	Holder (KHP)	B203
SRGCR/L	Holder (Screw on System)	B192
SRGPR/LE	Bearing Solution	B157
SRGPR/LF	Bearing Solution	B157
SSBCR/L	Holder (Screw on System)	B192
SSDCN	Holder (Screw on System)	B192
SSKCR/L	Holder (Screw on System)	B193
SSKCR/L	Boring Bar (Screw on System)	B219
SSKCR/L	Cartridge (Screw on System)	B245
SSKPR/L	Boring Bar (Screw on System)	B219
SSKPR/LB	Bearing Solution	B158
SSSCR/L	Holder (Screw on System)	B193
SSSCR/L	Cartridge (Screw on System)	B246
ST	Tap series (Straight Tap)	D75, 79
STACR/L	Holder (Auto Tools-ISO Type)	B124
STACR/L	Holder (Screw on System)	B193
STFCR/L	Holder (Screw on System)	B194
STFCR/L	Boring Bar (Screw on System)	B220
STFCR/L	Cartridge (Screw on System)	B246
STFPR/L	Boring Bar (Screw on System)	B221
STGCR/L	Holder (Screw on System)	B194
STLBR/L	Compact Mini	B225
STMD1T	Solid Threading Endmills (ISO Metric)	D64, 68
STMD2L	Solid Threading Endmills (ISO Metric / UN)	D69~70



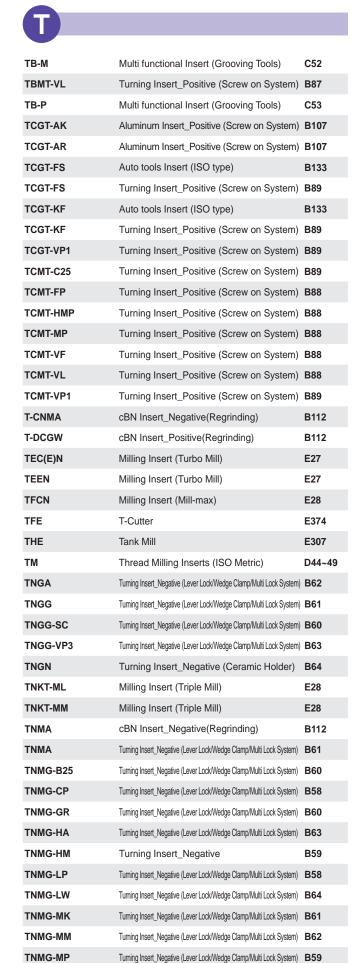
STMD3T	Solid Threading Endmills (ISO Metric / UN)	D65~67
STMH	Solid Threading Endmills (ISO Metric)	D57~60
STMHC	Solid Threading Endmills (ISO Metric)	D51~56
STMS	Solid Threading Endmills (ISO Metric)	D61~63
STR/L	Auto Tools Insert (Multi utility type)	B141
STTCR/L	Holder (Screw on System)	B194
STTCR/L	Cartridge (Screw on System)	B247
STUBR/L	Compact Mini	B225
STUPR/L	Compact Mini	B226
STWCR/L	Cartridge (Screw on System)	B247
STWPR/L	Boring Bar (Screw on System)	B222
SVABR/L	Holder (Screw on System)	B195
SVACR/L	Holder (Auto Tools-ISO Type)	B124
SVAPR/L	Holder (Auto Tools-ISO Type)	B125
SVHBR/L	Holder (Screw on System)	B195
SVJBR	Holder (KHP)	B203
SVJBR/L	Holder (Auto Tools-ISO Type)	B125
SVJBR/L	Holder (Screw on System)	B195
SVJCR/L	Holder (Auto Tools-ISO Type)	B125
SVJCR/L	Holder (Auto Tools-KHP)	B129
SVJCR/L	Holder (Screw on System)	B196
SVJCR/L	Boring Bar (Screw on System)	B222
SVJPR/L	Holder (Auto Tools-ISO Type)	B126
SVPBR/L	HSK Tooling System	B233
SVQBR/L	Boring Bar (Screw on System)	B222
SVQCR/L	Boring Bar (Screw on System)	B223
SVUBR/L	Boring Bar (Screw on System)	B223
SVUCR/L	Boring Bar (Screw on System)	B223
SVVBN	Holder (Screw on System)	B196
SVVBN	HSK Tooling System	B233
SVVCN	Holder (Screw on System)	B196
SVVPN	Holder (Auto Tools-ISO Type)	B126
SWLCR/L	Boring Bar (Screw on System)	B224
SWUBR/L	Compact Mini	B227
SXGNR/L	Holder (Auto Tools_Multi utility type)	B140



TAFCB	Side Milling Cutter (Tangential type-Full side cutter)	E407
TAFCP	Side Milling Cutter (Tangential type-Full side cutter)	E407
TAHCB	Side Milling Cutter (Tangential type-Half side cutter)	E408
TAHCP	Side Milling Cutter (Tangential type-Half side cutter)	E408
ТВ	Multi functional Insert (Grooving Tools)	C51
твст	Turning Insert_Positive (Compact Mini)	B87
ТВН	Multi functional (Grooving Tools)	C54







Turning Insert\_Negative (Lever Lock/Wedge Clamp/Multi Lock System) B62

TNMG-RK

V		
TNMG-RM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B63
TNMG-VB	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B58
TNMG-VC	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B59
TNMG-VF	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B58
TNMG-VL	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B58
TNMG-VM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B59
TNMG-VP2	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B63
TNMG-VP3	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B63
TNMG-VP4	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B63
TNMG-VQ	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B60
TNMG-VR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B62
TNMG-VW	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B64
TNMM-GH	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B65
TNMM-GR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B65
TNMX	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B65
TNMX-NM	Milling Insert (Power Buster)	E28
TNMX-SH	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B64
TNMX-SR	Turning Insert_Negative	B64
ТОЕН	Turning Insert_Positive	B90
TP2PCM-LN08	TP2P	E311
TP2PCM-LN14	TP2P	E312
TP2PCM-LN17	TP2P	E313
TP2PS-LN08	TP2P	E314
TP2PS-LN14	TP2P	E315
TP2PS-LN17	TP2P	E316
TPCN	Milling Insert (Mill-max, Side cutter)	E28
TPD	Drill Insert (TPDC Plus Drill)	F47~49
TPD	Drill Insert (TPDB Plus Drill)	F57
TPD	Drill Insert (TPDB-F)	F66
TPD	Drill Insert (TPDB-H)	F71
TPDB-F(1.5D)	Drill (TPDB-F)	F67
TPDB-H(3D)	Drill (TPDB-H)	F72
TPDB-H(4D)	Drill (TPDB-H)	F73
TPDB-H(8D)	Drill (TPDB-H)	F74
TPDB-P(10D)	Drill (TPDB Plus)	F61
TPDB-P(12D)	Drill (TPDB Plus)	F62
TPDB-P(3D)	Drill (TPDB Plus)	F58
TPDB-P(5D)	Drill (TPDB Plus)	F59
TPDB-P(8D)	Drill (TPDB Plus)	F60
TPDC(1.5D)	Drill (TPDC Plus)	F51
TPDC(10D)	Drill (TPDC Plus)	F53
TPDC(12D)	Drill (TPDC Plus)	F53
TPDC(3D)	Drill (TPDC Plus)	F51
TPDC(5D)	Drill (TPDC Plus)	F52
TPDC(8D)	Drill (TPDC Plus)	F52
50(35)	Dim (11 DOT 103)	1 32



TPDX(3D)	Drill (TPDC Plus)	F50
TPDX(5D)	Drill (TPDC Plus)	F50
TPDX(8D)	Drill (TPDC Plus)	F50
TPGB	cBN Insert_Positive (Regrinding)	B112
TPGH	Turning Insert_Positive	B93
TPGN	PCD Insert_Positive	B113
TPGN	Turning Insert_Positive	B92
TPGR-F	Turning Insert_Positive (Clamp on System)	B91
TPGR-M	Turning Insert_Positive (Clamp on System)	B92
TPGT	Turning Insert_Positive (Screw on System)	B93
TPGW	PCD Insert_Positive	B113
TPGX	Turning Insert_Positive (Screw on System)	B93
TPKN-MU	Milling Insert (Mill-max)	E29
TPKN-SU	Milling Insert (Mill-max)	E29
TPKR-MX	Milling Insert (Mill-max)	E29
TPMCM-TN16	Triple Mill	E258
TPMCM-TN20	Triple Mill	E259
TPMR-F	Turning Insert_Positive (Clamp on System)	B91
TPMR-M	Turning Insert_Positive (Clamp on System)	B91
TPMS-TN11	Triple Mill	E260
TPMS-TN16	Triple Mill	E261
TPMT-MP	Turning Insert_Positive (Screw on System)	B90
TPMT-MP	Turning Insert_Positive (Screw on System)	B91
TPMT-VF	Turning Insert_Positive (Screw on System)	B91
TPMT-VL	Turning Insert_Positive (Screw on System)	B91
TPUN	Turning Insert_Positive	B92
T-TPGB	cBN Insert_Negative (Regrinding)	B112
T-VNMA	cBN Insert_Negative (Regrinding)	B112
TWX-KC	Milling Insert (Multi functional Chamfer Tool)	E29



D26 UNJ (Unified Constant Thread) Thread Insert



VB Chip Breaker	Turning Chip Breaker	B29
VBGT	Aluminum Insert_Positive (Screw on System)	B95
VBGT-AK	Aluminum Insert_Positive (Screw on System)	B108
VBGT-AR	Turning Insert_Positive (Screw on System)	B108
VBGT-FS	Auto tools Insert (ISO type)	B133
VBGT-FS	Turning Insert_Positive (Screw on System)	B95
VBGT-KF	Auto tools Insert (ISO type)	B133
VBGT-KF	Turning Insert_Positive (Screw on System)	B96
VBGT-KM	Auto tools Insert (ISO type)	B133



VBGT-KM	Turning Insert_Positive (Screw on System)	B96
VBGT-VP1	Turning Insert_Positive (Screw on System)	B95
VBGW	PCD Insert_Positive	B113
VBMT	PCD Insert_Positive	B113
VBMT	Turning Insert_Positive (Screw on System)	B95
VBMT-FP	Turning Insert_Positive (Screw on System)	B94
VBMT-HMP	Turning Insert_Positive (Screw on System)	B94
VBMT-MP	Turning Insert_Positive (Screw on System)	B94
VBMT-VB	Turning Insert_Positive (Screw on System)	B94
VBMT-VF	Turning Insert_Positive (Screw on System)	B94
VBMT-VL	Turning Insert_Positive (Screw on System)	B94
VBMT-VP1	Turning Insert_Positive (Screw on System)	B95
VBMW	cBN Insert_Positive (Regrinding)	B112
VC Chip Breaker	Turning Chip Breaker	B30
VCET-KF	Auto Tools Insert (ISO type)	B134
VCET-KF	Turning Insert_Positive (Screw on System)	B99
VCET-KM	Auto Tools Insert (ISO type)	B134
VCET-KM	Turning Insert_Positive (Screw on System)	B99
VCGT-AK	Aluminum Insert_Positive (Screw on System)	B109
VCGT-AR	Aluminum Insert_Positive (Screw on System)	B109
VCGT-FS	Auto Tools Insert (ISO type)	B134
VCGT-FS	Turning Insert_Positive (Screw on System)	B98
VCGT-KF	Auto Tools Insert (ISO type)	B133
VCGT-KF	Turning Insert_Positive (Screw on System)	B99
VCGT-KM	Auto Tools Insert (ISO type)	B134
VCGT-KM	Turning Insert_Positive (Screw on System)	B99
VCGT-MS	Auto Tools Insert (ISO type)	B134
VCGT-MS	Turning Insert_Positive (Screw on System)	B98
VCGT-VP1	Auto Tools Insert (ISO type)	B134
VCGT-VP1	Turning Insert_Positive (Screw on System)	B98
VCGX-VP1	Auto Tools Insert (ISO type)	B134
VCGX-VP1	Turning Insert_Positive (Screw on System)	B99
VCKT-MA	Milling Insert (Pro-A Mill)	E29
VCMT	PCD Insert_Positive	B113
VCMT-FP	Turning Insert_Positive (Screw on System)	B97
VCMT-HMP	Turning Insert_Positive (Screw on System)	B97
VCMT-MP	Turning Insert_Positive (Screw on System)	B97
VCMT-VF	Turning Insert_Positive (Screw on System)	B97
VCMT-VL	Turning Insert_Positive (Screw on System)	B97
VCMT-VP1	Turning Insert_Positive (Screw on System)	B97
VDKT-MA	Milling Insert (Pro-A Mill)	E29
VETR	Thread Insert (Vertical Type)	D33
VH Chip Breaker	Turning Chip Breaker	B31
VL Chip Breaker	Turning Chip Breaker	B29
VNGG-HA	Turning Insert_Negative (Multi Lock System)	B67







VNGG-VP3	Turning Insert_Negative (Multi Lock System)	B67
VNMA	cBN Insert_Negative (Regrinding)	B112
VNMG-HA	Turning Insert_Negative (Multi Lock System)	B66
VNMG-HM	Turning Insert_Negative	B66
VNMG-LP	Turning Insert_Negative (Multi Lock System)	B66
VNMG-MK	Turning Insert_Negative (Multi Lock System)	B67
VNMG-MM	Turning Insert_Negative (Multi Lock System)	B67
VNMG-MP	Turning Insert_Negative (Multi Lock System)	B66
VNMG-RM	Turning Insert_Negative (Multi Lock System)	B67
VNMG-VB	Turning Insert_Negative (Multi Lock System)	B66
VNMG-VC	Turning Insert_Negative (Multi Lock System)	B66
VNMG-VF	Turning Insert_Negative (Multi Lock System)	B66
VNMG-VL	Turning Insert_Negative (Multi Lock System)	B66
VNMG-VM	Turning Insert_Negative (Multi Lock System)	B67
VNMG-VP3	Turning Insert_Negative (Multi Lock System)	B67
VNMG-VQ	Turning Insert_Negative (Multi Lock System)	B67
VP1 Chip Breaker	Turning Chip Breaker	B26
VP2 Chip Breaker	Turning Chip Breaker	B26
VP3 Chip Breaker	Turning Chip Breaker	B27
VP4 Chip Breaker	Turning Chip Breaker	B27
VPET-KF	Turning Insert_Positive (Screw on System)	B100
VPET-KF	Auto Tools Insert (ISO type)	B135
VPET-KM	Turning Insert_Positive (Screw on System)	B100
VPET-KM	Auto Tools Insert (ISO type)	B135
VPGT-KF	Auto Tools Insert (ISO type)	B135
VPGT-KM	Auto Tools Insert (ISO type)	B135
VPGT-VP1	Turning Insert_Positive (Screw on System)	B100
VPGT-VP1	Auto Tools Insert (ISO type)	B135
VQ Chip Breaker	Turning Chip Breaker	B30
VT Chip Breaker	Turning Chip Breaker	B31
VTH	Vertical Type Holder	D33
VW Chip Breaker	Turning Chip Breaker	B32



WBGT	Turning Insert_Positive (Compact Mini)	B101
WCMT-C20N	Drill Insert (WPDC)	F04
WCMT-C21N	Drill Insert (WPDC)	F04
WDKT-MH	Milling Insert (HRM)	E29
WFSB(M)	Wind Mill (Boss type)	E416
WFSP(M)	Wind Mill (Plane type)	E417
WNGG-VP3	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B71
WNGX-MA	Milling Insert (Rich Mill)	E30
WNGX-ML	Milling Insert (Rich Mill)	E30
WNGX-MM	Milling Insert (Rich Mill)	E30



WNMA	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B70
WNMG-B25	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B69
WNMG-CP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B68
WNMG-GR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B69
WNMG-HA	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B72
WNMG-HM	Turning Insert_Negative	B69
WNMG-LP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B68
WNMG-LW	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B72
WNMG-MK	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B70
WNMG-MM	Turning Insert (SAVE TURN)	B115
WNMG-MM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B71
WNMG-MP	Turning Insert (SAVE TURN)	B115
WNMG-MP	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B69
WNMG-RK	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B70
WNMG-RM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B71
WNMG-VB	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B68
WNMG-VC	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B68
WNMG-VF	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B68
WNMG-VL	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B68
WNMG-VM	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B69
WNMG-VP2	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B71
WNMG-VP3	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B71
WNMG-VP4	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B71
WNMG-VQ	Turning Insert (SAVE TURN)	B115
WNMG-VQ	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B70
WNMG-VR	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B70
WNMG-VW	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B72
WNMM-B25	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B72
WNMX-MF	Milling Insert (HRMDouble)	E30
WNMX-ML	Milling Insert (HRMDouble)	E30
WNMX-MM	Milling Insert (HRMDouble)	E30
WNMX-SH	Turning Insert_Negative (Lever Lock/Wedge Clamp/Multi Lock System)	B72
WNMX-SR	Turning Insert_Negative	B72
WPDC-5D	Drill (WPDC Standard type)	F79
WPDC-5D	Drill (WPDC Dual insert cartridge type)	F81
WPDC-5D	Drill (WPDC Single insert catridge type )	F80
WPDC-6.5D	Drill (WPDC Standard type)	F79
WPDC-6.5D	Drill (WPDC Dual insert cartridge type)	F81
WPDC-6.5D	Drill (WPDC Single insert catridge type )	F80
WPDC-8D	Drill (WPDC Standard type)	F79
WPDC-8D	Drill (WPDC Dual insert cartridge type)	F81
WPDC-8D	Drill (WPDC Single insert catridge type )	F80
ws	Side Cutter	E413
WTENN	Holder (Wedge Clamp System)	B179
WTJNR/L	Holder (Wedge Clamp System)	B179







WTXNR/L	Holder (Wedge Clamp System)	B179
WWLNR/L	Holder (Wedge Clamp System)	B180



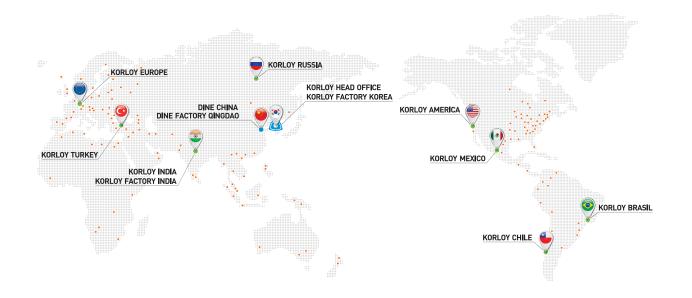
XCET-KC	Milling Insert (Chamfer Tool)	E31
XDET-MA	Milling Insert (Pro-V Mill)	E31
XEKT-MA	Milling Insert (Pro-X Mill)	E31
XEKT-ML	Milling Insert (Pro-X Mill)	E31
XNCT-MA	Milling Insert (Rich Mill)	E31
XNKT-ML	Milling Insert (Rich Mill)	E32
XNKT-MM	Milling Insert (Rich Mill)	E32
XNMX-ML	Milling Insert (Rich Mill)	E32
XOET-ND	Drill Insert (KING DRILL)	F04
XOMT-LD	Drill Insert (KING DRILL)	F03
XOMT-PD	Drill Insert (KING DRILL)	F03
XOMT-RD	Drill Insert (KING DRILL)	F04
XPMT-MM	Milling Insert (HAVE)	E32



ZDMT-R-MM	Milling Insert (BRE)	E33
ZPET-MM	Milling Insert (GBE)	E33
ZPMT-MM	Milling Insert (BT Tooling System, Tank Mill)	E33
ZPMT-R-MM	Milling Insert (BRE)	E33
ZPMT-R-MR	Milling Insert (BRE)	E33

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