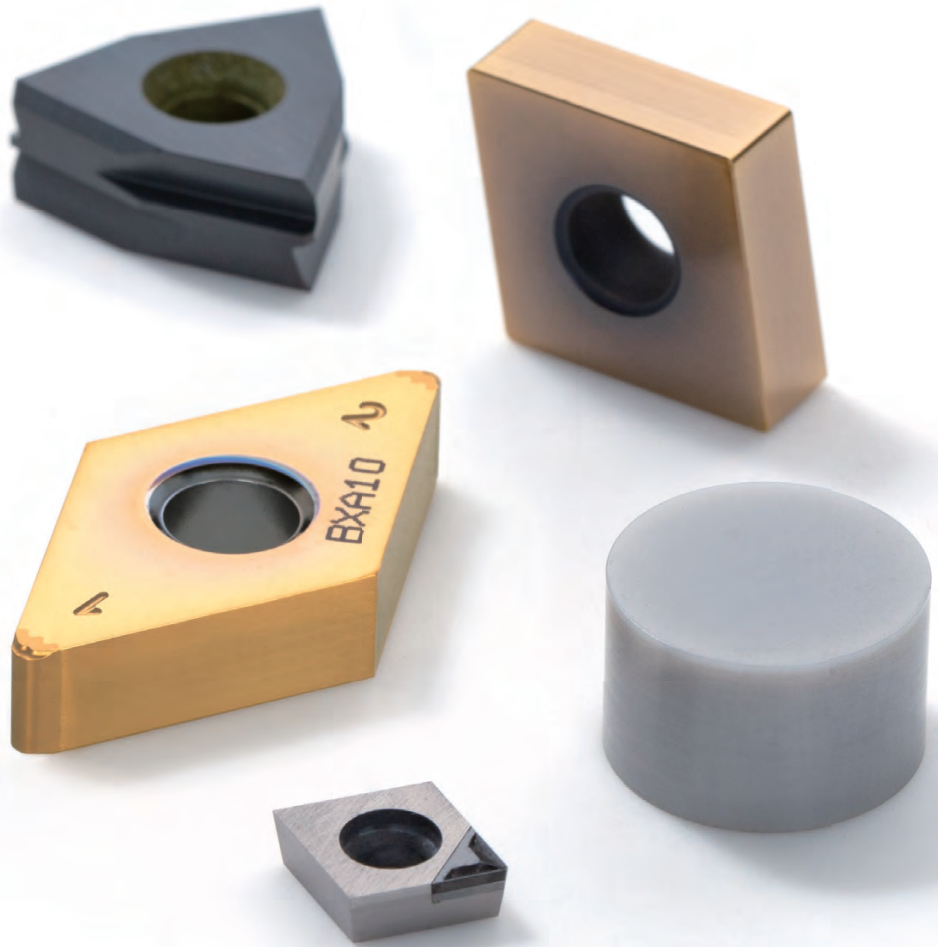


CBNCE RAMIGSPED



ADVANCED
MATERIALS
SOLUTIONS

S

K

H

N



Unleash the Powerhouse of Tungaloy and NTK with its Advanced Materials Solutions: Ceramics, CBN, and PCD

With our combined expertise, Tungaloy and NTK deliver unparalleled solutions in Ceramics, CBN, and PCD for ISO material groups K, S, H, and N. Experience the synergy of our Full Solutions Material approach that exceeds expectations and drives success. Explore our catalog to find the right tools for your most challenging applications



ADVANCED MATERIALS

CERAMIC SOLUTIONS



S
CER-1

Guidelines for Turning

Selection Guides
Solutions

for Grooving for Milling

Selection Guides
Solutions



K
CER-34

Guidelines for Turning

Selection Guides
Solutions

for Grooving

Selection Guides
Solutions

for Milling

Selection Guides
Solutions

H

CER-67

**Guidelines
for Turning**

**Sintered
metal**

CBN-119

**Guidelines
for Turning**

CBN
SOLUTIONS

PCD
SOLUTIONS

H

CBN-1

**Guidelines
for Turning**
Solutions
for Grooving

N

PCD-1

**Guidelines
for Turning**
Selection Guides
Solutions
for Grooving
Selection Guides
Solutions
for Milling
Selection Guides
Solutions

K

CBN-95

**Guidelines
for Turning**
Selection Guides
Solutions
for Milling

S

CBN-111

**Guidelines
for Turning**
Solutions

THE NECESSITY OF ADVANCED TOOL MATERIALS BEYOND CARBIDE

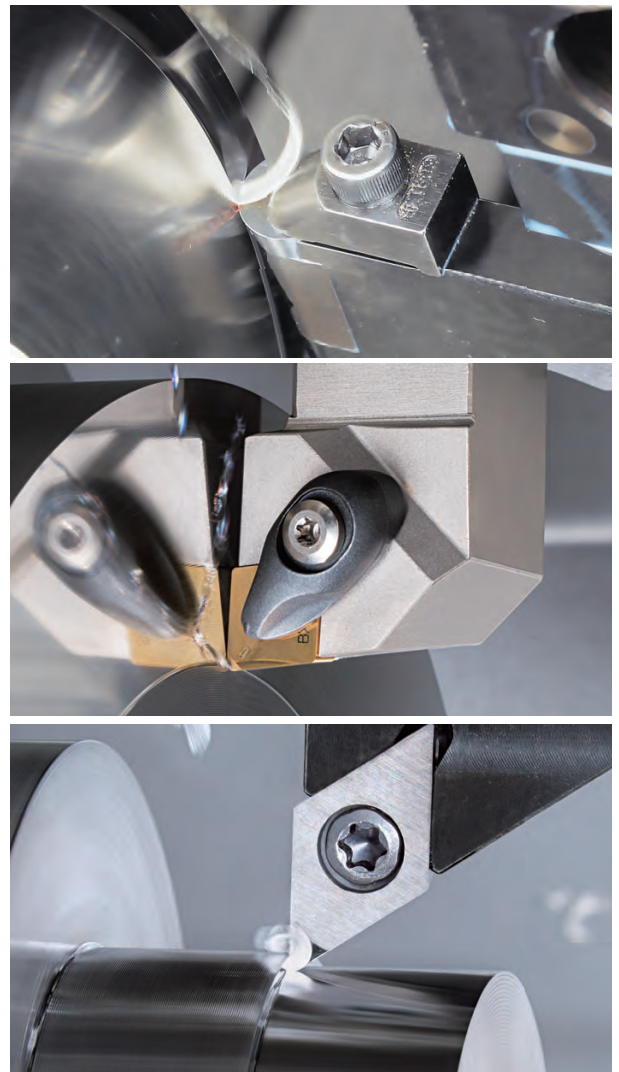
Ceramic, CBN, and PCD for Modern Machining Applications

Modern manufacturing industries—such as aerospace, automotive, energy, and medical devices—are increasingly using materials that offer higher strength, wear resistance, and heat tolerance. These difficult-to-cut materials, including heat-resistant superalloys, hardened steels, and non-ferrous metals, often exceed the capabilities of traditional carbide tools.

While carbide remains a versatile standard, its limitations become clear in high-demand applications:

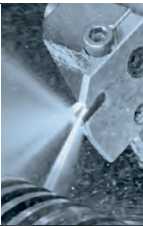
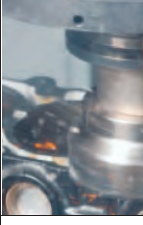
- Loss of hardness at elevated temperatures
- Rapid wear when cutting high-hardness materials
- Susceptibility to built-up edges and chemical wear

To meet the demands of modern machining, advanced tool materials such as Ceramic, CBN, and PCD offer superior solutions in performance, durability, and cost-efficiency.



Material	Key Strengths	Ideal for
CBN (Cubic Boron Nitride)	Second hardest material after diamond; optimal for hardened steels.	Retains hardness at elevated temperatures, excellent for finishing applications requiring high precision.
Ceramic	Maintains hardness at high temperatures, excellent wear and heat resistance.	Significantly improved tool life and productivity in high-speed cutting of difficult-to-cut materials.
PCD (Polycrystalline Diamond)	Ultra-hard diamond particles sintered together.	High-speed, high-quality machining of non-ferrous materials (aluminum alloys, copper alloys, etc.)

Application Map of Grades

ISO	Turning			Grooving			Milling		
	Ceramic	CBN	PCD	Ceramic	CBN	PCD	Ceramic	CBN	PCD
S			—		—	—		—	—
K			—		—	—			—
H			—	—		—	—	—	—
N	—	—		—	—		—	—	
	—		—	—	—	—	—	—	—



HEAT-RESISTANT ALLOYS (NI, CO-BASED, TI ALLOY)

Typical Industries & Applications

Aerospace: Turbine blades, engine disks, shafts

Energy: Gas turbine parts, thermal-resistant components

Medical: Titanium implants and housings

Material Properties & Machining Challenges

Low thermal conductivity generates high cutting temperatures.

High work hardening increases cutting forces.

Heat concentration at the cutting edge shortens tool life.

Recommended Tool Materials

Ceramic:

Maintains hardness above 1,000°C

Suitable for high-speed roughing
($V_c = 150 - 300$ m/min)

Excellent wear resistance in continuous cuts

CBN:

Ideal for high-precision finishing.

Maintains stability and hardness at high temperatures.

Delivers tight tolerances and excellent surface finishes.



K CAST IRON

(GREY CAST IRON, DUCTILE CAST IRON)

Typical Industries & Applications

Automotive: Brake components, engine blocks, manifolds

Machinery: Housings, pumps, gearboxes

Material Properties & Machining Challenges

Chips are powder-like requires high wear resistance.

Abrasive nature rapid tool wear on standard carbide.

Recommended Tool Materials

Ceramic:

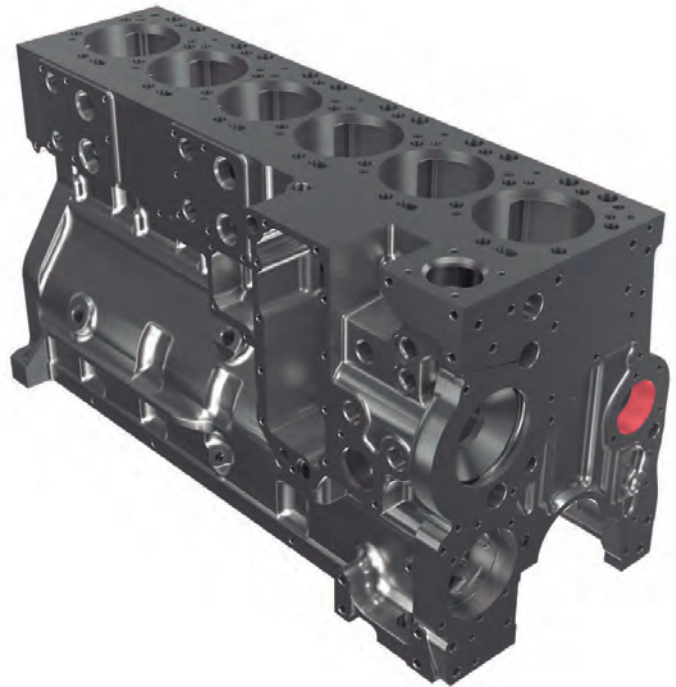
Excellent wear resistance in continuous, high-speed cuts.

Ideal for large-volume machining of grey cast iron.

CBN:

Recommended for alloyed or hardened cast iron.

Provides better wear resistance and durability under tough conditions.



H HARDENED STEELS (50-65+ HRC)

Typical Industries & Applications

Automotive: Transmission gears, bearings, transmission shafts

Die & Mold: Injection molds, forging and press dies

General Engineering: High-load shafts, rollers

Material Properties & Machining Challenges

High hardness and abrasion resistance.

Generates strong cutting forces and heat.

Carbide tools often fail due to rapid flank wear or edge chipping.

Recommended Tool Materials

CBN:

Outstanding hardness and wear resistance.

Maintains performance above 1,000°C.

Ideal for high-speed finishing and dimensional accuracy.

Ceramic:

Effective in stable conditions
(continuous cuts, minimal vibration)

Allows higher speeds than carbide.

Best suited for moderate to high-speed roughing.



N

NON-FERROUS METALS (ALUMINUM, COPPER ALLOYS)

Typical Industries & Applications

Electronics: Connectors, housings

Automotive: Lightweight structural components

Medical Devices: Casings, surgical tools

Material Properties & Machining Challenges

Soft materials prone to built-up edge and chip adhesion.

Surface finish and chip control are critical.

Carbide often lacks the wear resistance and cleanliness of cut required.

Recommended Tool Materials

PCD:

Extremely high hardness, resists chip adhesion.

Enables high-speed machining with long tool life.

Delivers excellent surface finish and dimensional control.



ADVANCED

MATERIALS SOLUTIONS



CERAMIC

SOLUTIONS



CBN

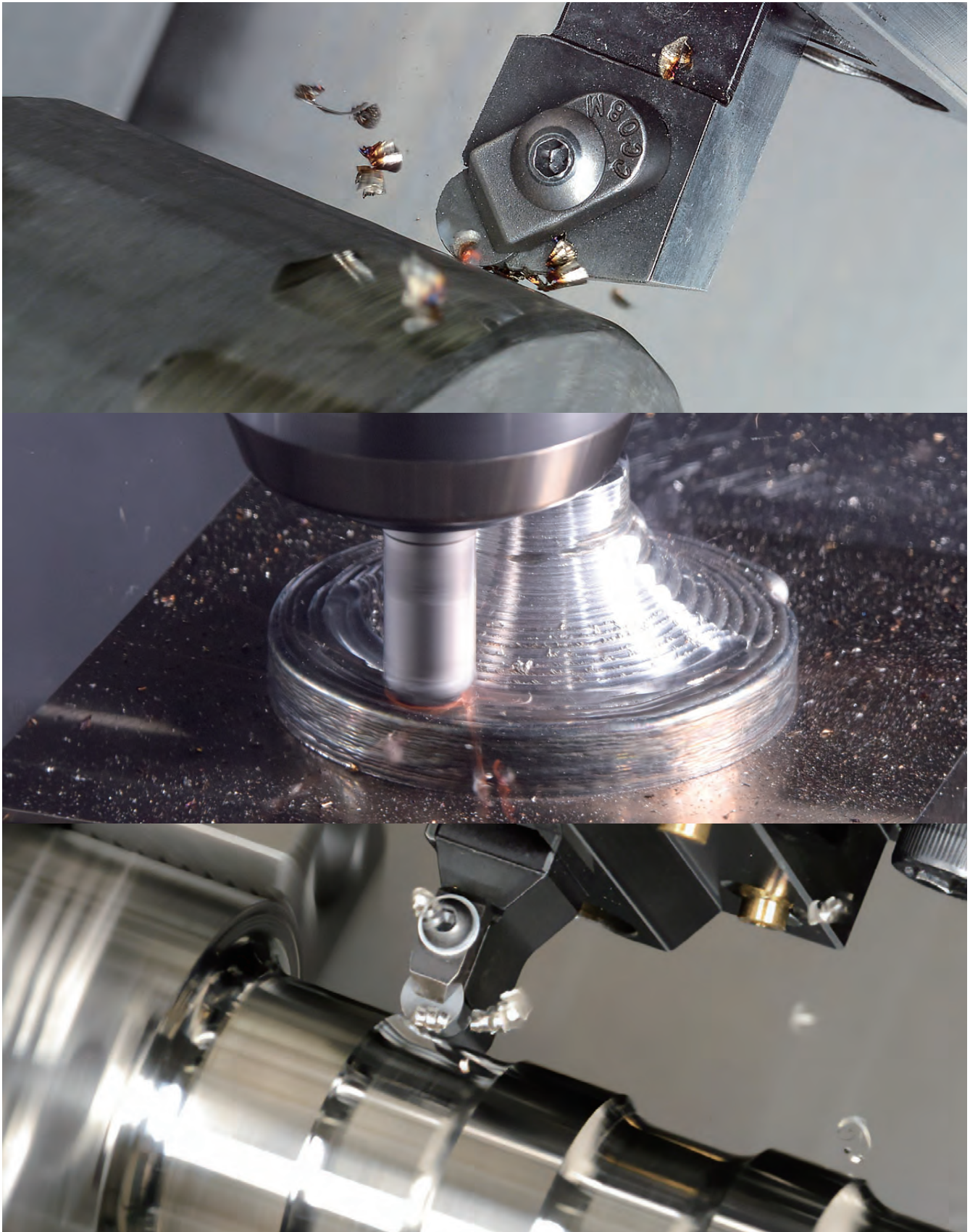
SOLUTIONS



PCD

SOLUTIONS

Ceramic



CER

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

CBN

Hardened Materials
Turning

Grooving

Cast Iron
Turning

Milling

Superalloys
Turning

Sintered metal
Turning

PCD

Non-Ferrous Materials
Turning

Grooving

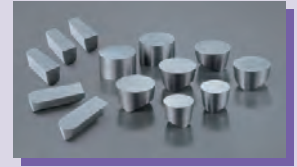
Milling

Superalloy machining

BIDEMICS - Game Changer

- 480m/min Speed Capability
- Double tool life at whisker's speed range

JX1



■ Features

- Up to 480m/min speed capability
- Much longer tool life at Whisker ceramics' speed range
- Superior surface finish vs. Whisker ceramics

■ Work Materials

- Inco 718 • 718 Plus
- Powdered metal
- Inco 625 • Rene

JP2



■ Features

- 10 to 15x speed capability vs. carbide
- Better wear resistance and notching resistance than CBNs
- Superior surface finish to Carbide or CBN

■ Work Materials

- Inco 718 • 718 Plus
- Powdered metal • Inco 625 • Rene

SX7

■ Features

- Can run at same cutting condition as whisker ceramics
- Best grade for high-speed milling

■ Work Materials

- Inco 718 • Inco 625
- Waspaloy • Udimet 720



SX3

■ Features

- Excellent wear resistance and toughness. Wide range of HRSA machining applications: Roughing with scale - semi finishing turning.
- Able to machine even the newest generation of HRSA work materials (like Rene) as well as most common HRSA materials; such as Inconel 718.

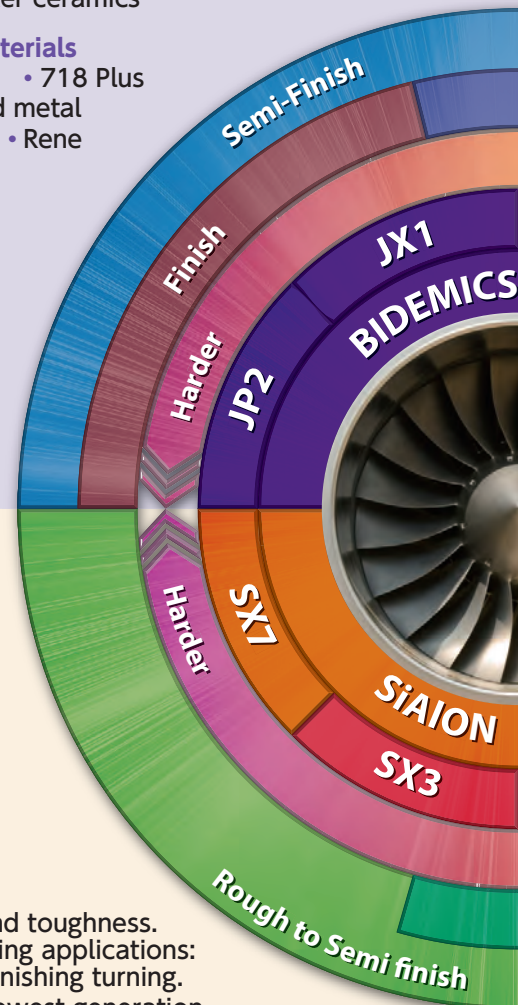
■ Work Materials

- Inco 718 • 718 Plus
- Powdered metal • Inco 625
- Rene

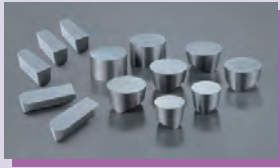


SiAlON - Workhorse

- Durable for scale to semi-finish machining



JX3



Features

- Added toughness in BIDE MICS
- Same speed capability as JX1

Work Materials

- Inco 718
- 718 Plus
- Powdered metal
- Inco 625
- Rene

533



Features

- Better flank wear resistance compared to SiAlON ceramics
- Better notching resistance compared to competitor's whisker ceramics

Work Materials

- Inco 718
- Inco 625

Whisker - Versatile Player

- Productivity and reliability

SX5



Features

- Best grade for scale and interruptions
- Best grade for machining high-cobalt alloys

Work Materials

- Waspaloy
- Udimet 720
- 718 Plus
- Rene 41

※ Production by order.

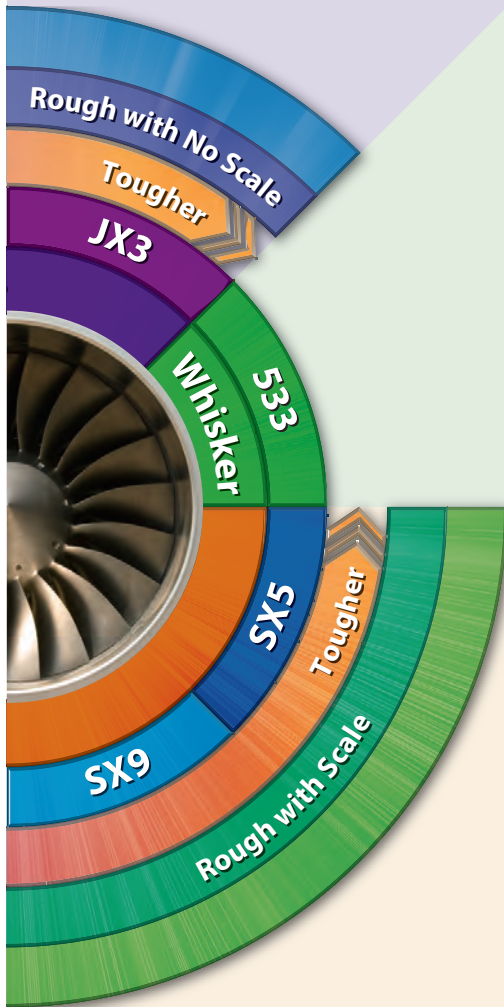
SX9

Features

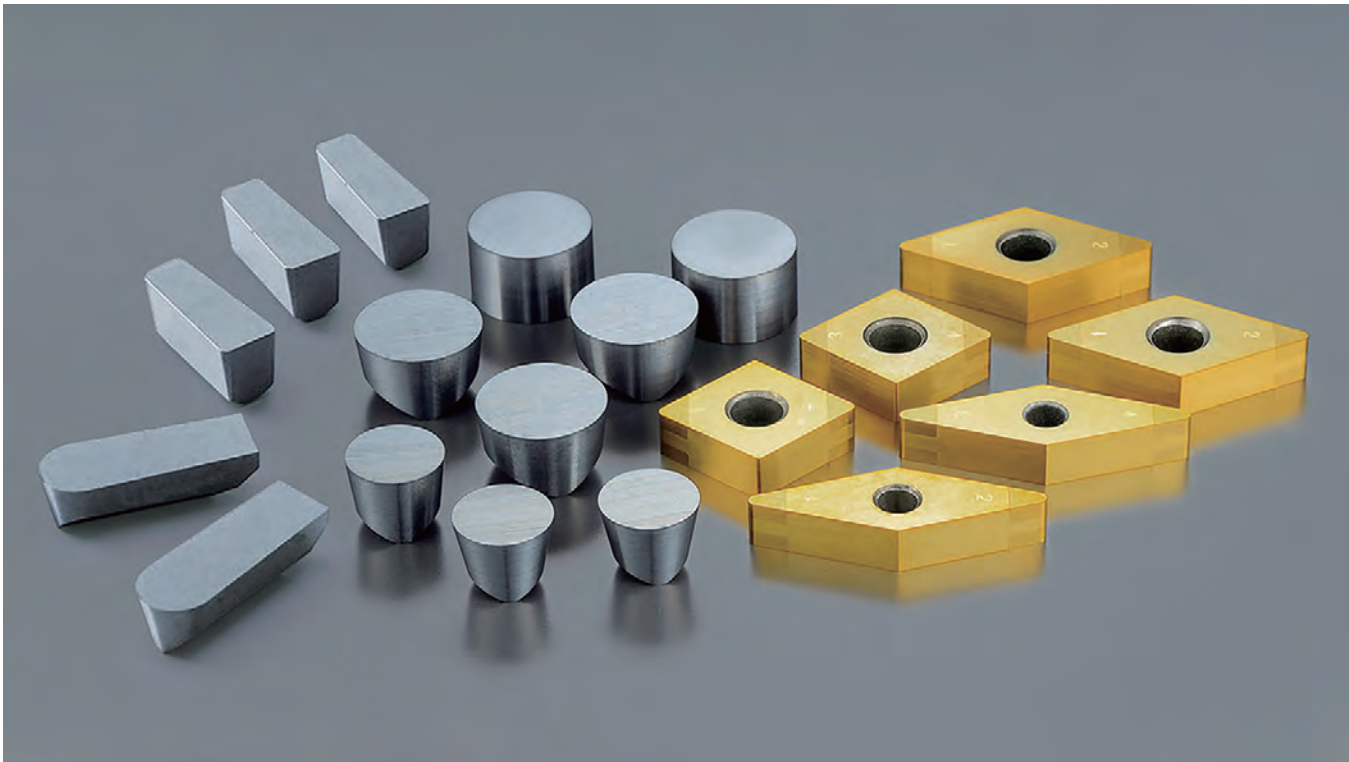
- Extreme toughness makes higher feed and heavier DOC machining possible
- Best grade for machining Inco 718 with scale

Work Materials

- Inco 718
- Inco 713
- Inco 706
- Rene



BIDEMICS



Superalloys, which are mainly used in the aircraft industry, have low thermal conductivity, high temperature strength, high work hardening, and high adhesion to tool materials, making them extremely difficult to cut, and improving production efficiency has been a key issue. BIDEMICS is a new category of material that combines various materials to achieve high strength and high hardness. It enables highly efficient machining that exceeds the performance of conventional carbide and ceramics.

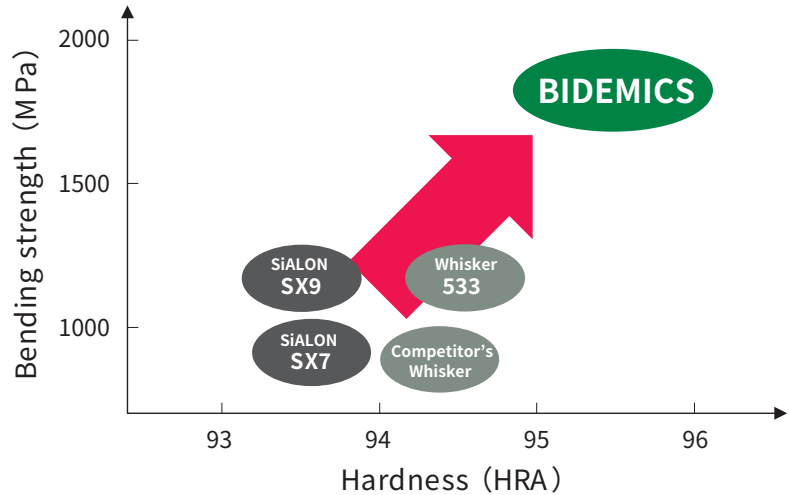
Insert grade, applications, and features

Work material	Grade	Application
	JX1	Semi-finishing/rough machining of superalloys (non scale) Cutting speed up to Vc=500m/min. Longer life and better machined surface compared to ceramic grades
	JX3	Semi-finishing/rough machining of superalloys (non scale) Cutting speed up to Vc=480m/min. Longer life and better machined surface compared to ceramic grades
	120	Finish machining of superalloys Cutting speed up to Vc=500m/min. Longer life and better machined surface compared to carbide tools
	JP2	Finish machining of superalloys Cutting speed up to Vc=480m/min. Longer life and better machined surface compared to carbide tools

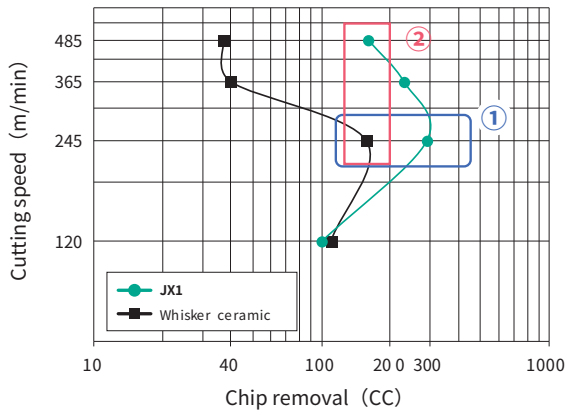


Physical properties

Grade	Hardness HRA	Bending Strength MPa	Thermal Conductivity W/m · K
JX1	95.5	1,800	40
533	94.5	1,200	35



Machining productivity comparison between JX1 and Whisker Ceramics



① Longer tool life

JX1/JX3's combination of High Hardness, Superior Thermal Conductivity and Improved Strength compared to Whisker ceramics results in significantly longer tool life when applied at typical Whisker ceramic speeds, feeds, and depth of cut.

② Higher Speeds, More Productivity

JX1/JX3's superior physical properties compared to Whisker ceramic enable you to increase speeds; potentially as much as 2X Whisker ceramic speeds; increasing productivity and potentially offsetting the need for additional equipment to meet increasing demands.

Chips break easily at higher cutting speeds vs the typically continuous chips of HRSA materials. The result is more efficient chip removal.

Recommended Cutting Conditions

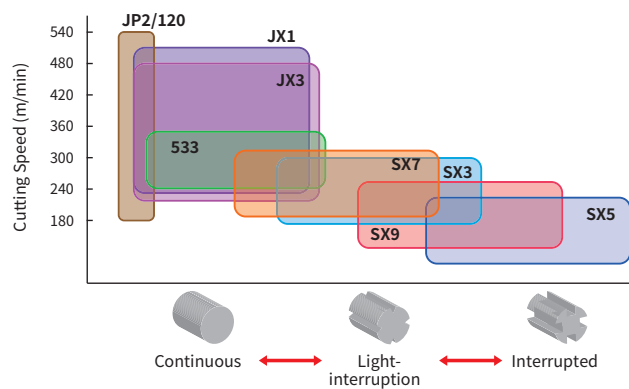
Grade	Work material	Application	Process	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	Coolant
JX1	Superalloys	turning	roughing	180- 480	0.15-0.30	1.0-2.5	WET
JX3			roughing	180- 480	0.10-0.25	0.5-2.0	WET
120	Superalloys	turning	finishing	180- 500	0.05-0.20	0.1-0.7	WET
JP2			finishing	180- 520	0.10-0.25	0.25-1.0	WET

Superalloy machining

Insert grades

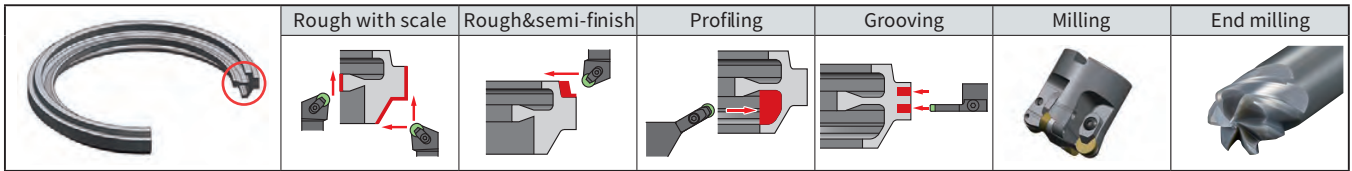
Category	Grade	Attributes	Applications						
			Scale	No scale	Profiling	Finishing	Grooving	Milling	End milling
									
BIDEMICS	JX1	Special grade with higher speed and longer tool life potential							
	JP2/120	Special grade for finish turning							
	JX3	Added toughness in BIDEMICS							
Whisker	533	General versatile grade for turning							
SiAlON	SX3	Best balance of toughness and hardness							
	SX5	Best grade for Waspaloy with scale							
	SX7	Versatile grade for turning and milling							
	SX9	Best grade for scale of Inco718							

 1st Choice  2nd Choice



	Grade	Rough with Scale	Rough	Semi-Finishing	Finishing
BIDEMICS	JP2/120				
	JX1				
	JX3				
Whisker	533				
SiAlON	SX7				
	SX3				
	SX9				
	SX5				

Application



Cutting conditions

Application	Grade	Work material	Cutting speed (m/min)						Feed (mm/rev)					Depth of cut (mm)					Coolant
			180	240	300	360	420	480	0.1	0.2	0.3	0.4	0.5	0.5	1.0	1.5	2.0	2.5	
 Rough with Scale	SX5	Waspaloy	200(180-240)						0.3(0.2-0.35)					2.0(1.0-5.0)					WET 
	SX9	Inco718	200(180-240)						0.3(0.2-0.35)					2.0(1.0-5.0)					
	SX3	Overall	240(180-270)						0.2(0.1-0.22)					2.0(1.0-5.0)					
 Rough no Scale	JX1 JX3	Overall	210-390(180-480)						0.2(0.13-0.28)					1.7(1.0-2.5)					WET 
	SX9 SX3 SX7	Overall	210(180-270)						0.2(0.15-0.3)					2.0(1.0-2.5)					
	533	Overall	240(180-300)						0.2(0.12-0.25)					1.7(1.0-2.5)					
	JX1 JX3	Overall	210-450(180-480)						0.2(0.1-0.25)					1.5(1.0-2.0)					
 Profiling & Semi-Finish	SX3 SX7	Overall	240(180-270)						0.2(0.12-0.25)					1.5(1.0-2.0)					WET 
	533	Overall	240(180-330)						0.2(0.1-0.25)					1.5(1.0-2.0)					
	JX1 JX3	Overall	210-480(180-510)						0.1(0.05-0.18)					0.25(0.13-0.76)					
 Grooving	JX1 JX3	Overall	360(180-480)						0.07(0.05-0.1)					When using SX7 / SX3 / SX5, increase feed rates 100% vs. Whisker Ceramics					WET 
	SX5	Waspaloy	210(180-240)						0.15(0.07-0.17)										
	SX9	Overall	230(180-270)						1.1(0.07-0.15)										
	SX3 SX7	Overall	230(180-270)						1.1(0.07-0.15)										
	533	Overall	240(180-330)						0.07(0.05-0.1)										

When using SX7/SX3/SX5, increase feed rates 100% vs. Whisker Ceramics

Application	Grade	Work material	Cutting speed (m/min)						Feed (mm/t)					Depth of cut (mm)					Coolant
			450	600	750	900	1000	1200	0.05	0.07	0.1	0.12	0.15	0.5	1.0	1.5	2.0	2.5	
	SX3 SX7	Overall																	DRY 
	SX9	Overall																	
	SX9	Overall																	DRY 
			600(300-1000)						0.02-0.03					1.0(0.5-2.0)					

Superalloy machining

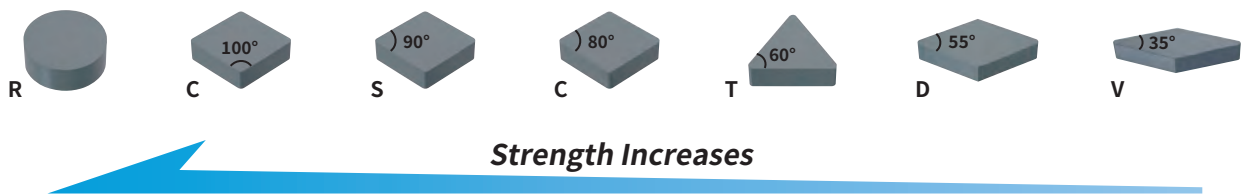
Key Points in Machining

The key to successful superalloy machining is the use of "BIDEMICS" and "ceramics".

- BIDEMICS and ceramic materials improve productivity in machining superalloys.
- BIDEMICS has excellent VB wear resistance and SiAlON ceramics has excellent wear resistance on the infeed side
- BIDEMICS provides high-speed machining and superior surface finishes not possible with conventional ceramic materials.
- Optimizing cutting conditions and tool grade enables more stable machining.

Selection of insert shape with toughness

Select inserts with higher strength cutting edges if at all possible.

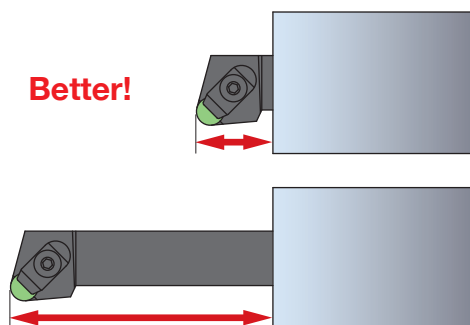


Selection of corner R with superior strength

The larger the insert's corner radius, the stronger the insert's cutting edge and the longer its life. However, please note that the larger the corner radius, the higher the cutting resistance. In general, RNGN1207 inserts are used for rough machining and CNGN1204 inserts are used for finish machining of heat resistant alloys.

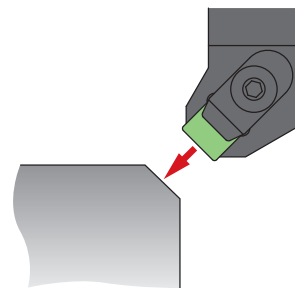
Minimize the amount of overhang

If the overhang is too long, chattering or chip loss will occur.



Insert chipping protection

Before machining, be sure to chamfer the corners of the workpiece. Machining sharp corners of workpieces without chamfering will result in chipping or defects of the inserts.



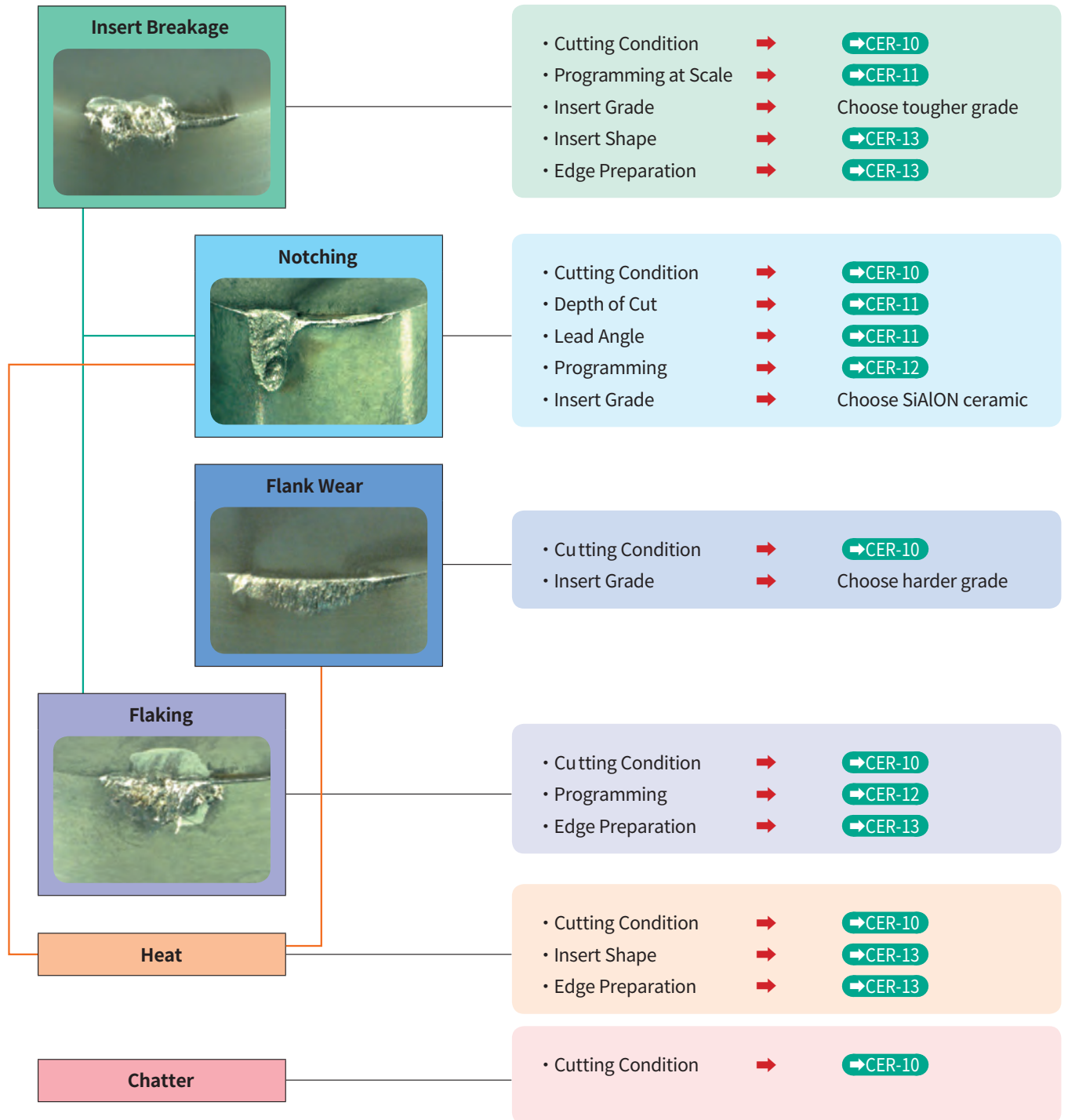
Coolant

WET machining is recommended when using BIDEMICS, SiAlON-based ceramics, or whisker ceramics in turning. However, DRY machining may be more effective in case of strong interrupted machining. When using SiAlON ceramics (SX3, SX7, SX9) in milling, be sure to use DRY machining.

Cutting Edge Treatment

Sharp edge preparation is required when machining superalloys, but in the case of ceramic inserts, minute angle chamfering or round honing is better for wear resistance, especially border wear resistance.

Troubleshooting



Turning	Superalloys
Grooving	Superalloys
Milling	Superalloys
Turning	Cast Iron
Grooving	Cast Iron
Milling	Hardened Materials
Turning	Hardened Materials
Turning	CBN
Grooving	Hardened Materials
Turning	Cast Iron
Milling	Cast Iron
Turning	Superalloys
Turning	Sintered metal
Turning	PCD
Grooving	Non-Ferrous Materials
Milling	Non-Ferrous Materials

Troubleshooting / Superalloy machining

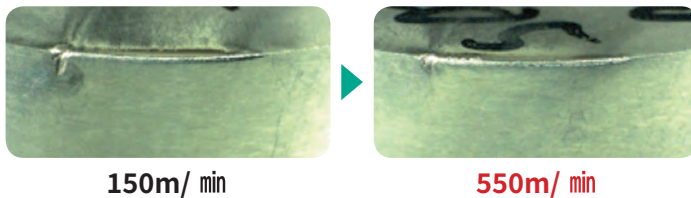
Adjustment of cutting conditions

		Cutting speed (m/min)		Feed rate (mm/rev)		Grade attribute		
		SiAlON	BIDEMICS	SiAlON	BIDEMICS	BIDEMICS	SiAlON	Whisker
	Notching		↗ r_a	↗ r_b		●	●	
	Flank wear	↘ r_c		↗ r_d		●	● SX3 SX7	●
	Breakage			↘	↘	●	●	
	Heat	↘	↘	↘	↘	—	—	—
	Chatter	↗	↗	↘	↘	—	—	—

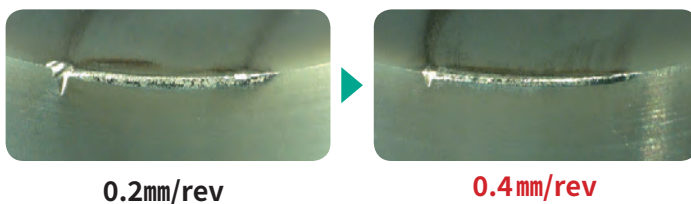
● 1st Choice ● 2nd Choice

Result

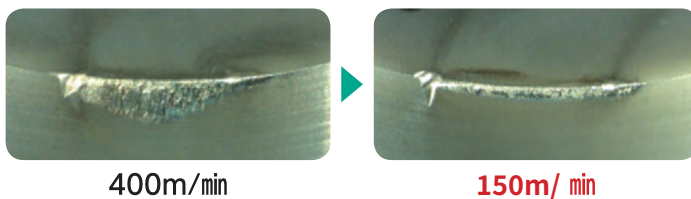
r_a WA1 : Increase cutting speed



r_b SX7 • SX3 • SX9 • SX5 : Increase feed rate

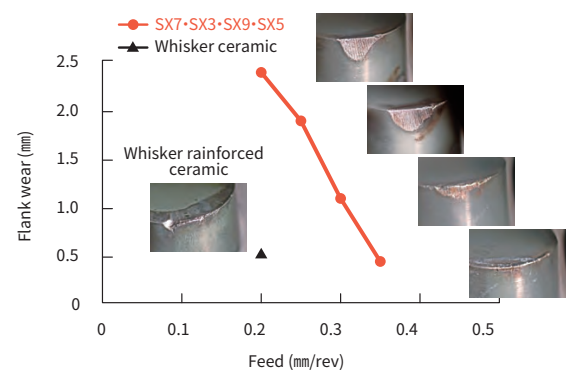


r_c SX7 • SX3 • SX9 • SX5 : Decrease cutting speed



r_d SX7 • SX3 • SX9 • SX5 : Increase feed rate

Feed rate increased decreases wear amount of SiAlON



Cutting condition
Work material : Inco718
Insert shape : RNGN120700

Cutting Speed : 250m/min
Depth of Cut : 2.0mm
WET

When using the SX7 & SX3 & SX9 & SX5, increased feed is necessary to increase the wear resistance of the tool. By increasing the feed rate and taking advantage of the high tool material strength of the SX7 & SX3 & SX9 & SX5, the number of times the tool and workpiece material rub against each other can be reduced, thereby reducing wear. In addition, higher feed rates shorten cycle time, increasing productivity and profitability.

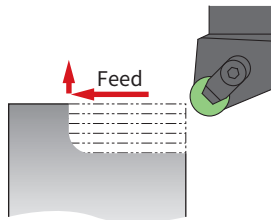
Note: When machining corner R, reduce feed rate by 25% to prevent insert defects.

Troubleshooting / Superalloy machining

Programming

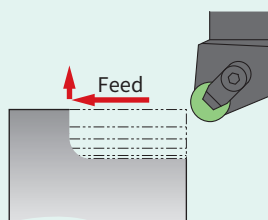
Rough

Same Depth of Cut



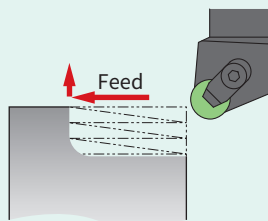
Note)
Notch wear on the insert cutting edge as shown is the result of multiple passes being taken at the same depth of cut. This type of wear will minimize tool life. The following programming examples will help to minimize this mode of failure.

Varying Depth of Cut



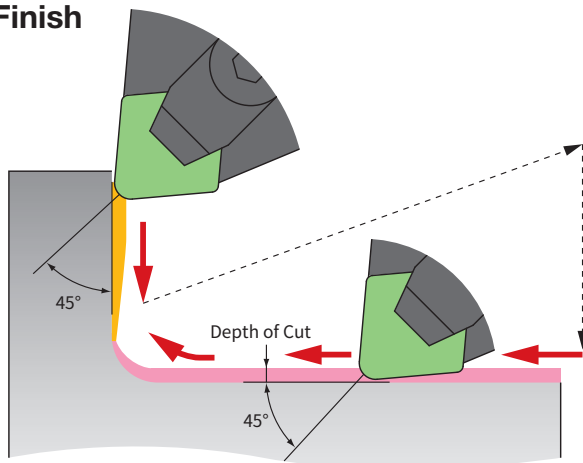
Note) Roughing while varying the depth of cut reduces notch wear because the point at which notch wear occurs changes each time.

Ramping



Note) Programming " Ramping " cuts in the same cutting direction is one of the best procedures to minimize notching. By varying the DOC, wear is distributed over the entire cutting edge not on one point.

Finish



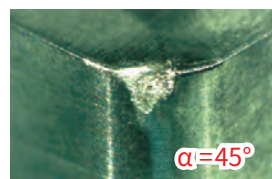
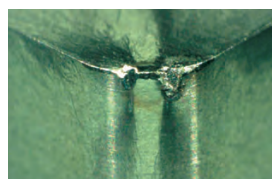
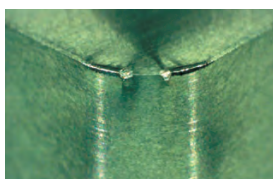
• $\alpha = 45^\circ$

(mm)

Insert radius	DOC
0.4	0.12
0.8	0.23
1.2	0.35
1.6	0.47
2.4	0.70
3.2	0.94

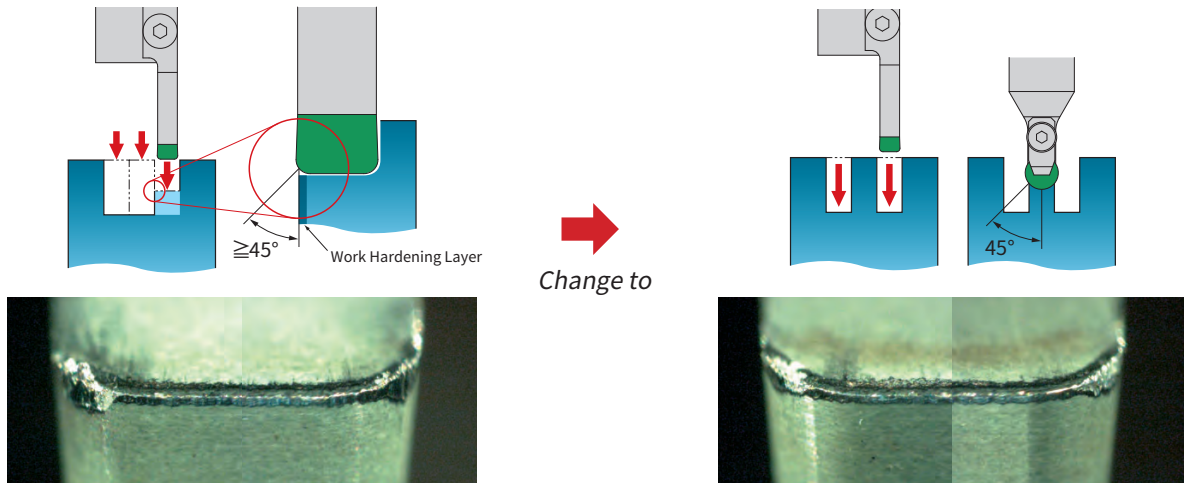
Note) The correct procedure is to take more material off during the previous roughing application. Then remove the amount of stock suitable for the nose radius of the insert by staying **below the 45° mark of the corner radius.** This will minimize notching and allow a cut from both directions.

Depth of Cut



Better

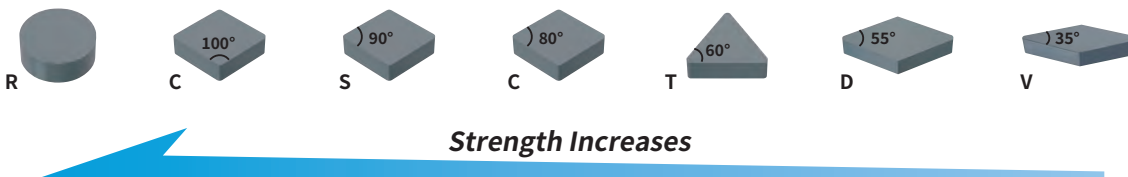
Application



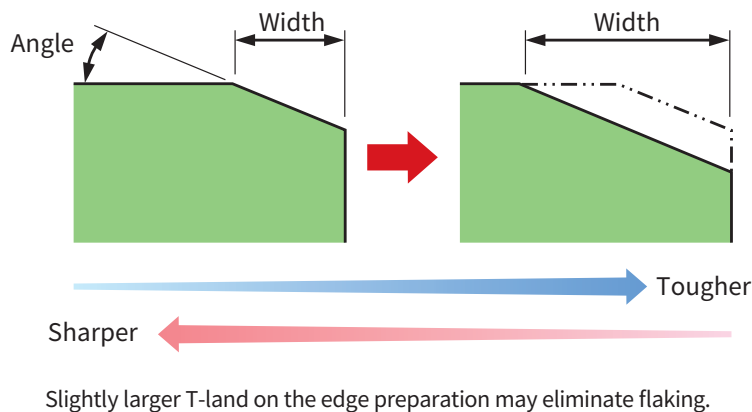
When grooving in multiple passes:
When grooving a final pass, the cutting edge contacts the workhardened area.
This causes chipping of the corner radius and border wear.

The grooving is performed on both sides, leaving the center machining point.
Finally, grooving is performed with a strong insert shape such as RCGX type.

Insert shape



Edge preparation



Prevention of chattering

When machining nickel-based superalloys, chattering often occurs due to increased cutting resistance. Chatter is especially likely to occur when using a holder with a large overhang for copying or grooving, when machining thin-walled workpieces, or when using a machine with low rigidity, resulting in abnormal insert wear or sudden loss of inserts. Generally, increasing the cutting speed and decreasing the feed rate will reduce or eliminate chattering. In addition, the following methods are also effective.

- Increase cutting speed and reduce feed rate.
- Change to an insert grade with higher hardness.
- Change to an insert with a smaller inscribed circle or smaller corner radius.
- Change the cutting edge treatment to the sharpest possible shape.
- Change to a positive insert.
- Reduce the lead angle.
- Minimum overhang.
- Change the holder material to anti-vibration material.

CER

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Turning

Grooving

Superalloys

Turning

Grooving

Cast Iron

Milling

Turning

Superalloys

Turning

Grooving

Sintered metal

Turning

Turning

PCD

Turning

Grooving

Milling

Non-Ferrous Materials

Turning

Grooving

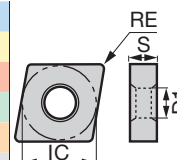
Milling

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊗ : Heavy interrupted cutting

CN



**Rhombic, 80°
with hole**

[illegible]

Application	Chipbreaker Designation		Material														Dimension (mm)					
			Whisker	SiAlON																		
			533	SX3	SX9														RE	IC	S	D1
Roughing to medium cutting	-	CNGA120408E004	●	●	●														0.8	12.7	4.76	5.16
		CNGA120408T00520	●	●	●														0.8	12.7	4.76	5.16
		CNGA120412E004	●	●	●														1.2	12.7	4.76	5.16
		CNGA120412T00520	●	●	●														1.2	12.7	4.76	5.16
		CNGA120416E004	●	●	●														1.6	12.7	4.76	5.16
		CNGA120416T00520	●	●	●														1.6	12.7	4.76	5.16

● : Line up

C

D

B

S

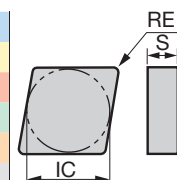
T

V

CN



**Rhombic, 80°
without hole**

[illegible]

Application			material																Dimension (mm)			
	Chipbreaker	Designation	Whisker		SiAlON		Bidemics												RE	IC	S	D1
			533		SX3	SX9	JX3															
Roughing to medium cutting	-	CNGN120408E004	●		●	●	●										0.8	12.7	4.76	-		
		CNGN120408T00520	●		●	●	●										0.8	12.7	4.76	-		
		CNGN120412E004	●		●	●	●										1.2	12.7	4.76	-		
		CNGN120412T00520	●		●	●	●										1.2	12.7	4.76	-		
		CNGN120416E004	●		●	●	●										1.6	12.7	4.76	-		
		CNGN120416T00520	●		●	●	●										1.6	12.7	4.76	-		
		CNGN120708E004	●		●	●	●										0.8	12.7	7.94	-		
		CNGN120712E004	●		●	●	●										1.2	12.7	7.94	-		
		CNGN120716E004	●		●	●	●										1.6	12.7	7.94	-		
		CNGN120708T00520	●		●	●	●										0.8	12.7	7.94	-		
		CNGN120712T00520	●		●	●	●										1.2	12.7	7.94	-		
		CNGN120716T00520	●		●	●	●										1.6	12.7	7.94	-		
	-	CNGX120708T01020				●											0.8	12.7	7.94	-		
		CNGX120712T01020				●											1.2	12.7	7.94	-		
	 	CNGX120716T01020				●											1.6	12.7	7.94	-		

● : Line up



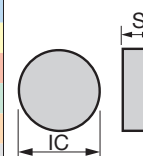
More info

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊗ : Heavy interrupted cutting

RN



**Round,
without hole**

[illegible]

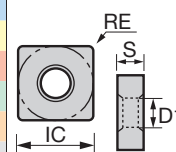
Application	Chipbreaker	Designation	Whisker		SiAlON		Bidemics										Dimension (mm)					
			533		SX3	SX5	SX7	SX9	JX1	JX3									RE	IC	S	D1
Roughing to medium cutting	-	RNGN120400E004	●		●	●	●	●	●	●									-	12.7	4.76	-
		RNGN120400T00520			●					●									-	12.7	4.76	-
		RNGN120400T01020	●		●	●	●	●	●	●									-	12.7	4.76	-
		RNGN120700E004	●		●	●	●	●	●	●									-	12.7	7.94	-
		RNGN120700T00520			●					●									-	12.7	7.94	-
		RNGN120700T01020	●		●	●	●	●	●	●									-	12.7	7.94	-
		RNGN190700E004			●	●		●											-	19.05	7.94	-
		RNGN190700T00520			●	●		●											-	19.05	7.94	-
		RNGN250700E004			●	●		●											-	25.4	7.94	-
		RNGN250700T00520			●	●		●											-	25.4	7.94	-

● : Line up

SN



Square with hole

[illegible][illegible]

● : Line up



More info

**Rhombic, 55°
without hole,
Positive 11°**

[illegible][illegible]

C

D

R

S

T

v

Round,
without hole
Positive 7°

[illegible]

Application			material	Whisker			SiAlON			Bidemics									Dimension (mm)			
	Chipbreaker	Designation																				
			S33	SX3	SX5	SX7	SX9	JX1	JX3									RE	IC	S	D	
Roughing to medium cutting	-	RCGX060400E004	●	●	●	●	●	●	●									-	6.35	4.76	-	
		RCGX060400T00520		●					●									-	6.35	4.76	-	
		RCGX060400T01020	●	●	●	●	●	●	●									-	6.35	4.76	-	
		RCGX060600E004	●	●	●	●	●	●	●									-	6.35	6.35	-	
		RCGX060600T00520		●					●									-	6.35	6.35	-	
		RCGX060600T01020	●	●	●	●	●	●	●									-	6.35	6.35	-	
		RCGX090700E004	●	●	●	●	●	●	●									-	9.525	7.94	-	
		RCGX090700T00520		●						●									9.525	7.94	-	
		RCGX090700T01020	●	●	●	●	●	●	●	●								-	9.525	7.94	-	
		RCGX120700E004	●	●	●	●	●	●	●	●								-	12.7	7.94	-	
		RCGX120700T00520		●						●								-	12.7	7.94	-	
		RCGX120700T01020	●	●	●	●	●	●	●	●								-	12.7	7.94	-	

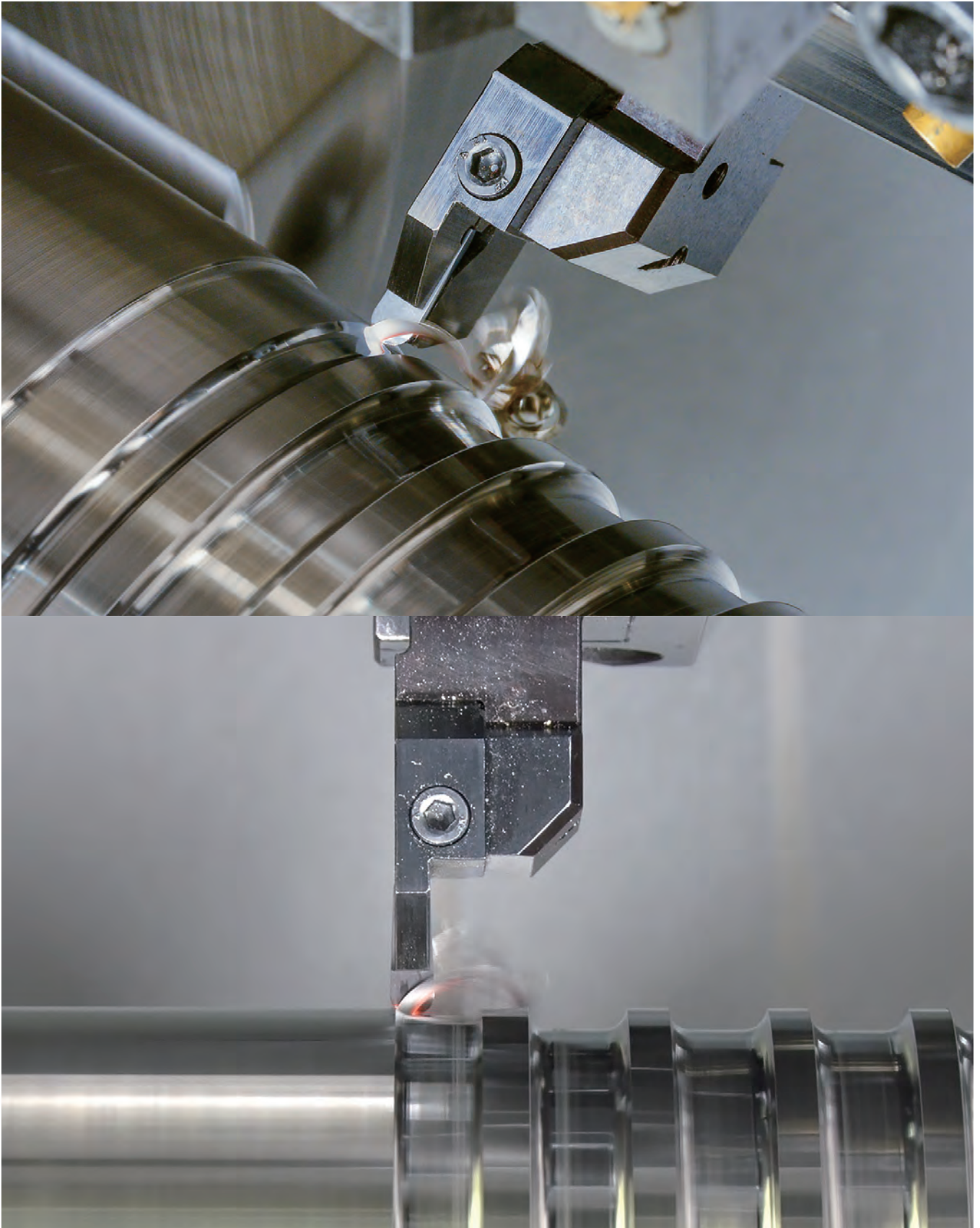
● : Line up



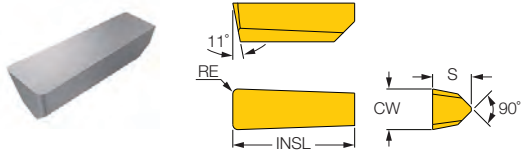
CER-18

Ceramic Grooving

S Superalloy



VGW



	1	2	3	4	5	6	7	8	9	10
P Steel										
M Stainless										
K Cast iron										
N Non-ferrous										
S Superalloy	★			★	☆	☆	★			
H Hard materials										

★ : First choice
 ☆ : Second choice

Designation	CW	RE	Whisker		SiAION		Bidemics		INSL	S	
			533		SX3	SX7	SX9	JX3			
VGW4125-1E004	3.175	0.4	●		●			●		12.7	4.51
VGW4125-1EM04X	3.175	0.4				●	●			12.7	4.51
VGW4125-1T00520	3.175	0.4			●	●	●			12.7	4.51
VGW4125-2E004	3.175	0.8	●		●			●		12.7	4.51
VGW4125-2EM04X	3.175	0.8				●	●			12.7	4.51
VGW4125-2T00520	3.175	0.8			●	●	●			12.7	4.51
VGW4156-1E004	3.962	0.4	●		●			●		12.7	4.51
VGW4156-1EM04X	3.962	0.4				●	●			12.7	4.51
VGW4156-1T00520	3.962	0.4			●	●	●			12.7	4.51
VGW4156-2E004	3.962	0.8	●		●			●		12.7	4.51
VGW4156-2EM04X	3.962	0.8				●	●			12.7	4.51
VGW4156-2T00520	3.962	0.8			●	●	●			12.7	4.51
VGW4187-1E004	4.75	0.4	●		●			●		12.7	4.51
VGW4187-1EM04X	4.75	0.4				●	●			12.7	4.51
VGW4187-1T00520	4.75	0.4			●	●	●			12.7	4.51
VGW4187-2E004	4.75	0.8	●		●			●		12.7	4.51
VGW4187-2EM04X	4.75	0.8				●	●			12.7	4.51
VGW4187-2T00520	4.75	0.8			●	●	●			12.7	4.51
VGW6250-1E004	6.35	0.4	●		●			●		19.05	6.05
VGW6250-1EM04X	6.35	0.4				●	●			19.05	6.05
VGW6250-1T00520	6.35	0.4			●	●	●			19.05	6.05
VGW6250-2E004	6.35	0.8	●		●			●		19.05	6.05
VGW6250-2EM04X	6.35	0.8				●	●			19.05	6.05
VGW6250-2T00520	6.35	0.8			●	●	●			19.05	6.05
VGW8375-2E004	9.525	0.8	●		●			●		25.4	8.31
VGW8375-2EM04X	9.525	0.8				●	●			25.4	8.31
VGW8375-2T00520	9.525	0.8			●	●	●			25.4	8.31

● : Line up



More info

Superalloy
Grooving

Turning

Cast Iron Grooving

Milling

Turning

Materials
Turning

Grooving

Turning Iron

Milling

Turning
superalloys

Sintered metal
Turning

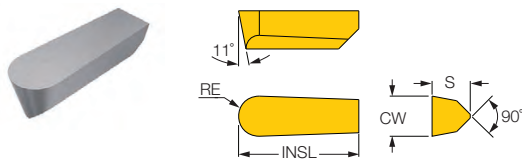
Turning

Grooving

Milling

INSERT

VGW-R



P	Steel												
M	Stainless												
K	Cast iron												
N	Non-ferrous												
S	Superalloy	★			★	☆	☆	★					
H	Hard materials												

★ : First choice
☆ : Second choice

Designation	CW	RE	Whisker		SiAlON			Bidemics		INSL	S
			533		SX3	SX7	SX9	JX3			
VGW4125-RE004	3.175	1.588	●		●			●		12.7	4.51
VGW4125-REM04X	3.175	1.588				●	●			12.7	4.51
VGW4125-RT00520	3.175	1.588			●	●	●			12.7	4.51
VGW4156-RE004	3.962	1.981	●		●			●		12.7	4.51
VGW4156-REM04X	3.962	1.981				●	●			12.7	4.51
VGW4156-RT00520	3.962	1.981			●	●	●			12.7	4.51
VGW4187-RE004	4.75	2.375	●		●			●		12.7	4.51
VGW4187-REM04X	4.75	2.375				●	●			12.7	4.51
VGW4187-RT00520	4.75	2.375			●	●	●			12.7	4.51
VGW6250-RE004	6.35	3.175	●		●			●		19.05	6.05
VGW6250-REM04X	6.35	3.175				●	●			19.05	6.05
VGW6250-RT00520	6.35	3.175			●	●	●			19.05	6.05
VGW8375-RE004	9.525	4.763	●		●			●		25.4	8.31
VGW8375-REM04X	9.525	4.763				●	●			25.4	8.31
VGW8375-RT00520	9.525	4.763			●	●	●			19.05	6.05

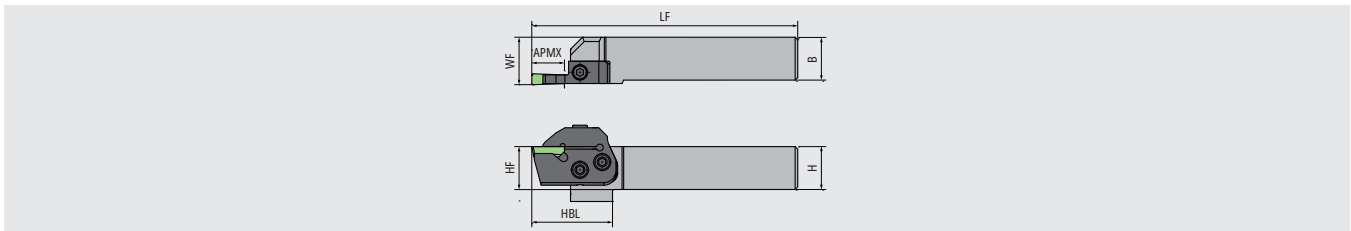
● : Line up



More info

GBVR...

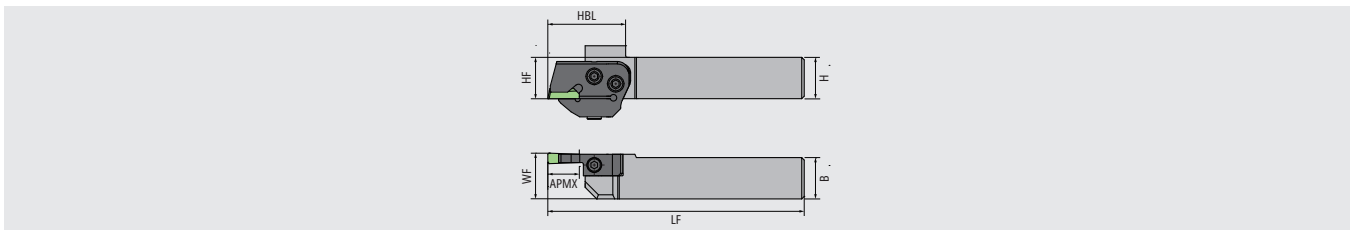
VGW.. series/For straight shank toolholder



Designation	APMX	H	B	LF	HBL	WF	HF	Holder	Insert
GBVR-VGW4-3T09	9.525	20	20	118.6	39.6	22.3	20	GTWPR2020-H	VGW4125
		25	25	143.6	35.6	27.2	25	GTWPR2525-H	
		32	32	163.6	–	34.2	32	GTWPR3232-H	
GBVR-VGW4-4T14	14.275	20	20	124.9	45.9	22.3	20	GTWPR2020-H	VGW4156
		25	25	150	42	27.3	25	GTWPR2525-H	
		32	32	170	–	34.3	32	GTWPR3232-H	
GBVR-VGW6-6T14	14.275	20	20	124.9	45.9	22.7	20	GTWPR2020-H	VGW6250
		25	25	150	42	22.7	25	GTWPR2525-H	
		32	32	170	–	34.7	32	GTWPR3232-H	
GBVR-VGW6-6T19	19.05	20	20	130	51	22.6	20	GTWPR2020-H	VGW6250
		25	25	155	47	27.6	25	GTWPR2525-H	
		32	32	175	–	34.6	32	GTWPR3232-H	
GBVR-VGW8-8T28	28.575	20	20	137.6	58.6	23.3	20	GTWPR2020-H	VGW8375
		25	25	162.7	54.7	28.3	25	GTWPR2525-H	
		32	32	182.7	–	35.3	32	GTWPR3232-H	

GBVL...

VGW.. series/For straight shank toolholder



Designation	APMX	H	B	LF	HBL	WF	HF	Holder	Insert
GBVL-VGW4-3T09	9.525	20	20	118.6	39.6	22.3	20	GTWPL2020-H	VGW4125
		25	25	143.6	35.6	27.2	25	GTWPL2525-H	
		32	32	163.6	–	34.2	32	GTWPL3232-H	
GBVL-VGW4-4T14	14.275	20	20	124.9	45.9	22.3	20	GTWPL2020-H	VGW4156
		25	25	150	42	27.3	25	GTWPL2525-H	
		32	32	170	–	34.3	32	GTWPL3232-H	
GBVL-VGW6-6T14	14.275	20	20	124.9	45.9	22.7	20	GTWPL2020-H	VGW6250
		25	25	150	42	22.7	25	GTWPL2525-H	
		32	32	170	–	34.7	32	GTWPL3232-H	
GBVL-VGW6-6T19	19.05	20	20	130	51	22.6	20	GTWPL2020-H	VGW6250
		25	25	155	47	27.6	25	GTWPL2525-H	
		32	32	175	–	34.6	32	GTWPL3232-H	
GBVL-VGW8-8T28	28.575	20	20	137.6	58.6	23.3	20	GTWPL2020-H	VGW8375
		25	25	162.7	54.7	28.3	25	GTWPL2525-H	
		32	32	182.7	–	35.3	32	GTWPL3232-H	

Reference pages: Insert → **CER-21, 22**



More info

Ceramic Milling

S Superalloy





Superalloy
Grooving

Milling

Cast Iron
Grooving

Turninged Mate
Turr

Harder
Groove

Turnin
t IronMillingTurningintermetal turningTurnin
aterialsGroovinMilling
Non

JRF Milling Cutter

Introducing a New Paradigm in Ceramic-Embedded Cutters

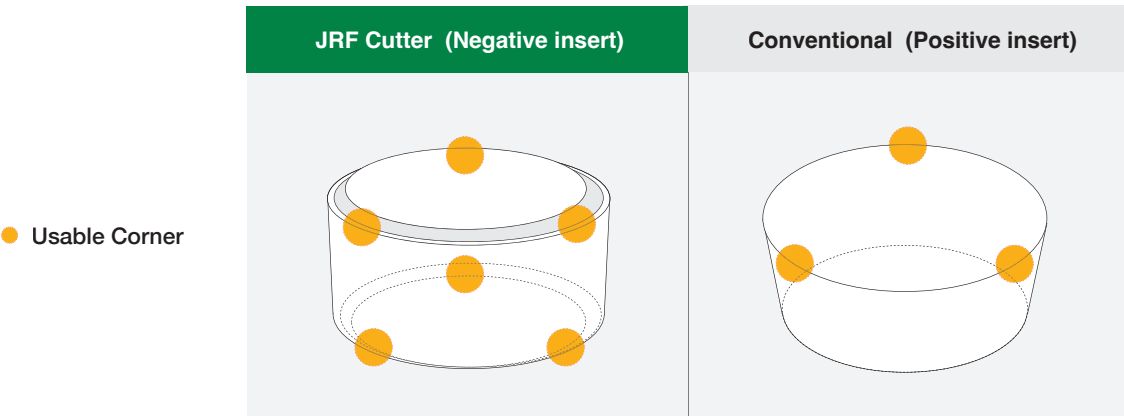
NTK Achieves Industry-First Triple-Blade Configuration with Ceramic Negative Inserts for $\phi 16$ Cutters
By utilizing double-sided, high-strength negative inserts and the high efficiency of three blades, NTK contributes to cost-effective tooling, stable machining processes, and enhanced productivity.

Enhancing Machining Efficiency Further with Increased Insert Count



High-Efficiency Machining with 3-insert Design
at $\phi 16$ - Supports Maximum Table Feed of 7200mm/min!

Economical with Double-Sided Usable Negative Inserts



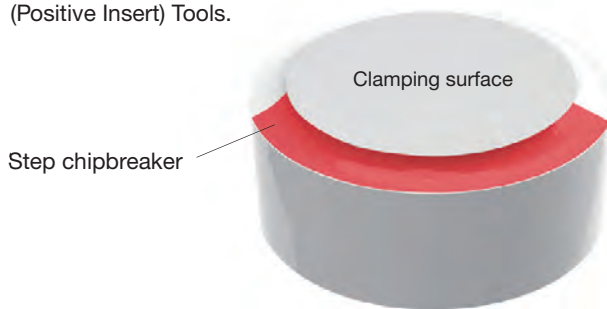


Superalloys [aircraft parts/generator parts]

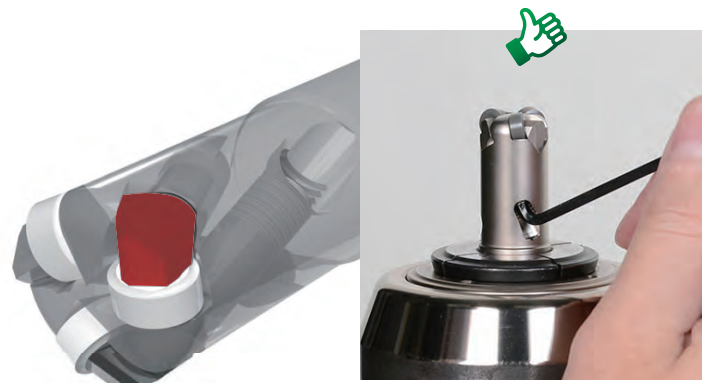
Turning
Grooving
Milling
Turning
Grooving
Milling

Extended Lifespan Chipbreaker

Our Step Chipbreaker: Reduces Flaking by Lowering the Cutting Edge from the Clamping Surface of Conventional (Positive Insert) Tools.



Prevent Insert Movement During Machining with Increased Clamping Force

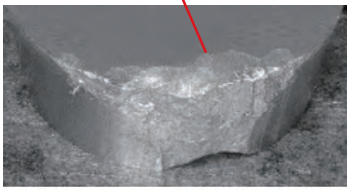
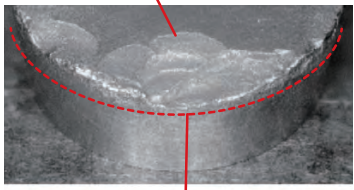


Turning

CBN

Turning
Grooving

Insert Damage Suppression with Chipbreaker-Equipped Negative Inserts and Increased Clamping Force!

	JRF Cutter (Negative insert)	Competitor (Positive insert)	
Number of teeth (pc)	3 ($\phi 16$)	2 ($\phi 16$)	
Table feed (mm/min)	2,250	1,500	
Edge Damage			

Turning
Grooving
Turning
Milling
Turning

PCD

Turning
Grooving
Milling

Workpiece Material	Waspaloy (Combustion Casing)
Cutting Speed (m/min)	500 (10,000rpm)

Feed per tooth (mm/t)	0.075
D.O.C.(mm)	0.5

Recommended Machining Parameters

Grade	Workpiece Material	Machining process	Cutting conditions			DRY	WET
			Cutting Speed (m/min)	Feed (mm/t)	D.O.C. (mm)		
SX3 SX9	HRSA	Milling	400 - 700 – 1000	0.08 - 0.10 - 0.12	- 1.0	●	×

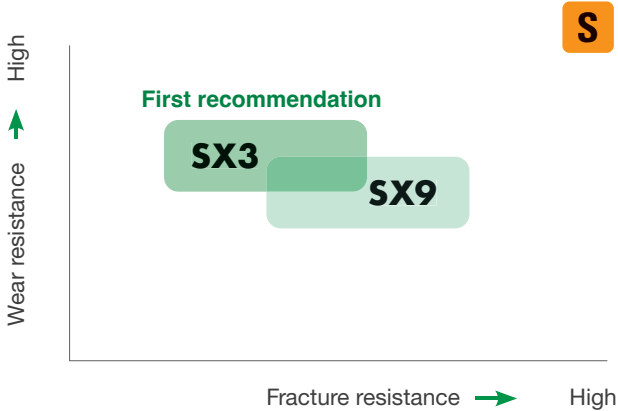
Material-Specific Characteristics

SX3

The First Recommended Material for Machining Superalloys with Ceramics: Balancing Wear Resistance and Fracture Resistance.

SX9

Ceramic Material Prioritizing Fracture Resistance



Case study

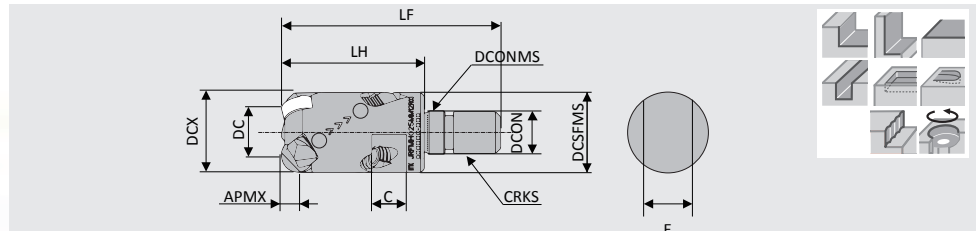
Waspaloy (Combustion Casing)			 1.7 Times Efficiency	 32% Reduction in Tooling Costs Chip Price ÷ Number of Corners (tool life) x Number of inserts
	JRF Cutter	Conventional		
Grade	SX9 Negative insert	SX9 Positive insert		
Teeth per body	5 (Φ32)	3 (Φ32)		
Speed (m/min)	800 (8,000rpm)	800 (8,000rpm)		
Feed per tooth (mm/t)	0.05	0.05		
Table feed (mm/min)	2,000	1,200		
D.O.C. (mm)	1.0	1.0		
Tool life	2 pass	1 pass		
Number of usable corners	8	5		



JRF Modular type

TUNGFLEX shank x Modular type JRF cutter, Dia. 16 - 32 with RNGF negative insert

GAMP = -10° ~ -15°, GAMF = -20° ~ -28°



Designation	APMX	DC	DCX	CICT	DCONMS	DCSFMS	LF	LH	C	E	CRKS	WT(kg)	Insert
JRFMH016MM08R03	1	9.65	16	3	8.5 (h7)	15	53	35	8	13	M8	0.04	RNGF0603...
JRFMH020MM10R03	1	13.65	20	3	10.5 (h7)	19	54	35	10	16	M10	0.07	RNGF0604...
JRFMH025MM12R03	1	15.475	25	3	12.5 (h7)	23	63	41	12	19	M12	0.11	RNGF0904...
JRFMH025MM12R04	1	18.65	25	4	12.5 (h7)	23	63	41	12	19	M12	0.13	RNGF0604...
JRFMH032MM16R03	1	19.3	32	3	17 (h7)	30	63	40.5	12	24	M16	0.2	RNGF1204...
JRFMH032MM16R04	1	22.475	32	4	17 (h7)	30	63	40.5	12	24	M16	0.19	RNGF0904...
JRFMH032MM16R05	1	22.475	32	5	17 (h7)	30	63	40.5	12	24	M16	0.21	RNGF0904...

SPARE PARTS

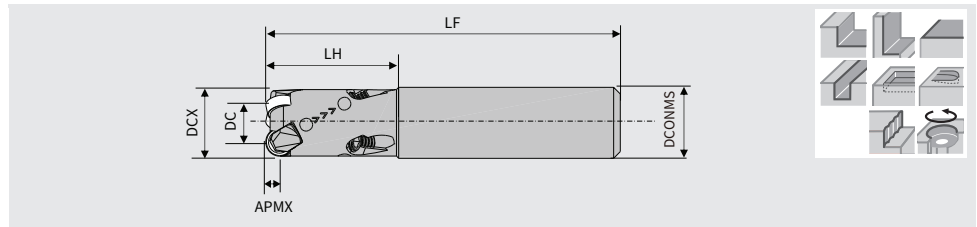
Designation	Cap screw	Wedge screw	Wrench	Wrench (sold separately)
JRFMH016MM08R03	HCS3P050	HWS3P050	LW-2.5	(DL-025-08-JRF)
JRFMH020MM10R03	HCS3P050	HWS3P050	LW-2.5	(DL-025-08-JRF)
JRFMH025MM12R03	HCS5P080	HWS5P080	LW-4.0	(DL-040-20-JRF)
JRFMH025MM12R04	HCS3P050	HWS3P050	LW-2.5	(DL-025-20-JRF)
JRFMH032MM16R03	HCS5P080	HWS5P080	LW-4.0	(DL-040-20-JRF)
JRFMH032MM16R04	HCS5P080	HWS5P080	LW-4.0	(DL-040-20-JRF)
JRFMH032MM16R05	HCS3P050	HWS3P050	LW-2.5	(DL-025-20-JRF)

Recommended Clamping Torque: CRKS / M8 = 23 N·m, M10 = 46 N·m, M12 = 80 N·m, M16 = 90 N·m

JRF Shank type

Shank type cutter for HRSA material, Dia. 16 - 32 with RNGF negative insert

GAMP = -10° ~ -15°, GAMF = -20° ~ -28°



Designation	APMX	DC	DCX	CICT	DCONMS	LF	LH	WT(kg)	Insert
JRFMH016E160R03	1	9.65	16	3	16	80	30	0.11	RNGF0603..
JRFMH020E200R03	1	13.65	20	3	20	100	40	0.22	RNGF0604..
JRFMH025E250R03	1	15.475	25	3	25	100	40	0.33	RNGF0904..
JRFMH025E250R04	1	18.65	25	4	25	100	40	0.34	RNGF0604..
JRFMH032E320R03	1	19.3	32	3	32	120	50	0.67	RNGF1204..
JRFMH032E320R04	1	22.475	32	4	32	120	50	0.67	RNGF0904..
JRFMH032E320R05	1	22.475	32	5	32	120	50	0.68	RNGF0904..

SPARE PARTS

Designation	Cap screw	Wedge screw	Wrench	Wrench (sold separately)
JRFMH016E160R03	HWS3P050	HCS3P050	LW-2.5S	(DL-025-08-JRF)
JRFMH020E200R03	HWS3P050	HCS3P050	LW-2.5S	(DL-025-08-JRF)
JRFMH025E250R03	HWS5P080	HCS5P080	LW-4.0	(DL-040-20-JRF)
JRFMH025E250R04	HCS3P050	HCS3P050	LW-2.5	(DL-025-20-JRF)
JRFMH032E320R03	HWS5P080	HCS5P080	LW-4.0	(DL-040-20-JRF)
JRFMH032E320R04	HWS5P080	HCS5P080	LW-4.0	(DL-040-20-JRF)
JRFMH032E320R05	HWS3P050	HCS3P050	LW-2.5	(DL-025-20-JRF)



More info

INSERT

RNGF-HNF



P	Steel			
M	Stainless			
K	Cast iron			
N	Non-ferrous			
S	Superalloy	★	☆	
H	Hard materials			

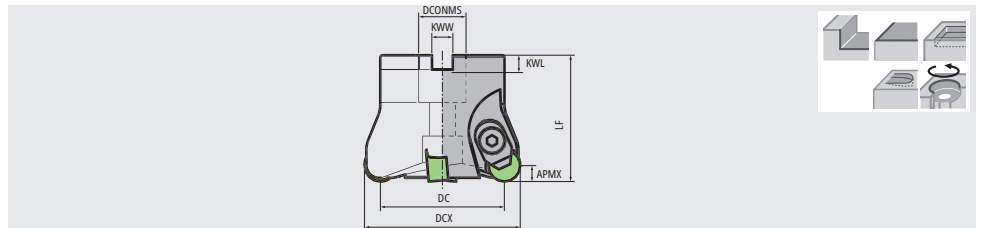
★ : First choice
☆ : Second choice

Designation	SiAlON		IC	S
	SX3	SX9		
RNGF060300E-HNF	●	●	6.35	3.18
RNGF060400E-HNF	●	●	6.35	4.76
RNGF090400E-HNF	●	●	9.525	4.76
RNGF120400E-HNF	●	●	12.7	4.76

●: Line up

JRNMW Arbor type Cutter

JRNMW Arbor type Cutter For HRSA materials



Designation	APMX	DC	DCX	CICT	DCONMS	KWL	KWW	LF	WT(kg)	Insert
JRNMW050S220R03	3.2	37.3	50	3	22	6	10	50	0.42	RNGN1207...
JRNMW063S220R04	3.2	50.3	63	4	22	6	10	50	0.55	RNGN1207...
JRNMW080S254R05	3.2	67.3	80	5	25.4	6	9.5	50	0.85	RNGN1207...

SPARE PARTS

Designation	Clamp	Shim	Clamp screw
JRNMW***S...	AMS-6T	AOB-6S-T30	LLR-T30

INSERT

RNGN



P	Steel			
M	Stainless			
K	Cast iron			
N	Non-ferrous			
S	Superalloy	★	☆	
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	SiAlON		IC	S
	SX3	SX9		
RNGN120700E004	●	●	12.7	7.94
RNGN120700T00520	●	●	12.7	7.94
RNGN120700T01020	●	●	12.7	7.94

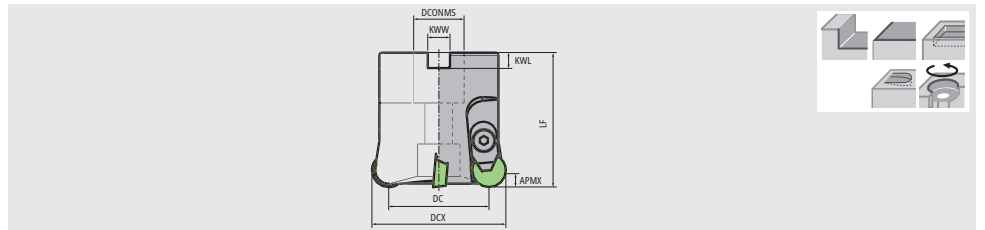
●: Line up



More info

JRPMW Arbor type Cutter

JRPMW Arbor type Cutter For HRSA materials



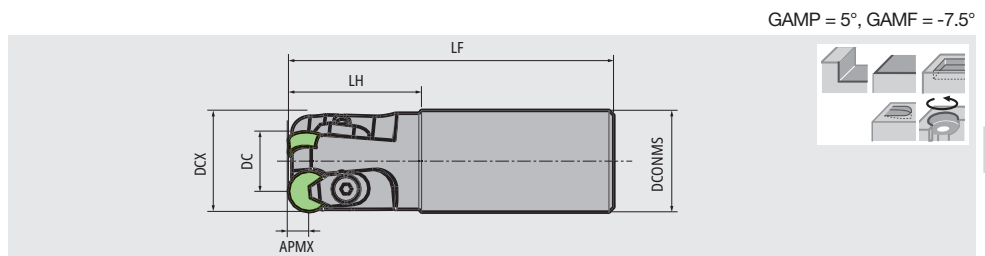
Designation	APMX	DC	DCX	CICT	DCONMS	KWL	KWW	LF	WT(kg)	Insert
JRPMW050S220R04	3.2	37.3	50	4	22	6.3	10.4	50	0.35	RP**1204...
JRPMW063S220R04	3.2	50.3	63	4	22	6.3	10.4	50	0.55	RP**1204...
JRPMW080S254R05	3.2	67.3	80	5	25.4	6	9.5	50	0.87	RP**1204...

SPARE PARTS

Designation	Clamp	Shim	Clamp screw	Screw (for Shim)	Wrench (for Clamp screw)
JRPMW**S**R...	AMS-5T	ARP42A	AOB-5S-T25	M3*8	LLR-T25

JRPMW Shank type Cutter

JRPMW Shank type Cutter For HRSA materials



Designation	APMX	DC	DCX	CICT	DCONMS	LF	LH	WT(kg)	Insert
JRPMW032E250R03	3.2	19.3	32	3	25	120	40	0.42	RP**1204...
JRPMW032E320R03	3.2	19.3	32	3	32	120	40	0.6	RP**1204...
JRPMW040E320R03	3.2	27.3	40	3	32	120	40	0.72	RP**1204...

SPARE PARTS

Designation	Clamp	Clamp screw	Wrench (for Clamp screw)
JRPMW**E**R...	AMS-5T	AOB-5S-T25	LLR-T25

INSERT

RPGN



	P	M	K	N	S	H
Steel						
Stainless						
Cast iron						
Non-ferrous						
Superalloy	★	☆	☆			
Hard materials						

★ : First choice
☆ : Second choice

Designation	SiAlON			IC	S
	SX3	SX7	SX9		
RPGN120400E004	●	●	●	12.7	4.76
RPGN120400T00520	●	●	●	12.7	4.76
RPGN120400T01020	●	●	●	12.7	4.76

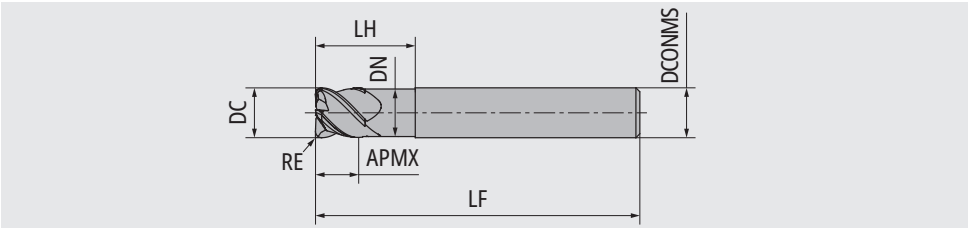
●: Line up



More info

Ceramic 4 blade

Solid ceramic end mill

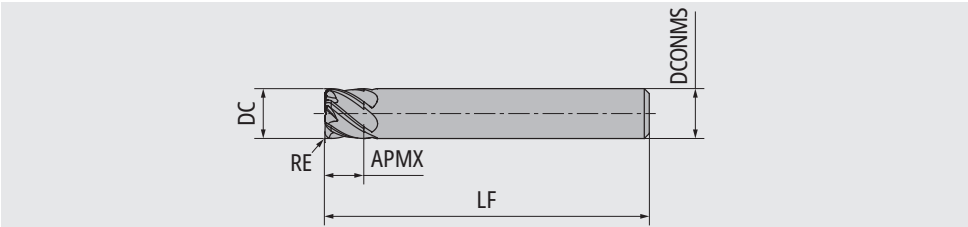


Designation	SX9	CICT	APMX	DC	DCONMS	DN	FHA	LH	LF	RE
RCEM080H4R100S	●	4	6	8	8	7.6	35	16	60	1
RCEM100H4R125S	●	4	7.5	10	10	9.6	35	20	65	1.25
RCEM120H4R150S	●	4	9	12	12	11.6	35	24	70	1.5

●: Line up

Ceramic 6 blade

Solid ceramic end mill



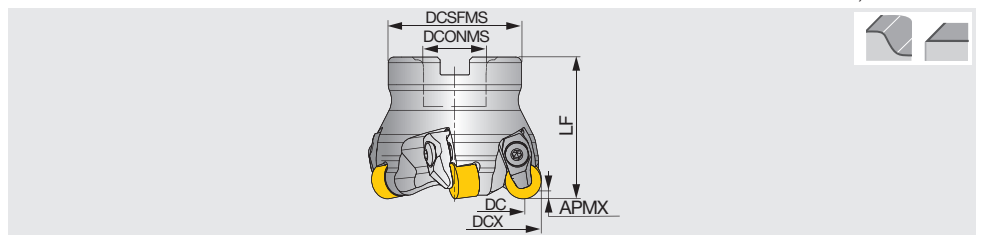
Designation	SX9	CICT	APMX	DC	DCONMS	DN	FHA	LH	LF	RE
RCEM080J6R100S	●	6	6	8	8	-	40	-	60	1
RCEM100J6R125S	●	6	7.5	10	10	9.6	40	30	67.8	1.5
RCEM120J6R150S	●	6	9	12	12	11.6	40	36	79.4	1.5

●: Line up



More info

Face milling cutter for high temperature alloy applications



GAMP = -7°, GAMF = +15°

Designation	APMX	DC	DCX	CICT	DCONMS	LF	DCSFMS	WT(kg)	Insert
TFMRN563-22R-12FL	2	50.35	63	5	22	50	47	0.6	RNGN120700...
TFMRN580-27R-12FL	2	67.37	80	5	27	50	58	0.9	RNGN120700...

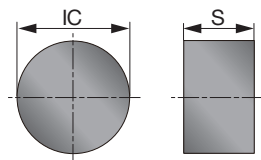
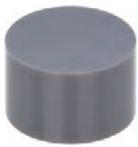
SPARE PARTS



Designation	Clamp	Screw	Snap ring
TFMRN**R-12FL	CCL-5S-F	CLS3C	CSR2

INSERT

RNGN-E/T1



P Steel			
M Stainless			
K Cast iron			
N Non-ferrous			
S Superalloys	★	★	
H Hard materials			

★ : First choice

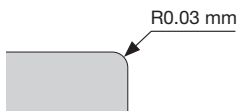
Designation	APMX	Edge prep.*	SiAlON		IC	S
			TS200	TS300		
RNGN120700-E	2	E	●		12.7	7.94
RNGN120700-T1	2	T1	●		12.7	7.94
RNGN120700-E	2	E		●	12.7	7.94
RNGN120700-T1	2	T1		●	12.7	7.94

* Types of cutting edge preparations

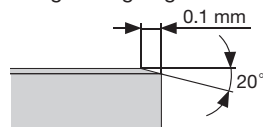
● : Line up

Edge prep

E: Low cutting force



T1: Strong cutting edge



STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Priority	Grades	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Depth of cut ap(mm)
S	Ni-based super alloys	Wear resistance	TS200	550 - 1300	0.05 - 0.2	0.1 - 2
		First choice	TS300	270 - 550	0.05 - 0.2	0.1 - 2
	Co-based super alloys	Wear resistance	TS200	550 - 1500	0.05 - 0.2	0.1 - 2
		First choice	TS300	270 - 550	0.05 - 0.2	0.1 - 2

Ceramic Turning

K Cast Iron

Cast iron / ductile cast iron machining

SX6 Silicon Nitride Ceramic

■ Features

- 1st choice for roughing grey cast iron
- Applicable for wet cutting
- Excellent thermal shock resistance makes high speed milling possible

■ Recommended Applications

- Grey cast iron — Rough — Turning and milling

■ Recommended Cutting Conditions

Work material	Purpose	Grade	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	DRY	WET
Grey cast iron	Turning	SX6	500-1000	0.3-0.6(mm/rev)	0.5-3.5	●	●
	Milling	SX6	450-1200	0.07-0.25(mm/t)	0.5-3.5	●	○

	SX6
Notching	◎
Flank Wear	
Toughness	○
Heat Shock	◎

HC1,HW2 Alumina Oxide Ceramic

■ Features

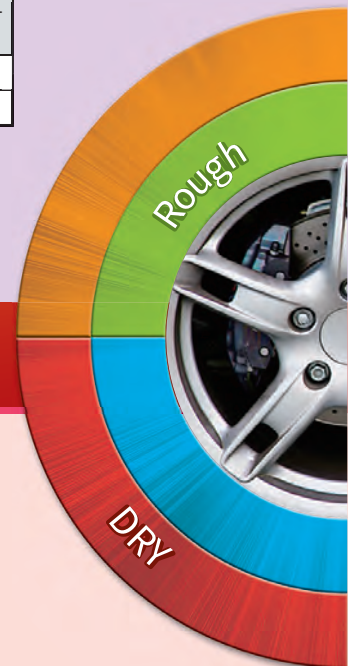
- 1st choice for finishing grey cast iron with no coolant
- Excellent wear resistance makes high speed finishing possible

■ Recommended Applications

- Grey cast iron — Finish — Turning
- Chilled liners — Rough / Finish — Turning (HW2)

■ Recommended Cutting Conditions

Work material	Purpose	Grade	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	DRY	WET
Grey cast iron	Turning	HC1	300-600	0.1-0.4	0.5-2.0	●	
		HW2	300-600	0.1-0.4	0.5-2.0	●	
Chilled liners	Turning	HW2	250-350	0.1-0.3	0.5-2.0	●	



SP9 CVD Coated Silicon Aluminum Oxynitride ceramics

SP9

■ Features

- Extremely tough – Tough enough to rough cast iron with T01020 (0.1 × 20°) edge preparation
- Small edge preparation – Low tool pressure for stable precision machining
- SP9's toughness makes higher feed rates possible
- Dramatically reduced flank wear due to CVD coating

■ Recommended Applications

- Grey cast iron – Rough – Turning and milling
- Ductile cast iron – Rough – Turning and milling

■ Recommended Cutting Conditions

Work material	Purpose	Grade	Cutting speed (m/min)	Feed (mm/rev, mm/t)	Depth of cut (mm)	DRY	WET
Grey cast iron	Turning	SP9	360-800	0.3-0.6	~3.5	●	○
	Milling		360-750	0.08-0.25	-6.0	●	○
Ductile cast iron	Turning	SP9	240-600	0.3-0.6	~3.5	●	○
	Milling		630-900	0.05-0.25	-6.0	●	○

HC2, HC6 TiC Ceramic 533 Whisker Reinforced Ceramic

■ Features

- All grades make high speed finishing of cast iron possible
- Applicable for wet cutting conditions
- HC6 – Optimized for finishing ductile cast iron

■ Recommended Applications

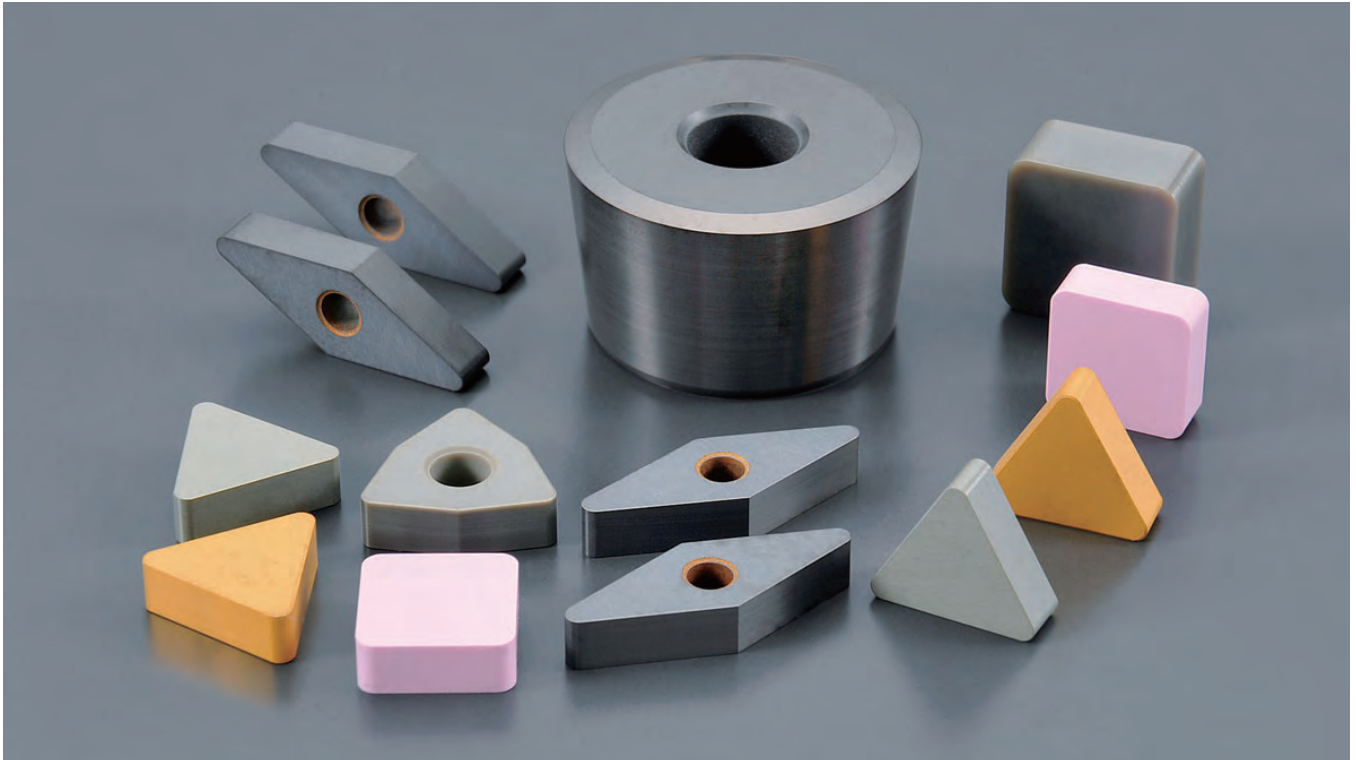
- Grey cast iron – Finish – Turning (HC2 • HC6 • 533)
- Ductile cast iron – Finish – Turning (HC6)

■ Recommended Cutting Conditions

Work material	Purpose	Grade	Cutting speed (m/min)	Feed (mm/rev, mm/t)	Depth of cut (mm)	DRY	WET
Grey cast iron	Turning	HC2/HC6	360-630	0.1-0.4	-1.5	●	●
		533	360-630	0.1-0.4	-3.0	●	●
Ductile cast iron	Turning	HC6	180-450	0.1-0.3	-0.2	○	●



Ceramics / NTK CeramiX



NTK ceramic inserts provide highly efficient machining with excellent high-temperature hardness, heat resistance, and chemical stability.

NTK offers various types and geometries of silicon nitride, alumina, and whisker ceramic inserts to meet the needs of each application and support highly efficient machining and high-speed cutting.

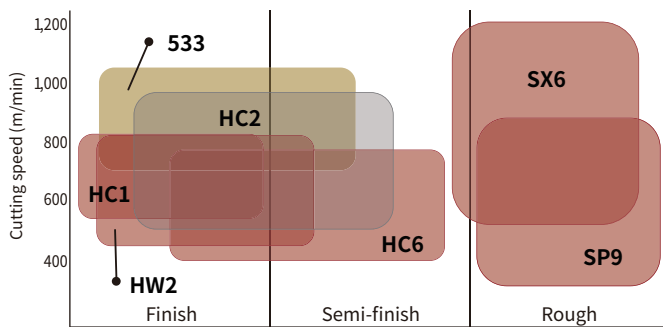
Insert grade, applications, and features

Work material	Grade	Structure	Color	Application	Hardness HR45N	Toughness Mpa	Thermal conductivity W/m.K
K	HC1	Al ₂ O ₃	White	Semi-finishing of grey cast iron Pipe bead cutting	94	700	17
	HC2	Al ₂ O ₃ +TiC	Black	Semi-finishing of grey cast iron	94.5	800	21
	HW2	Al ₂ O ₃	Pink	Semi-finishing of grey cast iron / liners Reinforced toughness	94	750	19
	HC6	TiC+Al ₂ O ₃	Black	Semi-finishing of ductile cast iron Semi-finishing of grey cast iron with coolant	94	800	29
	SX6	Si ₃ N ₄	Gray	Turning/milling of grey cast iron Reinforced VB wear resistance	93.5	1,200	29
	SP9	SiAlON	Yellow	Turning of heat-resistant alloy Roughing of grey cast iron High-precision machining by low-resistance edge treatment + CVD coating	93.5	1,200	15
H	450	TiAlN coating	Black	Continuous finishing of hardened material (HRC 55-65)	95.5	1200	31
	HC4/ZC4	Al ₂ O ₃ +TiC	Black / Gold	Finishing of hardened materials (e.g. removal of carburized layers)	95.5	1,000	25
	HC7/ZC7	Al ₂ O ₃ +TiC	Black / Gold	Finishing of hardened materials (e.g. removal of carburized layers)	95	1,100	23
S	SX3	SiAlON	Gray	Roughing with scale to Semi-finishing of heat-resistant alloys Excellent balance between wear and chipping resistance	93	1,100	12
	SX5	SiAlON	Gray	Rough turning of heat-resistant alloy (Waspaloy)	92.5	1100	18
	SX7	SiAlON	Gray	Turning/Milling of Heat-Resistant Alloys Good wear resistance	93	900	11
	SX9	SiAlON	Gray	Rough turning/milling of heat-resistant alloys and grey cast iron Excellent chipping resistance	93.5	1,200	15
	533	Al ₂ O ₃ +SiC	Light green	Turning of heat-resistant alloys/grey cast iron Excellent chipping resistance	94.5	1,200	35

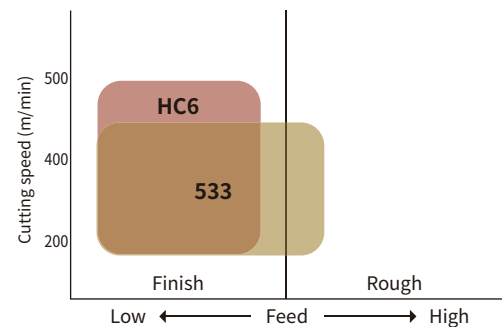


More info

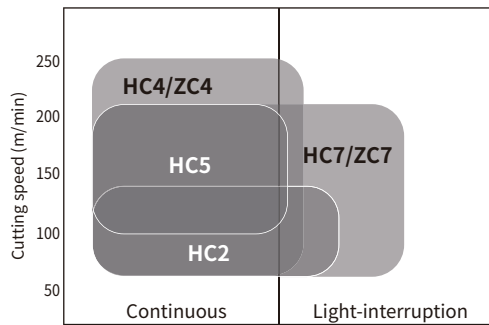
For grey cast iron



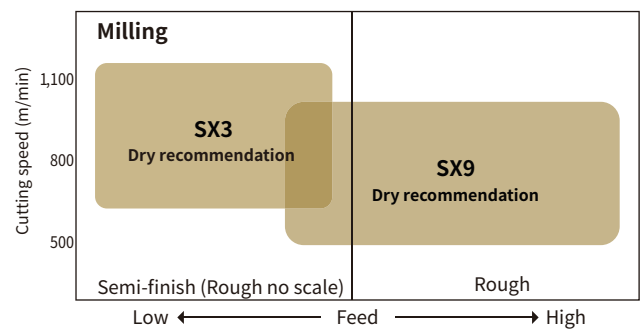
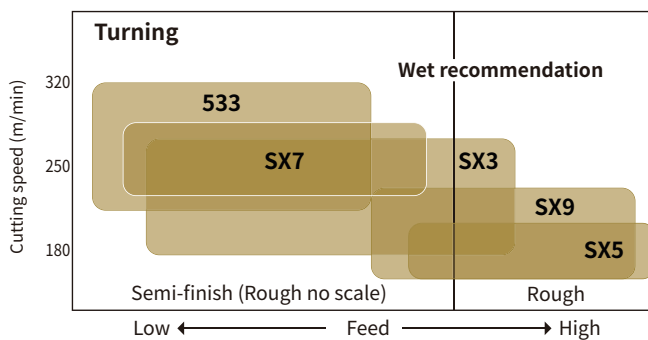
For ductile cast iron



For hardened materials



For heat-resistant alloys



Turning

Superalloys

Grooving

Milling

Turning

Grooving

Milling

Turning

Hardened Materials

Turning

Grooving

Turning

Cast Iron

Milling

Turning

Turning

PCD

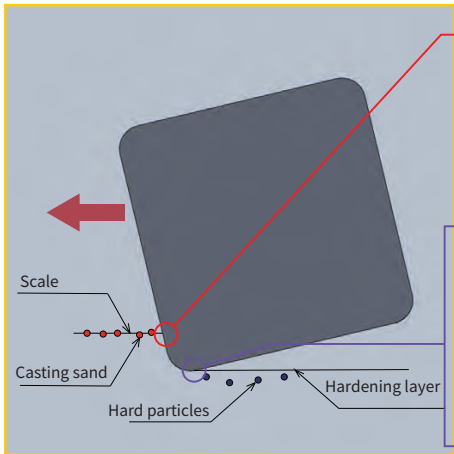
Turning

Grooving

Milling

Non-Ferrous Materials

Recommended grade from cutting edge damage



Recommended when wear on the infed side wear has progressed due to scale or casting sand, resulting in chipping of the cutting edge.

Roughing
SX6

Recommended when VB wear has progressed due to the surface machining layer and hard particles, and the machined surface has deteriorated.

Roughing
SP9
* DRY machining

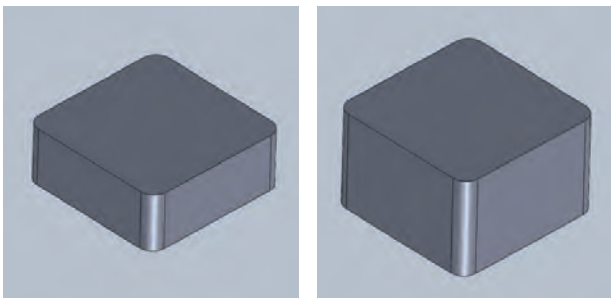
Finishing
HC2 HC6
* HC6 WET machining recommended

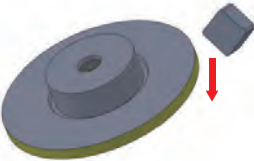
Recommended when the heat generated during DRY machining causes progressive wear, resulting in worsening of the machined surface and deterioration of dimensional accuracy.

Finishing
HC1 HW2
* DRY machining

Effect of insert thickness

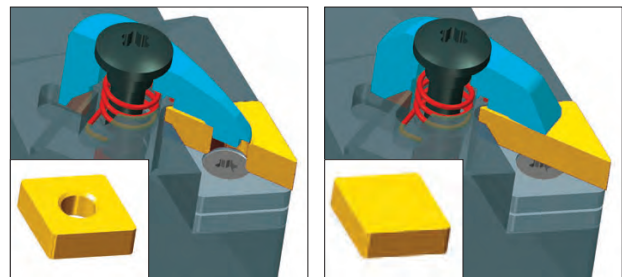
In machining with high cutting loads, such as roughing, a thicker insert thickness effectively reduces damage such as chipping, thus extending tool life.



Brake disc		
Work material	: FC250	
Cutting speed(m/min)	: 550	
Feed(mm/rev)	: 0.45	
Depth of cut(mm)	: 2.5	
Coolant	: DRY	
SNGN1207 type	100 pcs/corner stable	
SNGN1204 type	50-70 pcs/corner unstable	

Recommended clamping type when using ceramic inserts

To maximize the performance of ceramic inserts, clamping rigidity of the inserts is important. Select the clamping method best suited for your machining method.



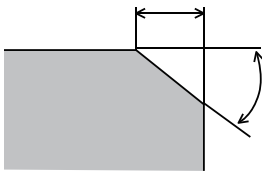
Capable of clamping inserts tightly. Supports cutting loads from any direction.

Best suited for ceramic inserts. Not suitable where cutting loads are applied from each direction.

Brake disc		
Work material	: FC250	
Cutting speed(m/min)	: 750	
Feed(mm/rev)	: 0.35	
Depth of cut(mm)	: 2.0	
Coolant	: DRY	
NTK double clamping type	100 pcs/corner	
Lever lock type	45 pcs/corner	

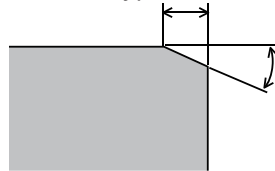
Use of different edge preparations

<Tougher type>



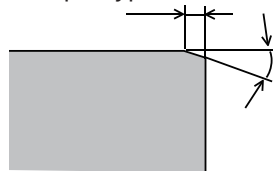
Width: Bigger
Angle: Bigger
Ex. width 0.3 × angle 35°

<Balance type>



Width: Medium
Angle: Medium
Ex. width 0.2 × angle 20°

<Shaper type>



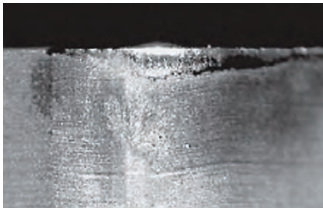
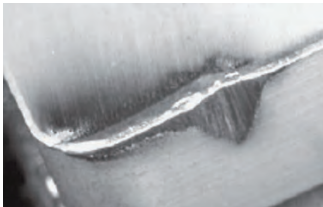
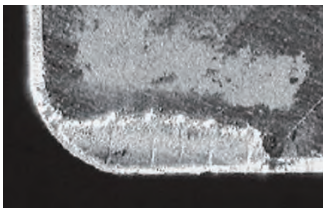
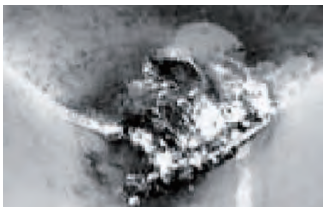
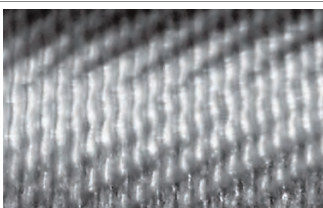
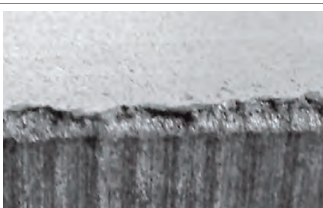
Width: Smaller
Angle: Smaller
Ex. width 0.1 × angle 15°

Case1.
Excessive notch wear or chipping in the early stages of machining.
→ Tougher type is recommended.

Case2.
Unstable machining dimensions and excessive VB wear
→ Sharper type is recommended.

Case3.
Micro chipping occurred.
→ Add round honing on the cutting edge is recommended.

Troubleshooting

	Case study		Cause	Measure
Insert	VB wear		- Cutting speed too high - Feed rate too low - Insert shape incorrect - Incorrect insert grade	- Reduce cutting speed - Increase feed rate - Increase corner radius - Change to a grade with superior wear resistance
	Notch wear		- Incorrect insert grade - Cutter geometry incorrect - Insert shape incorrect	- Change to a grade with better wear resistance - Increase the lead angle - Change the geometry of inserts
	Thermal crack		- Cutting conditions incorrect - Incorrect insert grade	- Reduce cutting speed - Change from WET to DRY machining - Change to a grade with superior thermal shock resistance
	Fracture		- Cutting condition incorrect - Edge treatment incorrect - Use coolant	- Lower feed - Increase cutting edge treatment - Apply honing - Change from WET to DRY machining
	Cracked		Insert clamped with incorrect seating	- Clean the mounting area and install according to the correct procedure - Tighten to the correct torque.
Work material	Chatter		- Low cutting resistance - Workpiece/tool less rigidity - Low cutting speed	- Lower feed - Smaller cutting edge treatment - Increase the clearance angle of the insert - Shorten tool overhang - Increase cutting speed
	Edge chipped		- High feed rate - Small cutting edge corner radius - Insert wear	- Lower feed - Increase the corner radius of insert - Use wiper inserts - Reduce cutting speed

CER

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

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Milling

Turning

Grooving

Milling

Turning

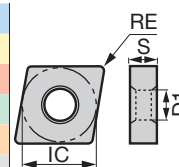
Grooving

Milling

CN



**Rhombic, 80°
with hole**

[illegible]

Application	Chipbreaker	Designation	Abrasive material										Dimension (mm)								
			Whisker	SiAlON		Silicon Nitride		Alumina						RE	IC	S	D1				
Finishing to medium cutting	-	CNGA120404	533		SP9	SX9	SX6	FX105	HC1	HC2	HC6	HW2	LX21					0.4	12.7	4.76	5.16
		CNGA120408					●						●				0.8	12.7	4.76	5.16	
		CNGA120412					●						●				1.2	12.7	4.76	5.16	
		CNGA120416					●							●			1.6	12.7	4.76	5.16	
																					
Roughing to finishing	-	CNGA120408T01020	●		●	●			●	●	●	●					0.8	12.7	4.76	5.16	
		CNGA120408T02020					●										0.8	12.7	4.76	5.16	
		CNGA120412T01020	●		●	●			●	●	●	●					1.2	12.7	4.76	5.16	
		CNGA120412T02020					●										1.2	12.7	4.76	5.16	
		CNGA120416T01020	●		●	●			●	●	●	●					1.6	12.7	4.76	5.16	
		CNGA120416T02020					●										1.6	12.7	4.76	5.16	
Finishing to medium cutting	-	CNMA120408					●										0.8	12.7	4.76	5.16	
		CNMA120412					●										1.2	12.7	4.76	5.16	
		CNMA120416					●										1.6	12.7	4.76	5.16	
																					
	Wiper	CNMA120408W					●										0.8	12.7	4.76	5.16	
		CNMA120412W					●										1.2	12.7	4.76	5.16	
		CNMA120416W					●										1.6	12.7	4.76	5.16	
																					

● : Line up



More info



Ex.Toolholder



In-Toolholder

	P	M	K	N	S	H
Steel						
Stainless						
Cast iron						
Non-ferrous						
Superalloy						
Hard material						

● : Line up



In.Toolholder

[illegible]

DN

[illegible]

● : Line up

DN

[illegible]

● : Line up



More info



Ex.Toolholder



In.Toolholder

Superalloys

lling



Cast Iron

Materials

Materials

Turning

Hardenec

rooving

Iron

Cast

Ailing

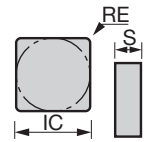
Superalloys

metal

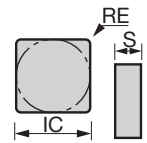
erials

errous Mat

Non-F

[illegible]

Application	Chipbreaker	Designation	Silicon Nitride	Alumina														Dimension (mm)			
			FX105	LX21															RE	IC	S
Finishing to medium cutting	-	SNGD120712	●															1.2	12.7	7.94	-
		SNGD120716	●															1.6	12.7	7.94	-
	-	SNGN090308		●														0.8	9.525	3.18	-
		SNGN120408	●	●														0.8	12.7	4.76	-
		SNGN120412	●	●														1.2	12.7	4.76	-
		SNGN120416	●	●														1.6	12.7	4.76	-
		SNGN120420	●	●														2	12.7	4.76	-
		SNGN120424	●															2.4	12.7	4.76	-
		SNGN120712	●															1.2	12.7	7.94	-
		SNGN120716	●															1.6	12.7	7.94	-

[illegible][illegible]

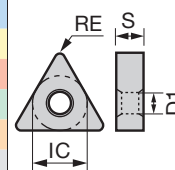
In.Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊗ : Heavy interrupted cutting

TN



Triangular with hole

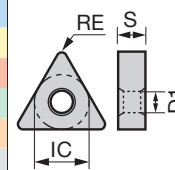
[illegible][illegible]

● : Line up

TN



Triangular with hole

[illegible][illegible]

● : Line up



More info



Ex.Toolholder



In.Toolholder

Superalloys

Turning

Cast Iron

Hardened
Materials

Turning

Hardened Materials

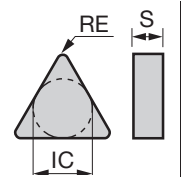
Best Iron

Superalloys

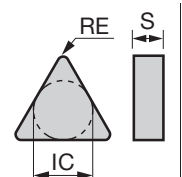
metal

Non-Ferrous Materials

	P	M	K	N	S	H
Steel						
Stainless						
Cast iron	●●	●●●●●●	●●●●●●			
Non-ferrous						
Superalloy						
Hard material						



Application	Chipbreaker Designation		Whisker		SiAlON		Silicon Nitride		Alumina								Dimension (mm)				
			533		SP9	SX9	SX6		HC1	HC2	HC6	HW2						RE	IC	S	D1
Roughing to finishing		- TNGN160408T01020	●		●	●			●	●	●	●						0.8	9.525	4.76	-
		TNGN160408T02020					●											0.8	9.525	4.76	-
		TNGN160412T01020	●		●	●			●	●	●	●						1.2	9.525	4.76	-
		TNGN160412T02020					●											1.2	9.525	4.76	-
		TNGN160416T01020	●		●	●			●	●	●	●						1.6	9.525	4.76	-
		TNGN160416T02020					●											1.6	9.525	4.76	-
		TNGN160416T02020					●											1.6	9.525	4.76	-
		TNGN160416T02020					●											1.6	9.525	4.76	-

[illegible]

Application	Material		Silicon Nitride	Alumina									Dimension (mm)			
	Chipbreaker	Designation	FX105	LX21									RE	IC	S	D1
Finishing to medium cutting	-	TNGN160404		●									0.4	9.525	4.76	-
		TNGN160408		●									0.8	9.525	4.76	-
		TNGN160412	●	●									1.2	9.525	4.76	-
		TNGN160416	●										1.6	9.525	4.76	-
		TNGN160420	●										2	9.525	4.76	-



In.Toolholder

Superalloys

Turning

Cast Iron

Materials

Turning

Materials

Hardeno

Iron

Cast

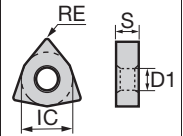
Superalloys

metal

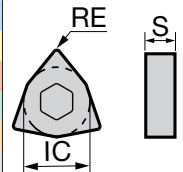
Materials

errous Mat

Non-F

[illegible]

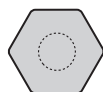
● : Line up

[illegible]

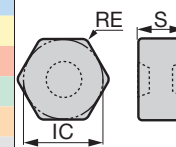
● : Line up



HN



Hexagonal,
120°
without hole

[illegible][illegible]

C

D

R

S

T

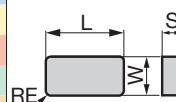
V

OTHERS

LNM



Rectangular

[illegible][illegible]

● : Line up



More info

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

A diagram showing a square hole in a plate. The hole has a side length labeled IC . The plate has a thickness labeled S . The distance from the center of the hole to the edge of the plate is labeled RE . The distance from the center of the hole to the center of the plate is labeled D .

● : Line up

● : Line up

● : Line up



Turning

Materials

Turning

Hardenne

n

Cast Iron

boys

Mi
ng

Supera

metal

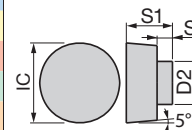
Materials

errous N

Groovin

Non-

RB

[illegible]

Application	Chipbreaker Designation		Material										Dimension (mm)						
			Whisker	Alumina															
Medium to finishing	-	RBGX20P20015	533	HC2											RE	IC	S	S1	D2
		RBGX26P20015	●	●											-	20	5	15	10
		RBGX26P20015	●	●											-	26	5	15	14
		RBGX32P20015	●	●											-	32	8	20	16
																			

C

D

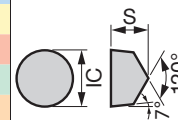


S

V

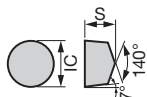
W

RC

[illegible]

Application	Chipbreaker		Material										Dimension (mm)				
			Whisker	Alumina													
		Designation	533	HC2										RE	IC	S	D
Medium to finishing		-	RCGX060400P07015	●	●									-	6.35	4.76	-
			RCGX060400T01025	●	●									-	6.35	4.76	-
			RCGX060600P07015	●	●									-	6.35	6.35	-
			RCGX060600T01025	●	●									-	6.35	6.35	-
			RCGX090700P07015	●	●									-	9.525	7.94	-
			RCGX090700T01025	●	●									-	9.525	7.94	-
			RCGX120700P20015	●	●									-	12.7	7.94	-
			RCGX120700T01025	●	●									-	12.7	7.94	-
			RCGX191000P20015		●									-	19.05	10	-
			RCGX251200P20015		●									-	25.4	12	-

● : Line up



Only RCGX251200P20015 bottoms angle is 140°.



More info

Superalloys

Grooving

turning

Cast Iron

Grooving

Materials

Materials

rdened Ma

moving

1

Learning

Cast Iron

eralloys

metal

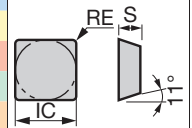
ס

erous Mate

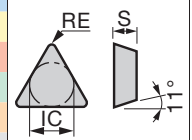
Non-Fe



	P	M	K	N	S	H
Steel						
Stainless						
Cast iron	● ●	● ●	● ●			
Non-ferrous						
Superalloy						
Hard material						

[illegible]

● : Line up

[illegible]

Application	Material		Alumina														Dimension (mm)				
	Chipbreaker	Designation	HC2	HC6	HW2	LX21												RE	IC	S	D1
Finishing	-	TPGN110304				●												0.4	6.35	3.18	-
		TPGN110304T01020	●		●													0.4	6.35	3.18	-
		TPGN110308T01020	●	●	●													0.8	6.35	3.18	-
		TPGN160304T01020	●		●													0.4	9.525	3.18	-
		TPGN160308T01020	●	●	●													0.8	9.525	3.18	-
		TPGN160312T01020	●		●													1.2	9.525	3.18	-

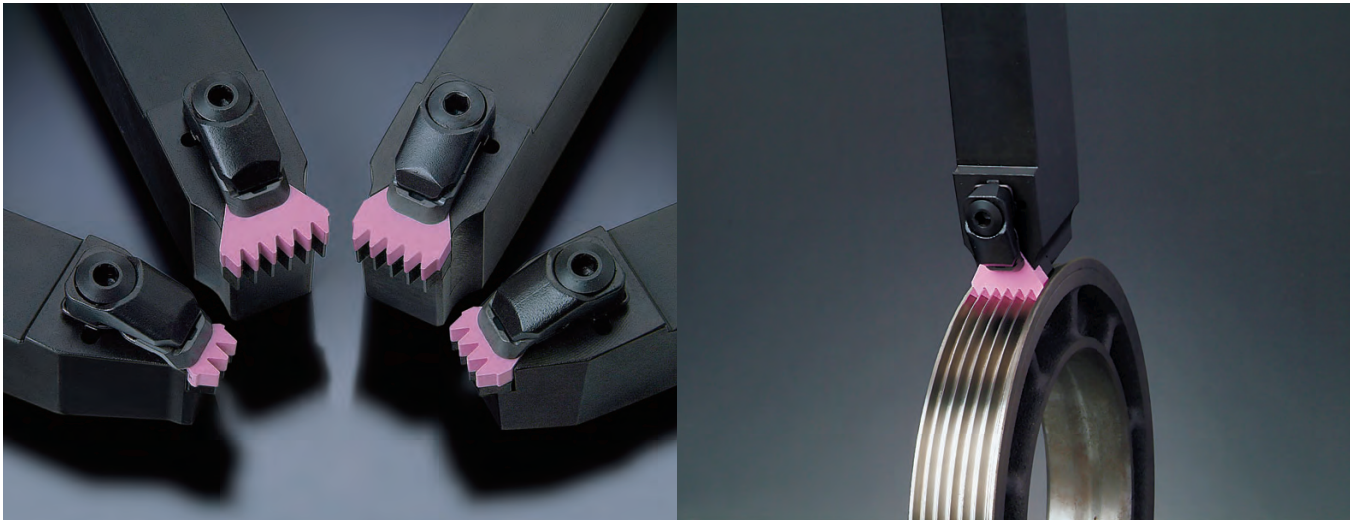
● : Line up



tungaloy.com
- ntkcuttingtools.com

Ceramic Grooving Cast Iron

V-pulley machining



Features

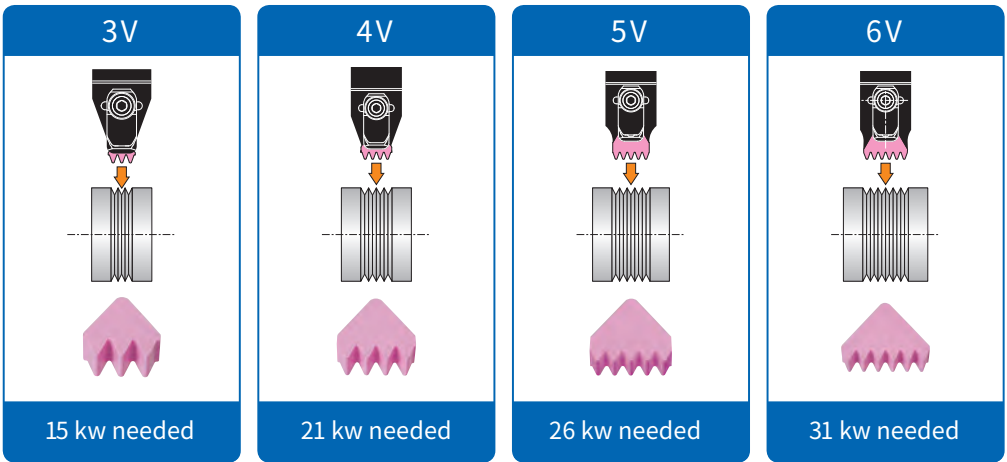
- High-speed machining of poly-V pulleys
- Up to 6 grooves can be machined in a single pass
- High-precision inserts can be produced by profile machining



Recommended Cutting Conditions

Material	Insert grade	Cutting speed (m/min)	Feed (mm/rev)	DRY	WET
cast iron	HW2	300-600	0.05-0.15	●	

Number of Grooves and the Required Machine Power



High-speed machining of poly V with NTK ceramic inserts

	Process #1	Process #2	Process #3	Process #4
	OD and Profile Roughing	OD and Profile Finishing	Plunge Grooving	Poly-V Grooving
Tooling				
Insert	SX6 CNGX120712T02020	HC6 DNGA150408T01225 SP9 DNGA150408T01020	533 VGW6250-2E004	HW2 PTM 53 K50504 ENB* 360-450 (420 m/min recommend)
Cutting speed	600-840	450-600(HC6) 540-720 (SP9)	300-420	(420 m/min recommend)
Feed	0.45-0.6	0.3-0.45 (HC6) 0.45-0.6 (SP9)	0.2-0.25	0.05-0.15
Depth of cut (mm)	2.0-3.0	0.5	-	-
Coolant	DRY (WET)	DRY (WET)	DRY (WET)	DRY
Pcs / corner	-300 pcs	-300 pcs	-300 pcs	-300 pcs

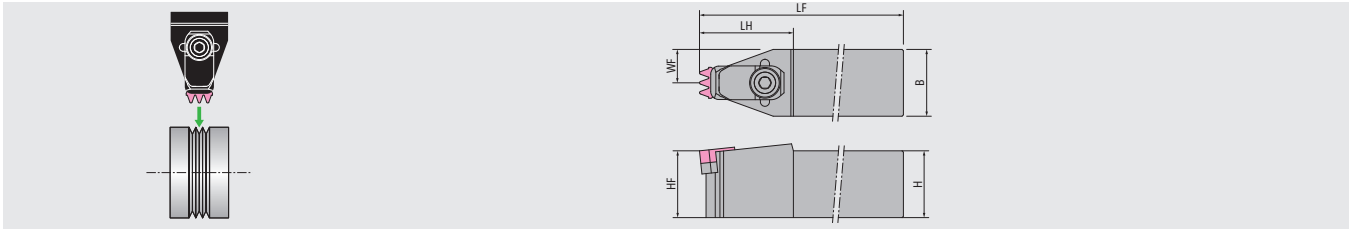
*Check the machine required power.

	3V	4V	5V	6V
Required HP kw	16kw	21kw	26kw	31kw

NTK's Ceramic Inserts ensure higher productivity and stable tool life for Damper-Pulley machining.

Poly-V Pulley Profiles

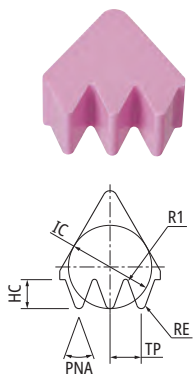
Poly-V Pulley Profiles - 3V Insert

							
Designation	B	H	HF	LF	LH	WF	Insert
POLY-V163	25.4	25.4	25.4	152.4	12.7	35.56	PTM33K30...

*Made to order item

INSERT

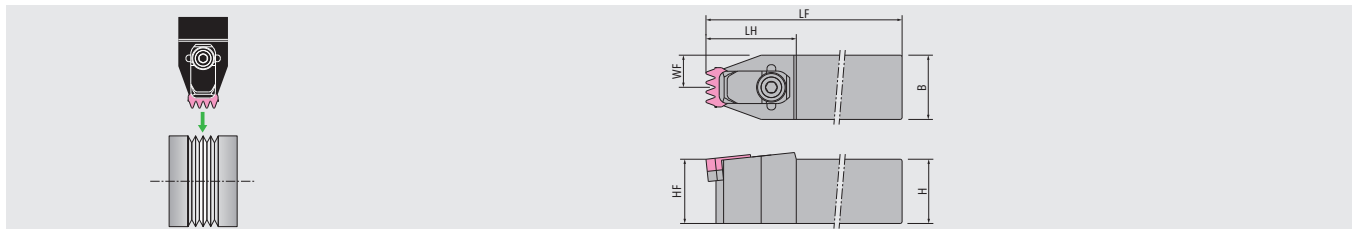
PTM33K30

	P Steel								
	M Stainless								
	K Cast iron	★							
	N Non-ferrous								
	S Superalloys								
	H Hard materials								
★ : First choice									
Designation	Alumina		HC	IC	PNA	R1	RE	S	TP
	HW2								
PTM33K30504E004	●		3.16	9.525	40	0.4	0.5	4.76	3.56
PTM33K305E004	●		3.35	9.525	40	0.3	0.5	4.76	3.56

● : Line up

Poly-V Pulley Profiles

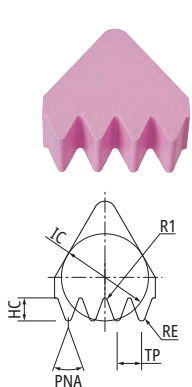
Poly-V Pulley Profiles - 4V Insert

							
Designation	B	H	HF	LF	LH	WF	Insert
POLY-V164	25.4	25.4	25.4	152.4	12.7	35.56	PTM43K40...

*Made to order item

INSERT

PTM43K40

	P Steel								
	M Stainless								
	K Cast iron	★							
	N Non-ferrous								
	S Superalloys								
	H Hard materials								
★ : First choice									
Designation	Alumina		HC	IC	PNA	R1	RE	S	TP
	HW2								
PTM43K40504E004	●		3.16	12.7	40	0.4	0.5	4.76	3.56
PTM43K405E004	●		3.35	12.7	40	0.3	0.5	4.76	3.56

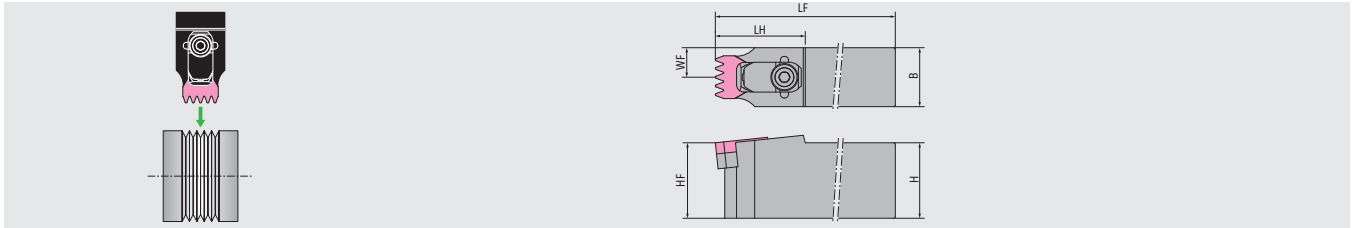
● : Line up



More info

Poly-V Pulley Profiles

Poly-V Pulley Profiles - 5V Insert

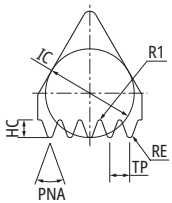


Designation	B	H	HF	LF	LH	WF	Insert
POLY-V205	31.75	31.75	31.75	177.8	15.875	38.1	PTM53K50...

*Made to order item

INSERT

PTM53K50



P	Steel			
M	Stainless			
K	Cast iron	★		
N	Non-ferrous			
S	Superalloys			
H	Hard materials			

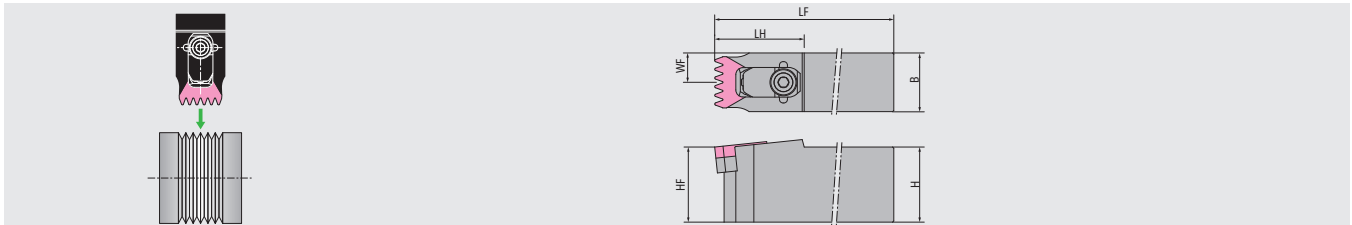
★ : First choice

Designation	Alumina		HC	IC	PNA	R1	RE	S	TP
	HW2								
PTM53K50504E004	●		3.16	15.875	40	0.4	0.5	4.76	3.56
PTM53K505E004	●		3.35	15.875	40	0.3	0.5	4.76	3.56

● : Line up

Poly-V Pulley Profiles

Poly-V Pulley Profiles - 6V Insert

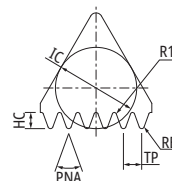


Designation	B	H	HF	LF	LH	WF	Insert
POLY-V206	31.75	31.75	31.75	177.8	15.875	38.1	PTM53K60...

*Made to order item

INSERT

PTM53K60



P	Steel			
M	Stainless			
K	Cast iron	★		
N	Non-ferrous			
S	Superalloys			
H	Hard materials			

★ : First choice

Designation	Alumina		HC	IC	PNA	R1	RE	S	TP
	HW2								
PTM53K60504E004	●		3.16	15.875	40	0.4	0.5	4.76	3.56
PTM53K605E004	●		3.35	15.875	40	0.3	0.5	4.76	3.56

● : Line up

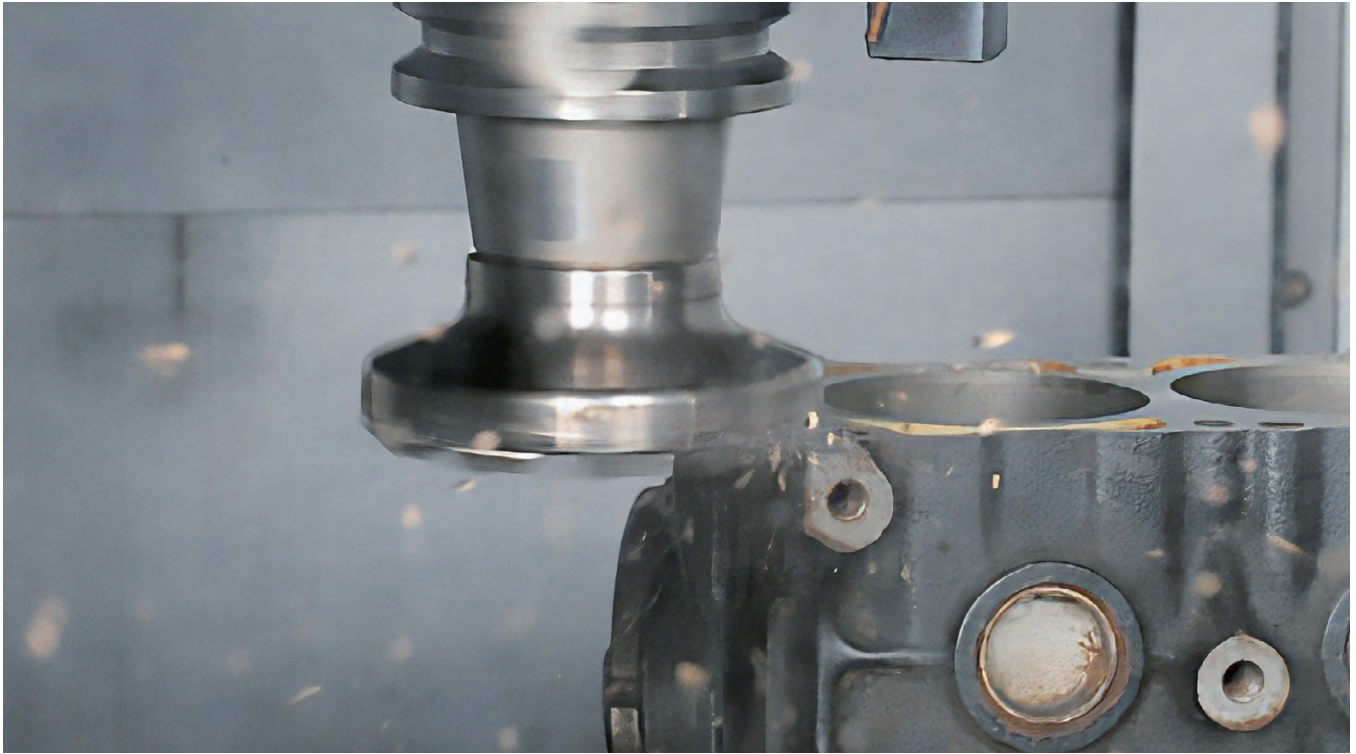


More info

Ceramic Milling

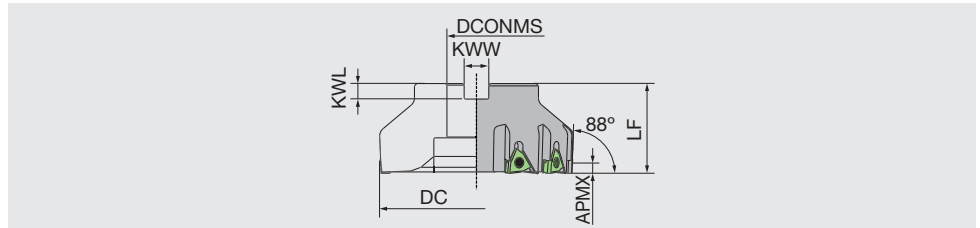
K Cast Iron

Grey / Ductile Cast Iron



Lineup

Series	Features	DC mm	KAPR °	APMX mm
JWNXM series 	Low resistance × multiple corners - Reduces occurrence of insert edge chipping which is common during cast iron machining - Ideal for machining through scale - Tooling cost is reduced by using the unique 6 corner insert.	φ63 - 160	88°	- 5.5
JFDX series 	Low cost x versatility - Extremely economical 8-corner inserts - Covers various applications with 45, 75, and 88 degree angle milling cutters - Ceramic inserts with chipbreaker and wiper are also available	φ63 - 160	45°, 75°, 88°	- 6
JXTM series 	High rigidity - Large DOC is possible because of the fine pitch of inserts which results in higher productivity - LNx Insert comes with special chipbreaker to reduce tool pressure - Newly added Left-hand cutters	φ80 - 125	88°	- 8
JQ series 	Shoulder milling × Small diameter cutter - Capable of 90-degree shoulder milling - A variety of cutter diameters as small as φ20mm	φ20 - 80	90°	- 8
JSDW series 	Low tool pressure - Positive inserts reduce tool pressure and produce excellent surface finish in addition to long tool life - Best for milling thin parts thanks to reduced tool pressure	φ80 - 160	45°, 75°	- 6



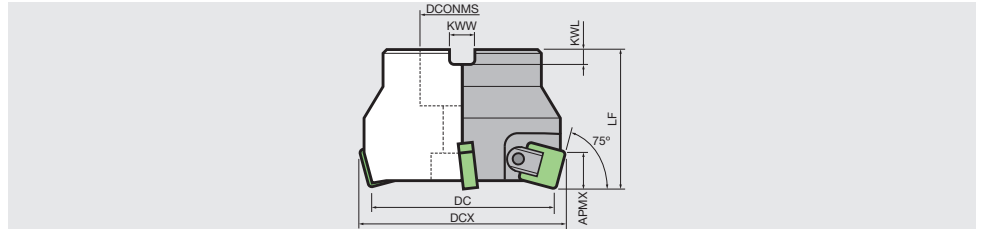
Grooving

Milling

Hardened
MaterialsTurningGroovingGrooving

JFDX**-75...

75-deg face mill, bore type, for 8-corner double side inserts



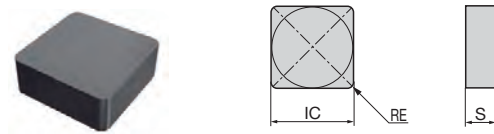
Designation	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Air hole	Insert
JFDX063-75-06R	6	63	70	6	50	22	6	10.4	0.79	Without	SN**1204...
JFDX080-75-08R	6	80	87	8	50	25.4	6	9.5	1.06	Without	SN**1204...
JFDX100-75-10R	6	100	107	10	50	31.75	8	12.7	1.39	Without	SN**1204...
JFDX125-75-12R	6	125	132	12	58	38.1	10	15.9	2.56	Without	SN**1204...

SPARE PARTS

Designation	Wedge	Shim	Clamp screw	Screw (for Shim)	Wrench (for Clamp screw)
JFDX**-75**-R	HLW175	ASN423	WS0616-T15	M3*8	T-15A

INSERT

SNGN-T



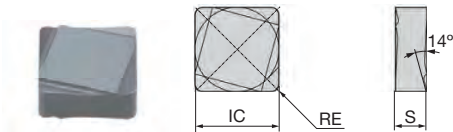
P	Steel					
M	Stainless					
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON	S	IC
		SX6		SP9		
SNGN120412T01020	1.2	●		●	4.76	12.7

● : Line up

SNGF-C/-CM



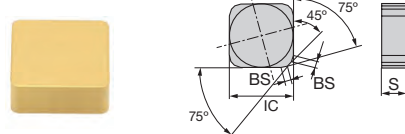
P	Steel					
M	Stainless					
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON	S	IC
		SX6		SP9		
SNGF120412T01025RC	1.2			●	4.76	12.7
SNGF120412T01025RC-CM	1.2	●			4.76	12.7

● : Line up

SNGN-ENT



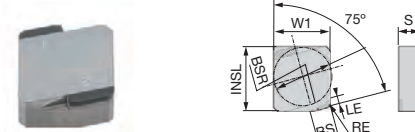
P	Steel					
M	Stainless					
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON	S	IC	BS
		SX6		SP9			
SNGN1204ENT01025	1.2	●		●	4.76	12.7	1.4

● : Line up

FDX-75



P	Steel					
M	Stainless					
K	Cast iron	★	☆	★	☆	
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	CBN				S	BS	W1	LE	BSR
		BK310	B30	BK350	B52					
FDX1204-75-50R	1.2	●	●	●	●	4.76	4.5	12.2	1.5	250

Note: CBN wiper insert can install 1 or 2 with ceramic inserts.

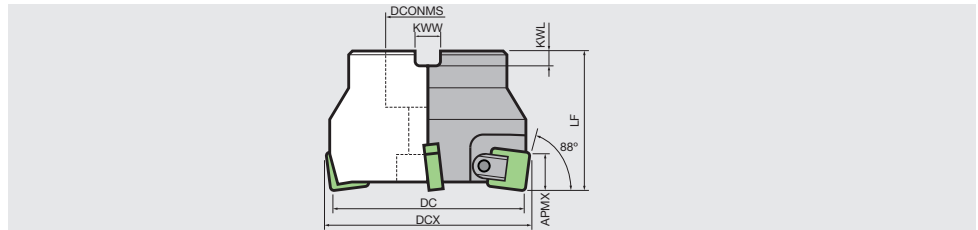
● : Line up



More info

JFDX**-88...

88-deg face mill, bore type, for 8-corner double side inserts



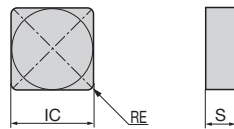
Designation	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Air hole	Insert
JFDX063-88-06R	6	63	64	6	50	22	6	10.4	0.79	Without	SN**1204...
JFDX080-88-08R	6	80	81	8	50	25.4	6	9.5	1.03	Without	SN**1204...
JFDX100-88-10R	6	100	101	10	50	31.75	8	12.7	1.38	Without	SN**1204...
JFDX125-88-12R	6	125	126	12	58	38.1	10	15.9	2.61	Without	SN**1204...

SPARE PARTS

Designation	Wedge	Shim	Clamp screw	Screw (for Shim)	Wrench (for Clamp screw)
JFDX**-88**-R	HLW175	ASN423	WS0616-T15	M3*8	T-15A

INSERT

SNGN-T



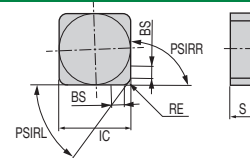
P	Steel					
M	Stainless					
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON	S	IC
		SX6		SP9		
SNGN120412T01020	1.2	●		●	4.76	12.7

● : Line up

SNEN-ZNT



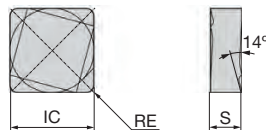
P	Steel					
M	Stainless					
K	Cast iron		★		☆	
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON	S	IC	BS
		SX6		SP9			
SNEN1204ZNT01025	1.2	●		●	4.76	12.7	2

● : Line up

SNGF-C/-CM



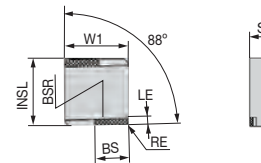
P	Steel					
M	Stainless					
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON	S	IC
		SX6		SP9		
SNGF120412T01025RC	1.2			●	4.76	12.7
SNGF120412T01025RC-CM	1.2	●			4.76	12.7

● : Line up

FDX-88



P	Steel					
M	Stainless					
K	Cast iron	★	☆	★	☆	
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	CBN				S	BS	W1	LE	INSL	BSR
		BK310	B30	BK350	B52						
FDX1204-88-50R	1.2	●	●	●	●	4.76	6.15	12.2	1.5	12.95	250

Note: CBN wiper insert can install 1 or 2 with ceramic inserts.

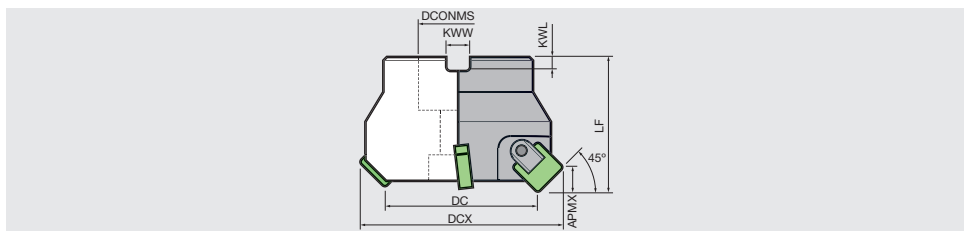
● : Line up



More info

JFDX**-45...

45-deg face mill, bore type, for 8-corner double side inserts



Designation	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Air hole	Insert
JFDX063-45-06R	6	63	72	6	50	22	6	10.4	0.93	Without	SN**1204...
JFDX080-45-08R	6	80	95	8	50	25.4	6	9.5	1.21	Without	SN**1204...
JFDX100-45-10R	6	100	120	10	50	31.75	8	12.7	1.66	Without	SN**1204...
JFDX125-45-12R	6	125	146	12	58	38.1	10	15.9	2.8	Without	SN**1204...

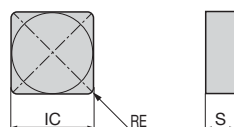
SPARE PARTS



Designation	Wedge	Shim	Clamp screw	Screw (for Shim)	Wrench (for Clamp screw)
JFDX**-45...	HLW175	ASN423	WS0616-T15	M3*8	T-15A

INSERT

SNGN-T



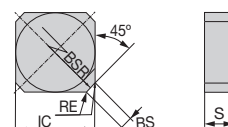
P	Steel					
M	Stainless					
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON		S	IC
		SX6		SP9			
SNGN120412T01020	1.2	●		●		4.76	12.7

● : Line up

SNGN-ANT



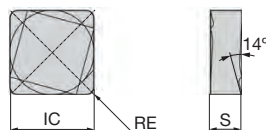
P	Steel					
M	Stainless					
K	Cast iron		★		☆	
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON		S	IC	BS	BSR
		SX6		SP9					
SNGN1204ANT01020	0.5	●		●		4.76	12.7	2	150

● : Line up

SNGF-C/-CM



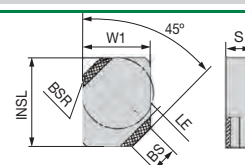
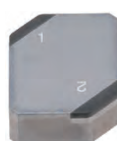
P	Steel					
M	Stainless					
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON		S	IC
		SX6		SP9			
SNGF120412T01025RC	1.2			●		4.76	12.7
SNGF120412T01025RC-CM	1.2	●				4.76	12.7

● : Line up

FDX-45



P	Steel					
M	Stainless					
K	Cast iron	★	☆	★	☆	
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	CBN				S	BS	W1	LE	INSL	BSR
	BK310	B30	BK350	B52						
FDX1204-45-50R	●	●	●	●	4.76	4.8	12.2	1.5	16	250

Note: CBN wiper insert can install 1 or 2 with ceramic inserts.

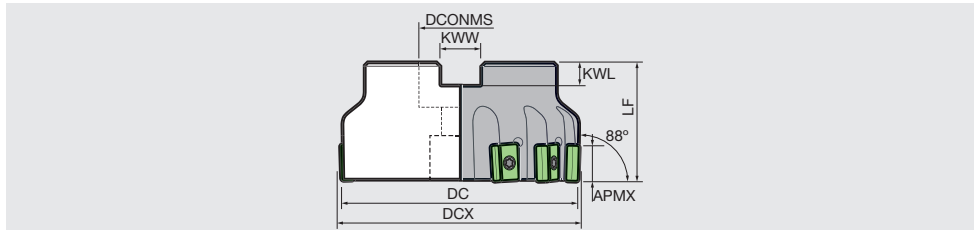
● : Line up



More info

JXTM...

Square shoulder mill, bore type, for 4-corner tangential inserts



Designation	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Air hole	Insert
JXTM080-88-10R	8	80	83	6	50	25.4	6	9.5	1.1	Without	LNX324M...
JXTM100-88-13R	8	100	103	8	50	31.75	8	12.7	1.8	Without	LNX324M...
JXTM125-88-16R	8	125	128	10	58	38.1	10	15.9	3.1	Without	LNX324M...

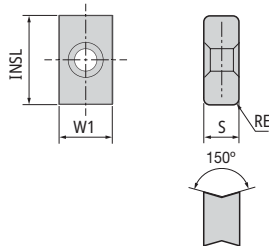
SPARE PARTS



Designation	Clamp screw	Wrench (for Clamp screw)
JXTM...	LRIS-4*12	LLR-25S

INSERT

LNX324



P	Steel						
M	Stainless						
K	Cast iron	★		☆			
N	Non-ferrous						
S	Superalloys						
H	Hard materials						

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON		S	D1	INSL	W1
		SX6		SP9					
LNX324A-08T01020	0.8	●		●		6.35	4.2	15.875	9.525
LNX324A-12T01020	1.2	●		●		6.35	4.2	15.875	9.525
LNX324A-16T01020	1.6	●		●		6.35	4.2	15.875	9.525

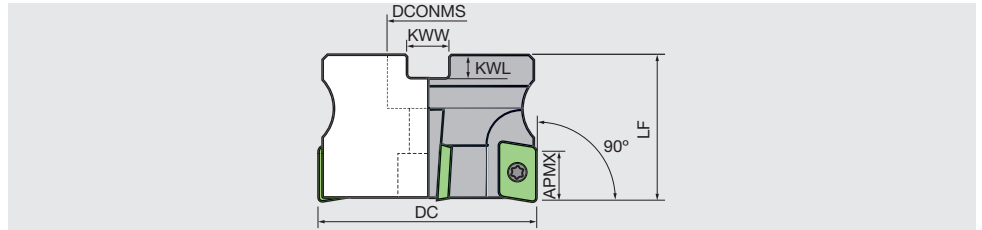
● : Line up



More info

JQTS...

For Grey / Ductile cast iron, Lead angle 90 degree / DOC max. 8mm



Designation	APMX	DC	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Air hole	Insert
JQTS040-90-4R	8	40	4	40	16	5.6	8.4	0.2	Without	APCW1604...
JQTS050-90-5R	8	50	5	40	22	6.3	10.4	0.32	Without	APCW1604...
JQTS063-90-6R	8	63	6	50	22	6.3	10.4	1.4	Without	APCW1604...
JQTS080-90-8R	8	80	8	50	25.4	6	9.5	1.9	Without	APCW1604...

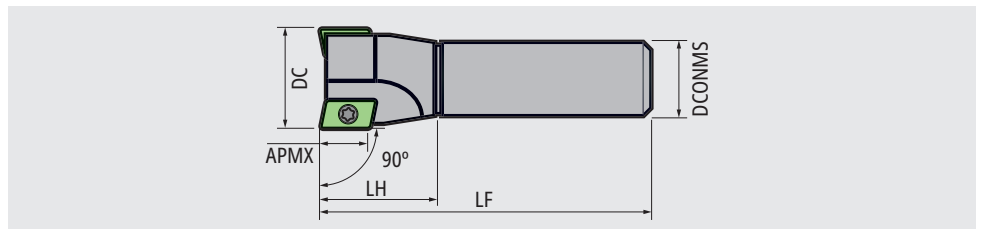
SPARE PARTS



Designation	Clamp screw	Wrench (for Clamp screw)
JQTS...	FSI22-4.0*11	T-15A

JQTE...

For Grey / Ductile cast iron, Lead angle 90 degree / DOC max. 8mm



Designation	APMX	DC	CICT	LF	DCONMS	LH	WT(kg)	Air hole	Insert
JQTE020-90-1R	8	20	1	100	20	30	0.22	Without	APCW1604...
JQTE025-90-2R	8	25	2	100	25	30	0.32	Without	APCW1604...
JQTE032-90-3R	8	32	3	120	32	35	0.53	Without	APCW1604...
JQTE040-90-4R	8	40	4	120	32	37	0.64	Without	APCW1604...

SPARE PARTS



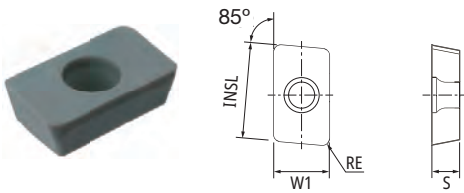
Designation	Clamp screw	Wrench (for Clamp screw)
JQTE020-90-1R, JQTE025-90-2R	FSI23-4.0*7	T-15A
JQTE032-90-3R, JQTE040-90-4R	FSI22-4.0*11	T-15A



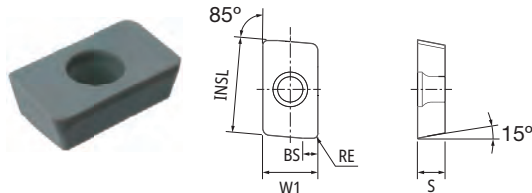
More info

INSERT

APCW1604**T01020



APCW1604PDRT01020



P	Steel						
M	Stainless						
K	Cast iron	★		☆			
N	Non-ferrous						
S	Superalloys						
H	Hard materials						

★ : First choice
☆ : Second choice

Designation	RE	Silicon Nitride		SiAlON		S	INSL	W1	BS
		SX6		SP9					
APCW160408T01020	0.8	●		●		4.76	16.46	9.525	-
APCW160412T01020	1.2	●		●		4.76	16.46	9.525	-
APCW160416T01020	1.6	●		●		4.76	16.46	9.525	-
APCW160420T01020	2	●		●		4.76	16.46	9.525	-
APCW1604PDRT01020	0.8	●		●		4.76	16.46	9.525	2.6

● : Line up

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

Hardened Materials
Turning

Hardened Materials
Turning

Hardened Materials
Grooving

Cast Iron
Turning

Cast Iron
Milling

Superalloys
Turning

Superalloys
Turning

Sintered metal
Turning

Sintered metal
Turning

Non-Ferrous Materials
Turning

Non-Ferrous Materials
Grooving

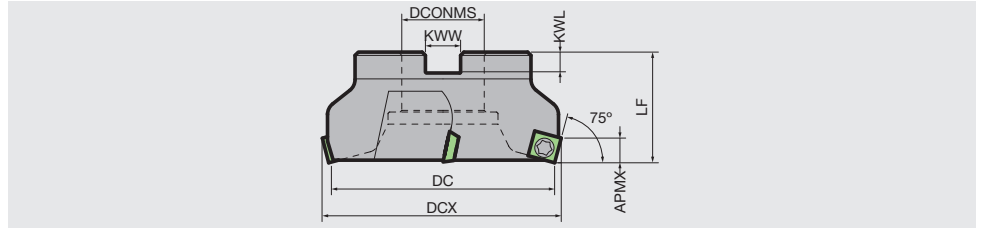
Non-Ferrous Materials
Milling



More info

JSDW**-75...

75-deg facemill, bore type, for 4-corner single inserts



Designation	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Air hole	Insert
JSDW063-75-04R	6	63	70.6	4	50	22	6.3	10.4	0.82	Without	SDCW1204...
JSDW080-75-05R	6	80	83.3	5	50	25.4	6	9.5	1.04	Without	SDCW1204...
JSDW100-75-06R	6	100	108.7	6	50	31.75	8	12.7	1.33	Without	SDCW1204...
JSDW125-75-07R	6	125	134.1	7	58	38.1	10	15.9	2.54	Without	SDCW1204...

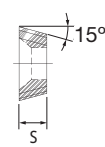
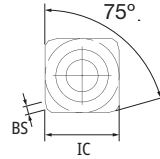
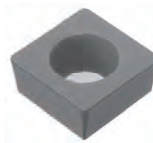
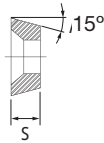
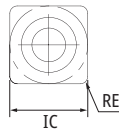
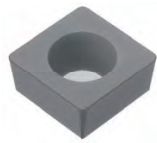
SPARE PARTS



Designation	Clamp screw	Wrench (for Clamp screw)
JSDW**-75-**-R	FSI21-5.0*12.45	T-20

INSERT

SDCW1204**T...



P	Steel					
M	Stainless					
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys					
H	Hard materials					

★ : First choice
☆ : Second choice

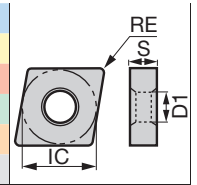
Designation	RE	Silicon Nitride		SiAlON		IC	S	BS
		SX6		SiP9				
SDCW120408T01020	0.8	●		●		12.7	4.76	-
SDCW1204AET01020	1.2	●		●		12.7	4.76	2.4
SDCW1204EERT01020	-	●		●		12.7	4.76	1.4

● : Line up



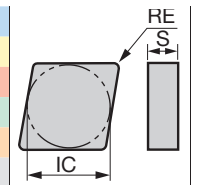
More info

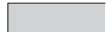
Hardened Materials

[illegible][illegible]

Application	Chipbreaker	Designation	Alumina															Dimension (mm)				
			LX10	LX11	ZC7														RE	IC	S	D1
Finishing to medium cutting		-	CNGA120404	●	●														0.4	12.7	4.76	5.16
			CNGA120404WLT01025			●													0.4	12.7	4.76	5.16
			CNGA120408	●	●														0.8	12.7	4.76	5.16
			CNGA120408WLT01025			●													0.8	12.7	4.76	5.16
			CNGA120412	●	●														1.2	12.7	4.76	5.16
			CNGA120412WLT01025			●													1.2	12.7	4.76	5.16
			CNGA120416	●	●														1.6	12.7	4.76	5.16
			CNGA120420	●	●														2	12.7	4.76	5.16

● : Line up

[illegible]

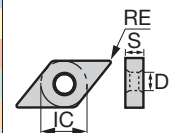
Application	Chipbreaker	Designation	Alumina																				Dimension (mm)					
			LX10	LX11	HC4	ZC7																			RE	IC	S	D1
Finishing to medium cutting	 	-	CNGN120404	●	●																				0.4	12.7	4.76	-
		CNGN120408	●	●																					0.8	12.7	4.76	-
		CNGN120408S02025				●																			0.8	12.7	4.76	-
		CNGN120408T01025				●																			0.8	12.7	4.76	-
		CNGN120408Z02025			●																				0.8	12.7	4.76	-
		CNGN120412	●	●																					1.2	12.7	4.76	-
		CNGN120412S02025				●																			1.2	12.7	4.76	-
		CNGN120412T01025				●																			1.2	12.7	4.76	-
		CNGN120412Z02025			●																				1.2	12.7	4.76	-
		CNGN120416	●	●																					1.6	12.7	4.76	-
		CNGN120708	●	●																					0.8	12.7	7.94	-
		CNGN120712	●	●																					1.2	12.7	7.94	-
		CNGN120716	●	●																					1.6	12.7	7.94	-
		CNGN120720		●																					2	12.7	7.94	-

● : Line up



In.Toolholder

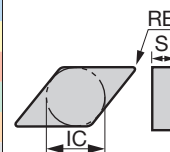
DN

[illegible]

Application			material													Dimension (mm)				
	Chipbreaker	Designation	Alumina																	
			LX10	LX11	HC4												RE	IC	S	D1
Finishing to medium cutting	-	DNGA150404	●	●													0.4	12.7	4.76	5.16
		DNGA150408	●	●													0.8	12.7	4.76	5.16
		DNGA150408Z02025			●												0.8	12.7	4.76	5.16
		DNGA150412	●	●													1.2	12.7	4.76	5.16
		DNGA150416															1.6	12.7	4.76	5.16
		DNGA150604	●	●													0.4	12.7	6.35	5.16
		DNGA150608	●	●													0.8	12.7	6.35	5.16
		DNGA150612	●	●													1.2	12.7	6.35	5.16
		DNGA150616	●	●													1.6	12.7	6.35	5.16
		DNGA150620	●	●													2	12.7	6.35	5.16

● : Line up

DN

[illegible]

Application	Chipbreaker	Designation	Material														Dimension (mm)								
			Alumina																						
			LX10	LX11	HC4	ZC7																RE	IC	S	D1
Finishing to medium cutting	-	DNGN150404		●																		0.4	12.7	4.76	-
		DNGN150408	●	●																		0.8	12.7	4.76	-
		DNGN150408S02025				●																0.8	12.7	4.76	-
		DNGN150408T01025				●																0.8	12.7	4.76	-
		DNGN150408Z02025			●																	0.8	12.7	4.76	-
		DNGN150412		●																		1.2	12.7	4.76	-
		DNGN150416																				1.6	12.7	4.76	-
		DNGN150708	●	●																		0.8	12.7	7.94	-
		DNGN150712	●	●																		1.2	12.7	7.94	-
DNGN150716	●	●																		1.6	12.7	7.94	-		

● : Line up



In-Toolholder

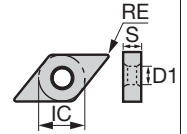
● : Continuous cutting
● : Light interrupted cutting
✱ : Heavy interrupted cutting

DN



**Rhombic, 55°
with hole**

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material



Application	Chipbreaker		Alumina										Dimension (mm)			
	Designation		HC7	ZC7									RE	IC	S	D1
Roughing to finishing		AG DNGG150404Z01030AG	●	●									0.4	12.7	4.76	5.16
		DNGG150408Z01030AG	●	●									0.8	12.7	4.76	5.16
		DNGG150412Z01030AG	●	●									1.2	12.7	4.76	5.16

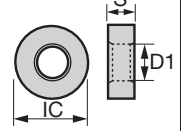
● : Line up

RN



**Round,
with hole**

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material



Application	Chipbreaker		Alumina										Dimension (mm)			
	Designation		LX10	LX11									RE	IC	S	D1
Finishing to medium cutting	-	RNGA120400	●	●									-	12.7	4.76	5.16

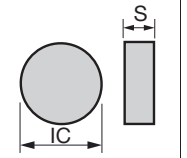
● : Line up

RN



**Round,
without hole**

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material



Application	Chipbreaker		Alumina										Dimension (mm)			
	Designation		LX10	LX11	HC4								RE	IC	S	D1
Finishing to medium cutting		RNGN120400	●	●									-	12.7	4.76	-
		RNGN120400Z02025			●								-	12.7	4.76	-
		RNGN120700	●	●									-	12.7	7.94	-
		RNGN120700Z02025			●								-	12.7	7.94	-

● : Line up



More info



DN
Ex.Toolholder



In.Toolholder



RN
Ex.Toolholder

CER

Turning

Superalloys
Grooving

Milling

Cast Iron
Turning

Grooving

Milling

Hardened Materials
Turning

CBN

Hardened Materials
Turning

Grooving

Cast Iron
Turning

Milling

Superalloys
Turning

Sintered metal
Turning

PCD

Non-Ferrous Materials
Turning

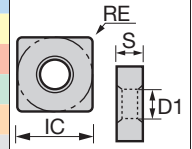
Grooving

Milling

- : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

SN**Square with hole**

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material

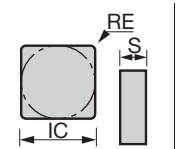


Application	Chipbreaker	Designation	Alumina				Dimension (mm)			
			LX10	LX11	ZC7		RE	IC	S	D1
Finishing to medium cutting		SNGA120404	●	●			0.4	12.7	4.76	5.16
		SNGA120408	●	●			0.8	12.7	4.76	5.16
		SNGA120408S02025			●		0.8	12.7	4.76	5.16
		SNGA120408T01025			●		0.8	12.7	4.76	5.16
		SNGA120412	●	●			1.2	12.7	4.76	5.16
		SNGA120412S02025			●		1.2	12.7	4.76	5.16
		SNGA120412T01025			●		1.2	12.7	4.76	5.16
		SNGA120416	●	●			1.6	12.7	4.76	5.16

● : Line up

SN**Square without hole**

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material



Application	Chipbreaker	Designation	Alumina				Dimension (mm)			
			LX10	LX11	HC4	ZC7	RE	IC	S	D1
Finishing to medium cutting		SNGN090308	●	●			0.8	9.525	3.18	-
		SNGN120304	●	●			0.4	12.7	3.18	-
		SNGN120312					1.2	12.7	3.18	-
		SNGN120404	●	●			0.4	12.7	4.76	-
		SNGN120408	●	●			0.8	12.7	4.76	-
		SNGN120408S02025			●		0.8	12.7	4.76	-
		SNGN120408T02020			●		0.8	12.7	4.76	-
		SNGN120408Z02025			●		0.8	12.7	4.76	-
		SNGN120412	●	●			1.2	12.7	4.76	-
		SNGN120412S02025			●		1.2	12.7	4.76	-
		SNGN120412T01025			●		1.2	12.7	4.76	-
		SNGN120412Z02025			●		1.2	12.7	4.76	-
		SNGN120416	●	●			1.6	12.7	4.76	-
		SNGN120416S02025			●		1.6	12.7	4.76	-
		SNGN120416T01025			●		1.6	12.7	4.76	-
		SNGN120416Z02025			●		1.6	12.7	4.76	-
		SNGN120420					2	12.7	4.76	-
		SNGN120708	●	●			0.8	12.7	7.94	-
		SNGN120712	●	●			1.2	12.7	7.94	-
		SNGN120716	●	●			1.6	12.7	7.94	-
		SNGN120720		●			2	12.7	7.94	-

● : Line up



More info



Ex.Toolholder



In.Toolholder

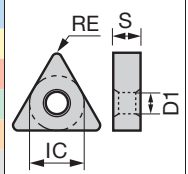
● : Continuous cutting
● : Light interrupted cutting
✱ : Heavy interrupted cutting

TN



Triangular
with hole

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material



Application	Chipbreaker	Designation	Alumina				Dimension (mm)			
			LX10	LX11	HC4	ZC7	RE	IC	S	D1
Finishing to medium cutting	-	TNGA160402	●	●			0.2	9.525	4.76	3.81
		TNGA160404	●	●			0.4	9.525	4.76	3.81
		TNGA160404S02025				●	0.4	9.525	4.76	3.81
		TNGA160404T01025				●	0.4	9.525	4.76	3.81
		TNGA160404Z02025			●		0.4	9.525	4.76	3.81
		TNGA160408	●	●			0.8	9.525	4.76	3.81
		TNGA160408S02025				●	0.8	9.525	4.76	3.81
		TNGA160408T01025				●	0.8	9.525	4.76	3.81
		TNGA160408Z02025			●		0.8	9.525	4.76	3.81
		TNGA160412	●	●			1.2	9.525	4.76	3.81
		TNGA160412S02025				●	1.2	9.525	4.76	3.81
		TNGA160412T01025				●	1.2	9.525	4.76	3.81
		TNGA160416	●	●			1.6	9.525	4.76	3.81

● : Line up

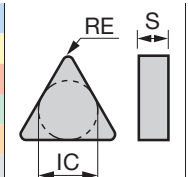
CER
Turning
Grooving
Milling
Turning
Grooving
Milling
Turning

TN



Triangular
without hole

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material



Application	Chipbreaker	Designation	Alumina				Dimension (mm)			
			LX10	LX11	HC4	ZC7	RE	IC	S	D1
Finishing to medium cutting	-	TNGN160404	●	●			0.4	9.525	4.76	-
		TNGN160404Z02025			●		0.4	9.525	4.76	-
		TNGN160408	●	●			0.8	9.525	4.76	-
		TNGN160408S02025				●	0.8	9.525	4.76	-
		TNGN160408T01025				●	0.8	9.525	4.76	-
		TNGN160408Z02025			●		0.8	9.525	4.76	-
		TNGN160412	●	●			1.2	9.525	4.76	-
		TNGN160412S02025				●	1.2	9.525	4.76	-
		TNGN160412Z02025			●		1.2	9.525	4.76	-
		TNGN160416	●	●			1.6	9.525	4.76	-
		TNGN160420					2	9.525	4.76	-
		TNGN160708	●	●			0.8	9.525	7.94	-
		TNGN160712		●			1.2	9.525	7.94	-

● : Line up

CBN
Hardened Materials
Turning
Grooving
Turning
Milling
Turning
Superalloys
Turning
Sintered metal
Turning
PCD
Non-Ferrous Materials
Turning
Grooving
Milling



More info



Ex.Toolholder

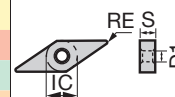


In.Toolholder

VN



**Rhombic, 35°
with hole**

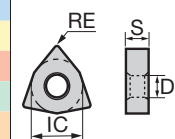
[illegible][illegible]

● : Line up

WN



**Trigon, 80°
with hole**

[illegible][illegible]

● : Line up



More info



VN

Ex.Toolholder



In-Toolholder



WN

Ex.Toolholder



In-Toolholder

Superalloys

Cast Iron

Turning

Hardened Materials

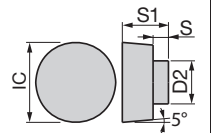
Materials

rooving

Sintered
metal

Materials

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material

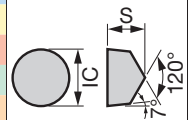


Application	Chipbreaker Designation		Alumina														Dimension (mm)				
			HC4	HC7														RE	IC	S	S1
Medium to finishing	-	RBGX20P20015	●	●													-	20	5	15	10
		RBGX26P20015	●	●													-	26	5	15	14
																					

RC

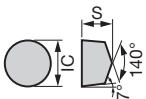
**Round,
without hole
Positive 7°**

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloy
H	Hard material



Application			material												Dimension (mm)					
	Chipbreaker	Designation	Alumina																	
			HC4	HC7													RE	IC	S	D1
Medium to finishing	-	RCGX060400P07015	●	●													-	6.35	4.76	-
		RCGX060400T01025	●	●													-	6.35	4.76	-
		RCGX060600P07015	●	●													-	6.35	6.35	-
		RCGX060600T01025	●	●													-	6.35	6.35	-
		RCGX090700P07015	●	●													-	9.525	7.94	-
		RCGX090700T01025	●	●													-	9.525	7.94	-
		RCGX120700P20015	●	●													-	12.7	7.94	-
		RCGX120700T01025	●	●													-	12.7	7.94	-
		RCGX191000P20015		●													-	19.05	10	-
		RCGX251200P20015		●													-	25.4	12	-

● : Line up



Only RCGX251200P20015 bottoms angle is 140°.



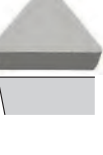
More info

tungaloy.com
- ntkcuttingtools.com

CER-73

TP



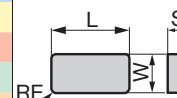
Application			material																				Dimension (mm)			
	Chipbreaker	Designation	LX10	LX11	HC4	ZC7																	RE	IC	S	D1
Medium cutting 	-	TPGN110304	●	●															0.4	6.35	3.18	-				
		TPGN110308	●	●															0.8	6.35	3.18	-				
		TPGN110304T01025				●													0.4	6.35	3.18	-				
		TPGN110308T01025				●													0.8	6.35	3.18	-				
		TPGN160304	●	●															0.4	9.525	3.18	-				
		TPGN160304Z01025				●													0.4	9.525	3.18	-				
		TPGN160304T01025			●														0.4	9.525	3.18	-				
		TPGN160308	●	●															0.8	9.525	3.18	-				
		TPGN160308T01025				●													0.8	9.525	3.18	-				
		TPGN160308Z01025			●														0.8	9.525	3.18	-				
		TPGN160312	●	●															1.2	9.525	3.18	-				

● : Line up

LNM



		P	M	K	N	S	H
Steel							
Stainless							
Cast iron							
Non-ferrous							
Superalloy							
Hard material	● ●						



Application	Chipbreaker	Designation	Material		Grain Size (mm)												Dimension (mm)			
			Alumina	AlN	1	2	3	4	5	6	7	8	9	10	11	12	RE	W	S	L
Medium to finishing	-	LNM6688SNX6	●	●													3.2	19.05	12.7	38.1
																				

● : Line up



More info



TP  In.Toolholder

Superalloys

Grooving

Materials

turning

Materials

Turning

Hardened

on

Cast

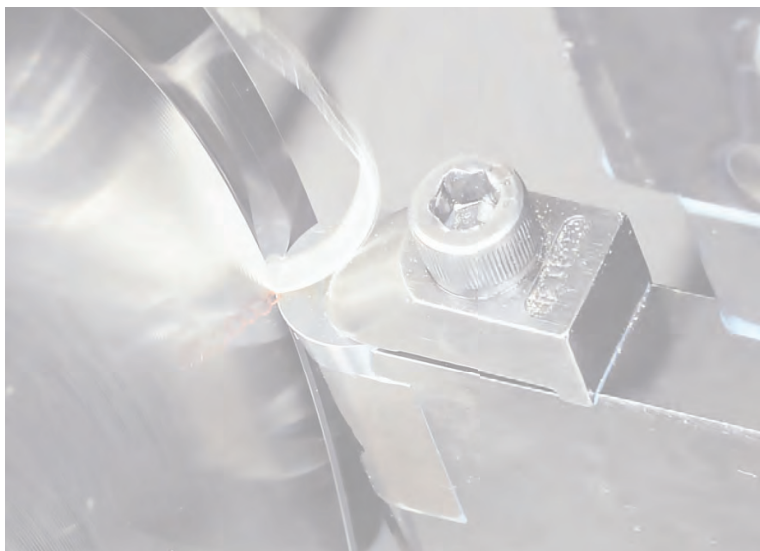
Building

Alloys

etal

Materials

ADVANCED MATERIALS SOLUTIONS



CERAMIC SOLUTIONS



CBN SOLUTIONS



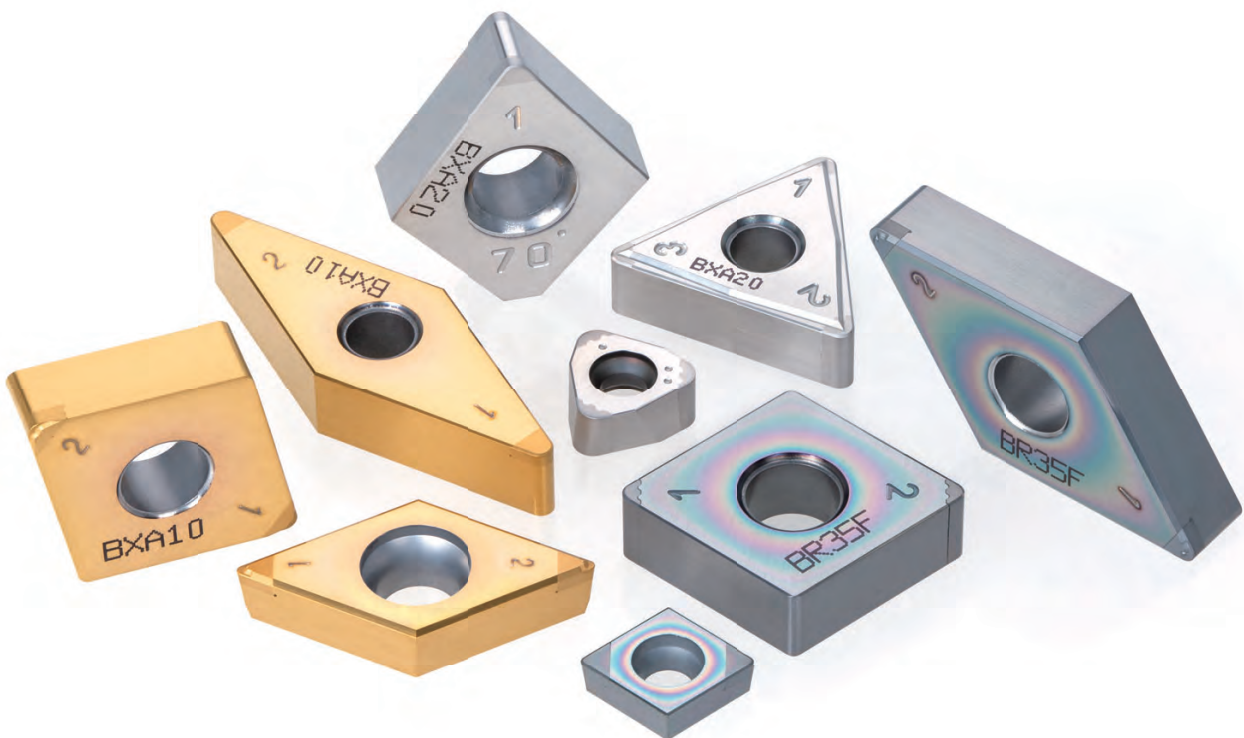
PCD SOLUTIONS

WHAT IS **HARD TURNING**?

Tungaloy has always been a pathfinder in hard turning applications, *making hard turning less hard than it seems...*

HARD TURNING commonly refers to turning operations of a part or bar stock harder than 50HRC on a lathe or turning center. In profiling hardened steel parts, grinding had long been the first-choice process for manufacturers to obtain the dimensions required on the workpiece. This was true until polycrystalline cubic boron nitride (**PcBN**) was introduced in late 1970s, which eventually impelled a shift from time- and energy-consuming grinding operations to hard turning operations.

Hard turning started to rapidly develop in the beginning of the 1990s as the availability of **PcBN** and ceramics increased, along with further advancement in physical vapor deposition (PVD) coating technologies and the capability of designing and building turning machines that are rigid, stable, and accurate enough to successfully finish hard turning. These advancements have made finish hard turning a viable alternative to grinding, as an accurate finishing operation.



More info

Key Points for the Selection of Grade types in Hardened Steel

CBN Inserts

- Broad hardness range
- Superior fracture resistance for both continuous and interrupted cuts

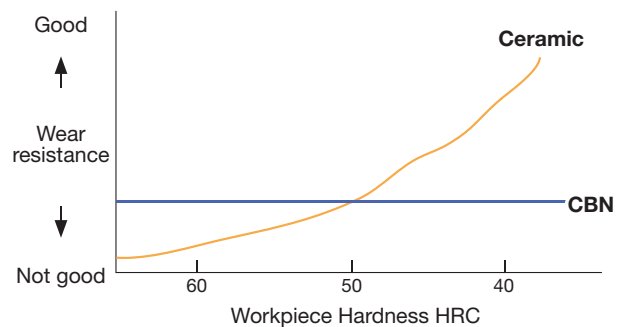
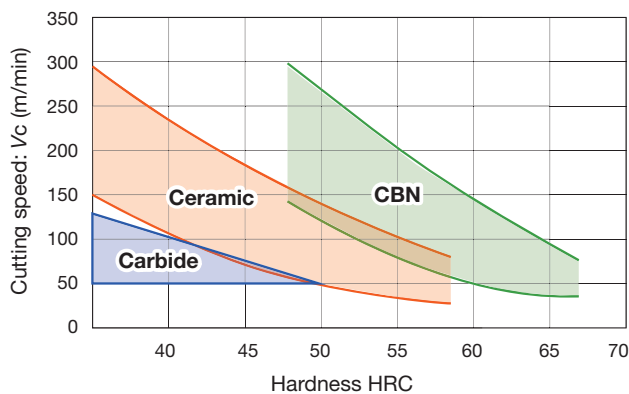
Ceramic Inserts

Best wear resistance in HRC 40 - 55 with continuous finishing

Carbide Inserts

- Suited for lower hardness (less than 50 HRC) or gentle conditions
- Cost-effective with moderate wear and toughness

Recommended cutting speed by hardness (continuous)

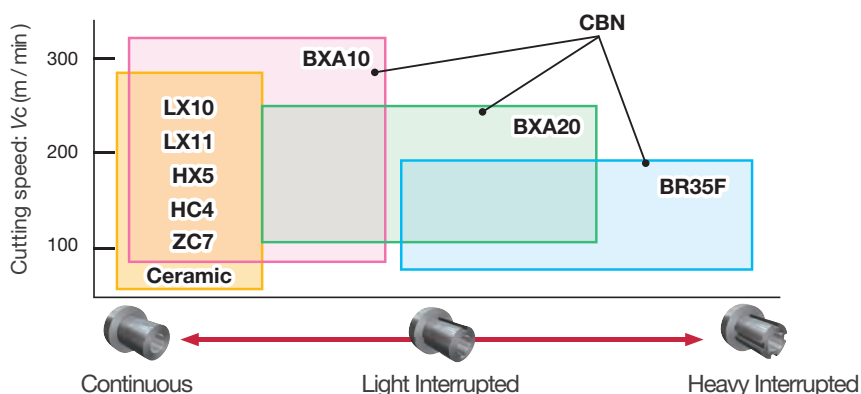


Ceramic has superior wear resistance to CBN in machining workpieces with hardnesses of HRC 55 or less.

Recommended Grade Map

This chart highlights Tungaloy and NTK's recommended grades for hardened steel cutting, ranging from continuous finishing to heavy interrupted machining.

BXA10, BXA20, and BR35F (CBN) offer robust fracture resistance across a wide hardness range, while HX3, HC4, and ZC7 (Ceramic) excel in high-speed, continuous operations. Select according to cutting speed, interruption severity, and required tool life.



Summary of CBN Grade Characteristics

Grain Size

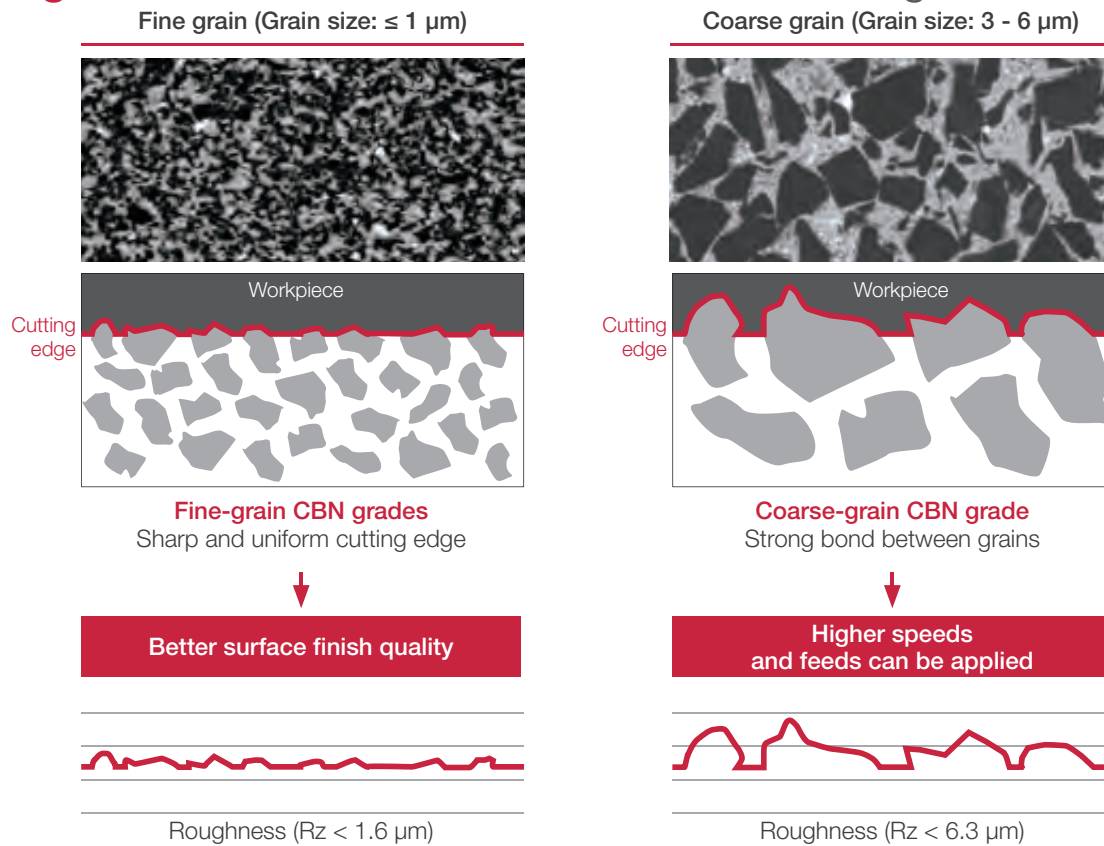
- **Fine:** Yields a sharper edge and better surface finish.
- **Coarse:** Offers enhanced fracture resistance.

CBN Content

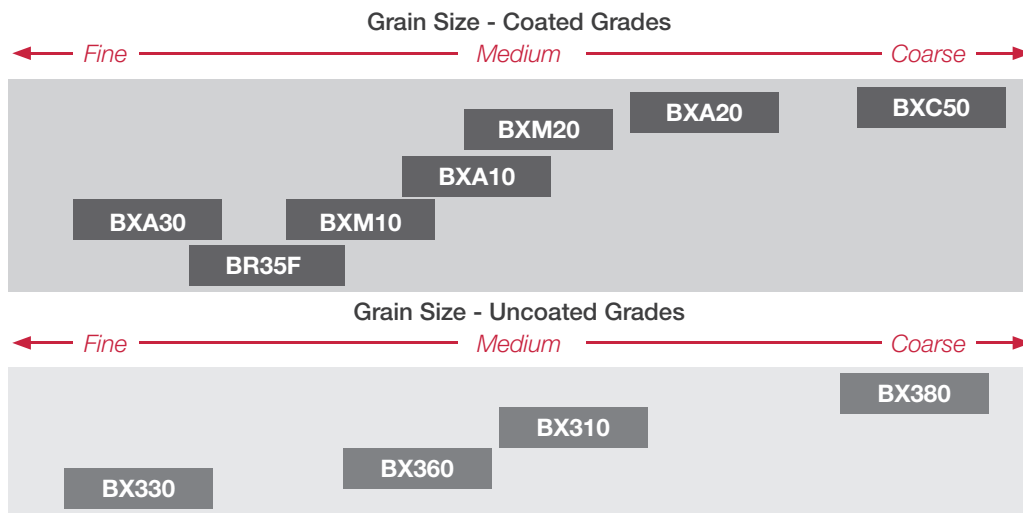
- **Lower Content:** Improves wear resistance.
- **Higher Content:** Boosts toughness for demanding cuts.

Overall, the balance of grain size and CBN content defines the insert's performance to match specific machining conditions.

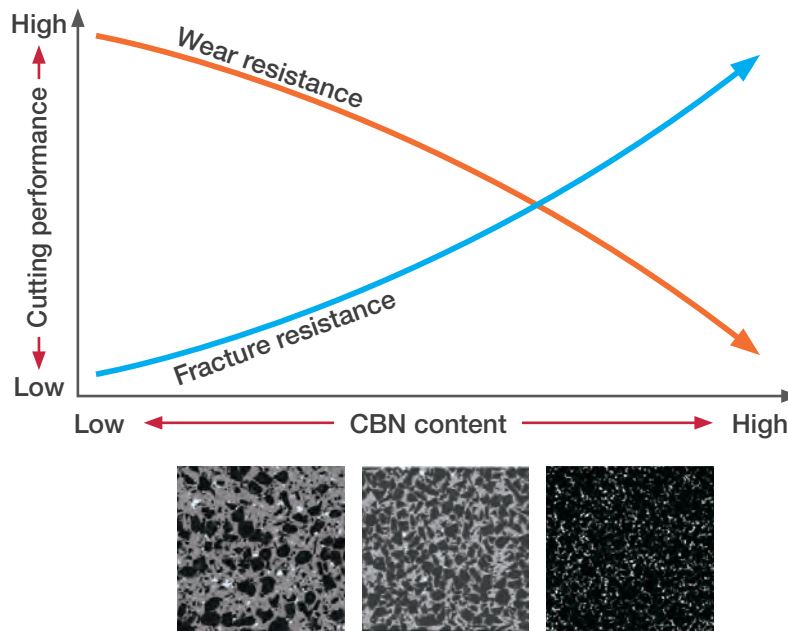
CBN grain sizes and their effects on surface roughness



CBN inserts are generally used in a finishing process. A CBN insert grade with coarse abrasive grains will output a rough surface and may not be able to achieve the surface quality required. To achieve superior surface quality of $R_z = 3.2$ or better, always use a fine grain CBN insert.

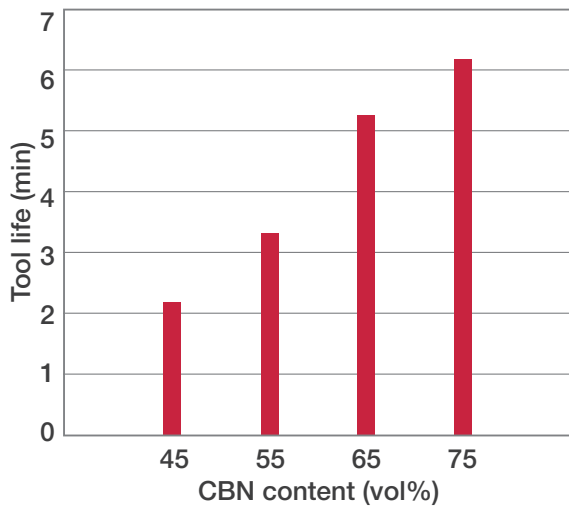


Wear and fracture resistance in terms of CBN content



The lower the CBN content is, the more wear resistant the grade will be, and the higher the CBN content is, the more fracture resistant the grade will be when turning hardened steel.

Interrupted Cutting

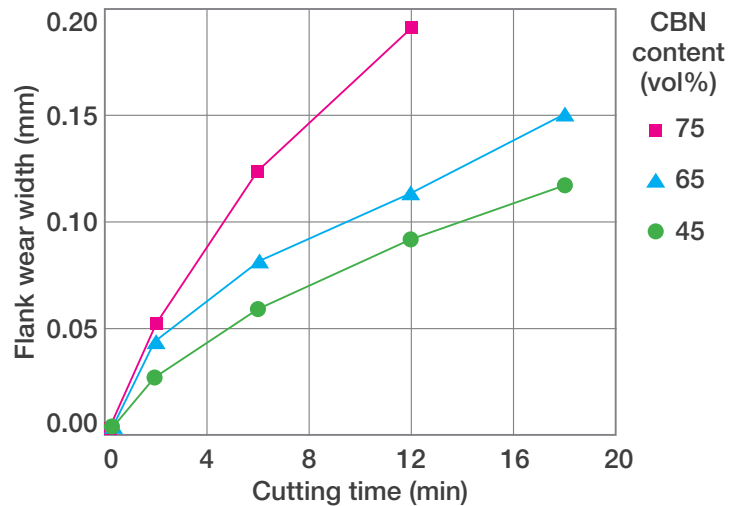


Cutting conditions

Cutting speed: $V_c = 180$ m/min
 Depth of cut: $a_p = 0.1$ mm
 Feed: $f = 0.1$ mm/rev
 Coolant: Dry
 Workpiece material: SCM435 (60HRC)

High CBN content
 ↓
 High fracture resistance

Continuous Cutting

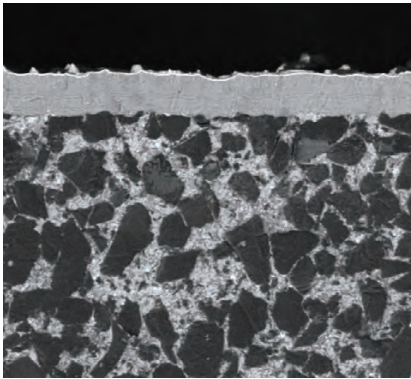


Cutting conditions

Cutting speed: $V_c = 180$ m/min
 Depth of cut: $a_p = 0.2$ mm
 Feed: $f = 0.1$ mm/rev
 Coolant: Wet
 Workpiece material: SCM415 (60HRC)

Low CBN content
 ↓
 High wear resistance

BENEFITS OF **COATED CBN**



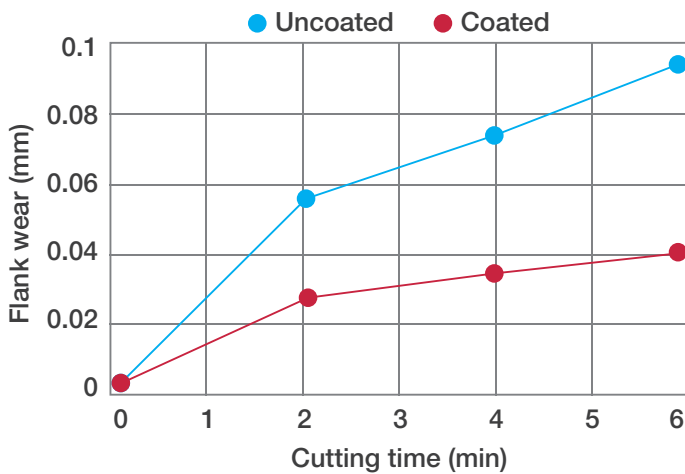
Anti-oxidation wear

PVD coating protects **CBN** from interacting with oxygen.

Enhanced wear resistance

CBN has high thermal conductivity and plastic deformation resistance, preventing the coating from delaminating under extreme temperatures generated during hard turning process.

Coated Grades: BXA10, BXA20, BXA30, BXM10, BXM20, and BXC50



Cutting conditions

Cutting speed: $V_c = 180$ m/min

Depth of cut: $a_p = 0.2$ mm

Feed: $f = 0.1$ mm/rev

Coolant: Dry

Workpiece material: SCM415 (60HRC)

Insert wear after 6 minutes

Uncoated



Coated



CER

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Hardened Materials

Turning

Grooving

Cast Iron

Turning

Milling

Superalloys

Turning

Sintered metal

Turning

PCD

Non-Ferrous Materials

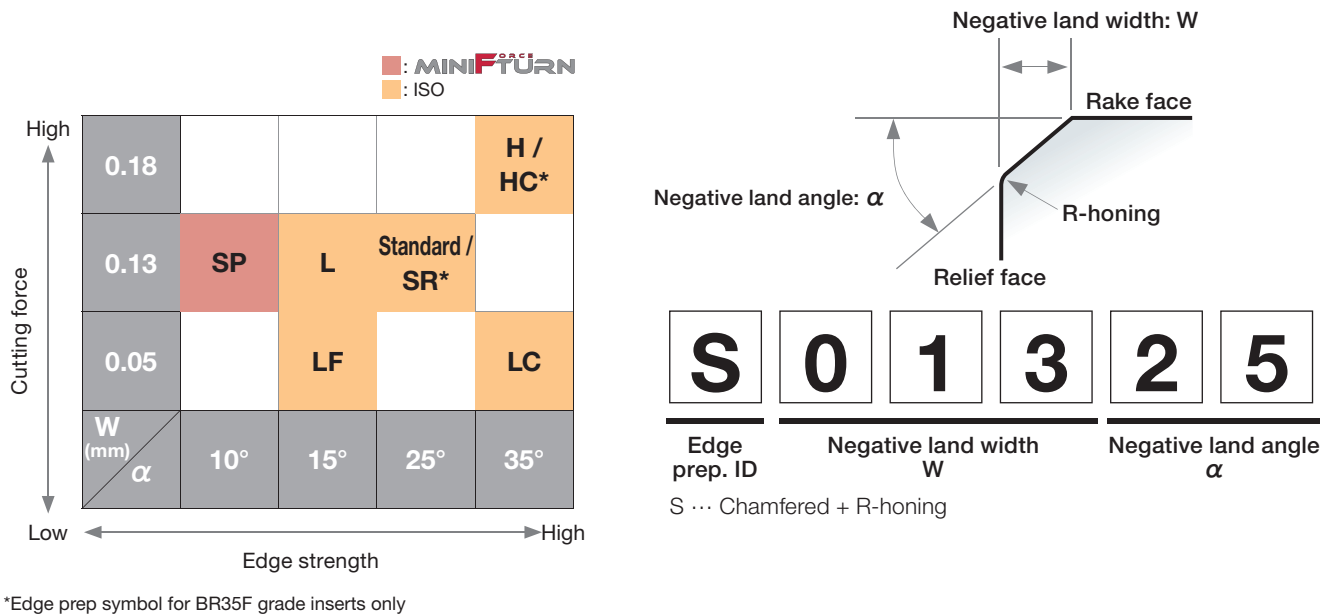
Turning

Grooving

Milling

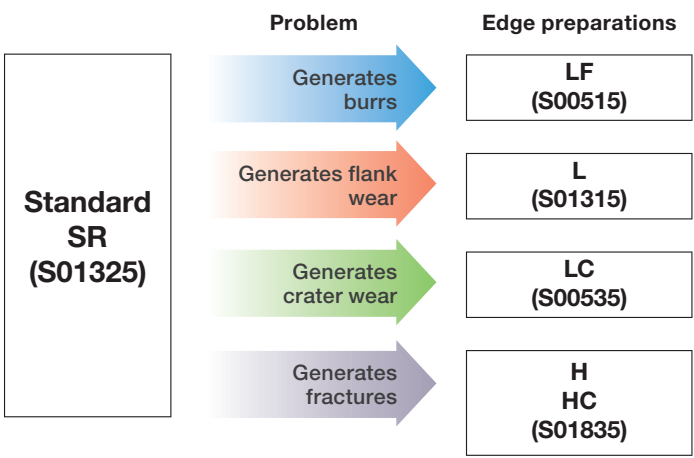
EDGE PREPARATIONS

Edge preparation - Designation

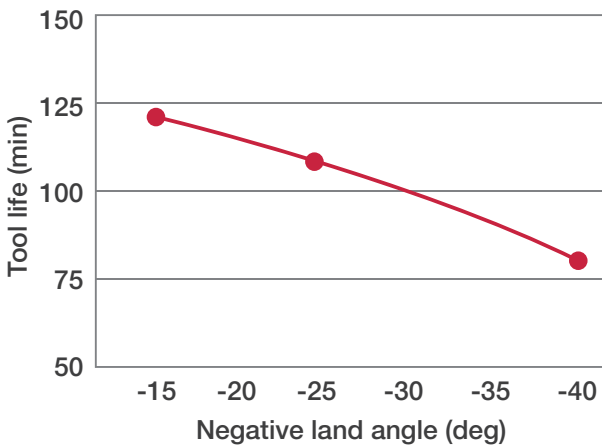


Edge preparation - Selection guide

Based on the performance of the insert with standard edge preparation, the following solutions are recommended.



Edge preparation - Continuous cutting



Cutting conditions

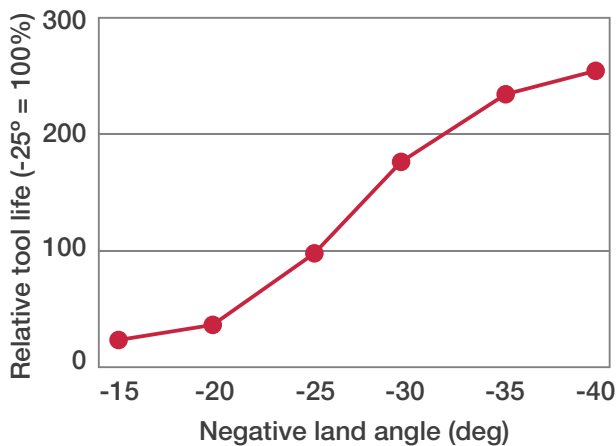
Cutting speed: $V_c = 100$ m/min
 Depth of cut: $a_p = 0.25$ mm
 Feed: $f = 0.1$ mm/rev
 Coolant: Dry
 Continuous cutting
 Workpiece material: SCM415 (60HRC)
 Criteria: $VB_{max} = 0.15$ mm

Edge preparations

Width: 0.13mm
 Angles: -15, -25, and -40°
 Honed to: R0.01~0.02 mm

The smaller the negative land angle is, the more wear resistant the cutting edge will be in continuous cuts.

Edge preparation - Interrupted cutting



Cutting conditions

Cutting speed: $V_c = 100$ m/min
 Depth of cut: $a_p = 0.25$ mm
 Feed: $f = 0.15$ mm/rev
 Coolant: Dry
 Workpiece material: SCM415 (60HRC)
 Criteria: Fracture

Edge preparations

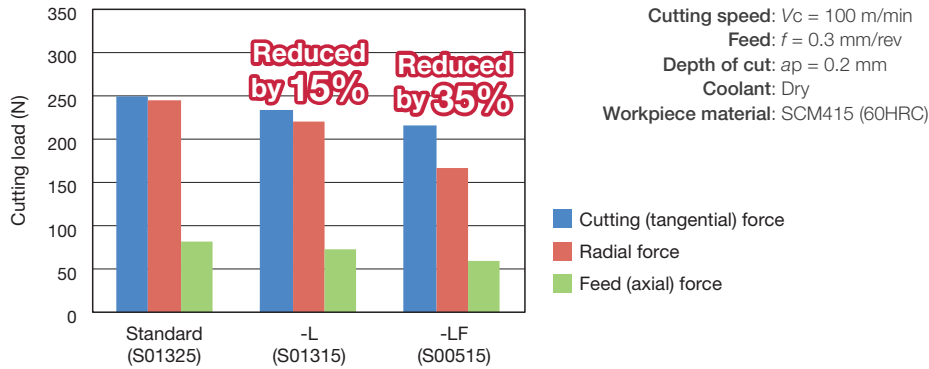
Width: 0.13 mm
 Angles: -15, -20, -25, -30, -35, and -40°
 Honed to: R0.01~0.02 mm

The larger the negative land angle is, the more fracture resistant the cutting edge will be in interrupted cuts.



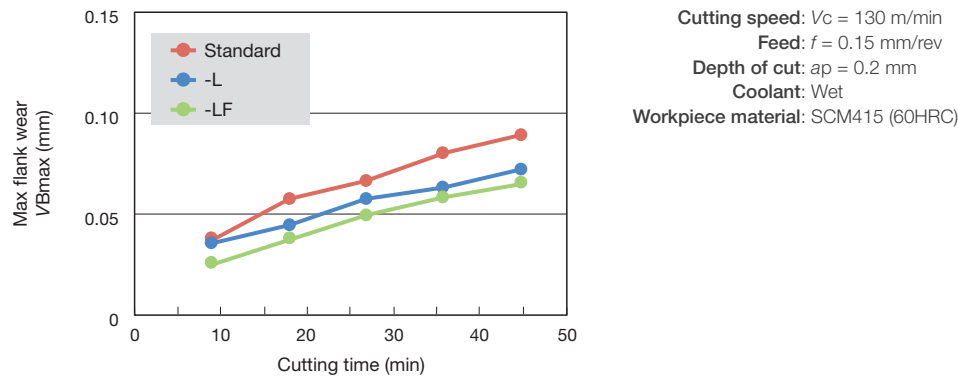
Edge preparation - Cutting loads

The -L and -LF edge preparations provide reduced cutting loads over the insert with standard edge preparation.



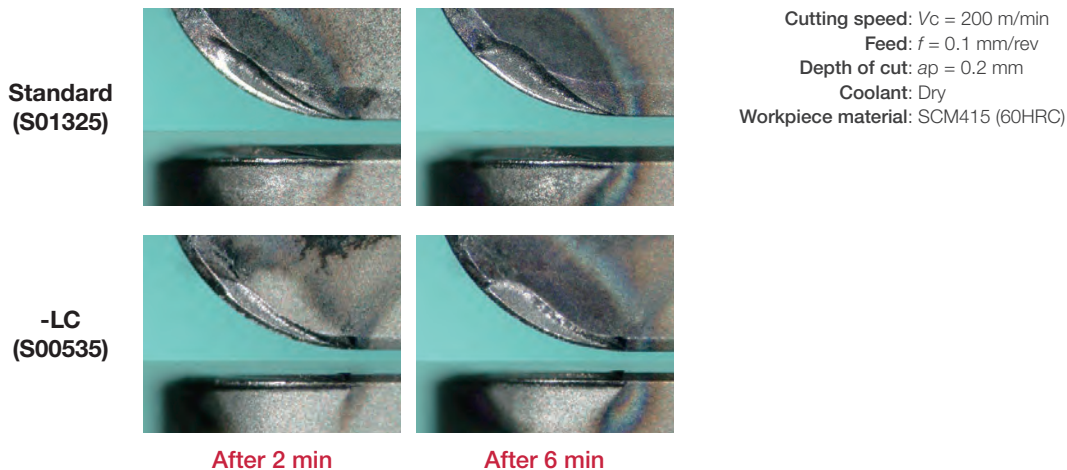
Edge preparation - Flank wear

The -L and -LF edge preparations provide reduced flank wear over the insert with standard edge preparation.



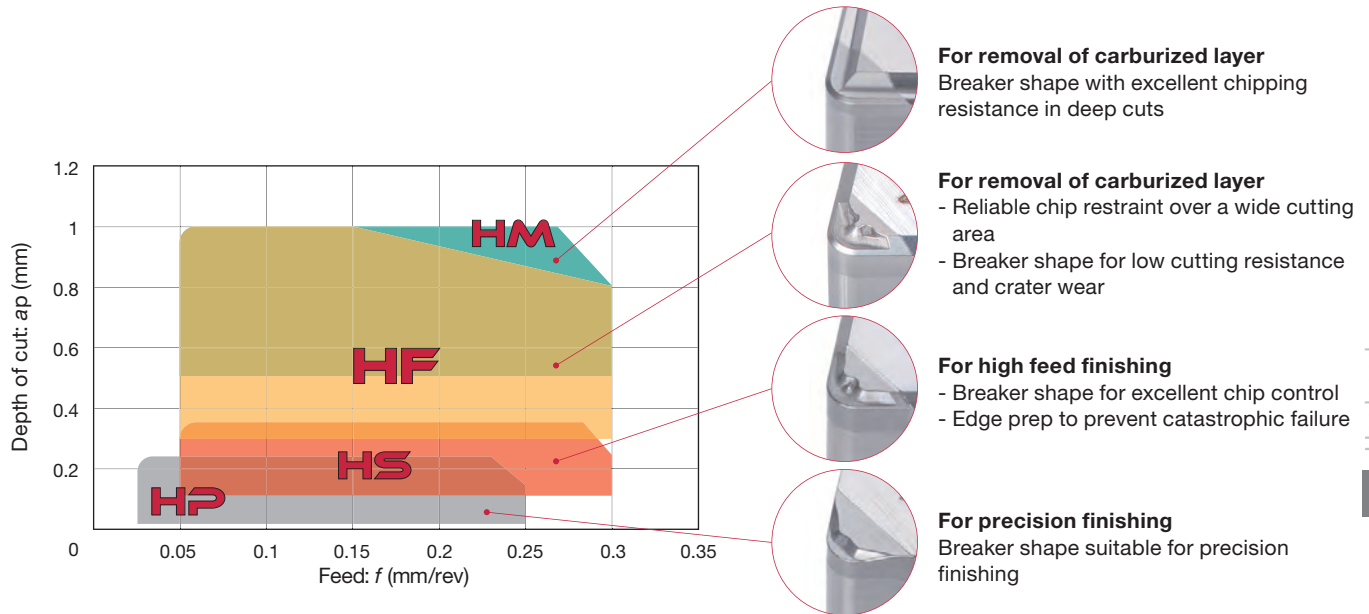
Edge preparation - Crater wear

The -LC edge preparation provides reduced crater wear over the insert with standard edge preparation. As a result, insert fracture induced by crater wear is reduced.



HARDBREAKER SERIES

CBN inserts with chipbreaker
ideal for carburized layer removal and finishing hardened steel



CER

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Hardened Materials

Turning

Grooving

Cast Iron

Turning

Milling

Superalloys

Turning

Sintered metal

Turning

PCD

Non-Ferrous Materials

Turning

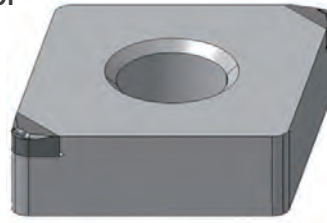
Grooving

Milling

HP - HardBreakers for finishing hardened steel

Innovative 3D chipbreaker for efficient chip control

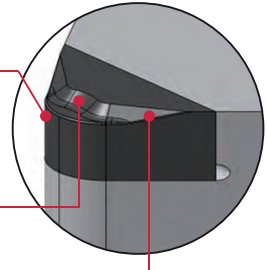
- By separating the chipbreaker from the cutting edge, the cutting force imposed on the cutting edge during machining is significantly reduced, thus providing long tool life.
- The cutting edge preparation is designed to ensure easy cutting at low cutting forces, while maintaining close tolerances with no deviations.
- The HP style chipbreaker, combined with built-in wipers, yields excellent surface quality and good chip control.



Optimized edge preparation for low cutting force

HP chipbreaker

Wiper



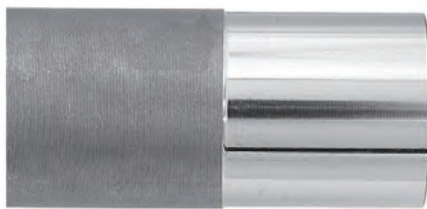
Consistent and durable chip breaking

HARDBREAKER HP	Vs.	Competitor
	40 min	
	80 min	

Insert: 2QP-CNGM120408-HP
 Workpiece material: SCM420 (58 HRC)
 Cutting speed: $V_c = 180 \text{ m/min}$ (590 sfm)
 Feed: $f = 0.15 \text{ mm/rev}$ (.006")
 Depth of cut: $a_p = 0.15 \text{ mm}$ (.006")
 Holder: ACLNR2525M12-A
 Coolant: Wet
 Machining: External continuous cutting

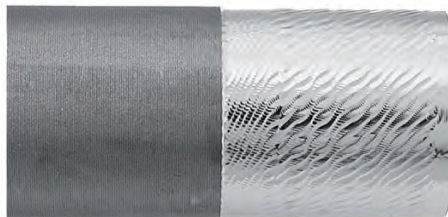
Chatter-free machining

HARDBREAKER HP



Due to low cutting force, chatter stability is greatly improved.

Competitor (without breaker)

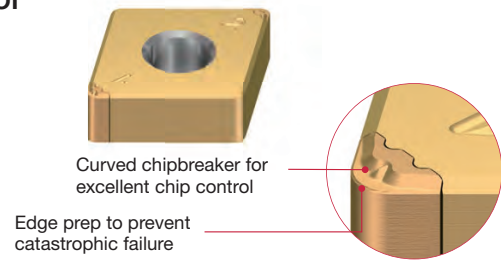


More info

HS chipbreaker

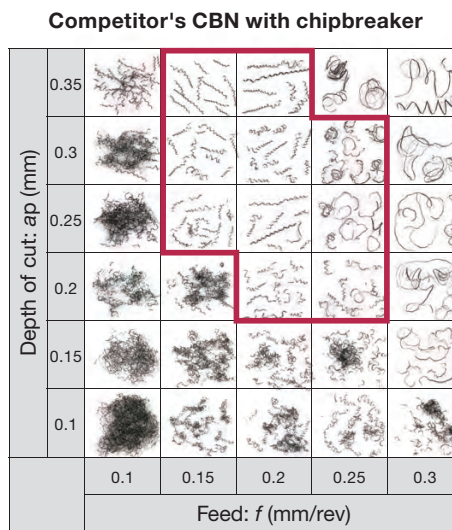
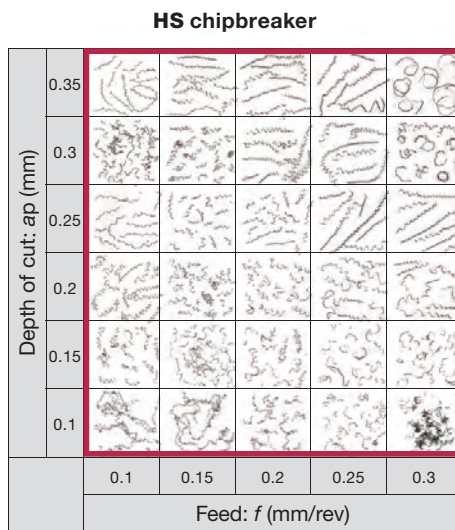
Optimized chipbreaker design for excellent chip control during hard turning at aggressive conditions

- Designed for high feed machining.
- Provides excellent chip control for a wide range of D.O.C. and feed rates.
- Edge preparation is designed to prevent catastrophic failure.



CUTTING PERFORMANCE

HS provides all-round chip breaking capability even at increased feed rates vs. competitors



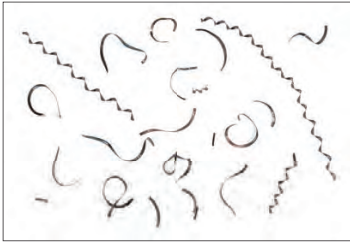
Insert : 2QP-CNGM120408-HS
 Workpiece material: SCM420 (58HRC)
 Cutting speed : $V_c = 150$ m/min
 Holder : ACLNL2525M12-A
 Coolant : Wet
 Machining : External continuous cutting

HARDBREAKER HF

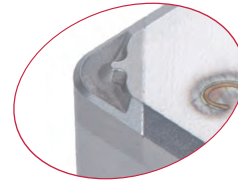
■ Chip control

Comparisons of chip formations after machining 80 pcs of automotive shafts

HF chipbreaker



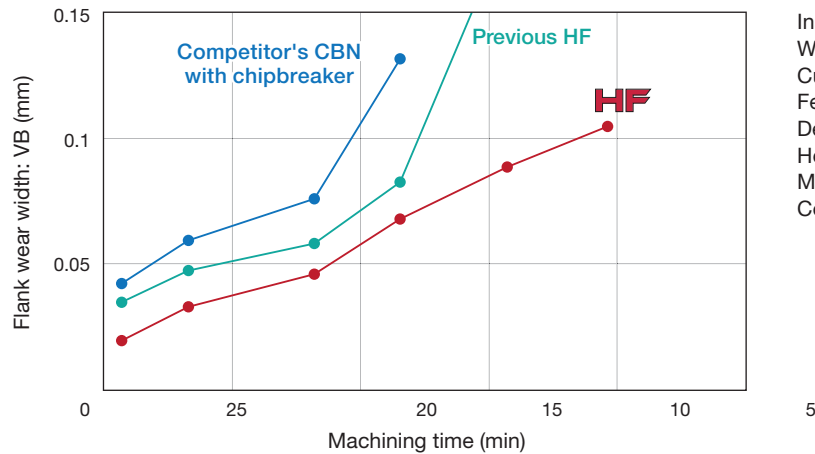
Competitor's CBN with chipbreaker



Insert : 2QP-CNGM120408-HF
Workpiece material : SCM415 (60HRC)
Cutting speed : $V_c = 180$ m/min
Feed : $f = 0.2$ mm/rev
Depth of cut : $a_p = 0.5$ mm x 3 passes
Holder : ACLNL25252M12-A
Machining : External continuous cutting
Coolant : Wet

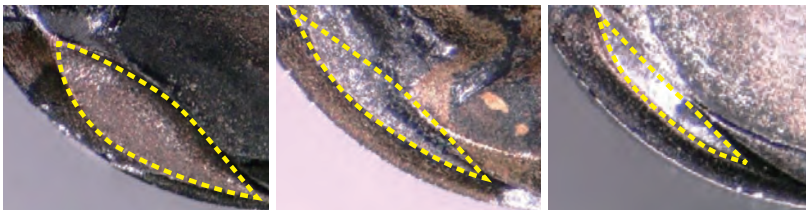
■ Crater wear resistance

Comparison of automotive clutch machining lifetime



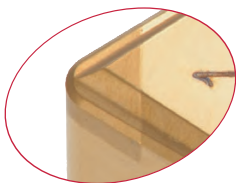
Insert : 2QP-CNGM120408-HF
Workpiece material : SCM415 (60HRC)
Cutting speed : $V_c = 150$ m/min
Feed : $f = 0.15$ mm/rev
Depth of cut : $a_p = 0.5$ mm x 5 passes
Holder : ACLNL25252M12-A
Machining : External continuous cutting
Coolant : Wet

Comparisons of crater wear sizes (After 8 min)



Competitor's chipbreaker Previous HF chipbreaker New **HF** chipbreaker

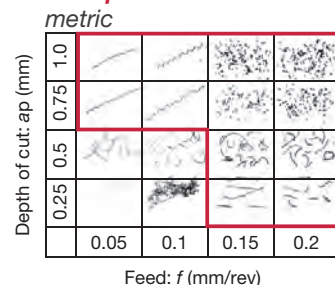
HARDBREAKER HM



Single-sided CBN insert provides high stability in heavy machining

Provides ideal chip control in large depth of cut with the well-designed chipbreaker
Suitable for medium cutting or roughing

HM chipbreaker



GNGA / FNGA / YNGA

New CBN inserts for general turning

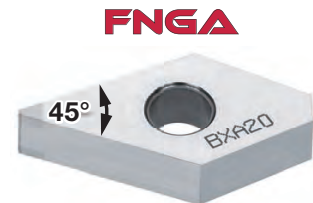
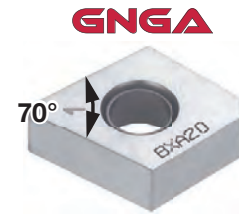
GNGA insert with 70° corner angle

FNGA insert with 45° corner angle

- Smaller corner angle provides the insert with greater clearance between the insert flank and workpiece surface, allowing better chip flow and evacuation
- Enables greater D.O.C. in face turning applications in which the insert is pulled outward (fed away from the workpiece center)

YNGA insert with 25° corner angle

Allows undercutting, V grooving, and other applications that are not possible with traditional V inserts



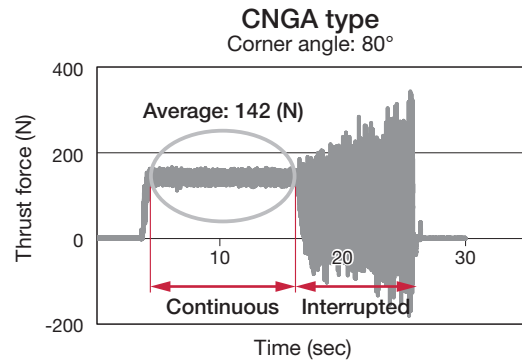
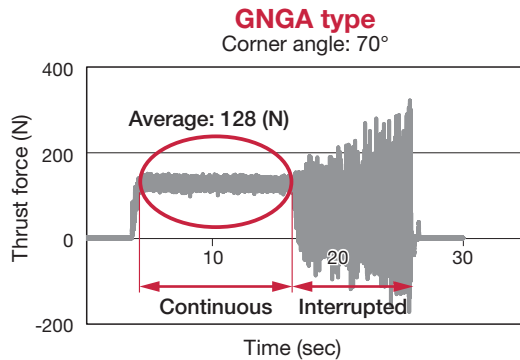
■ High versatility

- Existing ISO turning toolholder can be used for these inserts
For GNGA insert: use the holder for CN**1204 insert
For FNGA insert: use the holder for DN**1504 insert
For YNGA insert: use the holder for VN**1604 insert
- No offsets needed compared to ISO inserts, due to same geometry of cutting edge position
- Double sided insert with 2 cutting edges



CUTTING PERFORMANCE

■ Cutting force (Thrust force)



Cutting force of **GNGA** insert is lower than regular **CNGA** insert's.

	Insert	: 2QP-GNGA120408 2QP-CNGA120408
	Workpiece material	: SCM420 / 18CrMo4 (59HRC)
	Cutting speed	: $V_c = 150$ m/min
	Feed	: $f = 0.15$ mm/rev
	Depth of cut	: $a_p = 0.125$ mm
	Toolholder	: ACLNL2525M12-A
	Machining	: Face turning
	Coolant	: Dry

■ Chip flow and control in face turning

Chip flow of continuous face turning



GNGA type
Corner angle: 70°

CNGA type
Corner angle: 80°

Chip control in interrupted face turning



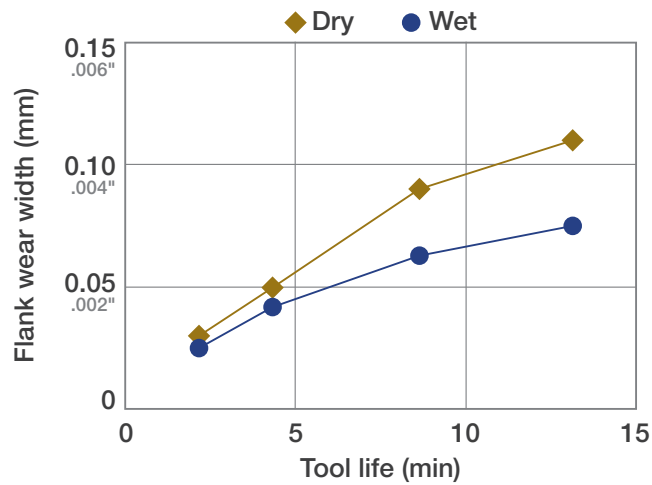
GNGA type
Corner angle: 70°

CNGA type
Corner angle: 80°

Since **GNGA** type inserts have enough space for chip flow, chip packing doesn't occur, improving surface finish and preventing sudden chipping on cutting edge.

	Insert	: 2QP-GNGA120408 2QP-CNGA120408
	Workpiece material	: SCM420 / 18CrMo4 (60HRC)
	Cutting speed	: $V_c = 150$ m/min
	Feed	: $f = 0.10$ mm/rev
	Depth of cut	: $a_p = 0.125$ mm
	Toolholder	: ACLNL2525M12-A
	Machining	: Face turning
	Coolant	: Dry

Coolant effect - Continuous cutting



Wet cutting improves tool life for continuous cutting operations.

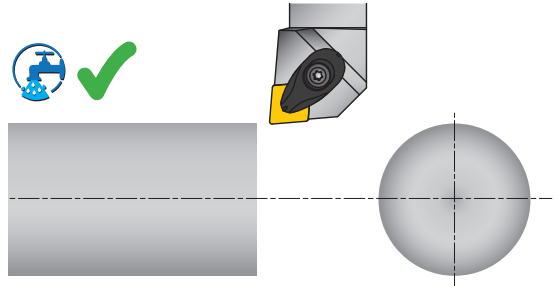
Cutting conditions

Cutting speed: $V_c = 180$ m/min

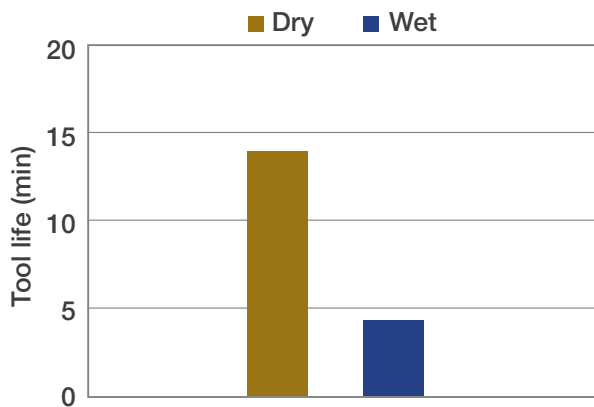
Depth of cut: $a_p = 0.2$ mm

Feed: $f = 0.1$ mm/rev

Workpiece material: SCM415 (60HRC)



Coolant effect - Interrupted cutting



Dry cutting improves tool life for interrupted cutting operations.

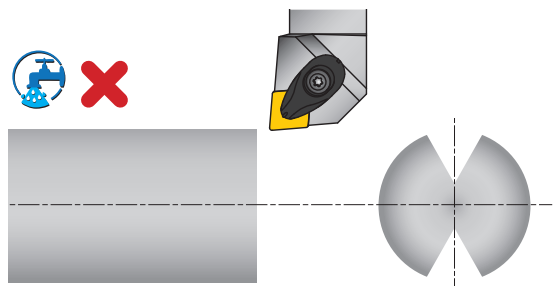
Cutting conditions

Cutting speed: $V_c = 150$ m/min

Depth of cut: $a_p = 0.2$ mm

Feed: $f = 0.2$ mm/rev

Workpiece material: SCM415 (60HRC)



Use of coolant

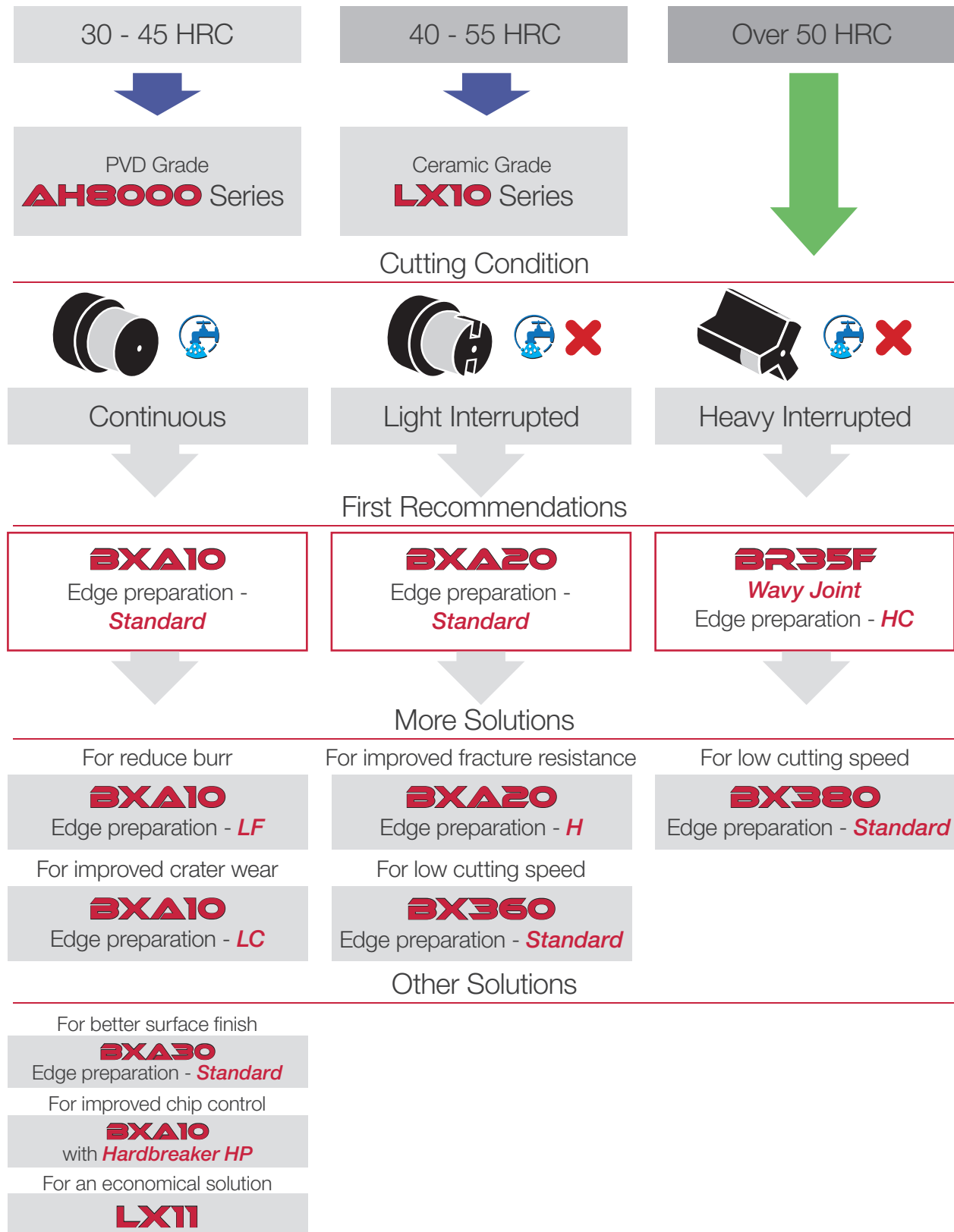
	Dry	Wet
Continuous cutting	✗	✓
Interrupted cutting	✓	✗

CBN Turning

H Hard Materials

SELECTION GUIDE

Tungaloy's recommended solutions *for hard turning*



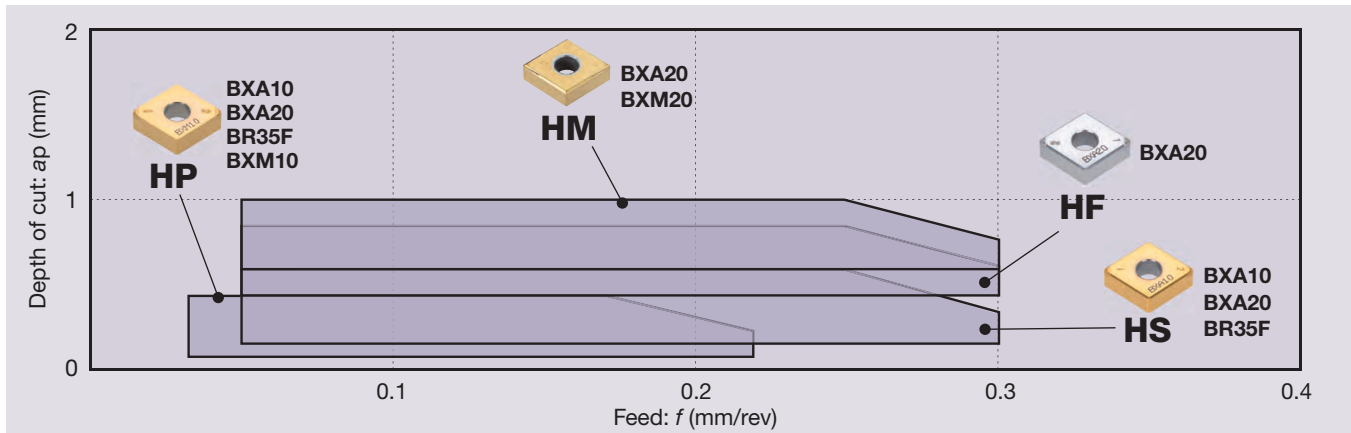
CER	Turning
Superalloys	Grooving
Cast Iron	Milling
Hardened Materials	Turning
CBN	Grooving
Hardened Materials	Turning
Cast Iron	Milling
Superalloys	Turning
Sintered metal	Turning
PCD	Turning
Non-Ferrous Materials	Grooving
	Milling

Chipbreaker Guide

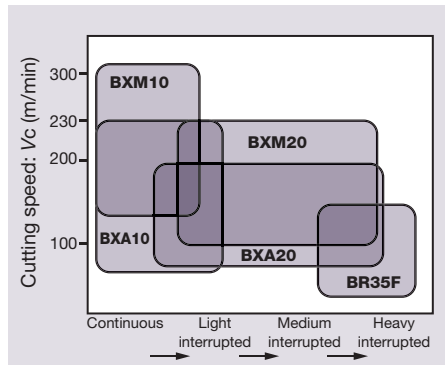
BASIC CHIPBREAKER: NEGATIVE TYPE

H Hard Materials

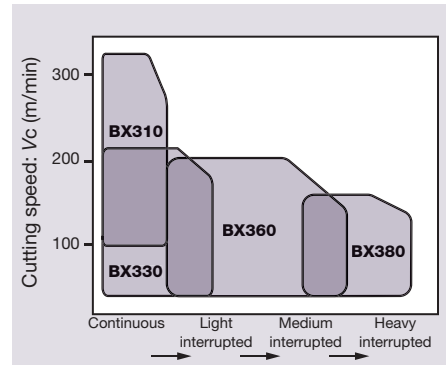
Chipbreaker System for Turning (Negative type)



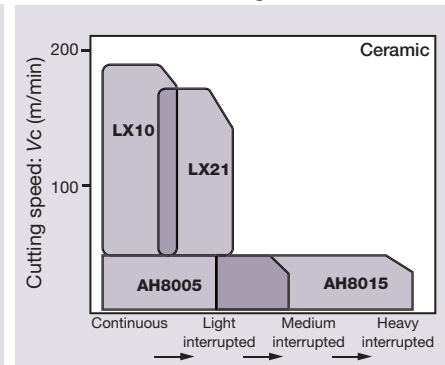
Coated CBN



T-CBN



Ceramic, PVD coating



Chipbreaker	Shape	Feature
-		Excellent performance in finishing of hard material with CBN sintered body on the cutting edge.
- (Ceramic)		Realizes economical hardened steel medium speed finishing.
HRF		Excellent chip control in Hardent steel medium finishing.

Chipbreaker	Shape	Feature
HP		Excellent chip control in precision finishing.
HS		Provides the excellent chip-control at a high-feed condition in the precise finishing operation.
HF		Excellent chip control in removing carburized layer at small depth of cut.
HM		Excellent chip control in removing carburized layer at large depth of cut.

STANDARD CUTTING CONDITIONS

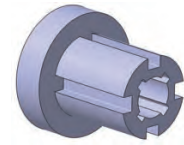
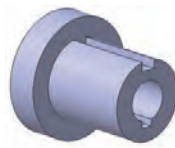
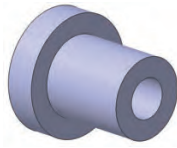
ISO	Operation	Chipbreaker	Grade	Depth of cut a_p (mm)	Feed f (mm/rev)	Cutting speed V_c (m/min)
H	Precision finishing	HP	BXA10 BXA20 BR35F	0.03 - 0.25	0.03 - 0.22	70 - 350
		HS	BXA10 BXA20 BR35F	0.1 - 0.35	0.05 - 0.3	70 - 350
	Finishing	-	BXM10 BXM20 BXA20	0.05 - 0.5	0.05 - 0.25	70 - 350
		-	LX10, LX11	0.05 - 0.5	0.05 - 0.25	60 - 180
	Removing of carburized layer	HF	BXA20	0.3 - 1	0.05 - 0.3	70 - 180
		HM	BXA20 BXM20	0.5 - 1	0.05 - 0.3	70 - 200
	Medium cutting	HRF	AH8005 AH8015	0.05 - 2	0.05 - 0.25	10 - 50

Hardened steels, Pre-hardened steels: SKD11, SKD61, etc. X153CrMoV12, X40CrMoV5-1, etc.

Selection System

SELECTION SYSTEM: NEGATIVE TYPE

H Hard Materials



Continuous

Light interrupted

Heavy interrupted

	Continuous	Light interrupted	Heavy interrupted
Precision finishing $[a_p \approx 0.35 \text{ mm}]$	Basic High feed HP BXA10	Basic Fracture -H BXA20 High-speed wear BXA10	
Finishing $[a_p \approx 0.5 \text{ mm}]$	Basic High-speed BXA10	Basic Fracture -H BXA20 High-speed wear BXA10	Basic Fracture -HC BR35F BR35F
Removing of carburized layer $[a_p \approx 1 \text{ mm}]$	Basic HF BXA20	Basic HM BXA20	
Medium cutting $[a_p \approx 2 \text{ mm}]$	Basic Fracture HRF AH8015 HRF AH8005	Basic Fracture HRM AH8015 HRF AH8015	Basic Fracture HRM AH8015 HRF AH8015

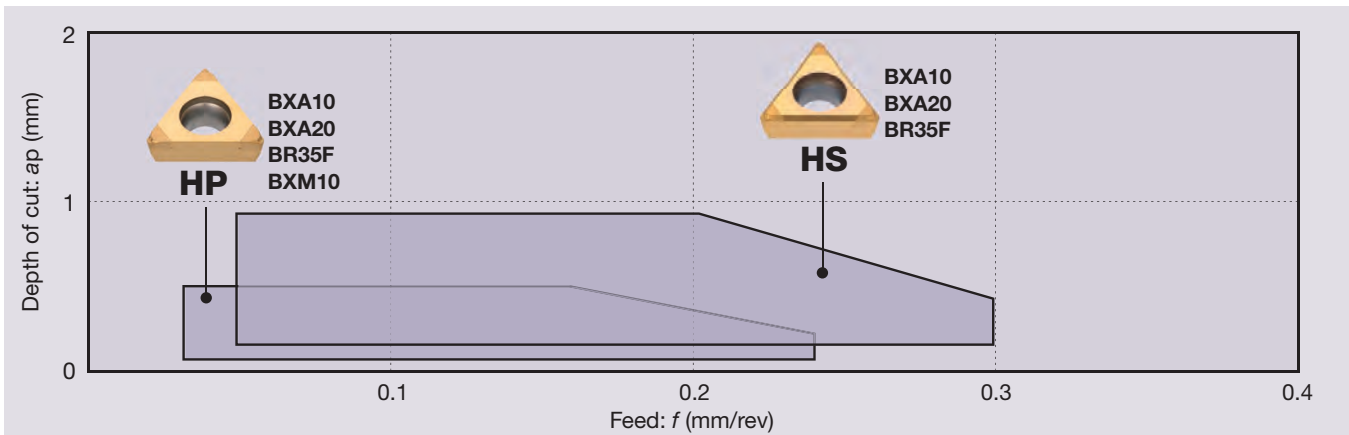
CER	Turning
Superalloys	Grooving
	Milling
	Turning
Cast Iron	Grooving
	Milling
Hardened Materials	Turning
CBN	Turning
Hardened Materials	Grooving
Cast Iron	Turning
	Milling
Superalloys	Turning
Sintered metal	Turning
PCD	Turning
Non-Ferrous Materials	Grooving
	Milling

Chipbreaker Guide

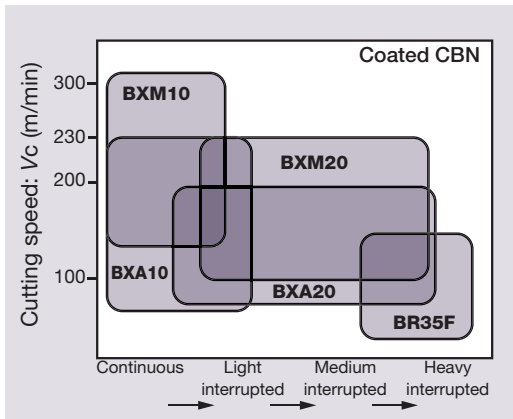
BASIC CHIPBREAKER: POSITIVE TYPE

H Hard Materials

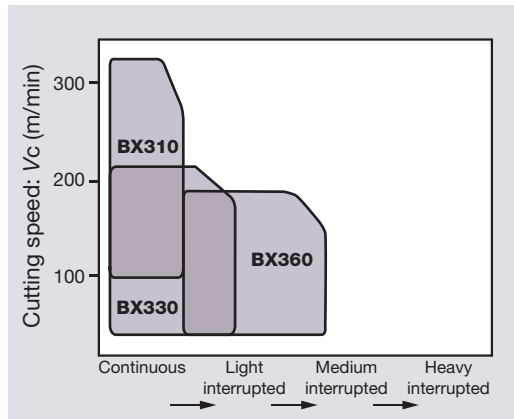
Chipbreaker System for Turning (Positive Type)



Coated CBN



CBN



Chipbreaker	Shape	Feature	Chipbreaker	Shape	Feature
-		Excellent performance in high-speed finishing of hard material with CBN sintered body on the cutting edge.	HP		Excellent chip control in precision finishing.
			HS		Provides the excellent chip-control at a high-feed condition in the precise finishing operation.

STANDARD CUTTING CONDITIONS

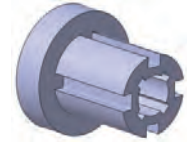
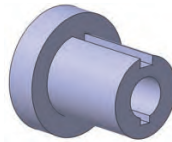
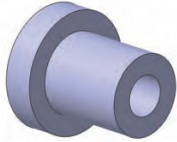
ISO	Operation	Chipbreaker	Grade	Depth of cut ap (mm)	Feed f (mm/rev)	Cutting speed Vc (m/min)
H	Precision finishing	HP	BXM10 BXA20 BR35F	0.03 - 0.25	0.03 - 0.22	70 - 350
		HS	BXM10 BXA20 BR35F	0.1 - 0.35	0.05 - 0.3	70 - 350
	Finishing	-	BXM10 BXA20 BR35F	0.05 - 0.5	0.05 - 0.25	70 - 350

Hardened steels, Pre-hardened steels: SKD11, SKD61, etc. X153CrMoV12, X40CrMoV5-1, etc.

Selection System

SELECTION SYSTEM: POSITIVE TYPE

H Hard Materials



Continuous

Light interrupted

Heavy interrupted

Precision finishing
[$a_p \approx 0.35 \text{ mm}$]

Basic

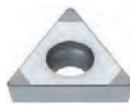


**HP
BXA10**

High-feed

**HS
BXA10**

Basic



BXA20

Fracture

**-H
BXA20**

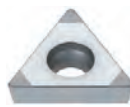
Finishing
[$a_p \approx 0.5 \text{ mm}$]

Basic



BXA10

Basic



BXA20

Fracture

**-H
BXA20**

High-speed wear

BXA10

Basic



**SR
BR35F**

Fracture

**HC
BR35F**

Hardened Materials

Hardened Materials

Cast Iron

Superalloys

Sintered metal

PCD

Non-Ferrous Materials

Superalloys

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

CBN

Turning

Grooving

Turning

Milling

Turning

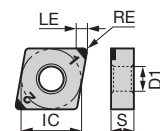
Turning

Turning

Grooving

Milling

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

CN



80° Rhombic with hole

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				Control Metal																
		RE	LE				Burr	Finak wear	Crater wear	Chipping	BXA10	BXA20	BR35F	BXM10	BXM20	BXC50	BXA30	BXA40	BX310	BX330	BX360	BX380					
Precision finishing	2QP-CNGA120402-LF	0.2	2.3	2			○				●	●															
	2QP-CNGA120402-L		2.3	2				○				●	●														
	2QP-CNGA120404-LF	0.4	2.3	2			○				●	●															
	4QS-CNGA120404-LF		1.6	4			○				●	●															
	2QP-CNGA120404-L		2.3	2				○			●	●		●	●						●						
	2QP-CNGA120404WL		2.3	2	○	○					●	●		●	●												
	4QS-CNGA120404WL		1.6	4	○	○					●	●															
	2QP-CNMA120404W		2.3	2	○	○															●						
	4QP-CNMA120404W		2.3	4	○	○																					
	2QP-CNGA120408-LF		0.8	2.2	2			○				●	●														
	4QS-CNGA120408-LF			1.5	4			○				●	●														
	2QP-CNGA120408-L	2.2		2				○			●	●		●	●						●						
	2QP-CNGA120408WL	2.2		2	○	○					●	●		●	●												
	4QS-CNGA120408WL	1.8		4	○	○					●	●															
	2QP-CNMA120408W	2.2		2	○	○															●						
	4QP-CNMA120408W	2.2		4	○	○																					
	2QP-CNGA120412-LF	1.2	2.4	2			○				●	●															
	4QS-CNGA120412-LF		1.7	4			○				●	●															
	2QP-CNGA120412-L		2.4	2				○			●	●		●	●						●						
	2QP-CNGA120412WL		2.4	2	○	○					●	●		●	●												
4QS-CNGA120412WL	2.1		4	○	○					●	●																
2QP-CNMA120412W	2.4		2	○	○															●							
4QP-CNMA120412W	2.4		4	○	○																						
Finishing	2QP-CNGA120402	0.2	2.3	2		○					●	●															
	2QP-CNGA120402-LC		2.3	2					○			●	●														
	2QP-CNGA120404	0.4	2.3	2		○					●	●		●	●					●	●	●	●				
	T2QP-CNGA120404		2.3	2		○																					
	2QP-CNGA120404SR		2.3	2		○								●													
	4QS-CNGA120404		1.6	4		○					●	●															
	4QS-CNGA120404SR		1.6	4		○							●														
	4QP-CNGA120404		2.3	4		○												●	●	●							
	2QP-CNGA120404-LC		2.3	2					○			●	●														
	4QS-CNGA120404-LC		1.6	4					○			●	●														

T at the beginning of the designation means 10 pieces per package.

● : Line up



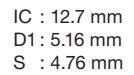
Ex Toolholder



In Toolholder

Reference pages : Edge preparation → **CBN-6**

Turning



K	Cast iron
S	Superalloy
H	Hard material
	Sintered

Superalloys

Milling

Turning

CBN

Turning

Hardened

ning

Cast Ir

CD



In.Toolholder

CN with chipbreaker



80° Rhombic with hole

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10	BXM20	BXA40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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CN



80° Rhombic with hole

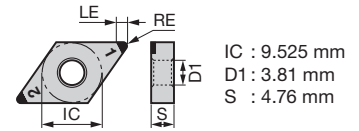
[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BX360									
		RE	LE				Burr	Flak wear	Crater wear	Chipping										
Medium cutting	CNGA120402-QBN	0.2	4.1	1		○					●									
	CNGA120404-QBN	0.4	4	1		○					●									
	CNGA120408-QBN	0.8	3.9	1		○					●									
	CNGA120412-QBN	1.2	3.9	1		○					●									



Reference pages : Edge preparation → **CBN-6**

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



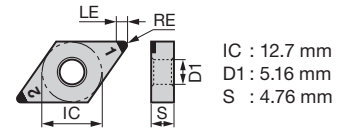
DN



55° Rhombic
with hole

 55° Rhombic with hole		K	Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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● : Line up



DN



55° Rhombic
with hole

		Application		Designation		Dimension (mm)		No. of corners	Wiper	Standard	Problem																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
						RE	LE				Burr	Flnak wear	Crater wear	Chipping	BXA10	BXA20	BR35F	BXM10	BXM20	BXC50	BXA30	BXA40	BX310	BX330	BX360	BX380																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Please see Tungaloy General catalog vol.5 page L025 about the toolholders recommended for wiper inserts of the designation with WJ at the end.

● : Line up



Ex.Toolholder



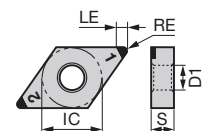
In.Toolholder

Reference pages : Edge preparation → CBN-6

DN


**55° Rhombic
with hole**

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm



55° Rhombic

with hole

K

Cast iron

S

Superalloy

H

Hard material

Sintered metal

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem					BXA10	BXA20	BR35F	BXM10	BXM20	BXC50	BXA30	BXA40	BX310	BX330	BX360	BX380												
		RE	LE				Burr	Flank wear	Crater wear	Chipping																									
Finishing	2QP-DNGA150408	0.8	2.1	2		○						●	●		●	●					●	●	●	●											
	2QP-DNGA150408SR		2.1	2		○																													
	4QS-DNGA150408		1.6	4		○						●	●																						
	4QS-DNGA150408SR		1.6	4		○								●																					
	4QP-DNGA150408		2.1	4		○										●	●	●																	
	2QP-DNGA150408-LC		2.1	2						○		●	●																						
	4QS-DNGA150408-LC		1.6	4						○		●	●																						
	2QP-DNGA150412		2	2		○						●	●		●	●						●	●	●	●										
	2QP-DNGA150412SR	2	2		○								●																						
	4QS-DNGA150412	1.6	4		○						●	●																							
	4QS-DNGA150412SR	1.6	4		○								●																						
	4QP-DNGA150412	2	4		○										●	●	●																		
	2QP-DNGA150412-LC	2	2						○		●	●																							
	4QS-DNGA150412-LC	1.6	4						○		●	●																							
	2QP-DNGA150416	1.6	3.4	2		○					●	●																							
	2QP-DNGA150416SR	3.4	2		○								●																						
	2QP-DNGA150420	2	3	2		○					●	●																							
	2QP-DNGA150420SR	3	2		○								●																						
	2QP-DNGA150424	2.4	2.6	2		○					●	●																							
	2QP-DNGA150424SR	2.6	2		○								●																						
Medium cutting	2QP-DNGA150404-H	0.4	2.5	2						○	●	●			●							●	●												
	2QP-DNGA150404HC		2.5	2						○			●																						
	4QS-DNGA150404-H		2	4						○	●	●																							
	4QS-DNGA150404HC		2	4						○			●																						
	4QP-DNGA150404-H	2.5	4						○										●																
	2QP-DNGA150408-H	0.8	2.1	2					○	●	●			●								●	●												
	2QP-DNGA150408HC		2.1	2					○			●																							
	4QS-DNGA150408-H		1.6	4					○	●	●																								
	4QS-DNGA150408HC		1.6	4					○			●																							
	4QP-DNGA150408-H	2.1	4					○											●																
	2QP-DNGA150412-H	1.2	2	2					○	●	●			●									●	●											
	2QP-DNGA150412HC		2	2					○			●																							
	4QS-DNGA150412-H		1.6	4					○	●	●			●																					
	4QS-DNGA150412HC		1.6	4					○			●																							
	4QP-DNGA150412-H	2	4					○											●																
	2QP-DNGA150416HC	1.6	3.4	2				○				●																							
	2QP-DNGA150420HC	2	3	2				○				●																							
	2QP-DNGA150424HC	2.4	2.6	2				○				●																							

● : Line up



Ex.Toolholder



In.Toolholder

Reference pages : Edge preparation → CBN-6

IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

**55° Rhombic
with hole**

● : Line up

● : Line up

**55° Rhombic
with hole**

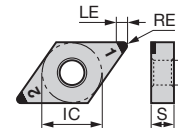
● : Line up

● : Line up



In.Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



IC : 12.7 mm
D1 : 5.16 mm
S : 6.35 mm

DN



55° Rhombic with hole

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10	BXM20						
		RE	LE				Burr	Finak wear	Crater wear	Chipping											
Precision finishing	2QP-DNGA150604-LF	0.4	2.5	2			○				●	●									
	2QP-DNGA150604-L		2.5	2				○				●	●								
	2QP-DNGA150608-LF	0.8	2.1	2			○				●	●									
	2QP-DNGA150608-L		2.1	2				○				●	●								
	2QP-DNGA150612-LF	1.2	2	2			○				●	●									
	2QP-DNGA150612-L		2	2				○				●	●								
Finishing	2QP-DNGA150604	0.4	2.5	2		○					●	●		●	●						
	2QP-DNGA150604SR		2.5	2		○							●								
	2QP-DNGA150604-LC		2.5	2					○			●	●								
	2QP-DNGA150608	0.8	2.1	2		○					●	●		●	●						
	2QP-DNGA150608SR		2.1	2		○							●								
	2QP-DNGA150608-LC		2.1	2					○			●	●								
	2QP-DNGA150612	1.2	2	2		○					●	●		●	●						
	2QP-DNGA150612SR		2	2		○							●								
	2QP-DNGA150612-LC		2	2					○			●	●								
Medium cutting	2QP-DNGA150604-H	0.4	2.5	2						○	●	●									
	2QP-DNGA150604HC		2.5	2						○			●								
	2QP-DNGA150608-H	0.8	2.1	2					○		●	●		●							
	2QP-DNGA150608HC		2.1	2					○				●								
	2QP-DNGA150612-H	1.2	2	2					○		●	●									
	2QP-DNGA150612HC		2	2					○				●								

● : Line up

DN with chipbreaker



55° Rhombic with hole

[illegible][illegible]

● : Line up



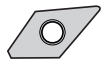
Ex.Toolholder



In.Toolholder

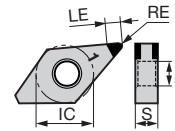
Reference pages : Edge preparation → **CBN-6**

FN



45° Rhombic
with hole

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm



45° Rhombic

with hole

K

Cast iron

S

Superalloy

H

Hard material

Sintered metal

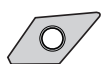
●●

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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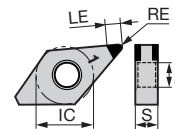
● : Line up

FN

with chipbreaker



45° Rhombic
with hole



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

 45° Rhombic with hole		K	Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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● : Line up



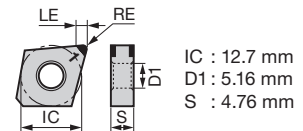
Ex.Toolholder



In.Toolholder

Reference pages : Edge preparation → CBN-6

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊗ : Heavy interrupted cutting



GN

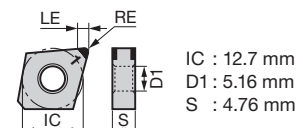


70° Rhombic with hole

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM20	BX360																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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● : Line up



GN with chipbreaker



70° Rhombic with hole

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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● : Line up



Reference pages : Edge preparation → **CBN-6**

Ex.Toolholder

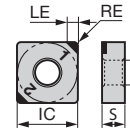
In.Toolholder

SN



Square
with hole

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

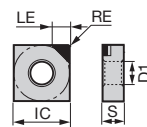
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● : Line up

SN



Square
with hole



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

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● : Line up



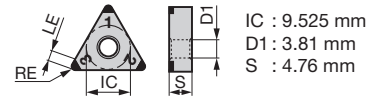
Ex.Toolholder



In.Toolholder

Reference pages : Edge preparation → CBN-6

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊗ : Heavy interrupted cutting



TN



Triangular with hole

[illegible][illegible]

T at the beginning of the designation means 10 pieces per package.

Please see page Tungaloy General catalog vol.5 **L025** about the toolholders recommended for wiper inserts of the designation with WG at the end.

● : Line up



Ex.Toolholder



In.Toolholder

IC : 9.525 mm
D1 : 3.81 mm
S : 4.76 mm



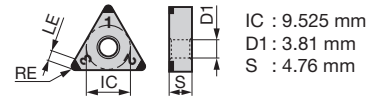
**Triangular
with hole**

T at the beginning of the designation means 10 pieces per package.



In Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



TN with chipbreaker



Triangular with hole

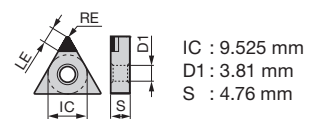
[illegible]

● : Line up

TN



Triangular with hole

[illegible]

● : Line up



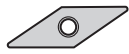
Ex.Toolholder



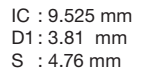
In.Toolholder

Reference pages : Edge preparation → **CBN-6**

- ## Turning



Superalloys



Milling

Cast Iron

Milling

urning

BN

Turni

Harden

Turning

metal

Material

g
Groo

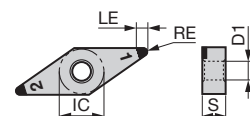
Mill



In.Toolholder

● : Line up

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



IC : 9.525 mm
D1 : 3.81 mm
S : 4.76 mm

VN with chipbreaker



35° Rhombic with hole

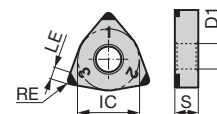
[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10	BXM20	BXA40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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● : Line up

WN

 80° Trigon with hole



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

[illegible][illegible]

● : Line up



VN

Ex Toolholder



In Toolholder



WT

Ex Toolholder

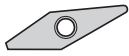


In Toolholder

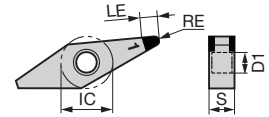
Reference pages : Edge preparation → **CBN-6**

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

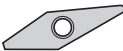
YN



25° Rhombic
with hole



IC : 9.525 mm
D1 : 3.81 mm
S : 4.76 mm



25° Rhombic
with hole

K

Cast iron

S

Superalloy

H

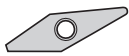
Hard material
Sintered metal

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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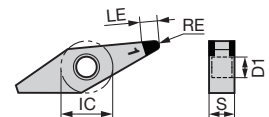
● : Line up

YN

with chipbreaker



25° Rhombic
with hole



IC : 9.525 mm
D1 : 3.81 mm
S : 4.76 mm



25° Rhombic
with hole

K

Cast iron

S

Superalloy

H

Hard material

Sintered metal

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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● : Line up



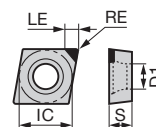
Ex.Toolholder



In.Toolholder

Reference pages : Edge preparation → CBN-6

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



IC : 3.57 mm
D1: 1.9 mm
S : 1.39 mm

CC



80° Rhombic with hole, Positive 7°

[illegible][illegible]

● : Line up

C

D

F

G

S

T

V

W

Y

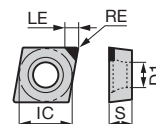
CC



80° Rhombic with hole, Positive 7°

[illegible][illegible]

● : Line up



IC : 4.37 mm
D1: 2.3 mm
S : 1.79 mm



Ex.Toolholder



In.Toolholder

[illegible]

● : Line up

[illegible]

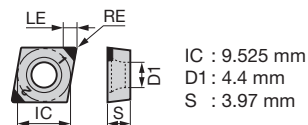
● : Line up



In.Toolholder

CBN-39

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



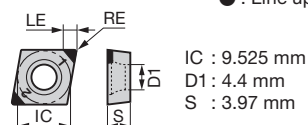
CC



80° Rhombic with hole, Positive 7°

[illegible][illegible]

● : Line up



CC

with chipbreaker



80° Rhombic with hole, Positive 7°

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem												
		RE	LE				Burr	Flnak wear	Crater wear	Chipping									
Precision finishing	2QP-CCGT09T304-HP	0.4	2.3	2		○					●BXA10	●BXA20	●BR35F	●BXM10					
	2QP-CCGT09T304-HS		2.2	2		○					●	●	●	●					
	2QP-CCGT09T304WL-HP		2.2	2	○	○					●			●					
	2QP-CCGT09T304WL-HS		2.2	2	○	○					●	●							
	2QP-CCGT09T308-HP	0.8	2.2	2		○					●	●	●	●					
	2QP-CCGT09T308-HS		2.2	2		○					●	●	●						
	2QP-CCGT09T308WL-HP		2.2	2	○	○					●			●					
	2QP-CCGT09T308WL-HS		2.2	2	○	○					●	●							

● : Line up

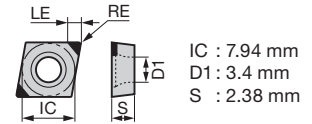


Ex Toolholder

In Toolholder

Reference pages : Edge preparation → **CBN-6**

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



● : Line up

Technical drawing of a square end mill. The drawing shows a top view and a side view. The top view is a square with a central circular hole. Dimensions labeled include LE (left edge), RE (right edge), IC (inner circle diameter), and S (square side length). The side view shows the profile of the end mill with dimensions D (outer diameter), D1 (inner hole diameter), and S (square side length). The following dimensions are listed:

- IC : 9.525 mm
- D1: 4.4 mm
- S : 3.18 mm

● : Line up

IC : 9.525 mm
D1 : 4 mm
S : 2.38 mm

Tungaloy's standard hole specification (ISO non-compliant)



tungaloy.com
- ntkcuttingtools.com

IC : 6.35 mm
D1 : 2.8 mm
S : 2.38 mm

[illegible]

● : Line up

IC : 6.35 mm
D1 : 2.8 mm
S : 2.38 mm

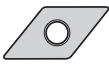
[illegible]

● : Line up



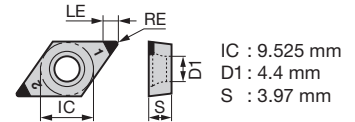
In Toolholder

DC



55° Rhombic
with hole, Positive 7°

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

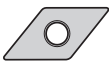


55° Rhombic with hole, Positive 7°					K	Cast iron		S	Superalloy		H	Hard material		Sintered metal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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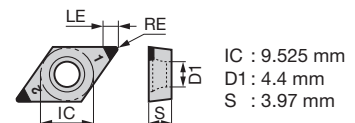
● : Line up

DC

with chipbreaker



55° Rhombic
with hole, Positive 7°





55° Rhombic

with hole, Positive 7°

K	Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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● : Line up



Ex.Toolholder



In.Toolholder

Reference pages : Edge preparation → CBN-6

IC : 3.57 mm
D1 : 1.9 mm
S : 1.39 mm

[illegible][illegible]

Y

[illegible][illegible]

SP

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BX330	BX360																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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SP  In.Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting

IC : 5.56 mm
D1 : 2.5 mm
S : 2.38 mm

[illegible]

● : Line up

IC : 6.35 mm
D1 : 2.8 mm
S : 2.38 mm

[illegible]

● : Line up

IC : 9.525 mm
D1 : 4.4 mm
S : 3.97 mm

[illegible]

● : Line up



Ex.Toolholder



In.Toolholder

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TP



Triangular Positive 11°
with hole



IC : 4.76 mm
D1 : 2.3 mm
S : 2.38 mm

	Triangular Positive 11° with hole					K Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</
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● : Line up

TP



Triangular Positive 11°
with hole



IC : 5.56 mm
D1 : 2.5 mm
S : 2.38 mm

		Triangular Positive 11° with hole		K		Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														</
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● : Line up

TP



Triangular Positive 11°
with hole



IC : 6.35 mm
D1 : 2.8 mm
S : 2.38 mm

Triangular Positive 11° with hole					K Cast iron		S Superalloy		H Hard material		Sintered metal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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● : Line up



In.Toolholder

IC : 6.35 mm
D1 : 3.4 mm
S : 3.18 mm

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10	BXM20	BXA30	BXA40	BX310	BX330	BX360																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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TP

IC : 6.35 mm
D1 : 3.4 mm
S : 3.18 mm

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem												
		RE	LE				Burr	Flnak wear	Crater wear	Chipping									
Precision finishing	3QP-TPGT110304-HP	0.4	2.2	3		○					●	●	●	●					
	3QP-TPGT110304-HS		2.1	3		○					●	●	●	●					
	3QP-TPGT110308-HP	0.8	1.9	3		○					●	●	●	●					
	3QP-TPGT110308-HS		1.8	3		○					●	●	●	●					



In Toolholder

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TP



Triangular Positive 11° with hole



IC : 7.94 mm
D1 : 3.4 mm
S : 3.18 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10	BXM20	BXA30	BXA40	BX310	BX330	BX360
		RE	LE				Burr	Flank wear	Crater wear	Chipping									
Finishing	3QP-TPGW130302	0.2	2.3	3		○					●	●							
	3QP-TPMW130302		2.3	3		○										●	●	●	
	Q-TPMW130302		2.4	1		○											●		
	3QP-TPGW130304	0.4	2.2	3		○					●	●	●	●	●				
	3QP-TPMW130304		2.2	3		○										●	●	●	
	Q-TPMW130304		2.3	1		○											●		
	3QP-TPGW130308	0.8	1.9	3		○					●	●							

● : Line up

TP



Triangular Positive 11° with hole



IC : 9.525 mm
D1 : 4.4 mm
S : 3.97 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10	BXM20	BXA30	BXA40	BX310	BX330	BX360
		RE	LE				Burr	Flank wear	Crater wear	Chipping									
Finishing	3QP-TPGW16T302	0.2	2.3	3		○					●	●							
	3QP-TPGW16T304		2.2	3		○					●	●	●	●	●				
	3QP-TPMW16T304		2.2	3		○										●	●	●	
	Q-TPGW16T304	0.8	2.3	1		○											●		
	3QP-TPGW16T308		1.9	3		○					●	●	●	●	●				
	3QP-TPMW16T308		1.9	3		○										●			

● : Line up



In.Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TP



Triangular Positive 11° with hole



IC : 9.525 mm
D1 : 4.4 mm
S : 4.76 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10	BXM20	BXA30	BXA40	BX310	BX330	BX360
		RE	LE				Burr	Flank wear	Crater wear	Chipping									
Finishing	3QP-TPGW160402	0.2	2.3	3		○					●	●							
	3QP-TPGW160404		2.2	3		○					●	●	●	●	●				
	3QP-TPMW160404	0.4	2.2	3		○					●	●	●	●	●	●	●	●	
	Q-TPMW160404		2.3	1		○											●		
	3QP-TPGW160408		1.9	3		○					●	●	●	●	●				
	3QP-TPMW160408	0.8	1.9	3		○										●	●	●	
	Q-TPMW160408		2	1		○											●		
	3QP-TPGW160402-H	0.2	2.3	3						○	●	●							
Medium cutting	3QP-TPGW160404-H	0.4	2.2	3						○	●	●							
	3QP-TPGW160408-H	0.8	1.9	3						○	●	●							

● : Line up

TP



Triangular Positive 11° without hole



IC : 6.35 mm
S : 3.18 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BX330	BX360
		RE	LE				Burr	Flank wear	Crater wear	Chipping		
Finishing	3QP-TPMN110302	0.2	2.3	3		○					●	●
	3QP-TPMN110304		2.2	3		○					●	●
	Q-TPGN110304	0.4	2.2	1		○					●	●
	3QP-TPMN110308		1.9	3		○					●	●
	Q-TPGN110308	0.8	2.2	1		○					●	●

● : Line up

TP



Triangular Positive 11° without hole



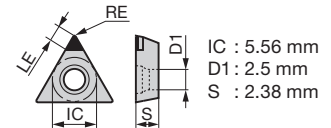
IC : 9.525 mm
S : 3.18 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BX330	BX360
		RE	LE				Burr	Flank wear	Crater wear	Chipping		
Finishing	3QP-TPMN160304	0.4	2.2	3		○					●	●
	Q-TPGN160304		2.3	1		○					●	●
	3QP-TPMN160308		1.9	3		○					●	●
	Q-TPGN160308	0.8	1.9	1		○					●	●

● : Line up

Reference pages : Edge preparation → CBN-6

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊗ : Heavy interrupted cutting



TP



Triangular Positive 11° with hole

[illegible]

● : Line up

TP



Triangular Positive 11° with hole

[illegible]

● : Line up

TP



Triangular Positive 11° with hole

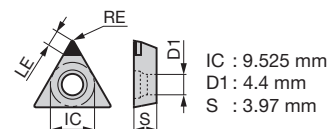
[illegible]

● : Line up



In.Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting

[illegible][illegible]

● : Line up

[illegible][illegible]

● : Line up

[illegible][illegible]

● : Line up



In.Toolholder

IC : 5.56 mm
D1 : 3.2 mm
S : 2.38 mm

[illegible]

Tungaloy's standard hole specification (ISO non-compliant)

● : Line up

[illegible]

Tungaloy's standard hole specification (ISO non-compliant)

● : Line up

[illegible]

Tungaloy's standard hole specification (ISO non-compliant)

● : Line up



IC : 9.525 mm
D1 : 4 mm
S : 3.18 mm

[illegible][illegible]

● : Line up

[illegible][illegible]

● : Line up



[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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● : Line up

[illegible]

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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● : Line up



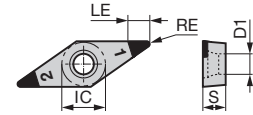
In Toolholder

Reference pages : Edge preparation → **CBN-6**

- : Continuous cutting
- : Light interrupted cutting
- : Heavy interrupted cutting

VB

**35° Rhombic
Positive 5°
with hole**



IC : 9.525 mm
D1 : 4.4 mm
S : 4.76 mm

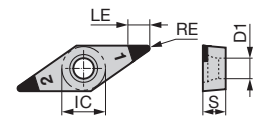
 35° Rhombic Positive 5° with hole		K	Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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● : Line up

VB with chipbreaker



**35° Rhombic
Positive 5°
with hole**



IC : 9.525 mm
D1 : 4.4 mm
S : 4.76 mm



35° Rhombic

Positive 5°

with hole

K

Cast iron

S

Superalloy

H

Hard material

Sintered metal

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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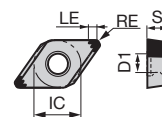
● : Line up



In.Toolholder

Reference pages : Edge preparation → CBN-6

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



IC : 6.35 mm
D1 : 2.7 mm
S : 3.18 mm

DX



55° Rhombic with hole

[illegible][illegible]

● : Line up

C

D

F

G

S

V



OTHERS

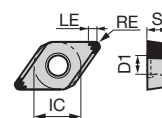
DX with chipbreaker



55° Rhombic with hole

[illegible][illegible]

● : Line up



IC : 6.35 mm
D1 : 2.7 mm
S : 3.18 mm



Ex Toolholder



In Toolholder

Reference pages : Edge preparation → **CBN-6**

[illegible]

● : Line up

[illegible]

● : Line up



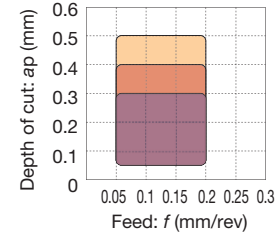
In.Toolholder

tungaloy.com
- ntkcuttingtools.com

External profiling of hardened steel**STR type
(1 corner)****Full radius type**

Profile insert with 3D chipbreaker that delivers excellent chip control during hard part turning.
CW = 3 - 5 mm

Note: This insert is not recommended for use in grooving applications.

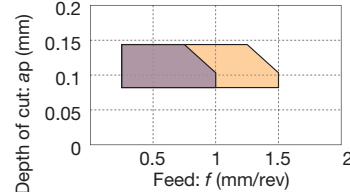
Standard feed and DoC

Groove width: CW (mm)
■ 3 ■ 4 ■ 5

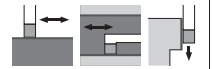
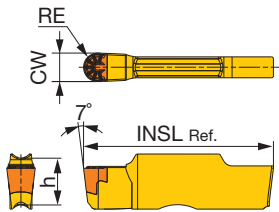
**High feed external/internal/face turning of hardened steel****STH type
(1 corner)****For high feed turning of hardened steel parts**

High efficiency machining using light D.O.C. and increased feeds
CW = 3, 5 mm

Note: This insert is not recommended for use in grooving applications.

Standard feed and DoC (for turning)

Groove width: CW (mm)
■ 3 ■ 5

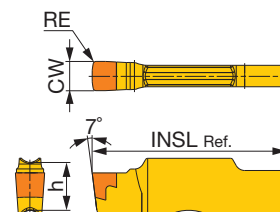
**INSERTS****STR****Profiling**

P	Steel			
M	Stainless			
K	Cast iron			
N	Non-ferrous			
S	Superalloys			
H	Hard materials	★		

★ : First choice

Designation	Seat size	CW±0.05	RE	CBN		INSL	h
				BXA10			
STR300-HP	3	3	1.5	●		20	5
STR400-HP	4	4	2	●		20	5
STR500-HP	5	5	2.5	●		20	5.5

● : Line up

STH**External and face turning**

P	Steel			
M	Stainless			
K	Cast iron			
N	Non-ferrous			
S	Superalloys			
H	Hard materials	★		

★ : First choice

Designation	Seat size	CW±0.025	RE	CBN		INSL	h
				BXA10			
STH300-SR	3	3	0.3	●		20	5
STH500-SR	5	5	0.3	●		25	5.5

● : Line up

STANDARD CUTTING CONDITIONS**STR**

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (m/min)
H	External profiling	> 50 HRC	First choice	BXA10	80 - 180

STH

ISO	Grade	CW	Application	Cutting speed Vc (m/min)	Depth of cut ap (mm)	Feed f (mm/rev)
H	BXA10	3	External turning	100 - 230	0.08 - 0.12	0.4 - 1
			Face turning	100 - 230	0.08 - 0.12	0.4 - 0.8
		5	External turning	100 - 230	0.08 - 0.12	0.5 - 1.5
			Face turning	100 - 230	0.08 - 0.12	0.5 - 0.8

CBN Grooving

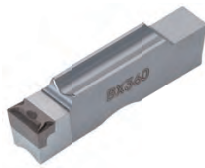
H Hard Materials

CHIPBREAKER GUIDE

TUNGCUT

External/internal/face grooving and turning of hardened steel

STX type
(1 corner)



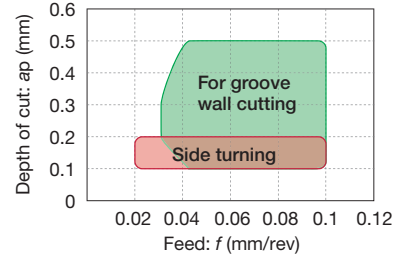
CBN-62

For hardened steel cutting

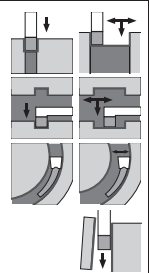
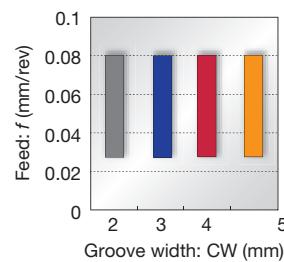
- Grooving insert with 3D chipbreaker for hardened steel parts. Provides excellent chip control
- High tolerance width for finishing
CW = 2 - 5 mm
(Tol. : ± 0.025 mm)

Standard feed and DoC

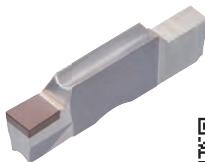
For groove wall cutting and side turning



For grooving



SGN type
(1 corner)

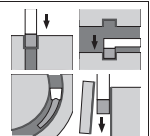
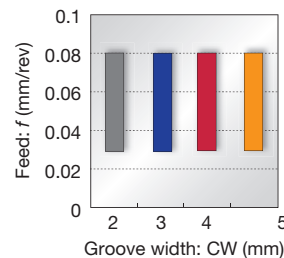


CBN-62

For hardened steel cutting

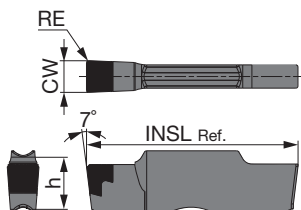
- Optimum cutting edge shape for grooving of hardened steels
- High tolerance width for finishing
CW = 2 - 5 mm
(Tol. : ± 0.025 mm)

Standard feed



CER
Turning
Superalloys
Grooving
Milling
Turning
Cast Iron
Grooving
Milling
Hardened Materials
Turning
CBN
Hardened Materials
Turning
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Non-Ferrous Materials
Turning
Grooving
Milling

STX

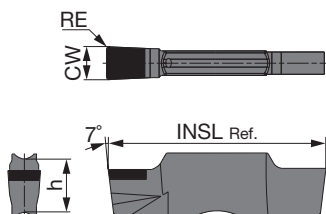


P	Steel				
M	Stainless				
K	Cast iron				
N	Non-ferrous				
S	Superalloys				
H	Hard materials	★			

★ : First choice

Designation	Seat size	CW ± 0.025	RE	CBN						INSL	h
				BX360							
STX200-020	2	2	0.2	●						20	5
STX300-020	3	3	0.2	●						20	5
STX400-020	4	4	0.2	●						20	5
STX500-020	5	5	0.2	●						25	5.5

SGN



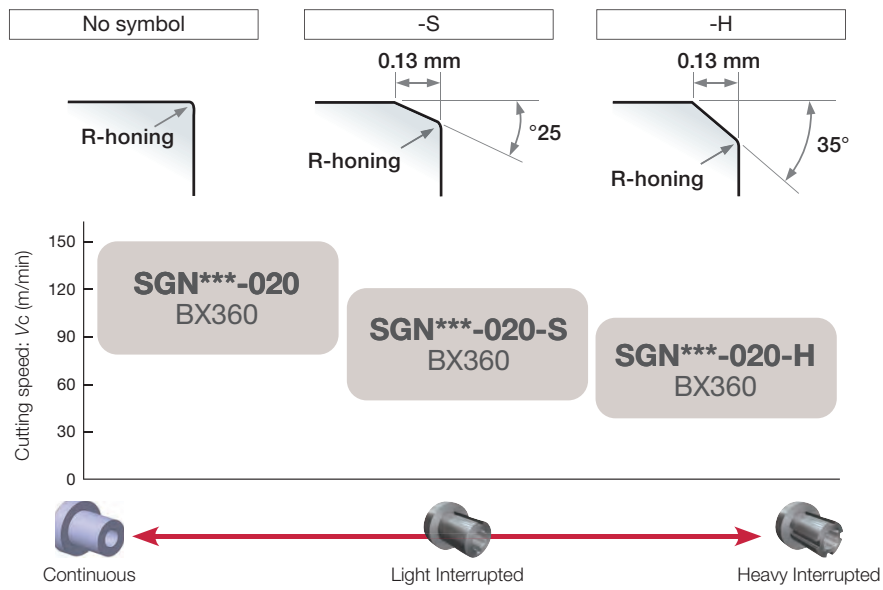
P	Steel				
M	Stainless				
K	Cast iron				
N	Non-ferrous				
S	Superalloys				
H	Hard materials	★			

★ : First choice

Designation	Seat size	CW±0.025	RE	CBN										INSL	h	Condition		
				BX360													Continuous	Light interrupted
SGN200-020	2	2	0.2	●										20	5	○		
SGN200-020-S	2	2	0.2	●										20	5		○	
SGN200-020-H	2	2	0.2	●										20	5			○
SGN300-020	3	3	0.2	●										20	5	○		
SGN300-020-S	3	3	0.2	●										20	5		○	
SGN300-020-H	3	3	0.2	●										20	5			○
SGN400-020	4	4	0.2	●										20	5	○		
SGN400-020-S	4	4	0.2	●										20	5		○	
SGN400-020-H	4	4	0.2	●										20	5			○
SGN500-020-S	5	5	0.2	●										25	5.5		○	
SGN500-020-H	5	5	0.2	●										25	5.5			○

CBN-62

Edge preparations



STANDARD CUTTING CONDITIONS

STX

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (m/min)
H	External grooving	> 50 HRC	First choice	BX360	80 - 150
	Groove wall cutting				
	Side turning				
	Internal grooving	> 50 HRC	First choice	BX360	80 - 120
	Face grooving				

SGN

ISO	Grade	Edge preparation	Workpiece condition	Cutting speed Vc (m/min)	Feed f (mm/rev)
H	BX360	No symbol	Continuous	80 - 150	0.03 - 0.08
		-S	Light interrupted	50 - 120	0.03 - 0.08
		-H	Heavy interrupted	40 - 100	0.03 - 0.06

CER

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Turning

Hardened Materials

Turning

Grooving

Cast Iron

Turning

Milling

Turning

Superalloys

Turning

Grooving

Milling

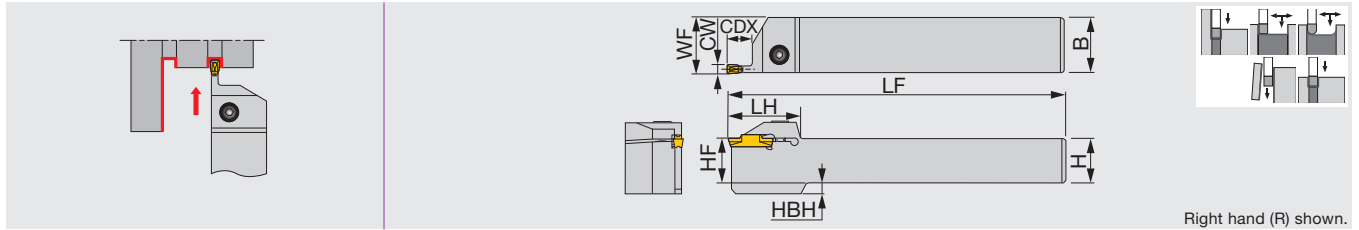
Non-Ferrous Materials

Turning

Grooving

Milling

External grooving, parting and turning toolholder



Designation	CW	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	HBH	Torque*
CTER/L1616-2T08	2	2	8	16	16	110	33	16	16.1	4	5
CTER/L2020-2T08	2	2	8	20	20	125	33	20	20.1	-	5
CTER/L2525-2T08	2	2	8	25	25	150	33	25	25.1	-	5
CTER/L1616-2T12	2	2	12	16	16	110	32	16	16.1	4	5
CTER/L2020-2T12	2	2	12	20	20	125	32	20	20.1	-	5
CTER/L2525-2T12	2	2	12	25	25	150	32	25	25.1	-	5
CTER/L1616-2T17	2	2	17	16	16	110	37	16	16.1	4	5
CTER/L2020-2T17	2	2	17	20	20	125	37	20	20.1	-	5
CTER/L2525-2T17	2	2	17	25	25	150	37	25	25.1	-	5
CTER/L2525-2T20	2	2	20	25	25	150	38.5	25	25.1	-	5
CTER/L1616-3T09	3	3	9	16	16	110	32	16	16.3	4	5
CTER/L2020-3T09	3	3	9	20	20	125	32	20	20.3	-	5
CTER/L2525-3T09	3	3	9	25	25	150	32	25	25.3	-	5
CTER/L1616-3T12	3	3	12	16	16	110	32	16	16.3	4	5
CTER/L2020-3T12	3	3	12	20	20	125	32	20	20.3	-	5
CTER/L2525-3T12	3	3	12	25	25	150	32	25	25.3	-	5
CTER/L1616-3T20	3	3	20	16	16	110	38.5	16	16.3	4	5
CTER/L2020-3T20	3	3	20	20	20	125	38.5	20	20.3	-	5
CTER/L2525-3T20	3	3	20	25	25	150	38.5	25	25.3	-	5
CTER/L2525-3T25	3	3	25	25	25	150	44.5	25	25.3	-	5
CTER/L1616-4T10	4	4	10	16	16	110	32	16	16.5	4	8.5
CTER/L2020-4T10	4	4	10	20	20	125	32	20	20.5	-	8.5
CTER/L2525-4T10	4	4	10	25	25	150	32	25	25.5	-	8.5
CTER/L2020-4T15	4	4	15	20	20	125	33	20	20.5	-	8.5
CTER/L2525-4T15	4	4	15	25	25	150	33	25	25.5	-	8.5
CTER/L1616-4T25	4	4	25	16	16	110	45	16	16.5	4	8.5
CTER/L2020-4T25	4	4	25	20	20	125	45	20	20.5	-	8.5
CTER/L2525-4T25	4	4	25	25	25	150	45	25	25.5	-	8.5
CTER/L3232-4T25	4	4	25	32	32	170	45	32	32.5	-	8.5
CTER/L2020-5T12	5	5	12	20	20	125	37	20	20.6	-	8.5
CTER/L2525-5T12	5	5	12	25	25	150	37	25	25.6	-	8.5
CTER/L2525-5T17	5	5	17	25	25	150	37	25	25.6	-	8.5
CTER/L2525-5T20	5	5	20	25	25	150	37	25	25.6	-	8.5
CTER/L2525-5T32	5	5	32	25	25	150	56	25	25.6	-	8.5
CTER/L3232-5T32	5	5	32	32	32	170	56	32	32.6	-	8.5
CTER/L2020-6T12	6	6	12	20	20	125	37	20	20.6	-	12
CTER/L2525-6T12	6	6	12	25	25	150	37	25	25.6	7	12
CTER/L2525-6T16	6	6	16	25	25	150	39	25	25.6	7	12
CTER/L2525-6T20	6	6	20	25	25	150	41	25	25.6	7	12
CTER/L2525-6T25	6	6	25	25	25	150	47	25	25.6	7	12
CTER/L2525-6T32	6	6	32	25	25	150	56	25	25.6	7	12
CTER/L3232-6T32	6	6	32	32	32	170	56	32	32.6	-	12
CTER/L2525-8T16	8	8	16	25	25	150	47	25	26.1	7	12
CTER/L2525-8T25	8	8	25	25	25	150	47	25	26.1	7	12
CTER/L3232-8T25	8	8	25	32	32	170	47	32	33.1	-	12
CTER/L3232-8T32	8	8	32	32	32	170	56	32	33.1	-	12
CTER/L2525-8T36	8	8	36	25	25	150	60	25	26.1	7	12
CTER/L3232-8T36	8	8	36	32	32	170	60	32	33.1	-	12

When groove depth is larger than (insert length - 1.5 mm), please use 1-cornered insert.

(1) "WF" value is calculated with groove width "CW" shown in the table.

Torque*: Recommended clamping torque (N·m)

SPARE PARTS



Designation	Clamping screw	Wrench
CTER/L1616-2T08	CM5X0.8X16-A	P-4
CTER/L2020-2T08	CM5X0.8X20-A	P-4
CTER/L2525-2T08	CM5X0.8X25-A	P-4
CTER/L1616-2T12	CM5X0.8X16-A	P-4
CTER/L2020-2T12	CM5X0.8X20-A	P-4
CTER/L2525-2T12	CM5X0.8X25-A	P-4
CTER/L1616-2T17	CM5X0.8X16-A	P-4
CTER/L2020-2T17	CM5X0.8X20-A	P-4
CTER/L2525-2T17	CM5X0.8X25-A	P-4
CTER/L2525-2T20	CM5X0.8X25-A	P-4
CTER/L1616-3T09	CM5X0.8X16-A	P-4
CTER/L2020-3T09	CM5X0.8X20-A	P-4
CTER/L2525-3T09	CM5X0.8X25-A	P-4
CTER/L1616-3T12	CM5X0.8X16-A	P-4
CTER/L2020-3T12	CM5X0.8X20-A	P-4
CTER/L2525-3T12	CM5X0.8X25-A	P-4
CTER/L1616-3T20	CM5X0.8X16-A	P-4
CTER/L2020-3T20	CM5X0.8X20-A	P-4
CTER/L2525-3T20	CM5X0.8X25-A	P-4
CTER/L2525-3T25	CM5X0.8X25-A	P-4
CTER/L1616-4T10	CM6X1X16-A	P-5
CTER/L2020-4T10	CM6X1X20-A	P-5
CTER/L2525-4T10	CM6X1X25-A	P-5
CTER/L2020-4T15	CM6X1X20-A	P-5
CTER/L2525-4T15	CM6X1X25-A	P-5
CTER/L1616-4T25	CM6X1X16-A	P-5
CTER/L2020-4T25	CM6X1X20-A	P-5
CTER/L2525-4T25	CM6X1X25-A	P-5
CTER/L3232-4T25	CM6X1X25-A	P-5
CTER/L2020-5T12	CM6X1X20-A	P-5
CTER/L2525-5T12	CM6X1X25-A	P-5
CTER/L2525-5T17	CM6X1X25-A	P-5
CTER/L2525-5T20	CM6X1X25-A	P-5
CTER/L2525-5T32	CM6X1X25-A	P-5
CTER/L3232-5T32	CM6X1X25-A	P-5
CTER/L2020-6T12	CM8X1.25X20-A	P-6
CTER/L2525-6T12	CM8X1.25X25-A	P-6
CTER/L2525-6T16	CM8X1.25X25-A	P-6
CTER/L2525-6T20	CM8X1.25X25-A	P-6
CTER/L2525-6T25	CM8X1.25X25-A	P-6
CTER/L2525-6T32	CM8X1.25X25-A	P-6
CTER/L3232-6T32	CM8X1.25X25-A	P-6
CTER/L2525-8T16	CM8X1.25X25-A	P-6
CTER/L2525-8T25	CM8X1.25X25-A	P-6
CTER/L3232-8T25	CM8X1.25X25-A	P-6
CTER/L3232-8T32	CM8X1.25X25-A	P-6
CTER/L2525-8T36	CM8X1.25X25-A	P-6
CTER/L3232-8T36	CM8X1.25X25-A	P-6

CER

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

CBN

Hardened Materials
Turning

Grooving

Cast Iron
Turning

Milling

Superalloys
Turning

Sintered metal
Turning

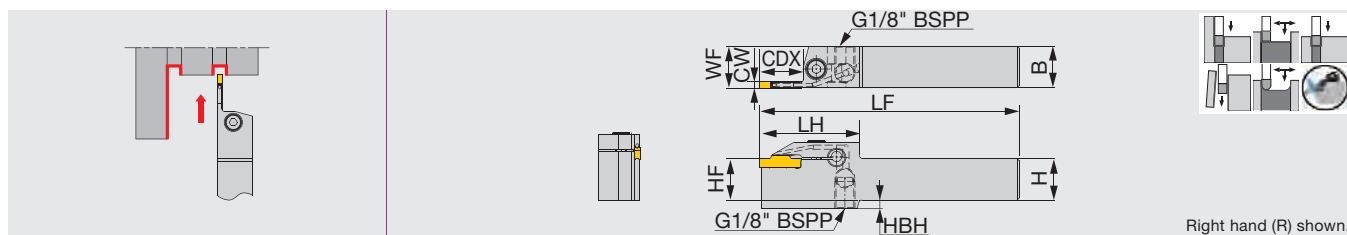
PCD

Non-Ferrous Materials
Turning

Grooving

Milling

External grooving and parting toolholder, with high pressure coolant capability



Designation	CW	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	HBH	Torque*
CTER/L2020-2T17-CHP	2	2	17	20	20	125	45	20	20.1	4	5.5
CTER/L2525-2T17-CHP	2	2	17	25	25	150	45	25	25.1	-	5.5
CTER/L2020-3T20-CHP	3	3	20	20	20	125	48	20	20.3	4	5.5
CTER/L2525-3T20-CHP	3	3	20	25	25	150	48	25	25.3	-	5.5
CTER/L2525-3T25-CHP	3	3	25	25	25	150	51	25	25.3	-	5.5
CTER/L2525-4T25-CHP	4	4	25	25	25	150	55	25	25.5	-	8
CTER/L2525-5T20-CHP	5	5	20	25	25	150	49	25	25.58	-	8
CTER/L2525-6T20-CHP	6	6	20	25	25	150	52	25	25.58	7	12

When groove depth is larger than (insert length - 1.5 mm), please use 1-cornered insert.

(1) "WF" value is calculated with groove width "CW" shown in the table.

Torque*: Recommended clamping torque (N·m)

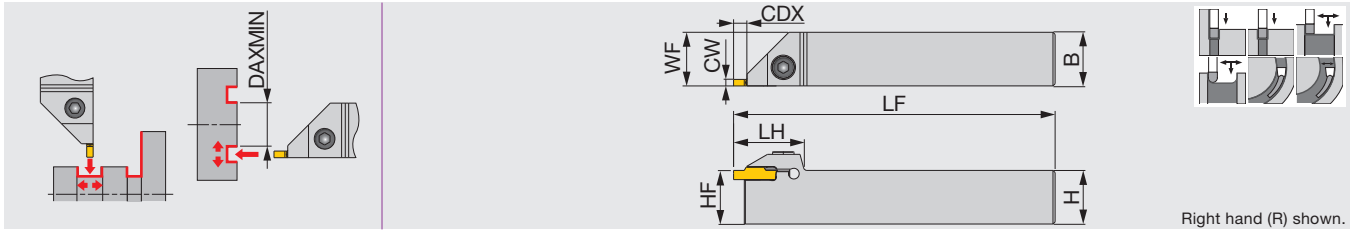
SPARE PARTS



Designation	Clamping screw	Wrench
CTER/L2020-2T17-CHP	CM5x0.8x20-A	P-4
CTER/L2525-2T17-CHP	CM5x0.8x25-A	P-4
CTER/L2020-3T20-CHP	CM5x0.8x20-A	P-4
CTER/L2525-3T20-CHP	CM5x0.8x25-A	P-4
CTER/L2525-3T25-CHP	CM5x0.8x25-A	P-4
CTER/L2525-4T25-CHP	CM6x1x16-A	P-5
CTER/L2525-5T20-CHP	CM6x1x16-A	P-5
CTER/L2525-6T20-CHP	CM8x1.25x20-A	P-6

CTEFR/L

External face grooving and turning toolholder



Designation	CW	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	Torque*
CTEFR/L2020-4T04	4	2, 3, 4	4.8	20	20	125	33	20	20.5	8.5
CTEFR/L2525-4T04	4	2, 3, 4	4.8	25	25	150	33	25	25.5	8.5
CTEFR/L2020-6T04	6	5, 6	4.8	20	20	125	37	20	20.6	8.5
CTEFR/L2525-6T04	6	5, 6	4.8	25	25	150	37	25	25.6	8.5

Use the right-hand insert for the right-hand holder with DTF insert.

(1) "WF" value is calculated with groove width "CW" shown in the table.

Torque*: Recommended clamping torque (N·m)

SPARE PARTS



Designation	Clamping screw	Wrench
CTEFR/L2020-4T04	CM6X1X20-A	P-5
CTEFR/L2525-4T04	CM6X1X25-A	P-5
CTEFR/L2020-6T04	CM6X1X20-A	P-5
CTEFR/L2525-6T04	CM6X1X25-A	P-5

Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DGM / DGS / SGN / DGL	2	295
DGM / DGS / SGN / DGL	3	92
DGM / DGS / SGN / DGL	4	37
DGM / DGS / SGN / DGL	5	60
DGM / DGS / SGN / DGL	6	57
DTX / DTM / DTR	2	295
DTE / DGG / DTM	3	62
DTE / DGG / DTM	4	42
DTE / DGG / DTM	5	64
DTE / DGG / DTM	6	61

Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DTR	3	44
DTR	4	32
DTR	5	48
DTR	6	48
DTX	3	22
DTX	4	20
DTX	5	20
DTX	6	23
DTF	3	20
DTF	4	20

CER

Turning

Superalloys

Grooving

Milling

Cast Iron

Turning

Grooving

Milling

Hardened Materials

Turning

CBN

Hardened Materials

Turning

Grooving

Cast Iron

Turning

Milling

Superalloys

Turning

Sintered metal

Turning

PCD

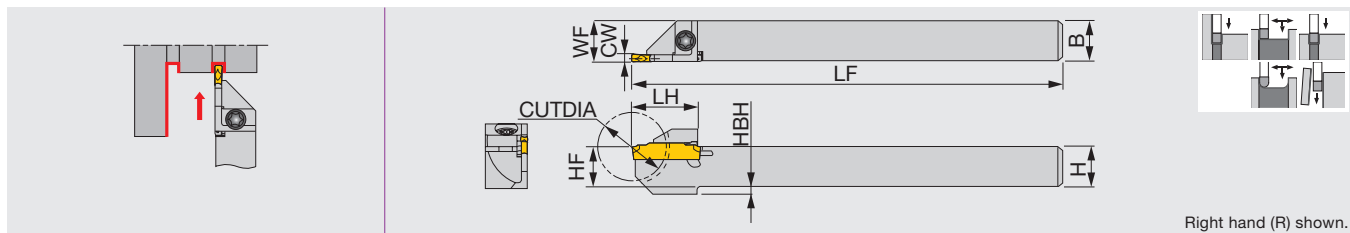
Non-Ferrous Materials

Turning

Grooving

Milling

External grooving and parting toolholder, for Swiss lathes

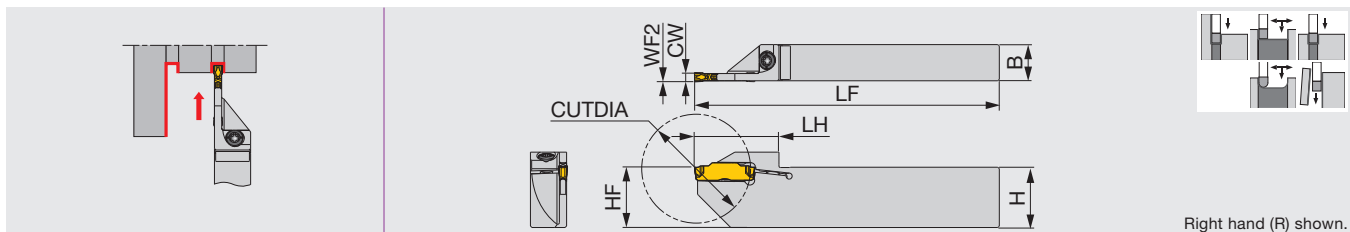


Designation	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF ⁽¹⁾	HBH	Torque*
JCTER/L1010X1.4T10	1.4	1	20	10	10	120	18	10	10.2	-	3
JCTER/L1212F1.4T12	1.4	1	24	12	12	85	19.5	12	12.2	-	3
JCTER/L1212X1.4T12	1.4	1	24	12	12	120	19.5	12	12.2	-	3
JCTER/L1414-1.4T12	1.4	1	24	14	14	125	19.5	14	14.2	-	3
JCTER/L1616X1.4T16	1.4	1	32	16	16	120	24	16	16.2	-	3
JCTER/L1010X2T10	2	2	20	10	10	120	19	10	10.1	2	3
JCTER/L1212F2T12	2	2	24	12	12	85	19	12	12.1	2	3
JCTER/L1212X2T12	2	2	24	12	12	120	19	12	12.1	2	3
JCTER/L1414-2T12	2	2	24	14	14	125	19	14	14.1	-	3
JCTER/L1616X2T16	2	2	32	16	16	120	24	16	16.1	-	3
JCTER/L1212F3T12	3	3	24	12	12	85	19	12	12.3	2	3
JCTER/L1212X3T12	3	3	24	12	12	120	19	12	12.3	2	3
JCTER/L1616X3T16	3	3	32	16	16	120	24	16	16.3	-	3
JCTER/L2020H3T16	3	3	32	20	20	100	24	20	20.3	-	3

(1) "WF" value is calculated with groove width "CW" shown in the table.
 Torque*: Recommended clamping torque (N·m)

JCTER/L2012

External grooving and parting toolholder, for Swiss lathes, with 20 mm shank height



Designation	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	Torque*
JCTER/L2012H2T18	2	2	36	20	12	100	25	20	0.1	3
JCTER/L2012H3T21	3	3	42	20	12	100	28	20	0.3	3

(1) "WF2" value is calculated with groove width "CW" shown in the table.
 Torque*: Recommended clamping torque (N·m)

SPARE PARTS

Designation	Clamping screw	Wrench
JCTER/L...	CSHB-4-A	T-15F



Direct connection



Iron
moving

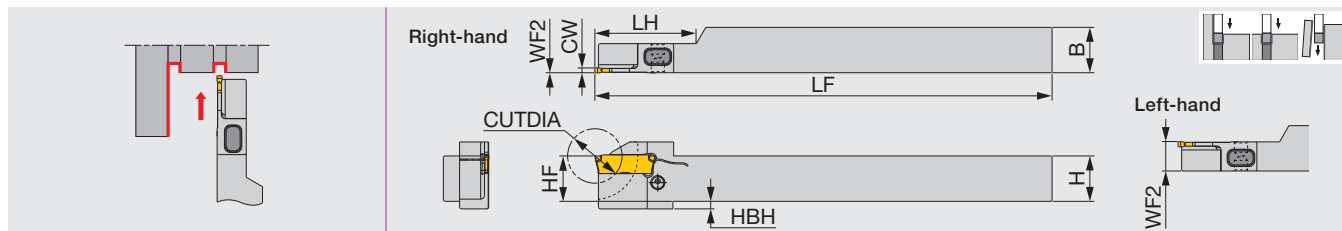


Hardened Materials

CBN

CBN-69

External grooving and parting toolholder, for Swiss lathes (for sub spindle)



Designation	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	HBH	Torque*
JTTER/L1010H1.2D12-S	1.2	0.9	12	10	10	100	22.8	10	0/7.7	-	1.5
JTTER/L1212F1.2D16-S ⁽²⁾	1.2	0.9	16	12	12	85	22.8	12	0	-	1.5
JTTER/L1212X1.2D16-S	1.2	0.9	16	12	12	120	26.8	12	0/7.7	-	1.5
JTTER/L1212X1.2D20-S	1.2	0.9	20	12	12	120	26.8	12	0/7.7	2	1.5
JTTER/L1616X1.2D20-S	1.2	0.9	20	16	16	120	26.8	16	0/7.7	-	1.5

(1) "WF2" value is calculated with groove width "CW" shown in the table. The first value before "/" indicates the WF2 for the right-hand holder and the second value after "/" for the left-hand holder.

(2) No clamping screw from the insert side.

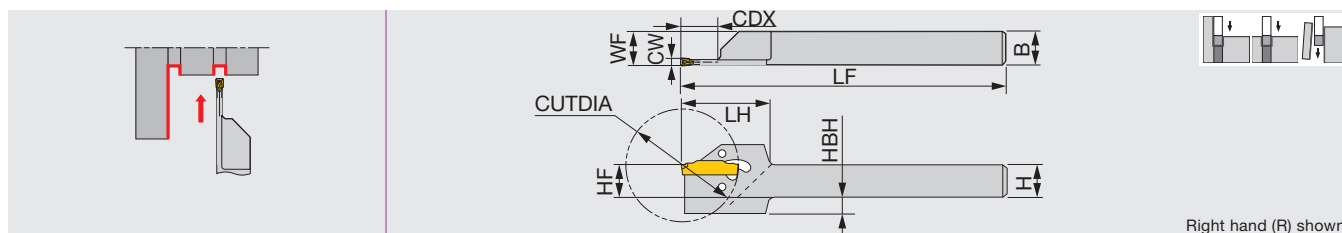
Torque*: Recommended clamping torque (N·m)

SPARE PARTS

Designation	Clamping screw	Clamping pin	Wrench
JTTER/L**S	SSM3.5x0.35	PIN-SL-TC	P-2F

CGER/L

External deep grooving and parting toolholder, for Swiss lathes



Designation	CW	Seat size	CUTDIA ⁽¹⁾	CDX	H	B	LF	LH	HF	WF ⁽²⁾	HBH
CGER/L2020-1.4T14	1.4	1	29/29	9.7	20	20	125	31	20	20.2	-
CGER/L1212-2T17	2	2	35/35	11.8	12	12	150	31	12	12.1	6
CGER/L1616-2T17	2	2	35/35	11.8	16	16	150	31	16	16.1	2
CGER/L2020-2T17	2	2	35/35	9.8	20	20	125	31	20	20.1	-
CGER/L1212-3T19	3	3	38/40	12	12	12	150	31	12	12.3	6
CGER/L1616-3T19	3	3	38/45	14.9	16	16	150	31	16	16.3	2
CGER/L2020-3T19	3	3	38/45	13.2	20	20	125	31	20	20.3	-
CGER/L2020-4T19	4	4	38/55	20.3	20	20	125	33	20	20.4	-

Wrench (CRW**) is not included. Please order it separately. Insert is clamped by the elastic deformation of the upper jaw.

(1) DG*/SG* maximum parting diameter will depend on the insert.

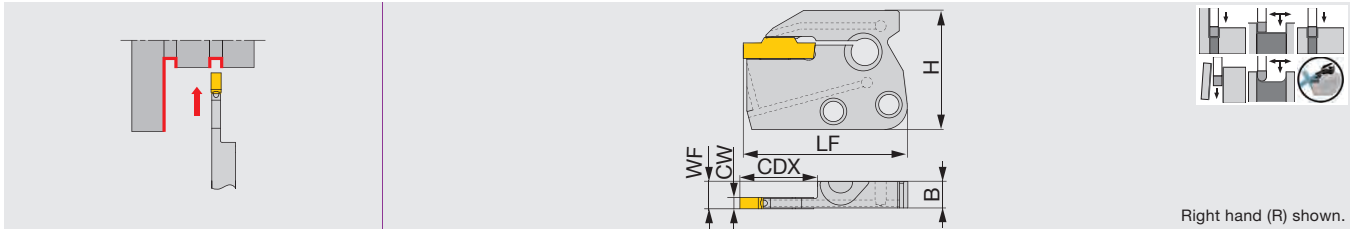
(2) "WF" value is calculated with groove width "CW" shown in the table.

SPARE PARTS

Designation	Wrench (Option)
CGER/L2020-1.4T14	CRW23
CGER/L****-2T17 - 4T19	CRW33

CAER/L-CHP

External grooving and parting adapter, with high pressure coolant capability

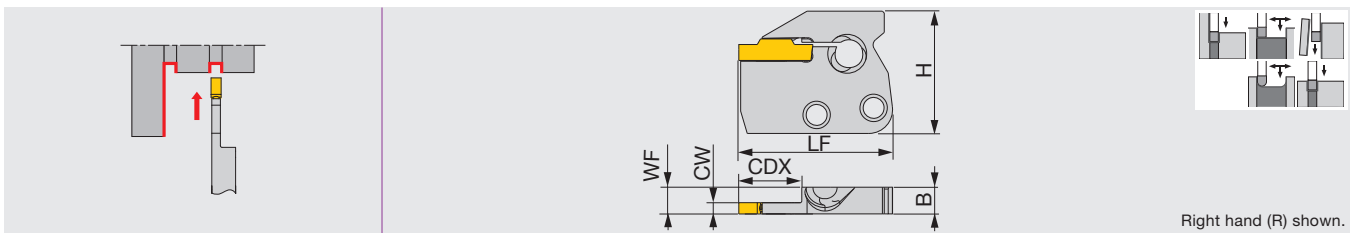


Designation	CW	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAER/L-2T16-CHP	2	2	16	33	7.2	41.5	7.3
CAER/L-2T20-CHP	2	2	20	33	7.2	45.5	7.3
CAER/L-3T16-CHP	3	3	16	33	7.2	41.5	7.4
CAER/L-3T20-CHP	3	3	20	33	7.2	45.5	7.5
CAER/L-4T16-CHP	4	4	16	33	7.2	41.5	7.7
CAER/L-4T20-CHP	4	4	20	33	7.2	45.5	7.7
CAER/L-5T20-CHP	5	5	20	33	7.2	46.3	7.8
CAER/L-6T20-CHP	6	6	20	33	7.2	46.3	7.8
CAER/L-8T25-CHP	8	8	25	33	7.2	51.1	8.3

When groove depth is larger than (insert length - 1.5 mm), please use 1-cornered insert.
(1) WF is calculated with the groove width (CW) in the above table.

CAER/L-MD

External grooving and parting adapter

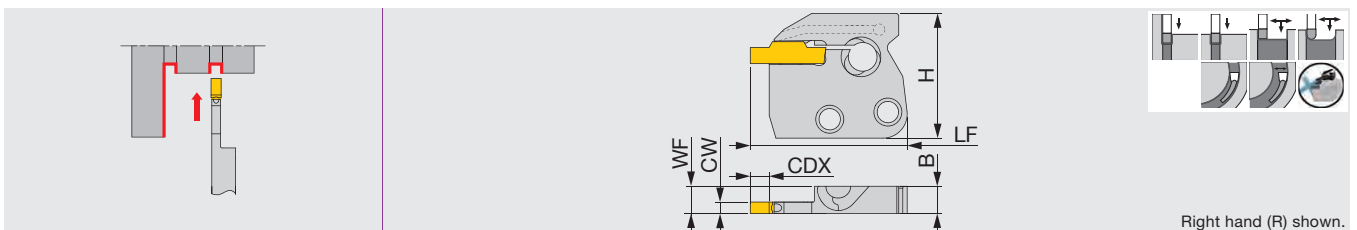


Designation	CW	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAER/L-2T16-MD	2	2	16	33	7.2	41.5	7.3
CAER/L-3T16-MD	3	3	16	33	7.2	41.5	7.4
CAER/L-4T16-MD	4	4	16	33	7.2	41.5	7.7
CAER/L-5T20-MD	5	5	20	33	7.2	46.3	7.8
CAER/L-6T20-MD	6	6	20	33	7.2	46.3	7.8
CAER/L-8T25-MD	8	8	25	33	7.2	51.1	8.3

(1) WF is calculated with the groove width (CW) in the above table.

CAEFR/L-CHP

Face and external grooving adapter, with high pressure coolant capability



Designation	CW	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAEFR/L-4T04-CHP	4	2,3,4	4.8	33	7.2	41.5	7.7
CAEFR/L-6T04-CHP	6	5,6	4.8	33	7.2	46.3	7.8

Use the right-hand insert for the right-hand holder with DTF insert.
(1) "WF" value is calculated with groove width "CW" shown in the table.

Turning

Grooving

Milling

Turning

Grooving

Milling

Hardened Materials

Turning

Grooving

Hardened Materials

Turning

Grooving

Turning

Grooving

Turning

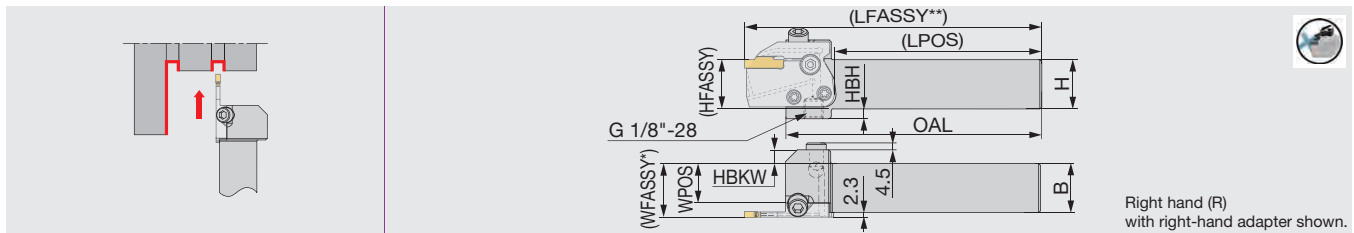
PCD

Turning

Grooving

Milling

Shank for adapter, with high pressure coolant capability



Designation	H	B	OAL	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque*
CHSR/L2020-CHP	20	20	130	105.5	15.1	12	20	10	CAE*R/L**-CHP, -MD	6.5
CHSR/L2525-CHP	25	25	130	105.5	20.1	7	25	5	CAE*R/L**-CHP, -MD	6.5

WFASSY* : Shank (WPOS) + adapter (WF)

LFASSY** : Shank (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Torque*: Recommended clamping torque (N·m)

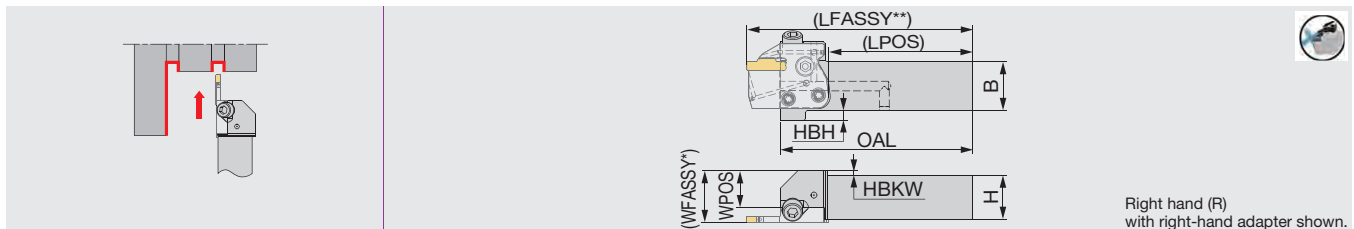
Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

CHSR/L-CHP-MC

Direct connection

Shank for adapter, with high pressure coolant capability



Designation	H	B	OAL	LPOS	WPOS	HBKW	HBH	Adapter (Option)	Torque*
CHSR/L2020-CHP-MC	20	20	98	73.5	14	6	10	CAE*R/L**-CHP, -MD	6.5
CHSR/L2525-CHP-MC	25	25	98	73.5	19	-	5	CAE*R/L**-CHP, -MD	6.5

WFASSY* : Shank (WPOS) + adapter (WF)

LFASSY** : Shank (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Torque*: Recommended clamping torque (N·m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

SPARE PARTS

Designation	Clamping screw 1	Wrench 1	Clamping screw 2	Clamping screw 3	Wrench 2	O-ring	Plug
CHSR/L**-CHP	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW5.0	OR 5X1N	PLUGG1/8ISO1179
CHSR/L**-CHP-MC	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW5.0	OR 5X1N	-

Recommended clamping torque (N·m)

Clamping screw	Torque (N·m)
SR M5-04451	2.5
SR M6X12DIN6912	6.5
SR M6X20-XT	6.5

Combination of adapter and shank

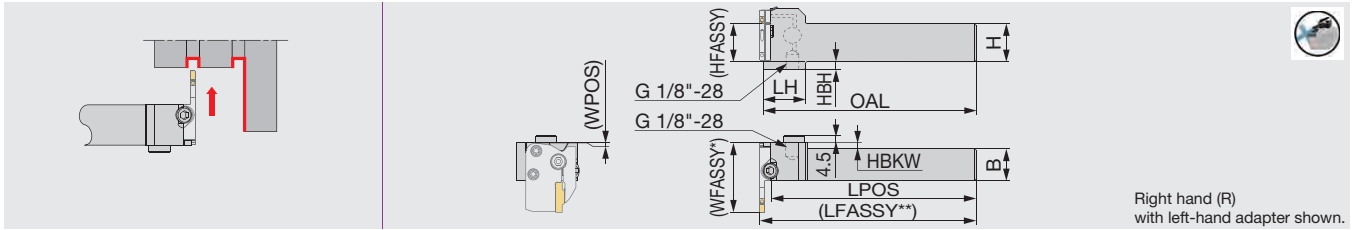
Shank	External grooving adapter		Face grooving adapter		External and face grooving adapter	
	CAER**-CHP, -MD	CAEL**-CHP, -MD	CAFR**-CHP	CAFL**-CHP	CAEFR**-CHP	CAEFL**-CHP
CHSR**-CHP (-MC)	●			●	●	
CHSL**-CHP (-MC)		●	●			●

● : Corresponding

CHFVR/L-CHP

Tube connection

Shank for perpendicularly-mounted adapter, with high pressure coolant capability



Right hand (R)
with left-hand adapter shown.

Designation	H	B	OAL	LH	LPOS	WPOS	HBKW	HFASS	HBH	Adapter (Option)	Torque*
CHFVR/L2020-CHP	20	20	140	28	135.1	0.5	5	20	10	CAE*L/R**-CHP, -MD	6.5
CHFVR/L2525-CHP	25	25	140	28	135.1	0.5	0	25	5	CAE*L/R**-CHP, -MD	6.5

WFASS* : Shank (WPOS) + adapter (LF)

LFASS** : Shank (LPOS) + adapter (WF)

Depend on the adapter type, the value of LFASS or WFASS may change.

Torque*: Recommended clamping torque (N·m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

SPARE PARTS

Designation	Clamping screw 1	Wrench 1	Clamping screw 2	Clamping screw 3	Wrench 2	O-ring	Plug
CHFVR/L...	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW5.0	OR 5X1N	PLUGG1/8ISO1179

Recommended clamping torque (N·m)

Clamping screw	Torque (N·m)
SR M5-04451	2.5
SR M6X12DIN6912	6.5
SR M6X20-XT	6.5

Combination of adapter and shank

Shank	External grooving adapter		Face grooving adapter		External and face grooving adapter	
	CAER**-CHP, -MD	CAEL**-CHP, -MD	CAFR**-CHP	CAFL**-CHP	CAEFR**-CHP	CAEFL**-CHP
CHFVR**-CHP		●	●			●
CHFVL**-CHP	●			●	●	

● : Corresponding

CER

Turning

Superalloys

Grooving

Milling

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Turning

Hardened Materials

Grooving

Cast Iron

Turning

Superalloys

Grooving

Sintered metal

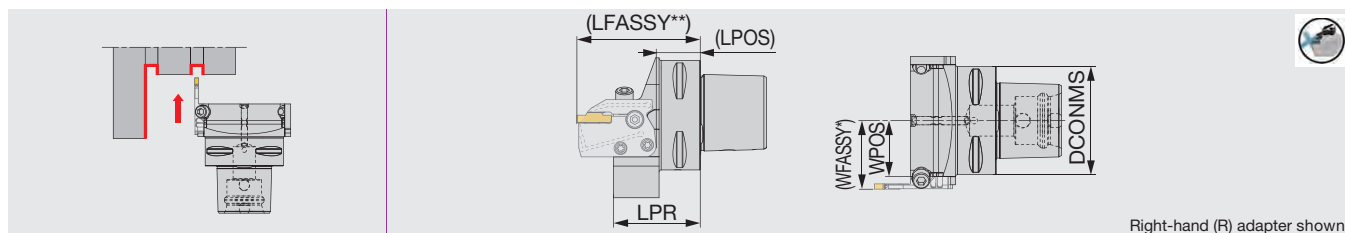
Turning

PCD

Non-Ferrous Materials

Milling

Toolholder with TungCap connection, for adapter, with high pressure coolant capability



Right-hand (R) adapter shown.

Designation	DCONMS	LPR	LPOS	WPOS	Adapter (Option)	Torque*
C3CHSN19045-CHP	32	45	17.5	18.5	CAE*R/L**-CHP, -MD	6.5
C4CHSN21047-CHP	40	46.5	21.5	21	CAE*R/L**-CHP, -MD	6.5
C5CHSN26047-CHP	50	47	22.5	26	CAE*R/L**-CHP, -MD	6.5
C6CHSN33050-CHP	63	50	24.5	32.5	CAE*R/L**-CHP, -MD	6.5

WFASSY* : Toolholder (WPOS) + adapter (WF)

LFASSY** : Toolholder (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

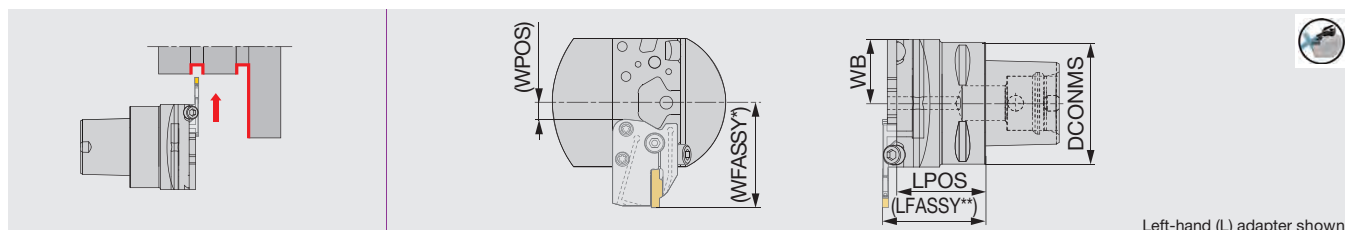
Torque*: Recommended clamping torque (N·m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

C*CHFVN-CHP

Toolholder with TungCap connection, for perpendicularly-mounted adapter, with high pressure coolant capability



Left-hand (L) adapter shown.

Designation	DCONMS	LPOS	WB	WPOS	Adapter (Option)	Torque*
C3CHFVN26040-CHP	32	40	26	1.5	CAE*R/L**-CHP, -MD	6.5
C4CHFVN26046-CHP	40	46	26	1.5	CAE*R/L**-CHP, -MD	6.5
C5CHFVN26046-CHP	50	46	26	1.5	CAE*R/L**-CHP, -MD	6.5
C6CHFVN33046-CHP	63	46	33	8.5	CAE*R/L**-CHP, -MD	6.5

WFASSY* : Toolholder (WPOS) + adapter (LF)

LFASSY** : Toolholder (LPOS) + adapter (WF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Torque*: Recommended clamping torque (N·m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

SPARE PARTS

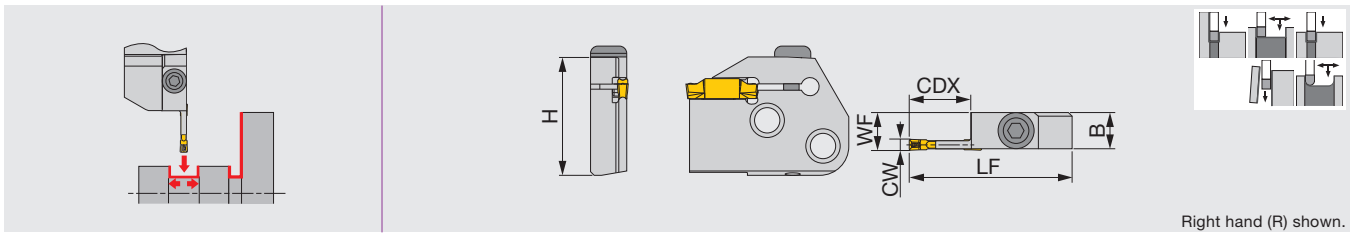
Designation	Clamping screw 1	Wrench 1	Clamping screw 2	Clamping screw 3	Wrench 2	O-ring
C*CH**N**-CHP	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW5.0	OR 5X1N

Recommended clamping torque (N·m)

Clamping screw	Torque (N·m)
SR M5-04451	2.5
SR M6X12DIN6912	6.5
SR M6X20-XT	6.5

CAER/L

External grooving, parting and turning adapter



Designation	CW	Seat size	CDX	H	B	LF	WF	Torque*
CAER/L-3T16	3	3	16	32.7	10	45	10.4	5
CAER/L-4T16	4	4	16	32.7	10	45	10.5	5
CAER/L-5T20	5	5	20	32.7	10	49	10.5	5
CAER/L-6T20	6	6	20	32.7	10	49	10.5	5

Torque*: Recommended clamping torque (N·m)

Not compatible with TungModularSystem

When groove depth is larger than insert length - 1.5 mm, please use 1-cornered insert.

SPARE PARTS

Designation	Clamping screw	Wrench
CAER/L...	BHM6-20-A	P-4

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

CBN

Hardened Materials
Turning

Grooving

Cast Iron
Turning

Milling

Superalloys
Turning

Sintered metal
Turning

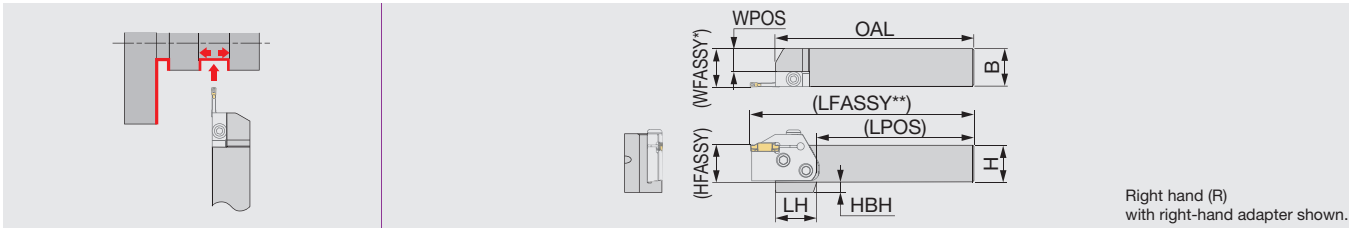
PCD

Non-Ferrous Materials
Turning

Grooving

Milling

Shank for adapter

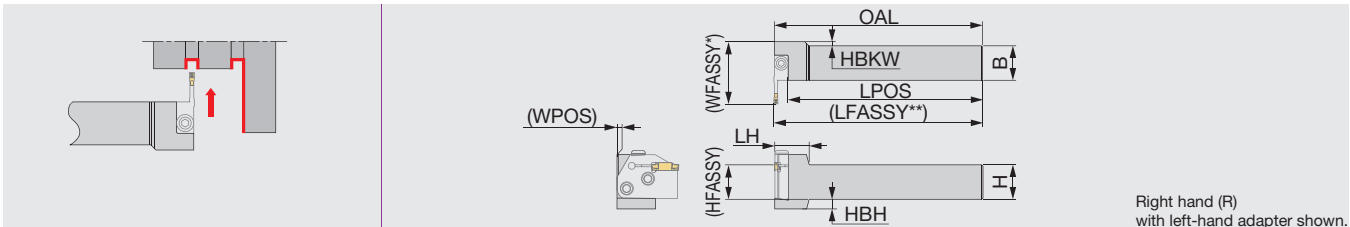


Designation	H	B	OAL	LPOS	LH	WPOS	HFASSY	HBH	Adapter (Option)
CHSR/L2020	20	20	133	105	35	10	20	12	CAER/L...
CHSR/L2525	25	25	133	105	28	15	25	7	CAER/L...
CHSR/L3232	32	32	153	125	-	22	32	-	CAER/L...

WFASSY* : Shank (WPOS) + adapter (WF)
LFASSY** : Shank (LPOS) + adapter (LF)
Depend on the adapter type, the value of LFASSY or WFASSY may change.
Not compatible with TungModularSystem

CHFVR/L

Shank for adapter, perpendicularly mounted



Designation	H	B	OAL	LPOS	LH	WPOS	HBKW	HFASSY	HBH	Adapter (Option)
CHFVR/L2020	20	20	150	140	25	0	8	20	12	CAEL/R...
CHFVR/L2525	25	25	150	140	25	0	3	25	7	CAEL/R...
CHFVR/L3232	32	32	170	160	25	4	-	32	-	CAEL/R...

WFASSY* : Shank (WPOS) + adapter (LF)
LFASSY** : Shank (LPOS) + adapter (WF)
Depend on the adapter type, the value of LFASSY or WFASSY may change.
Not compatible with TungModularSystem

SPARE PARTS

Designation	Clamping screw	Wrench
CH**R/L...	CSHB-6-A	P-4

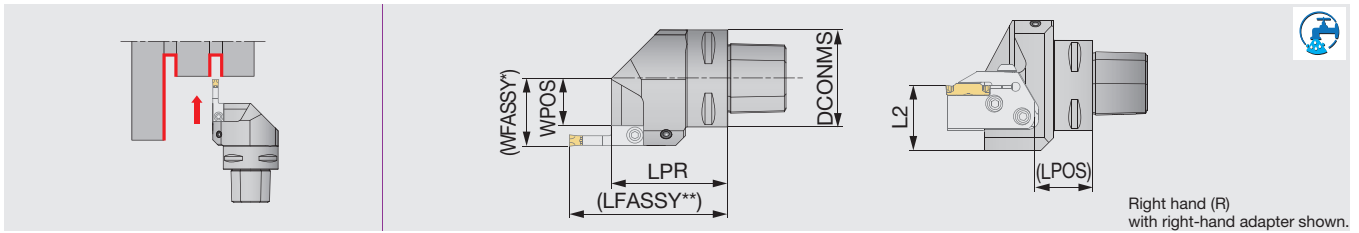
Combination of adapter and shank

Shank	External grooving adapter		Face grooving adapter	
	CAER...	CAEL...	CAFR...	CAFL...
CHSR...	●			●
CHSL...		●	●	
CHFVR...		●	●	
CHFVL...	●			●

● : Corresponding

C-CHSR/L

Toolholder with TungCap connection for adapter



Designation	DCONMS	LPR	LPOS	L2	WPOS	Adapter (Option)
C3CHSR/L22050N	32	50	22.1	35	11.5	CAER/L...
C4CHSR/L27050N	40	50	22.1	36	16.5	CAER/L...
C5CHSR/L35060N	50	60	32.1	36	24.5	CAER/L...
C6CHSR/L45065N	63	65	32.1	41	34.5	CAER/L...

WFASSY* : Toolholder (WPOS) + adapter (WF)

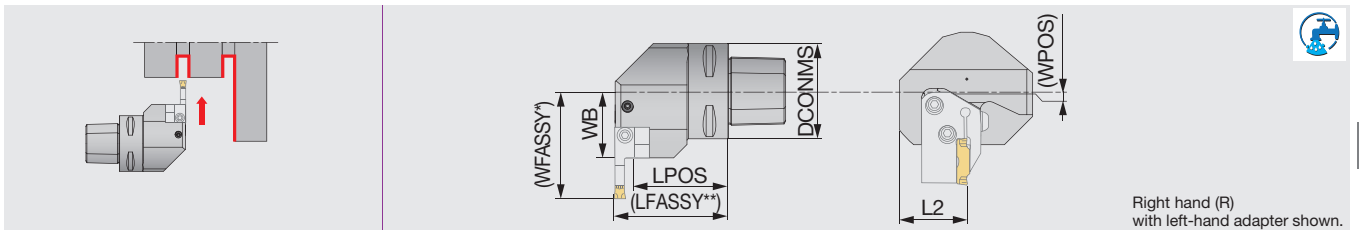
LFASSY** : Toolholder (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change. If needed, the coolant direction can be adjusted by the nozzle.

Applicable for 7 MPa coolant. Not compatible with TungModularSystem.

C-CHFVR/L

Toolholder with TungCap connection for adapter, perpendicularly mounted



Designation	DCONMS	LPOS	L2	WB	WPOS	Adapter (Option)
C3CHFVR/L22040N	32	32.5	35	22	-5.9	CAEL/R...
C4CHFVR/L27050N	40	42.5	36	27	-0.9	CAEL/R...
C5CHFVR/L35060N	50	49.5	36	35	7.1	CAEL/R...
C6CHFVR/L45065N	63	54.5	41	45	17.1	CAEL/R...

WFASSY* : Toolholder (WPOS) + adapter (LF)

LFASSY** : Toolholder (LPOS) + adapter (WF)

Depend on the adapter type, the value of LFASSY or WFASSY may change. If needed, the coolant direction can be adjusted by the nozzle.

Applicable for 7 MPa coolant. Not compatible with TungModularSystem.

SPARE PARTS

Designation	Coolant parts	Clamping screw	Wrench
C3CH**R/L...	SATZ-M8X1-M3	CSHB-6-A	P-4
C4CH**R/L...	SATZ-M8X1-M3	CSHB-6-A	P-4
C5CH**R/L...	SATZ-M10X1-M5	CSHB-6-A	P-4
C6CH**R/L...	SATZ-M10X1-M5	CSHB-6-A	P-4

Combination of adapter and toolholder

Toolholder	External grooving adapter		Face grooving adapter	
	CAER...	CAEL...	CAFR...	CAFL...
C*CHSR...	●			●
C*CHSL...		●	●	
C*CHFVR...		●	●	
C*CHFVL...	●			●

● : Corresponding

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

CBN
Turning

Hardened Materials
Grooving

Turning

Cast Iron
Milling

Superalloys
Turning

Sintered metal
Turning

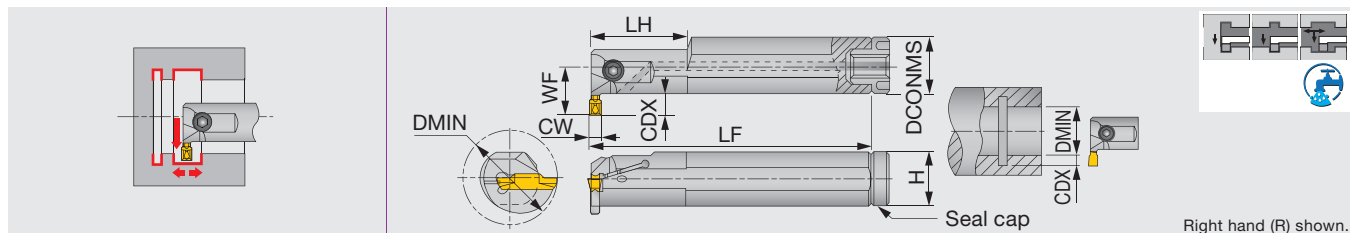
PCD

Turning

Non-Ferrous Materials
Grooving

Milling

Internal grooving and turning toolholder



Designation	CW	DMIN	Seat size	CDX	DCONMS	H	LF ⁽¹⁾	LH	WF	Insert	Torque*
CTIR/L16-2T08-D250	2	25	2	8	16	14	125	-	16.5	DGIM..., DGIS..., DTX...	5
CTIR/L20-2T06-D250	2	25	2	6	20	18	160	40	15.8	DGIM..., DGIS..., DTX...	5
CTIR/L20-3T06-D250	3	25	3	6	20	18	160	40	15.8	DTI..., DTX...	5
CTIR/L25-3T05-D250	3	25	3	5.1	25	23	200	40	17.5	DTI..., DTX...	5
CTIR/L25-3T08-D320	3	32	3	8	25	23	200	40	21.5	DTI..., DTX...	5
CTIR/L32-3T10-D400	3	40	3	10	32	30	250	60	27	DTI..., DTX...	5
CTIR/L20-4T06-D250	4	25	4	6	20	18	160	40	15.8	DTI..., DTX...	5
CTIR/L25-4T08-D320	4	32	4	8	25	23	200	40	21.5	DTI..., DTX...	5
CTIR/L32-4T04-D310	4	31	4	4	32	30	250	60	20.8	DTI..., DTX...	5
CTIR/L32-4T10-D400	4	40	4	10	32	30	250	60	27	DTI..., DTX...	5
CTIR/L25-5T05-D310	5	31	5	5	25	23	200	60	17.3	DTI..., DTX...	8.5
CTIR/L32-5T10-D400	5	40	5	10	32	30	250	60	27	DTI..., DTX...	8.5
CTIR/L32-6T04-D310	6	31	6	4	32	30	250	60	20.8	DTI..., DTX...	8.5
CTIR/L32-6T10-D400	6	40	6	10	32	30	250	60	27	DTI..., DTX...	8.5
CTIR/L32-8T05-D370	8	37	8	5	32	30	250	60	21.3	DTI..., DTX...	8.5
CTIR/L40-8T05-D420	8	42	8	5.8	40	38	300	65	25.8	DTI..., DTX...	8.5

(1) LF is calculated with the groove width CW in the above table.
 Torque*: Recommended clamping torque (N·m)

SPARE PARTS



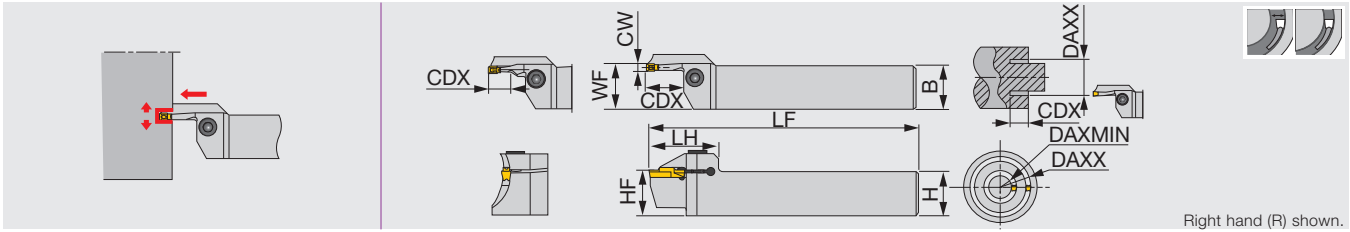
Designation	Clamping screw	Wrench	Seal cap	Thread type for connection
CTIR/L16-2T08-D250	CM5X0.8X10-A	P-4	CA-16	M6
CTIR/L20-2T06-D250	CM5X0.8X12-A	P-4	CA-20	M6
CTIR/L20-3T06-D250	CM5X0.8X12-A	P-4	CA-20	M6
CTIR/L25-3T05-D250	CM5X0.8X16-A	P-4	CA-25	R1/8"
CTIR/L25-3T08-D320	CM5X0.8X16-A	P-4	CA-25	R1/8"
CTIR/L32-3T10-D400	CM5X0.8X16-A	P-4	CA-32	R1/8"
CTIR/L20-4T06-D250	CM5X0.8X12-A	P-4	CA-20	M6
CTIR/L25-4T08-D320	CM5X0.8X16-A	P-4	CA-25	R1/8"
CTIR/L32-4T04-D310	CM5X0.8X16-A	P-4	CA-32	R1/8"
CTIR/L32-4T10-D400	CM5X0.8X16-A	P-4	CA-32	R1/8"
CTIR/L25-5T05-D310	CM6X1X16-A	P-5	CA-25	R1/8"
CTIR/L32-5T10-D400	CM6X1X20-A	P-5	CA-32	R1/8"
CTIR/L32-6T04-D310	CM6X1X20-A	P-5	CA-32	R1/8"
CTIR/L32-6T10-D400	CM6X1X20-A	P-5	CA-32	R1/8"
CTIR/L32-8T05-D370	CM6X1X20-A	P-5	CA-32	R1/8"
CTIR/L40-8T05-D420	CM6X1X25-A	P-5	CA-40	R1/8"

When using the inserts that are not in the above

INSERT	Groove width CW	Min. diameter DMIN
DGM / DGS / SGN / DGL / DTM	2	50
DGM / DGS / SGN / DGL / DTM	3	50
DGM / DGS / SGN / DTM / DGL	4	50
DGM / DGS / DTM / DGL	5	60
DGM / DGS / DTM / DGL	6	60
DGM / DGS / DTM	8	70
DTE / DGG	3	40
DTE / DGG	4	40
DTE / DGG	5	50
DTE / DGG	6	50
DTE / DGG	8	62
DTR	2	45
DTR	3	38
DTR	4	38
DTR	5	43
DTR	6	46
DTR	8	56

CTFR/L

Face grooving and turning toolholder



Designation	CW	DAXMIN	DAXX	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	Torque*
CTFR/L2525-3T10-024035	3	24	35	3	10	25	25	150	38	25	25.5	5
CTFR/L2525-3T10-029040	3	29	40	3	10	25	25	150	38	25	25.5	5
CTFR/L2525-3T10-034050	3	34	50	3	10	25	25	150	38	25	25.5	5
CTFR/L2525-3T15-044070	3	44	70	3	15	25	25	150	38	25	25.5	5
CTFR/L2525-3T15-064100	3	64	100	3	15	25	25	150	38	25	25.5	5
CTFR/L2525-4T10-022036	4	22	36	4	10	25	25	150	39	25	25.6	5
CTFR/L2525-4T20-028042	4	28	42	4	20	25	25	150	39	25	25.6	5
CTFR/L2525-4T20-034050	4	34	50	4	20	25	25	150	39	25	25.6	5
CTFR/L2525-4T20-042070	4	42	70	4	20	25	25	150	39	25	25.6	5
CTFR/L2525-4T20-062120	4	62	120	4	20	25	25	150	39	25	25.6	5
CTFR/L2525-4T20-112200	4	112	200	4	20	25	25	150	39	25	25.6	5
CTFR/L2525-5T25-050080	5	50	80	5	25	25	25	150	49	25	25.6	12
CTFR/L2525-5T25-070110	5	70	110	5	25	25	25	150	49	25	25.6	12
CTFR/L2525-5T25-100150	5	100	150	5	25	25	25	150	49	25	25.6	12
CTFR/L2525-5T25-140200	5	140	200	5	25	25	25	150	49	25	25.6	12
CTFR/L2525-6T25-048070	6	48	70	6	25	25	25	150	49	25	25.6	12
CTFR/L2525-6T25-058100	6	58	100	6	25	25	25	150	49	25	25.6	12
CTFR/L2525-6T25-088180	6	88	180	6	25	25	25	150	49	25	25.6	12
CTFR/L2525-6T25-168400	6	168	400	6	25	25	25	150	49	25	25.6	12

When depth is deeper than (insert length - 1.5 mm), 1 corner type is recommended.
 Max. groove depth will be 15 mm with DTF insert.
 Use the right-hand insert for the right-hand holder with DTF insert.
 (1) WF is calculated with the groove width (CW) in the above table.
 Torque*: Recommended clamping torque (N·m)

SPARE PARTS

Designation	Clamping screw	Wrench
CTFR/L2525-3T - 4T...	CM6X1X25-A	P-5
CTFR/L2525-5T - 6T...	CM8X1.25X25-A	P-6

INSERT

Designation	Seat size	Insert
CTFR/L2525-3T10-024035	3	DTF, DTX
CTFR/L2525-3T10-029040	3	DTF, DTX
CTFR/L2525-3T10-034050	3	DTF, DTX
CTFR/L2525-3T15-044070	3	DTF, DTX, DTR, DTE, DGG, DTM
CTFR/L2525-3T15-064100	3	DTF, DTX, DTE, DGG, DGM, DGS, DTR, SGN, DGL, DTM
CTFR/L2525-4T10-022036	4	DTF, DTX
CTFR/L2525-4T20-028042	4	DTF, DTX, DTR
CTFR/L2525-4T20-034050	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR, DTM, DGL, SGN
CTFR/L2525-4T20-042070	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR, SGN, DTM, DGL
CTFR/L2525-4T20-062120	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR, SGN, DTM, DGL
CTFR/L2525-4T20-112200	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR, SGN, DTM, DGL
CTFR/L2525-5T25-...	5	DTX, DTE, DGG, DGM, DGS, DTR, DTM, DGL, SGN
CTFR/L2525-6T25-...	6	DTX, DTE, DGG, DGM, DGS, DTR, DTM, DGL, SGN

Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DGM / DGS / SGN / DGL	3	92
DGM / DGS / SGN / DGL	4	37
DGM / DGS / SGN / DGL	5	60
DGM / DGS / DGL	6	57
DTE / DGG / DTM	3	62
DTE / DGG / DTM	4	42
DTE / DGG / DTM	5	64
DTE / DGG / DTM	6	61
DTR	3	44
DTR	4	32
DTR	5	48
DTR	6	48
DTX	3	22
DTX	4	20
DTX	5	20
DTX	6	23
DTF	3	20
DTF	4	20

Superalloys
Turning
Grooving
Milling

Cast Iron
Turning
Grooving
Milling

Hardened Materials
Turning

CBN
Turning
Grooving

Cast Iron
Turning
Milling

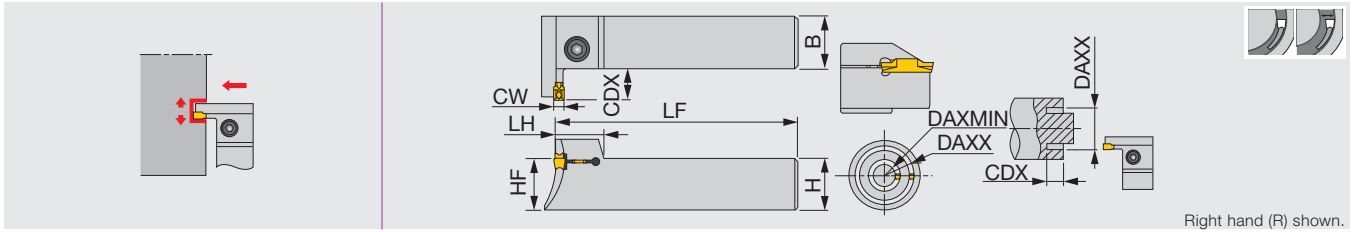
Superalloys
Turning
Turning

Sintered metal
Turning

PCD
Turning

Non-Ferrous Materials
Grooving
Milling

Face grooving and turning perpendicular toolholder



Designation	CW	DAXMIN	DAXX	Seat size	CDX	H	B	LF	LH	HF	Torque*
CTFVR/L2525-3T10-024035	3	24	35	3	10	25	25	150	18	25	5
CTFVR/L2525-3T10-029040	3	29	40	3	10	25	25	150	18	25	5
CTFVR/L2525-3T10-034050	3	34	50	3	10	25	25	150	18	25	5
CTFVR/L2525-3T15-044060	3	44	60	3	15	25	25	150	18	25	5
CTFVR/L2525-3T15-054085	3	54	85	3	15	25	25	150	18	25	5
CTFVR/L2525-4T12-022040	4	22	40	4	12	25	25	150	18.5	25	8.5
CTFVR/L2525-4T15-032050	4	32	50	4	15	25	25	150	18.5	25	8.5
CTFVR/L2525-4T15-042060	4	42	60	4	15	25	25	150	18.5	25	8.5
CTFVR/L2525-4T15-052085	4	52	85	4	15	25	25	150	18.5	25	8.5
CTFVR/L2525-5T20-050080	5	50	80	5	20	25	25	150	22	25	12
CTFVR/L2525-5T20-070110	5	70	110	5	20	25	25	150	22	25	12
CTFVR/L2525-5T20-100150	5	100	150	5	20	25	25	150	22	25	12
CTFVR/L2525-5T20-140200	5	140	200	5	20	25	25	150	22	25	12
CTFVR/L2525-6T20-048085	6	48	85	6	20	25	25	150	22	25	12
CTFVR/L2525-6T20-073150	6	73	150	6	20	25	25	150	22	25	12
CTFVR/L2525-6T20-138250	6	138	250	6	20	25	25	150	22	25	12

When depth is deeper than (insert length - 1.5 mm), 1 corner type is recommended
 Max. groove depth will be 15 mm with DTF insert.
 Use the right-hand insert for the right-hand holder with DTF insert.
 Torque*: Recommended clamping torque (N·m)

SPARE PARTS

Designation	Clamping screw	Wrench
CTFVR/L2525-3T...	CM5X0.8X25-A	P-4
CTFVR/L2525-4T...	CM6X1X25-A	P-5
CTFVR/L2525-5T..., 6T...	CM8X1.25X25-A	P-6

INSERT

Designation	Seat size	Insert
CTFVR/L2525-3T10-024035	3	DTF, DTX
CTFVR/L2525-3T10-029040	3	DTF, DTX
CTFVR/L2525-3T10-034050	3	DTF, DTX, DTR
CTFVR/L2525-3T15-044060	3	DTF, DTX, DTR
CTFVR/L2525-3T15-054085	3	DTF, DTX, DTE, DGG, DTR, DTM
CTFVR/L2525-4T12-022040	4	DTF, DTX, DTR
CTFVR/L2525-4T15-032050	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR, DTM, DGL, SGN
CTFVR/L2525-4T15-042060	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR, SGN, DTM, DGL
CTFVR/L2525-4T15-052085	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR, SGN, DTM, DGL
CTFVR/L2525-5T20-...	5	DTX, DTE, DGG, DGM, DGS, DTR, DTM, DGL, SGN
CTFVR/L2525-6T20-...	6	DTX, DTE, DGG, DGM, DGS, DTR, DTM, DGL

Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DGM / DGS / SGN / DGL	3	92
DGM / DGS / SGN / DGL	4	37
DGM / DGS / SGN / DGL	5	60
DGM / DGS / DGL	6	57
DTE / DGG / DTM	3	62
DTE / DGG / DTM	4	42
DTE / DGG / DTM	5	64
DTE / DGG / DTM	6	61
DTR	3	44
DTR	4	32
DTR	5	48
DTR	6	48
DTX	3	22
DTX	4	20
DTX	5	20
DTX	6	23
DTF	3	20
DTF	4	20

Superalloys

Hardened Materials

CBN

Materials

Hardened

ron

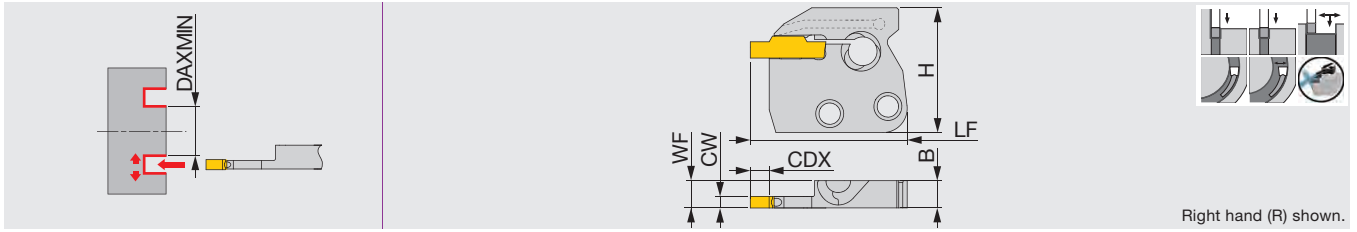
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Superalloys

metal

Non-Ferrous Materials

Face and external grooving adapter, with high pressure coolant capability

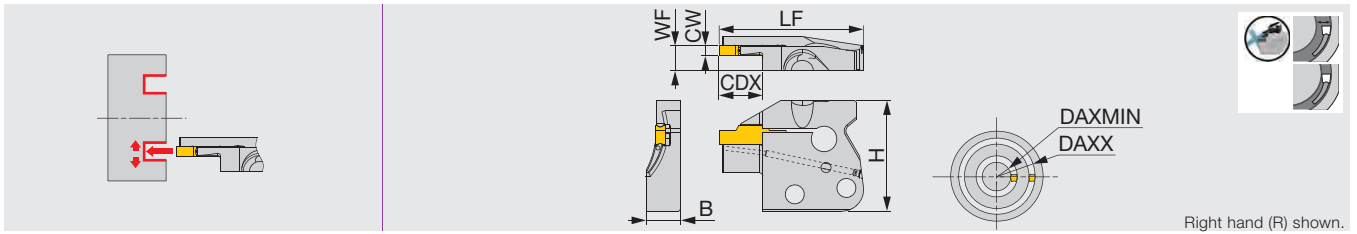


Designation	CW	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAEFR/L-4T04-CHP	4	2,3,4	4.8	33	7.2	41.5	7.7
CAEFR/L-6T04-CHP	6	5,6	4.8	33	7.2	46.3	7.8

(1) "WF" value is calculated with groove width "CW" shown in the table.

CAFR/L-CHP

Face grooving and turning adapter, with high pressure coolant capability



Designation	CW	DAXMIN	DAXX	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAFR/L-3T12-040055-CHP	3	40	55	3	12	33	10.2	43	7.5
CAFR/L-3T12-055075-CHP	3	55	75	3	12	33	10.2	43	7.5
CAFR/L-3T12-075100-CHP	3	75	100	3	12	33	10.2	43	7.5
CAFR/L-3T12-100140-CHP	3	100	140	3	12	33	10.2	43	7.5
CAFR/L-3T12-140200-CHP	3	140	200	3	12	33	10.2	43	7.5
CAFR/L-4T16-050070-CHP	4	50	70	4	16	33	10.2	43	8
CAFR/L-4T16-070100-CHP	4	70	100	4	16	33	10.2	43	8
CAFR/L-4T16-100150-CHP	4	100	150	4	16	33	10.2	43	8
CAFR/L-4T16-150250-CHP	4	150	250	4	16	33	10.2	43	8
CAFR/L-5T20-055080-CHP	5	55	80	5	20	33	10.2	47	8.5
CAFR/L-5T20-080120-CHP	5	80	120	5	20	33	10.2	47	8.5
CAFR/L-5T20-120180-CHP	5	120	180	5	20	33	10.2	47	8.5
CAFR/L-5T20-180300-CHP	5	180	300	5	20	33	10.2	47	8.5
CAFR/L-5T20-300000-CHP	5	300	∞	5	20	33	10.2	47	8.5
CAFR/L-6T25-060090-CHP	6	60	90	6	25	33	10.2	52	9
CAFR/L-6T25-090150-CHP	6	90	150	6	25	33	10.2	52	9
CAFR/L-6T25-150250-CHP	6	150	250	6	25	33	10.2	52	9
CAFR/L-6T25-250400-CHP	6	250	400	6	25	33	10.2	52	9

When groove depth is larger than (insert length - 1.5 mm), please use 1-cornered insert.
Max. groove depth will be 15 mm with DTF insert.

Use the right-hand insert for the right-hand holder with DTF insert.

(1) WF is calculated with the groove width (CW) in the above table.

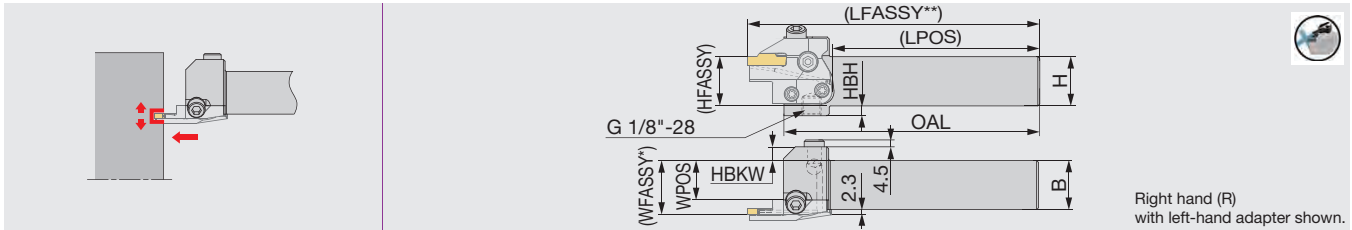
Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DGM / DGS / SGN / DGL	2	295
DGM / DGS / SGN / DGL	3	92
DGM / DGS / SGN / DGL	4	37
DGM / DGS / SGN / DGL	5	60
DGM / DGS / DGL	6	57
DTX / DTM / DTR	2	295
DTE / DGG / DTM	3	62
DTE / DGG / DTM	4	42
DTE / DGG / DTM	5	64
DTE / DGG / DTM	6	61

Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DTR	3	44
DTR	4	32
DTR	5	48
DTR	6	48
DTX	3	22
DTX	4	20
DTX	5	20
DTX	6	23
DTF	3	20
DTF	4	20

CHSR/L-CHP

Tube connection

Shank for adapter, with high pressure coolant capability



Designation	H	B	OAL	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque*
CHSR/L2020-CHP	20	20	130	105.5	15.1	12	20	10	CA*FL/R**-CHP	6.5
CHSR/L2525-CHP	25	25	130	105.5	20.1	7	25	5	CA*FL/R**-CHP	6.5

WFASSY* : Shank (WPOS) + adapter (WF)

LFASSY** : Shank (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Torque*: Recommended clamping torque (N·m)

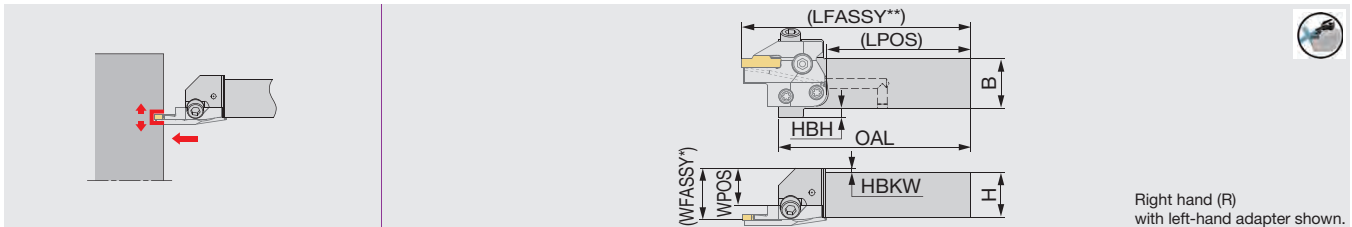
Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

CHSR/L-CHP-MC

Direct connection

Shank for adapter, with high pressure coolant capability



Designation	H	B	OAL	LPOS	WPOS	HBKW	HBH	Adapter (Option)	Torque*
CHSR/L2020-CHP-MC	20	20	98	73.5	14	6	10	CA*FL/R**-CHP	6.5
CHSR/L2525-CHP-MC	25	25	98	73.5	19	-	5	CA*FL/R**-CHP	6.5

WFASSY* : Shank (WPOS) + adapter (WF)

LFASSY** : Shank (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Torque*: Recommended clamping torque (N·m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

SPARE PARTS

Designation	Clamping screw 1	Wrench 1	Clamping screw 2	Clamping screw 3	Wrench 2	O-ring	Plug
CHSR/L**-CHP	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW5.0	OR 5X1N	PLUGG1/8ISO1179
CHSR/L**-CHP-MC	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW5.0	OR 5X1N	-

Recommended clamping torque (N·m)

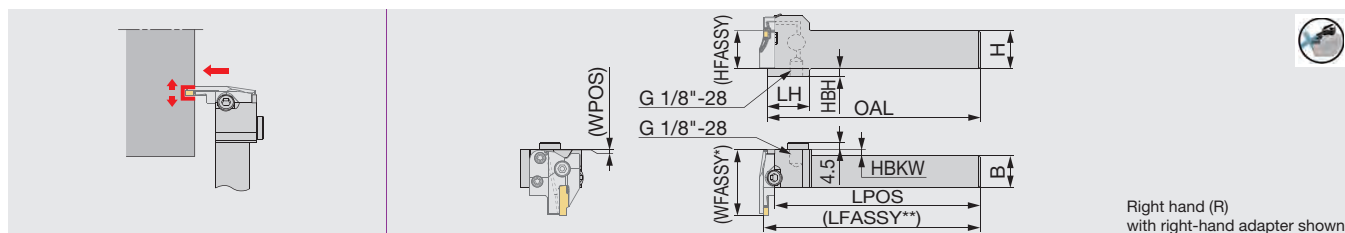
Clamping screw	Torque (N·m)
SR M5-04451	2.5
SR M6X12DIN6912	6.5
SR M6X20-XT	6.5

Combination of adapter and shank

Shank	External grooving adapter		Face grooving adapter		External and face grooving adapter	
	CAER**-CHP, -MD	CAEL**-CHP, -MD	CAFR**-CHP	CAFL**-CHP	CAEFR**-CHP	CAEFL**-CHP
CHSR**-CHP (-MC)	●			●	●	
CHSL**-CHP (-MC)		●	●			●

● : Corresponding

Shank for perpendicularly-mounted adapter, with high pressure coolant capability



Designation	H	B	OAL	LH	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque*
CHFVR/L2020-CHP	20	20	140	28	135.1	0.5	5	20	10	CA*FR/L**-CHP	6.5
CHFVR/L2525-CHP	25	25	140	28	135.1	0.5	0	25	5	CA*FR/L**-CHP	6.5

WFASSY* : Shank (WPOS) + adapter (LF)

LFASSY** : Shank (LPOS) + adapter (WF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Torque*: Recommended clamping torque (N·m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

SPARE PARTS

Designation	Clamping screw 1	Wrench 1	Clamping screw 2	Clamping screw 3	Wrench 2	O-ring	Plug
CHFVR/L...	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW5.0	OR 5X1N	PLUGG1/8ISO1179

Recommended clamping torque (N·m)

Clamping screw	Torque (N·m)
SR M5-04451	2.5
SR M6X12DIN6912	6.5
SR M6X20-XT	6.5

Combination of adapter and shank

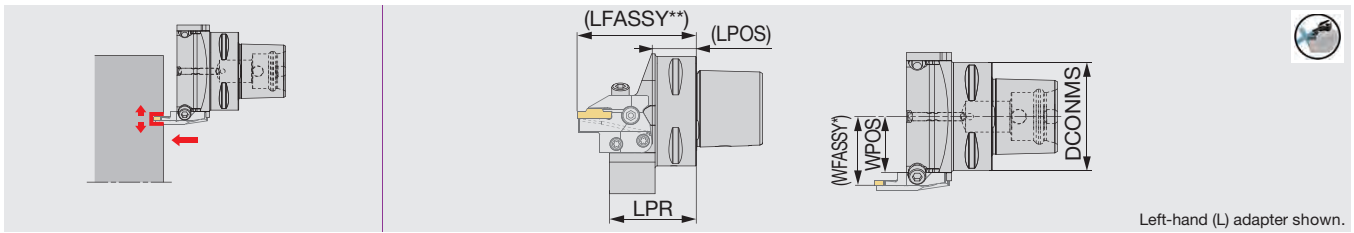
Shank	External grooving adapter		Face grooving adapter		External and face grooving adapter	
	CAER**-CHP, -MD	CAEL**-CHP, -MD	CAFR**-CHP	CAFL**-CHP	CAEFR**-CHP	CAEFL**-CHP
CHFVR**-CHP		●	●			●
CHFVL**-CHP	●			●	●	

● : Corresponding

C*CHSN-CHP

Direct connection

Toolholder with TungCap connection, for adapter, with high pressure coolant capability



Left-hand (L) adapter shown.

Designation	DCONMS	LPR	LPOS	WPOS	Adapter (Option)	Torque*
C3CHSN19045-CHP	32	45	17.5	18.5	CA*FR/L**-CHP	6.5
C4CHSN21047-CHP	40	46.5	21.5	21	CA*FR/L**-CHP	6.5
C5CHSN26047-CHP	50	47	22.5	26	CA*FR/L**-CHP	6.5
C6CHSN33050-CHP	63	50	24.5	32.5	CA*FR/L**-CHP	6.5

WFASSY* : Toolholder (WPOS) + adapter (WF)

LFASSY** : Toolholder (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Torque*: Recommended clamping torque (N·m)

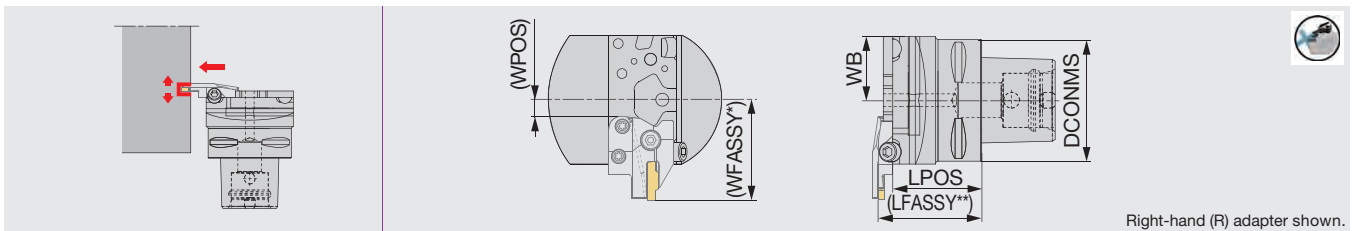
Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

C*CHFVN-CHP

Direct connection

Toolholder with TungCap connection, for perpendicularly-mounted adapter, with high pressure coolant capability



Right-hand (R) adapter shown.

Designation	DCONMS	LPOS	WB	WPOS	Adapter (Option)	Torque*
C3CHFVN26040-CHP	32	40	26	1.5	CA*FR/L**-CHP	6.5
C4CHFVN26046-CHP	40	46	26	1.5	CA*FR/L**-CHP	6.5
C5CHFVN26046-CHP	50	46	26	1.5	CA*FR/L**-CHP	6.5
C6CHFVN33046-CHP	63	46	33	8.5	CA*FR/L**-CHP	6.5

WFASSY* : Toolholder (WPOS) + adapter (WF)

LFASSY** : Toolholder (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Torque*: Recommended clamping torque (N·m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L053 for instructions on installing and removing the adapter or the insert.

SPARE PARTS

Designation	Clamping screw 1	Wrench 1	Clamping screw 2	Clamping screw 3	Wrench 2	O-ring
C*CH**N**-CHP	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW5.0	OR 5X1N

Recommended clamping torque (N·m)

Clamping screw	Torque (N·m)
SR M5-04451	2.5
SR M6X12DIN6912	6.5
SR M6X20-XT	6.5

CER

Turning

Superalloys

Grooving

Milling

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Turning

Hardened Materials

Grooving

Cast Iron

Turning

Superalloys

Turning

Sintered metal

Turning

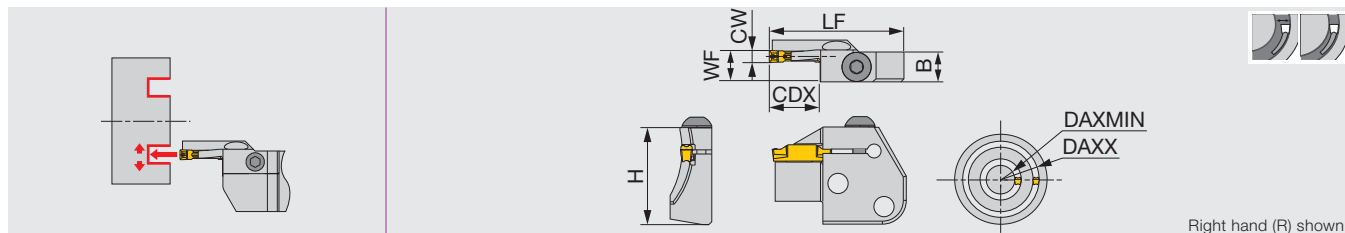
PCD

Non-Ferrous Materials

Grooving

Milling

Face grooving and turning adapter



Designation	CW	DAXMIN	DAXX	Seat size	CDX	H	B	LF	WF ⁽¹⁾	Torque*
CAFR/L-3T12-040055	3	40	55	3	12	32.7	10	45	10.4	5
CAFR/L-3T12-055075	3	55	75	3	12	32.7	10	45	10.4	5
CAFR/L-3T12-075100	3	75	100	3	12	32.7	10	45	10.4	5
CAFR/L-3T12-100140	3	100	140	3	12	32.7	10	45	10.4	5
CAFR/L-3T12-140200	3	140	200	3	12	32.7	10	45	10.4	5
CAFR/L-4T16-050070	4	50	70	4	16	32.7	10	45	10.5	5
CAFR/L-4T16-070100	4	70	100	4	16	32.7	10	45	10.5	5
CAFR/L-4T16-100150	4	100	150	4	16	32.7	10	45	10.5	5
CAFR/L-4T16-150250	4	150	250	4	16	32.7	10	45	10.5	5
CAFR/L-5T20-055080	5	55	80	5	20	32.7	10	49	10.5	5
CAFR/L-5T20-080120	5	80	120	5	20	32.7	10	49	10.5	5
CAFR/L-5T20-120180	5	120	180	5	20	32.7	10	49	10.5	5
CAFR/L-5T20-180300	5	180	300	5	20	32.7	10	49	10.5	5
CAFR/L-5T20-300000	5	300	∞	5	20	32.7	10	49	10.5	5
CAFR/L-6T25-060090	6	60	90	6	25	32.7	10	55	10.5	5
CAFR/L-6T25-090150	6	90	150	6	25	32.7	10	55	10.5	5
CAFR/L-6T25-150250	6	150	250	6	25	32.7	10	55	10.5	5
CAFR/L-6T25-250400	6	250	400	6	25	32.7	10	55	10.5	5

When groove depth is larger than (insert length - 1.5 mm), please use 1-cornered insert.
Max. groove depth will be 15 mm with DTF insert.

Use the right-hand insert for the right-hand holder with DTF insert.

Not compatible with TungModularSystem

(1) WF is calculated with the groove width (CW) in the above table.

Torque*: Recommended clamping torque (N·m)

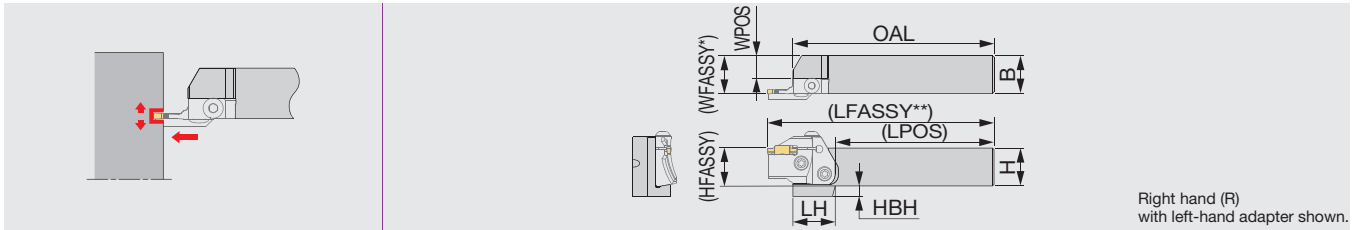
SPARE PARTS

Designation	Clamping screw	Wrench
CAFR/L...	BHM6-20-A	P-4

Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DGM / DGS / SGN / DGL	3	92
DGM / DGS / SGN / DGL	4	37
DGM / DGS / SGN / DGL	5	60
DGM / DGS / DGL	6	57
DTE / DGG / DTM	3	62
DTE / DGG / DTM	4	42
DTE / DGG / DTM	5	64
DTE / DGG / DTM	6	61
DTR	3	44
DTR	4	32
DTR	5	48
DTR	6	48
DTX	3	22
DTX	4	20
DTX	5	20
DTX	6	23
DTF	3	20
DTF	4	20

CHSR/L

Shank for adapter



Designation	H	B	OAL	LPOS	LH	WPOS	HFASSY	HBH	Adapter (Option)
CHSR/L2020	20	20	133	105	35	10	20	12	CAFL/R...
CHSR/L2525	25	25	133	105	28	15	25	7	CAFL/R...
CHSR/L3232	32	32	153	125	-	22	32	-	CAFL/R...

WFASSY* : Shank (WPOS) + adapter (WF)

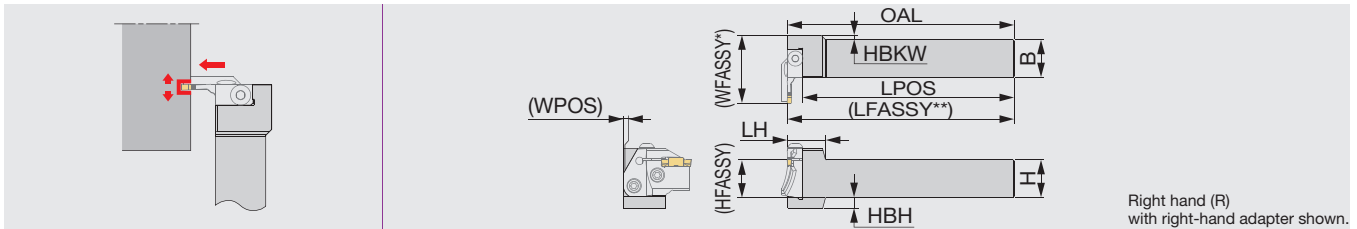
LFASSY** : Shank (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Not compatible with TungModularSystem

CHFVR/L

Shank for adapter, perpendicularly mounted



Designation	H	B	OAL	LPOS	LH	WPOS	HBKW	HFASSY	HBH	Adapter (Option)
CHFVR/L2020	20	20	150	140	25	0	8	20	12	CAFR/L...
CHFVR/L2525	25	25	150	140	25	0	3	25	7	CAFR/L...
CHFVR/L3232	32	32	170	160	25	4	-	32	-	CAFR/L...

WFASSY* : Shank (WPOS) + adapter (LF)

LFASSY** : Shank (LPOS) + adapter (WF)

Depend on the adapter type, the value of LFASSY or WFASSY may change.

Not compatible with TungModularSystem

SPARE PARTS

Designation	Clamping screw	Wrench
CH**R/L...	CSHB-6-A	P-4

Combination of adapter and shank

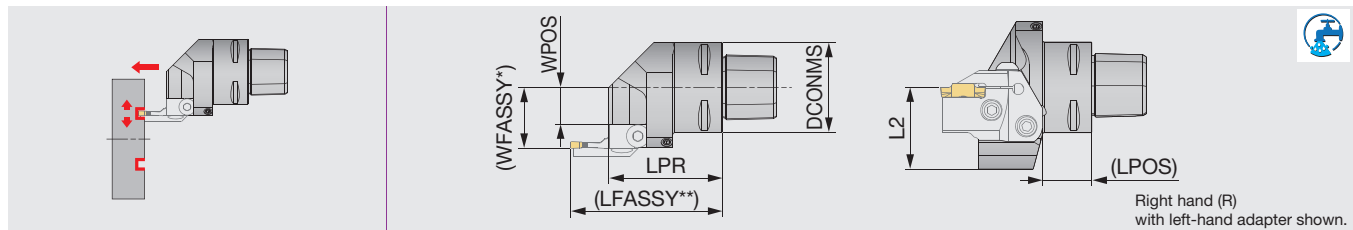
Shank	External grooving adapter		Face grooving adapter	
	CAER...	CAEL...	CAFR...	CAFL...
CHSR...	●			●
CHSL...		●	●	
CHFVR...		●	●	
CHFVL...	●			●

● : Corresponding

TUNGALLOY

C-CHSR/L

Toolholder with TungCap connection for adapter



Designation	DCONMS	LPR	LPOS	L2	WPOS	Adapter (Option)
C3CHSR/L22050N	32	50	22.1	35	11.5	CAFL/R...
C4CHSR/L27050N	40	50	22.1	36	16.5	CAFL/R...
C5CHSR/L35060N	50	60	32.1	36	24.5	CAFL/R...
C6CHSR/L45065N	63	65	32.1	41	34.5	CAFL/R...

WFASSY* : Toolholder (WPOS) + adapter (WF)

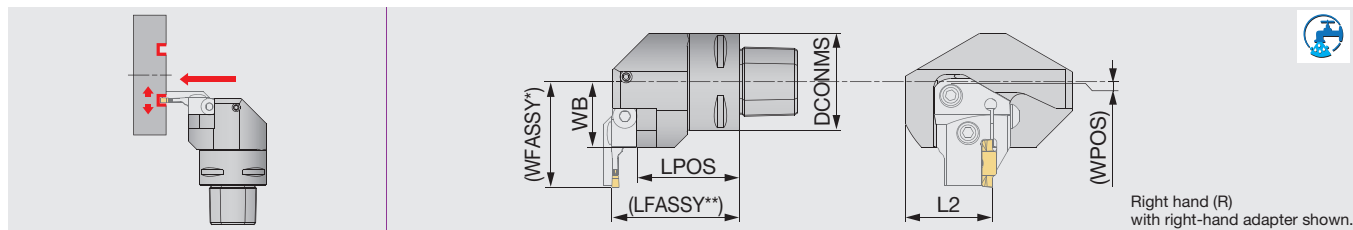
LFASSY** : Toolholder (LPOS) + adapter (LF)

Depend on the adapter type, the value of LFASSY or WFASSY may change. If needed, the coolant direction can be adjusted by the nozzle.

Applicable for 7 MPa coolant. Not compatible with TungModularSystem.

C-CHFVR/L

Toolholder with TungCap connection for adapter, perpendicularly mounted



Designation	DCONMS	LPOS	L2	WB	WPOS	Adapter (Option)
C3CHFVR/L22040N	32	32.5	35	22	-5.9	CAFR/L...
C4CHFVR/L27050N	40	42.5	36	27	-0.9	CAFR/L...
C5CHFVR/L35060N	50	49.5	36	35	7.1	CAFR/L...
C6CHFVR/L45065N	63	54.5	41	45	17.1	CAFR/L...

WFASSY* : Toolholder (WPOS) + adapter (LF)

LFASSY** : Toolholder (LPOS) + adapter (WF)

Depend on the adapter type, the value of LFASSY or WFASSY may change. If needed, the coolant direction can be adjusted by the nozzle.

Applicable for 7 MPa coolant. Not compatible with TungModularSystem.

Designation	Coolant parts	Clamping screw	Wrench
C3CH**R/L...	SATZ-M8X1-M3	CSHB-6-A	P-4
C4CH**R/L...	SATZ-M8X1-M3	CSHB-6-A	P-4
C5CH**R/L...	SATZ-M10X1-M5	CSHB-6-A	P-4
C6CH**R/L...	SATZ-M10X1-M5	CSHB-6-A	P-4

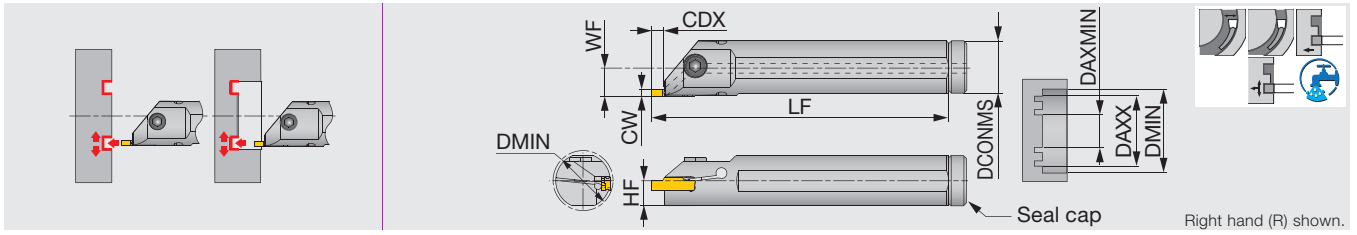
Combination of adapter and toolholder

Toolholder	External grooving adapter		Face grooving adapter	
	CAER...	CAEL...	CAFR...	CAFL...
C*CHSR...	●			●
C*CHSL...		●	●	
C*CHFVR...		●	●	
C*CHFVL...	●			●

● : Corresponding

CTIFR/L

External/Internal face grooving and turning toolholder



Designation	CW	Seat size	CDX	DCONMS	LF	HF	WF ⁽¹⁾	Torque*
CTIFR/L25-4T05-D270	4	2, 3, 4	5.5	25	200	11.5	13.3	5
CTIFR/L32-4T05-D340	4	2, 3, 4	5.5	32	250	15	16.8	5
CTIFR/L25-5T05-D270	6	5, 6	5.5	25	200	11.5	13.3	5
CTIFR/L32-5T05-D340	6	5, 6	5.5	32	250	15	16.8	5

Use the right-hand insert for the right-hand holder with DTF insert.

(1) WF is calculated with the groove width CW in the above table.

Torque*: Recommended clamping torque (N-m)

Designation	Clamping screw	Wrench	Seal cap
CTIFR/L25-4T05-D270	CM6X1X16-A	P-5	CA-25
CTIFR/L32-4T05-D340	CM6X1X20-A	P-5	CA-32
CTIFR/L25-5T05-D270	CM6X1X16-A	P-5	CA-25
CTIFR/L32-5T05-D340	CM6X1X20-A	P-5	CA-32

Seat size	Min. machining dia.: DMIN	
	DCONMS = 25 mm	DCONMS = 32 mm
2	299	299
3	26.3	33.3
4	26.8	33.8
5	26.3	33.3
6	26.8	33.8

Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DGM / DGS / SGN / DGL	2	295
DGM / DGS / SGN / DGL	3	92
DGM / DGS / SGN / DGL	4	37
DGM / DGS / SGN / DGL	5	60
DGM / DGS / DGL	6	57
DTX / DTM / DTR	2	295
DTE / DGG / DTM	3	62
DTE / DGG / DTM	4	42
DTE / DGG / DTM	5	64
DTE / DGG / DTM	6	61

Insert	Groove width CW	Face grooving Min. machining dia. DAXMIN
DTR	3	44
DTR	4	32
DTR	5	48
DTR	6	48
DTX	3	22
DTX	4	20
DTX	5	20
DTX	6	23
DTF	3	20
DTF	4	20

CER

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

CBN

Hardened Materials
Turning

Grooving

Turning

Cast Iron
Milling

Superalloys
Turning

Sintered metal
Turning

PCD

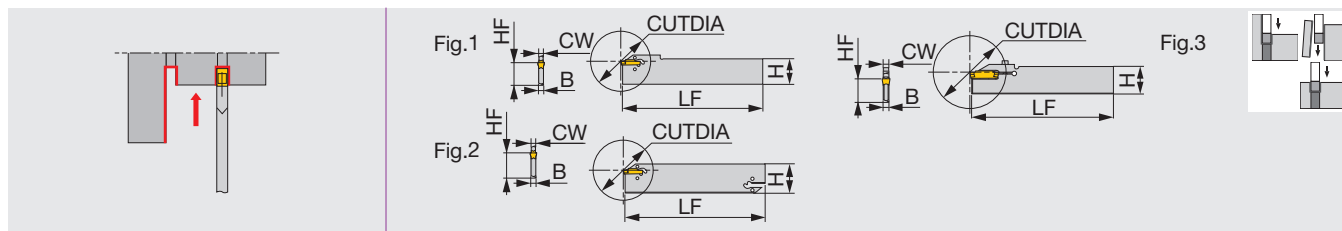
Turning

Grooving

Milling

Non-Ferrous Materials

External deep grooving and parting blade



Designation	CW	Seat size	CUTDIA	H	B	LF	HF	Fig.	Torque*
CGP26-1.4S	1.4	1	26	26	1	150	21.4	1	-
CGP32-1.4D	1.4	1	26	32	1	150	24.8	2	-
CGP26-2S	2	2	40	26	1.8	150	21.4	1	-
CGP32-2D	2	2	50	32	1.8	150	24.8	2	-
CGP26-3S	3	3	50	26	2.4	150	21.4	1	-
CGP32-3D	3	3	100	32	2.4	150	24.8	2	-
CGP26-4S	4	4	80	26	3.2	150	21.4	1	-
CGP32-4D	4	4	100	32	3.2	150	24.9	2	-
CGP45-4D	4	4	120	45	3.2	150	38.1	2	-
CGP32-5D	5	5	120	32	4	150	24.9	2	-
CGP32-6D	6	6	120	32	5.2	150	24.9	2	-
CGP32-8S-CL	8	8	80	32	6.2	150	24.9	3	3

When depth is deeper than (insert length - 1.5mm), 1 corner type is recommended.

Wrench (CRW...) is not included. Please order it separately.

*Torque: Recommended clamping torque (N·m)

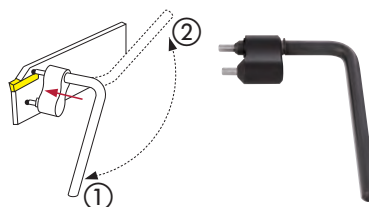
SPARE PARTS

Designation	Clamping screw	Wrench	wrench (Optional)
CGP**-1.4*	-	-	CRW23
CGP**-2/3/4/5/6	-	-	CRW33
CGP32-8S-CL	CM4X0.7X20-M0-A	P-3	-

Caution

Newly developed clamp

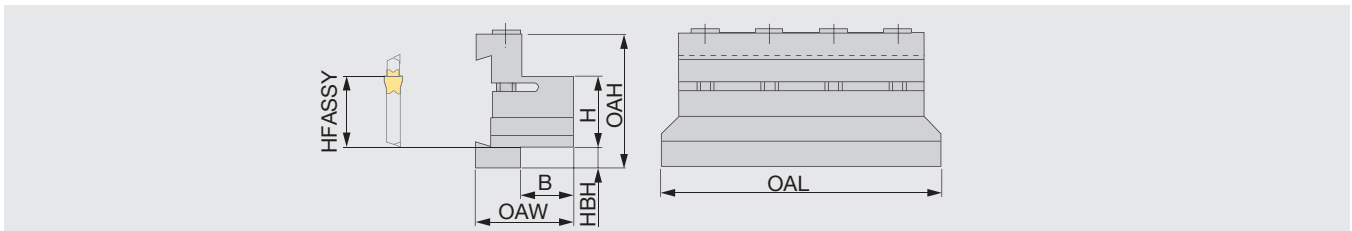
Insert is clamped by the elastic deformation of upper jaw.
Low clamping stress increases the stability and tool life.



①→② : unclamp
②→① : clamp

CTBF

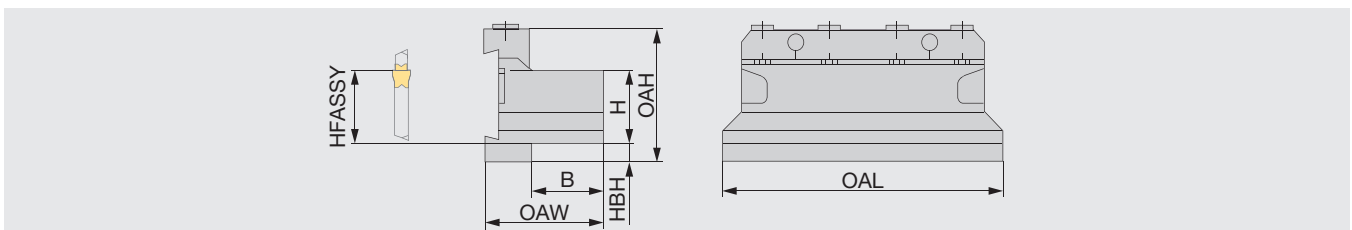
Tool block for CGP blade, mono block



Designation	H	B	OAL	HFASSY	HBH	OAH	OAW	Blade (Optional)
CTBF25-45	25	22	110	25	25	66	40	CGP45...
CTBF32-45	32	28	120	32	18	66	45	CGP45...

CTBU

Tool block for CGP blade



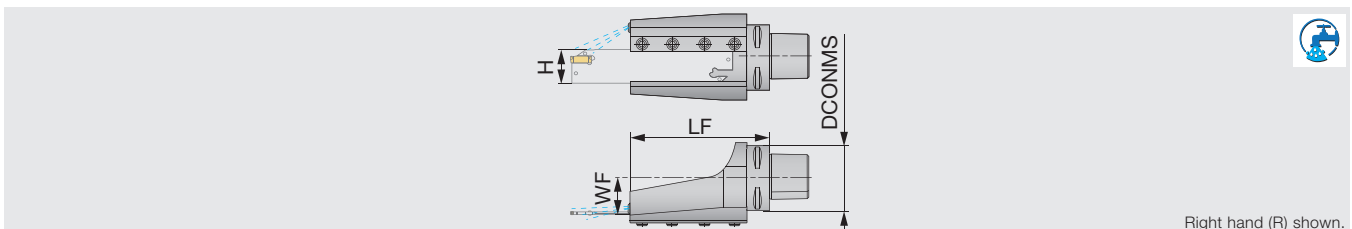
Designation	H	B	OAL	HFASSY	HBH	OAH	OAW	Blade (Optional)
CTBU20-26	20	21	86	20	9	43	38	CGP26...
CTBU25-26	25	23	110	25	5	45	43	CGP26...
CTBU20-32	20	19	100	20	13	50	38	CGP32...
CTBU25-32	25	23	110	25	8	50	42	CGP32...
CTBU32-32	32	29	110	32	5	54	48	CGP32...

SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
CTBU20-26	CT-86	CM6X30-S	P-5
CTBU25-26	CT-105	CM6X30-S	P-5
CTBU20-32	CT-100	CM6X30-S	P-5
CTBU25-32	CT-110	CM6X30-S	P-5
CTBU32-32	CT-110	CM6X30-S	P-5

C-TBK-R/L

Toolholder with TungCap connection for parting-off blade



Designation	DCONMS	WF	LF	H
C6TBK-32R/L	63	32	138	32

Applicable for 3 MPa coolant

SPARE PARTS

Designation	Clamp	Clamping screw	Wrench	Coolant parts
C6TBK-32R/L	BK32-9WEDG	SRM6X16DIN912-12.9	HW5.0	EZ125

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

CBN
Turning

Hardened Materials
Grooving

Turning

Cast Iron
Milling

Superalloys
Turning

Sintered metal
Turning

PCD

Turning

Grooving

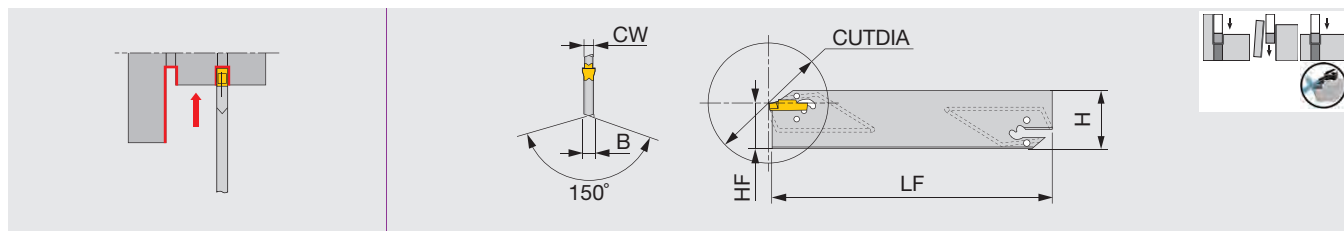
Milling

TUNG

CUT

CGP32-CHP

External deep grooving and parting blade, with high pressure coolant capability



Designation	CW	Seat size	CUTDIA	H	B	LF	HF
CGP32-2D-CHP	2	2	50	32	1.8	150	24.8
CGP32-3D-CHP	3	3	90	32	2.5	150	24.8
CGP32-4D-CHP	4	4	90	32	3.2	150	24.9
CGP32-5D-CHP	5	5	110	32	4	150	24.9
CGP32-6D-CHP	6	6	110	32	5.2	150	24.9

When depth is deeper than (insert length - 1.5mm), 1 corner type is recommended.
Wrench (CRW...) is not included. Please order it separately.

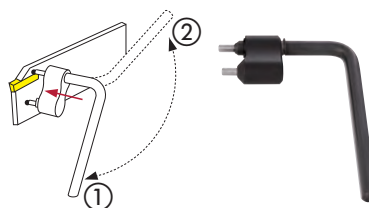
SPARE PARTS

Designation	Sealing screw	Wrench (Optional)
CGP32-*D-CHP	SGC340	CRW33

Caution

Newly developed clamp

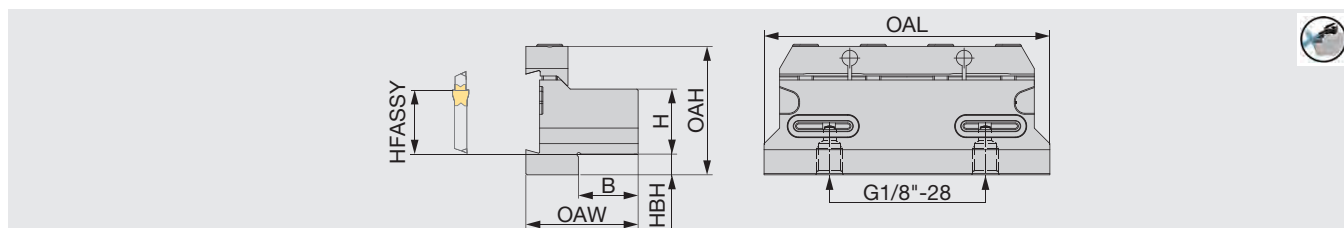
Insert is clamped by the elastic deformation of upper jaw.
Low clamping stress increases the stability and tool life.



①→② : unclamp
②→① : clamp

CTBU-CHP

Tool block for CGP-CHP blade, with high pressure coolant capability



Designation	H	B	OAL	HFASSY	HBH	OAH	OAW	Blade (Optional)
CTBU25-32-CHP	25	23	110	25	8	50	43.2	CGP32-*D-CHP

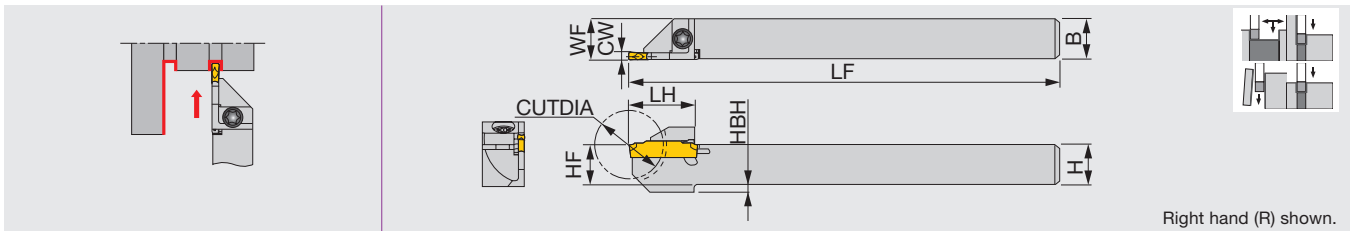
Applicable for 14 MPa coolant

SPARE PARTS

Designation	Clamping screw	Clamp	Wrench	O-ring
CTBU25-32-CHP	SRM6X16DIN912-12.9	CT-110	P-5	OR14X2.5NN

JCTER/L

External grooving and parting toolholder, for Swiss lathes



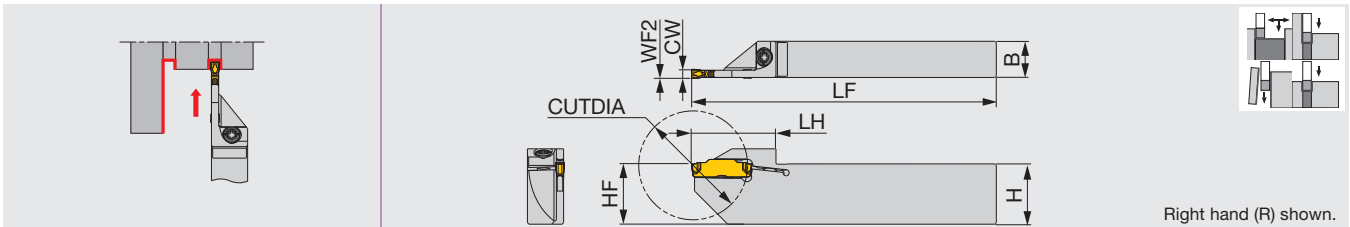
Designation	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF ⁽¹⁾	HBH	*Torque
JCTER/L1010X1.4T10	1.4	1	20	10	10	120	18	10	10.2	-	3
JCTER/L1212F1.4T12	1.4	1	24	12	12	85	19.5	12	12.2	-	3
JCTER/L1212X1.4T12	1.4	1	24	12	12	120	19.5	12	12.2	-	3
JCTER/L1414-1.4T12	1.4	1	24	14	14	125	19.5	14	14.2	-	3
JCTER/L1616X1.4T16	1.4	1	32	16	16	120	24	16	16.2	-	3
JCTER/L1010X2T10	2	2	20	10	10	120	19	10	10.1	2	3
JCTER/L1212F2T12	2	2	24	12	12	85	19	12	12.1	2	3
JCTER/L1212X2T12	2	2	24	12	12	120	19	12	12.1	2	3
JCTER/L1414-2T12	2	2	24	14	14	125	19	14	14.1	-	3
JCTER/L1616X2T16	2	2	32	16	16	120	24	16	16.1	-	3
JCTER/L1212F3T12	3	3	24	12	12	85	19	12	12.3	2	3
JCTER/L1212X3T12	3	3	24	12	12	120	19	12	12.3	2	3
JCTER/L1616X3T16	3	3	32	16	16	120	24	16	16.3	-	3
JCTER/L2020H3T16	3	3	32	20	20	100	24	20	20.3	-	3

⁽¹⁾ "WF" value is calculated with groove width "CW" shown in the table.

Torque*: Recommended clamping torque (N·m)

JCTER/L2012

External grooving and parting toolholder, for Swiss lathes, with 20 mm shank height



Designation	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	*Torque
JCTER/L2012H2T18	2	2	36	20	12	100	25	20	0.1	3
JCTER/L2012H3T21	3	3	42	20	12	100	28	20	0.3	3

⁽¹⁾ "WF2" value is calculated with groove width "CW" shown in the table.

Torque*: Recommended clamping torque (N·m)

SPARE PARTS

Designation	Clamping screw	Wrench
JCTER/L...	CSHB-4-A	T-15F

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

CBN

Hardened Materials
Turning

Grooving

Cast Iron
Turning

Milling

Superalloys
Turning

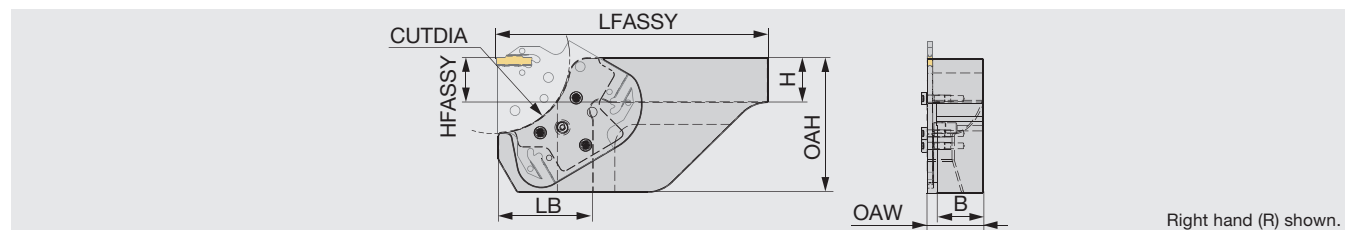
Sintered metal
Turning

PCD

Non-Ferrous Materials
Turning

Grooving

Milling



Designation	CUTDIA	H	B	OAL	OAH	OAW	LB
CHTBR/L2020-52	52	20	20.5	100	50	26.5	37
CHTBR/L2525-52	52	25	25.5	125	50	31.5	37
CHTBR/L2020-82	82	20	20.5	140	75	26.5	53
CHTBR/L2525-82	82	25	25.5	150	75	31.5	53

Note: The blade clamping screw heads protrude out for as much as 3.1 mm over the insert cutting edge point.
 Maintain the clearance from the chucking device to avoid interference.

SPARE PARTS

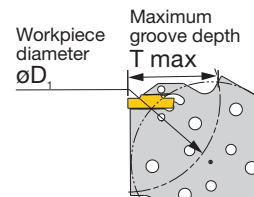


Designation	Clamping screw	Grip	Torx bit
CHTBR/L...	SR ISO 14580 M4X10	SW6-SD	BLDT20/S7

Maximum groove depth (T max) as function of workpiece diameter (ϕD_1)

Designation		øD1																
CHTBR/L****-D52	53	54	55	56	58	60	62	65	68	72	78	84	92	102	115	133	159	198
CHTBR/L****-D82	104	108	112	116	121	127	134	142	151	162	176	192	212	237	270	313	375	468
T max	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4

Designation	ϕD_1											
CHTBR/L****-D82	83	84	85	86	87	89	90	92	94	96	98	101
T max	34	33	31	30	29	28	27	26	25	24	23	22



CBN Turning

K Cast Iron

Key Points for the Selection of Grade Types in Cast iron

- ****CBN Inserts:****
- ****High Speed:**** Enable faster cutting for increased efficiency.
- ****Long Life:**** Extend tool life and reduce downtime.
- ****High Productivity:**** Deliver top performance for cast iron machining.

****Overall, CBN inserts offer superior speed and durability, making them the best choice for high-efficiency cast iron machining.**



■ Grey cast iron

Cutting speed Vc (m/min)	150 - 700	200 - 1,000	300 - 2,000
Grade	Carbide 	Ceramic 	CBN 
Tool cost	Low	Low	High



■ Ductile Cast Iron

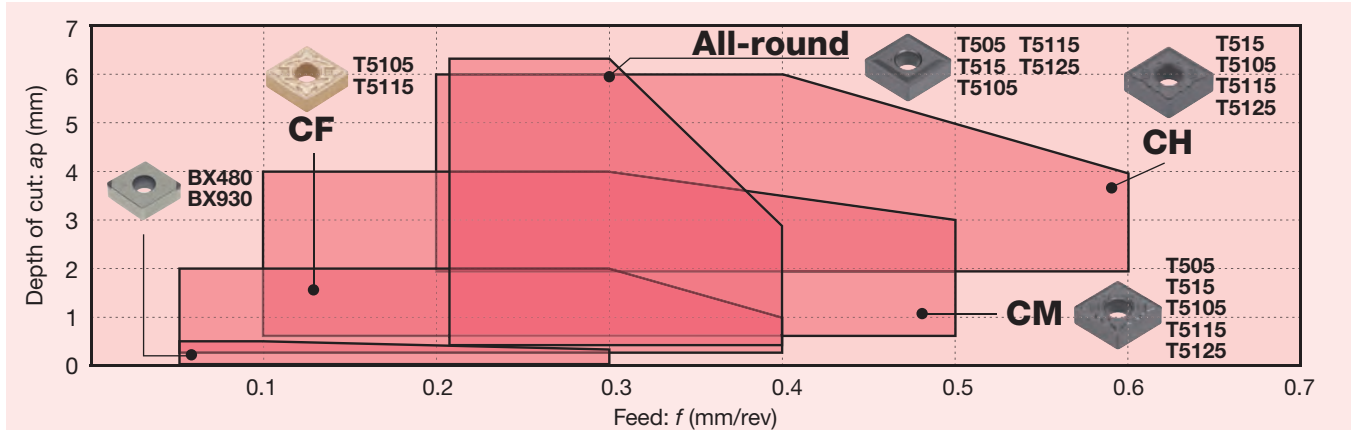
Cutting speed Vc (m/min)	150 - 300	150 - 500	200 - 500
Grade	Carbide 	Ceramic 	CBN 
Tool cost	Low	Low	High

Chipbreaker Guide

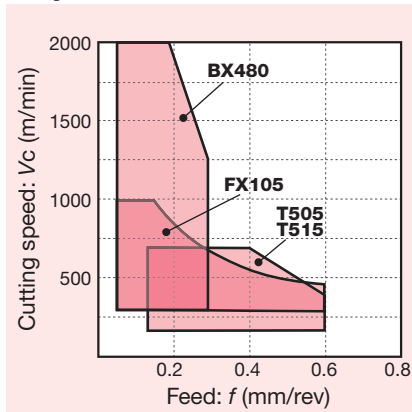
BASIC CHIPBREAKER: NEGATIVE TYPE

K Cast Iron

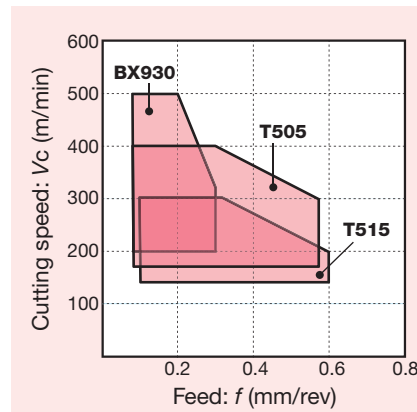
Chipbreaker System for Turning (Negative type)



Grey cast iron



Ductile cast iron



Chipbreaker	Shape	Feature
-		Excellent performance in high-speed finishing of cast iron with CBN sintered body on the cutting edge.
CF		Low cutting force chipbreaker for cast iron. Combined with an arc-shaped high rake angle (substantially 20°) drastically reduces cutting force and prevents the deformation and burr of thin-walled components.
All-round		Excellent performance in interrupted cutting. Highly reliable chipbreaker with great stability.

Chip-breaker	Shape	Feature
CM		First choice for cast iron. Versatile chipbreaker for a wide range of applications from continuous to interrupted cutting thanks to the positive land and wide chip pocket.
CH		Chipbreaker with reinforced cutting edge. The negative land and the land support provide stable insert seating and increase cutting edge strength, resulting in no fracture even in heavy cutting.

STANDARD CUTTING CONDITIONS

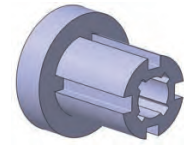
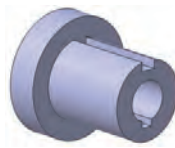
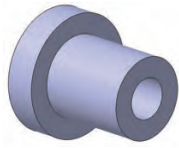
ISO	Operation	Chip-breaker	Grade	Depth of cut a_p (mm)	Feed f (mm/rev)	Cutting speed: V_c (m/min)	
						Grey cast iron	Ductile cast iron
K	High speed cutting	-	BX930	0.05 - 0.5	0.05 - 0.2	300 - 1200	200 - 500
		-	BX480	0.05 - 0.5	0.05 - 0.3	300 - 2000	200 - 300
	Finishing	All-round	T505	1 - 5	0.1 - 0.5	180 - 700	180 - 400
		All-round	T515	1 - 5	0.1 - 0.5	150 - 700	150 - 300
	Medium cutting	All-round	T505	1 - 5	0.1 - 0.5	180 - 700	180 - 400
		All-round	T515	1 - 5	0.1 - 0.5	150 - 700	150 - 300
	Medium to heavy cutting	CH	T515	3 - 6	0.2 - 0.6	150 - 700	150 - 300
		All-round	T515	1 - 5	0.1 - 0.5	150 - 700	150 - 300
		CH	T515	3 - 6	0.2 - 0.6	150 - 700	150 - 300

Grey cast iron: FC250, etc. 250, etc. Ductile cast iron: FCD450, etc. 450-10S, etc.

Selection System

SELECTION SYSTEM: NEGATIVE TYPE

K Cast Iron



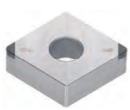
Continuous

Light interrupted

Heavy interrupted

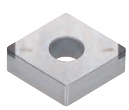
Precision finishing
[$a_p \sim 0.5 \text{ mm}$]

Basic



BX480

Basic



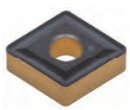
BX480



**All-round
T515**

Finishing
[$a_p = 0.5 \sim 2 \text{ mm}$]

Basic



**All-round
T505**

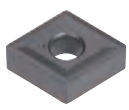


**All-round
T515**



**CF
T5105**

Basic



**All-round
T515**



**All-round
T505**

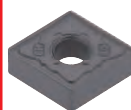


**CH
T515**



**CF
T5115**

Basic



**CH
T515**



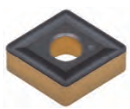
**All-round
T505**



**All-round
T515**

Medium cutting
[$a_p = 1 \sim 5 \text{ mm}$]

Basic



**All-round
T505**

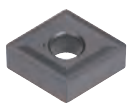


**All-round
T515**



**CF
T5105**

Basic



**All-round
T515**



**All-round
T505**

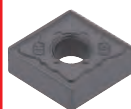


**CH
T515**



**CF
T5115**

Basic



**CH
T515**



**All-round
T505**



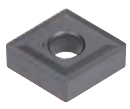
**CH
T5125**



**All-round
T515**

Medium to heavy cutting
[$a_p = 3 \sim 6 \text{ mm}$]

Basic



**All-round
T515**

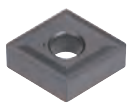


**All-round
T505**



**CF
T5105**

Basic



**All-round
T515**



**All-round
T505**

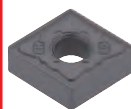


**CH
T515**



**CF
T5115**

Basic



**CH
T515**



**All-round
T505**



**CH
T5125**



**All-round
T515**

CER

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Hardened Materials

Turning

Grooving

Cast Iron

Turning

Milling

Superalloys

Turning

Turning

PCD

Non-Ferrous Materials

Turning

Grooving

Milling

CN



80° Rhombic with hole

[illegible][illegible]

C

D

G

S

V

W

DN



55° Rhombic with hole

[illegible][illegible]

IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

GN



70° Rhombic with hole

[illegible][illegible]

Diagram illustrating the geometry of a square hole in a plate. The hole is square with side length S . The distance from the center of the hole to the left edge is LE , and to the right edge is RE . The total width of the plate is IC . The hole is centered vertically within the plate thickness.

IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm



CN, GN

Ex.Toolholder



In-Toolholder



DN

Ex Toolholder

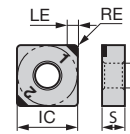


In Toolholder

SN



Square with hole



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

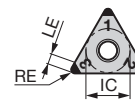
[illegible]

● : Line up

TN



Triangular with hole



IC : 9.525 mm
D1 : 3.81 mm
S : 4.76 mm

- | | |
|----------|---------------|
| K | Cast iron |
| S | Superalloy |
| H | Hard material |
| | Sintered |

[illegible]

● : Line up



SN

Ex.Toolholder



In.Toolholder



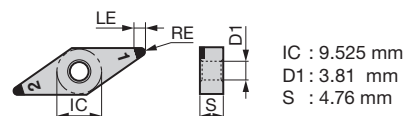
TN

Ex.Toolholder



In.Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



VN



35° Rhombic with hole

[illegible]

● : Line up

C

D

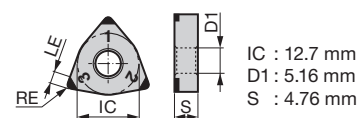
G

S

WN



80° Trigon with hole

[illegible]

● : Line up



VN  Ex.Toolholder



In.Toolholder



WN  Ex.Toolholder



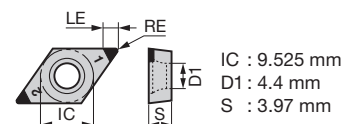
In.Toolholder

IC : 6.35 mm
D1 : 2.8 mm
S : 2.38 mm

[illegible][illegible][illegible][illegible][illegible][illegible]

In.Toolholder

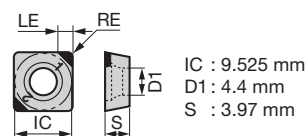
- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



55° Rhombic with hole, Positive 7°

[illegible]

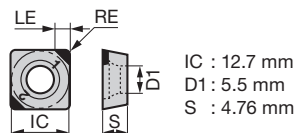
● : Line up



Square Positive 11° with hole

[illegible]

● : Line up



Square Positive 11° with hole

[illegible]

● : Line up



DC

Ex.Toolholder



In.Toolholder



SP

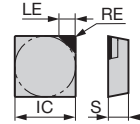
In.Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

SP



**Square Positive 11°
without hole**



IC : 12.7 mm
S : 3.18 mm

Square Positive 11°

without hole

K

Cast iron

S

Superalloy

H

Hard material

Sintered metal

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem					BX910	BX930																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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● : Line up

TP



**Triangular Positive 11°
with hole**



IC : 5.56 mm
D1 : 2.5 mm
S : 2.38 mm

		Triangular Positive 11° with hole		K		Cast iron		●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</
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● : Line up

TP



**Triangular Positive 11°
with hole**



IC : 6.35 mm
D1 : 2.8 mm
S : 2.38 mm

		Triangular Positive 11° with hole				K		Cast iron	●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</
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● : Line up



SP
In.Toolholder



TP
In.Toolholder

CER
Turning
Superalloys
Grooving
Milling
Turning
Cast Iron
Grooving
Milling
Turning
Hardened Materials
Turning
CBN
Hardened Materials
Turning
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Non-Ferrous Materials
Turning
Grooving
Milling

- C

D

G

S

V

W

IC : 6.35 mm
D1 : 3.4 mm
S : 3.18 mm

[illegible]

● : Line up

IC : 7.94 mm
D1 : 3.4 mm
S : 3.18 mm

[illegible]

● : Line up

IC : 9.525 mm
D1 : 4.4 mm
S : 3.97 mm

[illegible]

● : Line up



In.Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TP



Triangular Positive 11° with hole



IC : 9.525 mm
D1 : 4.4 mm
S : 4.76 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem													
		RE	LE				Burr	Flank wear	Crater wear	Chipping										
Finishing	3QP-TPMW160404	0.4	2.2	3		○					●									
	3QP-TPMW160408	0.8	1.9	3		○					●									

● : Line up

TP



Triangular Positive 11° without hole



IC : 6.35 mm
S : 3.18 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem													
		RE	LE				Burr	Flank wear	Crater wear	Chipping										
Finishing	3QP-TPGN110302	0.2	2.3	3		○					●									
	3QP-TPMN110302		2.3	3		○							●							
	3QP-TPGN110304	0.4	2.2	3		○					●									
	3QP-TPMN110304		2.2	3		○							●							
	3QP-TPGN110308	0.8	1.9	3		○					●	●								
	3QP-TPMN110308		1.9	3		○							●							
	3QP-TPGN110312	1.2	2.4	3		○						●								

● : Line up

TP



Triangular Positive 11° without hole



IC : 9.525 mm
S : 3.18 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem													
		RE	LE				Burr	Flank wear	Crater wear	Chipping										
Finishing	3QP-TPGN160304	0.4	2.2	3		○					●									
	3QP-TPMN160304		2.2	3		○						●								
	3QP-TPGN160308	0.8	1.9	3		○					●									
	3QP-TPMN160308		1.9	3		○						●								

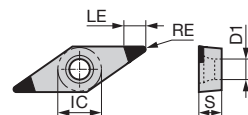
● : Line up



In.Toolholder

CER
Turning
Superalloys
Grooving
Milling
Turning
Cast Iron
Grooving
Milling
Turning
Hardened Materials
Turning
CBN
Hardened Materials
Turning
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Non-Ferrous Materials
Turning
Grooving
Milling

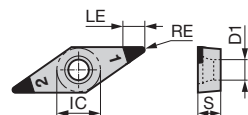
- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



IC : 6.35 mm
D1 : 2.8 mm
S : 3.18 mm

[illegible][illegible]

● : Line up

[illegible]

IC : 9.525 mm
D1 : 4.4 mm
S : 4.76 mm

[illegible]

● : Line up



Ex.Toolholder



In.Toolholder

CBN Milling

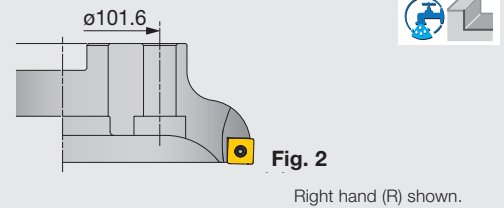
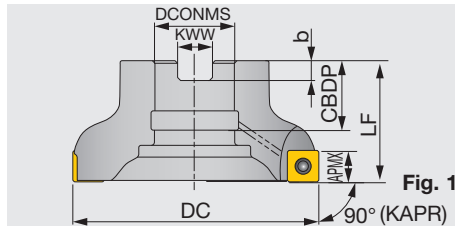
K Cast Iron

TPW / EPW

TPW13

Square shoulder mill, with screw clamp system

GAMP = +11.5°, GAMF = -13° ~ -10.5°



Designation	APMX	DC	CICT	LF	DCONMS	CBBDP	KWW	b	WT(kg)	Air hole	Insert	Fig.
TPW13R050M22.0-03	10	50	3	40	22	20	10	6	0.3	With	SW*T1304...	1
TPW13R050M22.0-04	10	50	4	40	22	20	10	6	0.3	With	SW*T1304...	1
TPW13R050M22.0E04	10	50	4	40	22	20	10.4	6.3	0.3	With	SW*T1304...	1
TPW13R050M22.0E05	10	50	5	40	22	20	10.4	6.3	0.3	With	SW*T1304...	1
TPW13R063M22.0-04	10	63	4	40	22	20	10	6	0.5	With	SW*T1304...	1
TPW13R063M22.0-05	10	63	5	40	22	20	10	6	0.5	With	SW*T1304...	1
TPW13R063M22.0E05	10	63	5	40	22	20	10.4	6.3	0.4	With	SW*T1304...	1
TPW13R063M22.0E06	10	63	6	40	22	20	10.4	6.3	0.4	With	SW*T1304...	1
TPW13R080M25.4-04	10	80	4	50	25.4	26	9.5	6	0.8	With	SW*T1304...	1
TPW13R080M25.4-06	10	80	6	50	25.4	26	9.5	6	0.8	With	SW*T1304...	1
TPW13R080M27.0E06	10	80	6	50	27	22	12.4	7	0.8	With	SW*T1304...	1
TPW13R080M27.0E08	10	80	8	50	27	22	12.4	7	0.8	With	SW*T1304...	1
TPW13R100M31.7-05	10	100	5	50	31.75	38	12.7	8	1.2	With	SW*T1304...	1
TPW13R100M31.7-07	10	100	7	50	31.75	38	12.7	8	1.2	With	SW*T1304...	1
TPW13R100M32.0E07	10	100	7	50	32	28.5	14.4	8	1.2	With	SW*T1304...	1
TPW13R100M32.0E10	10	100	10	50	32	28.5	14.4	8	1.2	With	SW*T1304...	1
TPW13R125M38.1-06	10	125	6	63	38.1	38	15.9	10	2.4	With	SW*T1304...	1
TPW13R125M38.1-08	10	125	8	63	38.1	38	15.9	10	2.4	With	SW*T1304...	1
TPW13R125M40.0E08	10	125	8	63	40	32	16.4	9	2.4	With	SW*T1304...	1
TPW13R125M40.0E12	10	125	12	63	40	32	16.4	9	2.5	With	SW*T1304...	1
TPW13R160M50.8-08	10	160	8	63	50.8	38	19	11	4	Without	SW*T1304...	1
TPW13R160M50.8-12	10	160	12	63	50.8	38	19	11	4	Without	SW*T1304...	1
TPW13R200M47.6-10	10	200	10	63	47.625	38	25.4	14	7.4	Without	SW*T1304...	2

SPARE PARTS

Designation	Clamping screw	Lubricant	Shim screw	Shell locking bolt 1	Shell locking bolt 2	Shim	Wrench	Wrench
TPW13R050, 063...	CSPB-3.5	M-1000	DTS5-3.5SS	-	CM10X30H	FSSP1102	IP-15D	P-3.5
TPW13R080M...	CSPB-3.5	M-1000	DTS5-3.5SS	-	CM12X30H	FSSP1102	IP-15D	P-3.5
TPW13R100M...	CSPB-3.5	M-1000	DTS5-3.5SS	TMBA-M16H	-	FSSP1102	IP-15D	P-3.5
TPW13R125M...	CSPB-3.5	M-1000	DTS5-3.5SS	TMBA-M20H	-	FSSP1102	IP-15D	P-3.5
TPW13R160, 200...	CSPB-3.5	M-1000	DTS5-3.5SS	-	-	FSSP1102	IP-15D	P-3.5

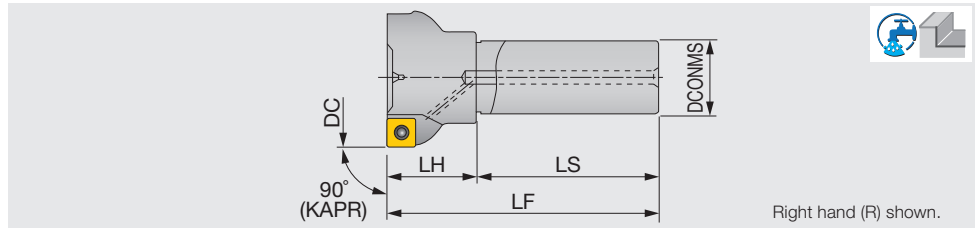
Recommended clamping torque : 3.5 N·m

Reference pages: Inserts, Standard cutting conditions → **CBN-108**

EPW13

Square shoulder endmill, shank type, with screw clamp system

GAMP = +11.5°, GAMF = -13° ~ -10.5°



Designation	APMX	DC	CICT	DCONMS	LS	LH	LF	WT(kg)	Air hole	Insert
EPW13R032M32.0-02	10	32	2	32	80	35	115	0.6	With	SW*T1304...
EPW13R040M32.0-03	10	40	3	32	80	35	115	0.7	With	SW*T1304...
EPW13R050M32.0-03	10	50	3	32	80	40	120	0.9	With	SW*T1304...
EPW13R050M32.0-04	10	50	4	32	80	40	120	0.9	With	SW*T1304...
EPW13R063M32.0-04	10	63	4	32	80	40	120	1	With	SW*T1304...
EPW13R063M32.0-05	10	63	5	32	80	40	120	1	With	SW*T1304...
EPW13R080M32.0-04	10	80	4	32	80	40	120	1.3	With	SW*T1304...
EPW13R080M32.0-06	10	80	6	32	80	40	120	0.8	With	SW*T1304...

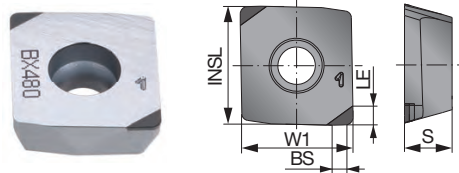
SPARE PARTS

Designation	Clamping screw	Lubricant	Shim screw	Shim	Wrench	Wrench
EPW13R032, 040...	CSPB-3.5	M-1000	-	-	IP-15D	-
EPW13R050 - 080...	CSPB-3.5	M-1000	DTS5-3.5SS	FSSP1102	IP-15D	P-3.5

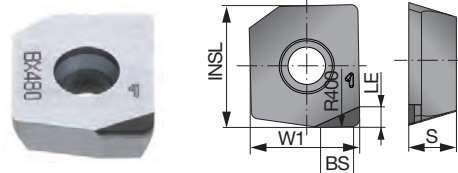
Recommended clamping torque : 3.5 N·m

INSERTS

F2-SWGW...



WSGW... (Wiper edge)



P	Steel				
M	Stainless				
K	Cast iron	★			
N	Non-ferrous				
S	Superalloys				
H	Hard materials				

★ : First choice

Designation	RE	APMX	CBN			LE	INSL	W1	S	BS
			BX480							
F2-SWGW130508PDLSR	0.8	0.5	●			2	13.8	13.1	5.6	1.5
WSGW130508PDLSR	0.8	-	●			2	14.3	12.8	5.6	3.7

CBN inserts are not designed to be reground.

F2-SWGW.... inserts are sold in 5 pcs per box. (The prefix "F" indicates five)

● : Line up

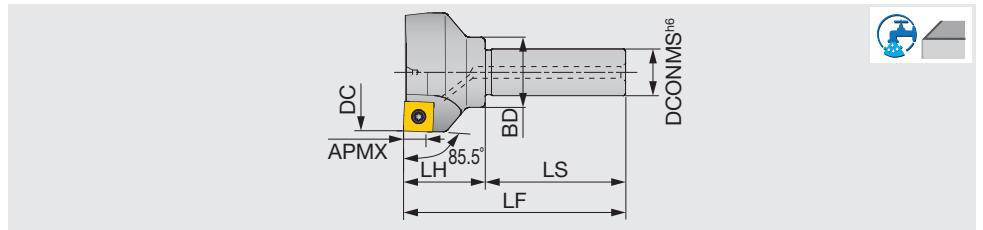
STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Grades	Shape	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
K	Grey cast iron FC250, etc. 250, etc.	BX480	2-SWGW130508PDLSR	800 - 1500	0.05 - 0.3

EFE / TFE

EFE12R

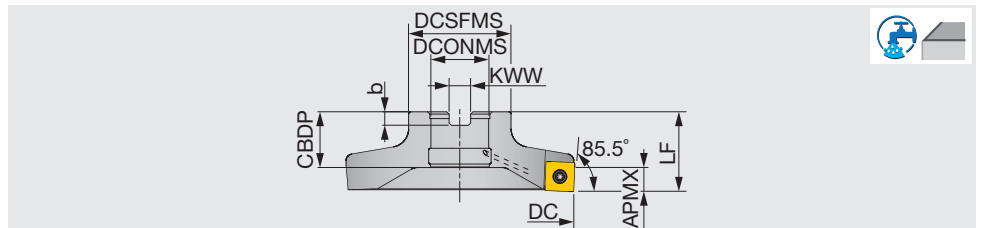
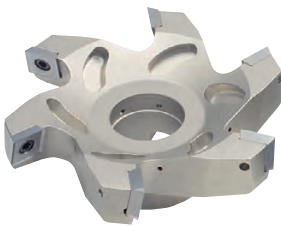
Face endmill for aluminium machining, shank type, with screw clamp system



Designation	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT(kg)	Air hole	Insert
EFE12050R	8	50	3	20	30	60	35	95	0.37	With	SEG*12X4...

TFE12R

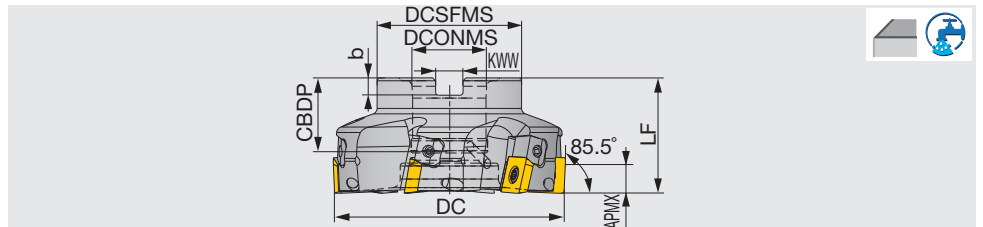
Face mill for aluminium machining, with screw clamp system, light weight



Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT(kg)	Air hole	Insert
TFE12063R	8	63	3	45	35	22	19	10	6	0.34	With	SEG*12X4...
TFE12080R	8	80	4	50	35	25.4	24.5	9.5	6	0.45	With	SEG*12X4...
TFE12100R	8	100	6	50	35	25.4	24.5	9.5	6	0.59	With	SEG*12X4...
TFE12125R	8	125	6	50	35	25.4	24.5	9.5	6	0.9	With	SEG*12X4...

TFE12R...-...A

Face mill for aluminium machining, with screw clamp system



Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT(kg)	Air hole	Insert
TFE12R080M25.4-06A	8	80	6	50	40	25.4	26	9.5	6	0.70	With	SEG*12X4...
TFE12R080M27.0E06A	8	80	6	55	40	27	22	12.4	7	0.69	With	SEG*12X4...
TFE12R100M25.4-08A	8	100	8	50	40	25.4	26	9.5	6	1.15	With	SEG*12X4...
TFE12R100M27.0E08A	8	100	8	55	40	27	22	12.4	7	1.11	With	SEG*12X4...
TFE12R125M31.7-10A	8	125	10	70	50	31.7	32	12.7	8	2.24	With	SEG*12X4...
TFE12R125M32.0E10A	8	125	10	70	50	32	28.5	14.4	8	2.14	With	SEG*12X4...

SPARE PARTS



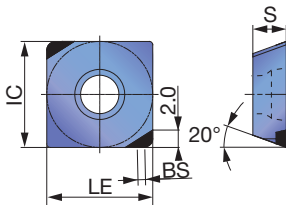
Designation	Clamping screw	Adjustable Wedge	Lubricant	Shell locking bolt 1	Shell locking bolt 2	Right-left screw	Wrench	Wrench
EFE12000R	CSPB-4S	-	M-1000	-	-	-	-	IP-15D
TFE12063R	CSPB-4S	-	M-1000	-	CM10X30H	-	-	IP-15D
TFE12080R - TFE12125R	CSPB-4S	-	M-1000	TMBA-M12H	-	-	-	IP-15D
TFE12R**A	CSTB-4	FW-701R	M-1000	TMBA-M12H	-	MCS520-2.5	P-2.5T	T-15LB

Recommended clamping torque: 3.5 N·m

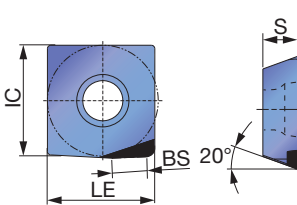
Reference pages: Inserts, Standard cutting conditions → **CBN-110**

INSERT

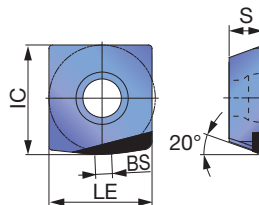
2QP-SECW12X412ZETR



1QP-SECW12X4ZETR-W



1QP-SECW12X4ZETR-B



P	Steel				
M	Stainless				
K	Cast iron	★			
N	Non-ferrous				
S	Superalloys				
H	Hard materials				

★ : First choice

Designation	APMX	CBN				IC	LE	S	BS
		BX480							
2QP-SECW12X412ZETR	1.5	●				12.7	12.7	4	0.9
1QP-SECW12X4ZETR-W	-	●				12.9	12.3	4	4
1QP-SECW12X4ZETR-B	-	●				13.1	12.3	4	2

● : Line up

BX480: 1 piece per package

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Grade	Designation	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
	Grey and ductile cast irons	150 - 250 HB	AH120	SEGW12X4ZEPR	100 - 200	0.03 - 0.15
K	Grey cast iron	150 - 250 HB	BX480	2QP- SECW12X412ZETR	800 - 1500	0.05 - 0.3
	Ductile cast irons	150 - 250 HB	BX480	2QP- SECW12X412ZETR	500 - 800	0.05 - 0.2

Notes:

- In milling aluminium and copper alloys:

(1) For improved surface finish, use together with wiper insert

SEGW12X4ZEFR-WD

(2) For reducing burr occurrence, use together with deburring inserts

SEGW12X4ZEFR-BD

- When milling aluminium and copper alloys, use of a water soluble cutting fluid is recommended. When milling steels, cast irons, and stainless steels, dry cutting is recommended.

- When the length-to-diameter overhang ratio of the tool (L/D) exceeds 3, reduce cutting speed and feed to 70 to 80% of the values given in the table.

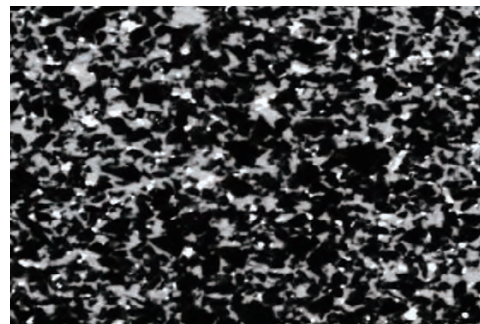
CBN Turning

S Superalloys

New CBN grade for high speed finishing of super alloys

BX815

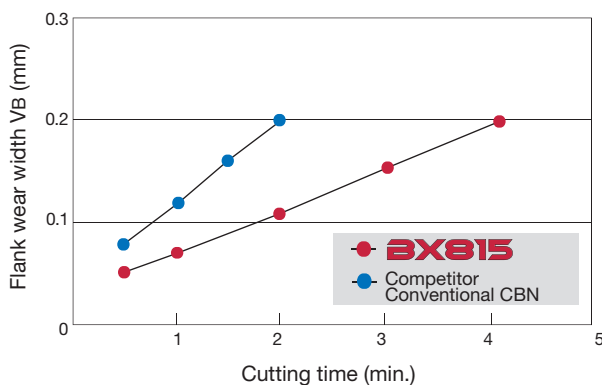
- Heat resistance and oxidation resistance are improved by using Alumina-based binders. Maximizes high-speed machining of super alloys
- Well-dispersed Zirconia grains improve fracture resistance
- Excellent finished surface is obtained by using fine cBN particles.



Microstructure image of BX815

CUTTING PERFORMANCE

Comparison of wear resistance



S

Insert : DNGA150412 BX815
 Workpiece material : Inconel 718 (44 HRC) Continuous cutting
 Cutting speed : **$V_c = 400 \text{ m/min}$**
 Feed : $f = 0.2 \text{ mm/rev}$
 Depth of cut : $a_p = 0.2 \text{ mm}$
 Coolant : Wet

BX815 exhibited excellent wear resistance in high speed machining of superalloy.

CER

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Hardened Materials

Turning

Hardened Materials

Grooving

Cast Iron

Turning

Milling

Superalloys

Turning

Sintered metal

Turning

PCD

Non-Ferrous Materials

Turning

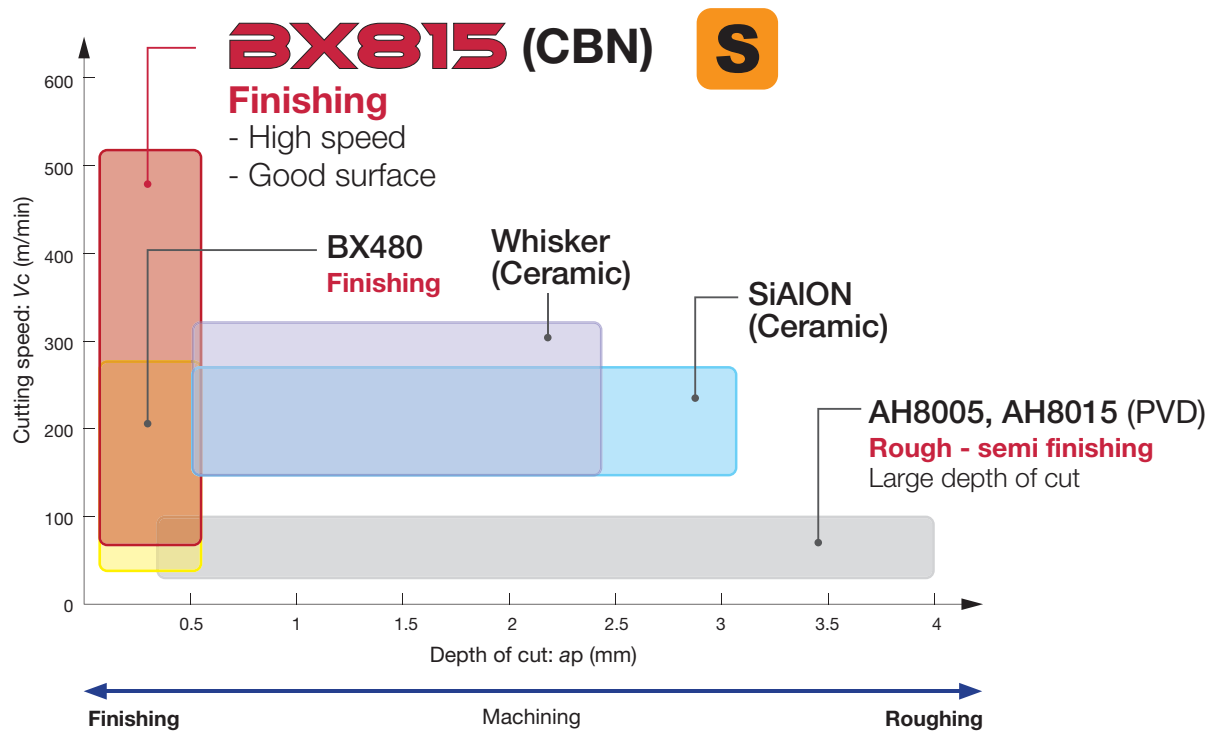
Grooving

Milling

Negative

Positive

APPLICATION AREAS



C

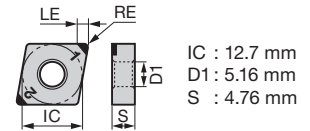
D

S

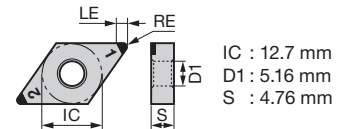
T

V

W

[illegible][illegible]

● : Line up

[illegible][illegible]

● : Line up



CN

Ex.Toolholder



In.Toolholder



DN

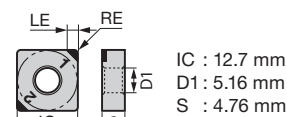
Ex Toolholder



In Toolholder

SN**Square with hole**

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



	Square with hole		K	Cast iron	●●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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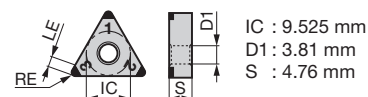
D

S

T

V

W

TN**Triangular with hole**

 Triangular with hole		K	Cast iron	●●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</
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● : Line up

SN



Ex.Toolholder



In.Toolholder

TN



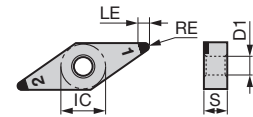
Ex.Toolholder



In.Toolholder

Reference pages : Edge preparation → CBN-6

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊗ : Heavy interrupted cutting



IC : 9.525 mm
D1: 3.81 mm
S : 4.76 mm

VN



35° Rhombic with hole

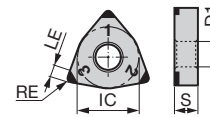
[illegible]

● : Line up

WN



80° Trigon with hole



IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

[illegible]

● : Line up



VN

Ex.Toolholder



In.Toolholder



WN

Ex.Toolholder



In.Toolholder

IC : 6.35 mm
D1 : 2.8 mm
S : 2.38 mm

[illegible]

● : Line up

W

[illegible]

● : Line up

[illegible]

● : Line up



DC

In Toolholder

CBN-116

IC : 9.525 mm
D1 : 4.4 mm
S : 3.97 mm

[illegible]

● : Line up

[illegible]

● : Line up

[illegible]

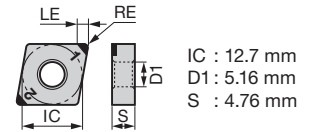
● : Line up



CBN Turning

 Sintered Metal

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



CN



80° Rhombic with hole

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem				BX470	BX480																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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CN, GN



Ex.Toolholder



In.Toolholder

DN



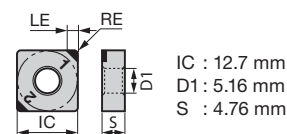
Ex.Toolholder



In.Toolholder

● : Line up

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



SN



Square with hole

[illegible][illegible]

● : Line up

C

D

G

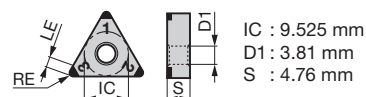
S

W

TN



Triangular with hole

[illegible][illegible]

● : Line up



SN

Ex.Toolholder



In.Toolholder



TN

Ex.Toolholder



In.Toolholder

CC

[illegible][illegible]

C

D

G

S

T

V

W

CC

[illegible][illegible]

CC

[illegible][illegible]

● : Line up



CBN-122

Technical drawing of a 1/2" 20 TPI UNF-2A x 0.50mm thread plug. The drawing shows a cross-section of the plug with the following dimensions and labels:

- LE: Length of the plug
- RE: Radius of the plug
- IC: Inner diameter of the plug (9.525 mm)
- D1: Outer diameter of the plug (4.4 mm)
- S: Thickness of the plug (3.97 mm)

[illegible]

● : Line up

[illegible]

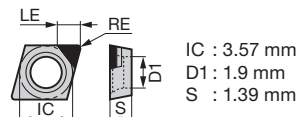
● : Line up

[illegible]

● : Line up



- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting



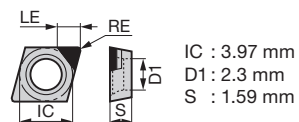
EP



**75° Rhombic,
Positive 11°
with hole**

[illegible]

● : Line up



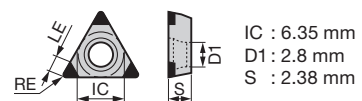
EP



**75° Rhombic,
Positive 11°
with hole**

[illegible]

● : Line up



TP



Triangular Positive 11° with hole

[illegible]

● : Line up



- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TP



Triangular Positive 11°
with hole



IC : 6.35 mm
D1 : 3.4 mm
S : 3.18 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem													
		RE	LE				Burr	Flank wear	Crater wear	Chipping										
Precision finishing	3QP-TPGW110304F	0.4	2.2	3			○				●	●								
	3QP-TPGW110308F	0.8	1.9	3			○				●	●								
Finishing	3QP-TPGW110302	0.2	2.3	3		○					●	●								
	3QP-TPGW110304	0.4	2.2	3		○					●	●								
Medium cutting	3QP-TPGW110308	0.8	1.9	3		○					●	●								

● : Line up

TP



Triangular Positive 11°
with hole



IC : 7.94 mm
D1 : 3.4 mm
S : 3.18 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem													
		RE	LE				Burr	Flank wear	Crater wear	Chipping										
Finishing	3QP-TPGW130302	0.2	2.3	3		○					●	●								
	3QP-TPGW130304	0.4	2.2	3		○					●	●								

● : Line up

TP



Triangular Positive 11°
with hole



IC : 9.525 mm
D1 : 4.4 mm
S : 3.97 mm

Application	Designation	Dimension (mm)		No. of corners	Wiper	Standard	Problem													
		RE	LE				Burr	Flank wear	Crater wear	Chipping										
Finishing	3QP-TPGW16T304	0.4	2.2	3		○					●	●								

● : Line up



In.Toolholder

CER
Turning
Superalloys
Grooving
Milling
Turning
Cast Iron
Grooving
Milling
Hardened Materials
Turning
CBN
Hardened Materials
Turning
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Non-Ferrous Materials
Turning
Grooving
Milling

Diagram illustrating the geometry of a 30° cone. The cross-section is a triangle with a central circular hole. The dimensions are defined as follows:

- LE: Length of the cone (height of the triangle).
- RE: Radius of the cone (distance from the center of the hole to the outer edge of the cone).
- IC: Inner diameter of the hole.
- S: Thickness of the cone (width of the triangle).

IC : 6.35 mm
S : 3.18 mm

[illegible][illegible]

S

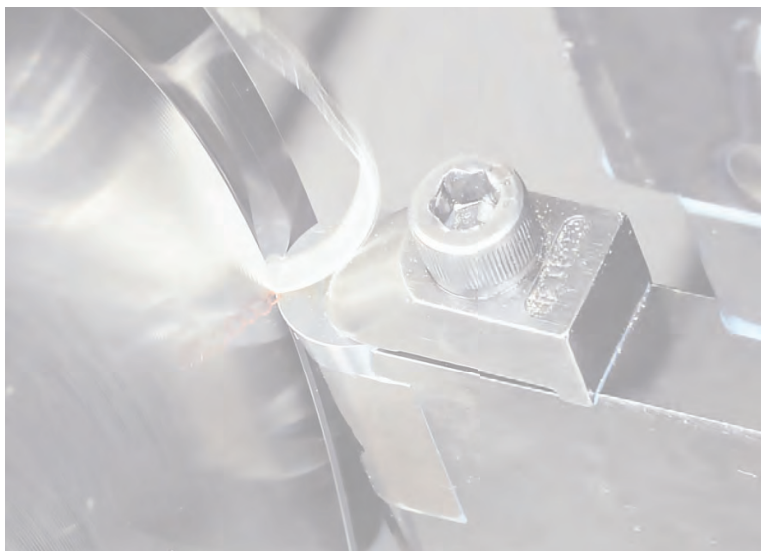
[illegible][illegible]

W



ADVANCED

MATERIALS SOLUTIONS



CERAMIC

SOLUTIONS



CBN

SOLUTIONS



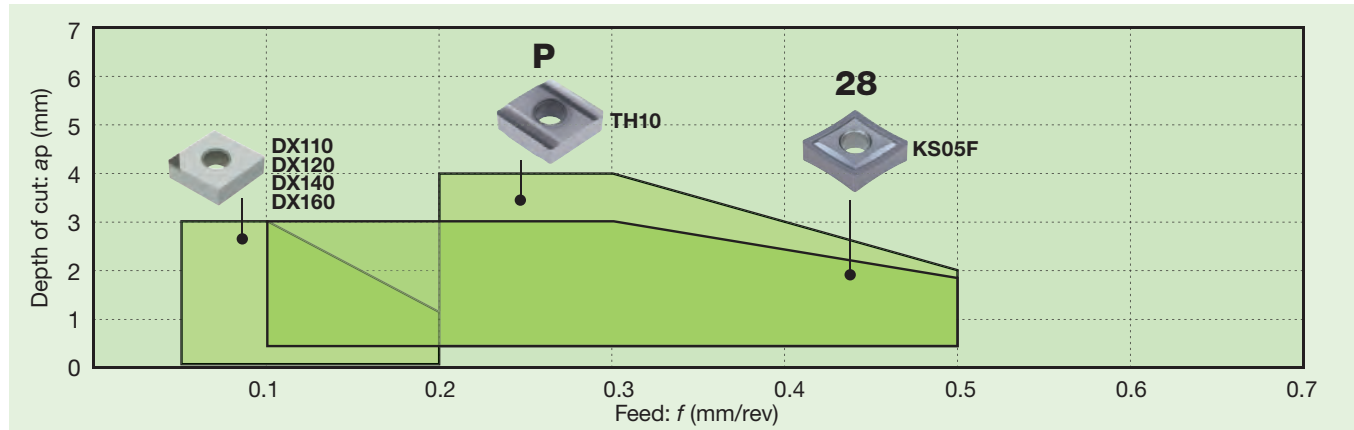
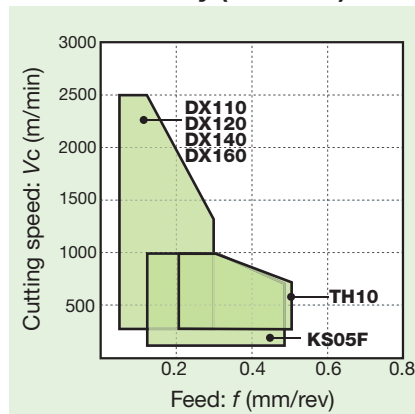
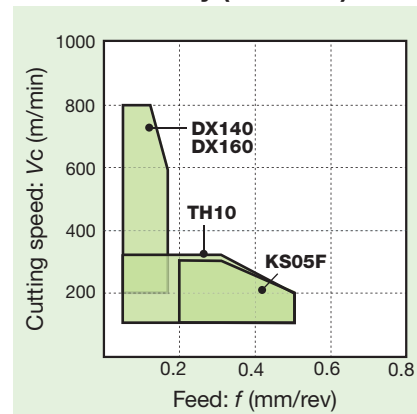
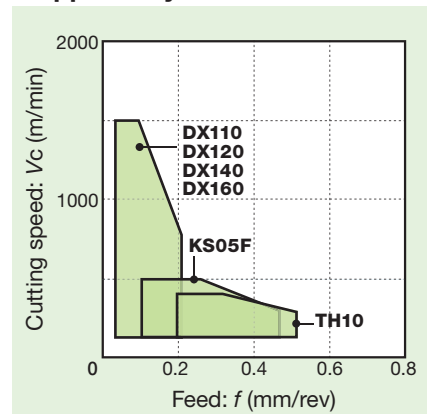
PCD

SOLUTIONS

PCD Turning

Chipbreaker Guide

N Non-Ferrous Metal

BASIC CHIPBREAKER: NEGATIVE TYPE
N Non-ferrous Metal
Chipbreaker System for Turning (Negative type)

Aluminium alloy (Si < 12%)

Aluminium alloy (Si ≥ 12%)

Copper alloy


Chipbreaker	Shape	Feature	Chipbreaker	Shape	Feature
-		Excellent performance in high-speed finishing of non-ferrous metal, such as aluminium and copper alloy, with diamond sintered body on the cutting edge.	With chip-breaker		Wide chipbreaker for excellent chip control.
P		Excellent sharpness for non-ferrous metal, such as aluminium and copper alloy.	28		Low cutting geometry with large inclination for finishing to medium cutting range.

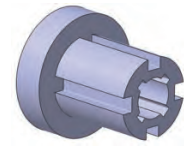
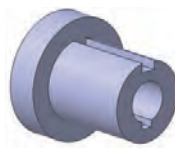
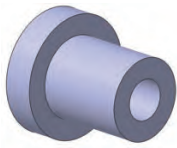
STANDARD CUTTING CONDITIONS

ISO	Operation	Chip-breaker	Grade	Depth of cut a_p (mm)	Feed f (mm/rev)	Cutting speed: V_c (m/min)		
						Aluminium alloy (Si < 12%)	Aluminium alloy (Si ≥ 12%)	Copper alloy
N	Precision finishing	With	DX160	0.03 - 0.5	0.05 - 0.15	300 - 2500	300 - 800	300 - 1500
	Finishing	With	DX160	0.05 - 2	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
		P	TH10	0.5 - 4	0.2 - 0.5	100 - 1000	100 - 300	100 - 300
	Medium cutting	P	KS05F	0.5 - 3	0.1 - 0.5	100 - 1200	100 - 300	100 - 300
		P	KS05F	0.5 - 3	0.1 - 0.5	100 - 1200	100 - 300	100 - 300
		P	TH10	0.5 - 4	0.2 - 0.5	100 - 1000	100 - 300	100 - 300

Selection System

SELECTION SYSTEM: NEGATIVE TYPE

N Non-ferrous Metal



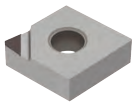
Continuous

Light interrupted

Heavy interrupted

Precision finishing
[$a_p \approx 0.5 \text{ mm}$]

Basic

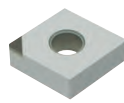


With chipbreaker
DX160

Surface quality

With chipbreaker
DX110

Basic



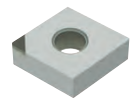
DX160

Surface quality

With chipbreaker
DX110

Finishing
[$a_p = 0.5 \sim 2 \text{ mm}$]

Basic

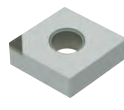


With chipbreaker
DX160

Surface quality

With chipbreaker
DX110

Basic

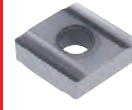


DX160

Fracture

P TH10

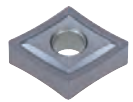
Basic



P TH10

Medium cutting
[$a_p = 1 \sim 4 \text{ mm}$]

Basic

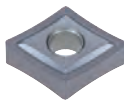


28 KS05F

Wear

DX160

Basic

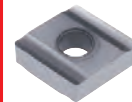


28 KS05F

Wear

DX160

Basic



P TH10



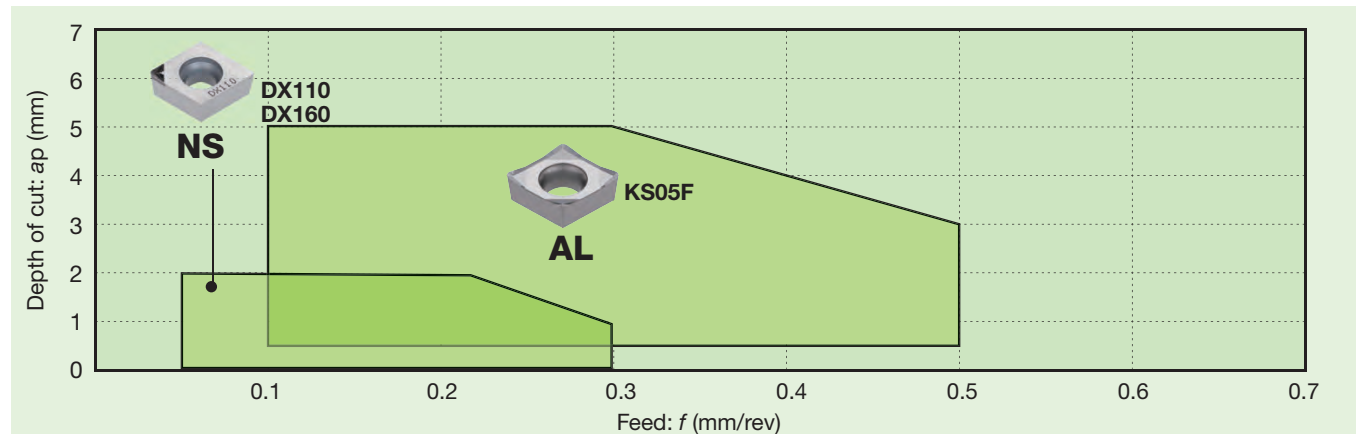
More info

Chipbreaker Guide

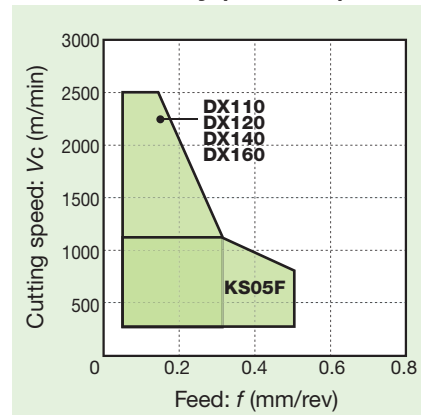
BASIC CHIPBREAKER: POSITIVE TYPE

N Non-ferrous Metal

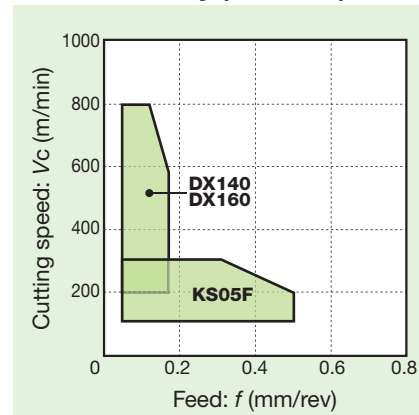
Chipbreaker System for Turning (Positive Type)



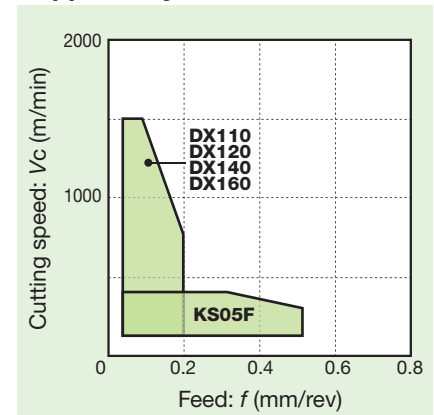
Aluminium alloy (Si < 12%)



Aluminium alloy (Si ≥ 12%)



Copper alloy



Chipbreaker	Shape	Feature	Chipbreaker	Shape	Feature
-		Excellent performance in high-speed finishing of non-ferrous metal with diamond sintered body on the cutting edge.	NS		A unique three-dimensional chipbreaker. Covers a wide range of condition from roughing to finishing.
AL		Large rake angle and sharp cutting edge reduce cutting force. Lapped rake face prevents adhesion. Large inclination on the cutting edge (wavy cutting edge) for more stable chip control.			

STANDARD CUTTING CONDITIONS

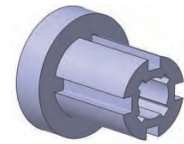
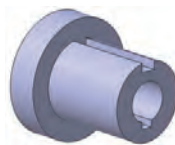
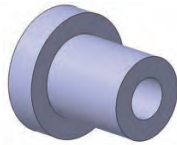
ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut a_p (mm)	Feed f (mm/rev)	Cutting speed: V_c (m/min)		
							Aluminium alloy (Si < 12%)	Aluminium alloy (Si ≥ 12%)	Copper alloy
N	Precision finishing	Continuous	NS	DX160	0.03 - 0.5	0.03 - 0.15	300 - 2500	300 - 800	300 - 1500
		Light interrupted	-	DX160	0.03 - 0.5	0.05 - 0.2	300 - 2500	300 - 600	300 - 1500
	Finishing	Continuous	NS	DX160	0.05 - 2	0.03 - 0.3	300 - 2500	300 - 800	300 - 1500
		Light interrupted	-	DX160	0.05 - 1	0.05 - 0.15	300 - 1800	300 - 600	300 - 1200
		Heavy interrupted	AL	KS05F	0.5 - 5	0.1 - 0.5	100 - 600	100 - 200	100 - 300
	Medium cutting	Continuous	AL	KS05F	0.5 - 5	0.1 - 0.5	100 - 1200	100 - 300	100 - 300
		Light interrupted	AL	KS05F	0.5 - 5	0.1 - 0.5	100 - 900	100 - 200	100 - 200
		Heavy interrupted	AL	KS05F	0.5 - 5	0.1 - 0.5	100 - 600	100 - 200	-

Selection System

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

SELECTION SYSTEM: POSITIVE TYPE

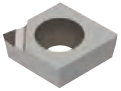
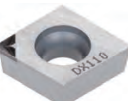
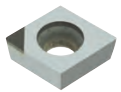
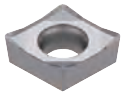
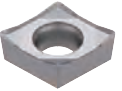
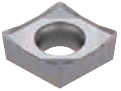
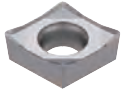
N Non-ferrous Metal



Continuous

Light interrupted

Heavy interrupted

	Continuous	Light interrupted	Heavy interrupted
Precision finishing $[a_p = \sim 0.5 \text{ mm}]$	Basic  NS DX160 Surface quality → NS DX110	Basic  Surface quality → With chipbreaker DX110 Fracture → DX160 With chipbreaker DX160	
Finishing $[a_p = 0.5 \sim 2 \text{ mm}]$	Basic  NS DX160 Surface quality → NS DX110	Basic  Fracture → AL KS05F DX160	Basic  AL KS05F
Medium cutting $[a_p = 1 \sim 5 \text{ mm}]$	Basic  AL KS05F Wear → With chipbreaker DX160	Basic  AL KS05F Wear → DX160	Basic  AL KS05F

CER

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Hardened Materials

Turning

Hardened Materials

Grooving

Cast Iron

Turning

Milling

Superalloys

Turning

Sintered metal

Turning

PCD

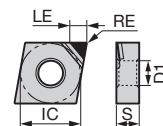
Non-Ferrous Materials

Turning

Grooving

Milling

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

CN**80° Rhombic
with hole**

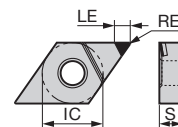
IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

N Non-ferrous

●● ●● ●● ●●

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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● : Line up

DN**55° Rhombic
with hole**

IC : 12.7 mm
D1 : 5.16 mm
S : 4.76 mm

N Non-ferrous

●● ●● ●●

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX120	DX140	DX160													
Finishing	1QP-DNMM150402F	0.2	2.6	1	○			●													
	DNMM150402-DIA		3.3	1	○	●															
	1QP-DNMM150404F	0.4	2.5	1	○			●													
	DNMM150404-DIA		3.1	1	○	●															
	DNGA150404-DIA		3.1	1			●	●													
	1QP-DNMM150408F	0.8	2.5	1	○			●													
	DNGA150408-DIA		2.8	1			●														
	1QP-DNMM150412F	1.2	2.5	1	○			●													

● : Line up

CN



Ex. Toolholder



In. Toolholder

DN

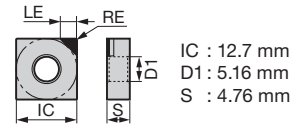


Ex. Toolholder



In. Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



SN



Square with hole

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	SNGA120404-DIA	0.4	3.6	1	DX140	●															
	SNGA120408-DIA	0.8	3.6	1	DX140	●															

SN



Square without hole

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	SNGN120408-DIA	0.8	3.6	1	DX140	●															

TN



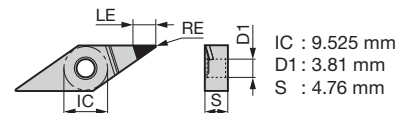
Triangular with hole

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	1QP-TNMM160402	0.2	2.7	1	DX110	●															
	1QP-TNMM160402F		2.6	1	DX120																
	TNMM160402-DIA		3.3	1	DX140		●														
	1QP-TNMM160404	0.4	2.6	1	DX160	●															
	1QP-TNMM160404F		2.4	1																	
	TNMM160404-DIA		3.2	1			●														
	TNGA160404-DIA		3.2	1				●	●												
	1QP-TNMM160408F	0.8	2.1	1						●	●										
	TNGA160408-DIA		2.9	1						●	●										



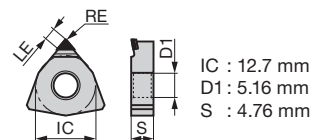
● : Line up

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

VN**35° Rhombic
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX120	DX160														
Finishing	1QP-VNMM160402F	0.2	2.5	1	○	●	●														
	VNMM160402-DIA		4.8	1	○	●	●														
	1QP-VNMM160404F	0.4	2.3	1	○	●	●														
	VNMM160404-DIA		4.4	1	○	●	●														
	1QP-VNMM160408F	0.8	2.1	1	○	●	●														
	VNMM160408-DIA		3.6	1	○	●	●														
	1QP-VNMM160412F	1.2	2.1	1	○	●	●														

● : Line up

WN**80° Trigon
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX160															
Finishing	1QP-WNMM080402F	0.2	2.6	1	○	●															
	1QP-WNMM080404F	0.4	2.6	1	○	●															

● : Line up

VN



Ex.Toolholder



In.Toolholder

WN



Ex.Toolholder



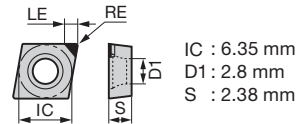
In.Toolholder

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

CC



**80°Rhombic
Positive 7°
with hole**



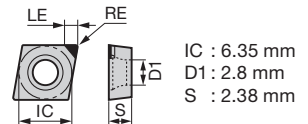
Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX200															
Finishing	1QP-CCGW04T102F	0.2	1.7	1		●															
	CCGW04T104F	0.4	1.6	1		●															

● : Line up

CC



**80°Rhombic
Positive 7°
with hole**



Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX110	DX120	DX140	DX160	DX200											
Finishing	CCGW060200-DIA	0.05	2.4	1				●													
	1QP-CCGT060201-NS	0.1	3.1	1	○	●		●													
	1QP-CCMT060202F		2	1	○				●												
	CCMT060202-DIA		2.4	1	○		●														
	1QP-CCGT060202-NS	0.2	3.1	1	○	●			●												
	1QP-CCGW060202F		3.5	1						●											
	CCGW060202-DIA		2.4	1				●													
	1QP-CCGT060204-NS		3.1	1	○	●			●												
	1QP-CCMT060204		2.4	1	○	●															
	1QP-CCMT060204F		2.1	1	○				●												
	CCMT060204-DIA		2.4	1	○		●														
	1QP-CCGW060204F		3	1						●											
	CCGW060204-DIA		2.4	1				●													

● : Line up



Ex. Toolholder



In. Toolholder

CER
Turning
Superalloys
Grooving
Milling
Turning
Cast Iron
Grooving
Milling
Hardened Materials
Turning
CBN
Turning
Hardened Materials
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Non-Ferrous Materials
Turning
Grooving
Milling

Technical drawing of a square pin. The drawing shows a top view and a side view. The top view is a square with a central circular hole. Dimensions are labeled: LE (left edge), RE (right edge), IC (inner circle diameter), and D (outer diameter). The side view shows the pin's profile with dimensions S (thickness) and D (height). The following table lists the dimensions:

Dimension	Value
IC	9.525 mm
D1	4.4 mm
S	3.97 mm



N	Non-ferrous	OC	OC	OC	OC	OC
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[illegible]

N Non-ferrous

[illegible]

● : Line up



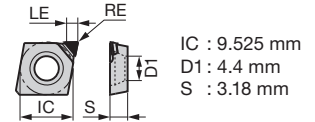
In-Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

CP



**80° Rhombic
Positive 11°
with hole**



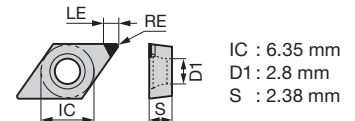
		80° Rhombic Positive 11° with hole		N Non-ferrous		●●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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● : Line up

DC



**55° Rhombic
Positive 7°
with hole**



Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX110	DX120	DX140	DX160	DX200											
Finishing	DCGW070200-DIA	0.05	2.4	1				●													
	1QP-DCGT070201-NS	0.1	3.3	1	○	●															
	1QP-DCGT070202-NS		3.2	1	○	●			●												
	1QP-DCMT070202F		2.5	1	○				●												
	DCMT070202-DIA	0.2	2.3	1	○		●														
	1QP-DCGW070202F		3	1						●											
	DCGW070202-DIA		2.3	1			●	●													
	1QP-DCGT070204-NS		3	1	○	●			●												
	1QP-DCMT070204F		2.5	1	○				●												
	DCMT070204-DIA	0.4	2.1	1	○		●														
	1QP-DCGW070204F		3	1						●											
	DCGW070204-DIA		2.1	1				●													

● : Line up



CP

Ex.Toolholder



In.Toolholder

DC



Ex.Toolholder



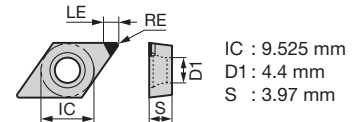
In.Toolholder

CER
Turning
Superalloys
Grooving
Milling
Turning
Cast Iron
Grooving
Milling
Hardened Materials
Turning
CBN
Turning
Hardened Materials
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Turning
Non-Ferrous Materials
Grooving
Milling

DC

**55° Rhombic
Positive 7°
with hole**

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

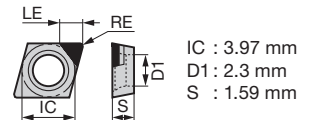


Application	Designation	Dimension (mm)		No. of corners	Chipbreaker										
		RE	LE			DX110	DX120	DX140	DX160	DX200					
Finishing	1QP-DCGT11T301-NS	0.1	3.3	1	○	●									
	1QP-DCGT11T302-NS	0.2	3.2	1	○	●			●						
	1QP-DCMT11T302F		2.6	1	○				●						
	DCMT11T302-DIA		3.2	1	○		●								
	1QP-DCGW11T302F		3	1						●					
	DCGW11T302-DIA	0.4	3.2	1				●							
	1QP-DCGT11T304-NS		3	1	○	●			●						
	1QP-DCMT11T304F		2.4	1	○				●						
	DCMT11T304-DIA		3	1	○		●								
	1QP-DCGW11T304F		3	1						●					
	DCGW11T304-DIA	0.8	3	1				●							
	1QP-DCGW11T308F		4	1						●					
	1QP-DCMT11T308F		2.4	1	○				●						
	1QP-DCGT11T308-NS		3	1	○	●			●						
	DCGW11T308-DIA	2.7	1	1				●							

● : Line up

EP

**75° Rhombic
Positive 11°
with hole**



Application	Designation	Dimension (mm)		No. of corners	Chipbreaker										
		RE	LE			DX140									
Finishing	EPGW040102-DIA	0.2	2	1		●									
	EPGW040104-DIA	0.4	1.9	1		●									

● : Line up

DC



Ex.Toolholder



In.Toolholder

EP



In.Toolholder

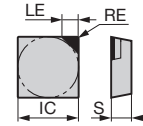
- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

SP



Square Positive 11° without hole

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	SPGN090308-DIA	0.8	3.6	1		●															



IC : 9.525 mm
S : 3.18 mm

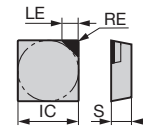
● : Line up

SP



Square Positive 11° without hole

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	SPGN120302-DIA	0.2	3.6	1		●															
	SPGN120304-DIA	0.4	3.6	1		●															
	SPGN120308-DIA	0.8	3.6	1		●	●														



IC : 12.7 mm
S : 3.18 mm

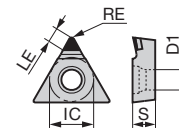
● : Line up

TC



Triangular Positive 7° with hole

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	TCMT080202-DIA	0.2	2.2	1	○	●															
	TCMT080204-DIA	0.4	2	1	○	●															



IC : 4.76 mm
D1 : 2.7 mm
S : 2.38 mm

● : Line up

SP



In.Toolholder

TP

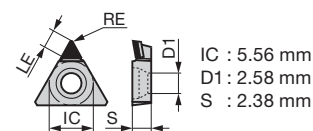


Ex.Toolholder



In.Toolholder

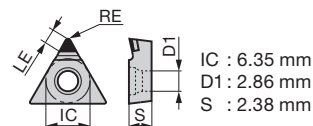
- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

**TC**

**Triangular
Positive 7°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	Material									
		RE	LE			N Non-ferrous									
Finishing	1QP-TCGT090202-NS	0.2	3.1	1	○	●	●								
	1QP-TCMT090202F	0.2	2.3	1	○	●	●								
	1QP-TCGT090204-NS	0.4	3	1	○	●	●								
	1QP-TCMT090204F	0.4	2.2	1	○	●	●								

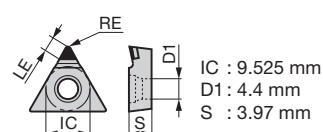
● : Line up

**TC**

**Triangular
Positive 7°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	Material									
		RE	LE			N Non-ferrous									
Finishing	1QP-TCGT110202-NS	0.2	3.1	1	○	●	●								
	1QP-TCGT110204-NS	0.4	3	1	○	●	●								

● : Line up

**TC**

**Triangular
Positive 7°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	Material									
		RE	LE			N Non-ferrous									
Finishing	1QP-TCGT16T304-NS	0.4	3	1	○	●	●								
	1QP-TCGT16T308-NS	0.8	3.1	1	○	●	●								

● : Line up

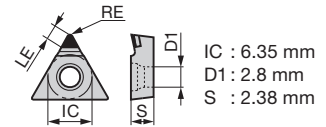


Ex. Toolholder



In. Toolholder

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting



TC



**Triangular
Positive 7°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX120	DX160														
Finishing	1QP-TCMT110202F	0.2	2.3	1	○	●	●														
	TCMT110202-DIA		2.4	1	○	●	●														
	1QP-TCMT110204F	0.4	2.2	1	○	●	●														
	TCMT110204-DIA		2.2	1	○	●	●														

● : Line up

TC



**Triangular
Positive 7°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX110	DX120														
Finishing	TCMT110302-DIA	0.2	2.4	1	○	●	●														
	1QP-TCMT110304	0.4	2.2	1	○	●	●														
	TCMT110304-DIA		2.2	1	○	●	●														

● : Line up

TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX140															
Finishing	TPGA090202-DIA	0.2	2.4	1		●															
	TPGA090204-DIA	0.4	2.2	1		●															

Tungaloy's standard hole specification (ISO non-compliant)

● : Line up



TC
Ex.Toolholder



In.Toolholder



TP
In.Toolholder

CER
Turning
Superalloys
Grooving
Milling
Cast Iron
Turning
Grooving
Milling
Hardened Materials
Turning
CBN
Turning
Hardened Materials
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Turning
Non-Ferrous Materials
Grooving
Milling

IC : 6.35 mm
D1 : 2.8 mm
S : 2.38 mm



N Non-ferrous

● : Line up

C

D

S

V

w



N Non-ferrous

● : Line up

IC : 4.76 mm
D1 : 2.3 mm
S : 2.38 mm

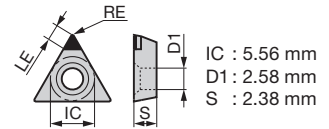


N Non-ferrous

● : Line up



- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



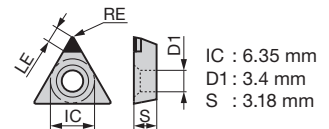
TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	DX160										
		RE	LE													
Finishing	1QP-TPGT090202-NS	0.2	3.1	1	○	●										
	1QP-TPGT090204-NS	0.4	3	1	○	●										

● : Line up



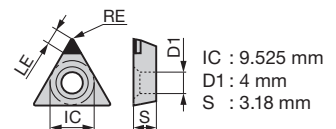
TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	DX160										
		RE	LE													
Finishing	1QP-TPGT110302-NS	0.2	3.1	1	○	●										
	1QP-TPGT110304-NS	0.4	3	1	○	●										

● : Line up



TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	DX140										
		RE	LE													
Finishing	TPGA160302-DIA	0.2	3.3	1		●										
	TPGA160304-DIA	0.4	3.2	1		●										
	TPGA160308-DIA	0.8	2.9	1		●										

Tungaloy's standard hole specification (ISO non-compliant)

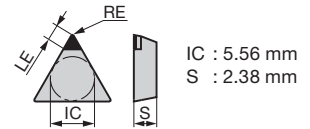
● : Line up



In.Toolholder

CER
Turning
Superalloys
Grooving
Milling
Cast Iron
Turning
Grooving
Milling
Hardened Materials
Turning
CBN
Turning
Hardened Materials
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Turning
Non-Ferrous Materials
Grooving
Milling

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

**TP**

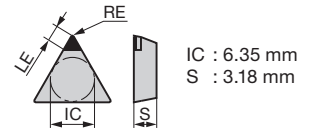
**Triangular
Positive 11°
without hole**

N Non-ferrous

●●

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker														
		RE	LE																
Finishing	TPGN090204-DIA	0.4	2.2	1	●	●													

● : Line up

**TP**

**Triangular
Positive 11°
without hole**

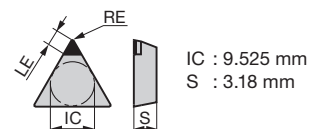
N Non-ferrous

●●

●●

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker														
		RE	LE																
Finishing	TPGN110304-DIA	0.4	3.2	1	●	●													
	TPGN110308-DIA	0.8	2.9	1	●	●													

● : Line up

**TP**

**Triangular
Positive 11°
without hole**

N Non-ferrous

●●

●●

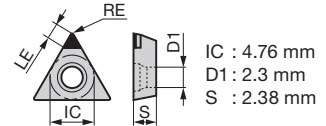
Application	Designation	Dimension (mm)		No. of corners	Chipbreaker														
		RE	LE																
Finishing	TPGN160302-DIA	0.2	3.3	1	●	●													
	TPGN160304-DIA	0.4	3.2	1	●	●													
	TPGN160308-DIA	0.8	2.9	1	●	●													

● : Line up



In.Toolholder

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting



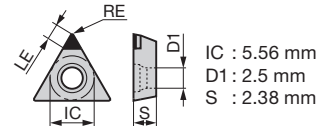
TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker										
		RE	LE												
Finishing	TPGW080202-DIA	0.2	2.4	1	DX140	●									
	TPGW080204-DIA	0.4	2.3	1	DX140	●									

● : Line up



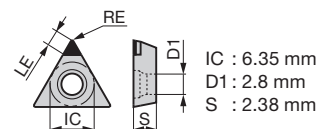
TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker										
		RE	LE												
Finishing	TPGW090202-DIA	0.2	2.4	1	DX120	●	●								
	TPGW090204-DIA	0.4	2.2	1	DX140	●	●								

● : Line up



TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker										
		RE	LE												
Finishing	TPGW110202-DIA	0.2	2.4	1	DX120	●	●								
	TPGW110204-DIA	0.4	2.2	1	DX140	●	●								

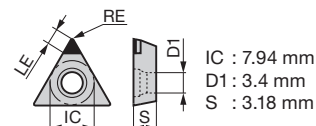
● : Line up



In.Toolholder

CER
Turning
Superalloys
Grooving
Milling
Cast Iron
Turning
Grooving
Milling
Hardened Materials
Turning
CBN
Turning
Grooving
Hardened Materials
Turning
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Turning
Non-Ferrous Materials
Grooving
Milling

- : Continuous cutting
- : Light interrupted cutting
- : Heavy interrupted cutting

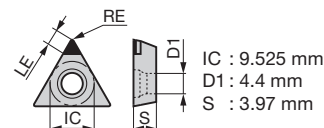
**TP**

**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	N Non-ferrous ●● ●●													
		RE	LE			DX120	DX140												

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	N Non-ferrous ●● ●●													
		RE	LE			DX120	DX140												
Finishing	TPGW130302-DIA	0.2	3.3	1		●	●												
	TPGW130304-DIA	0.4	3.2	1			●												
Finishing																			

● : Line up

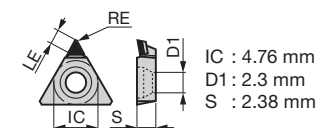
**TP**

**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	N Non-ferrous ●●													
		RE	LE			DX140													

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	N Non-ferrous ●●													
		RE	LE			DX140													
Finishing	TPGW16T302-DIA	0.2	3.3	1		●													
	TPGW16T304-DIA	0.4	3.2	1		●													
Finishing	TPGW16T308-DIA	0.8	2.9	1		●													

● : Line up

**TP**

**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	N Non-ferrous ●●													
		RE	LE			DX160													

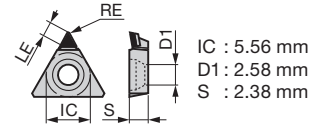
Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	N Non-ferrous ●●													
		RE	LE			DX160													
Finishing	1QP-TPMT080202F	0.2	1.8	1	○	●													
	1QP-TPMT080204F	0.4	1.7	1	○	●													
Finishing																			

● : Line up



In.Toolholder

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting



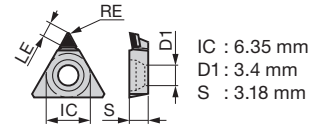
TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	DX160										
		RE	LE													
Finishing	1QP-TPMT090202F	0.2	1.8	1	○	●										
	1QP-TPMT090204F	0.4	1.7	1	○	●										

● : Line up



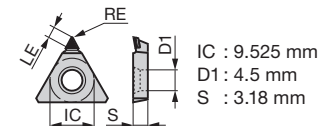
TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	DX160										
		RE	LE													
Finishing	1QP-TPMT110302F	0.2	2.3	1	○	●										
	1QP-TPMT110304F	0.4	2.2	1	○	●										

● : Line up



TP



**Triangular
Positive 11°
with hole**

Application	Designation	Dimension (mm)		No. of corners	Chipbreaker	DX160										
		RE	LE													
Finishing	1QP-TPMH160302F	0.2	2.4	1		●										
	1QP-TPMH160304F	0.4	2.3	1		●										

● : Line up



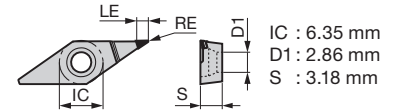
In.Toolholder

- CER
- Turning
- Superalloys
- Grooving
- Milling
- Turning
- Cast Iron
- Grooving
- Milling
- Hardened Materials
- Turning
- CBN
- Turning
- Grooving
- Cast Iron
- Turning
- Milling
- Superalloys
- Turning
- Sintered metal
- Turning
- PCD
- Turning
- Grooving
- Milling
- Non-Ferrous Materials

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

VB

**35° Rhombic
Positive 5°
with hole**

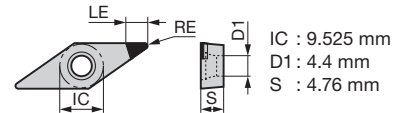


Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	1QP-VBMT110302F	0.2	2.5	1	○	●															
	1QP-VBMT110304F	0.4	2.3	1	○	●															
	1QP-VBMT110308F	0.8	2.1	1	○	●															

● : Line up

VB

**35° Rhombic
Positive 5°
with hole**

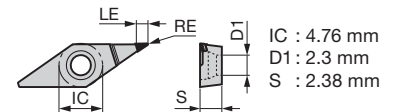


Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	1QP-VBGT160401-NS	0.1	2.8	1	○	●	●														
	1QP-VBMT160402F	0.2	2.5	1	○		●														
	1QP-VBGT160402-NS		3.4	1	○	●	●														
	1QP-VBGT160404-NS	0.4	3	1	○	●	●														
	1QP-VBMT160404F		2.3	1	○		●														
	1QP-VBGT160408-NS	0.8	3	1	○	●	●														
	1QP-VBMT160408F		2.1	1	○		●														

● : Line up

VC

**35° Rhombic
Positive 7°
with hole**



Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE																		
Finishing	1QP-VCGT080202-NS	0.2	3.4	1	○	●	●														
	1QP-VCMT080202F	0.2	2.5	1	○		●														
	1QP-VCMT080204F	0.4	2.3	1	○		●														
	1QP-VCMT080208F	0.8	2.1	1	○		●														

● : Line up



Ex. Toolholder



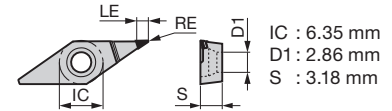
In. Toolholder

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

VC



**35° Rhombic
Positive 7°
with hole**



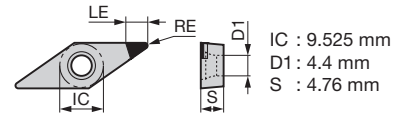
Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX110	DX160	DX200													
Finishing	1QP-VCMT110302F	0.2	2.5	1	○	●	●														
	1QP-VCMT110302F	0.2	2.5	1	○		●														
	1QP-VCMT110302F	0.2	3.4	1				●													
	1QP-VCMT110304F	0.4	2.3	1	○	●															
	1QP-VCMT110304F	0.4	2.3	1	○		●														

● : Line up

VC



**35° Rhombic
Positive 7°
with hole**



Application	Designation	Dimension (mm)		No. of corners	Chipbreaker																
		RE	LE			DX110	DX120	DX140	DX160												
Finishing	1QP-VCMT160401-NS	0.1	2.8	1	○	●															
	1QP-VCMT160402-NS		3.4	1	○	●			●												
	1QP-VCMT160402F	0.2	2.5	1	○				●												
	VCMT160402-DIA	0.2	4.8	1	○		●														
	VCGW160402-DIA	0.2	4.8	1				●													
	1QP-VCMT160404-NS		3	1	○	●			●												
	1QP-VCMT160404F	0.4	2.3	1	○				●												
	VCMT160404-DIA	0.4	4.4	1	○		●														
	VCGW160404-DIA	0.4	4.4	1				●													
	1QP-VCMT160408-NS	0.8	3	1	○	●			●												
	1QP-VCMT160408F	0.8	2.1	1	○				●												
	1QP-VCMT160412F	1.2	2.1	1	○				●												

● : Line up



Ex. Toolholder



In. Toolholder

CER
Turning
Superalloys
Grooving
Milling
Turning
Cast Iron
Grooving
Milling
Turning
Hardened Materials
Turning
CBN
Turning
Hardened Materials
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
Non-Ferrous Materials
Turning
Grooving
Milling

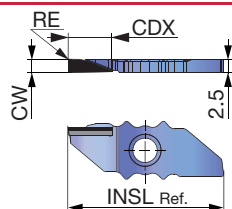
PCD Grooving

N Non-Ferrous Metal

DUOJUST

■ INSERTS

JXDXR-F (PCD insert)**



P	Steel				
M	Stainless				
K	Cast iron				
N	Non-ferrous	★			
S	Superalloys				
H	Hard materials				

★ : First choice

Designation	HAND	CW±0.05	RE	PCD				CDX	INSL
				DX110					
JXDX12R20F	R	2	< 0.1	●				6	25
JXDX12R25F	R	2.5	< 0.1	●				6.5	25
JXDX16R25F	R	2.5	< 0.1	●				7	29



More info

● : Line up

STANDARD CUTTING CONDITIONS

For aluminium and non-ferrous metal PCD insert

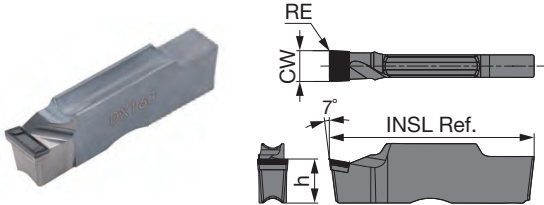
ISO	Workpiece materials	Grades	Operation	Cutting speed Vc (m/min)	Feed f (mm/rev)	Depth of cut ap (mm)
	Aluminium alloys A5056, A6061, etc.	DX110	Grooving	100 - 300	0.03 - 0.15	-
		DX110	Turning	100 - 300	0.03 - 0.15	< 6

TUNGCUT

New

STX

External/internal/face grooving and turning



P	Steel					
M	Stainless					
K	Cast iron					
N	Non-ferrous	★				
S	Superalloys					
H	Hard materials					

★ : First choice

[illegible]

More info

★: Will be released in July 2025

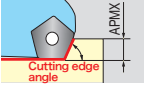
●: New product

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Operation	Cutting speed Vc (m/min)	Feed f (mm/rev)	Depth of cut ap (mm)
N	Aluminium alloys Si ≤ 12%	DX160	Grooving	200 - 2000	0.05 - 0.15	-
		DX160	Turning	200 - 2000	0.07 - 0.3	< 1
	Aluminium alloys Si ≥ 12%	DX160	Grooving	200 - 1500	0.05 - 0.15	-
		DX160	Turning	200 - 1500	0.07 - 0.3	< 1
	Copper and copper alloys	DX160	Grooving	200 - 1500	0.05 - 0.15	-
		DX160	Turning	200 - 1500	0.07 - 0.3	< 1
	Carbon / Graphite	DX160	Grooving	200 - 500	0.05 - 0.15	-
		DX160	Turning	200 - 500	0.07 - 0.3	< 1
	Ceramic	DX160	Grooving	100 - 200	0.02 - 0.1	-
		DX160	Turning	100 - 200	0.02 - 0.1	< 1
	Tungsten carbide (HRA80 - 95)	DX160	Grooving	5 - 30	0.02 - 0.1	-
		DX160	Turning	5 - 30	0.02 - 0.1	0.02 - 0.2

PCD Milling

N Non-Ferrous Metal

	TUNGSMILL T/EPYD	TFE	HFC	HPC
				
Cutting edge angle	90°	85.5°	90°	90°
Depth of cut (APMX)	4.5 / 7.5	8 / 3.5 / 1.5	6.5 / 7.5	4 / 5
Tool diameter	ø40 - ø160	ø63 - ø125	ø50 - ø125	ø20 - ø35
Workpiece material	N	P M K N	N	N
No. of corners (insert)	1	4 / 1 / 2	1	1 / 2
 Face milling	★  ★  ★  ☆ 	★  ★  ★  ☆ 	★  ★  ★ 	★  ★  ★ 
 Shoulder milling	★ 			
Reference pages	PCD-28	PCD-31	PCD-35	PCD-36

Icon

	Thin workpiece		Hollow workpiece
	Face milling		Shoulder milling
	Interrupted surface		



Super high density PCD cutter for efficient finishing of aluminum

■ The number of insert settings that can be used for a wide range of machining forms

TPYD06..., EPYD06...

DC (mm)	Number of inserts on the cutter		
	Coarse pitch	Close pitch	Extra close pitch
40	-	-	8
50	6	8	10
63	8	10	14
80	-	10	16
100	-	12	22
125	-	14	26
160	-	20	34

TPYD06...(Lightweight type)

DC (mm)	Cutter weight (kg, Insert-included)	Number of inserts on the cutter	
		Close pitch	Extra close pitch
100	< 1.3*	12	22
125	< 1.8*	14	26

*Including the arbor weight, it must be 3 kg or less.

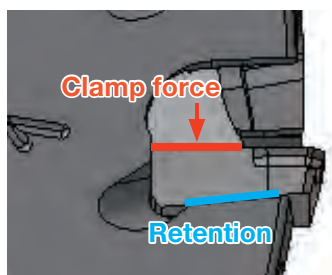
■ Safety measures for high speed milling

Safety insert lock to protect against centrifugal force

Inserts are securely retained in place, preventing displacement due to centrifugal force during high-speed milling.

Wedge shape design prevents the insert from dislodging from its seat due to centrifugal inertia force.

Note: Do not exceed the maximum rotation (n max) inscribed on the cutter body.



DC (mm)	Max. rotation number (min ⁻¹)
40	24,000
50	20,000
63	19,000
80	17,000
100	15,000
125	14,000
160	12,000

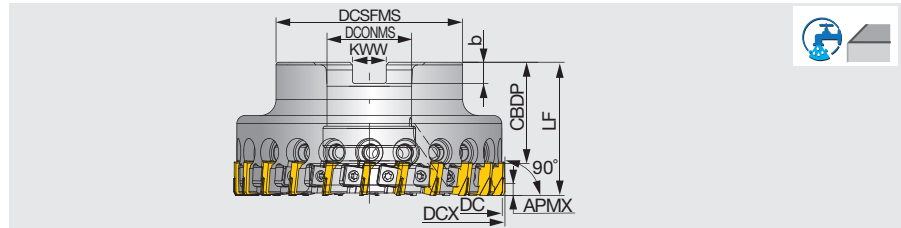


More info

TPYD06

Face milling cutter for non-ferrous applications, bore type, with PCD inserts

GAMP = +9°, GAMF = +4°



Designation	APMX	DC	DCX	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	RPMX(min ⁻¹)	Insert
TPYD06M040B16.0R08*	4.5	40	42	8	38	40	16	18	8.4	5.6	0.28	With	24000	YDEN0603...
TPYD06M050B22.0R10*	4.5	50	52	10	47	40	22	20	10.4	6.3	0.42	With	21000	YDEN0603...
TPYD06M063B22.0R08	4.5	63	65	8	45	40	22	20	10.4	6.3	0.59	With	19,000	YDEN0603...
TPYD06M063B22.0R10	4.5	63	65	10	45	40	22	20	10.4	6.3	0.57	With	19,000	YDEN0603...
TPYD06M063B22.0R14*	4.5	63	65	14	47	40	22	20	10.4	6.3	0.42	With	19000	YDEN0603...
TPYD06M080B27.0R10	4.5	80	82	10	60	50	27	22	12.4	7	1.3	With	17,000	YDEN0603...
TPYD06M080B27.0R16	4.5	80	82	16	60	50	27	22	12.4	7	1.24	With	17,000	YDEN0603...
TPYD06J080B25.4R10	4.5	80	82	10	60	50	25.4	26	9.5	6	1.31	With	17,000	YDEN0603...
TPYD06J080B25.4R16	4.5	80	82	16	60	50	25.4	26	9.5	6	1.26	With	17,000	YDEN0603...
TPYD06M100B32.0R12	4.5	100	102	12	70	50	32	25	14.4	8	1.85	With	15,000	YDEN0603...
TPYD06M100B32.0R22	4.5	100	102	22	70	50	32	25	14.4	8	1.78	With	15,000	YDEN0603...
TPYD06J100B31.7R12	4.5	100	102	12	70	50	31.75	32	12.7	8	1.84	With	15,000	YDEN0603...
TPYD06J100B31.7R22	4.5	100	102	22	70	50	31.75	32	12.7	8	1.76	With	15,000	YDEN0603...
TPYD06M125B40.0R14	4.5	125	127	14	90	60	40	32	16.4	9	3.59	With	14,000	YDEN0603...
TPYD06M125B40.0R26	4.5	125	127	26	90	60	40	32	16.4	9	3.48	With	14,000	YDEN0603...
TPYD06J125B38.1R14	4.5	125	127	14	90	60	38.1	38	15.9	10	3.61	With	14,000	YDEN0603...
TPYD06J125B38.1R26	4.5	125	127	26	90	60	38.1	38	15.9	10	3.56	With	14,000	YDEN0603...
TPYD06M160B40.0R20	4.5	160	162	20	90	60	40	32	16.4	9	5.34	With	12,000	YDEN0603...
TPYD06M160B40.0R34	4.5	160	162	34	90	60	40	32	16.4	9	5.2	With	12,000	YDEN0603...
TPYD06J160B38.1R20	4.5	160	162	20	90	60	38.1	38	15.9	10	5.43	With	12,000	YDEN0603...
TPYD06J160B38.1R34	4.5	160	162	34	90	60	38.1	38	15.9	10	5.29	With	12,000	YDEN0603...

*Wrench, Grip, and Shell locking bolt are not included in the box.

SPARE PARTS



Designation	Insert locking wedge	Wedge fixing screw	Adjusting wedge screw (Optional)	Grip (Optional)	Shell locking bolt (Optional)	Wedge tightening wrench (Optional)
TPYD06M040B16.0R08	WF385N	SSHM5-4PF-S	(AJC08-BLDS635)	(TBJ)	(SRPS118-0416)	(P-2.5F)
TPYD06M050B22.0R10	WF385N	SSHM5-4PF-S	(AJC08-BLDS635)	(TBJ)	(FSHM10-40H)	(P-2.5F)
TPYD06M063B22.0R14	WF385N	SSHM5-4PF-S	(AJC08-BLDS635)	(TBJ)	(CM10X30H)	(P-2.5F)

SPARE PARTS



Designation	Insert locking wedge	Wedge fixing screw	Adjusting cam	Torx bit	Cam tightening screw	Wrench	Grip	Shell locking bolt
TPYD06M063B22.0R**	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	CM10x30H
TPYD06*080B2*.R**	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	CM12x30H
TPYD06M100B32.0R**	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	CM16x40H
TPYD06J100B31.7R**	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	TMBA-M16H
TPYD06*125B*.R**	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	TMBA-M20H
TPYD06*160B*.R**	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	TMBA-M20H

Reference pages: Inserts, Standard cutting conditions → [PCD-30](#)

INSERT SETTING PROCEDURE FOR UNIQUE AXIAL ADJUSTING MECHANISM CUTTER (DC 63 - 160 mm / Exterior color: Black)

1 Loosening the wedge



Loosen the wedge so that they do not exceed the cutter's outer diameter.

2 Cleaning insert pockets



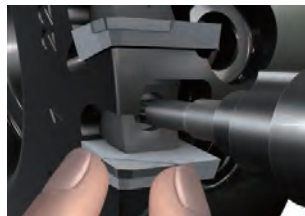
Remove all the inserts from the pockets. Use compressed air to thoroughly clean the pockets of dust and chips.

3 Mounting the inserts, LIGHTLY tighten the wedge

Place the insert in the pocket and LIGHTLY tighten the wedge at 1 N·m (0.74 ft-lb). Make sure that there are no gaps between the insert and cutter body. Fix all inserts on the cutter in the same manner.

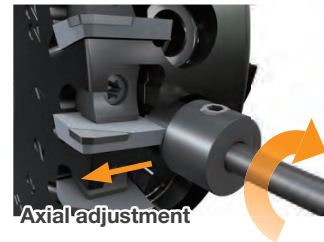


Direction to place the insert



5 Initially adjusting the axial height

Place the adjusting cam in the hole located at the bottom of the pocket. Adjust the insert axial height by rotating the cam in the CW direction to gradually increase the axial measure. Stop when it reaches 30 μ m ~ 40 μ m just below the desired position. Then, slightly rotate the cam in the CCW direction before removing the cam from the cutter body.



Axial adjustment

6 Tighten the wedges

Firmly tighten the wedges to 3.5 N·m (2.58 ft-lb). In order to prevent body deformation from tightening, it is recommended to perform the final tightening alternately. Do not exceed the recommended clamping torque when fixing the insert. This may damage or fracture the screw.

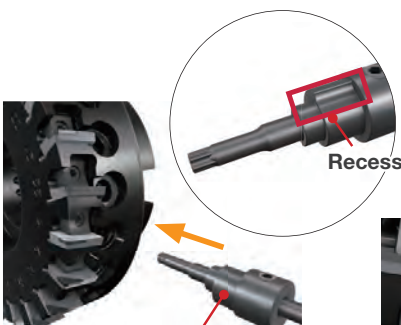


skip

... and on

4 Place the Adjusting cam

The recessed part of the cam should be placed on the insert bottom.



Adjusting cam



7 Final adjustments

For the final axial adjustment, instead of setting the insert height close to the target position, set so that it reaches approximately 8 μ m above the target. Slightly rotate the cam CCW to remove the key off the body. The insert will go down by 8 μ m to the target height when the cam is removed. It is recommended that the inserts be set to less than 5 μ m axially in relation to one another.

■ INSERT SETTING PROCEDURE (DC 40 - 63mm, 100 - 120 mm / Exterior color: Silver)

Preparing the key wrenches

■ The key for axial adjustment of insert



■ The key for tightening the wedge screws



Note: The key wrenches are not included with the cutter. Please purchase them separately.

1 Loosening the wedge



Loosen the wedge so that they do not exceed the cutter's outer diameter.

2 Cleaning insert pockets



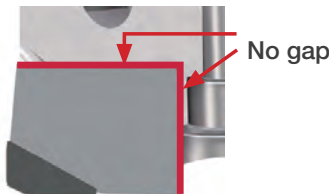
Remove all the inserts from the pockets. Use compressed air to thoroughly clean the pockets of dust and chips.

3 Mounting the inserts, LIGHTLY tighten the wedge

Place the insert in the pocket and LIGHTLY tighten the wedge to 1 N·m (0.74 ft-lb). Make sure that there are no gaps between the insert and cutter body. Fix all inserts on the cutter in the same manner.



Direction to place the insert



4 Place the Adjusting cam

The recessed part of the cam should be placed on the insert bottom.



5 Initially adjusting the axial height

Place the adjusting cam in the hole located at the bottom of the pocket. Adjust the insert axial height by rotating the cam in the CW direction to gradually increase the axial measure. Stop when it reaches 20 μ m just below the desired position. Then, slightly rotate the cam in the CCW direction before removing the cam from the cutter body.



Note: Make sure to place the cam all the way in.



Adjusting cam

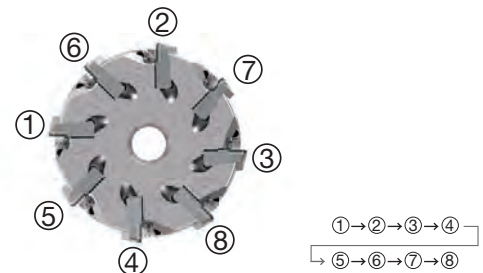


Axial adjustment

Note: If the desired height is not reached and is exceeded during adjustment, loosen the wedge and push the insert all the way to the pocket bottom, then start from Step 3.

6 Tighten the wedges

Firmly tighten the wedges to 2 N·m (2.58 ft-lb). In order to prevent body deformation from tightening, it is recommended to perform the final tightening alternatively. Do not exceed the recommended clamping torque when fixing the insert. This may damage or fracture the screw.

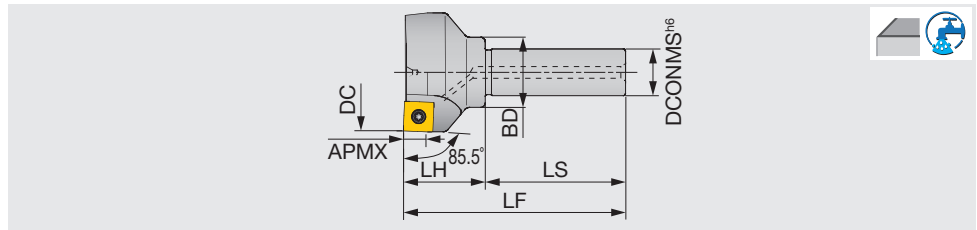


7 Final adjustments

For the final axial adjustment, instead of setting the insert height close to the target position, set so that it reaches approximately 5 μ m above the target. Slightly rotate the cam CCW to remove the key off the body. The insert will go down by 5 μ m to the target height when the cam is removed. It is recommended that the inserts be set to less than 5 μ m axially in relation to one another.

Face endmill for aluminium machining, shank type, with screw clamp system

GAMP = +13°, GAMF = +7°

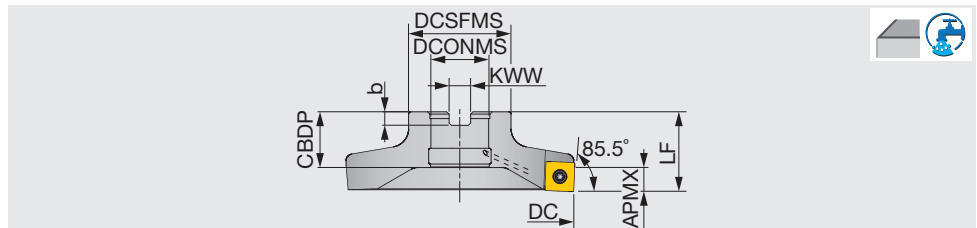
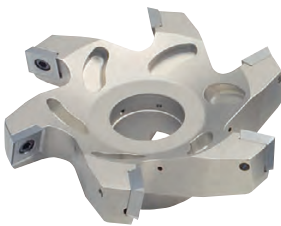


Designation	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT(kg)	Air hole	Insert
EFE12050R	8	50	3	20	30	60	35	95	0.37	With	SEG*12X4...

TFE12R

Face mill for aluminium machining, with screw clamp system, light weight

GAMP = +13°, GAMF = +7°

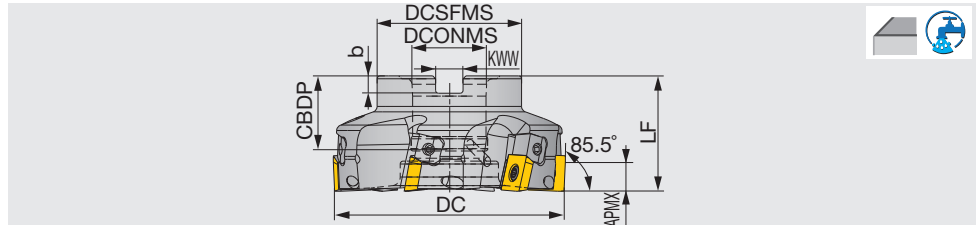


Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT(kg)	Air hole	Insert
TFE12063R	8	63	3	45	35	22	19	10	6	0.34	With	SEG*12X4...
TFE12080R	8	80	4	50	35	25.4	24.5	9.5	6	0.45	With	SEG*12X4...
TFE12100R	8	100	6	50	35	25.4	24.5	9.5	6	0.59	With	SEG*12X4...
TFE12125R	8	125	6	50	35	25.4	24.5	9.5	6	0.9	With	SEG*12X4...

TFE12R...-...A

Face mill for aluminium machining, with screw clamp system

GAMP = +13°, GAMF = +7°



Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT(kg)	Air hole	Insert
TFE12R080M25.4-06A	8	80	6	50	40	25.4	26	9.5	6	0.70	With	SEG*12X4...
TFE12R080M27.0E06A	8	80	6	55	40	27	22	12.4	7	0.69	With	SEG*12X4...
TFE12R100M25.4-08A	8	100	8	50	40	25.4	26	9.5	6	1.15	With	SEG*12X4...
TFE12R100M27.0E08A	8	100	8	55	40	27	22	12.4	7	1.11	With	SEG*12X4...
TFE12R125M31.7-10A	8	125	10	70	50	31.7	32	12.7	8	2.24	With	SEG*12X4...
TFE12R125M32.0E10A	8	125	10	70	50	32	28.5	14.4	8	2.14	With	SEG*12X4...

SPARE PARTS



Designation	Clamping screw	Adjustable Wedge	Lubricant	Shell locking bolt 1	Shell locking bolt 2	Right-left screw	Wrench	Wrench
EFE12000R	CSPB-4S	-	M-1000	-	-	-	-	IP-15D
TFE12063R	CSPB-4S	-	M-1000	-	CM10X30H	-	-	IP-15D
TFE12080R - TFE12125R	CSPB-4S	-	M-1000	TMBA-M12H	-	-	-	IP-15D
TFE12R**A	CSTB-4	FW-701R	M-1000	TMBA-M12H	-	MCS520-2.5	P-2.5T	T-15LB

Recommended clamping torque: 3.5 N·m

Reference pages: Inserts → **PCD-35**, Standard cutting conditions → **PCD-36**

INSERT SETTING PROCEDURE – ADJUSTABLE-TYPE TFE FACE MILLING CUTTER

1 Cleaning insert pockets



Remove all the inserts. Use air pressure to thoroughly clean the pockets of dust and chips.

2 Loosening wedges

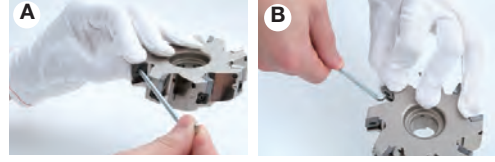


CCW rotation
- Insert screw loosens
- Wedge slides out
- Insert lowers

CW rotation
- Insert screw tightens
- Wedge slides in
- Insert lifts up

Use the included key for wedge adjustment to loosen all the wedges so that they do not exceed the cutter's outer diameter.

3 Clamping inserts for adjustments



Place the insert in the pocket and lightly tighten the clamping screw with the included key. Suggested method: Tighten the screw first with the straight end of the key (Fig A) until finger tight, then use the angled end to further tighten the screw for insert steadiness (Fig B). Do NOT fully tighten the screw at this moment as this procedure is prior to insert adjustment. Repeat the procedure for all inserts.

4 Axial height adjustment of inserts



Mount the cutter in Step ③ on the setting fixture of the pre-setter. Determine the highest insert, and, while carefully monitoring each insert's axial position, rotate the wedge screw in the CW direction to raise the insert in the axial direction, as close as possible to that of the highest insert. Repeat this procedure for all inserts.

Note:

Since the insert is clamped, loosening the wedge screw will not bring down the insert. To lower insert height, both the insert and wedge screws need to be loosened. Start the adjusting procedure for this insert again from Step 1.

5 Tighten insert screws

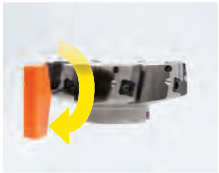


Tighten the insert clamping screw at 3.5 Nm, using the key as shown to the left. Repeat the procedure for all inserts.

Cautions:

- ① Always clean all the insert pockets thoroughly of dust and chips. Any objects present in the pocket may shift the insert's position during machining and cause poor surface finishing quality.
- ② Always loosen the wedge screw before installing the insert as described in Step ②. If the wedge is left tightened in the cutter, the adjustment range of the wedge will be limited, and insert height may not be as freely adjustable as possible.
- ③ With a finger, firmly press and hold the insert into the wedge while tightening the insert screw. If the insert is not in contact, the wedge has to be driven until the gap in between is closed, with no actual insert movement.
- ④ Loosening the wedge will not lower the insert. When the insert height exceeds the desired setting during adjustment, loosen both the insert and wedge screws and re-start the adjustment procedure from Step ①. If the insert slides downward when the wedge screw is loosened, the clamping torque of the insert screw is too low. Tighten the insert screw with a slightly higher torque. Suggested clamping method: First use the straight end of the key to tighten the screw until finger tight, then switch the key to the angled side and turn an additional 45°.
- ⑤ Do not exceed the recommended clamping torque when fixing the insert. This may damage or fracture the insert screw.

6 Final adjustments

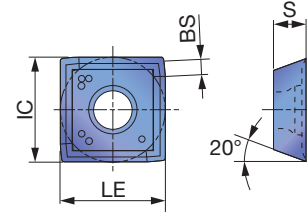
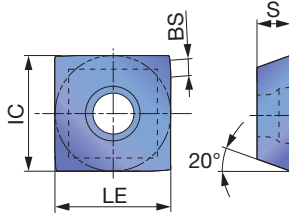


After final tightening of all insert screws, measure to ensure all inserts are at the desired axial heights. If necessary, further tighten any wedge screws in the CW direction for the final few microns. For inserts exceeding the required runout, re-start the adjustment procedure from Step ①.

Note:

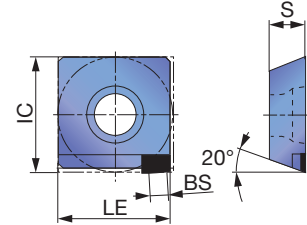
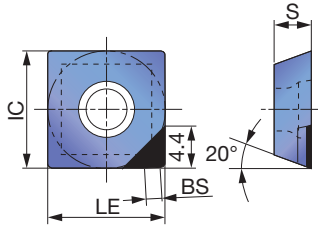
Do not re-tighten the insert screw after insert adjustment is completed. Additional tightening may weaken wedge clamping torque.

SEGT12X4-AJ



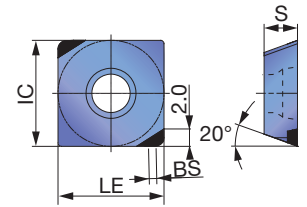
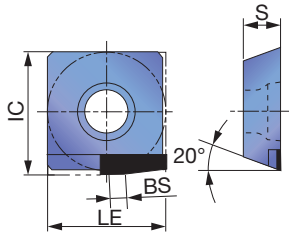
SEGW12X4ZEFR-D

SEGW12X4ZEFR-WD



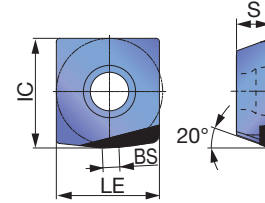
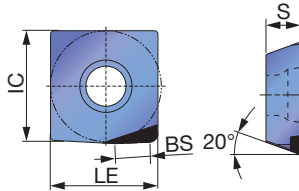
SEGW12X4ZEFR-BD

2QP-SECW12X412ZETR



1QP-SECW12X4ZETR-W

1QP-SECW12X4ZETR-B

[illegible]

★ : First choice

Designation	APMX	Coated			Cermet	Uncoated	PCD	CBN					IC	LE	S	BS
		AH120	AH140	DS1100	NS740	KS05F	DX140	BX480								
SEGW12X4ZEFR	8					●							12.7	12.7	4	1.8
SEGW12X4ZEPR	8	●	●		●								12.7	12.7	4	1.4
SEGT12X4ZEFR-AJ	8			●		●							12.7	12.7	4	1.8
SEGW12X4ZEFR-D	3.5						●						12.7	12.7	4	1.8
SEGW12X4ZEFR-WD	-						●						12.8	12.4	4	2
SEGW12X4ZEFR-BD	-						●						13.1	12.4	4	1.8
2QP-SECW12X412ZETR	1.5							●					12.7	12.7	4	0.9
1QP-SECW12X4ZETR-W	-							●					12.9	12.3	4	4
1QP-SECW12X4ZETR-B	-							●					13.1	12.3	4	2

● : Line up

DX140: 2 pieces per package

BX480: 1 piece per package

How to put each insert together

			For general	Accuracy of machining surface priority	Burr reduction priority
Applicable insert	General insert	SEGW12X4ZEFR-D DX140	◎	◎	◎
		2QP-SECW12X412ZETR BX480			
	Wiper insert	SEGW12X4ZEFR-WD DX140	—	◎	—
		1QP-SECW12X4ZETR-W BX480			
	Wiper insert for burr reduction	SEGW12X4ZEFR-BD DX140	—	—	◎
		1QP-SECW12X4ZETR-B BX480			
	Number of Inserts by type		All general	1 or 2 wiper inserts in cutter body	General insert : Burr wiper insert = 1 : 1
Accuracy of machining surface (roughness and undulation)			△	◎	○
Burr of machining surface			△	○	◎

STANDARD CUTTING CONDITIONS

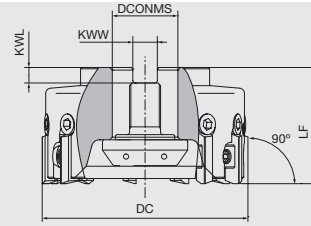
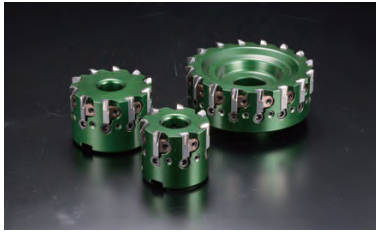
ISO	Workpiece material	Hardness	Grade	Designation	Cutting speed V _c (m/min)	Feed per tooth f _z (mm/t)
P	Carbon steels and alloy steels	< 300HB	AH120	SEGW12X4ZEPR	100 - 180	0.03 - 0.15
		< 300HB	NS740	SEGW12X4ZEPR	100 - 180	0.03 - 0.15
M	Stainless steels	< 250HB	AH140	SEGW12X4ZEPR	80 - 180	0.03 - 0.15
K	Grey and ductile cast irons	150 - 250 HB	AH120	SEGW12X4ZEPR	100 - 200	0.03 - 0.15
	Grey cast iron	150 - 250 HB	BX480	2QP- SECW12X412ZETR	800 - 1500	0.05 - 0.3
	Ductile cast irons	150 - 250 HB	BX480	2QP- SECW12X412ZETR	500 - 800	0.05 - 0.2
N	Cast aluminium alloy / Die-cast Si < 13%	-	KS05F	SEGT12X4ZEFR-AJ	200 - 1500	0.05 - 0.2
		-	DX140	SEGW12X4ZEFR-D	200 - 1500	0.05 - 0.2
	Cast aluminium alloy / Die-cast Si ≥ 13%	-	KS05F	SEGT12X4ZEFR-AJ	80 - 200	0.05 - 0.2
		-	DX140	SEGW12X4ZEFR-D	200 - 500	0.05 - 0.2
	Aluminium alloy Tensile strength < 350 N/mm ²	-	KS05F	SEGT12X4ZEFR-AJ	200 - 1500	0.05 - 0.2
		-	DX140	SEGW12X4ZEFR-D	200 - 1500	0.05 - 0.2
	Aluminium alloy Tensile strength > 350 N/mm ²	-	KS05F	SEGW12X4ZEFR	200 - 1500	0.05 - 0.2
		-	DX140	SEGW12X4ZEFR-D	200 - 1500	0.05 - 0.2
	Copper alloy	-	KS05F	SEGT12X4ZEFR-AJ	200 - 500	0.05 - 0.2
		-	DX140	SEGW12X4ZEFR-D	200 - 500	0.05 - 0.2

Notes:

- In milling aluminium and copper alloys:
 - For improved surface finish, use together with wiper insert SEGW12X4ZEFR-WD
 - For reducing burr occurrence, use together with deburring inserts SEGW12X4ZEFR-BD
- When milling aluminium and copper alloys, use of a water soluble cutting fluid is recommended. When milling steels, cast irons, and stainless steels, dry cutting is recommended.
- When the length-to-diameter overhang ratio of the tool (L/D) exceeds 3, reduce cutting speed and feed to 70 to 80% of the values given in the table.

JHF...

Face mill, bore type, lightweight aluminum body, 1 corner type insert



Designation	DC	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Air hole	RPMX(min ⁻¹)	Insert
JHF050C2200R07	50	7	45	22	6.3	10.4	0.23	Without	20000	HFT...
JHF063C2200R10	63	10	45	22	6.3	10.4	0.38	Without	20000	HFT...
JHF080A2540R12	80	12	45	25.4	6	9.5	0.48	Without	18000	HFT...
JHF100A2540R16	100	16	45	25.4	6	9.5	0.74	Without	18000	HFT...
JHF125A2540R22	125	22	45	25.4	6	9.5	1.1	Without	15000	HFT...

SPARE PARTS



Designation	Wedge	Clamp screw	Screw (for Axial set)	Wrench (for Clamp screw)	Wrench (for Axial set)	Clamping bolt
JHF050C2200R07, JHF063C2200R10	HLW179	WS0512	CS0510A	LW-2.5	LW-4	CS1040A
JHF080A2540R12, JHF100A2540R16	HLW179	WS0512	CS0510A	LW-2.5	LW-4	MBC-M12
JHF125A2540R22						

INSERT

HFT...

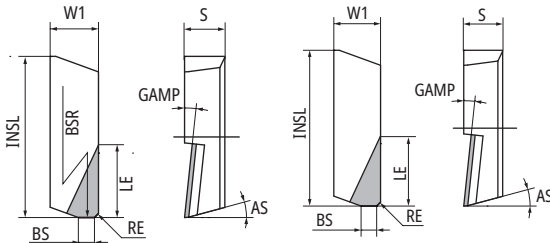


Fig.1

Fig.2

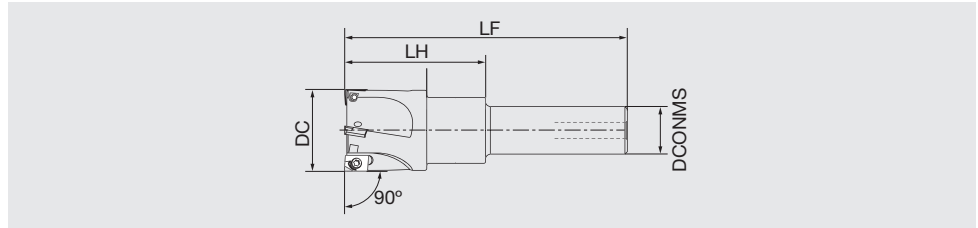
Designation	PCD PD1	Chipbreaker	Wiper	AS	BS	BSR	GMAP	INSL	LE	RE	S	W1	Figure
HFT802006C05	●	No	Arch	5°	2	150	6°	20	7.5	C0.5	5	6	1
HFT802006R04	●	No	Arch	5°	2	150	6°	20	7.5	0.4	5	6	1
HFT702010W05	●	No	Arch	5°	2	-	10°	20	6.5	Double chamfer	5	6	2



More info

RD...

Face mill, shank type cutter, Steel body, fixed type



Designation	DC	CICT	LH	LF	DCONMS	WT(kg)	Air hole	RPMX(min ⁻¹)	Insert
RD020T20070R03	20	3	30	100	20	0.23	Without	18000	HDA...
RD025T25070R03	25	3	40	110	25	0.37	Without	18000	HDA...
RD030T20060R04	30	4	60	120	20	0.33	Without	18000	HDA...
RD032T20060R04	32	4	60	120	20	0.36	Without	18000	HDA...
RD035T20060R04	35	4	60	120	20	0.36	Without	18000	HDA...

SPARE PARTS



Designation	Clamp screw	Wrench (for Clamp screw)
RD0**T2****R...	FSI0306A	(6300-T10-80)

INSERT

HDA...

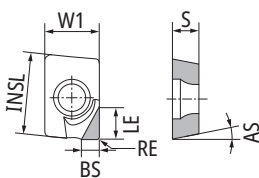


Fig.1

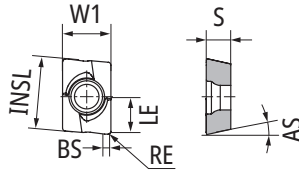


Fig.2

Designation	PCD PD1	Carbide PVD TM1	Chipbreaker	Wiper	AS	BS	GAMF	GMAP	INSL	LE	RE	S	W1	Figure
HDA4015R04	●		No	Arch	14	-1.5	4°	9°	10	4	0.4	3.4	6.7	1
HDA405R04		●	Yes	Arch	14	-0.9	4°	9°	10	MIN 5.0	0.4	3.4	6.7	2



More info

Adjusting and handling instructions for High Feed Cutter

Procedures

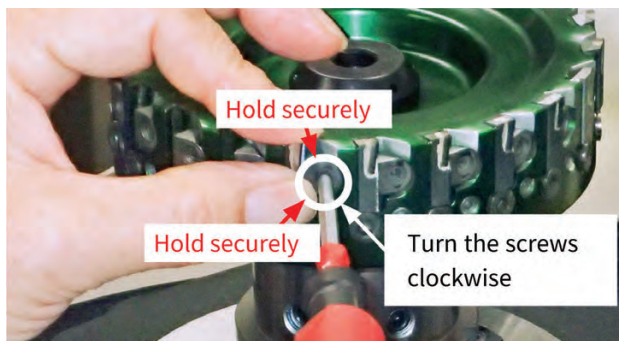
1. Loosen the axial adjustment screw
2. Insert installation (temporary tightening)
3. Cleaning the insert edge
4. Cutting edge height adjustment (Rough)
5. Insert installation (main tightening)
6. Cutting edge height adjustment (Finish)

1. Loosen the axial adjustment screw



Loosen the axial adjustment screw and move it out about 1~2mm from the outer circumference of the body. When re-setting, clean the insert mounting area with air after removing the insert.

2. Install the inserts (initially tighten)



Install the insert to cutter pocket. Tighten wedge set screw with 1Nm torque while pushing insert to cutter center using two fingers. (do not overtighten)

3. cleaning the cutting edge



Clean the cutting edge with clay or other material to prevent misalignment of accuracy due to dust.

Preparations

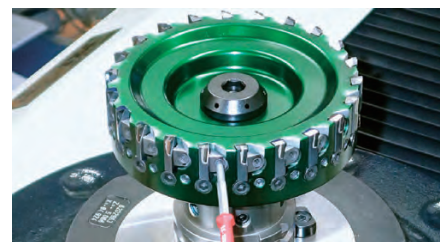
- Tool presetter
- Air blower
- 4.0mm Hex wrench
- 2.5mm Hex torque-wrench(1-4 N-m)

4. Cutting edge height adjustment (rough)



Turn the axial adjustment screw until it is near the position where it does not come out of the outer circumference of the body. (clockwise) [Approximate height of the blade edge: 44.980 mm] Adjust all edge heights according to that height. (within about 10 μ m)

5. insert installation (final tightening)



Tighten the wedge fixing screw to 4 N-m. (Clockwise)

4. cutting edge height adjustment (finishing)



Turn the axial adjustment screw to further increase the height of all blades by 10 μ m and adjust the cutting edge height to within ± 2 μ m. Adjust the blade tip height to within ± 2 μ m. The approximate height of the cutting edge is 45.000 mm.

*If the cutting edge height is raised too high during adjustment, if it is only a few micrometers, the highest cutting edge should be adjusted again. If it is too far off, it is necessary to start over from the beginning. (Because distortion occurs due to stress.)

Note(s): After tightening (4 N-m), the lower surface of the insert and the axial adjustment screw may not be in contact, and the full blade-up operation described above is necessary as a measure to prevent the axial adjustment screw from falling out.

CER

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Hardened Materials

Turning

Grooving

Cast Iron

Turning

Milling

Superalloys

Turning

Turning

Sintered metal

PCD

Non-Ferrous Materials

Turning

Grooving

Milling

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